

Publication status: This preprint has not been published elsewhere.

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<https://doi.org/10.1590/SciELOPreprints.15327>

Submitted on: 2026-03-09

Posted on: 2026-03-10 (version 1)

(YYYY-MM-DD)

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WORKING LIKE ANTS': EXPLORING VETERINARIANS' VIEWS ON LABORATORY ANIMAL CARE IN BRAZIL

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Abstract: Animal use in research was recently regulated in Brazil in line with international guidelines. In this scenario, veterinarians have a shared responsibility for animal care and welfare. In this study, we examine their role in Brazil 15 years on from the regulatory act's introduction. To this end, in-depth interviews were conducted with 24 veterinarians between October 2023 and February 2024. The participants included women (n=17) and men (n=7). They worked in public universities (n=14), public health research institutions (n=10), and public-private higher education institutions (n=3). Geographically, participants were from the Southeast (n=12), Northeast (n=7), Midwest (n=3), North (n=1), and South (n=1). Through a constructivist grounded theory approach, key themes were identified. Veterinarians expressed concerns about (i) inadequate infrastructure and difficulties with its repair, (ii) the low priority given to laboratory animals' needs, and (iii) species and gender discrimination. Participants also shared successes in improving animal care and welfare. Participants often used the emic category "*Working like ants*" ("*É um trabalho de formiguinha*" in Portuguese), reflecting community engagement, that involves technical and political efforts (rather than merely ethical) towards safer practices of care. These findings suggest two key implications. Firstly, animal research in Brazil has been undergoing a welfarist reform. Secondly, greater efforts are necessary to address the need for investment in infrastructure and foster cultures of care in animal research facilities through the development of institutional governance policies which work to counter species and gender inequalities.

Keywords: Laboratory animals; care; animal welfare; epistemologies of the South

INTRODUCTION

Reform is currently underway for laboratory animal care in Brazil, shaped by a new governance system: law 11.794, dated October 08, 2008, alongside further acts from the Brazilian regulatory animal research body (CONCEA — read as *kon-seh-ah*) (Braga *et al.*, 2025; Vieira, 2025). The normative framework establishes minimal requirements for animal care, such as shared responsibilities, good practice standards, and infrastructure regulations (CONCEA, 2022a). In brief, regulation plays a critical role in driving change in animal research by fostering a degree of reconciliation between animal welfare and science.¹

The veterinary profession has played a central role in laboratory animal science (LAS) by improving animal care and, consequently, health and welfare (Druglitrø, 2018; Mcglacken; Anderson; Hobson-West, 2023). In Brazil, CONCEA recognized veterinarians' responsibility for animal health and welfare (*Responsável técnico*, RT. Read as *ar-tee*) in 2012, similar to the role of the Named Veterinary Surgeon (NVS) in the UK's animal research governance, and Designated Veterinarian (DV) in European Union (Poirier *et al.*, 2015). As RT, veterinarians are also accountable to CONCEA and the Brazilian Council of Veterinary Medicine (CFMV) based on compliance and good practice (CFMV, [n.d]). Nevertheless, accountability is shared with institutions, research ethics committees (CEUA — *SEH-wah*) and researchers (CONCEA, 2022a). Tensions are common in this context. Veterinarians must navigate between humans, animals and infrastructure (Haraway, 2008; Kirk, 2016), complex skills (Druglitrø, 2018), the coexistence of care and harm (Roe; Greenhough, 2023), and the entanglements of ethics, law and academic prestige (Davies *et al.*, 2020; Williams, 2023). Thus, RTs' role in animal research is a challenge faced by veterinarians.

Previous studies in Brazil have focused on researchers and students (Souza, 2013; Bones *et al.*, 2014; Carvalho, 2016; Souza, 2017; Fischer; Rodrigues, 2018; Bones; Molento, 2020),

¹ This article is a revised and expanded version of a paper entitled 'It's an ant's work': a view from the South on Culture of Care, which was presented at the 18th SBCAL Congress, Fortaleza, Brazil, 2-4 April 2025 and at the 16th FELASA Congress, Athens, Greece, 2-5 June 2025. The manuscript underwent English language editing by a third-party service.

CEUAs (Machado; Filipecki, 2011; Jankoski; Fischer, 2019; Borghesi, 2020), and laboratory animal professionals (LAPs) (Freire *et al.*, 2025; Rego *et al.*, 2025). Souza (2013) found a social division of care labor between senior and junior researchers²: the latter were actively engaged in husbandry and experimental procedures, while the former remained distant from harm. Bones and Molento (2020) noted neglectful practices among researchers; for example, weaknesses in identifying harm and a lack of pain treatment highlight failures to mitigate animal suffering, while Jankoski and Fischer (2019) identified conflicts of interest, bureaucratic decision-making processes (as opposed to ethical reflection), and tensions among actors in CEUAs. In addition, growing attention has been paid to LAPs. Qualitative studies reported tensions in scientific objectivity and care alongside conflictual relationships between researchers and LAPs (Souza, 2017; Esturião; Fischer, 2021). Psychological strain among veterinarians and other LAPs was also noted in quantitative studies and linked to work-related stress (e.g., euthanasia) (Freire *et al.*, 2025; Rego *et al.*, 2025).

Humanities and social sciences were brought into the conversation on laboratory animal science (LAS) in recent studies from the Global North that highlighted sociohistorical complexities between care, ethics and animal research. These work have drawn attention to (i) the role of competent care (Holmberg, 2008; Anderson; Hobson-West, 2022; Williams, 2023) (ii) histories of lab animal science and the role of infrastructure (Kirk, 2016; Druglitrø, 2018; Kirk, 2018; Kirk, 2024); (iii) current tensions between scientific objectives and animal welfare (Davies, 2012; Greenhough; Roe, 2018; Sharp, 2021; Roe; Greenhough, 2023); (iv) and gender inequalities within Veterinary Medicine (Irvine; Vermilya, 2010; Freestone; Remnant; Gummery, 2022).

Gaps in undergraduate training in Laboratory Animal Science (LAS) among veterinarians have been reported in various contexts (Poirier *et al.*, 2015; Anderson; Hobson-West, 2022; Mohr *et al.*, 2023; Breijó, 2025). Anderson and Hobson-West (2022) have shown that veterinarians, who became mandatory after the 1986 Act in the UK (Kirk; Myelnikov, 2022), had limited knowledge of LAS before transitioning to the NVS role. Key skills and knowledges for their professional development include teaching skills, team management, ethics and animal welfare (Bayne *et al.*,

² In this paper, junior and senior researchers are used to differentiate students (trainees/masters- and doctoral-level students) from graduated and experienced researchers (whose role involves teaching and advising junior researchers).

2011; Poirier *et al.*, 2015; Mohr *et al.*, 2023). Training and continuing education are central to cultures of care, as a broad and complex set of competencies is required to fulfill veterinarian's role in animal research (for a review of cultures of care, see Greenhough e Roe (2024)

Historical analyses have explored the social construction of LAS through the 20th century. Kirk (2016; 2018) and Druglitrø (2018) have shown that changes in husbandry, technology, and infrastructure enabled a degree of reconciliation between animal welfare and scientific values, thereby improving both animal health and research quality. Care became skilled, that is, performed by trained individuals and based on the combination of scientific values (standardization, quantification) and needs (healthy animals for research) and societal concerns regarding the moral consideration of animals (animal rights and welfare groups). Thus, scientific knowledge, technologies, and infrastructures were constituted in order to achieve quality standards.

Further work has highlighted how animal laboratories are characterized by a tension between regulatory requirements (as well as personal commitments) to animal welfare and the harms permitted by scientific research protocols. Greenhough e Roe (2018) observed a conflict between care and scientific objectivity (i.e., comparability with previous research) at animal facilities. Davies (2012, p. 629) illustrated how these conflicts unfold in practice, as strategies to improve animal welfare are withheld to maintain comparability with previous results: "Environmental enrichments will be used [...] unless they are contraindicated by current experimental design. Pain-relieving drugs will be administered unless they might interfere with experimental outcomes". Mazhary e Hawkins (2019) found that assumptions and anecdotes about animals' needs are barriers to the adoption of refinement measures. Furthermore, Williams (2023) and Nuyts e Friese (2023) suggest that unequal prestige within academic institutions plays a role in deciding which needs will take priority.

Previous studies have investigated the role of gender in shaping practices in science and in the veterinary profession³. Early feminist critique of science focused on strong scientific objectivity, emotional detachment and sex bias in biomedical research (Haraway, 1991; Birke, 1995; Gilligan,

³ For the purposes of this study, gender is considered a binary category, since none participants self-identified as non-binary.

2023; Segato, 2024). Birke (1995) noted that emotions were historically constructed as a feminine value, thus, as animals, have a lesser status in science. To preserve this ideal, affective dimensions of care—such as attentiveness and becoming attuned, i.e. ability to notice bodily and behavioral changes of animals (Greenhough; Roe, 2019) — were marginalized in scientific discourse, in spite of its importance to care and scientific production (Kirk, 2024). Furthermore, sex bias in biomedical research reflects androcentrism in science, taking the male body as the universal standard (Harding, 2004; Plevkova *et al.*, 2020). In addition, female veterinarians face gender inequalities in their daily work (Clarke; Knights, 2019; Freestone; Remnant; Gummery, 2022). Irvine and Vermilya (2010), for example, found that female veterinarians perform “gender work”—that is, adopting discursive and behavioral strategies to distance themselves from feminine values and to be respected.

Latin American thinking complements work from Global North, offering insights into how the broader political context shape funding distribution, the adoption of refinement, and the capacities of LAPs to provide care. Firstly, collective health⁴ has explored how wider social determinants (such as social status and environmental conditions) play a role in shaping human population health and disease (Paim *et al.*, 2011). Specifically, the analysis of workers’ health has been expanded to consider socioeconomic contexts which affect health, as opposed to approaches that only consider risks directly associated with labor activity (Brito, 2005). For example, Brito (2005) argued that gender relations should be included in the analysis due to a historical sexual division of labor. This division associates, certain forms of work with men (e.g., leadership) and others with women (e.g., care), while assigning higher value give to masculine roles, leading to different work experiences for men and women. Hence, analytical attention is drawn to gender relations and how they affect women and laboratory animal welfare. In doing so, this paper extends on previous quantitative analyses of psychological strain reported by laboratory animal professionals, both in Brazil (Freire *et al.*, 2025; Rego *et al.*, 2025) and elsewhere (Lafollette *et al.*, 2020; Rumpel *et al.*, 2023). This represents an analytical shift, shedding new light on relational and institutional aspects that produce caring or uncaring practices and their impacts on workers’ health instead of focusing only on individual effects of tensions surrounding care and harm (e.g., euthanasia).

⁴ Collective health is a Latin American approach to public health. It is linked to the social movement of the Brazilian sanitary reform (late 1970s), which led to the constitution of the public health system (SUS) in 1988.

Furthermore, the term ‘laboratory animal safety’ is used throughout this text to indicate the emergence of harm that would be avoidable based on current knowledge and/or was caused by withholding access to refined techniques (e.g., analgesia). This term originates from patient safety models of human health that seek to reduce the risk of unnecessary harm caused by health care (World Health Organization, 2023). In doing so, current challenges in animal research are reframed based on the access of laboratory animals to safe care.

Secondly, Rita Segato (2024), an Argentinean feminist and decolonial scholar, offers an analytical framework to approach the role of gendered relations in day-to-day conflicts between care and scientific values in the context of animal research. In her view, patriarchal⁵ politics is at the center of violence and other unequal political divisions, such as species and race, acting as an analytical model for other political classifications of status (e.g. moral status discussions in bioethics scholarship (Reichlin, 2016)). Her work is also situated within broader discussions on Latin America that draw attention to the historically situated constitution of America—through the colonial expansion of Europe during modernity—as a point of inflection in the political organization of social relationships (Quijano, 2019; Segato, 2022).

