RESEARCH ARTICLE

Medical school and engineering school students' view on animal killing: Cumhuriyet University sample

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Received: 25.06.2014, Accepted: 01.09. 2014
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Özet

Yıldırım G, Kadıoğlu S. Tıp fakültesi ve mühendislik fakültesi öğrencilerinin hayvanların öldürülmesi hakkındaki görüşleri: Cumhuriyet Üniversitesi örneği.

Amaç: Bu çalışmada biri tıp diğeri mühendislik öğrencilerinden oluşan iki grubun hayvanların farklı nedenlerle öldürülmesi hakkındaki görüşlerinin belirlenmesi amaçlandı.

Gereç ve Yöntem: Toplamda 274 Cumhuriyet Üniversitesi öğrencisinden elde edilen veriler değerlendirildi. Araştırmada kullanılan anket formu araştırıcılar tarafından geliştirildi. Hayvan öldürülmesinin yaygın olarak rastlanan 11 nedeni sıralandı ve katılımcılardan bunları uygun bulma derecelerini en az uygun buldukları için 1, en çok uygun buldukları için 10 puan olacak şekilde 1'den 10'a kadar puan belirtmeleri istendi. Her iki grubun tanımlayıcı değerlendirmeleri yapıldı. İfadelerin puan ortalamaları bazında tıp ve mühendislik öğrencileri arasındaki fark Ki-kare testi, T testi ve Mann Whitney-U testi ile değerlendirildi.

Bulgular: Tüm katılımcılar bazında en yüksek puan alan seçenekler, hayvanı dini inanç gereği kurban etme (8.68), kasaplık hayvandan et üretme (8.35) ve sağlık sorunu nedeniyle acı çeken hayvana ötanazi uygulamadır (7.60). En düşük puan ortalaması ise kürkü ya da derisi giysi üretiminde kullanılmak üzere yetiştirilen hayvanların öldürülmesi seçeneğine aittir (2.84). Tıp ve benzeri alanlarda, laboratuar eğitimi çerçevesinde kullanılan deney hayvanlarının öldürülmesi tıp öğrencileri tarafından daha yüksek (7.93), mühendislik öğrencileri tarafından daha düşük (6.84) oranda benimsenmekte ve gruplar arasında istatistik açıdan anlamlı fark bulunmaktadır (p=0.009).

Öneri: Katılımcıların bir hayvan öldürme uygulamasını benimsenebilir bulma derecesi ilgili uygulamanın sağladığı yarar ölçüsünde yükselmekte ve içerdiği acımasızlık ölçüsünde düştüğü ifade edilebilir.

Anahtar kelimeler: Etik, hayvan, hayvan öldürülmesi, öğrenci

Abstract

Yildirim G, Kadioglu S. Medical school and engineering school students' view on animal killing: Cumhuriyet University sample.

Aim: The study aims to determine and compare the views of medicalschool and engineeringschool students about the killing of animals for various reasons and ways.

Materials and Methods: The data evaluated were obtained from 274 students attending Cumhuriyet University. The questionnaire used in the study was developed by the researchers. The most common 11 reasons for killing animals are listed. The participants were asked to arrange them from the one they considered the least appropriate to the one they considered the most appropriate and to score them ranging from 1 to 10, respectively. Descriptive assessments of the two groups were performed. The difference between the mean scores of the students was assessed with the chi-square test, t-test and Mann-Whitney-U.

Results: The highest mean scores are as follows: sacrificing an animal due to religious beliefs (8.68), slaughtering domestic livestock for food (8.35), and practicing euthanasia on an animal suffering due to health problems (7.60). The lowest mean score was obtained from the questionnaire was for the item that an animal is killed for its fur or hide (2.84). Medical students(7.93) agreed to the killing of experimental animals in a laboratory setting for the training of students in medicine or other areas more than did the engineering students (6.84, p=0.009).

Conclusions: Acceptability of an animal killing practice among the participants increases with its utility and decreases with its cruelty.

Keywords: Ethics, animal, animal killing, student

Introduction

Since there are some differences between various communities and various parts of a certain society in terms of values and norms adopted by them, there exists diversity between them for the purpose of determining the moral status of animals and humans' attitudes towards animals (Ögenler 2007).

