

See discussions, stats, and author profiles for this publication at:
<https://www.researchgate.net/publication/275674265>

Attitudes of Taiwan veterinarians towards animal welfare

Article in *Animal welfare* (South Mimms, England) · May 2015

DOI: 10.7120/09627286.24.2.223

CITATIONS

0

READS

29

4 authors, including:



[Shihyun Wu](#)

University of Eastern Finland

3 PUBLICATIONS 0 CITATIONS

[SEE PROFILE](#)



[Andrew Fei](#)

National Taiwan University

22 PUBLICATIONS 121 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Animal Welfare Legislation in Taiwan and China- A comparative and empirical legal study

[View project](#)

All content following this page was uploaded by [Shihyun Wu](#) on 16 November 2016.

The user has requested enhancement of the downloaded file.

Attitudes of Taiwan veterinarians towards animal welfare

S-Y Wu^{*†§}, Y-T Lai[#], C-Y Fei[†] and D-S Jong[‡]

[†] School of Veterinary Medicine, National Taiwan University, No 1, Sec 4, Roosevelt Road, Taipei 10617, Taiwan

[‡] Department of Animal Science and Technology, National Taiwan University, No 1, Sec 4, Roosevelt Road, Taipei 10617, Taiwan

[§] Law School, University of Eastern Finland, PO Box 111, FI-80101 Joensuu, Finland

[#] Department of Biology, University of Eastern Finland, PO Box 111, FI-80101 Joensuu, Finland

* Contact for correspondence and requests for reprints: shihyuwu@student.uef.fi

Abstract

A survey was carried out to examine the attitudes of veterinarians in Taiwan towards animal welfare issues and current systems related to animal protection. The respondents were asked to express the extent to which they agreed with the importance of the Five Freedoms and relevant education in animal welfare. The survey was sent to 889 veterinarians and the response rate was 34%. According to the findings, veterinarians in Taiwan consider that current animal protection laws in Taiwan, and their relevant systems, are unable to protect animals effectively. They mostly have an uncertain attitude towards the statement that animal welfare can upgrade their professional abilities or enhance their image, in that they have a relative lack of awareness of animal welfare as well as also lacking further understanding of the importance and influence of animal welfare. However, many veterinarians strongly support the content of 'The Five Freedoms' and relevant training of animal welfare and ethics. Instead of denying the necessity and importance of the relevant issues, we consider that some veterinarians lack confidence in animal welfare merely because of a lack of relevant training. The results of the survey indicate that providing veterinarians with professional education of animal welfare is the first step which brooks no delay.

Keywords: animal protection law, animal welfare, animal welfare, attitude, education, Taiwan, veterinarians

Introduction

The general animal welfare legislation in Taiwan, which is known as the 'Taiwan Animal Protection Law' (TAP), has been in place since 1998, and the amended version came into effect in 2011 (Anonymous 2011a). As Taiwan is one of the few countries which has promulgated a general animal welfare legislation and criminalised the offence of animal cruelty in Asia, it might be assumed that the level of animal welfare in Taiwan would be higher than that of other neighbouring countries (Favre & Hall 2004; Whitfort & Woodhouse 2010). However, the truth is that the legislation of the TAP was developed in too limited a time, due to international pressure (Lee 1999). The effectiveness of the TAP and its new criminal provisions might both be questionable and the public's knowledge of the law is also inadequate (Weng *et al* 2006).

On the other hand, amongst veterinarians, it is generally acknowledged that the veterinary profession plays a significant role in animal welfare issues, particularly in research, clinical care and the animal protection movement (Hewson 2003a, 2004a,b, 2005, 2006; Easton 2004; Boo & Knight 2006; WSPA 2012). Their positions and attitudes towards animals are an indicator of animal

welfare standards, and are fundamental in preventing animals from unnecessary suffering and improving their welfare status in practice (Williams 2002; Hewson 2003a; Becker & French 2004; Sabuncuoglu & Coban 2008). However, neither the Taiwan Animal Protection Law nor the Taiwan Veterinarian Act assigns animal welfare implementation duties to clinical veterinarians or official veterinarians (Anonymous 2009, 2011a), both of which may result in an inability to enforce the law (Striwing 2002). Moreover, unlike other countries, the national veterinary profession groups in Taiwan (Anonymous 2012) have not included animal welfare in their policies or objectives, let alone provided veterinary education on animal welfare (Hewson 2004a,b, 2005; Boo & Knight 2006). Prior to 2012, the four veterinary schools in Taiwan did not have a single relevant module on animal welfare in a compulsory course, and only two of them provided a general introduction to animal welfare in optional courses.

