



Knowledge and attitudes of official inspectors at slaughterhouses in southern Brazil regarding animal welfare

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ABSTRACT - We assessed the views, knowledge, and attitudes of livestock inspectors working in federally inspected slaughterhouses in southern Brazil, the major pig and poultry processors in the country, regarding farm animal behavior and welfare, and factors that may influence animal welfare improvements at abattoirs. An online questionnaire with closed and open questions was sent to all the federally inspected slaughterhouses in the three states of the region. All respondents (n = 83) strongly agreed that animals are capable of feeling pain, but fewer agreed that animals have mental states and individual temperament, or that animals can feel boredom or frustration. In the assessment of respondents, professionals in Brazil receive insufficient training in animal welfare; most believe that stockpeople do not understand the relationship between animal welfare and meat quality. Furthermore, most respondents believe that stockpeople are not satisfied with their working conditions at slaughterhouses and are not motivated to adopt practices to improve animal welfare. Respondents reported positive attitudes towards animal welfare but insufficient understanding and training on animal welfare during professional education. The three main actions that, according to the respondents, are required to successfully implement humane slaughter in Brazil are better selection and greater valorization of the stockpeople by the industry; refinements of the legislation to indicate minimum and maximum standards for specific species, practices, and outcomes; and introduction of animal welfare as a topic during the professional training of professionals that will oversee and support the implementation of humane practices in slaughterhouses.

Key Words: abattoir, legislation, survey, veterinarian

Introduction

Animal welfare has been increasingly included in business agreements and with humane slaughter is a key area of interest (von Keyserlingk and Hötzel, 2015). Retailers, restaurants, and food service companies seek kinder and more responsible farm animal practices (Grandin, 2010; Bayvel et al., 2012). Yet, it is a consensus that changes in attitudes and practices of stakeholders are required to improve farm animal welfare at slaughter (Paranhos da Costa et al., 2012; Del Campo et al., 2014). Knowledge and attitudes towards animal behavior, animal welfare, and humane slaughter are known to influence behavior of stakeholders (Hemsworth and Coleman, 1998), which in turn may influence the success of programs aimed

at adopting humane slaughter practices. In Brazil, federal livestock inspectors, represented mainly by veterinarians, are responsible for inspecting slaughter procedures in slaughterhouses, including on site practices related to animal welfare (MAPA, 2011). These professionals are required to employ federal standardized checklists on site and apply the relevant legislation such as Normative Instruction No. 3, which defines humane slaughter and approves the “Technical Regulation of Stunning Methods for Humane Slaughter of Meat Animals” (Brasil, 2000). In the exercise of their duties, these agents have the opportunity to observe the relationships between the different stakeholders that may be directly or indirectly interested in humane slaughter practices. Furthermore, practical experience with slaughter may help these agents to form an opinion on the motivations, opportunities, and constraints to successfully implement changes required to improve handling during pre-slaughter and slaughter of animals.

The objective of this study was to assess the knowledge and attitudes of federal livestock inspectors working in slaughterhouses in southern Brazil regarding farm animal behavior and welfare, and their opinions regarding factors

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that may influence animal welfare in slaughterhouses, as well as the role each of the various stakeholders (industry, slaughter personnel, Brazilian consumers, and the government) in improving animal welfare during slaughter.

Material and Methods

This research was approved by the Institutional Committee on Human research (protocol n. 120.174/2012). The Brazilian Ministry of Agriculture, Livestock, and Supply (MAPA) authorized this survey and provided the emails of the inspectors that work in slaughterhouses in southern Brazil operating under the Serviço de Inspeção Federal (SIF). The role of these professionals, in especial the veterinarians, is to oversee all procedures carried out in the slaughter plant, including its compliance with the humane slaughter regulations in force in the country (Brasil, 2000).

Invitations to participate in the study were sent to the SIF inspectors (veterinarians and agents) in all the federally inspected slaughterhouses in the southern region of Brazil – which includes the states of Rio Grande do Sul (30.0346° S, 51.2177° W), Santa Catarina (27.2423° S, 50.2189° W), and Paraná (25.2521° S, 52.0215° W). The choice of these states was based on their representativeness, as they process 75% of poultry, 65% of pork, and 13% of beef produced in the country (IBGE, 2014).

Emails were sent to 214 SIF inspectors, through their email addresses. The electronic messages were addressed to “the attention of the veterinarian (Vet) or inspection agent (IA)” and were sent three times in one-week intervals from November to December 2012.

