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Research

Hauliers' perceptions and attitudes towards farm animal welfare could influence the operational and logistics practices in sheep transport

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ABSTRACT

A survey of Mexico-based sheep hauliers was conducted in order to investigate perceptions and attitudes toward farm animal welfare (FAW) and their influence on operational and logistic practices (OLPs) in sheep transportation. The statistical analysis consisted in the application of 2-factor analyses (OLP and animal welfare attitudes), additionally a cluster analysis; the latter allowed a segmentation of hauliers according to their attitudes and OLP. The factor analysis gave 3 OLP factors: logistic issues, economic losses, and welfare losses. In the case of factor analyses about animal welfare attitudes, we obtained 4 factors: training and regulations, animal needs, welfare improvement, and sensibility. The cluster analysis of this study showed the existence of 3 haulier profiles; these were "efficient and concerned," "efficient and not concerned," and "not efficient and concerned." Our results showed that hauliers' perceptions had a clear influence on the performance of their operative and logistic activities during the sheep transportation. This study highlights the individual hauliers' risk factors which can be considered to improve not only animal welfare but also indicates the need to consider the transportation as a whole because of potential factor combinations and confusions. The attitudes of sheep hauliers toward FAW are a strategic component that requires being considered when hauliers are trained. If it can be shown that modifying hauliers' attitudes leads to improved OLP, then there is an opportunity to develop specific training programs to modify certain haulier's animal welfare attitudes, with a subsequent improvement of sheep welfare.

Introduction

The improvement of farm animal welfare (FAW) is a joint responsibility and challenge for many stakeholders within the agro-food chain (Verbeke, 2009). In recent years, survey-based research about perceptions and attitudes to FAW of stakeholders of livestock industry has increased (Phillips et al., 2009) but mostly limited to veterinarians (Wu et al., 2015; Ventura et al., 2016), farmers (Kılıç and Bozkurt, 2013; Wilson et al., 2014; Diez et al., 2015; Vanhonacker et al., 2016), retailers (Miranda-de la Lama et al., 2013), and consumers (Hoeksma et al., 2017; Miranda-de la Lama et al., 2017). The nature of stakeholder's involvement with the livestock industry has been associated with differing attitudes to animal welfare. For example, discord in attitudes toward animal welfare exists in Europe among farmers, who reported satisfactory levels of FAW, and the public, who described the current state of FAW as "problematic" (Vanhonacker et al., 2008). This highlights the importance of understanding and improving the attitudes to the animal welfare of each key stakeholder group within the livestock industry (Sinclair et al., 2017). While on-farm factors, such as housing and husbandry of farm animals are arguable issues for many people, there is an increasing community that is concerned about the treatment of farm animals' postfarm gate, particularly during transportation and preslaughter operations (Hemsworth et al., 2011).

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During transport operations even under favorable conditions, livestock is exposed to a range of potential stressors which may compromise their welfare including increased handling and human contact, driving haulier style, transportation, loading and lairage, unfamiliar environments, food and water deprivation, alterations in weather conditions, and also changes in social structure through separation, mixing, and crowding, and noise and environmental pollutants (Miranda-de la Lama et al., 2014). These stressors will originate a cascade of reactions in the organism, with activation of the nervous sympathetic adrenomedullary system and the hypothalamic–pituitary–adrenocortical axis, causing an increase in levels of catecholamines and glucocorticoids, respectively (Eriksen et al., 2013). Improper preslaughter handling and transportation clearly result in even greater emotional reactivity, morbidity, mortality, live weight losses, meat quality defects, such as shrinking of the carcass, higher pH, dark meat, and damage of the carcass through bruising (Paranhos da Costa et al., 2012). The logistic chain of sheep transport is a strategic activity in the meat sheep industry and includes diverse risk factors such as loading animals at the farm, transport from farm to the abattoir, and unloading of animals at the abattoir (Miranda-de la Lama et al., 2010). Consequently, animal welfare during transport depends greatly on the attitudes and training of handlers and hauliers and on the availability of appropriate facilities. Much has been investigated about stress during transport, but less attention has been paid for identifying and correcting risks factors from the point of view of personal interactions with the animals, partly because they vary widely both nationally and internationally (Marahrens et al., 2011).