It is still not clear why veterinary profession groups and academic units in Taiwan pay less attention to animal welfare issues; however, understanding how different animal welfare participants perceive their role should be a precondition for the successful improvement of animal welfare (Kauppinen *et al* 2010). Several studies have

already investigated and discussed the attitudes of various practitioners to animal welfare, such as veterinarians (Ozen *et al* 2004; Sabuncuoglu & Coban 2008; İzmirli & Selçuk 2010), farmers (Kauppinen *et al* 2010), academics (Heleski *et al* 2004, 2005; İzmirli & Phillips 2012) and students (Levine *et al* 2005; Heleski & Zanella 2006; Phillips *et al* 2011, 2012), yet studies concerning the attitude of veterinarians and other practitioners towards animal welfare issues are still limited in Taiwan or in Asia as a whole. The purpose of this study was to undertake the research via a questionnaire survey which aimed to investigate the individual Taiwanese veterinarian's awareness of animal welfare and their attitude towards relevant issues, in order to understand the situation in practical terms. The study also examined the possible intrinsic problems of the veterinary profession regarding animal welfare issues. We hope this will provide guidance for Taiwan and other Asian countries, in similar situations, to help develop education and awareness of animal welfare issues.

Materials and methods

Questionnaire development and designing

A review of other relevant studies that have investigated practitioners' attitudes towards animal welfare (Heleski *et al* 2004, 2005; Levine *et al* 2005; Heleski & Zanella 2006) showed that these mostly involved high level surveys of animal welfare and relevant education, and did not address basic awareness and veterinary education of animal welfare. For this reason, we designed our questionnaire to address attitudes and issues relevant to regions where animal welfare systems were still in development (Sabuncuoglu & Coban 2008).

A pilot questionnaire was completed by veterinarians at the National Taiwan University Veterinary Hospital and finalised after we had consulted with them and made suitable revisions. Simultaneously, we collected the addresses of veterinarians all over Taiwan from each local veterinarian, veterinary academic unit and relevant authority and sent 889 questionnaires to them via surface mail in late December of the same year. The questionnaire comprised four sections of 35 quantitative questions. We used a five-point Likert scale for allowing respondents to choose their answers, and the ratings were scored from 1 (strongly disagree) to 5 (strongly agree). A fifth section comprised qualitative and open-ended questions, enabling us to have a better understanding of respondents' opinions and thoughts as complementary data. In addition, the questionnaire contained such demographics as gender, work unit and job nature.

Section 1: Statements regarding basic awareness of animal welfare

In the first section of the questionnaire, there were questions which mainly concerned the respondents' basic awareness of animal welfare and their personal views on the role of veterinarians in animal welfare. In addition, the last three statements of the section made special reference to the survey research report concerning the Turkish veterinarians' attitude towards the animal welfare (Sabuncuoglu & Coban 2008). This aimed at enabling us to keep abreast of the situation in Taiwan and

also compare our results with other countries. Further, we asked veterinarians to convey their degree of understanding and support with reference to the systems of animal protection laws and animal shelters in Taiwan.

Section 2: Statements regarding the welfare of farm and laboratory animals

The second section of the questionnaire concerned the general issues of the welfare of farm and laboratory animals. In this section, veterinarians were asked to define the degree of their support. Veterinarians were also asked to express their views on personal consumption of animal welfare-friendly products.

Section 3: Statements regarding the identification of 'The Five Freedoms'

The third section of the questionnaire allowed veterinarians to convey their degrees of support for 'The Five Freedoms' (FAWC 2009). Namely, the freedom from hunger and thirst, the freedom from injury and disease, the freedom from discomfort in body and mind, the freedom from fear and distress and the freedom to express normal behaviour.

