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Food safety knowledge and hygiene practices among veterinary medicine students at Trakia University, Bulgaria

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ABSTRACT

The results from the first survey on food safety knowledge, attitudes and hygiene practices (KAP) among veterinary medicine students in Bulgaria are reported in this study. It was designed and conducted from September to December 2015 using structured questionnaires on food safety knowledge, attitudes and practices. Data were collected from 100 undergraduate veterinary medicine students from the Trakia University, Bulgaria. It was observed that the age and the gender did not affect food safety knowledge, attitudes and practices. There was no significant difference (p > 0.05) on food safety knowledge and practices among students based on the years of study. A high level of food safety knowledge was observed among the participants (85.06%), however, the practice of food safety was above average (65.28%) while attitude toward food safety was high (70%). Although there was a significant awareness of food safety knowledge among respondents, there is a need for improvement on food safety practices, interventions on food safety and foodborne diseases.

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Introduction

Global occurrence of foodborne illnesses is of public health importance as both developed and developing countries are affected. In a recent report conducted by the World Health Organization (WHO), it was revealed that 1 in 10 people fall ill globally due to foodborne diseases while more than 91 million people are affected in developing countries despite various research and intervention measures toward food safety [1]. Similarly, 2.2 million children die of diarrhea annually in developing countries [2]. Occurrence of foodborne diseases however, is more prevalent in developing countries due to poor hygiene, lack of potable drinking water, contaminated inappropriate food storage facilities and lack of food safety education [3]. According to European Food Safety Authority, more than 5000 foodborne outbreaks have affected over 69000 people [4]. The burden of foodborne diseases is global and therefore requires global efforts in terms of collaboration, funding, awareness, and commitment from various governments especially

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in developing nations and policy makers. Food safety awareness and education should be emphasized and encouraged among citizens. This is because most foodborne disease outbreaks occur at home, restaurants, and/or at social functions. Due to the continuous increase and the emergence and re-emergence of foodborne diseases, the WHO created the Foodborne Disease Burden Epidemiology Reference Group (FERG) in 2006 to investigate the global burden of foodborne diseases. Various studies were carried by this group since then including various consultations on how to mitigate these diseases affecting developed and developing nations alike.

Food handlers and consumers are important factors in foodborne disease outbreaks due to mishandling of food during preparation, processing or storage [5]. Similarly, meta analytical study by Patil et al. [6] it was stated that knowledge, attitude, and practice of food safety among food handlers contribute to food poisoning. Food handlers are individuals such as students, workers, parents who prepare and/or serve prepared food. Understanding the perception of food handlers is of significant importance in food safety education. There are many factors influencing the occurrence of foodborne diseases in developing countries which when properly addressed, can lead to reduced incidence of these diseases. Firstly, homes in developing countries serve as key contributors

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to foodborne disease outbreaks due to contamination of raw food with prepared food, lack of food safety awareness, poor personal hygiene, improper food handling, and preparation at home. Food intended for consumption can be contaminated in various ways. Contamination can occur from the farm, during transportation to consumers, and even through the consumers themselves. When food gets to the house of consumers, factors such as storing raw food together with prepared food in the refrigerator could cause contamination. Use of unwashed cutting boards could also lead to cross contamination. Consumers and food handlers are encouraged to maintain good personal hygiene in order to prevent spread of foodborne diseases. For example, proper hand wash after visiting a toilet is a key to prevention of introduction of microorganisms into food.

Veterinary medicine plays a significant role in food safety. Among the several courses taught to students in veterinary medicine at Trakia University is food safety. This course has been taught for several years. However, no previous study has been carried out to evaluate food safety knowledge, attitudes and practices among these students. This survey therefore aimed to evaluate the knowledge, attitude and practices of students studying veterinary medicine and the effects of age, gender and education level on food safety knowledge.