In Segato’s reading (Segato; Monque, 2021), patriarchy was modified through colonial power: a separation between public and private spaces; the exclusion of women from public life and politics. Furthermore, objectification — ontologically placing different forms of life in the position of objects for instrumental use — was a colonial strategy to exploit nature and bodies. It is through gender violence, she argues, that power is expressed and status regimes are reinforced. In this paper, attention will be drawn to moral violence — subtle and automatically discursive mechanisms, normalized by social mores, that daily reinforce the status order in social relations —against women and laboratory animals.

Overall, this study gives an account of Brazil’s current welfarist reform, identifying key obstacles and the transformation of care practices. We adopted constructivist grounded theory as our approach to empirical research. This investigation explores veterinarians’ stories to identify key

⁵ For Segato, patriarchy is a symbolic, unconscious and archaic political structure that shapes social roles, subjectivities and sexuality and gives higher prestige to masculine roles.

issues within the social context in which animal research is produced, including the impact of gender, and the ways in which this impacts care (Davies; Greenhough; *et al.*, 2024). In addition, regulatory documents and key literature were used as secondary data.

The first section is concerned with the methodology used for collecting and analyzing data in this study. The second section presents and discusses the findings, focusing on four key themes: (i) knowledge and training; (ii) infrastructure and repair work; (iii) communication with researchers; and (iv) care and animal welfare. In the Conclusions Section, the research findings are summarized alongside possible implications. According to the veterinarians interviewed, enacting changes in practice is a collective and political effort that includes, for example, training students and advocacy work at CEUAs, and it is supported by normative frameworks. These efforts are challenged daily by (i) training gaps, (ii) infrastructure and difficulties in repairs, (iii) poor communication, (iv) species and gender discriminations, and (v) deficient institutional support. Hence, this research sheds new light on how care and ethics are put into practice in laboratory animal research in Brazil and reframes current challenges in laboratory animal care in terms of access to safe care. It also complements recent work from the North with a view from the South that sheds light on underlying gender, and species relations in the context of laboratory animal care.

Existing work on laboratory animal cultures has highlighted how tensions between providing care and inflicting permitted harms are shaped by social relations, cultural beliefs and political influences. In Brazil, these tensions coexist alongside the challenge of assembling and maintaining infrastructure for laboratory animal facilities. Furthermore, a Brazilian context offers a view that foregrounds public health, patriarchy and colonialism. Thus, this study complements previous works firstly by focusing on the role of infrastructure in animal care: what happens when it breaks down? Secondly, it explores underlying political structures within which social relationships are constituted: where do the values in conflict come from?

2.1 MATERIALS AND METHODS

Qualitative methodology is a well-established approach in social sciences to investigate how care and ethics are put into practice within animal research (Davies; Kirk; *et al.*, 2024). The present study employs a constructivist grounded theory research design (Charmaz, 2006). For this reason, in-depth interviews offer an effective approach to understanding participants' views on the interpretation of their role and their interactions with others. It also allows us to identify key concerns among actors to be further investigated (Davies; Kirk; *et al.*, 2024). Here, we also reference the Brazilian regulatory framework, key literature and informal conversations.

Veterinarians were recruited via a natural group formation strategy at the 17th conference of the Brazilian Laboratory Animal Science Association (SBCAL/COBEA) in Fortaleza (CE) in September 2023. They were invited to partake in a survey regarding sociodemographic information and expressed interest in being interviewed. The survey was also distributed through WhatsApp groups and the mailing list Biotbras to minimize selection bias (Appendix A). Prior to this, this instrument had been validated for comprehensibility and the accuracy of its terms by fourteen veterinarians from various sectors (e.g., universities, hospitals, and research institutes, both public and private) and six individuals without a veterinary background. The study's inclusion criteria were a veterinary medicine degree and work experience in animal research. A total of 50 people responded to the survey during the recruitment phase. Of 39 participants who had expressed interest in participating in the interviews, 24 responded positively to the invitation (sent only once). Sociodemographic data was analyzed through descriptive statistics using Jamovi® software.

In-depth interviews were conducted between October 2023 and February 2024. Conversations were facilitated via an interview guide with open-ended questions regarding the participants' life histories, perceived obstacles, ethics and culture of care (Appendix B). Participants were allowed to speak freely and in their own terms. Interviews lasted 60 minutes on average and were conducted and recorded online to ensure nationwide coverage. In some cases, stability of internet connection and electric power emerged as an issue, with instances of power outages. Despite these limitations, all interviews successfully took place. The recordings were then

transcribed *verbatim*. Interview transcripts were inductively coded in three cycles in the NVIVO 14® software. Actions and meanings were synthesized by event. In the first coding cycle, we utilized (i) in vivo coding (for instance, 'I was parachuted in' ('*Eu caí de paraquedas*' in Portuguese)); (ii) process coding, e.g., dealing with bureaucracy; (iii) and descriptive coding (e.g., CEUA). These codes were consolidated in themes in a third coding cycle.

This study was conducted in accordance with Resolution 510/2016 of the National Health Council (CNS, 2016). The project acquired approval from the local and national research ethics committees (CAAE: 69366123.2.0000.0030). According to Brazilian law (2018), this dataset contains personal and sensitive information; thus, informed consent was sought for (i) collecting data, (ii) recording interviews, (iii) analyzing transcripts, and (iv) sharing data with supervisors. Participants were given the opportunity to control their own information. For example, they were invited to review and identify sensitive information in transcripts. To prevent any data quoted in published results being traced back to individual participants, pseudonymization and decontextualization were applied to the transcripts and participants received a pseudonym.

Most findings are illustrated with composite vignettes to avoid identification in cases of sensitive research (Piper; Sikes, 2010; Harding *et al.*, 2022). In this strategy, voices from different participants are combined to represent their shared experiences and discourses. The vignettes comprise quotes from different participants within the same code and similar events. Words were added in brackets to facilitate the comprehension of context. In some cases, quotes were inserted into one another to create a cohesive storyline. Otherwise, the words and language patterns remained exactly as stated by the participants. One limitation of unifying their voices is that it prevents the procurement of more nuanced disparities, such as regional differences. Nevertheless, this strategy was adopted to protect internal confidentiality. Brief individual quotes were incorporated into the text to illustrate unique accounts.

Vignettes and quotes were translated by the author from Portuguese to English. However, translation may not fully capture culturally shaped experiences (Younas *et al.*, 2022). For instance, the term for animal facility in Portuguese is *biotério* (read as *bee-o-TÉ-ryo*). This word was not translated to preserve the naming culture shaped by a particular sociohistorical context. In addition,

the term “animal user” is a regulatory definition for “every individual involved in animal manipulation in activities of production, maintenance and use in scientific or teaching activities” (CONCEA, 2021). Interviewees commonly used this label to refer to junior and senior researchers. One English native speaker reviewed the vignettes to validate comprehension. The vignettes and quotes in Portuguese are available in Table S1.

This analysis features some limitations. Firstly, this study was unable to include researchers due to practical constraints. Thus, it considers only one point of view, but there is scope to expand these perspectives in future research. Secondly, sample saturation is needed to explore the role of racial inequalities in veterinary profession and laboratory animal care. Notwithstanding these limitations, the findings have identified areas for improvement.

2.2 RESULTS AND DISCUSSION

Participants (n=24) spoke freely about their daily work. Women composed the majority of the sample (n=17), and most participants self-identified as white (n=20). The majority of participants (n=21) work in public-funded institutions, with the remaining participants work in public–private partnerships (n=3). Institutions also vary according to the core activity: 58.3% (n=14) of participants work in universities, while 41.7% (n=10) work in public research institutes. Few participants (n=4) do not hold the *Responsável técnico* (RT) position (Table 1). Nevertheless, themes were shared across RTs and non-RTs. To avoid identification, this distinction in roles will not be addressed. In this section, the themes of knowledge and training, infrastructure and repair work, communication, and care and animal welfare are presented and discussed. In Table 2, a summary of codes more frequently applied in interview transcripts gives an overview of relevant themes for participants and the researcher. Supplementary Figure S1 displays the hierarchy charts generated in NVivo for the second and third coding cycles, illustrating the distribution of codes.

Table 1 - Sociodemographic data of research participants interviewed (n=24).

Demographics	Variable	Counts	% of total
Gender	Female	17	70.8%
	Male	7	29.2%
Race/Color	White	19	82.6%
	Pardo*	4	17.4%
Age	30-39	8	33.3%
	40-49	9	37.5%
	50-59	7	29.2%
Residential area	Southeast	12	50%
	Northeast	7	29.2%
	Central-West	3	12.5%
	South	1	4.2%
	North	1	4.2%
Degree	Doctorate	17	70.8%
	Master's degree	5	20.8%
	Specialization	1	4.2%
	Graduate in Veterinary Medicine	1	4.2%
Workplace sector	University	14	58.3%
	Research Institute	10	41.7%
Institutional sector	Public	21	87.5%
	Public-private partnership	3	12.5%
RT role	Yes	20	83.3%
	No	4	16.7%
Ethics committee membership	Yes	15	62.5%
	No	9	37.5%

* Pardo (*PAHR-doo*) is a category of self-identification from the Brazilian Institute of Geography and Statistics (IBGE) comprising mixed-raced individuals, i.e., mixing European, African and/or Indigenous populations. The term was not translated due to the specificity of this race/color identification to Brazil's history, culture and social context.

Table 2 - Summary of codes and subcodes that emerged from qualitative interviews in the second cycle

1	Knowledge and training/ "I was parachuted in"
2	Social relationships/"Dealing with people"
3	Social relationships/Respect
4	Tensions and conflicts/Ethics in practice
5	Care/Improving animal welfare
6	Social relationships/Principal Investigator
7	Vet's role/"RT"
8	Care/Culture of care
9	Vet's roles/CEUA
10	Social relations/Animal caretakers
11	Knowledge and training/Training animal users
12	Care/Talking about harm
13	Tensions and conflicts/Values in conflict
14	Infrastructure issues/Issues with buildings
15	Care/Impact of change regulation
16	Tensions and conflicts/Resistance to change
17	Care/Health care practices
18	Social relations/Politics
19	Infrastructure issues/Institutional support
20	Social relations/Respect/Feeling respected
21	Tensions and conflicts/"without adversities"
22	Knowledge and training/"Running after Lab animal Science"
23	Infrastructure issues/Issues with equipment
24	Social relations/Students
25	Vet's role/Euthanasia
26	Care/Culture of care/A look at human welfare
27	Social relationships/Principal Investigator/Conflicts
28	Care/Animal Welfare/Improving animal welfare/Environmental enrichment
29	Knowledge and training/ "I was parachuted in"/Feeling lost
30	Care/ emotions

* In this table, codes are ordered from the most common to the least, according to how frequently they were applied in different transcripts.

2.2.1 Knowledge and training

A lack of knowledge regarding animal research by veterinarians was a common topic in the interviews. Most participants (n=15) had formal training and professional experience in different fields of the veterinarian profession prior to their engagement in animal research. People tend to move into the RT role for employment opportunities, such as the pursuit of tenured positions within public service or invitations from private institutions requiring an RT to ensure compliance. Participants often used the emic category⁶ "I was parachuted in" (*"Eu caí de paraquedas"*) to highlight the unexpected nature of the role. In their view, a lack of laboratory animal science in the

⁶ Emic category refers to the language used by participants to interpret and give meaning to the world in which they live (Oliveira, 1996).

curricula of veterinary courses combined with unawareness of animal research led to an uncomfortable experience:

Well, I was parachuted in. I believe a lot of people were. Back then, when I secured a public service position, the position was a general one for veterinarians. So, we didn't know where they were going to put us. When I got there, I came across the work at the *biotério*. My first step was to understand what a *biotério* really was. I was pretty insecure, because at the facility there were rats and mice, and I've never had contact with those species. They were, literally, unknown animals. I didn't know how to conduct research, what happened, what we do with the animals. It's crazy remembering this story nowadays, because it was a total unawareness. So, this is how it began... in a shock [smile].