Section 4: Statements regarding animal welfare in veterinary education

In the fourth section of the questionnaire, we referred to the syllabus content of courses related to animal welfare provided by the Ontario Veterinary College (Millman *et al* 2005) and listed the four major compulsory courses. We then asked veterinarians to express their views as to whether they felt these courses were important and should be placed on compulsory courses of veterinary education in Taiwan.

Section 5: Open-ended questions regarding animal welfare issues

The fifth section of the questionnaire, also known as the final part, comprising open-ended questions, was as follows:

- If you think that animal welfare is important, then what difficulties would you consider to be the biggest in the light of rectifying the problems of related issues?
- What other knowledge and course content related to animal welfare would you consider to be suitable for including in the veterinary education programme?

The results were presented as complementary information integrated into the discussion below.

Data analysis

The data were analysed by the statistical software SPSS12.0, while statistically significant differences in mean Likert scale choices associated with demographic variables (gender, work unit and job nature) were investigated via Chi-squared tests.

Results

There was a total of 306 valid responses from the 889 questionnaires sent, with the response rate being 34% and its gender ratio of male to female being 73 to 27%. The response proportions of academic, government and clinical units were 34, 16 and 50%, respectively; amongst them, 62% of veterinarians were engaged in clinical therapy, 30% in academic and research work and 8% in other work content.

As the mean value results of all options in the Likert scale (Table 1 [see supplementary material to papers published in *Animal Welfare* on the UFAW website: www.ufaw.org.uk]) indicated, veterinarians showed a fairly high degree of identification with the statement 'Vertebrates have the same perceptions as humans do' as regards their basic awareness (4.37). The mean value of females (4.59) was higher than that of males (4.29).

As regards the awareness of the animal welfare criteria of 'The Five Freedoms' proposed by the FAWC, government units (3.31) topped the rank for results of distinct service units, while clinical units (3.04) ranked second and academic units (2.98) third (Table 1).

Statistical results revealed that Taiwanese veterinarians' knowledge of the content of the current Taiwan animal protection law was neutral (3.41; Table 1): government units topped the rank (3.89), while clinical units (3.40) came second and academic units (3.21) third. The results showed that veterinarians engaged in research work (3.28) had lower awareness than those engaged in clinical work (3.40) and other work content (4.00), and these differences were statistically significant ($\chi^2 = 23.850$; $P = 0.002$, $\chi^2 = 22.393$; $P = 0.004$, respectively).

The majority of veterinarians in Taiwan apparently lacked confidence about the animal protection law (2.01; Table 1) and the function of animal shelters (2.63; Table 1), considering that it was ineffective in protecting animals; amongst them, those engaged in clinical work distrusted it the most (1.86). A fairly high proportion of veterinarians agreed about the statements that 'I will anaesthetise animals first while undertaking surgical operations, irrespective of how long it takes to do them' (4.22; Table 1) and 'I will strive to prevent animals from unnecessary suffering by all possible means' (4.48; Table 1).

In general, veterinarians in Taiwan agreed strongly with the statement that 'Veterinarians are important in communication and education about issues of animal protection' (4.31; Table 1); however, they expressed uncertainty regarding the statement 'Taking courses and training in animal welfare raise the image and ability of veterinary profession' (3.20; Table 1). Amongst them, veterinarians from government units showed the highest degree of disagreement (2.97), while those from clinical units came next (3.03) and academic units last (3.53 [± 1.21]), revealing statistically significant differences ($\chi^2 = 18.094$; $P = 0.02$).

Veterinarians mostly agreed that 'It is important to satisfy the need of farm animals to behave normally' (4.06; Table 2 [see supplementary material to papers published in *Animal Welfare* on the UFAW website: www.ufaw.org.uk]); amongst them, veterinarians from academic units had the highest mean value (4.20), while those from government units came next (4.14) and those from clinical units last (3.93). Also, the mean value of veterinarians engaged in other work content (4.20) and research work (4.13) were higher than those engaged in clinical work (3.98), and the two differences revealed were thus statistically significant ($\chi^2 = 19.514$; $P = 0.03$ and $\chi^2 = 15.561$; $P = 0.01$). The mean

results of the several subsequent statements connected with the welfare of farm animals (Table 2) also revealed the differences not to be that significant statistically; however, regarding the welfare issues of farm animals, the degree of support from clinical and official veterinarians was evidently lower than from veterinarians who were engaged in research work or worked in academia.