Rapid progress toward animal welfare may arise due to stakeholder's initiatives to adopt welfare friendly practices with respect to animal transport (De Witte, 2009). Although hauliers are likely to be interested in making profits and prevent the losses, hauliers are not simply rational profit maximizers and are likely to have emotional reactions to their animals that also influence decision-making (O'Kane et al., 2017). The willingness to change current operating practices throughout the logistic chain will depend upon the hauliers' perception about this issue which is crucial for an improvement in animal welfare (Vimiso et al., 2012). Through a social approach, researchers can capture the social aspects of a phenomenon to improve the understanding of how hauliers perceive the relationships between attitudes and perceptions of hauliers and their impact in operational and logistic practices (OLPs) and the welfare of transported animals (Burnard et al., 2015). The results of this study will help to identify "at-risk" groups of hauliers that can be targeted for training programs on animal welfare, good OLP, and empathy for animals. The study is based on the hypothesis that animal welfare perceptions directly influence the performance and usual OLP of hauliers. Therefore, the purpose of this study was to analyze the perceptions and attitudes of commercial hauliers toward animal welfare and their influence on operational and logistics practices in sheep transport. The second aim of this research was to identify the potential areas for further research, development, and improvements in the worldwide livestock transport sector.

Material and methods

The study was carried out in the municipality of Capulhuac (19°12′N 99°28′W; 2700 masl) in the State of Mexico (central plateau of Mexico). The survey period was from May to September 2016. The slaughter of sheep and their industrialization for meat and by-products in Mexico is concentrated in the center of the country. This focus is mostly motivated by a higher demand for sheep meat in the central plateau of Mexico, Hidalgo, and Mexico City, which are traditional consumers of sheep meat in the form of a traditional dish named "barbacoa." Capulhuac municipality is the largest meat sheep producer in the country with around 400,000 heads per year slaughtered, and approximately 300 sheep meat retailers operating in the area. There are 350 feedlots, 700 sheep meat processors, and approximately 115 professional hauliers. At this municipality, there are 8 specialized abattoirs, and 60% of the animals are slaughtered in small abattoirs and even at homes. The transported animals come from different origins of the Mexican Republic like the North through long journeys—more than 8 hours (Chihuahua, San Luis Potosi, Zacatecas, Coahuila, and Durango); Northwest-Central Mexico with medium journeys—between 4 and 8 hours (Aguascalientes, Jalisco, Queretaro, and Guanajuato); Central Mexico with short journeys—less than 4 hours (State of Mexico, Morelos, and Michoacan); and Southeast Mexico with long journeys (Guerrero and Oaxaca).

Study description

In the study, a nonprobability sampling method was used following the sampling strategy proposed by Girma et al. (2011). A multistage sampling method was used to identify the farmers' sample. First, the Capulhuac municipality (State of Mexico) was selected purposively because it is the largest meat sheep retailer in the country. Second, this municipality has the Sheep Dealers and Hauliers Association of Capulhuac which is the most representative association of sheep hauliers of the country. Third, respondent hauliers from the association were identified using a systematic random sampling procedure. The sample size was determined based on the project time and the willingness of hauliers to provide information. A face-to-face survey was carried out with 57 male professional hauliers aged between 18 and 62 years (mean = 40, standard deviation = 10.7 years old) because there were no women hauliers in this activity. For this purpose, the members' list of the association was used. The hauliers of this association had participated in previous studies related to the same sector, due to the credibility of the information given. To minimize the bias, we ensure that the participant hauliers did not know the main objectives of the study (Daros et al., 2017). The interested hauliers in the study were informed that: "participation will be voluntary, the information collected will be confidential, and if they finally did not participate or if the participants decided to leave the study, their future employment conditions won't be affected." No financial remuneration was offered to the participants. The participants had a heavy-lorry driving license, and they were working as professional hauliers driving sheep lorries. The interviews were conducted individually at the assembly center, classification center, or haulier offices (working context). In the last 20 years in Mexico, professional hauliers have displaced the occasional livestock lorry drivers, representing 80% of the livestock drivers in the country (J. Martinez, personal communication).

Questionnaire and measurement scales

Before using the final questionnaire, a pilot study was carried out in May 2016 using draft questions and applied to 10 sheep hauliers (these participants were excluded from subsequent analyses), then the results were used for the development of the final questionnaire that contained 2 sections. The first section considered OLPs during transport; the operational part considered the time to unload animals, vehicle load capacity, number of kilometers of the journey, transportation time in a journey, number of inspections carried out during the transport of sheep in a journey, loading time of sheep, transportation cost per sheep, body weight loss of sheep during the journey, percentages of sheep dead, or injured. The logistic chain of sheep transport considered the following questions: origin of the journey (north, northwest center, center and/or Southeast, described previously), vehicle type used (potbelly, lorry of 10 t, lorry of 3.5 t, and/or pick-up), methods used