[Vignette 1: six women and one man, interview, 2023/2024]

Animal research was not new for other veterinarians (n=10) having worked with laboratory animals in their undergraduate and graduate studies. However, a few (n=3) also experienced the discomfort of “being parachuted”. This was due to differences between what they had learned as students and the complex knowledge and skills they had to develop. For example, two participants reflected upon their initial beliefs: “I had some knowledge about the *biotério* – I thought I had, because I hadn't [laughs]. In my innocence, I thought it was enough [laughs]” [Vignette 2, interview, two women, 2023/2024].

Many participants (n=12) also commented on “running after lab animal science” and the need for continuing professional development for their new role. In their words, this involves actively searching for technical visits, enrolling in courses (usually funded by their institutions), and partaking in scientific research. This movement also led colleagues across the country to share experiences and concerns. Furthermore, “running after” knowledge development features an ethical dimension. Four participants linked their pursuit of professional development with taking responsibility for competent animal care. These findings indicate that to “run after” (“*correr atrás*”)—that is, to actively (and voluntarily) pursue knowledge and skills—is an avenue for putting ethics into practice:

I said: 'ok, since I assumed, now I'm going to run after this'; 'I need to study to be able to handle this'. And I started studying, running after... I took courses, I asked for help to friends that worked in the field... [I] like a lot to participate [in courses], independently of having benefits for my career or not, I like it.

[Vignette 3: two women and one man, interview, 2023]

Likewise, participants (n=11) identified the issue of gaps in training for junior and senior researchers. In May 2023, training became mandatory for all personnel involved in animal research through an act (RN49) of Brazilian regulatory animal research body. (CONCEA, 2021). RN49 introduced a bureaucratic procedure with practical consequences: ethics committees (CEUAs) would approve research protocols only if all team members presented a valid training certificate. This led to some confusion and tension among actors. For instance, would career history be valid proof of competence? CONCEA later clarified that publications would serve as proof of training only if related directly to mandatory content (CONCEA, 2023). Data collection for this study began 5 months after RN49 took effect, and training for animal users was a recurring topic in participants' accounts. For instance, some commented on unawareness regarding laboratory animal science (LAS) and/or a lack of complex skills (e.g., for anesthesia procedures), as well as having heard the mantra "I have always done this way" while raising concerns about the acceptability of current research methods.

Participants (n=11) expressed that RN49 brought new opportunities for changing practices through training. As two women put it, "I spend part of my day preparing lectures. I've been invited to give lectures and I do it gladly. I said: 'I hadn't learned. So, now I'm going to teach them what I have learned'." [vignette 4, two women, interview, 2023/2024]. However, some veterinarians (n=4) commented on the challenges of training senior researchers (i.e., those who had worked in animal research since the 1990s and early 2000s). For example, one participant stated that "they know what happened 30, 40, 50 years ago. Nowadays, things have changed" [quote 5, interview, woman, 2023/2024]. Alternatively, training juniors in refined techniques is viewed preferably for driving change. Amélia, for instance, commented that she prefers when students come "raw", so she can shape their practices informed by LAS.

Overall, these results highlight that RN49 represents a turning point from former animal research paradigms by creating mechanisms for recognized training to take place based on contemporary understanding of laboratory animal care and welfare practices. It also confirms previous studies about gaps in veterinary training in Brazil (Antiorio *et al.*, 2019; Dias, 2020; Dias *et al.*, 2025). Areas for improvement in Veterinary Education include (i) management and leadership skills; (ii) hands-on training, including anesthesia and pain treatment skills; (iii) and research training and academic literacy. Similar gaps in laboratory animal professions (LAP) education was also described in Uruguay (Breijó, 2025) and South Africa (Mohr *et al.*, 2023). These results reflect those of Anderson e Hobson-West (2022) in the UK context, which indicated a gap in vet training and how the NVS role came about by chance. The shift toward animal research within UK context was influenced by challenges faced by veterinarians in clinical practice, such as long working hours and the demands of clinic management (Anderson; Hobson-West, 2022).

Furthermore, the results suggest a learning gap regarding practical skills among animal users, consistent with observations of studies in Brazil in the early years after regulation came into force. Deguchi and Molento (2016) found that around 18% (n= 11) of untrained researchers had performed invasive procedures amongst a small sample (n=62). Others have observed that inexperienced and apprehensive junior researchers were responsible for performing experiments (Souza, 2013; Amaral *et al.*, 2025). Building on the work of Tronto (1998), Williams (2023) argued that competence defines the outcome of care and that a lack of skills leads to failure in implementing care correctly. Thus, training gaps have serious implications, posing a risk to lab animals' safety. In recent years, training resources and scientific production in LAS have expanded in Brazil (e.g. (Mori; Zanatto; Laporte, 2024). In summary, these findings indicate that challenges in training are being addressed, possibly leading to more competent and thus careful practices.

2.2.2 Infrastructure and repair work

A current obstacle faced by welfarist reform is the material conditions of *biotérios*. CONCEA established housing requirements to safeguard animal health, welfare and research quality, conceding a 5-year period for institutions to comply. Spatial division between activities is a key

feature of mandatory building configurations in laboratory animal facilities. For example, breeding and experimental activities must be located in different spaces, separated by physical barriers and specific routines; euthanasia must be performed in a separated room from housing spaces; and animal food and bedding must be stored in a specific room. In March 2025, after the initial deadlines had passed, the body issued a bureaucratic license procedure to attest facilities' compliance (CONCEA, 2022b).

This is an important shift from previous practices. Two participants described their first days as students in the 1990s and 2010s, highlighting the layout of the shared “room” where housing, husbandry and experimental activities took place. Furthermore, untrained students performed husbandry:

In fact, the university had a breeding room by that time, far from be called a *biotério*. It was a room, with small cages that we cared for. There was no one that cared, the students cared for the animals...So, it was a *biotério* that... it was just a room that we used for breeding, experimenting, such as post-surgical [care]. It was a *biotério*...a room... so, in that room there was a wash area, everything was there, it was a conventional *biotério*.

[Vignette 6: two men, interview, 2023/2024].

Furthermore, participants often understood the importance of the physical environment, infrastructure, and technologies in improving animal health and welfare. Seven participants stated that they worked in breeding and/or experimental conventional housing systems. Sofia, Aria and Benjamin, for instance, mentioned recurring infectious disease episodes.

Nevertheless, others (n=8) reported working in facilities with “good” infrastructure (i.e., with specific architectonic design). This view was common among veterinarians that work in recently built facilities. Even so, local contingencies encouraged situated solutions. This was expressed through a Brazilian idiom: “doing the Brazilian way” (*jeitinho brasileiro*). One participant commented that his work is limited by an unavailability of services for sanitation and genetic examination, making it difficult to confirm diagnoses and specific-pathogen-free status (SPF). This limitation is both logistic

and financial. Shipping live animals across a continent-sized country is a complex and expensive task for many.

It is funny because I had the opportunity to gain experience in a *biotério* with a good structure. That is not the reality of the *biotérios* in Brazil. We went there to finish the work and to make things functional, because there wasn't...it was like... it was a construction site. There is some stuff lacking, and we have been "doing the Brazilian way", but it's a really good plan. And new, new, everything is new... He is not a word-by-word SPF, because I've never done the exams. Because you have to do...take a sentinel, send it and so on. I've never done that

[Vignette 7: one woman and two men, interview, 2023/2024].

The presence of insufficient investment in the material conditions of *biotérios* was a commonly held view among participants (n= 13), understood for a variety of reasons: as a lack of specific funds for the *biotério*; as the low priority given to the *biotério* by higher administration; and as a result of the high costs of assembling and maintaining an animal facility. In negotiations, requests for funding are supported by regulatory frameworks, consequences of non-compliance (e.g., fees in case of irregularities), and impacts on research. Many participants' (n= 11) departments provide support "as best as possible", and improvements have been made over time. Harper commented that, over the years, their institution recognized the "importance of the *biotério*", and their support is now readily accessible. In contrast, others seek stronger support from higher administration offices. Furthermore, it is a shared understanding that public universities face additional budget challenges.

There is an infrastructural barrier, I say from my experience, but I believe is the reality of many universities... I think we are not priority in budget. There are few researchers that use the facility, so we don't have [political] influence. Every year, we improve a little bit. But the most important, the bulk of infrastructure, the AC [air-conditioner] ... we don't succeed ... because it's very expensive. I've noticed [changes] are slower...when something is economically viable, it is easier. If it's expensive, it's harder. For instance, there is one thing I've been asking for ages... I only got the *biotério* remodeling because of CONCEA's regulations. I need the AC working, I need 20 air exchanges by hour, I need the lights working... I need it, there is no other way. CONCEA, CEUAs are pressing [for infrastructure compliance]. This is what I think

is making the universities to invest a little bit...the leftovers, it's not a specific money for the *biotério*. So, it's improving.

[Vignette 8: two women and two men, interview, 2023/2024].

Lily commented on a cultural view that *biotérios* were an “underworld” in institutions, a place of punishment for difficult employees. Her view echoes the account of Humberto Rangel, a researcher engaged in advancing LAS in Brazil, on undertaking research in the 1950s and 1970s.

I visited many breeding and experimental facilities [in São Paulo] and interviewed animal caretakers, veterinarians and, in some cases, the heads of institutes...The caretakers, by and large, were semi-literate employees, transferred to this position due to unsuitability for other areas.

[Quote 9: Humberto Rangel, book chapter, Lapchik; Mattaraia e Ko (2017, p. 6)].

Participants (n=5) also commented on their efforts to shape practices through operational routines. Standardized work routines are seen as a way to minimize the impact of infrastructural limitations on daily care. William and Aria, for instance, commented how keeping records helped them to organize the *biotério's* work routine. However, Aria commented that researchers were resistant to changing established operational practices. Furthermore, one participant stated that, despite conventional housing conditions, their team is able to maintain animal health, at least clinically, through procedural barriers (e.g., by gowning up before entering housing areas).

Nevertheless, teams' abilities to adapt should not be interpreted with the assumption that infrastructural limitations do not pose a challenge. Participants (n=8) often referred to infrastructure when asked to describe a bad day at work. Isabella, for instance, commented how power outages and unstable internet connections affect her ability to perform tasks, which were similarly observed whilst interviewing Sofia, Harper, Henry and Liam. Veterinarians were mainly concerned about basic material conditions when keeping animals alive in closed spaces, as well as care workers being under appropriate working conditions.

Additional concerns comprised the correct functioning of electrical power and equipment (e.g., exhaust fans, Split AC and IVC racks) to ensure air quality (e.g., ammonia removal) in macro- and microenvironments (Hogan; Norton; Reynolds, 2018); cooling systems running effectively to ensure stable temperature conditions for both animals and humans; the presence of a functional autoclave to enable a regular supply of sterilized resources to satisfy animals' needs (e.g., nutrition, comfort and health); and the integrity of building structures (e.g., pipes) to facilitate routine procedures (e.g., cage wash) and hygiene practices (Table 3).

Table 3 - Main concerns regarding infrastructure and its failings.

Infrastructure	Main concerns	Consequences of failure
Building	Electrical power	Equipment failure
	Structural integrity	Disrupt working routines
		Difficulty cleaning
Equipment	Autoclave	
	Cooling systems	Delays in husbandry
	Exhaust fan	Impact on air quality
	IVC rack	Higher levels of toxic gases
		Higher temperatures
Higher risk of respiratory diseases		
	Lower breeding rates	

Moreover, participants commented on how these infrastructural failings are obstacles that need to be overcome in order to provide good care, and that these failings can sometimes have a direct impact on animal welfare (e.g., changes in breeding rates). Two participants reported costly actions to provide care—for example, paying out of pocket to fulfill their duties when institutions failed to provide material conditions for care. One participant reported a municipal blackout episode and her concerns about the functioning of ventilation systems, laboratory animal safety, and ethics:

A good day at work? [it's] when the environment is fine, when everything is fine [laughs] ... when there is no power outage, that our electrical generator is working fine, the rooms are in the right temperature, the exhaustion system is ok. Nothing is ... broken. I think a bad day is

when we have problems with cooling. It's what stresses me the most. I get there early, and I sit in the computer, open the e-mails and then it is just solving pickles. It seems it does not but are those small attitudes [sic] that interferes with animal welfare. Even autoclave maintenance. So, it sounds silly but... This last bank holiday, for instance, there was a power outage. I had to go there to [check] the backup...connected to ventilation and AC. So...7 am in a [holiday] and I went there. I don't get paid for that, but I'm on call...I have a responsibility towards the animals ...they need to be cared. So, I don't care that I don't get paid for that. I go, because my consciousness doesn't allow me not to [laughs].

