

Analgesic Use in Farm Animals by Kazakhstani Veterinarians and Farmers

Giorgi, M.,¹ De Vito, V.,² Raushanova, R.,³ Lubov, K.³ and Owen, H.⁴

¹ Department of Veterinary Sciences, University of Pisa, Via Livornese (lato monte), 56122, San Piero a Grado, Pisa, Italy.

² Department of Veterinary Medicine, University of Sassari, Via Vienna 2, 07100 Sassari, Italy.

³ Veterinary School, Kostanay State A. Baitursynov University, A. Baytursynov Street 47, 110000 Kostanay, Kazakhstan.

⁴ School of Veterinary Science, The University of Queensland, Gatton Campus, Gatton, Queensland 4343, Australia.

Corresponding author: Prof. Mario Giorgi, Chem.D, Spec. Pharmacol., Department of Veterinary Sciences, University of Pisa, Via Livornese (lato monte), 56122 San Piero a Grado, Italy. E-mail: mario.giorgi@unipi.it

ABSTRACT

Freedom from pain is among the most important aspects of animal welfare. The main obstacle for pain management in farm animals is an inability of personnel to recognise, quantify and evaluate the pain status of each individual animal. No information has been reported in developing countries where attitudes towards and practices in pain management might be lagging behind those in developed countries. Hence, the aim of this study was to evaluate the attitudes of farmers and veterinarians towards pain in farm animals in Kazakhstan. A total of 3,010 Kazakhstani veterinarians and farmers were contacted by electronic and regular post and 2,005 (66.6%) surveys were returned and analysed. Use of analgesic agents for the conditions and procedures considered in the survey was widespread, but use of opioids was not recorded. The responses indicated that few veterinarians (8.9%) and a negligible number of farmers (0.6%) sufficiently appreciated pain in farm animals. In conclusion, further measures to increase the level of knowledge and awareness regarding farm animal pain in veterinary students, licensed veterinarians and farmers should be undertaken in Kazakhstan.

Keywords: Pain; Farm Animals; Analgesia; Painkiller Drugs; Farmers; Veterinarians.

INTRODUCTION

Freedom from pain is among the most important aspects of animal welfare (1) and animals must be protected from pain, injury and disease either by prevention or rapid diagnosis and treatment (2). In recent decades there has been a vast improvement in pain reduction in animals thanks to studies of new analgesic drugs (3,4), less invasive surgical procedures (5) and *ad hoc* validated pain scoring systems (6) among other measures. For these reasons, veterinarians practicing in the third millennium are expected to appreciate the importance of pain management in companion animals. However, the management of pain in farm animals (7, 8) has not progressed in parallel to that of companion animals.

Pain induces negative effects on well-being and behaviour, as well as on growth and reproduction of the animals (9). However, the main obstacle for pain management in farm animals is an inability of personnel to recognise, quantify and evaluate the pain status of each individual or to treat pain in a single individual without disturbing the whole group of animals (10).

Several surveys have investigated the attitudes of farmers and veterinarians toward pain in farm animals in various countries and with differing results. In Denmark, farmers considered the diseases to be more painful but were less in favour of the use analgesics compared to veterinarians (11). In New Zealand, dairy cattle practitioners were shown to have

a wide range of attitudes to pain in cattle (12). Australian pig producers considered animal welfare as a high priority (13) while in the UK, cattle practitioners had a wide range of attitudes to pain and to the use of analgesics in cattle although not to the level that would ensure that cattle received appropriate levels of analgesia (14). In the same country, potential barriers to the increased use of pain relief for pigs included lack of up-to-date knowledge and poor communication between farmers and veterinarians (15). In the USA respondents perceived that cattle felt pain although pain perception was often thought to be underestimated (16). All countries considered in these surveys are fully developed countries with strict animal welfare regulations.

No information has ever been reported in poor or developing countries where attitudes and practices in pain management might be lagging. Kazakhstan is a rapidly developing country. A few big, modern and industrialized cities are interspersed with thousands of small agricultural villages. On one hand, Kazakhstan has a huge inhabited area where farm animals can graze and reproduce, however on the other hand, its continental climate limits outdoor breeding to a few months year.

