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Assessing the level of awareness of avian influenza among Greek students

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ABSTRACT

Introduction: Current concern regarding avian influenza, the so-called 'bird flu', concerns H5N1, a highly pathogenic avian influenza form that has spread across Asia, into Western Europe and Africa. The wide spread of bird flu makes it a serious threat to humans. A key factor in reducing the risk of an influenza pandemic is adequate preparedness, including providing prospective, accurate information to the public. In our study, we attempted to assess the level of information among Greek students aged 8 to 15 years, regarding avian influenza.

Methods: A descriptive study was carried out in 6 Greek prefectures to determine the information level regarding avian influenza among students, concerning methods of transmission, symptoms and prevention measures.

Results: In total, 2805 Greek students participated in the study (47% male and 53% female). Approximately 90% of the students reported knowing what 'bird flu' is, and 25% wrongly answered that there had been at least one human infection from avian influenza in Greece. Nearly half the students (46.2%) reported that an effective vaccine exists against avian influenza, and almost all the study participants (95.7%) believed that they should not touch an ill or dead bird. Forty-two per cent of the students reported that avian influenza can be transmitted from human to human, and only 11.9% believed that humans can present symptoms after being infected. The media was their main source of information.

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Conclusion: The level of information about avian influenza among Greek students was found to be satisfactory, if not ideal. These findings, along with the potential for a future avian influenza pandemic, highlight the need for intensified health education programs in Greek schools, in order to deal with this serious public health problem.

Key words: avian influenza, Greece, H5N1, health education programs, influenza pandemic.

Introduction

Influenza is a seasonal epidemic disease. In temperate climates it occurs most commonly during the colder months; in tropical and subtropical countries, it occurs with one or two peaks of increased activity throughout the year. Worldwide pandemics are less constrained by season. In the past century three influenza pandemics have been certified, resulting in millions of deaths[1].

The three types of human influenza virus recognized (types A, B and C) have been classified members of the genus Orthomyxovirus. Their individual names demonstrate either their type, location or the year of their isolation[1,2]. Major outbreaks and severe disease are caused only by influenza A and B, whereas influenza C is associated with a common cold-like illness. The two major surface glycoprotein antigens (hemagglutinin-HA or H and neuraminidase NA or N) undergo gradual, progressive antigenic variation, referred as 'antigenic drift' and 'antigenic shift'[3,4]. This makes the viruses capable of escaping immune reactions and causing epidemics.

Avian influenza is caused by the H5N1 type of virus A. The first known infection with H5N1 occurred in Hong Kong in 1997 (18 people contacted the virus and six of them died). In 2003, another two people from Hong Kong, were found to be infected with H5N1 and one of them died. Since then, 229 cases of human infection have been reported with a mortality rate greater than 50%[1,5-8].

The difficulty of predicting the pathogen ability of a new virus, and the particular characteristics of a future avian influenza pandemic prompted WHO to formulate strong and flexible response plans. The key factor for success in reducing the risk of an influenza pandemic is early and adequate public preparedness. This descriptive study aimed to determine the level of information about the so-called 'bird flu' among students aged 8 to 15 years at different Greek locations. More specifically, we attempted to assess the level of knowledge regarding the bird flu among Greek students, as well as their ability to react efficiently in case of an avian influenza pandemic.

Methods

Setting

The study was conducted in a sample of schools in 6 different Greek prefectures (Attiki, Eyvoia, Helia, Fthiotida, Serres and Lesvos) with a total population of 4 million people. Participating schools were located in rural (population <2000), semi-urban (population >2000 and <10 000) or urban districts (population >10 000).

Study design and sample

Permission to conduct this descriptive study was obtained from the Greek Ministry of Health. Participants were not required to record their personal details, nor to answer all questions in the questionnaire. In total, 2805 students aged 8 to 15 years were selected. A two-stage cluster sampling

technique was used in the identification of study participants. In the first stage, primary schools with students in grades 3 to 6, and high schools with students in grades 1 to 3 were chosen, with the probability of being included in the sample proportionate to enrolment size. Enrolment information was obtained from the Ministry of Education. The second stage consisted of systematic equal probability sampling. Classes were randomly selected from within the chosen schools and all the students within the selected classes were eligible to participate in the study.

Questionnaire

The study attempted to discover how informed and alert Greek students were regarding avian influenza. The questionnaire consisted of 15 items designed to assess students' knowledge of avian influenza characteristics, for example: What is avian influenza? Is human-to-human infection possible? Is there a vaccine? What are the symptoms? Has there ever been an avian influenza case in Greece?

Statistical analysis

Statistical analysis was performed using SPSS for Windows v 10.0 (SPSS Inc; Chicago IL, USA). The χ^2 test was used to determine statistically significant differences among subgroups of the study's participants.

Results

Students from 6 prefectures were selected to participate in the study. The total sample consisted of 2805 children aged between 8 and 15 years. In total, 1318 (47%) were male and 1418 (53%) were female; 1122 (40%) students were from urban districts, 814 (29%) from semi-urban and the remaining 869 (31%) were from rural districts.