[Vignette 10: two women and one men, interview, 2023/2024].

Furthermore, participants raised concerns about securing the provision of maintenance services (n=9). *Biotérios'* needs for reliable infrastructure and technology sit uneasily with bureaucracy and constrains faced by institutional repair teams. In participants' views, these interactions are "stressful", "time-consuming" and "annoying". Amélia, for instance, said she feels "useless" when calling "just about everyone in this university" and failing to ensure repair. These affective states are the result of ineffective communication across sectors, delayed repair (e.g., going over a year without an answer), and a lack of resolution. Veterinarians' accounts highlighted the importance of administrative staff and repair teams in laboratory animal care. In contrast, another participant commented on how their maintenance team addresses the facility's needs quickly as a result of strong institutional support: "They are sensitive. They know there is an issue, 'stop everything and go to the biotério', 'because they're a priority.'" [quote 11, woman, interview 2023/2024].

The real issue is when an equipment breaks, when there is some problem with the cooling system, and we depend on people [...] of other sector. We call one, we call another. We cry out to one, we cry out to another. Sometimes, I open a call [in the system]. Then, I send a text message for the service manager. Then, I call. Then, I go to his office. Sometimes, it gets really hard, and I start becoming stressed... We had a problem because the Split AC broke, it was broken for a month... and the animals? How were they inside? I was anguish for a month, because it's a life. It's complicated ...we don't know what to do ... it's always a challenge when this happens. [Vignette 12: three women, interview, 2023/2024].

Recent studies have noted ethical and social entanglements of infrastructure and technology (Henke; Sims, 2020). Kirk (2016) and Druglitrø (2018) emphasized how current state-of-the-art infrastructure and skilled care were shaped amidst ethical and scientific tensions. In the UK, transforming marginal animal houses into scientific animal facilities required the elevation of laboratory animals' and caretakers' statuses (Kirk, 2024). Similarly, in Brazil, findings suggest that *biotérios* were historically constructed as peripheral spaces within institutions. These findings also indicate resistance to *biotério's* marginal existence by different stakeholders, alongside efforts to ensure professionalization and higher value awarded to laboratory animals and their caretakers. The theme of the 18th Brazilian Laboratory Animal Science Association (SBCAL/CONCEA) conference in 2025, for instance, was "Professionalism and Respect".

Furthermore, a significant finding is how repair work affects animal facility staff, creating possibilities for failings in care and posing risks to laboratory animal safety. For example, in crisis, infrastructure failure and insufficient institutional support push veterinarians to perform costly actions to fulfill their duties. These findings provide a snapshot of the ethical consequences of institutional decision-making processes that mark the needs of the *biotérios* as low priority. They also reflect significant changes in infrastructure funding for public universities under differing political leadership within the 21st century (Centro de Estudos Sociedade, Universidade e Ciência, 2023), illustrating how political dynamics at the national level influence public institutions' ability to support laboratory animal care. Thus, it is argued that deficient infrastructure and insufficient repair work are institutional failures of care. These results corroborate Williams' thesis (2023) that institutions shape the ability of staff to provide care by being attentive to their needs. Williams (2023, p. 13) has argued that the task of caring in precarious spaces "becomes impossible, even for the most committed individuals". Here, it is suggested that to put ethics into practice in precarious spaces is to share suffering ⁷ (Haraway, 2008).

In addition, we found that veterinarians from conventional *biotérios* face constraints in ensuring sanitation and stable environmental conditions. In many cases, access to health and genetic testing is unavailable. Laboratory animal care is internationally standardized to foster

⁷ In Haraway's view, sharing suffering means acknowledging the moral value of harming animals and taking responsibility to reduce the latter's suffering.

research collaboration, scientific validity and reproducibility across cultures (Helppi, 2023). While it is possible to question the adoption of epistemological standards and moral values from other cultures (Garrafa; Lorenzo, 2008; Neves, 2023), it is also important to ask how infrastructural problems in animal facilities affect research production. The Brazilian Reproducibility Initiative (2025) describes delays in research execution due to failures in animal supply and infrastructure issues in *biotérios*. Similar barriers lead to setbacks in other research fields. Neves (2023), for instance, noted that precarious repair work made bioenergy researchers unable to achieve reliable experimental conditions.

Overall, these accounts emphasize the ways in which infrastructure and repair work are integral aspects of care by providing stable ambient conditions. Such failings compromise air quality, temperature, and husbandry. Veterinarians also raised concerns about laboratory animal safety, indicating that poor infrastructure creates access barriers for researchers to standardize laboratory animals. It also has implications for staff health (e.g. acute psychological stress). Furthermore, veterinarians' accounts illustrate how infrastructure and its repairs are entangled with bureaucracy, financial distribution and politics.

2.3.3 Communication with researchers

In the previous sections, we highlighted how participants began their careers with no or little knowledge about laboratory animals, as well as the challenges they have faced due to the material conditions of *biotérios*. They exist within a peripheral space, where “deliberate and inadvertent harming and killing of animals” (Roe; Greenhough, 2023, p. 49) creates a tense social context. Participants have often indicated that human–human relations and changing cultures are key challenges in their daily work. For example, one participant expressed her frustration: “I’m used to say: animals have never created me trouble” (quote 13, interview, woman, 2023/2024). This section will focus on communication barriers with researchers that emerged in many ways: poor communication, asymmetries of academic prestige, and gender relations.

Reports of poor communication with senior researchers were common in this sample (n=15), including negative comments on (i) a lack of interaction and (ii) differences in care expectations between research and animal care staff, reflecting a tension among scientific and animal welfare needs. For example, one participant commented on a lack of response to his e-mails. Another shared a situation in which she had no access to information about procedures being performed on animals. In contrast, participants often held more attentive researchers in high regard, or as “the good ones” with whom they have respectful relations.

There are groups on WhatsApp, and they include me. There are others that don't. We send an email... and [they] don't answer. Or send the student to look for me. There is a professor, I found out who she was 15 days ago... I had great difficulty, because when I had approached to understand the method, they thought I was being intrusive, that I shouldn't get involved with the animals. It was hard to get research protocols, like, what has been approved, a research project. I said: 'I'm not interested in the results...what I'm interested is in the method. I need to know what kind of method you're using... Because I need to take care for this animal while he's still alive'. So, this kind of communication is too hard... communication is complicated.

[Vignette 14: two women and one man, interview, 2023/2024]

Moreover, communication barriers are deepened by social asymmetries of authority and prestige in decision-making processes. Participants (n=3) commented about an implicit devaluation of technical roles and a culture of authority around professorship roles. One participant noted that an increase in academic status leads to a decrease in respect for his statements. These feelings of undervalued labor are illustrated by Abigail, who noted that researchers do not always acknowledge animal care teams' contributions in published work, which further translates to challenges in communicating ethical issues and managing controversial situations (n=8).

What I see is... that relationships with professors... researchers are still an issue. For me, this is the major issue. The students, as I told you, the research trainees are great, they listen to everything. They follow what we say. They are learning, right? Then, the master's [students] are hard, but not that hard. The doctorate [students] are... closer to the professor as difficult to communicate with ... In an institution, where there is a hierarchy between professors and public servants – as if professors weren't public servants – people believe those are sublevels. Actually, they are not. They are parallel careers, if you're on top of one, you do not evolve for

the other. Most people, culturally, have this mindset: 'oh, you can't talk like that to a professor', 'oh, you can't say that to a professor'. I think that, unfortunately, we live in a country that does not value technical expertise.

[Vignette 15: two women and two men, interview, 2023/2024]

Participants also expressed concerns about gender relations that emerged from the data in many ways: lower credibility, mockery, stigmatization, silencing and disregard for the affectual dimensions of care and ethics. For example, three women reported that they “had earned” the respect of researchers by proving their competence, indicating that they were not listened to when first beginning their careers within *biotérios*. Furthermore, two participants named gender discrimination as a reason for not being heard. Others (n= 5) gave examples of situations when they were publicly labeled as “difficult”, “crazy” or a “troublemaker”. Moreover, one participant mentioned facing mockery when expressing her ethical concerns: “It gives me the same feeling when they tried to impose something to make the work easier... Although [now] ... they don't put pressure, they mock in compensation.” [quote 16, interview, woman, 2023/2024]. Importantly, women commented (n=4) on the discomfort of these encounters and, in some cases, the toll on their mental health (n=2).

I feel respected, ahn, up to a point. Because we end it up imposing ourselves. It's not everyone like: 'Brianna said, that's it, then'. No. 'Brianna said, because she kicked and screamed, she sent an email, she went there.' In the end: 'oh no, she was actually right'. It's exhausting ... We encounter sexism also, since I've noticed that — as a vet I have the same responsibilities of my [male] vet colleague — I've noticed that people sometimes respect more what he says or refers more to what he says. I've always been a patient person; I was known for being calm. During my professional career at the biotério, I became known as stubborn, as troublemaker. So, nowadays, I'm feeling better, but I was in bad condition. Like... depression, anxiety. So, having... anxiety crises. And a feeling of being in a place totally inappropriate for me and my profession.

[Vignette 17: four women, interview, 2023/2024].

Furthermore, speaking up in meetings has become a challenge for one participant. She feels vulnerable when expressing her concerns: “I prefer not to expose myself...but I also refrain from participation. I refrain it because you become the target... depending on what kind of opinion you

have.” [quote 18, interview, woman, 2023/2024]. Lily, on the other hand, expressed how she feels lonely in being the only one to take a stand, making her known as “the annoying one”. In contrast, other women (n=8) stated that their voices and expertise are respected, although refining protocols remains a challenge. In some cases, to be respected was a result of empowerment. For example, Mia commented on her early days when she resisted researchers’ attempts to place her in a subservient position and made a stand to give animals priority.

Conversely, most men (n=6) stated that their voices are acknowledged. Two participants commented that they could not remember any episode in which their competence was questioned. For instance, one participant considered that institutional hierarchies did not affect him. Nevertheless, men also face challenges in their daily work. Their accounts show examples of resistance to changing methods, heated discussions in CEUAs, and difficulties in being taken seriously when requesting larger investments: “Is this for a rat? [amount]? No” [quote 19, interview, man, 2023/2024]. Thus, in this sample, with one exception, men stated that they felt respected and heard.

Well, I’ve never been in a situation that I was not heard. So, everything that I say...they don’t question...Everybody respects the expertise, the knowledge. I have never felt that...let’s say, disrespected. I’ve never had this issue with.... role, career...I don’t know if it’s because I’ve never noticed, but, actually, I’ve never felt it. So, I’d say that, in general, is a good respect. It is not perfect, because there is always one who complains.

[Vignette 20: three men, interview, 2023/2024].

Furthermore, participants commented on conflicting values between animal welfare and science. Veterinarians expressed irritation regarding resistance to adopt refined techniques due to preference for an established method: “Ow, ‘it’ll change the model’ ... they say just that” [quote 21: woman, interview, 2023/2024]. Some claimed (n=9) that animals were treated as “objects” by certain researchers: lesser importance given to animals or a lack of attentiveness and responsibility. For instance, one participant commented on the symbolic value of animals given by a budget-constrained researcher: “So, like, to pay R\$200...in a reactant, they’d pay. But to pay R\$ 20 in a

cotton roll: ‘ow, but R\$20 in a cotton roll?’. It’s about that” [quote 22, woman, interview 2023/2024]. Others have commented how care is seen as an “exaggeration” by some: “What for? It’s just a rat” [quote 23, woman, interview 2023/2024]. Conversely, others have noted junior researchers finding emotional support in animal facility teams whilst facing challenges in expressing their feelings to supervisors. This reflects a shared understanding among participants: sensibility and presence are seen as necessary for good care, as opposed to detached approaches.