Materials and methods

Research design

The study was designed and conducted from September to December 2015 using structured questionnaires on food safety knowledge, attitudes and practices. This study involved 100 students currently enrolled in veterinary medicine education at the Trakia University, Bulgaria. Surveyed students had not taken the course of food safety.

Questionnaire design and data collection

The questionnaire used in this study comprised 64 items developed based on previous methods [5,7–9]. Questionnaires were sent to the consented participants via a Google document link. Each questionnaire was made up of four sections. Section 1: Demographic section to collect information about age, gender, marital status and years of study. Section 2 was on food safety knowledge of participants and comprised 20 questions. Section 3 examined 20 questions on food safety attitudes among participants while section 4 assessed food safety hygiene practices with 20 questions. The questionnaire took approximately 20 min to complete.

Statistical analysis

Collected data were analyzed using Social Package for Social Scientist (SPSS) version 21. Incomplete responses were not included for statistical analysis. Analysis carried out include descriptive statistics and analysis of variance (ANOVA) at 95% confidence level. Independent t-test was used to show relationship between age, gender and food safety knowledge while ANOVA was used to find out impact of education on food safety knowledge.

Results and discussion

Demographic responses

Only 90 out of all 100 students that consented to this study have correctly filled the questionnaire (90% response rate). The results of demographic variables showed that 94.4% of the respondents

Table 1

Demographic information of respondents.

Demographic variables	n	%
Age		
21–25 years old	85	94.4
26-30 years old	5	5.6
Gender		
Male	40	44.4
Female	50	55.6
Marital status		
Single	74	82.2
Married	2	2.2
Engaged	13	14.4
Divorced	1	1.1
Year of study		
<1 year	10	11.1
1–2 years	13	14.4
3–5 years	66	73.3
6 years	1	1.1

were within the age range of 21–25 years while 5.6% were between 26-30 years of age as shown in Table 1. However, no significant difference in food safety knowledge was observed between the age groups. Gender status revealed that 55.6% of the respondents were female vs 44.4% male similarly to other studies of Hassan and Dimassi [7] and Takeda et al. [10] that studied food safety knowledge among university students in Lebanon and Japan. Similarly, Ovca et al. [11] and Lazou et al. [12] observed 49.1% and 67.1% responses from female students. Osaili et al. [13] stated that females as future mothers play significant role in prevention of foodborne diseases. In our study, gender did not influence food safety knowledge unlike the study of Hassan and Dimassi [7] demonstrating that both males and females had equal food safety knowledge. While 82.2% of respondents were single, 14.4% were engaged, 2.2% - married and 1.1% – divorced. Educationally, 73.3% of the respondents had education for 3-5 years, 14.4% 1-2 years, 11.1% less than 1 year and 1.1% 6 years.

Food safety knowledge

As shown in Table 2, 94.4% of the respondents were aware of food poisoning. More than 50% of the respondents never experienced food poisoning because of knowing how to prevent it. Similarly, 81.1% of respondents always used gloves while handling food to reduce risk of food contamination. Almost all respondents believed that food poisoning can have significant health and economic effects on the society. A very large proportion (95.6%) of the respondents admitted that children, pregnant women and older individuals are more at risk of food poisoning because they have weak immune systems compared to healthy individuals. In this survey, the majority of the respondents agreed that hand washing before cooking reduces the risk of food contamination while almost three quarters of the respondents believed that washing of hands after handling raw food prevents foodborne disease. Over 95% of the respondents agreed that diarrhea can be transmitted through contaminated food. The majority of the respondents affirmed that microorganisms can be found on the surface of human skin, nose and mouth of healthy handler while 91.1% agreed that personal hygiene can prevent food contamination and that contaminated water can be a vehicle for foodborne disease transmission. More than three quarters (75.6%) of the students supposed that storing raw and cooked food together can cause contamination of food. Of all respondents, 96.7% responded that food handlers having diarrhea, flu and sore throat can pose risk of food contamination. However, 45.6% of the respondents disagreed that leftover food that smells good is still safe to eat. Among the respondents, 86.7%

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