

Essential veterinary education in the welfare of food production animals

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Summary

The primary responsibility of veterinarians is to the animals in their care, so veterinary students need to be aware of important issues and factual information relevant to animal welfare. Veterinarians have tended to concentrate on physical aspects of welfare, but also need to take account of mental aspects (including pain) and naturalness. A crucial first step in animal welfare education is to encourage students to examine the interactions between welfare science, ethics and policy. Scientific measures of welfare include physiological, immunological, behavioural, disease and productivity. Welfare ethics includes consideration of different ethical theories and of professional ethics. Understanding of policy involves awareness of legislation, codes of practice and farm assurance programmes. As well as utilising their education in their clinical practice, veterinarians may expect to have an important role in influencing policy and standards in the wider world. It is recommended that animal welfare should be taught as a clearly defined academic subject within the curriculum.

Keywords

Behaviour – Ethics – Five freedoms – Health – Immunology – Legislation – Pain – Physiology – Policy – Suffering – Welfare.

Introduction

There have always been people who have shown concern for non-human animals, but over the last two centuries, particularly in the last 50 years, the number of people paying attention to animal welfare issues has increased in many countries. Similarly, diagnosis and treatment of injury and disease, and their prevention, have developed over centuries into veterinary science, which is fundamental to safeguarding some very important aspects of animal welfare (or well-being; these terms are treated here as synonyms). This development of veterinary knowledge and techniques has perhaps been strongest historically in food production animals, because of their nutritional and commercial importance, but it is precisely because of this importance that a broader approach to animal welfare is now needed. In companion animals the interests of the owner, veterinarian and animal all

concern the health and welfare of the individual animal. In food animals, by contrast, these interests do overlap (animal health is beneficial to all of them) but not completely, because the farmer's income is dependent on production of the group, not the individual. An animal that is healthy and productive enough to contribute to that income may nevertheless have problems both in health and in other aspects of welfare.

Understanding of the consequences of these problems is growing. Health problems that are not severe enough for the farmer to address cost-effectively, in a short-term, local context, may have negative effects in the long-term and/or wider context – for example, reducing longevity of the stock, spreading diseases to other farms or other countries, or damaging public health. Problems in other aspects of welfare (such as behavioural restriction leading to stress) also affect health. This is the basis for the World Organisation for Animal Health (OIE) remit to address

animal welfare (15). Such problems are also associated with other impacts of farming, notably its environmental impact. Thus, choice of housing and management systems (e.g. grazing versus intensive housing) affects both the welfare of the animals and the incidence of air and water pollution. All these issues are matters of public concern, and therefore have an increasing economic impact. In developed countries, such as in Europe, North America and Australasia, they have led to niche markets for organic and high-welfare animal products. Developing countries are increasingly taking advantage of these markets as a commercial opportunity (4). Furthermore, all countries need to address these issues to achieve sustainability of their livestock agriculture and sustainable treatment of other animals, including wildlife. Animal welfare is an important consideration for developing countries (13) as well as developed countries.

Veterinarians need to be educated in animal welfare because despite the complex conflicts of interest mentioned above, their primary responsibility is to the animals in their care. Whether acting as clinicians or policy advisers, they have a special role to play as 'animal advocates', while taking into account the considerations of owners, animal industries and governments. This requires knowledge of the welfare impact of different husbandry and clinical practices and an ability to analyse logically the human interests involved. The importance of animal welfare in the veterinary curriculum has been widely recognised and has been adopted as a theme by the *Journal of Veterinary Medical Education* (9). Detailed suggestions for a potential syllabus and teaching methods have been made elsewhere (10, 14). Here, the authors outline the requirements for teaching the basics of animal welfare concepts, and then the three essential approaches to animal welfare: science, ethics and policy. First, though, as with any education, it is appropriate to consider the desired outcomes.

Educational outcomes

A veterinary education in animal welfare would not be expected to be polemic: it should not challenge in a confrontational manner common practices in animal production or other areas of animal use. Such an approach might well raise objections from other veterinary teachers and representatives of the agricultural industry. A sensible approach, by contrast, would be that the welfare education should provide veterinary students with the basic skills and understanding to be able to analyse the actions of themselves and others. This will at least enable them to act in accordance with the relevant legal standards in each country. Furthermore, it is important to consider whether the goal of such education should be to change the attitudes and behaviours of veterinary students. In view

of the fact that animal welfare is becoming an increasingly important factor in many livestock issues, it does seem appropriate to encourage students to pay closer attention to the welfare of animals, perhaps especially food production animals. Analysis of outcomes will be covered below.