I’ve seen a professor saying: ‘oh, my student doesn’t have [psychological] profile to work with animals.’ They think people who feel empathy as the ones who don’t have a profile to the job. For me, it’s the other way around, we need to be empathetic to work with animals. Those are the ones who are going to care. Those are the ones that will have sensibility to notice when things are going beyond. But the understanding, especially among senior researchers, is that we are just being fussy.

[Vignette 24: three women, interview, 2023]

Similarly, poor communication and conflicts between animal technologists (ATs) and researchers were also reported in the UK (Greenhough; Roe, 2018). Previous studies have found similar conflicts between care and modern scientific values (Souza, 2013; Esturião; Fischer, 2021) in different contexts (Greenhough; Roe, 2018; Mazhary; Hawkins, 2019) and at various times (Kirk, 2024). Kirk (2024) argues that affect for animals was historically subjugated in scientific discourse, despite being understood as prerequisite of good care by technicians. It is further understood that power asymmetries (Williams, 2023) and scientific authority (Kirk, 2018) play a role in academic disputes on the prioritization of values. An important difference between contexts is that, in the UK, researchers trust Named Veterinary Surgeons (NVSs) to mediate disagreements. Previous studies have shown that NVSs are empowered by their academic status (Williams, 2023).

An additional key finding constituted the impact of gender relations on human welfare. Previous studies (Rumpel *et al.*, 2023) have shown gender differences in psychological strain amongst LAPs. Rego *et al.*(2025), for example, estimated that men were 36% less likely to present psychological distress compared to women in a study on RTs in Brazil (n=86, IC 95%: ,44 - ,93). LaFollete *et al.* (2020) also found statistical differences in burnout among different-gendered LAPs

($n=801$, $F=3.68$, $p = 0,026$). More broad gender discrimination in the veterinary profession have also been described in the literature (Irvine; Vermilya, 2010; Clarke; Knights, 2019; Gouhie *et al.*, 2024). For instance, Gouhie *et al.* (2024) reported discrediting of women's competences in the veterinary profession in Brazil. Mockery as a discrimination mechanism was also reported by Miranda *et al.* (2014) in a study on challenges faced by female professors in Brazil. Thus, this study corroborates previous findings by identifying gender as a possible social determinant of psychological strain amongst LAPs.

These findings also complement previous work on academic status and laboratory animal care (Nuyts; Friese, 2023; Williams, 2023) by pointing to unequal gender relations that fuel the conflict between various approaches to care. Segato hypothesizes that status orders of gender, species and race are enacted in contingent (i.e. it could be otherwise) social and knowledge relations (Segato, 2021; 2025). In other words, symbolic status hierarchies are still enacted automatically in daily discourses through (i) traditions ("I have always done this way"), (ii) mockery ("This rat lives better than me"), and (iii) moral violence against women ("That woman from CEUA is completely crazy") [vignette 25: two women and one man, interview, 2023/2024]. Segato's arguments echo Haraway's critique of researchers' relationships with laboratory animals: "Unidirectional relations of use, ruled by practices of calculation and self-sure of hierarchy..." (Haraway, 2008, p. 71).

The colonial political project had an epistemological component, with different forms of knowledge (e.g. indigenous' epistemologies) being undervalued while modern scientific values and methods (e.g. objectivity, reason, quantification) were positioned as more valuable within a hierarchy of status. Modern science presupposes a knowledge relation between a subject (rational, detached and autonomous) and an object to be known through experimentation (Quijano, 2024). Defining aspects of objectifying relationships are silencing agencies and experiences, ownership, violation and disposability (Nussbaum, 1995; Haraway, 2008; Segato, 2021). For Segato, these are taught through harmful social practices featuring masculine values such as low empathy and repression of affective dimensions (Segato, 2021). Objectification sits uneasily with care values (presence, attentiveness and empathy) that presupposes ontological recognition of animal's agency and the relational and interdependent dimensions.

In sum, these findings clearly indicate that veterinarians were critical of what, in their view, is a lack of attentiveness to the needs of animals and care staff by some researchers. In addition, these findings demonstrate how implicit status hierarchies, gender relations and species discriminations play a role in LAPs' abilities to foster careful practices. These data must be interpreted carefully due to the absence of the researchers' point of view and quantitative inquiry. For example, previous qualitative studies in Brazil have shown accounts of personal moral conflicts and affects among senior and junior researchers (Souza, 2013; Esturião; Fischer, 2021; Marini; Marras, 2022). It is also important to consider how broader social contexts create challenges for research to take place, such as infrastructural barriers (Amaral *et al.*, 2025), career pressures (Carvalho, 2016), regulatory frameworks (Hobson-West, 2012) and institutional bureaucracy (Borghesi, 2020). Nevertheless, opinions on animals' needs as subordinate appeared commonly in the data. For Midgley (1998, p. 13), giving low priority to animals is a "relative dismissal" since it leads to unmet needs, similar to situations lacking moral consideration. Furthermore, Williams (2023) argues that attentiveness to the needs of care staff is a matter of providing resources, empowerment and respect, which will in turn allow them to deliver effective care. Therefore, these communication barriers created by gender and species discriminations are a serious matter, since at worst they imply greater risks to laboratory animals' safety (e.g., withholding refined techniques and barriers to veterinary care).

2.3.4 Care and animal welfare

Thus far, this study has highlighted how training, infrastructure and communication are key challenges for culturing laboratory animal care in Brazil. Notwithstanding, advances have been made since the introduction of regulation. Participants often commented that the regulatory framework supports their arguments for change. As discussed above, CONCEA recently issued regulations on training (CONCEA, 2021), the configuration of facilities (CONCEA, 2025), and the distribution of responsibilities and care standards (CONCEA, 2022a). This subsection will briefly focus on veterinarians' successful efforts to improve and sustain care. Common strategies were

adjusting macro- and microenvironments, acting in CEUAs to protect animals' interests, and training students. In addition, this subsection will also present their suggestions to address the identified weaknesses.

When asked to share their positive stories, participants usually identified a number of improvements over recent years. Firstly, the majority of participants (n=15) cited the inclusion of environmental enrichment as a mandatory item (CONCEA, 2022b). Mice bunkers are available for some, whilst many others improvise the construction of tunnels from autoclaved toilet rolls and water bottles. Secondly, as in the UK (Mcglacken; Anderson; Hobson-West, 2023), participants have often also understood their role as advocates for the animals they work with, illustrated by their actions in ethics committees, which includes offering a thorough analysis of protocols and encouraging refinements. These interactions, however, create tensions among actors. As one participant put it, “we question more, we mind the details, we try to change things... I don't know, maybe they think we are annoying...” [quote 26, woman, interview 2023/2024]. Participants further indicated fostering horizontal relations among staff and refining procedures and communication with researchers based on scientific evidence as ways to improve animal welfare. Interestingly, Mia and Amelia commented on how the skilled care they provide has been recognized by researchers. Such progress towards changing cultures was described by participants through the Portuguese metaphor “working like ants” (“*É um trabalho de formiguinha*”), which refers to steady and slow work that involves individual and collective efforts.

Well, there are so many... so many (laughs). We are working like ants. So, the small things that we do daily, and we keep [doing it] already bring a big change and benefit. I remember when we established environmental enrichment ... Barbering and fights have decreased. Also, I'm always attentive to anesthesia and analgesia... It is about care... welfare, like do not make a lot of noises... to transmit a serenity, and calmness. The rat, in these last 20...30 years, became a main character instead of [being] an instrument. I witnessed that change. I notice that people are more engaged and concerned about animal welfare. I think what contributed is training, because the veterinarians and online courses keep hammering about [animal welfare]. On the other day, a student... she was taught to handle by cupped hands ... and she had to handle by the tail, and she was saying: 'But how am I going to handle by the tail? I don't know how to handle by the tail'. It's good to be able to remember several situations that we improved [animal welfare], right?

[Vignette 27: seven women and two men, interview, 2023/2024]

As mentioned in previous subsections, participants indicated the need for stronger institutional support to address the remaining issues. A common view (n=11) was that higher administration offices fall short of taking responsibility for laboratory animal welfare. According to Brazilian regulations (CONCEA, 2022a), institutions are responsible for ensuring compliance by supporting CEUAs' activities. Nevertheless, some participants stated that CEUAs also encounter barriers to institutional support. For instance, Ava and Liam commented on how they accumulate administrative labor as a result of staff limitations. Importantly, two participants suggested “institutional polices”—that is, formal agreements—as a way to empower animal care staff and foster cultures of care. In their view, institutional governance systems could provide stronger support and improve compliance.

I think a culture of care should be established as an institutional policy. So, there are situations, that we eventually face, that we don't have an institutional back up for our positions... or a demand, an experiment or...sometimes a situation that we are held responsible as RT. [Thus], I think there is a lack of institutional support. In the sense that the institution to take on [responsibility for] ethical use of animals, move towards accountability... and define the actors in this scientific process that involves the use of animals. To empower those people, thus we automatically can say: 'No...' This institutional support that gives us this safety, a backup... It is necessary. Because without institutional policies everything rests in the political arena: 'that person is inflexible'... or if the person is meticulous, then she is 'bureaucratic'. Things remain in a personal level not an institutional one.

[Vignette 28: two women, interview, 2023/2024].

To summarize, these results shed light on the positive effects of the regulatory framework on laboratory animal care. The emic category “working like ants” (“*É um trabalho de formiguinha*”) points to community engagement, that involves technical and political efforts (rather than merely ethical) towards safer practices of care⁸. It is important to highlight successful care experiences for

⁸ I am grateful to Ana Miriam Wuensch for this observation.

two reasons: firstly, to avoid essentialist views of uncaring practices by illustrating the paradoxical coexistence of care and harm (Souza, 2017; Roe; Greenhough, 2023), and secondly, to foster community connection by exchanging knowledge grounded in daily experience at *biotérios*. The Brazilian public health system (SUS), for example, has an online space for actors to share and comment on positive experiences and consider daily challenges as workers, users, and managers of the health care system. Sharing positive stories is understood as important by valuing workers' and users' experiences. It has also allowed support networks to be built, raised awareness of challenges, and strengthened public understanding by highlighting "the SUS that works". This initiative is part of a public policy to put its principles in practice, although challenges remain (Teixeira *et al.*, 2016). National and institutional policies to address the sociohistorical contexts in which animal research takes place remain to be developed.

CONCLUSIONS

This study set out to explore the influence of social context on laboratory animal care in Brazil. By giving voice to veterinarians, this paper has highlighted three key areas (training, infrastructure and communication with researchers) with room for improvement. Tronto (2010). argued that for institutions to deliver good care, power differences, purposes and pluralities must be explicit. In this study, it is shown that conflicts between values develop amid social dynamics in which academic prestige and gender relations play a role in creating obstacles to culturing care. Furthermore, insufficient institutional support and deficient infrastructure impact animal care staff's ability to provide care.

This paper also provides a view from the South to the transnational laboratory animal community by shedding light on how gender relations and species discrimination are enacted in historically situated conflicts between values of animal welfare and modern science standards. Furthermore, it is suggested that psychological strain in laboratory animal professionals (LAPs) reflects broader social contexts, such as gender inequalities. Our findings also highlight the role of infrastructure in providing stable conditions and care, and how failings in institutional capacities to

provide means and mediate conflicts impact laboratory animal safety. Overall, these findings reinforce growing calls for public investment in *biotérios* and specific institutional governance mechanisms to address challenges in social relations and repair issues.

Author Contributions: Conceptualization, methodology, data curation, analysis and writing: A.L.S.V.

Funding: This research was funded by *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, Brasil (CAPES)*, Finance Code 001.