The aim of this study was to evaluate the attitudes of Kazakhstani farmers and veterinarians towards pain in farm animals.

MATERIALS AND METHODS

A total of 3,010 Kazakhstani veterinarians and farmers (members of veterinary and farmer organizations) were contacted by electronic and regular post during the summer of 2014. Using the two forms of contact was necessary in order to reach areas without internet coverage. However to prevent respondents completing the survey twice, surveys delivered in both forms included instructions not to reply to the hardcopy form if the respondent had already replied to the electronic survey, and vice versa.

The letter explained the aim of the study and included a printed questionnaire and a prepaid envelope. No reminders were sent after the initial contact. The survey (Figure 1) was designed based on previous questionnaires used in a number of studies concerning pain in farm animals (2,12,14,16) and was translated into Russian. The questions related to demographics and practices and perceptions involving pain and use of analgesics. Respondents were required to choose one

or several options for the demographic questions and those relating to use of analgesics. For their perceptions on farm animal pain, they were variously required to choose an opinion from a list of statements, score the likely pain associated with a condition or procedure and rank the perceived usefulness of various potential indicators of pain. The questionnaire was submitted by and returned to the Kostanay State University in Kazakhstan, and the responses inserted into an electronic database. This was shared with the University of Pisa (Italy) for the evaluation and interpretation of the results.

Statistical analysis

Differences between scores for pain given by farmers and veterinarians were evaluated using the Wilcoxon rank-sum test. The statistical significance of differences in the proportion of farmers and veterinarians agreeing with various statements about pain and analgesia was evaluated using a logistic regression (binomial distribution, logit link) with farmer or veterinarian as the explanatory variable (SAS version 9.2).

RESULTS

Of the 3,010 questionnaires submitted, 2005 (66.6%) were returned. 59.2% of responders were male (1187), *vs* 40.8% females (818) and 64.6% were veterinarians (1295) *vs* 35.4% farmers (710). The most represented age group was 45-65 years (60.6%), followed by 22-44 years (32.0%) and over 65 years (7.4%). In the over 65 years group, males accounted for a larger percentage (10.3%) compared to females (3.2%), this difference was statistically significant ($P < 0.05$). The most bred or commonly visited animals were beef (39.1%) and dairy cattle (23.5), horses (23.3), swine (8.7%), sheep (4.2%) and camels (1.2%).

Figure 2 depicts the results to the question "How many types of analgesic drug do you use routinely in your large animal practice?" There were no statistical differences in the responses from males and females, between age groups or according to animal species being treated. Veterinarians were more likely to use alpha-2 agonists and dissociative anaesthetics compared to farmers ($P < 0.046$). These findings are in line with those reported from Ison and Ruther (15) in which veterinarians were found to use more anti-inflammatory drugs than farmers. A surprising finding was that a large number of respondents do not use analgesic drugs at all. An original finding from the questionnaire was that no respondents reported using opioids for farm animals.

Analgesic Use in Farm Animals by Kazakhstani Veterinarians and Farmers.

Personal details

- I'm a:
 - Farmer
 - Veterinarian
- My age group is:
 - 22-44 30.5%
 - 45-65 52.2%
 - >65 17.3%
- My sex is:
 - Male
 - Female
- The animal species (most) bred/visited is (please select just one):
 - Horse
 - Pig
 - Dairy cow
 - Beef cow
 - Sheep
 - Camel

USE OF ANALGESICS IN FARM ANIMALS

The following questions relate to your use of analgesic drugs in farm animals.

Analgesic drugs should be interpreted to mean one or more of the following drugs or drug groups:

Local anesthetics (e.g., lidocaine, mepivacaine)

Nonsteroidal antiinflammatory drugs (e.g., aspirin, flunixin, ketoprofen)

Opioids (e.g., butorphanol)

Alpha-2 agonists (e.g., xylazine, detomidine, romifidine)

Dissociative anesthetics (e.g., ketamine).

