Strategies for improving the welfare of working equids in the Americas: a Chilean example

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Summary
In the past, the use of animals for transport and traction has been of economic importance all over the world, and this is still the case in certain areas of the world today, especially in rural and peri-urban areas of developing and transition countries. In Chile, for example, thousands of families rely on draught animal power as a fundamental source of income. This provides an opportunity to generate scientific information to increase understanding of the relationship between human well-being and that of domestic animals. Minimising the risks associated with poor draught animal welfare should be beneficial for this relationship. Given the important role of working equids as a source of wealth, in Chile and similar countries, different strategies have been implemented to address the health and welfare of these animals. For these strategies to be successful it is essential to establish appropriate government policies as well as to consider the cultural, political and geographical situation of the regions in which these equids work.

Keywords

Introduction

The mandate of the World Organisation for Animal Health (OIE) has been guiding the animal welfare activities of the organisation since welfare was identified as a priority in the early 2000s. At present, the OIE Terrestrial Animal Health Code (Terrestrial Code) (1) and the Aquatic Animal Health Code (Aquatic Code) (2) contain twelve animal welfare standards. These cover the welfare of production animals, the use of animals in education and research, the control of stray dog populations and the welfare of farmed fish.

The implementation of these standards has become a major focus of the OIE, official Veterinary Services, researchers, non-governmental organisations and other stakeholders since their adoption in the animal welfare chapters of the Terrestrial and Aquatic Codes. As stated in the recently adopted OIE Regional Animal Welfare Strategy for the Americas, although many improvements in animal welfare have been achieved to date, in relevant areas the OIE will continue to develop standards for animal welfare in the region (3). One of these areas will be the welfare of working animals (4).

In many underdeveloped and transition countries, draught animals, particularly equids, make a significant contribution to the economic development of small-scale farms and entrepreneurial businesses in urban areas. Underestimating the social and economic impact of the relationship between working animals and their owners may therefore increase the impoverishment of an important sector of some countries.

Currently, most of the estimated 100 million working horses, donkeys and mules in developing countries are used to transport goods by pack or on carts, are ridden, or are used in agriculture or for ceremonial purposes (5, 6). Chile has a small number of equids, according to a survey performed by the National Statistics Institute (INE) (7), but the role that these animals play within the population is unknown because the INE survey did not include information on the function, breed or type of these animals. For urban draught horses the lack of information is even greater. Such horses were not included in the INE survey because they are housed within the urban and peri-urban perimeters, and the survey of animals undertaken by INE applied only to rural areas.
Working animals provide more than 50% of the world's agricultural energy for traction, whereas the internal combustion engine provides less than 30%, and the rest is provided by the physical effort of people (8). Moreover, draught animal power was included as one of the 14 sources of renewable energy by the United Nations Conference on New and Renewable Sources of Energy held in Nairobi in 1981 (9). Equine power is most commonly used in poorer communities, and therefore the animals are generally undernourished, have limited access to water, and receive relatively little husbandry or veterinary attention (6). Consequently, reports of skin wounds, poor body condition, respiratory diseases, high parasite burdens, lameness, dental problems and gastrointestinal illness in these animals are common (10, 11, 12, 13). All of these problems contribute directly to a poor welfare state.

In 2009 an Animal Protection Law (Ley N° 20.380) was approved in Chile by the Congress (14). The law makes no reference to working animals and has excluded all equestrian sports through article number 16, so that working horses are outside the compass of the law. However, the Animal Protection Law modified the Criminal Code by introducing the crime of animal cruelty or abuse, which is punishable by fines or imprisonment. Only these provisions of the Criminal Code can be applied to the protection of working horses, and only after an act of cruelty has been committed.

In 2011, working animals became the focus of a meeting of the Food and Agriculture Organization (FAO) held in Rome. The meeting was preceded by an online consultation in which over 40 participants from different countries contributed to the discussion and over 70 documents on working animals were shared (15).