Institutional Review Board Statement: This study was conducted in accordance with the No 510 of April 7, 2016, from the Brazilian National Health Council (CNS). The study received approval on June 23, 2023, by the local (CEP-FS) and the national research ethics committee (CONEP). Reference number (CAAE): 69366123.2.0000.0030.

Informed Consent Statement: Written informed consent for data collection and analysis was obtained from all subjects involved in this study.

Data availability Statement: Interview recordings and transcripts supporting the conclusions of this article are not readily available to protect participants' confidentiality.

Acknowledgments: This article is part of my doctoral thesis. I thank the University of Brasília for granting me the leave to pursue this research and CAPES for funding this work. I thank all the veterinarians who gave their time and trust to take part in this study. Many thanks to the Brazilian Laboratory Animal Science Association (SBCAL) for allowing participant recruitment. I am sincerely grateful to Beth Greenhough for her valuable guidance throughout all stages of this research and her continuous support and feedback. I also thank Natan Monsores for conversations about bioethics and collective health. I further thank Ana Miriam Wuensch, Carina Krewer, Cleide Falcone, Isabel Freire, Marianna Holanda, Soraya Fleischer and Rita Paixão for their careful reading and thoughtful comments. All interpretations and any errors remain my sole responsibility.

Conflicts of Interest: The author declares no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

CONCEA	<i>Conselho Nacional de Controle de Experimentação Animal</i>
RT	<i>Responsável técnico</i>
CFMV	<i>Conselho Federal de Medicina Veterinária</i>
CEUA	<i>Comissão de Ética no Uso de Animais</i>
SBCAL/COBEA	<i>Sociedade Brasileira de Ciência em Animais de Laboratório</i>
CNS	<i>Conselho Nacional de Saúde</i>
CEP – FS	<i>Comissão de ética em pesquisa, Faculdade de Ciências da Saúde</i>
CONEP	<i>Comissão Nacional de Ética em Pesquisa</i>
LAP	Laboratory Animal Professional
NVS	Named Veterinary Surgeon
AT	Animal technologist
LAS	Laboratory Animal Science
SUS	<i>Sistema único de saúde</i>

Appendix A

Table A1: Sociodemographic variables in the questionnaire.

Theme	Variable
Sociodemographic	Gender
	Year of birth
	Sexual orientation
	Ethnic/racial identification
	Religion
	Degree
	Individual income
	Place of Birth
	Nationality
	Place of living
	Workplace sector
Professional activity	Purpose of the animal facility
	Roles in the animal facility
	Estimate of number of animals
	Species
	Membership in animal ethics committees
Recruitment	Filiation to scientific societies and/or animal protection societies
	Interest in participating in the interview

Appendix B

Table B1. Interview guide.

Open-ended questions

- Could you introduce yourself?
 - How did you start working with laboratory animals?
 - When did you graduate? From which school?
 - Can you describe your first day at work?
 - Do you remember how you felt on that day?
 - Can you describe a typical day of your work now?
 - Could you describe a good day at work?
 - And a bad day?
 - What does the word “ethics” in the context of animal research mean to you?
 - How do you put ethics into practice in your day-to-day work?
 - Do you think there are barriers to promoting animal welfare at your institution?
 - If yes, could you provide some examples?
 - If not, why not?
 - Have you heard of ‘Culture of care’?
 - If yes, what does that mean to you?
 - A culture of care has some elements such as recognition of individual and shared responsibilities, good communication, empowered staff and animal ethics committees, institutional support, training and continuing professional development. Do you recognize any of these elements at your workplace?
 - Do you feel you have the respect of your colleagues?
 - If yes, can you share an example?
 - If not, why not?
 - Do you feel able to speak out and feel listened to if you are concerned about an animal in your care?
 - If yes, can you share an example?
 - If not, why not?
 - Are you a member of the animal ethics committee?
 - Do you feel you contribute to the committee?
 - If yes, can you share an example?
 - If not, why not?
 - Finally, do you remember any situation in which you were able to improve animal welfare?
 - Could you tell me about it?
 - Is there anything else you would like to add?
-

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Table S1. Quotes and vignettes from veterinarians' interviews (2023/2024) in original Portuguese and translated English numbered by order of appearance

Number	Portuguese	English
Knowledge and training		
Vignette 01 (six women and one man)	Eu caí meio de paraquedas, acho que como muita gente cai. E... quando eu passei no concurso, a minha seleção, [...] era aquele cargo de médico veterinário geral. E aí a gente não sabia qual setor que ia ocupar. E quando eu cheguei lá, eu me deparei em trabalhar com o biotério, né. O meu primeiro passo foi entender o que era realmente um biotério. Eu tava bem insegura, porque lá no biotério tem ratos e camundongos, então eu nunca tive contato com essas espécies. Então, eram literalmente animais desconhecidos. Não imaginava, assim, como... como se conduzir um experimento, o que acontecia, o que que a gente fazia com os animais. Nossa, eu acho tão louco lembrar dessa história, porque realmente era um desconhecimento completo, assim. Então...foi assim que começou. No susto (sorri)	<i>Well, I was parachuted in. I believe a lot of people were. Back then, when I secured a civil service position, the position was a general one for vets. So, we didn't know where they were going to put us. When I got there, I came across the work at the biotério. My first step was to understand what a biotério really was. I was pretty insecure, because at the facility there were rats and mice, and I've never had contact with those species. They were literally unknown animals. I didn't know how to conduct research, what happened, what we do with the animals. It's crazy remembering this story nowadays, because it was a total unawareness. So, this is how it began... in a shock [smile].</i>
Vignette 02 (two women)	E eu tinha algum conhecimento em biotério — eu achava que eu tinha (risos), porque eu não tinha. Eu achei, na minha vã inocência, que isso era suficiente (risos), entendeu.	<i>I had some knowledge about the biotério – I thought I had, because I hadn't [laughs]. In my innocence, I thought it was enough [laughs]</i>
Vignette 03 (two women and one man)	Eu falei: “Bom, tá bom, já que eu assumi a bronca agora eu vou correr atrás da história”; eu falei: ‘não, eu preciso estudar isso aqui pra dar conta né do recado, tudo’. E passei a estudar né. Correr atrás, comecei a fazer curso, comecei a pedir ajuda pra os amigos que trabalhavam na área e tal. [E eu] Gosto bastante de tá participando, adoro tá participando, independente de ter progressão na minha carreira ou não, eu gosto	<i>I said: ‘ok, since I assumed, now I’m going to run after this’; ‘I need to study to be able to handle this’. And I started studying, running after... I took courses, I asked for help to friends that worked in the field... [I] like a lot to participate [in courses], independently of having benefits for my career or not, I like it.</i>
Vignette 04 (two women)	Eu tenho me dedicado bastante, eu tenho tido convites pra palestras. Então, assim eu sou convidada e vou de bom grado...	<i>I spend part of my day preparing lectures. I've been invited to give lectures and I do it gladly. I said: ‘I hadn't learned. So, now I'm going to teach them what I have learned</i>

	para dar essas palestras. Eu fiz questão de dar, porque eu falei assim: 'eu não aprendi e agora eu vou passar o que eu aprendi pra eles'.	
Quote 05 (one woman)	Então, eles sabem a coisa que acontecia há 30, 40, 50 anos atrás. Hoje tudo mudou né.	<i>They know what happened 30, 40, 50 years ago. Nowadays, things have changed</i>
Infrastructure and repair		
Vignette 06 (two men)	Na verdade, na universidade tinha um criatório à época, longe de ser chamado de biotério. Era uma salinha lá, que tinha umas caixinhas que a gente cuidava. Não tinha ninguém que cuidava, quem cuidava dos animais éramos nós, os estudantes. Então não tinha nada de... poderia chamar assim de biotério. Então, assim era um biotério de... também era o biotério que era... era uma sala, nessa sala fazia-se a criação, fazia a experimentação, no caso pós cirúrgico. É... era um biotério... era só uma sala, então ali naquela sala tinha a sala de lavagem, tinha tudo ali né, era um biotério convencional e tal.	<i>In fact, the university had a breeding room by that time, far from be called a biotério. It was a room, with small boxes that we cared for. There was no one that cared, the students cared for the animals...So, it was a biotério that... it was just a room that we used for breeding, experimenting, such as post-surgical [care]. It was a biotério...a room... so, in that room there was a wash area, everything was there, it was a conventional biotério."</i>
Vignette 07 (one woman and two men)	Engraçado que eu tive a oportunidade de aprender já com estrutura boa, entendeu que não é a realidade dos biotérios brasileiros né. Só que a gente foi pra terminar a obra e pra fazer as coisas funcionarem, que não tava nada... tava assim... era... era uma construção. Falta algumas coisas assim, que a gente tem que tá dando um jeitinho brasileiro, mas a planta é muito boa. E novinha né, novinha, tudo novinho. Ele não é um SPF ao pé da letra, porque eu não faço os exames né. Porque você tem que fazer, é pegar o sentinela, mandar e tal. Isso eu nunca fiz.	<i>It is funny because I had the opportunity to gain experience in a biotério with a good structure. That is not the reality of the biotérios in Brazil. We went there to finish the work and to make things functional, because there wasn't...it was like... it was a construction site. There is some stuff lacking, and we have been "doing the Brazilian way", but it's a really good plan. And new, new, everything is new... He is not a word-by-word SPF, because I've never done the exams. Because you have to do...take a sentinel, send it and so on. I've never done that.</i>
Vignette 08 (two women and two men)	Tem barreira tanto estrutural, eu falo por aqui, mas eu acredito que a realidade de muitas universidades. Só que eu acho que a gente não é a prioridade diante do orçamento, sabe. São poucos os que usam biotério né. Então a gente não tem essa força	<i>There is an infrastructural barrier, I say from my experience, but I believe is the reality of many universities. But I think we are not priority in budget. There are few researchers that use the facility, so we don't have [political] influence. Every year, we improve a little bit. But the most important, the bulk of infrastructure, the AC... we don't succeed ...</i>

	<p>[política] né. A cada ano, a gente melhora um pouquinho. Mas o... o mais assim o importante mesmo, o grosso, que é a estrutura física, é ar-condicionado... a gente não consegue ... porque é muito caro. Eu percebo que é um pouco mais lento. Quando é uma coisa economicamente viável, eu tenho fácil respaldo. Se é uma coisa cara, é mais difícil. Eu, por exemplo, uma coisa que eu tô pedindo há muito tempo lá, que eu.... eu só consegui a reforma do biotério por conta das RNs do CONCEA. Agora, eu preciso do ar funcionando, eu preciso das 20 trocas de ar por hora, eu preciso da luz funcionando... entendeu. Eu preciso, não tem como. Tá chegando a cobrança do CONCEA, das CEUAs. E aí eu acho que isso tá fazendo as universidades começarem a investir um pouquinho... o que sobra, que não é um dinheiro específico pro biotério, mas o que sobra vai para o biotério. Então tá melhorando.</p>	<p><i>because it's very expensive. I've noticed [changes] are slower...when something is economically viable, it is easier. If it's expensive, it's harder. For instance, there is one thing I've been asking for ages... I only got it the biotério remodeling because of CONCEA's regulations. I need the AC working, I need 20 air exchanges by hour, I need the lights working... I need it, there is no other way. CONCEA, CEUAS are pressing [for infrastructure compliance]. This is what I think is making the universities to invest a little bit...the leftovers, it's not a specific money for the biotério. So, it's improving."</i></p>
<p>Quote 09 (Humberto Rangel, book chapter, 2017, p. 6)</p>	<p>Procurei visitar vários biotérios de criação e experimentação e entrevistei os tratadores, os veterinários responsáveis e, mesmo em alguns casos, diretores de Instituição. ...Os tratadores, na sua esmagadora maioria, eram funcionários semialfabetizados, deslocados para essa função por inadequação em outras áreas.</p>	<p>I visited many breeding and experimental facilities [in São Paulo] and interviewed animal caretakers, veterinarians and, in some cases, the heads of institutes...The caretakers, by and large, were semi-literate employees, transferred to this position due to unsuitability for other areas.</p>
<p>Vignette 10 (two women and one men)</p>	<p>Um dia bom de trabalho? [É] quando o ambiente tá bem [risos], quando tá tudo bem...um dia ... que não falta luz, que o nosso grupo gerador tá funcionando bem, que os nossos... que as salas tão mantendo as temperaturas adequada, o sistema de exaustão e insuflação tá legal também. Não tem nada queimado, nada estragado. Eu acho que um dia ruim de trabalho é quando dá problema assim na climatização. É o que mais nos estressa é a climatização. Mas eu chego cedo naquele computador, abro aqueles e-mail e aí é resolução de pepino. Então parece que não, mas são pequenas atitudes, mas que</p>	<p><i>"A good day at work? [it's] when the environment is fine, when everything is fine [laughs] ... when there is no power outage, that our electrical generator is working fine, the rooms are in the right temperature, the exhaustion system is ok. Nothing is ... broken. I think a bad day is when we have problems with cooling. It's what stresses us the most. I get there early, and I sit in the computer, open the e-mails and then it is just solving pickles. It seems it does not but are those small attitudes that interferes with animal welfare. Even autoclave maintenance. So, it sounds silly but...This last bank holiday, for instance, there was a power outage. I had to go there to turn on the backup...connected to ventilation and AC. So...7 am in a Sunday and I went there. I don't get paid for that, but I'm on call...I have a responsibility towards the animals ...they need to be cared... So, I don't</i></p>