If you do not know which group the drug you use belongs in, please write its commercial name in "other" space

1) How many analgesic drugs do you use routinely in your large animal practice? (multiple choice allowed)

- None
- Local anesthetics (e.g., lidocaine)
- Nonsteroidal antiinflammatory drugs (e.g., aspirin)
- Opioids (e.g., butorphanol)
- Alpha-2 agonists (e.g., xylazine)
- Dissociative anesthetics (e.g., ketamine).
- Other

2) How frequently do you use analgesic drugs in your large animal practice?

- Daily
- Weekly
- Monthly
- Yearly
- Never

3) Which of the following statements do you most agree with:

- It is difficult to recognise pain in farm animals
- Pain relief drugs are too expensive for farmers to use regularly
- I feel I know enough about pain and how to treat pain in farm animals
- There aren't enough pain relief drugs available to use on farm animals with painful conditions
- Farm animals are not as sensitive to pain as humans
- Farm animals recover better with pain relief
- I regularly discuss pain and pain relief options with farmers (vets) or my veterinary doctor (farmer)

4) Please score the pain (0 no pain – 10 most severe pain) associated with the following 7 conditions:

- Broken leg ()
- Infectious mastitis ()
- Difficult farrowing ()
- Lameness – minimal weight bearing ()
- Respiratory disease ()
- Gastrointestinal disease ()
- Normal farrowing ()

5) Please score the pain (0 no pain – 10 most severe pain) associated with the following procedures performed without analgesic:

- Tail docking ()
- Dehorning ()
- Ear tagging ()
- Castration ()
- Teeth filing ()
- Caesarean sections ()

6) Which behavioral and physiological indicators best represent a painful condition? Please select the 3 more important indicators (1 = most painful, 2 = second most painful, 3 = third most painful)

- Vocalization
- Change in gait
- Lethargic/listless
- Change in skin condition
- Eyes glassy or red
- Restlessness
- Ear and head position
- Self-isolation
- Panting
- Posture (sit like a dog/on belly)
- Off feed
- Tremors
- Teeth grinding
- Runny nose
- Escape maneuvers

Figure 1: Questionnaire submitted to Kazakhstani Veterinarians and Farmers.

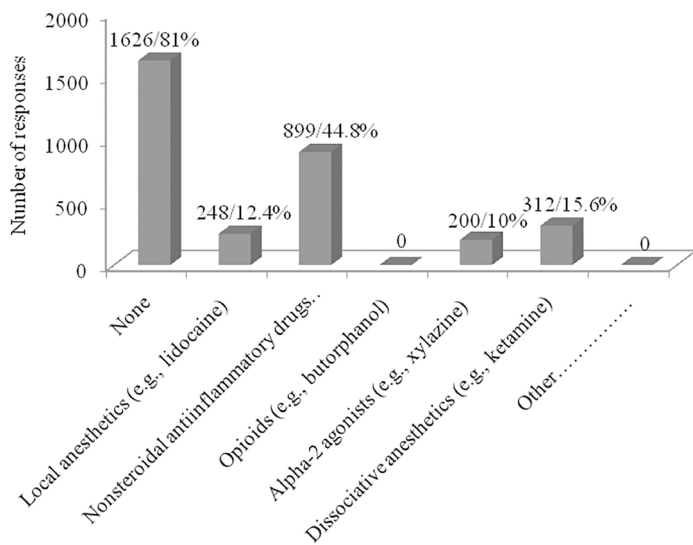


Figure 2: Overall number and percentage of responses to the question “How many analgesic drugs you use routinely in your large animal practice?”

Figure 3 reports the results to the question “How frequently do you use analgesic drugs in your large animal practice?” Over 80% of responders reported never using analgesic drugs in managing farm animals. There were no statistical differences in the responses between males and females or among the age groups. In contrast, a significant difference was noted between veterinarians and farmers for the “weekly” response where farmers used fewer analgesic drugs on a weekly basis.