In the section concerned with the welfare of laboratory animals, veterinarians agreed about the following statements very strongly (Table 2), including: 'Operating procedures of laboratory animals should be strictly assessed, examined and approved' (4.42); 'Operating procedures of laboratory animals should be strictly assessed and examined by veterinarians' (4.46); 'Personnel involved in operating procedures of laboratory animals should have training in laboratory animal ethics' (4.51); and 'It is necessary to reduce the use of laboratory animals whatever the purpose of the animal use is' (4.20). The final question concerned the veterinarians' attitude towards their personal consumption of animal welfare products (Table 2): a very high proportion of veterinarians considered that 'animal welfare status can be raised or improved only if the costs do not increase' (4.51); however, the statement that 'As a consumer, I am willing to pay more for products with higher animal welfare standards' also received a very high degree of veterinarians' support (4.20).

The results in the third section showed that the content of 'The Five Freedoms' listed in the questionnaire received a fairly high degree of support from veterinarians in Taiwan. The mean results of the statements in this part averaged 4.56 (Table 3 [see supplementary material to papers published in *Animal Welfare* on the UFAW website: www.ufaw.org.uk]). The fourth section concerned veterinarians' attitudes as regards education courses related to animal welfare, and the mean value results of all options in the Likert scale are shown in Table 4 (see supplementary material to papers published in *Animal Welfare* on the UFAW website: www.ufaw.org.uk). We saw from the survey results that in general, veterinarians highly supported the importance of courses related to animal welfare and strongly agreed (4.31) that they should be included in veterinary education.

Discussion

The role of the veterinary profession in animal welfare is diverse and significant (Hewson 2003a,b, 2004a,b, 2005, 2006; Becker & French 2004; Easton 2004). Veterinarians' medical knowledge and clinical expertise are critical for animal welfare; veterinarians are also educators teaching those in charge of animals and play a significant role in humane education as well (WSPA 2012). Most veterinarians in Taiwan agreed that they play an important role as a communicator and an educator regarding animal protection (Average score, 4.46 out of the 1–5 Likert scale). However, they have relatively low conceptual awareness of the animal welfare criteria of 'The Five Freedoms' (score 3.06) which are the most accepted animal welfare criteria in the last 20 years (Radford 2001; Easton 2004; FAWC 2009; Schaffner 2011; WSPA 2012). This suggests that Taiwanese

veterinarians may lack a full understanding of animal welfare. Indeed, they consider that expertise in animal welfare does not help them enhance the ability and image of the veterinary profession (score 3.02). In addition, the qualified profession has been expected to have more active an involvement in developing and improving domestic regulations and enforcing laws for protecting animals (Radford 2001; RAWs 2013). However, Taiwan veterinarians were not fully familiar with the content of the current Taiwan animal protection law (score 3.41). Weng *et al* (2006) found a similar result when investigating Taiwanese citizens' knowledge of the law, indicating that animal protection law is not effectively communicated. Furthermore, the survey revealed that most of the veterinarians in Taiwan lack of an awareness of what roles they should play in animal welfare, failing to show leadership on broader issues regarding the well-being of animals. Several reasons for this can be put forward.

Firstly, in contrast to many other developed countries (Gumbrell 1983; Fogle 1999; Estol 2004; Siegford *et al* 2005), the academic units of veterinary education in Taiwan provide a very limited number of courses or training in animal welfare, animal ethics and laws. As Boo and Knight (2006) indicated, most veterinarians will remain relatively ignorant of animal welfare science and issues unless they learn about them during their formal education. Therefore, animal welfare courses and training in veterinary education should be improved in Taiwan.

Secondly, many major international organisations, such as the World Organisation for Animal Health (OIE) and the World Veterinary Association (WVA) emphasised the critical role national veterinary associations play in developing and improving animal welfare (RAWs 2013; WVA 2013), since their professional policies and statements usually reflect the views of the majority of the profession (Hewson 2004a,b). However, despite having been one of the members of the WVA and the OIE, the Taiwan Veterinary Medical Association (TwVMA) did not include any explicit mission statements and policies regarding relevant issues on any dedicated welfare pages as many other countries did (Anonymous 2012). We believe, therefore, that opportunities exist for veterinarians in Taiwan to develop such policies, and that this would be in accordance with the general public's expectations for the profession (Hewson 2003a; Easton 2004).