When the moral premise of an animal's natural behaviors towards its species is concerned, it is not meant that the animal should follow certain moral rules but that its behavior should comply with moral norms accepted by humans. Therefore, the inclusion of animals in moral interests depends on their behaviors such as capacity of feeling sad when a member of the species suffers pain (Des Jardins 2006), appropriate approaches towards other members of the species, capacity to use a language and ability to understand certain concepts (Resnik 2004). According to Tom Regan, animals cannot be valued for their features because they are inherently valuable (DeGrazia 2006). Başağaç Gül (2004) emphasizes that humans are expected to respect all living things in the nature to a certain extent; but she also states that animals are not subjects but objects from the legal perspective.

Just as those who conduct theoretical work on the moral status of animals have different views, so do the different segments of society have different opinions about animal rights and thus value animal life differently. In such diversity, professional organizations each of which represents a universal sub-culture display distinctive approaches. Thus, itis natural that vegetarians' attitudes towards animal killing are different from non-vegetarians', and similarly those dealing with experimental animals see animal killing from a different perspective compared to other people. In a research conducted with students of various nationalities on the use of animals (Phillips and McCulloch 2005), although the difference was not statistically significant, European students objected to cruelty to animals more strongly than did Asian students. In another study carried out with medical and veterinary school students in Sweden (Hagelin et al 2000), those who participated in courses in which animals were used for experimentation supported the use of animals in research more than did those who did not attend the courses.

Although there are several studies discussing the practices leading to the death of animals in terms of ethics (Zamir 2006, Saucier and Cain 2007, Williams et al 2007, Knight and Barnett 2008, Henry and Pulcino 2009), studies comparing animal-killing practices are few. In the literature, it is reported that veterinarians agree to the killing of animals more than do agricultural students (Dürr et al 2011).

Since the formations obtained from two fields of applied science, one of which is biology-based and the other of which is not, differ from each other, it is just normal that those having education in these two fields of science display different attitudes towards animals. Determining the attitudes of today's students towards the killing of animals is of great importance since they will be tomorrow's leaders to make decisions regarding animal welfare or they will be source of labor force to work with animals. Studies conducted to determine the views of different segments of society on the issue could be expected to contribute to the debates on the value of animal life so that they should be built on a more realistic basis.

The purpose of this study based on such an expectation is to determine and compare the views of medical and engineering students about the killing of animals for various reasons and ways.

Materials and Methods

Type of the study

The study was a descriptive one; a preliminary study was conducted with 30 students. After the data collection, the forms were handed out to the students participating in the preliminary study, and statements considered incomprehensible by the participants were revised. The prospective participants were first given detailed information about the research. Then they were told that participation in the study was completely on a voluntary basis, that they were not required to write their names on the questionnaire and that the data would be used only for scientific purposes and kept confidential. Finally, the questionnaires were handed out to those who agreed to participate in the study.

Study population and sample

The study population and sample were planned to include all the senior students attending Sivas Cumhuriyet University Medical School (n=103) and Engineering School (n=213). The data collection phase of the study was carried out between March 17, 2008 and March 21, 2008. Thirteen students from each school did not participate in the study. Seven medical school students and nine engineering school students who did not fill in the questionnaire completely were excluded from the assessments. Therefore, the data obtained from 274 students (191 from the engineering school and 83 from the medical school) were evaluated. The participation rate of the medical and engineering school students was 80.6% and 89.7%, respectively.

Data collection tools

The questionnaire of the study was developed by the researchers after conducting a literature review (Stanisstreet et al 1993, Wuensch et al 2002, Phillips and McCulloch 2005, Henry 2006, Williams et al 2007). It includes two parts. The first part has three items about the socio-demographic char-

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acteristics of the participants (gender, age, and faculty). In the second part, the most common (Bal and Keskin 2002, Wuensch et al 2002, Hızarcı et al 2005, Phillips and Mc-Culloch 2005) 11 reasons for killing animals are listed. The participants were asked to arrange them from the one they considered the least appropriate to the one they considered the most appropriate and to score them ranging from 1 to 10, respectively. That the participants achieved high scores suggests that killing of animals was more acceptable among them. Cronbach's alpha coefficient for the second part was 0.707.

Evaluation of the data

For statistical analysis, descriptive assessments of the two groups were performed. The difference between the mean scores of the medical and engineering students was assessed with the chi-square test, t-test and Mann-Whitney-U test. The study data were evaluated with the SPSS 14.0 program with an error rate of 0.05.