The main themes addressed during the meeting (15) were related to:

– the current state of knowledge on the worldwide contribution of working animals to people's livelihoods, via food security, poverty alleviation, income generation, access to services, gender equity and other aspects
– existing standards and guidelines, case studies and best practices addressing working animal health and welfare
– policies, legislation and further actions at national and international level.

Contribution of working animals to livelihoods

The impact of urban working equids on the livelihoods of thousands of families in Chile has not been studied in detail. It is known that the attitude and behaviour of handlers towards the animals in their care are significant factors that affect animal welfare and productivity. The attitudes of people towards animals probably develop from incidental observations, tradition, and cultural background (16, 17). As far as the authors are aware, it has not been ascertained whether these attitudes are also related to the quality of life and resultant well-being of the animal handlers.

The generation of this information is essential in order to understand links between problems of animal welfare and human well-being. This knowledge could also be used in the development of guidelines that would help to improve the welfare of draught animals and their owners. The challenge of obtaining accurate population statistics for working animals, and of assessing their economic value to a country, has been identified by the FAO as an issue that needs to be addressed. In particular, it is important to clarify why (15):

– the contribution of working animals is generally not clear to governments
– governments rarely include working animals in their statistics
– governments do not recognise the added value such animals bring to a country in economic and social terms.

According to Swann (18), most owners of working equids located in Asia, Africa and Latin America earn less than US$1 per person in the family per day, which falls within the international definition of poverty. Given that thousands of families that cannot access other types of work are economically dependent on working animals, local governments should encourage training programmes for owners in order to establish working practices that comply with welfare standards and the protection of working animals. These changes in practice must be supported by evidence from risk assessment studies (18) in order to set up useful intervention strategies.

Socio-economic implications of draught animal power

A first attempt at understanding the economic impact of working horses on agriculture in Chile was made by Ramírez (19), who concluded that the animals help to decrease liquidity risk, decrease operational risk and increase patrimony. Studies of the economic impact and costs of working equids compared with motorised vehicles have been undertaken in some Latin American countries such as Colombia, Mexico and Guatemala (20, 21, 22, 23). All these studies were focused on the rural areas of these countries. The main methodology adopted consisted
of estimating the maintenance costs involved in owning a horse and the costs of alternatives, such as renting animals or using mechanised equipment, which has attendant fuel costs.

The construction of new highways in the main cities and other urban areas in Chile is making it more difficult for horses to travel and work, because they are prevented from using the roads and their access to some places is limited. Nevertheless, urban draught horses continue to be the main source of income for many families in urban and peri-urban areas of Chile.

Therefore, an effect of the urbanisation process has been the creation of isolated clusters of working horses in areas with poor access to basic services. Most of the people working with horses in these areas either have a rural background, and have migrated to the cities in search of better opportunities, or do not possess the qualifications necessary to obtain a better job. The same situation pertains in other countries, because the owners of the majority of working animals use them as their sole means of income to sustain their families, which are often large and extended (11). In addition, increasing fuel prices during the last ten years have hit impoverished people especially hard, and this has led significant numbers of urban workers to switch from motorised vehicles to equine-powered carts, as has happened, for example, in India and Pakistan (24). This occurs especially in developing countries, where working animals are still essential, often representing the only income source for their owners (25), and where, for example, draught horses located in peri-urban areas may still represent the most economically viable option for motive power (26) (Fig. 1).

By 1994, an estimated 20 million carts worldwide were being pulled by animal traction (27). In comparison with motorised vehicles, the potential usefulness of animal traction is often underestimated, especially for work that involves transport over short and medium distances. When draught horses are present as a local resource, communities should favour their use in an effort to implement sustainable production systems, provided that husbandry practices are adequate (26). A recent study used a developing country (Indonesia) model of ruminant draught animal power (DAP) to compare its environmental impact with that of tractor power, and found that DAP can be considered a valid system in marginal areas (9).