Thirdly, neither the Taiwan Animal Protection Law nor the Taiwan Veterinarian Act assign animal welfare implementation duties to clinical veterinarians or official veterinarians (Anonymous 2009, 2011), such as the obligations for veterinarians to report cases of animal abuse to authorities. Both surveys of Taiwanese and Turkish veterinarians revealed that a fairly high proportion of veterinarians in Taiwan agreed on the importance of preventing animals from suffering (Sabuncuoglu & Coban 2008). There were, however, two major differences: Turkish people seem more concerned about this issue and far more positive towards reporting animal abuse. Not only did Turkey introduce animal welfare courses in veterinary education from 2004,

but the Turkish Animal Protection Law also has a fairly coercive power (Sabuncuoglu & Coban 2008). The legal obligations for veterinarians should be recognised as a necessary part of the set of tools to promote and improve animal welfare (Radford 2001).

In addition, many veterinarians that we interviewed (109 out of 306) reported difficulties in enforcing the animal protection law: they indicated that the greatest problem lay in the lack of enforcement officers: it was currently uncommon to assign dedicated personnel who protected animals and banned law violations all over Taiwan (Anonymous 2011b). This result displays not only the law's major deficiency and inability to protect animals in Taiwan (Radford 2001), but also explains why the majority of Taiwanese veterinarians and citizens (Weng *et al* 2006) apparently lack confidence in the local animal protection law and animal shelter system. The results also reveal serious animal welfare problems in farming: in Taiwan, farm animals are not treated humanely, and clinical veterinarians have lower support for farm animal welfare issues. These indicate that veterinarians engaging in practical work either have little understanding of animal welfare or encounter obstacles when trying to prevent farm animals from suffering (Williams 2002; Hewson 2003a). It is always a challenge, striking a balance between the needs of animals and those of their owners. However, the keys to resolving it are knowledge and communication (Williams 2002; Hewson 2003a,b). Turning contradictory conditions into educative and constructive ones is more likely to lead to resolution (Williams 2002).

Overall, veterinarians in Taiwan have relatively poor knowledge of 'the Five Freedoms' (FAWC 2009). However, they expressed a fairly high degree of support for them. They agree that courses on animal welfare should be included in veterinary education. They nevertheless still maintain a wait-and-see attitude towards the influence and significance of animal welfare expertise. By this we mean that they do not actively seek to develop animal welfare expertise within the profession, perhaps because they think of animal welfare as merely good advice and not a responsibility of the profession or a necessary requirement for their daily duties.

As discussed above, veterinarians who generally receive no relevant education and training are still not very confident in animal welfare and have not further realised the role they should play in animal welfare. This may be the reason why, in recent years, promoting the inclusion of animal welfare in undergraduate and postgraduate veterinary curricula has been one of the animal welfare mandates of OIE in its global animal welfare strategy and Regional Animal Welfare Strategy for Asia, the Far East and Oceania (RAWs) (OIE 2004; Boo & Knight 2006; RAWs 2013). Despite Taiwan being a member of OIE since 1954, neither its national veterinary profession group nor academic units of veterinary education implemented a relevant strategy to improve animal welfare education. We believe this is also the major cause of the level of animal welfare in Taiwan still lagging behind many other countries. Taiwan veterinarians can no longer afford to ignore the roles they ought to be playing in developing and improving animal welfare. Whatever their roles are, they must always be knowledgeable.

Animal welfare implications

Most veterinarians from Taiwan consider that the current animal protection laws in their country and its relevant implementation system are unable to protect animals effectively and that most animals are not treated humanely. The government of Taiwan has always claimed that they attach importance to animal protection. To address this concern, the legislative framework and its implementation need to be reviewed and improved. The academic units in Taiwan should also actively set up relevant courses and training for veterinary students and continuous education, in order to enable veterinarians to improve animal welfare in practice.

Acknowledgements

This work is funded by the National Taiwan University, YongLin Animal Welfare Development Foundation. We are warmly grateful to all the veterinarians for their participation.