Limitation of the study

The study was performed at the faculties of medicine and engineering of a university. Therefore, the findings are related only to the participants of this study and thus cannot be generalized.

Results

Analysis of the socio-demographic information found out of all the participants that, 20% (55) were female, 80% (n=219) were male and 77% (n = 211) were in the age group of 22-25. Of the medical students, 50.6% (n=42) were female, 49.4% (n=41) were male and 86.7% (n=72) aged in 22 and 25. Of the engineering students, 6.8% (n=13) were female, 93.2% (n=178) were male and 72.8% (n=139) aged between 22 and 25.

The mean scores the participants obtained from the second part of the questionnaire regarding the ways used for killing animals are listed from the highest to the lowest in Table 1. Of the items, those with the highest mean scores were as follows: Sacrificing an animal due to religious beliefs (8.68), slaughtering domestic livestock for food (8.35), and practicing euthanasia on an animal suffering due to health problems (7.60). The lowest mean score was obtained from the questionnaire was for the item that an animal was killed for its fur or hide (2.84).

Medical students agreed to the killing of experimental animals in a laboratory setting for the training of students in medicine or other areas more than did the engineering students (7.93 and 6.84, respectively), and the difference between the groups was statistically significant (P=0.009). Similarly, medical students agreed to the killing of experimental animals for scientific research more than did the engineering

Table 1. The mean scores of all participants and faculty groups for ending the life of an animal.

Practices used to end the life of an animal	Medical students (n=83)	Engineering students (n=191)	Both groups (n=274)	P
Sacrificing an animal due to religious beliefs	8.78±2.93	8.64±2.66	8.68±2.74	0.711
Slaughtering domestic livestock for food	8.21±3.32	8.41±2.65	8.35±2.86	0.603
Practicing euthanasia on an animal suffering due to health problems	7.30±3.64	7.74±3.12	7.60±3.28	0.307
Killing experimental animals in a laboratory setting for the training of students in medicine or other areas	7.93±3.17	6.84±3.13	7.17±3.18	0.009*
Killing experimental animals for scientific research	7.75±3.52	6.81±3.05	7.10±3.22	0.026*
Extermination of insects and other pests within the scope of agricultural pest control since they cause damage to agricultural products	7.56±3.13	6.18±3.07	6.60±3.15	0.001*
Killing wild animals allowed to be hunted in accordance with the hunting activities	4.32±3.92	4.70±3.24	4.58±3.46	0.409
Killing animals used in experiments to test potential harms of cosmetics	4.48±3.94	3.97±3.42	4.13±3.59	0.288
Killing stray animals for the sake of environmental health	3.57±3.68	3.46±3.04	3.50±3.24	0.793
Killing pets who are abandoned by the owners and cannot live on their own	2.60±2.97	3.29±3.20	3.08±3.14	0.093
Killing animals raised for fur or hide to be used in clothing production	3.31±3.56	2.64±2.72	2.84±3.01	0.091

*P<0.05

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students (7.75 and 6.81, respectively) and the difference between the groups was statistically significant (P=0.026).

Another reason for killing animals with a significant difference between the mean scores of the two groups was the extermination of insects and other pests within the scope of agricultural pest control since they caused damage to agricultural products. For this item, the mean scores of the medical and engineering students were 7.56 and 6.18 respectively (P=0.001).

Statistically significant differences were observed between mean scores of males and females of all the participants in the following items (Table 2): (1) Extermination of insects and other pests within the scope of agricultural pest control since they cause damage to agricultural products (female: 7.60±3.09, male: 6.35±3.12, P=0.009) (2) Killing wild animals allowed to be hunted in accordance with the hunting activities (female: 3.18±3.01, male: 4.94±3.48, P=0.001).

Comparison of the engineering students in terms of gender difference revealed that male students agreed to the slaughter of domestic livestock for food more than did the females (8.5±2.48 and 5.92±3.59, respectively) with a statistically significant difference (P=0.001). There was a statistically significant difference between the two genders of medical students for the following two items: (1) Killing animals raised for fur or hide to be used in clothing production (female: 2.52±2.02 male: 4.34±3.63, P=0.0006), (2) killing wild animals allowed to be hunted in accordance with the hunting activities (female: 3.71±2.62, male: 5.53±3.80, P=0.013). The participants' responses regarding 11various ways of ending animal life were compared in terms of other socio-demographic results, but no significant results were determined (P>0.05).