	acaba interferindo na...no bem-estar do animal. Até manutenção de autoclave. Pode parecer besta, mas... Agora, nesse feriado, por exemplo, queimou a... caiu a luz. Então eram 07 horas da manhã do domingo, e eu tava lá ligando o gerador. E é um serviço que eu não recebo pra isso, mas eu tô de plantão, vamos dizer assim. ...Agora eu tenho uma responsabilidade com os bichos ... Eles precisam estar sendo cuidados ... Então, não interessa se eu não recebo pra isso. Eu vou, porque a minha consciência não permite que eu não vá (risos)	<i>care that I don't get paid for that. I go, because my consciousness doesn't allow me not to [laughs].</i>
Quote 11 (one woman)	...eles são sensíveis. Sabe que deu problema, 'para tudo e vai atender o biotério', 'porque eles são prioridade'.	<i>They are sensitive. They know there is an issue, 'stop everything and go to the biotério', 'because they're a priority.'</i>
Vignette 12 (Three women)	O problema realmente quando queima um aparelho desse, quando acontece algum problema no sistema de climatização, e a gente depende das pessoas, depende de outras pessoas, de outros setores. E a gente liga pra um, liga pra outro. Chora pra um, chora pra outro. Muitas vezes eu abro a ordem de serviço por e-mail. Eu mando WhatsApp pro apoio predial, depois eu ligo e depois eu vou na sala dele. E quando fica muito difícil, aí eu já começo a me estressar. A gente teve um problema que o ar-condicionado quebrou, e o ar-condicionado ficou quebrado um mês. E os animais? Como é que ficam lá dentro? Eu passei um mês angustiada com essa história, porque é uma vida. E aí é complicado né. A gente fica...a gente não sabe o que faz, mas assim até conseguir resolver. Sempre é um desafio quando isso acontece.	<i>"The real issue is when an equipment breaks, when there is some problem with the cooling system, and we depend on people...on other sectors... We call one, we call another. We cry out to one, we cry out to another. Many times, I open a call by e-mail. Then, I send a text message for the service manager. Then, I call. Then, I go to his office. When it gets really hard, I start becoming stressed...We had a problem because the Split AC broke, it was broken for a month... and the animals? How were they inside? I was anguish for a month, because it's a life. It's complicated ...we don't know what to do until we can solve it ... it's always a challenge when that happens."</i>
Communication with researchers		
Quote 13 (one woman)	Eu falo: os animais nunca me trouxeram problemas	<i>Animals have never created me trouble</i>
Vignette 14 (two women and one man)	Porque assim tem, tem alguns grupos que tem WhatsApp do grupo, por exemplo né. E aí eles me incluem. Tem outros que	<i>There are groups on WhatsApp, and they include me. There are others that don't. We send an email... and [they] don't answer. Or send the student to look for me. There is a</i>

	<p>não. A gente manda um e-mail é... não responde. Ou então manda um aluno me procurar... Eu tenho uma professora... eu descobri quem é ela tem 15 dias. Eu tinha muita dificuldade, porque quando eu chegava para abordar, para explicar, para entender a metodologia, eles já achavam que eu tava sendo invasiva, que eu não tinha que me meter com relação aos animais. E... eu tive muita dificuldade em conseguir os protocolos de pesquisa. Tipo assim, o que estava aprovado, o projeto de pesquisa. Aí eu falava 'gente, não me interessa a parte do desenvolvimento, o resultado...'. 'Me interessa a metodologia'. 'Eu preciso saber a metodologia que vocês vão fazer com o animal'. 'Porque eu preciso cuidar desse animal no momento em que ele ainda tem vida'. Então é esse tipo de comunicação é difícil... demais, comunicação é complicado.</p>	<p><i>professor, I found out who she was 15 days ago... I had great difficulty, because when I had approached to understand the method, they thought I was being intrusive, that I shouldn't get involved with the animals. It was hard to get research protocols, like, what has been approved, a research project. I said: 'I'm not interested in the results...what I'm interested is in the method. I need to know what kind of method you're using. If you're going to take the animal, to do euthanasia, to use the organs, that is ok. What I need to know is how euthanasia is being done. Because I need to take care for this animal while he's still alive'. So, this kind of communication is too hard... communication is complicated.</i></p>
<p>Vignette 15 (two women and two men)</p>	<p>...hoje ainda é um problema essa questão de... da... relação com os professores, com os pesquisadores. Pra mim esse é o maior problema. Os alunos, como eu falei, os alunos de iniciação científica são ótimos, ouvem tudo. É... acatam o que a gente fala. Estão aprendendo, né. Então, os de mestrado são difíceis, mas nem tanto. Os de doutorado são... tão mais perto dos docentes de... uma comunicação difícil. ...Dentro de uma instituição que existe uma hierarquia, em que existe o docente e o servidor - como se o docente não fosse servidor... onde as pessoas acreditam que isso seja subníveis, na verdade, não são. São carreiras paralelas, tanto que quando você chega no topo de uma, você não evolui para outra. A maioria das pessoas, culturalmente, tinham aquela coisa de 'nossa você não pode falar assim com o professor', 'você não pode falar assado com o professor'. Eu acho, que a gente vive num país que infelizmente ainda não valoriza o serviços dos técnicos.</p>	<p><i>What I see is... that relationships with professors... researchers are still an issue. For me, this is the major issue. The students, as I told you, the research trainees are great, they listen to everything. They follow what we say. They are learning, right? Then, the master's [students] are hard, but not that hard. The doctorate [students] are... closer to the professor as difficult to communicate with ... In an institution, where there is a hierarchy between professors and public servants – as if professors weren't public servants – people believe those are sublevels. Actually, they are not. They are parallel careers, if you're on top of one, you do not evolve for the other. Most people, culturally, have this mindset: 'oh, you can't talk like that to a professor', 'oh, you can't say that to a professor. I think that, unfortunately, we live in a country that does not value technical expertise.</i></p>

Quote 16 (one woman)	Me dá aquele mesmo sentimento ... quando recebia algum pesquisador e... eles tentavam impor alguma coisa pra... facilitar o trâmite do trabalho... Só que [agora] ... eles não fazem esse tipo de pressão, mas em compensação eles debocham.	<i>It gives me the same feeling when they tried to impose something to make the work easier... Although [now] ... they don't put pressure, they mock in compensation</i>
Vignette 17 (four women)	Me sinto respeitada é... até certo ponto também sabe. Porque... a gente acaba se impondo também. [...]Não é todo mundo 'Ah, Brianna falou, tá falado'. Não. 'A Brianna falou, porque ela gritou, ela esperneou, ela mandou e-mail, ela foi lá' sabe. Aí acabar 'não, tá certo'. Assim é muito cansativo. [...] a gente emperra inclusive no machismo, sabe. Porque eu vejo que eu como veterinária, eu tenho a mesma responsabilidade que meu colega veterinário também tem né. E eu percebo que, às vezes, as pessoas respeitam mais o que ele fala ou se referem mais ao que ele fala, sabe. Eu sempre fui muito paciente, sempre tive fama de calma. Ao longo da minha vida profissional do biotério, eu fiquei conhecido como a teimosa, como encrenqueira, como a pessoa que bate de frente por causa disso. Eu acho que hoje eu estou bem melhor, mas eu fiquei muito ruim em muitos momentos. Então assim, de quase ir pra uma depressão...Então de ter crise de ansiedade. É me sentir assim num ambiente totalmente inadequado pra mim e pra minha profissão.	<i>I feel respected, ahn, up to a point. Because we end it up imposing ourselves. It's not everyone like: 'Brianna said, that's it, then'. No. 'Brianna said, because she kicked and screamed, she sent an email, she went there.' In the end: 'oh no, she was actually right'. It's exhausting ... We encounter sexism also, since I've noticed that — as a vet I have the same responsibilities of my [male] vet colleague — I've noticed that people sometimes respect more what he says or refers more to what he says. I've always been a patient person; I was known for being calm. During my professional career at the biotério, I became known as stubborn, as troublemaker. So, nowadays, I'm feeling better, but I was in bad condition. Like... depression, anxiety. So, having... anxiety crises. And a feeling of being in a place totally inappropriate for me and my profession.</i>
Quote 18 (one woman)	Prefiro não me expor, mas também deixo... deixo de... deixe de participar. Deixo de participar porque também você vira alvo. Dependendo do seu tipo de opinião.	<i>I prefer not to expose myself...but I also refrain from participation. I refrain it because you become the target... depending on what kind of opinion you have</i>
Quote 19 (one man)	'Isso aqui é pra um rato? [quantia em reais]? Não'.	"Is this for a rat? [amount]? No"
Vignette 20 (three men)	Olha, eu nunca passei por uma situação de que eu não fosse escutado. Então tudo o que eu falo eles...eles não questionam... Todo mundo respeita o conhecimento, o saber. Nunca me senti a... como, digamos assim, desrespeitado. Nunca tive esse	Well, I've never been in a situation that I was not heard. So, everything that I say...they don't question...Everybody respects the expertise, the knowledge. I have never felt that...let's say, disrespected. I've never had this issue with.... role, career...I don't know

