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RESEARCH ARTICLE

Evaluating the Awareness Level of Zoonotic Diseases Among Final-Year Veterinary Students

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ABSTRACT

Zoonotic diseases have significant implications for public health, and veterinary professionals are essential in their prevention and control. This study aimed to evaluate the level of zoonotic disease awareness among final-year veterinary students and explore their perspectives on protection against these diseases. A survey was administered to 128 final-year veterinary students, and the data were analyzed to investigate the associations between demographic factors and cumulative scores, which were based on six statements related to zoonosis awareness. The results showed a moderate level of awareness among the participants. No significant differences in cumulative scores were observed with respect to age (P = 0.769), gender (P = 0.342), geographical region of residence (P = 0.565), living area (P = 0.748), and grade point average (P = 0.468). However, students who owned or took care of companion animals (4 [1-6]) exhibited higher cumulative scores compared to those who did not own companion animals (3 [1-6]; P = 0.011). Further research is needed to explore the underlying factors and develop educational interventions that promote zoonotic disease awareness among veterinary students.

Key Words: animal, education, questionnaire, survey, zoonosis

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Veteriner Fakültesi Son Sınıf Öğrencilerinin Zoonoz Hastalıklar Konusundaki Farkındalık Düzeylerinin Değerlendirilmesi

ÖZ

Zoonotik hastalıkların halk sağlığı üzerinde önemli etkileri vardır ve veteriner hekimler bu hastalıkların önlenmesi ve kontrolünde çok önemli rol üstlenmişlerdir. Bu çalışma, son sınıf veteriner fakültesi öğrencilerinin zoonoz hastalıklar konusundaki farkındalık düzeylerini değerlendirmek ve bu hastalıklardan korunma konusundaki bakış açılarını araştırmak amacıyla yapılmıştır. 128 son sınıf veteriner fakültesi öğrencisine bir anket uygulandı ve zoonoz farkındalığıyla ilgili altı ifadeye dayanan demografik faktörler ile kümülatif puanlar arasındaki ilişkileri araştırmak için veriler analiz edildi. Sonuçlar, katılımcılar arasında orta düzeyde bir farkındalık olduğunu gösterdi. Yaş (P = 0.769), cinsiyet (P = 0.342), yaşanılan coğrafi bölge (P = 0.565), yaşanılan bölge (P = 0.748) ve not ortalamasına göre kümülatif puanlarda anlamlı bir fark gözlenmedi (P= 0.468). Ancak, evcil hayvanlara sahip olan veya onlara bakan öğrenciler (4 [1-6]), evcil hayvanlara sahip olmayanlara kıyasla (3 [1-6]; P = 0.011) daha yüksek kümülatif puanlar sergiledi. Altta yatan faktörleri araştırmak ve veteriner fakültesi öğrencileri arasında zoonotik hastalık farkındalığını teşvik eden eğitimsel faaliyetleri geliştirmek için daha fazla araştırmaya ihtiyaç vardır.

Anahtar Kelimeler: Anket, eğitim, hayvan, survey, zoonoz

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INTRODUCTION

Zoonotic diseases, which are infectious diseases that can be transmitted between animals and humans, have significant implications for global public health (Rahman et al. 2020; Kheirallah et al. 2021). Zoonotic diseases have gained increasing attention in recent years due to their potential to cause outbreaks, pandemics, and significant morbidity and mortality in both animals and humans (Baker et al. 2022). Veterinary professionals play a crucial role in the prevention, diagnosis, and control of these diseases, making it imperative to assess their level of awareness and knowledge (Pappaioanou 2004; Lorusso et al. 2020).

The undergraduate veterinary education program in Türkiye typically spans five years. The veterinary curriculum in Türkiye covers a wide range of subjects including basic sciences (such as anatomy, physiology, and biochemistry), preclinical science (such as microbiology, virology, and pathology) food hygiene and technology (such as dairy hygiene and technology, and public health), clinical sciences (such as medicine, and surgery), and animal husbandry and animal nutrition (such as animal feding and genetics). The practical training and clinical rotations commence in the sixth semester and reach their culmination in the final semester with an internship, during which students primarily undergo practical education within clinics, farms, and research facilities (Ozen and Ozen 2006). Evaluating the knowledge and preparedness of veterinary students before graduation may provide a comprehensive understanding of their educational needs and potential gaps in training (Sander and Miller 2021; Routh et al. 2022).