References

- Anonymous** 2009 *Taiwan Veterinarian Act*. <http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCCode=M0130001>
- Anonymous** 2011a *Taiwan Animal Protection Law*. <http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCCode=M0060027>
- Anonymous** 2011b *The Report Concerning the Enforcement of Taiwan Animal Protection Law*. <http://www.lihpao.com/?action-viewnews-itemid-110844>
- Anonymous** 2012 *Taiwan Veterinary Medical Association*. <http://www.tvma.org.tw/index.htm>
- Becker F and French L** 2004 Making the links: child abuse, animal cruelty, and domestic violence. *Child Abuse Review* 13: 399-414. <http://dx.doi.org/10.1002/car.878>
- Boo JD and Knight A** 2006 Educating the veterinary professional about animal welfare. *Altex: Alternatives to Animal Experimentation* 23. *Proceedings: 5th World Congress 2005* pp 71-74. 25 August 2005, Berlin, Germany
- Easton KL** 2004 The veterinarian's role in animal welfare. *Canadian Veterinary Journal* 45: 1030
- Estol LR** 2004 Animal welfare in the veterinary curriculum. *Proceedings of the Global Conference on Animal Welfare: An OIE Initiative* pp 37-49. 23-25 February 2004, Paris, France. Office for Official Publication of the European Communities: Luxembourg
- Favre D and Hall CF** 2004 *Comparative National Animal Welfare Laws*. Animal Legal & Historical Web Center, Michigan State University College of Law, USA. <http://www.animallaw.info/nonus/articles/arcomparativenationalwelfarelaws.htm>
- FAWC** 2009 *The Five Freedoms*. Farm Animal Welfare Council: London, UK. <http://www.fawc.org.uk/freedoms.htm>
- Fogle B** 1999 The changing roles of animals in western society: Influences upon and from the veterinary profession. *Anthrozoös* 12: 234-239. <http://dx.doi.org/10.2752/089279399787000084>
- Gumbrell RC** 1983 Animal welfare and the veterinary profession. *New Zealand Veterinary Journal* 31: 187-188. <http://dx.doi.org/10.1080/00480169.1983.35023>
- Heleski CR, Merting AG and Zanella AJ** 2004 Assessing attitudes toward farm animal welfare: A national survey of animal science faculty members. *Journal of Animal Science* 82: 2806-2814
- Heleski CR, Merting AG and Zanella AJ** 2005 Results of a national survey of US veterinary college faculty regarding attitudes toward farm animal welfare. *Journal of American Veterinary Medical Association* 226(9): 1538-1546. <http://dx.doi.org/10.2460/javam.2005.226.1538>
- Heleski CR and Zanella AJ** 2006 Animal science student attitudes to farm animal welfare. *Anthrozoös* 19: 3-16. <http://dx.doi.org/10.2752/089279306785593883>
- Hewson CJ** 2003a How might veterinarians do more for animal welfare? *Canadian Veterinary Journal* 44: 1000-1004
- Hewson CJ** 2003b Focuses on animal welfare. *Canadian Veterinary Journal* 44: 335-336
- Hewson CJ** 2004a Leadership in animal welfare: a comparison of Canada with the United States, the United Kingdom, Australia, and New Zealand. *Canadian Veterinary Journal* 45: 944-950
- Hewson CJ** 2004b Showing leadership in welfare: position statements and some of their consequences. *Canadian Veterinary Journal* 45: 781-786
- Hewson CJ** 2005 Leadership in animal welfare: the role of veterinary colleges. *Canadian Veterinary Journal* 46: 74-78
- Hewson CJ** 2006 Veterinarians who swear: animal welfare and the veterinary oath. *Canadian Veterinary Journal* 47: 807-811
- Izmirli S and Phillips CJ** 2012 Attitudes of Australian and Turkish veterinary faculty toward animal welfare. *Journal of Veterinary Medicine Education* 39(2): 200-207. <http://dx.doi.org/10.3138/jvme.1010.130R3>
- Izmirli S and Selçuk U** 2010 A survey on animal welfare attitudes of veterinary surgeries, veterinary students, animal owners and society in Turkey. *Journal of the Faculty of Veterinary Medicine, University of Kafkas* 16(6): 981-985
- Kauppinen T, Vainio A, Valros A, Rita H and Vesala KM** 2010 Improving animal welfare: qualitative and quantitative methodology in the study of farmers' attitudes. *Animal Welfare* 19: 523-536
- Lee MS** 1999 The concept of animal rights and the cultural implication of Taiwan Animal Protection Law. *The Taiwan Law Review* 94: 155-180
- Levine ED, Mills DS and Houpt KA** 2005 Attitudes of veterinary students at one US college toward factors relating to farm animal welfare. *Journal of Veterinary Medicine Education* 32(4): 481-490. <http://dx.doi.org/10.3138/jvme.32.4.481>
- Millman ST, Adams CL and Turner PV** 2005 Animal welfare training at the Ontario Veterinary College. *Journal of Veterinary Medicine Education* 32(4): 447-450. <http://dx.doi.org/10.3138/jvme.32.4.447>
- OIE** 2004 *Proceedings of the Global Conference on Animal Welfare: An OIE Initiative*. Office for Official Publication of the European Communities: Luxembourg. http://www.oie.int/fileadmin/Home/eng/Conferences_Events/docs/pdf/proceedings.pdf
- Ozen A, Ozturk R, Yasar A, Armutak A, Basagac T, Ozugur A, Seker I and Yerlikaya H** 2004 An attitude of veterinary practitioners towards animal rights in Turkey. *Veterinary Medicine Czech* 49(8): 298-304
- Phillips C, Izmirli S, Aldavood J, Alonso M, Choe B, Hanlon A and Handziska A** 2011 An international comparison of female and male students' attitudes to the use of animals. *Animals* 1: 7-26. <http://dx.doi.org/10.3390/ani1010007>