Access to veterinary services for draught horses in Chile varies across the country. For example, in Valdivia, in the Region of Los Ríos, the Universidad Austral de Chile has been providing free services since 1997; however, in the neighbouring province of Los Lagos, notably in the cities of Osorno and Puerto Montt, veterinary services for urban

draught horses were almost non-existent until relatively recently. The services of farriers are unaffordable for most owners, which results in a high percentage of horses working lame, with poor hoof conformation or with inadequate shoes (12, 13). As well as causing suffering to the animals, this results in a decrease in working efficiency and in income for the owning families. Reduced working efficiency also results from overloading of carts, excessive working hours and poor feeding practices.

Fig. 1
Draught horses and their owners in Chile
A rise in fuel prices has led significant numbers of urban workers to switch from motorised vehicles to equine-powered carts.
In relation to gender equality, there is little information in Chile on the male-to-female ratio among the owners of working equines, or on the role of different genders in the husbandry practices associated with ownership of working horses. There is also little information on the roles of children within the family in the maintenance of these horses.

According to Herzog (28), women, on average, show higher levels of positive attitudes and behaviours towards animals. For example, women exhibit compassionate attitudes towards animal use and greater involvement in animal protection, whereas men typically have higher levels of negative attitudes and behaviours, for example with regard to hunting and animal abuse, and have less favourable attitudes towards animal protection. This gender effect could directly influence the welfare of working horses. Preliminary results in Chile show that, although virtually all urban draught horses are being worked by men, women and, especially, children seem to have an important role in their care at home (Tadich, preliminary results). Some other socio-economic characteristics of owners are shown in Box 1 (29).

Strategies addressing the health and welfare of working equids

Animal welfare can be considered in relation to ethical and social values and norms. These take into account not only the physical harm that may be done to animals, but also views on the acceptability or otherwise of particular husbandry systems and practices. In general, the way we treat animals is a reflection of our relationship with them and the environment (30, 31). Clearly, the welfare state of an animal is heavily influenced by its health. However, as pointed out by Duncan and Fraser (30), animal welfare has come to be conceived of in three major ways:

- the first emphasises the animal's subjective experiences, for example, its experiences of pleasure and pain, i.e. its affective state
- the second focuses on the normal biological functioning of the animal
- the third highlights the naturalness of the environment for the species, including opportunities for the animal to display important components of its behavioural repertoire.

Most strategies for assessing animal welfare should incorporate all these aspects. They should also include a wide range of direct and indirect indicators of welfare (32, 33). Direct animal-based assessments employ behavioural, physiological and health parameters (32). Indirect resource-based assessments focus on the adequacy of husbandry practices, shelter, space allowances, nutrition, and how companionship and the comfort of the animals are provided for (32, 34). Thorough welfare assessments should therefore evaluate the animals in the context of their environment and their interactions with it (35).

Welfare assessment of working equids

The welfare status of working equids has been variously assessed according to species (horses, donkeys or mules), type of work (pack, ridden, draught) or geographical context (rural or urban). Pritchard et al. (11) used mainly animal-based observations to record physical and behavioural indicators of welfare, and provided information on 4,903 equids that were ridden, used as pack animals, or used for draught work in Afghanistan, India, Egypt, Jordan and Pakistan. They successfully identified some of the main welfare problems by using animal-based indicators in their protocol, but did not necessarily consider the major problems in the context of community, cultural and country differences. The authors reported that many animals were unresponsive to external events and were described as apathetic, and there was a significant correlation between apathetic animals and skin wounds, traditionally attributed to poorly fitting harnessing systems.