Considering the findings of Kutlu et al. (2014), which identify direct contact with excretions from infected animals and inhalation of airborne droplets as primary modes of transmission for zoonotic diseases, veterinary students face an increased risk of contracting these diseases due to their regular exposure to infected animals during their education. Therefore, the primary objective of this study was to assess the level of awareness among final-year students concerning zoonotic diseases, as well as to examine students' perspectives on protection from such diseases.

MATERIAL and METHODS

This study received approval from the Ethical Committee for Social Science at Burdur Mehmet Akif Ersoy University (2023/380). A voluntary survey was conducted among final-year students enrolled in the Faculty of Veterinary Medicine Burdur Mehmet Akif Ersoy University.

The questionnaire underwent a pre-testing phase among a group of twenty selected veterinary students from the previous year, and necessary adjustments were made accordingly. The resulting sample consisted of 128 final-year students who had completed and undertaken all the theoretical courses. The questionnaire spanned one side of A4 paper, and participants were required to respond to the questions by circling one of the available answer options.

The questionnaire comprised three parts, consisting of a total of 12 questions. The first section covered student demographics, including gender, age, geographical region of residence, urban or rural living area, ownership or caretaking of companion animals, and grade point average. The second section evaluated students' comprehension of the definition of zoonotic disease through a single statement. Additionally, students' viewpoints on protection from zoonotic diseases were assessed using five statements through three-point Likert scale questions (Table 1). Each correct response related to questions was given a score of one point, and the cumulative score was calculated out of a total of 6 points.

Table 1. Questionnaire on the definition of zoonotic diseases and awareness of prevention among final year veterinary students

Gender	Male		Female	
Age	16-20	21-25	25-30	30>
Geographical region of residence	Mediterranean Region Aegean Region	Black Sea Region Southeastern Anatolia Region	Eastern Anatolia Region Central Anatolia Region	Marmara Region
Living area	Rural		Urban	
Ownership or caretaking of companion animal	Yes		No	
Grade point average	AA (90–00) CC (70–74)	BA (85–89) DC (65–69)	BB (80–84) DD (60–64)	CB (75–79) FD (01–59)
Which sentence provides the most accurate understanding of the definition of zoonotic diseases?	Zoonotic diseases have only the potential to be transmitted from animals to humans	Zoonotic diseases have only the potential to be transmitted from humans to animals	Zoonotic diseases can be transmitted both from humans to animals and from animals to humans	
Prior to making contact with the animal	Washing hands with water and soap or disinfectants	Washing hands with water	No washing	
After coming into contact with the animal	Washing hands with water and soap or disinfectants	Washing hands with water	No washing	
Using examination gloves before making contact with the animal	Yes	Sometimes	No	
Wearing a mask before approaching animals	Yes	Sometimes	No	
Wearing an apron or upper and lower suit before handling animals that come to the clinic	Yes	Sometimes	No	

Statistical Analysis

The data were analyzed using MedCalc (Version 13.2.2; MedCalc, Ostend, Belgium). The normal distribution of the data was assessed using the Shapiro-Wilk test. The cumulative scores of students based on gender, living area, and ownership or caretaking of companion animals were compared using the Mann-Whitney U test. The cumulative scores of students based on age, geographical region of residence, and grade point average were compared using the Kruskal-Wallis test. Data were expressed as median (range). Statistical significance was set at $p < 0.05$.

RESULTS

A total of 71 students (60.2%) were male, while 47 students (39.8%) were female. The majority of these students (n=110; 93.2%) fell into the 21-25 age range. In terms of geographical distribution, the Mediterranean region had the highest number of students (44 students, 37.3%), followed by the Aegean region with 34 students (28.8%). Out of the total, 29 students (24.6%) resided in rural areas, while 89 students (75.4%) lived in urban areas. Among the students, 69 (58.5%) owned or took care of a companion animal, while 49 (41.5%) did not have any companion animals. The most common grade point average among the students was BB (n=37, 31.4%), followed by CB (n=31, 26.3%) (Table 2).

No significant differences in cumulative scores were observed with respect to age (P = 0.769), geographical region of residence (P = 0.565), and grade point average (P = 0.468). Similarly, no significant differences in cumulative scores were found based on gender (P = 0.342) and living area (P = 0.748). However, students who owned or took care of companion animals (4 [1-6]) exhibited higher cumulative scores compared to those who did not own companion animals (3 [1-6]; P = 0.011) (Table 2).