	problema de cargo, carreira ou a me sentir pelo menos... Agora não sei se é eu que nunca percebi isso, mas de fato nunca senti. Então eu, eu diria pra todos, de maneira geral, é um bom respeito. Não é assim perfeito, porque sempre tem um que reclama.	if it's because I've never noticed, but, actually, I've never felt it. So, I'd say that, in general, is a good respect. It is not perfect, because there is always one who complains.
Quote 21 (one woman)	Ah, 'porque vai alterar o modelo', 'vai alterar o modelo'. Também só falam isso.	Ow, 'it'll to change the model' ... they say just that
Quote 22 (one woman)	Então, tipo assim, pagar R\$ 200 ... num reagente eles pagam, mas pagar R\$20 no rolo de algodão: 'Nossa, mas R\$20 no rolo de algodão?' Então é isso, é sobre isso.	<i>So, like, to pay R\$200...in a reactant, they'd pay. But to pay R\$ 20 in a cotton roll: 'ow, but R\$20 in a cotton roll?'. It's about that.</i>
Quote 23 (one woman)	'Pra quê? Ele é só um rato!'	<i>What for? He is just a rat!</i>
Vignette 24 (three women)	Eu vi muito professor falando isso: 'ah, meu aluno que não tem perfil para trabalhar com animais'. Eles acham que não tem perfil aquele que tem empatia. E... para mim é ao contrário né, a gente tem que ter empatia para trabalhar com os animais, né. É essas [pessoas] que vão cuidar. Essas que vão ter sensibilidade de perceber quando aquilo ali está indo além. Só que o entendimento, principalmente dos mais velhos, dos pesquisadores mais velhos, é que isso é frescura.	<i>I've seen a professor saying: 'oh, my student doesn't have [psychological] profile to work with animals.' They think people who feel empathy as the ones who don't have a profile to the job. For me, it's the other way around, we need to be empathetic to work with animals. Those are the ones who are going to care. Those are the ones that will have sensibility to notice when things are going beyond. But the understanding, especially among senior researchers, is that we are just being fussy.</i>
Vignette 25 (two women and one man)	'Eu sempre fiz assim' ... 'Ah, esse rato vive muito melhor do que eu'... 'aquela mulher da CEUA é muito louca'.	<i>'I have always done this way' ... 'This rat lives better than me' ... 'That woman from CEUA is completely crazy'</i>
Care and animal welfare		
Quote 26 (one woman)	Ahn, mas a gente questiona mais, tenta mudar coisas ... não sei, eu acho que eles acham a gente muito chato, né!	<i>We question more, we mind the details, we try to change things... I don't know, maybe they think we are annoying.</i>
Vignette 27 (seven women and two men)	Então, são tantas... tantas (risos). É trabalho de formiguinha. Então são pequenas coisas que a gente faz no dia a dia, que você consegue manter e que isso já traz uma grande melhoria, um grande benefício. Lembro quando a gente conseguiu instituir	<i>Well, there are so many... so many (laughs). We are working like ants. So, the small things that we do daily, and we keep [doing it] already bring a big change and benefit. I remember when we established environmental enrichment ... Barbering and fights have decreased. Also, I'm always attentive to anesthesia and analgesia... It is about care... welfare, like do not make a lot of noises... to transmit a serenity, and calmness. The</i>

	<p>o enriquecimento ambiental. [...] Diminuiu barbering, diminuiu briga. Eu...procuro tá sempre vendo a parte de anestesia, analgesia... É a questão do cuidado mesmo né, do bem-estar, desde... não chegar a fazendo barulho, de conversar sabe, de passar, a transmitir uma serenidade, uma tranquilidade. O rato deixou né, nesses últimos 20... 30 anos vai que eu saí da faculdade, o rato deixou de ser um instrumento pra se tornar um protagonista. Eu vi essa transformação. Eu percebo que as pessoas estão mais engajadas e preocupadas com o bem-estar animal. Também acho que outro ponto que entrou aí pra contribuir a isso é a questão da capacitação e dos treinamentos, porque aí os veterinários e esses cursos on-line também tão batendo muito nessa tecla. Outro dia, uma aluna [...] ela foi ensinada sempre a pegar como conchinha né. E aí tinha que [pegar] pela cauda. A menina dizia: 'mas como que eu vou pegar o camundongo pela cauda?', 'Eu não sei pegar pela cauda'. Eu acho muito bom assim a gente poder né... lembrar de várias situações que você melhorou assim, né?</p>	<p><i>rat, in these last 20...30 years, became a main character instead of [being] an instrument. I witnessed that change. I notice that people are more engaged and concerned about animal welfare. I think what contributed is training, because the veterinarians and online courses keep hammering about [animal welfare]. On the other day, a student... she was taught to handle by cupped hands ... and she had to handle by the tail, and she was saying: 'But how am I going to handle by the tail? I don't know how to handle by the tail'. It's good to be able to remember several situations that we improved [animal welfare], right?</i></p>
<p>Vignette 28 (two women)</p>	<p>Eu acho que a cultura de cuidado ela deve ser estabelecida como ... uma política institucional sabe. Então tem situações ali, às vezes, que a gente passa aqui, que não tem um respaldo institucional, que dê ali embasamento para o nosso posicionamento.... frente a uma solicitação descabida. A equipe do biotério não se sente empoderada para tentar acessar alguma coisa sem uma retaliação às vezes né, seja dos pesquisadores mais antigos ou da própria direção em alguns casos. E que eu acho que carece um pouco desse respaldo institucional, né. No sentido de a instituição se colocar como comprometida com o uso ético de animais né. É... responsabilizar e definir ali os atores nesse processo científico. Empoderar essas pessoas e aí automaticamente a gente poder falar: 'não'. Porque não tem uma política, fica tudo muito no campo político institucional, porque</p>	<p><i>I think a culture of care should be established as an institutional policy. So, there are situations, that we eventually face, that we don't have an institutional back up for our positions... or a demand, an experiment or...sometimes a situation that we are held responsible as RT. [Thus], I think there is a lack of institutional support. In the sense that the institution to take on [responsibility for] ethical use of animals, move towards accountability... and define the actors in this scientific process that involves the use of animals. To empower those people, thus we automatically can say: 'No...' This institutional support that gives us this safety, a backup... It is necessary. Because without institutional policies everything rests in the political arena: 'that person is inflexible'... or if the person is meticulous, then she is bureaucratic. Things remain in a personal level not an institutional one.</i></p>

	<p>'ah, aquela pessoa que tá lá é irredutível, ou é criteriosa e aí é burocrática'. E aí fica uma coisa muito... pessoal e não institucional, entendeu.</p>	
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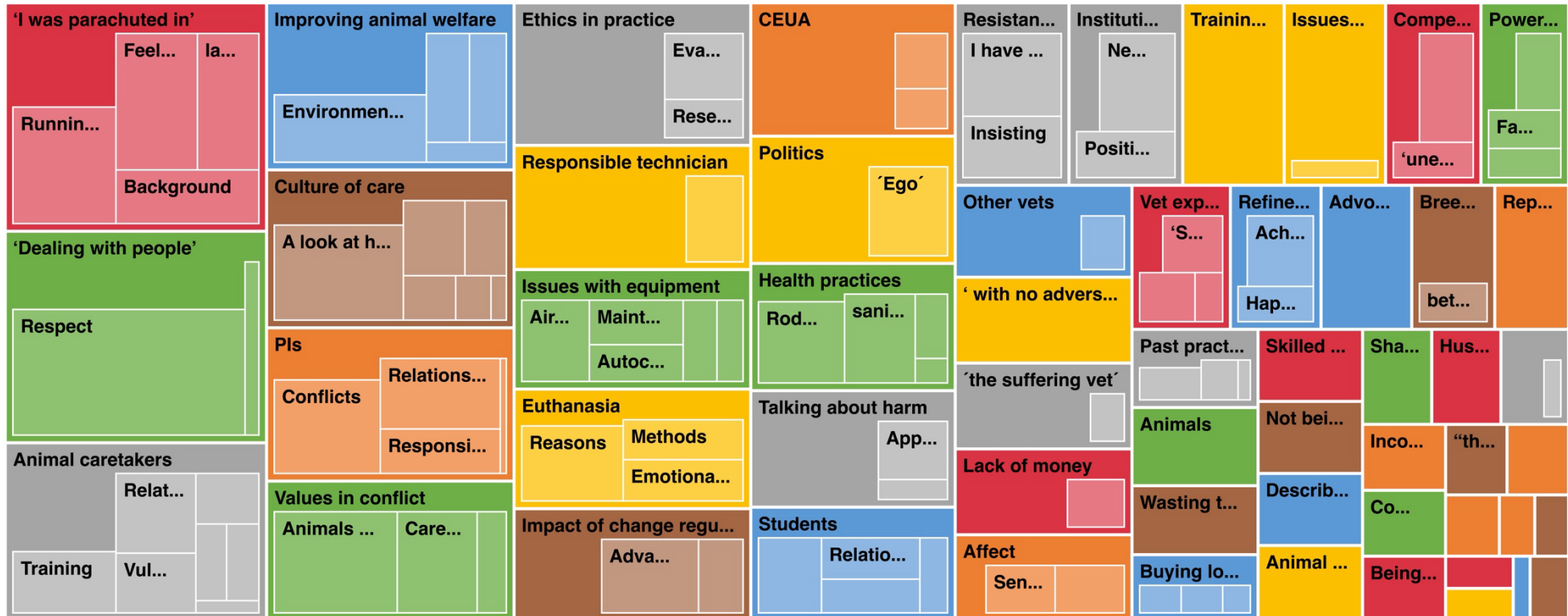


Figure S1 A – Second coding cycle: codes compared by number of items coded

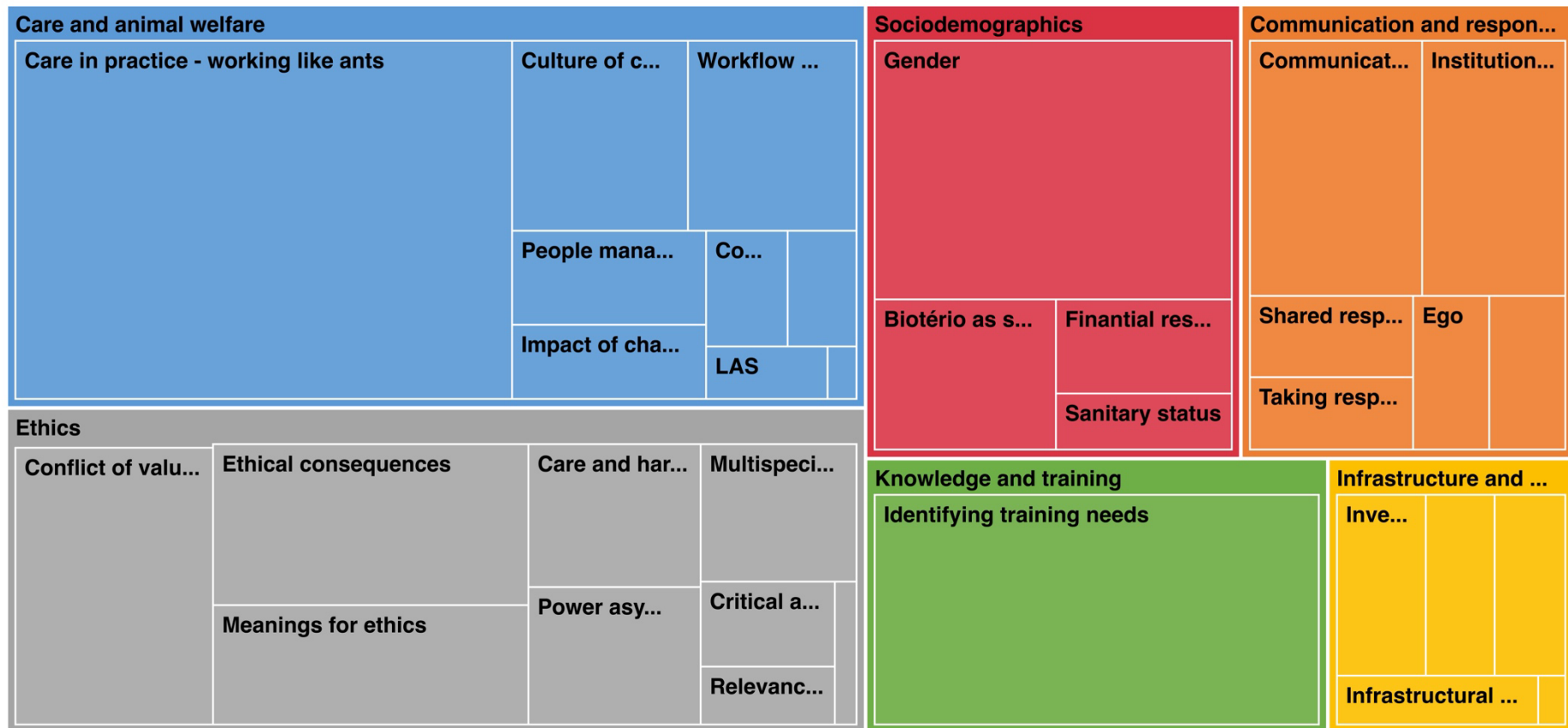


Figure S1 – B – Third coding cycle: codes condensed in main themes

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