Basic welfare concepts

Animal welfare is a multidisciplinary subject as it encompasses scientific approaches for assessing welfare, philosophical issues governing human behaviour towards animals, and the policy methods (including legislation) available for defining minimum standards or promoting improvements in welfare. A crucial first step in welfare education is, therefore, to encourage students to examine the interactions between welfare science, ethics and policy. For example, when considering a surgical mutilation of an animal, such as castration in lambs, veterinary students can be encouraged to consider the following questions:

- What is the welfare impact of the husbandry procedure and of the possible alternatives? (welfare science)
- What is the moral justification for this procedure and its impact on the various stakeholders? (welfare ethics)
- What legal controls or other intervention strategies can be used to limit the welfare compromise associated with this procedure? (welfare policy)

Veterinary students also need to be aware of important debates as well as factual information available in this discipline. A key aspect that needs to be discussed is the various concepts and definitions that have been used within animal welfare. A useful approach here is to recognise the three overlapping concepts of physical attributes, mental attributes and naturalness (7). These may be characterised as emphasising animal bodies, animal minds and animal natures respectively (1). They are complementary to some extent, but may sometimes be contradictory: keeping an animal outdoors is more natural but may cause it to feel hot or cold and limit its growth. Most welfare definitions tend to focus on one or more of these concepts. Veterinarians have in the past tended to concentrate on physical aspects of welfare, but need to take account of other opinions that emphasise mental aspects (including pain and other negative states) and naturalness. Some frameworks such as the Five Freedoms established by the Farm Animal Welfare Council in the United Kingdom (8) seem to have become widely used because they draw on all three concepts: physical (freedom from injury and disease), mental (freedom from hunger, thirst, discomfort, pain, fear and distress) and natural (freedom to express normal behaviour).

Animal welfare education: three essential components

Welfare science

Over the last few decades there has been a significant increase in the application of scientific methods to the assessment of welfare. Science has been particularly useful for evaluating the impact of husbandry systems and procedures on an animal's welfare state. In addition to quantification of welfare compromises, scientific approaches can be used to evaluate possible solutions within either an experimental or more applied context. As an animal's welfare may be influenced by many factors, welfare assessment normally requires concurrent assessment of several measures (11). These measures would include physiological, immunological, disease, physical fitness, productivity and behavioural indicators (Box 1).

Box 1

Generally used measures of welfare

- Physiological indicators of pleasure
- Behavioural indicators of pleasure
- Extent to which strongly preferred behaviours can be shown
- Variety of normal behaviours shown or suppressed
- Extent to which normal physiological processes and anatomical development are possible
- Extent of behavioural aversion shown
- Physiological attempts to cope
- Immunosuppression
- Disease prevalence
- Behavioural attempts to cope
- Behaviour pathology
- Brain changes, e.g. those indicating self-narcotisation
- Body damage prevalence
- Reduced ability to grow or breed
- Reduced life expectancy

Source: Broom (5)

An understanding of animal behaviour is essential in animal welfare science. For example, the presence of abnormal behaviours (such as repetitive or stereotypic behaviour) can indicate present or previous welfare problems. An assessment of behaviour in both experimental and commercial systems can also provide information on the preferences of animals. In particular it can yield information on the motivation of an animal to be provided with a certain resource. As well as understanding the various parameters available, veterinary students should also be encouraged to interpret the welfare science,

which would include discussion of why some measurements are more meaningful than others.