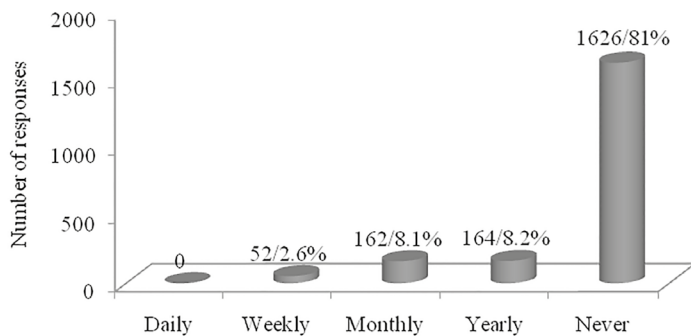


Figure 3: Overall number and percentage of responses to the question “How frequently you use analgesic drugs in your large animal practice?”

Figure 4 shows the responses concerning pain listed in the survey and the proportion of respondents who most resonate with each of these. For this question, some respondents chose multiple answers and a few did not select any. The most commonly selected responses were “Pain relief drugs are too ex-

pensive for farmers to use regularly” and “It is difficult to recognise pain in farm animals” for both farmers and veterinarians. Other commonly selected responses for veterinarians were (in descending order) “There aren’t enough pain relief drugs available to use on farm animals with painful conditions”; “I feel I know enough about pain and how to treat pain in farm animals” and “Farm animals are not as sensitive to pain as humans”. Farmers selected (in descending order) “Farm animals are not as sensitive to pain as humans”; “There aren’t enough pain relief drugs available to use on farm animals with painful conditions” and “I feel I know enough about pain and how to treat pain in farm animals”. No veterinarians or farmers selected the last two responses (“Farm animals recover better with pain relief” or “I regularly discuss pain and pain relief options with farmers (vets) or my veterinary doctor (farmer)”). No significant difference was found between male and females in either the farmer or veterinarian categories.

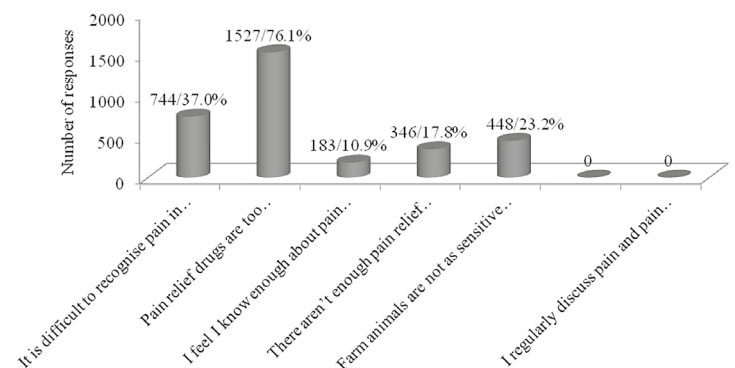


Figure 4: Overall number and percentage of responses in agreement with statements concerning pain.

Figure 5 reports the results of the question “Please score the pain for the following 7 conditions”. None of the conditions evoked the maximum pain score from respondents. A broken leg and normal farrowing were scored as the most and least painful conditions, respectively. Farmers were found to rate all the conditions as less painful compared to veterinarians but no significant difference was found between males and females.

Figure 6 reports the results to the question “score the pain (0 no pain – 10 most severe pain) for the following procedure performed without analgesics”. None of these procedures other than caesarean sections were considered to produce severe pain. A significant difference between perceptions of veterinarians and farmers was found for almost all the listed