Discussion

The reasons for killing animals considered most acceptable by all the participants as a whole and each group separately were as follows: Sacrificing an animal due to religious beliefs and slaughter of domestic livestock for food (Table 1). It is possible to say that this data is consistent with the observations on the general population and that sacrificing animals and consuming meats of sacrificed animals are widely practiced in Turkey. According to the Statistical Data of Turkey, red meat production is estimated to be 218.432 tons in Turkey by the end of 2014 (TUIK 2014). Cultural origins of this practice are based on the Islamic obligatory (Quran, DeGrazia 2006, Bakhos 2009). On the other hand, this practice may have been resulted from the older belief that animals do not feel pain and lack moral status, which also influenced Islam (Bratanova et al 2011).

The reason for killing animals considered least acceptable by all the participants as a whole and each group separately was killing an animal for its fur and hide to use in clothing industry (Table 1). However, in this case, it is not possible to say that the general population shares the same opinions of the participants and that the general population is against wearing clothes made from fur or leather. In studies conducted with students, it was found that killing animals for fur and clothing less favored (Stanisstreet et al 1993, Pagani et al 2007).

Of the ways of killing an animal, the one which was second to the last in the approval list was the killing of a pet which had to be left by the owner in order not to expose it to poor living conditions. The difference between the less approved item which is a way of practicing euthanasia on animals for social reasons and the more approved item which is another way

Table 2. Mean scores regarding applications of ending animal life by gender.

Practices used to end the life of an animal**	Medical students (n=83)			Engineering students (n=191)			Both groups (n=274)		
	Female (n=42)	Male (n=41)	P	Female (n=13)	Male (n=178)	P	Female (n=55)	Male (n=219)	P
Hunting	3.71±2.62	5.53±3.80	0.013* t test	3.69±2.81	4.77±3.26	MWU=952.50 0.279	3.18±3.01	4.94±3.48	0.001* t test
Slaughtering domestic livestock for food	8.54±2.31	7.70±3.52	0.202 t test	5.92±3.59	8.59±2.48	MWU=594.50 0.001*	8.09±3.15	8.42±2.79	0.448 t test
For fur or hide to be used in clothing production	2.52±2.02	4.34±3.63	0.006* t test	2.46±3.35	2.65±2.68	MWU=984.50 0.308	2.32±2.62	2.97±3.09	0.153 t test
Scope of agricultural pest control	7.45±2.75	7.31±2.73	0.823 t test	7.23±3.03	6.11±3.07	MWU=909.50 0.192	7.60±3.09	6.35±3.12	0.009* t test

*P<0.05, **Significant ones are included in the table.

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of practicing euthanasia on sick animals is noteworthy. Given that both this practice and the practice of killing of stray animals received low scores, it can be concluded that the participants cared much about animals' quality of life.

The items referring to the killing of experimental animals in biomedical studies conducted for educational and research purposes and to the use of pesticides were the ones about which the opinions of the medical and engineering students participating in the study differed statistically significantly. These differences can be explained with the fact that conducting animal studies in medicine for educational and especially research purposes has been widely approved and that agricultural production is associated with health due to its nutritional aspect. The medical students having biology-based education considered on animal killing practiced in medicine and in agriculture, a biology-based field of occupation, more acceptable than did the engineering students having mathematics-based education. Studies revealed that courses students took and their being have to deal with animals in their education affected their attitudes. A study conducted with biology, English and computer students at a university to investigate their attitudes revealed that the students of biology and English departments opposed dissection more than did the students of computer department (Stanisstreet et al 1993). In another study, students studying agriculture agreed to the killing of animals less than did veterinarians (Dürr et al 2011).

Although there was a certain extent of difference between the two groups in the study with regard to approving of animal killing for scientific purposes, the general tendency in both groups was to support such practices. This is consistent with the results of a recent study conducted in Brazil 101 students and 20 faculty members of history, biology, pharmacology, medicine and veterinary departments indicating that the majority of the students agreed to the use of animals in education (Deguchi et al 2012). A study conducted with medical and veterinary students in Sweden determined that the students participating in animal experiments supported the use of animals in experiments more than did the students who did not participate in animal experiments, which supports our finding that a person's being involved in researches conducted on animals makes him/her consider animal killing acceptable (Hagelin et al 2000). Spanish psychology students' displaying positive attitudes towards the use of animals in researches can be attributed to the fact that psychology has utilized animal experiments while establishing data specific to psychology (Navarro et al 2001).