Observing and understanding behaviour has been particularly important in comparing the welfare impacts of intensive or confinement husbandry systems with more extensive systems. For example, when pregnant sows are kept in crates or on tethers, they are prevented from showing much of their normal behaviour such as foraging, and they frequently show stereotypic behaviour such as biting the bars. Evidence suggests that the stereotypes arise from frustration of motivations such as that for foraging, and demonstrate either that the sows are stressed at the time or that they were stressed during the early period of confinement. Sows in groups, though, often fight – which is a 'normal behaviour', but one that reduces welfare at least for the losers. So both systems have advantages and disadvantages. However, behavioural studies have also demonstrated ways of reducing aggression in groups, such as providing barriers behind which sows can escape, whereas welfare problems in confinement are more intrinsic to the system (2). Familiarity with the behaviour of farm animal species and with the principles and practice of behavioural studies will enable veterinary students to recognise welfare problems and to suggest either solutions or studies that might identify such solutions.

Welfare ethics

Welfare ethics concerns an examination of the morality of human actions towards animals. Ethics can be descriptive (explaining why we do what we do, or 'what is') or normative (formulating frameworks or rules to guide future actions, or 'what ought to be'). Ethical theories attempt to explain the reasoning behind our moral thinking and why actions are considered right or wrong. The major philosophical theories taught might include utilitarianism (and its branches), deontology (including rights-based theories) and virtue (character) ethics. In addition, there should be examination of value systems, values and value judgements, as well as of how to understand alternative views, conflict resolution and decision-making processes. There should be a review of current frameworks for applying ethics, with particular reference to frameworks that focus on animal use, such as the Three Rs of animal experimentation (Reduce, Replace, Refine) and the Five Freedoms. Ethics in veterinary medicine can also be compared to ethics in other professions, particularly healthcare ethics (medical ethics, nursing ethics, etc.). The role of professional ethics or etiquette, which concerns the relationship between veterinary surgeons and other members of their profession, their clients and their patients, is also important.

Welfare policy

The output of scientific investigations and ethical analysis may be the formulation of standards in the form of legislation, codes of practice, or increasingly for farm animals the retailer/farm assurance requirements. Law would include the principal national and international (e.g. European Union) legislation as it relates directly to animal welfare. Other laws that relate to animal use and reflect society's view of animals (for example, pets as property, protected species and wild animals) should also be examined. In addition, the inconsistencies in legislation should be considered, for example, the existence of different laws for different species and different laws for the same species undergoing different uses. Analysis of the role and impact of international law on animal welfare should also be included.

Application to clinical practice

Armed with an understanding of welfare science, ethics and policy, veterinary students should then be encouraged to apply such principles to clinical practice. For example, clinical decision-making in veterinary practice requires understanding of the associated welfare implications, ethical dilemmas and legal consequences. It is important that students see for themselves the ethical problems faced by others involved with animal care and use. During the veterinary degree programme, students should be visiting different husbandry systems and observing different types of clinical practice. It is important to encourage them to reflect on these activities. Components of student reports should include reference to the welfare strengths and weaknesses of the system. This analysis is as relevant to the treatment of individual companion animals as to intensive farming systems.

Analysis of outcomes

It was suggested above that a goal of education in animal welfare may be to change the attitudes and behaviours of veterinary students towards the welfare of animals in their care. Arguably of even greater importance is their longer-term role as future policy-makers and opinion formers. Unlike almost any other student groups, undergraduate veterinary surgeons in all countries may expect to have, or should be motivated to have, an important role in influencing both policy and animal welfare standards in whatever field of veterinary practice they later work in. So how much impact does education have upon attitudes towards animals?

In the absence of specific education on animal welfare, studies in both Britain and Australia have found that many

veterinary students perceive their education as a rite of passage from 'tender-minded' pet owner to 'tough-minded' clinician (3). In particular, students appear to reduce their beliefs about the sentience of animals (their capability to have feelings of pain, fear, etc.) and their empathic reactions to animals in distress (12). Although this process of apparently hardening one's attitudes towards animals may help some students to cope with the emotional and ethical challenges of veterinary work, it may also threaten the welfare of animals in their care.

A project is under way to evaluate the effects on such attitudes of one educational programme by the World Society for the Protection of Animals. Their 'Concepts in Animal Welfare' (16) is a package of Powerpoint and other teaching materials developed in collaboration with the University of Bristol to facilitate the teaching of animal welfare to students at veterinary institutes worldwide and has been well received in the veterinary community (6). This project aims to develop assessment methods for different components of veterinary students' and graduates' attitudes (cognitive, affective, behavioural) towards animal welfare. A secondary aim will be to make use of these methods to investigate variation in attitudes towards animal welfare in two different countries, namely the UK and Brazil, according to a number of factors (educational, social, cultural, personality-based, etc.) that are expected to be influential.