Table 2. Demographic distribution of 128 final year veterinary students responding to the questionnaire on zoonotic disease awareness and prevention.

	n (%)	Cumulative score	*P*
	Gender	Median (Min-Max)	
Female	47 (39.8%)	4 (1-6)	0.342
Male	71 (60.2%)	4 (1-6)	
	Age		
16-20	1 (0.8%)	3 (3-3)	
21-25	110 (93.2%)	4 (1-6)	0.769
26-30	6 (5.1%)	3.5 (3-6)	
30>	1 (0.8%)	3 (1-3)	
	Geographical region of residence		
Mediterranean Region	44 (37.3%)	4 (1-6)	
Black Sea Region	8 (6.8%)	3 (2-6)	
Eastern Anatolia Region	2 (1.7%)	3 (3-3)	
Marmara Region	13 (11%)	4 (3-5)	0.565
Aegean Region	34 (28.8%)	4 (1-6)	
Southeastern Anatolia Region	2 (1.7%)	4.5 (3-6)	
Central Anatolia Region	15 (12.7%)	4 (1-6)	
	Living area		
Rural	29 (24.6%)	4 (1-6)	0.748
Urban	89 (75.4%)	4 (1-6)	
	Ownership of companion animal		
Yes	69 (58.5%)	4 (1-6)	0.011
No	49 (41.5%)	3 (1-6)	
	Grade point average		
AA (90–00)	9 (7.6%)	3 (1-6)	
BA (85–89)	16 (13.6%)	3.5 (1-6)	
BB (80–84)	37 (31.4%)	4 (2-6)	
CB (75–79)	31 (26.3%)	4 (1-5)	0.468
CC (70–74)	12 (10.2%)	4 (1-6)	
DC (65–69)	9 (7.6%)	4 (3-6)	
DD (60–64)	4 (3.4%)	3.5 (2-5)	

n: Number of students

DISCUSSION

This study offered valuable insights into zoonotic disease awareness among final year veterinary students, representing one of the pioneering studies conducted in Türkiye on this topic. The findings revealed a moderate level of awareness among participants, contributing to the existing literature and providing an understanding of the current state of zoonotic disease knowledge among veterinary students in Türkiye.

Regarding the relationship between the demographic factors and cumulative scores, our analysis revealed no significant differences based on age, gender, geographical region, grade point average, or living area. These findings suggest that these variables may not directly influence the overall knowledge and understanding of zoonotic diseases among veterinary students in our sample. However, it is worth noting that students who owned or took care of companion animals had significantly higher cumulative scores compared to those who did not have pets. This finding indicates a potential positive association between pet ownership and enhanced awareness of zoonotic diseases. Additionally, companion animal ownership may positively influence academic performance by contributing to reduced stress levels, increased emotional well-being, and improved focus, leading to enhanced academic performance (Pendry et al. 2023). Pets are known to provide comfort, companionship, and stress relief, which can positively impact students' overall well-being and potentially translate into improved academic outcomes (Grajfoner et al. 2017).

While this survey on zoonotic diseases awareness and prevention among students provides valuable insights, there are certain limitations that should be considered when interpreting the results. The survey relies on self-reported data provided by the students, which may be subject to recall bias or social desirability bias. Participants may have provided responses that they perceived as socially acceptable or may not accurately recall their behaviors or knowledge related to zoonotic diseases and prevention. The questionnaire utilized multiple-choice questions and predefined answer options. While this allows for standardized data collection, it limits the participants' ability to provide nuanced responses or express their level of understanding in more detail. This may result in oversimplification of

certain aspects of zoonotic diseases awareness and prevention. The survey did not include follow-up questions to explore participants' reasoning behind their responses or to gain further insights into their knowledge or practices. This restricts the depth of understanding regarding the factors influencing awareness and behaviors related to zoonotic diseases among the student population.

CONCLUSION

In conclusion, this study suggests a potential association between pet ownership and enhanced awareness of zoonotic disease protection among veterinary students. The higher cumulative scores among students who owned or cared for companion animals may indicate a greater understanding of zoonotic diseases and their prevention measures. Further research is needed to explore the underlying factors contributing to this relationship and to develop educational interventions that promote zoonotic disease awareness among all veterinary students, regardless of pet ownership status.

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