The questionnaire used in this study was modified from previously published questionnaires (Heleski et al., 2004, 2005; Mullan et al., 2011). It contained 24 closed questions with response options structured in a five-point Likert scale, ranging from “strongly agree” to “strongly disagree”. The first 14 questions asked demographic information of the respondents and 10 asked beliefs and opinions of SIF inspectors regarding: The Five Freedoms (FAWC, 2012), concepts of animal behaviors and animal welfare, handling practices adopted by the plant, perceptions regarding the personnel involved in animal handling in the pre-slaughter and slaughter routine, opinions regarding the role of the slaughterhouse on improving animal welfare, opinions regarding the relevance of Brazilian legislation on animal welfare, and perceptions regarding the importance that Brazilian citizens give to farm animal welfare. Additionally, the questionnaire had two open questions which stated: “If you want to leave comments regarding one or more of the

topics covered in the questionnaire, please use the space below. Due to your professional experience, your views are valuable to our research” and “Comments and suggestions on the issue of animal welfare, or related specifically to this questionnaire, can be left in the space below”.

For the analysis of closed questions, descriptive statistics were used to explore the distribution of respondents across all answer categories. For analysis of the open questions, responses were categorized using content analysis (Corbin and Strauss, 2007; Minayo, 2008) to identify major themes within and across responses. Two researchers examined independently 10 responses to identify primary themes, then compared results and reconciled discrepancies. The lead author then undertook the final analyses, after discussion with all the authors. Sentences or comments that covered more than one theme were coded into multiple themes. In the results section, respondents are identified by their profession followed by an ID number [see Hötzel et al. (2017) for extensive detail on this type of analysis].

Results

A total of 83 questionnaires were returned, resulting in a 39% response rate. Most respondents were SIF veterinarians, who graduated in the 1970s (6%), 1980s (12%), 1990s (41%), and after 2000 (41%), and worked mainly at poultry and pork slaughterhouses (Table 1). In response to the question “During professional training, did you receive specific information about animal welfare, for example in your university degree or short-course?”, 100% had already received specific information about animal welfare. However, only 18% believed to know the subject sufficiently, while 35% believed to need more information, and 47% received insufficient information on the subject.

Most respondents strongly agreed that animals are capable of feeling pain, but fewer agreed that animals have mental states and individual temperament, or that animals can feel boredom or frustration (Table 2); 44.5% agreed and 41% disagreed with the statement, “if animals are producing well, it means they have a good welfare state”. Nearly all respondents (97%) answered that they are concerned with improving animal welfare in slaughterhouses. Cattle slaughter was rated lower than swine and poultry slaughter in terms of the suitability of current practices to meet high animal welfare standards during pre-slaughter and slaughter, and the need to change practices to improve animal welfare at slaughter. Most respondents (69%) agreed that “the religious slaughter (Shechita and Halal) causes suffering to animals” and that “the industry has an ethical obligation to care for the animals” (96%); most also

agreed that “improving animal welfare is economically profitable” (91%) and that “investing in animal welfare promotes the slaughter plant’s reputation” (93%). Of the respondents, 47% agreed and 31% disagreed with the statement “improving animal welfare costs money”.

Most respondents agreed that professional conferences, events, and printed materials are important sources of animal welfare information than training provided by universities (Table 3).

Few respondents agreed that stockpeople understand that poor animal welfare has negative impacts on meat quality and that stockpeople understand that animals can feel pain and fear (Table 4). Most respondents agreed that the industry has an ethical obligation to improve animal

welfare and that caring for animal welfare results in economic gain and increases the reputation of the industry among the public. For 71% of the respondents, animal handlers at slaughterhouses are not receptive to recommendations to change their routine practices. Furthermore, very few respondents agreed that stockpeople are satisfied with their working conditions at the slaughterhouses or that stockpeople are motivated to adopt practices to improve animal welfare. Most respondents agreed that the Brazilian public is increasingly concerned about farm animal welfare.

Sixty-one respondents (74%) answered the open questions. Six major themes were identified in the responses: insufficient training (frequency or quality) in animal behavior and welfare (n = 27; 44%); insufficient

Table 1 - Demographic data of respondents (n = 83; 39% response rate)

	Respondent (%)
Employment at abattoir	
Veterinarian inspector	82
Inspection agent ¹	14
Other veterinarians ²	4
Species with which respondent works at slaughterhouse	
Poultry	49
Swine	30
Bovine	13
Others	7
Place of residence and work	
Rio Grande do Sul	45
Santa Catarina	27
Paraná	29
Gender	
Male	71
Age group (years)	
Up to 30	11
31 to 40	52
41 to 50	21
51 or more	16

SIF - Serviço de Inspeção Federal (Federal Inspection Service).