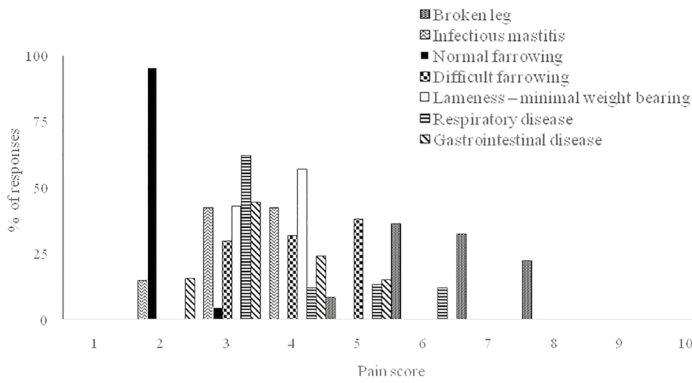


Figure 5: Percentage of responses to “score 7 painful conditions” (0 no pain – 10 most severe pain).

procedures (veterinarians considered the procedures as more painful than farmers) excluding tail docking and dehorning.

Figure 7 shows the response to the question “Which behavioural and physiological indicators best represent a painful condition?”. Although the questionnaire explicitly required respondents to indicate the 3 most important indicators of a painful condition, a number of responders did not select any indicators while some just gave a single response. Both veterinarians and farmers most commonly selected “vocalization” and “self isolation” as indicators suggesting the greatest pain. The three indicators commonly selected as suggesting pain of a slightly lesser degree were “vocalization”, “self isolation” and “eyes appearing glassy or red”. There was wide variation in the indicator selected as reflecting pain of a further reduced intensity.

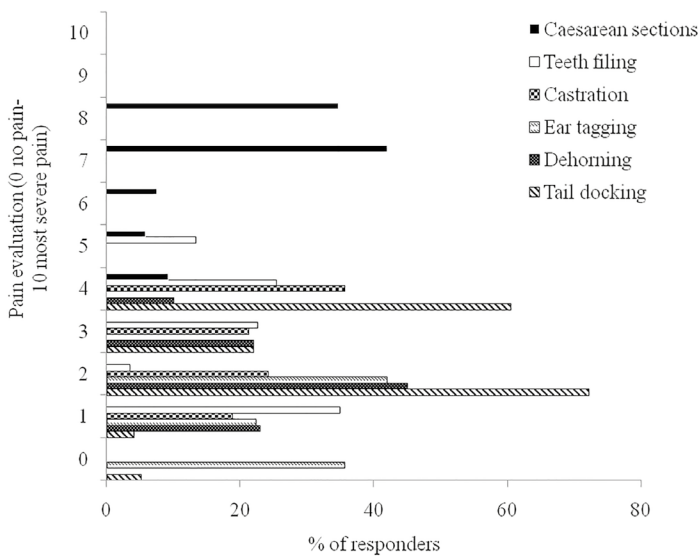


Figure 6: Percentage of responses to “score procedures performed without painful conditions” (0 no pain – 10 most severe pain).

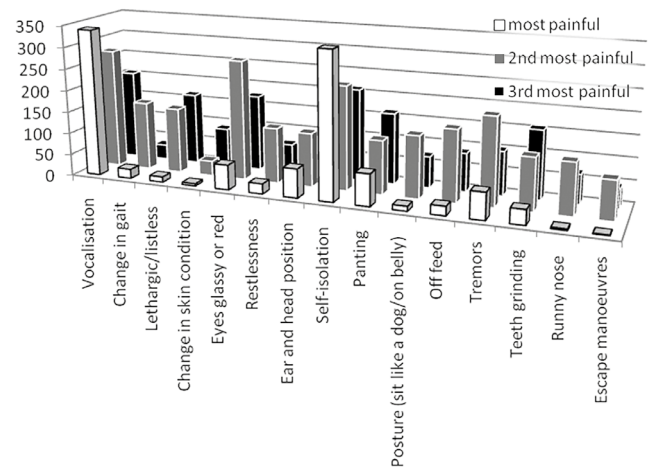


Figure 7: Number of responses to the question “Which behavioural and physiological indicators best represent a painful condition?”

DISCUSSION

This survey was designed to assess the attitudes of veterinarians and farmers to pain and the use of analgesics in farm animals in Kazakhstan. It is unfortunate that no other studies concerning the attitudes of veterinarians and farmers to production animal pain in developing countries are available for comparison. Hence it is only possible to compare these results with those of developed countries which is likely to generate some bias in the discussion.