In different studies conducted to determine students' attitudes towards the use of animals in scientific studies, their approval was affected by such factors as the rationale and importance of the research, the scope of the interventions animals undergo, the number of the animals used in the re-

search and whether the animal species benefits from the research (Zamir 2006, Saucier and Cain 2007, Williams et al 2007, Knight and Barnett 2008, Henry and Pulcino 2009). However, in our study, no findings indicating whether the participants had such concerns were determined. Although they are not directly comparable to our study, in one of the two studies conducted with elementary school students in Turkey, the students displayed disapproving attitudes towards animal-based researches.This might be due to the students' lack of sufficient knowledge of and familiarity with this issue which might have affected their perspectives and perceptions. In the same study, the students were also against hunting of wild animals a lot more than were our participants (Hızarcı et al 2005). In the other study conducted to determine attitudes of university students towards genetic engineering practices, it was determined that the students approved animal experiments as long as they contributed to human life, health and nutrition (Bal and Keskin 2002). These results are consistent with our study findings

According to Regan, animals have natural rights and should not be included in research for the benefits of humans because they are the subject of a life (Regan 2007, Henry and Pulcino 2009). On the other hand, according to Singer, the interests of humans who will benefit from the research should be weighed against the interests of animals to be used in the research. Garner stated that both human interests and animal interests should be taken into account but human interests should weigh more (Henry and Pulcino 2009). Therefore, it can be concluded that cost-benefit analysis should be done in order to determine whether it is worth using animals in research (Li 2002, Henry and Pulcino 2009).

The view of the female participants of our study that killing animals for agricultural purposes is acceptable could be associated with the fact that women were at the forefront at the beginning of agricultural lifestyle whereas the male participants' view that ending an animal's life by hunting is acceptable could be associated with the fact that men were at the forefront at the beginning of hunting tradition (Table 2). The fact that hunting is still a male-dominant field can account for the basis of the second finding. The fact that the females in the engineering group supported slaughtering animals for food less than males, and the females in the medicine group supported animal killing for fur less than did the males could be explained with their human being more tenderhearted and compassionate (Table 2). In some studies, it is emphasized that there is a strong relationship between the attitudes towards and empathy for animals (Signal and Taylor 2007, Kielland et al 2010, Knight et al 2010). A study conducted with psychology students found that females tended to protect the lives of animals more than did men, which is consistent with the findings of this present study (Eldridge and Gluck 1996). In a study performed with Italian adolescents too, girls opposed animal killing through hunting or

for fur/leather production more strongly than did boys (Pagani et al 2007). We would like to mention a study because they were conducted with students within a similar thematic framework of our study although their findings were not directly comparable to those of our study. In a study conducted with students of different nationalities on the use of animals, the difference determined between the students was not statistically significant; however, females were more sensitive to animals' suffering than were males (Phillips and McCulloch 2005).

In a study conducted with 244 university students majoring in biology, computer and English language, it was found that while most of the participants (75%) opposed killing animals for clothing, fewer of them (53%) but supported killing animals for food, which is in line with our study results indicating that all the participants approved animal killing for clothing at the lowest level and that they approved animal killing for food production (Stanisstreet et al 1993).

Conclusions

In conclusion, when the results are taken into account as a whole, it is seen that the participants did not stay at the limits but in the average or moderate of the range of approval/disapproval. On the other hand, when they are compared with their preferences, it is seen that they mostly tended to cluster in the approval side. It is possible to say that they more strongly approved of animal killing practices concerning the benefits of larger portion of the population and having a wider place in the ordinary course of life. From a different point of view, practices considered beneficial were approved, whereas practices considered arbitrary or merciless were disapproved. Based on our observations of the general population's views related to the value of animal life and approval of animal killing, we could say that the participants' attitudes towards animal killing reflect those of the general population. Our study can be considered as a pioneer among national studies conducted on the value of animal life, because it comparatively assesses the reasons of animal killing. Studies to be conducted with the general population or various specific groups can provide realistic information about approval/disapproval of animal killing and society's perception of animals. It is possible to take advantage of such knowledge in theoretical discussions and practical arrangements regarding human-animal relationships. Therefore, we recommend that similar studies should be conducted to determine attitudes of different cultures and sub-cultures towards this issue.

Acknowledgement

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