¹ Professional degree of inspection agents: veterinarian (n = 6); agricultural college degree (n = 4); High School (n = 4).

² Other SIF veterinarians that did not work in inspection directly (i.e., they had other supervising duties).

Table 2 - Response choices (%) to the question “Relate your own beliefs to the statements listed below”

Statement	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)	Likert score ¹
Animals must be free						
from pain and discomfort	96	4	0	0	0	5.0
from hunger and thirst	87	12	1	0	0	4.9
of injuries and disease and must receive prompt veterinary assistance	87	13	0	0	0	4.9
from fear and distress	81	19	0	0	0	4.8
to express natural behaviors	49	42	6	1	1	4.4
Animals have the ability to feel pain	86	14	0	0	0	4.9
Animals have some mental capacity	42	43	8	5	1	4.2
Animals have individual temperaments	31	64	0	5	0	4.2
Animals can feel something equivalent to boredom or frustration	37	43	8	11	0	4.1
If animals are producing well it means they have good welfare	13	31	14	36	5	3.1

¹ Mean of strongly agree = 5; agree = 4; neutral = 3; disagree = 2; strongly disagree = 1.

knowledge among stockpeople and professionals at slaughterhouses on humane slaughter (n = 22; 36%); low appreciation of employees by the industry and/or lack of motivation among stockpeople (n = 17; 28%); weaknesses of the Brazilian legislation on animal welfare (n = 13; 21%); poor engagement of the livestock industry in animal welfare issues (n = 12; 20%); poor engagement of the Brazilian society in animal welfare issues (n = 11; 18%).

Of the 27 respondents that discussed the need for more frequent courses and of better quality, six specifically mentioned a lack of courses in animal welfare and applied ethology in universities, as for example, “During my undergraduate studies, there was no compulsory class dealing/teaching with animal welfare” (Vet 30). Interestingly, some respondents also commented that the need for more and better training in farm animal welfare is not restricted to SIF professionals; in particular, respondents mentioned that stockpeople and administration personnel needed to receive training on animal welfare (for example, “Companies should empower their employees so that they understand the fundamentals of animal welfare and become more sensitive and truly engaged in the issue” (Vet 3); “Training should be more comprehensive and reach a larger number of colleagues involved in this area” (IA 13); “Animal welfare training courses should also target the management people in the companies” (Vet 58).

Respondents associated low receptivity of stockpeople to recommendations to change their routine practices with low understanding of the issue, e.g., “It is very difficult to work with employees who, sometimes out of stubbornness, do not understand and do not want to understand about the proper handling of animals” (Vet 34).

For 17 respondents, working conditions are a main obstacle to improve animal welfare (“In many cases the quality of the facilities further undermine working conditions” (Vet 79), and motivation of employees (“[...] even when they receive training courses they do not care about the issue, often unmotivated by their working conditions or by their sociocultural condition”; Vet 40). Nine respondents linked low wages paid to stockpeople as the reason for low motivation and work satisfaction: “[...] the low pay of employees who work directly with the animals, the working conditions in abattoirs [...] are the main barriers to develop animal welfare policies” (Vet 55), or “[...] “if an employee is well paid, he will work with enthusiasm” (IA 29). Six respondents related low motivation of stockpeople to poor hiring selection criteria (e.g., “Some employees, but only a few, understand animal sentience and handle animals with knowledge and patience. However, in most cases, people with inadequate profiles are hired”, Vet 79). The high turnover rate of employees was also pointed as a potential limitation to the effectiveness of

Table 3 - Response choice (%) to statements regarding the general knowledge of animal welfare among professionals and academics in Brazil

Statement	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)	Likert score ¹
I have enough knowledge about animal welfare	17	58	12	13	0	3.8
Professionals have enough knowledge to support the implementation of animal welfare programs at abattoirs	4	27	23	39	8	2.8
Universities offer basic knowledge required to meet market demands regarding animal welfare	5	25	22	42	6	2.8
Congresses and other technical events help meeting market demands regarding animal welfare	18	69	6	7	0	4.0
Printed material (magazines, bulletins) and the internet help meeting market demands regarding animal welfare	17	70	8	4	1	4.0

¹ Mean of strongly agree = 5; agree = 4; neutral = 3; disagree = 2; strongly disagree = 1.