- Phillips CJC, Izmirli S, Aldavood SJ, Alonso M, Choe BI, Hanlon A, Handziska A, Illmann G, Keeling L, Kennedy M, Lee GH, Lund V, Mejdell C, Pelagic VR and Rehn T** 2012 Students' attitudes to animal welfare and rights in Europe and Asia. *Animal Welfare* 21: 87-100. <http://dx.doi.org/10.7120/096272812799129466>
- Radford M** 2001 *Animal Welfare Law in Britain: Regulation and Responsibility*. Oxford University Press: UK
- RAWS** 2013 *Regional Animal Welfare Strategy for Asia, the Far East and Oceania 2013-2015*. <http://www.rr-asia.oie.int/activities/regional-programme/regional-animal-welfare-strategy/>
- Sabuncuoglu N and Cabon O** 2008 Attitudes of Turkish veterinarians towards animal welfare. *Animal Welfare* 17: 27-33
- Schaffner J** 2011 *An Introduction to Animals and the Law*. Palgrave Macmillan: Basingstoke, UK
- Siegfors JM, Bernardo TM, Malinowski RP, Laughlin K and Zanella AJ** 2005 Integrating animal welfare into veterinary education: using an online, interactive course. *Journal of Veterinary Medicine Education*. Winter 32(4): 497-504
- Striwing H** 2002 Animal law and animal rights on the move in Sweden. *Animal Law* 8: 93-106
- Weng HY, Kass PH, Hart LA and Chomel BB** 2006 Animal protection measures in Taiwan: Taiwanese attitudes toward the animal protection law and animal shelters. *Journal of Applied Animal Welfare Science* 9(4): 315-326. http://dx.doi.org/10.1207/s15327604jaws0904_6
- Whitfort A and Woodhouse F** 2010 *Review of Animal Welfare Legislation in Hong Kong*. HKU 7010-PPR-5. <https://www.law.hku.hk/faculty/staff/Files/Review%20of%20Animal%20Welfare%20Legislation%20in%20HK.pdf>
- Williams V** 2002 Conflicts of interest affecting the role of veterinarians in animal welfare. *ANZCCART News* 15: 1-3
- WSPA** 2012 *World Society for the Protection of Animals. Concepts in Animal Welfare Modules*. <http://www.wspa-international.org/wspaswork/education/concepts-animal-welfare-modules.aspx>
- WVA** 2013 *World Veterinary Association Position on the Role of the Veterinarian in Animal Welfare*. <http://www.worldvet.org/library.php?item=314&cat=1&view=item>