In addition, it should be noted that the survey was performed in Kazakhstan but the data sets were processed in Italy. Hence, it is inevitable that these results would have been interpreted within a European paradigm to a degree and the conclusions may not be directly relevant for Kazakhstan or other developing countries. The way of perceiving, expressing, and controlling pain is a learned behavior that, when manifested, is culture-specific (17). Hence the results of this study might be interpreted differently by and from other cultural groups.

The apparent response rate was 66.6%. This is a high response rate compared to previous studies (14, 16). However, this survey was not specific for a single species while some previous surveys have been. In addition, it was sent via two different media of communication which might have resulted in an overestimation of the response rate if respondents completely both surveys. The degree of bias, if any, is difficult to assess; however, the demographic data show that there was a wide range of respondents including both veterinarians and farmers, of various age groups and both sexes, involved with

a variety of animal species. The average number of animals on the relevant farms is unknown and the potential influence of this parameter on the questionnaire is obscure. Indeed owners of smaller herds might feel more attached to individual animals and therefore more likely to provide pain relief.

The use of analgesic agents for the conditions and procedures considered in the survey was widespread, although there were wide variations in the agents used. It may appear surprising that opioid drugs were not included as an analgesic remedy. However, opioids have very strict regulation in Kazakhstan and their use is allowed only for humans. No opioid drug for veterinary applications is on the market and their extra label use is prohibited.

Another impressive finding was that most of the respondents claimed to never use analgesic drugs for farm animals (80%). This is in conflict with other studies, for example only 15% of respondents did not use anti-inflammatory drugs for breeding pigs in the UK (15). The most commonly used class of analgesic was NSAIDs which probably represent a balance between cost, availability, efficacy, pharmaceutical form, withdrawal period and other factors. This is in agreement with former studies (10,15). Additional, more specific questions should be asked in subsequent surveys to better evaluate analgesic use in farm animals.

Only a few veterinarians (8.9%) and a negligible proportion of farmers (0.6%) evaluated themselves as knowing enough about pain. This fits well with the high argument rate to the point that "it is difficult to recognize pain in farm animals", and with the absence of respondents claiming to be involved in regular discussions about pain between veterinarians and farmers and with the misconception that farm animals do not recover better with pain relief. This likely indicates that further education concerning pain would be of benefit to veterinarians and farmers. The highest response rate regarding the cost of analgesic drugs was expected because this finding is in full agreement with other surveys (2).

Concerning pain evaluation, it is noteworthy that almost all the painful conditions listed in the survey were not considered to produce severe pain. Despite farmers generally having scored some conditions as less painful than veterinar-

ians, the total acknowledgement of pain is low compared to similar studies. A previous report on pigs reported that pain scores did not differ between farmers and veterinarians (15). However, it should be noted that the present study accounts for pain evaluation in different animals species (horse, dairy and beef cows, pigs, sheep, and camels), while the others previously reported in the literature consider pain evaluation only in a single animal species. The results of the pain scoring in the present survey match well with the results of question 3 (Figure 4), showing that a sound understanding of pain evaluation and pain relief is lacking in both Kazakhstan veterinarians and farmers.

In conclusion, although the results of this questionnaire might not be fully representative of the situation in Kazakhstan, analgesic use for farm animals by Kazakhstani veterinarians and farmers seems to be infrequent. This research also highlights potential barriers to the increased use of pain relief for farm animals, identifying lack of up-to-date knowledge, poor communication between farmers and veterinarians and the fact that many respondents gave low scores for painful conditions, indicating a poor awareness of pain in farm animals. Understanding the attitudes of farmers and veterinarians to pain and pain management could help target future education, training and research strategies in this area. More efforts to increase the level of knowledge about pain among veterinary students, licensed veterinarians and farmers should be undertaken in this country.

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CONFLICT OF INTEREST STATEMENT

None of the authors has any financial or personal relationships that could inappropriately influence or bias the content of the paper.

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