Table 4 - Percentage and mean (\pm SE) Likert scale choices regarding statements about stockpeople working conditions at abattoirs

Statement	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)	Likert score ¹
Employees work to prioritize, to some degree, the welfare of animals	5	33	28	28	7	3.0
Employees understand the importance of animal welfare for meat quality	1	23	23	43	10	2.6
Employees understand the ability of animals to feel pain, discomfort, or fear	5	28	23	34	11	2.8
Employees are satisfied with their working conditions	2	8	33	37	19	2.4
The level of employee motivation at the workplace is favorable to implement animal welfare practices	4	23	20	35	18	2.6

¹ Mean of strongly agree = 5; agree = 4; neutral = 3; disagree = 2; strongly disagree = 1.

training programs: “Training company employees should be periodic and mandatory, in view of the large turnover that occurs in most slaughterhouses” (Vet 3).

Although 95% of the respondents agreed that the Brazilian slaughter legislation is pertinent to their work, fewer (44%) agreed that it is adequate to achieve high animal welfare standards. This perception was explained in statements written by 13 respondents, such as “A normative document cannot use terms such as ‘recommended’, ‘preferably’, etc. That is because companies understand that they are not required to meet recommendations or preferences. Instead, it needs to use terms such as ‘mandatory’, ‘must’, etc. [...] You need to have a lot of numbers (critical upper and lower limits); otherwise, the company engages in endless arguments and refuses to comply with determinations of SIF” (Vet 2).

Eight respondents believed that the industry cares about animal welfare because it is important for product quality and the image of the company. Some related comments follow: “[...] Companies have already begun to care about animal welfare because this improves profitability and meat quality and adds to its image” (Vet 9); “Many changes took place after companies started working to improve animal welfare. But the change did not arise from awareness of those responsible for animal welfare, but rather from an interest to meet international consumer markets, for profit” (Vet 49).

Eleven respondents mentioned low information or lack of engagement of the Brazilian society with livestock welfare issues, for example, “as consumers, Brazilians do not have yet this concern [...]” (Vet 68), and “...among consumers, the discussion is still shy...” (Vet 82).

Discussion

The participants of this survey – SIF veterinarians that supervise and audit slaughter at slaughterhouses in southern Brazil – expressed mostly positive attitudes towards statements about animal welfare and generally endorsed the Five Freedoms (FAWC, 2012), which have been used as reference for the development of European legislation (Veissier et al., 2008), private and public protocols to assess animal welfare at slaughterhouses (Velarde and Dalmau, 2012), and certification programs (e.g., RSPCA, 2015). It has been established that positive attitudes towards animals and their well-being are positively related to improvements in animal welfare at slaughter (Coleman et al., 1998, 2003), and, in contrast, low agreement with the Five Freedoms among North American extensionists was associated with resistance to change farm practices (Cantrell et al., 2013).

In addition, professionals with negative attitudes regarding the ability of animals to feel pain or towards practices that may improve animal welfare tend to reject these practices or do not recommend or promote their use (Fajt et al., 2011; Hötzel and Sneddon, 2013). Given the direct role these stakeholders have in ensuring the implementation of good practices at abattoirs, their positive attitudes are a positive step in improving animal welfare.

However, responses regarding mental states, temperament, and cognitive abilities of animals reveal low familiarity with animal behavior and welfare. This contradicts self-assessment of respondents as well informed on issues of animal welfare but is consistent with the self-reported insufficient training on animal welfare during professional education and greater value given to printed material and congresses as sources of animal welfare information than university training. Main et al. (2009) addressed the need to train professionals on issues of ethology and animal welfare if they are to favorably influence animal welfare policies and standards. Although these skills are rare among professionals in animal production in Brazil (Poletto and Hötzel, 2012), training in applied ethology and animal welfare is increasing (Molento and Calderon, 2009), as well as interest in this area among professionals. For example, in a poll published by Conselho Federal de Medicina Veterinária (CFMV), in response to the question “In what areas would you like to increase your knowledge?”, animal welfare was the theme chosen by the greatest proportion (64%) among the 4,068 veterinarians and 401 animal scientists that responded the survey (CFMV, 2012). Overall, positive attitudes of veterinary inspectors observed in this study indicate a potential for improvement of humane slaughter practices in slaughterhouses that process a large proportion of the Brazilian poultry and pig. This, however, requires an increase in animal behavior and animal welfare teaching during professional and continuous education programs (Tadich et al., 2010).

The views of respondents that stockpeople have low understanding of animal behavior and animal welfare concepts and that they need further training is highly relevant, given that stockpeople are considered the most influential factor affecting animal handling, welfare, and productivity (Coleman and Hemsworth, 2014). Interestingly, some respondents believed that the need for training on animal welfare is not restricted to animal handlers but includes inspectors and administration staff, a view also generally supported by Coleman and Hemsworth (2014).