Conclusions

To equip veterinary graduates to deal with the welfare-related problems they encounter within the veterinary context – both for food production and other categories of animals – formal teaching in animal welfare is increasingly necessary in veterinary courses worldwide. A deeper understanding of welfare science and ethical issues that might affect standards and legislation is also needed for veterinary surgeons to contribute to policy-making. It is recommended that the subject should be taught as a clearly defined academic subject within the curriculum. In addition to giving credibility to the subject in the eyes of students and other teachers, this ensures that students attain a minimum standard of skills and knowledge in the area.

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Les fondamentaux de l'enseignement vétérinaire dans le domaine du bien-être des animaux d'élevage destinés à l'alimentation

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Résumé

La principale mission des vétérinaires étant d'assurer les soins aux animaux, les étudiants en médecine vétérinaire doivent être bien informés des problèmes majeurs et des données factuelles relatifs au bien-être animal. Les vétérinaires ont tendance à se concentrer sur les aspects physiologiques du bien-être animal ; or, ils doivent aussi prendre en compte les aspects mentaux (notamment ceux intervenant dans la douleur) ainsi que ceux liés à l'expression comportementale naturelle des espèces animales. La première étape essentielle de l'enseignement sur le bien-être animal consiste à inciter les étudiants à examiner les interactions entre la science du bien-être, l'éthique du bien-être et les politiques appliquées dans ce domaine. Les méthodes scientifiques utilisées pour mesurer le bien-être font appel à des indicateurs physiologiques, immunologiques et comportementaux, ainsi qu'à l'analyse de l'état sanitaire et de la productivité des animaux. L'éthique du bien-être animal est la prise en compte des différentes théories éthiques et déontologiques dans ce domaine. S'agissant des politiques à appliquer, les étudiants doivent connaître et comprendre la réglementation, les codes de bonnes pratiques et les programmes d'assurance mis en œuvre au niveau des exploitations. En plus des applications concrètes de ces acquis dans la pratique clinique, les vétérinaires doivent plus largement se préparer à intervenir dans l'élaboration des politiques et des normes. Il est recommandé que le bien-être animal figure en tant que discipline clairement définie dans les programmes d'enseignement.

Mots-clés

Bien-être animal – Comportement – Douleur – Éthique – Immunologie – Les « cinq besoins fondamentaux » du bien-être animal – Mesure politique – Physiologie – Réglementation – Santé – Souffrance.



Enseñanza veterinaria básica en materia de bienestar de los animales para consumo humano

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Resumen

Los veterinarios tienen ante todo una responsabilidad primordial para con los animales a los que atienden, y en este sentido los estudiantes de veterinaria deben ser conscientes de varias cuestiones importantes y conocer una serie de hechos relacionados con el bienestar de esos animales. Aunque hasta ahora los veterinarios han tendido a concentrarse en los aspectos físicos del bienestar, también deben tener en cuenta los aspectos psíquicos (comprendido el dolor) y las condiciones que resultan naturales para el animal. Al impartir formación en la materia, un primer paso crucial es el de alentar a los estudiantes a que

examinen las interacciones entre la ciencia del bienestar y las dimensiones ética y programática del tema. A la hora de cuantificar científicamente el bienestar se tienen en cuenta la fisiología, el estado inmunitario, la conducta, el estado de salud y la productividad de un animal. La ética del bienestar conlleva el examen de distintas pautas profesionales y teorías al respecto. Para entender los aspectos programáticos es preciso conocer la legislación, los códigos de práctica y los programas de seguros agropecuarios. Más allá de aplicar su formación a la praxis clínica, los veterinarios pueden aspirar a la importante función de ejercer influencia en los procesos normativos y programáticos en otros muchos ámbitos. Se recomienda enseñar el bienestar animal como materia académica claramente definida e integrada en los planes de estudios.

Palabras clave

Bienestar – Cinco libertades – Conducta – Dolor – Ética – Fisiología – Inmunología – Legislación – Programas – Salud – Sufrimiento.

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