A similar animal-based welfare-assessment strategy was applied to working horses in Chile, but some elements were modified to allow for local circumstances (12). For example, the animals observed were only used for draught work and not as pack animals, and no mules or donkeys were assessed because they were difficult to find. Indirect
indicators based upon the resources provided to the animals and the husbandry practices used were also included (12). The welfare state of the horses in this study was generally good, and the welfare problems that did exist differed from those reported by Pritchard et al. (11); they were related more to the accessibility of service providers such as veterinarians and farriers, and other costly services.

A similar welfare-assessment strategy was applied in a rural region of Romania (25), but it included observation of the behavioural responses of the horses to their owners and not only to an observer, as in previous studies (11, 12). Significant differences were found in how the horses responded to their owners compared with an unknown observer. Horses showed higher aggressive or friendly responses towards the unknown observer, while indifference was the most common response towards their owners. These findings should be considered when interpreting behavioural responses in future welfare studies.

**Provision of free clinical services**

The provision of free clinics has been used as a strategy to address welfare problems in working horses. This is time-consuming and expensive. In Chile, such a clinic has been provided by the Veterinary Faculty of the Universidad Austral de Chile since 1997, where volunteer veterinarians and students provide services on a weekly basis. The main aim is to ensure an appropriate level of health in working horses and to prevent some forms of pathology. The clinic does not necessarily address other aspects of welfare, such as the mental state and behaviour of the animals, nor does it provide education for owners.

Sáez et al. (36) reviewed 1,132 clinical records provided by this clinic. They revealed that most horses did not have draught-type morphological characteristics, and that the most common health afflictions involved the integumentary, locomotor and respiratory systems. The authors concluded that the effective operation, revision and re-design of such extension programmes depend critically on an understanding of good husbandry practices and the constraints and advantages of animal power (36). They also concluded that the ethos of the clinic should move from its present focus on provision of free first aid to include educational and preventative programmes (36).

**Focused research projects**

Research projects have also been developed as a means of improving the welfare of working horses in Chile. In 2010, a project on pain management during castration was implemented in such a way as to provide free castration for working horses (37). A preference for the use of geldings for urban draught work in the south of Chile has been reported (12). Given that most gelding operations are conducted by animal owners, the castration project was an attempt to halt this practice and aimed to help owners to understand the risks to their horses when castration was performed by someone other than a veterinarian.

Another research project, also undertaken in 2010, was a study on the diagnosis of the most frequent pathological conditions related to lameness in working horses. Menarim (13) reported a lameness prevalence of 36% among a population of 166 working horses in the south of Chile. As this was mostly severe lameness and chronic in nature, it provided evidence of the inadequate welfare conditions under which these horses were working.

The high prevalence of lameness in working horses in Chile may be partly due to a lack of professional farriers at affordable prices, and partly due to the fact that fewer than 50% of urban draught horses comply with the morphological characteristics of a draught-type horse (38). Shoeing would not be a problem if owners had a proper understanding of hoof balance and care, or if they could access professional farriers with this knowledge (12). However, in many cases, such knowledge is absent, and adverse consequences for equine welfare result from inadequate horseshoes being made with poor-quality materials (Fig. 2).

Currently, a three-year research study funded by the Chilean government is being conducted in order to develop reference blood parameters relevant to the health status of working horses, and to assess links between welfare problems and the social, economic and educational background of horse owners in Chile. Such information can provide a framework upon which to establish adequate strategies to improve not only the welfare of horses but also that of the families they support. In addition, it should help to establish local policies related to good husbandry practices and appropriate use of animal power (29). Although such research projects provide important information, thus aiding the implementation of new strategies, their disadvantage is that they depend upon funding being available.