Altogether, the opinions and examples given by veterinarians working at slaughterhouses regarding the

role of stockpeople and the industry in improving humane slaughter suggest a feedback loop in which poorly paid jobs explain low levels of education and lack of technical skills of employees, which in turn leads to low job satisfaction and high turnover rates; the latter then, acts a disincentive to the industry to invest in training programs. In support of these opinions expressed by respondents, low motivation and satisfaction of employees with their working conditions at the slaughterhouses have been identified as obstacles to implement good management practices in abattoirs (Coleman et al., 1998) and are reasons for job abandonment (Coleman et al., 2000). To improve employee hiring selection, slaughterhouses could use existing empirical knowledge of traits of stockpeople that favor good handling (e.g., Coleman et al., 1998, 2012; Fraser et al., 2013). Retaining employees in the job, however, may also require improved working conditions and greater wages. As stated by Paranhos da Costa et al. (2012), for the solutions to the problems of animal welfare in slaughterhouses in Latin America to have a greater chance for success, the well-being of the workers also needs to be considered.

Most respondents considered the Brazilian slaughter legislation inadequate; specifically, many associated the difficulties to improve practices aiming at humane slaughter in Brazilian abattoirs with the absence of critical upper and lower limits. In accordance with these opinions, Sorensen and Fraser (2010) remarked that any animal welfare regulatory program should set minimum acceptable standards. On the same line, Grandin (2010) suggested that the use of a numerical scoring would improve animal welfare during slaughter, with the additional advantage of providing a greater consistency between different auditors or inspectors. In Brazil, the first regulation of humane slaughter was the Decree 2244/97 (Brasil, 1997), which established the mandatory use of a stunning method prior to bleeding animals. This was revoked by Decree n. 9013 of 2017 (Brasil, 2017).

Respondents also claimed that the Brazilian public is increasingly concerned with farm animal welfare, but many considered the lack of engagement of consumers as a limiting factor for the industry to implement changes. Citizens of different countries express concerns for the humane slaughter of animals (e.g., Schnettler et al., 2009; Vanhonacker et al., 2009; Miele et al., 2011; Jonge and Trijp, 2013, 2014; Sato et al., 2017). Indeed some studies have shown that Brazilian consumers have little knowledge about production systems and that, in general, animal welfare does not seem to influence their purchase choices (Bonamigo et al., 2012; Souza et al., 2013). However, after

receiving information about production systems, Brazilian consumers tend to associate high animal welfare standards with higher quality products (Bonamigo et al., 2012; Yunes et al., 2017) and become more critical of practices that influence animal welfare (Hötzel et al., 2017). In the context of the socioeconomic development in Brazil, we expect changes in this scenario within the upcoming years. Also, as in other places, these changes are likely to be driven by retail initiatives rather than by direct action of consumers (Aerts, 2013).

It is relevant to note that the respondents of this study had previously participated in the Steps Program along with industry employees (Paranhos da Costa et al., 2012; Sato et al., 2015). This training included information of the OIE and EU pre-slaughter and slaughter regulations, as well as the scientific basis for animal welfare principles (WAP, 2015). The knowledge obtained from the Steps Program training may have influenced the assessment of respondents of Brazilian slaughter legislation and their attitudes regarding concepts of animal welfare. This point may be considered as a limitation of the study in generalizing the opinions expressed by the respondents of the study to a wider population of SIF employees. However, it may also be considered that a growing number of professionals are being exposed to the discussion of farm animal welfare and humane slaughter and receiving similar training. For example, over 10,000 professionals have been trained in humane slaughter since 2008 (MAPA, 2017). Additionally, in recent years, there has been an increase in university training in animal welfare in Brazil, as well as legislation and research in areas that give support to improvement of humane slaughter (Broom, 2011; Paranhos da Costa et al., 2012; Galindo et al., 2016), which may change the landscape described in this study.

Conclusions

Veterinarians of SIF and inspection agents working at slaughterhouses in southern Brazil have positive attitudes towards general principles of animal welfare. Considering their key role in supervising the implementation of slaughter legislation in Brazil, these positive attitudes indicate a potential for improving animal welfare at abattoirs. However, the insufficient understanding of respondents about animal behavior and welfare suggests that there is a need to improve training on these issues. Additionally, the views of respondents highlight at least three major concomitant actions that may favor the adoption of humane slaughter practices in abattoirs in Brazil: appropriate selection and greater valorization of the work of stockpeople

by the industry; refinement of the legislation to indicate minimum and maximum standards for specific species, practices, and outcomes; and the introduction of animal welfare as a topic of interest during the professional training of veterinarians and other professionals that oversee and support the implementation of humane slaughter practices at the abattoirs.

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