**Participatory action tools for animal welfare**

An interesting strategy for addressing the welfare of working equids was reported by Pritchard et al. (39). Through the British charity The Brooke, adapted participatory rural appraisal exercises known as ‘participatory action tools for animal welfare’ (40) were applied in India in order to help village-level groups produce a list of welfare issues affecting their animals. The agreed scoring systems were later applied in each village by implementing a strategy of positive competition between owners. This involved groups of people, accompanied by a facilitator, walking from house to house through the village and collectively assessing the welfare of all animals using the agreed list of welfare indicators.
The system allowed discussions among participants about the inputs and outcomes of the findings. Although The Brooke did not reward ‘winners’, for most groups the reward was an elevated status within the village or pride in their winning animals (39). According to the authors, the competitive approach to welfare improvement also strengthened the social cohesion of the groups, which in turn improved knowledge-sharing and peer-encouragement and increased members’ negotiating power with suppliers of equine-related services and resources (39). In Chile, most owners of working horses are located in peri-urban areas of large cities such as Santiago (the capital), where little or no sense of community exists and therefore, in order to implement this kind of strategy, work needs to be conducted on social interactions between owners.

Concluding remarks

Constraints such as poverty and lack of knowledge mean that animal welfare is compromised internationally. When working equids can no longer work, their owners lose their livelihood, either temporarily or permanently. The welfare of working equids in developing countries is therefore crucially important, not only for the health and survival of the animals, but also for the livelihood of the people who depend on them (8, 41). Thus the importance of gathering enough scientific information must not be underestimated, including information on risk factors for poor equine welfare, to aid in understanding the intricate links between human welfare and that of their equids. This must be followed by the development of appropriate policies. At the same time, it is important to understand that different geographical, cultural and political contexts require different strategies for addressing animal welfare issues, because the type of animals, the socio-economic condition of stakeholders, the resources available for animals and the priorities of different countries are not uniform.

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Stratégies d’amélioration du bien-être des équidés de travail dans les Amériques : l’exemple du Chili

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Résumé
L’utilisation des animaux pour le transport et le trait a joué par le passé un rôle économique majeur dans le monde entier ; cela reste le cas dans certaines régions, notamment les zones rurales et périurbaines des pays en développement et en transition. Au Chili, par exemple, des milliers de foyers dépendent de l’énergie fournie par les animaux de trait, qui constituent leur principale source de revenus. Cet état de choses appelle à rechercher des informations scientifiques permettant de mieux connaître les relations entre le bien-être de l’homme et celui des animaux domestiques. La réduction des risques imputables à un niveau médiocre de bien-être chez les animaux de trait devrait permettre d’améliorer cette relation. Compte tenu de l’importance des équidés de travail en tant que source de richesse, le Chili et d’autres pays de même profil ont élaboré diverses stratégies pour améliorer la santé et le bien-être de ces animaux. La mise en place de politiques publiques est indispensable à la réussite de ces stratégies, parallèlement à une prise en compte de la situation culturelle, politique et géographique des régions où travaillent les équidés.

Mots-clés

Estrategias para mejorar el bienestar de los équidos de trabajo en las Américas: el ejemplo de Chile

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Resumen
En el pasado, el uso de animales con fines de transporte o tracción revestía gran importancia económica en todo el mundo, lo que aún sigue siendo el caso en ciertas áreas del planeta, especialmente las zonas rurales y periurbanas de países en desarrollo o en transición. En Chile, por ejemplo, miles de familias dependen de la fuerza de tracción animal para obtener el grueso de sus ingresos. Ello brinda la oportunidad de generar información científica que sirva para entender mejor la relación entre el bienestar de las personas y el de los animales domésticos. El hecho de reducir al mínimo los riesgos ligados a un escaso nivel de bienestar de los animales de tiro debería resultar beneficioso para dicha relación. Dada la importante función que cumplen los équidos de trabajo como fuente de riqueza, en Chile y países similares se han instituido diversas estrategias relativas a la salud y el bienestar de esos animales. Para que tales estrategias tengan éxito es indispensable instaurar políticas públicas adecuadas, así como tener en cuenta la situación cultural, política y geográfica de las regiones en las que esos équidos trabajan.

Palabras clave
Américas – Animal de trabajo – Bienestar animal – Caballo – Chile – Équido – Fuerza de tracción animal.
References