General knowledge about 'bird flu'

Among the 2805 participants, 2442 (87%) reported knowing what the avian influenza is, while only 363 (13%) didn't know. In total, 1900 (67.7%) were aware that humans have been infected by bird flu. Participants were also asked if cats can be infected and 1761 (62.8%) answered positively. Regarding whether an effective vaccine exists, 1296 (46.2%) reported there was a vaccine, and 1509 (53.8%) said there was no vaccine. Interestingly, 2021 of the students (72%) said the source of their information about avian influenza was newspapers and television, and only 784 (28%) were informed by their families or teachers.

Symptoms and transmission of avian influenza

Study participants were asked about the symptoms of avian influenza; 1060 (37.8%) said they are similar to those of a common cold-like illness, while 1745 (62.2%) reported that they are different from a common cold. Furthermore, 2465 (88.1%) believed that humans cannot contract bird flu, with only 335 (11.9%) reporting that this is possible. In total, 2441 (87%) reported that bird flu can be transmitted to humans by ill birds, and 364 (13%) said by birds in general. Moreover, 1179 (42%) thought avian influenza can be transmitted from human to human. However, 2587 of the participants (92.2%) reported that bird flu is transmitted between countries by bird-to-bird infection only.

Avian influenza in Greece

Study participants were asked whether they had heard of an avian influenza case in Greece in either humans or animals, and whether they were aware of any human infection by bird flu in the country. Although an avian influenza case has never occurred in Greece, 63% and 25% of the students, respectively, were misinformed. The results are shown (Table 1).

Table1: Knowledge level regarding cases of 'bird flu' in Greece

Knowledge	Yes *n* (%)	No *n* (%)
Heard of a case of "bird flu" in Greece, either in humans or animals	1783 (63.5)	1022 (36.5)
Heard of a case of "bird flu" in Greece in humans	702 (25)	2103 (75)

Awareness of protection measures

The study also aimed to determine how informed students were about protection measures. Of all students, 2282 (84.3%) knew that the consumption of well-cooked chicken and eggs is safe, and only 523 (18.7%) reported that it is not. Moreover, 2541 (90.6%) believed they should wash their hands and inform their parents as soon as they found a dead bird. Only 264 (9.4%) thought that nothing should be done. In all, 2684 (95.7%) were aware that a dead or ill bird should not be touched, while only 4.3% were unaware.

Data stratified according to sex

When data were stratified according to sex, no statistically significant differences were found, apart from on the question about whether avian influenza could be transmitted from human to human. In this case 778 females (54.9%) answered correctly, and only 401males (30.4%) gave the right answer ($p<0.05$).

Data stratified according to rural, semi-urban, or urban origin

When data were stratified according to rural, semi-urban or urban origin of the participants, only one significant difference was found. This was in the question regarding what students should do if they encountered a dead bird: 200/869 students (23%) from rural districts answered that no action was necessary, in contrast with students from urban and semi-urban areas where only 29/1122 (2.6%) and 35/814 (4.3%) respectively, answered that nothing needed to be done ($p<0.05$).

Discussion

During the past 3 years, more than 250 cases of human H5N1 infection have been documented, with an associated mortality approaching 60%[1]. Experts are concerned that 'antigenic drift' or 'antigenic shift' of the virus may result in a pandemic, capable of killing millions of people[2,5].

To date, no effective treatment exists for avian influenza. In a report of 10 cases in Vietnam, treatment with neuraminidase inhibitors (oseltamivir or zanamivir) was associated with an 80% mortality rate[9,10]. In addition, resistance to oseltamivir has already been documented[9,11].

Regarding the existence of an effective, preventive therapy, our study demonstrated that almost half the students (46.2%) wrongly believed that an effective vaccine against avian influenza exists. Contrary to students' perceptions, according to findings reported in March 2006, an experimental H5N1 vaccine produced neutralizing antibody responses in only 56% of vaccinated people[2,12]. Moreover, a vaccine based on recombinant protein and DNA-technologies will not be available in the foreseeable future. Greek students' opinions regarding such serious issues clearly demonstrated that the level of their information about avian influenza is not ideal.

That 72% of our participants were informed by the media (television, newspapers etc) is of concern. Media reporting is often sensational, rather than substantial, as was evident in the UK in 2005 when reporting of the spread of the virus to Eastern Europe was clearly motivated by its 'newsworthiness'. A more reliable source of information is needed, such as a global center that follows WHO guidelines

regarding the provision of accurate, adequate and up-to-date information.

Regarding the fear of an influenza pandemic, all nations should adopt an emergency preparedness plan, among other elements taking responsibility for providing a high level of information to the public. In the case of some nations, however, warnings about the disease have produced only transient and inconsistent changes in buying and cooking poultry. For instance, in Hong Kong where an estimated 35 325 000 live chickens are purchased annually, of 976 surveyed persons only 30% reported always washing their hands after purchasing live birds, and only 30% agreed that live chickens are a health risk[13]. This contrasts with our study, in which 81.3% participants stated that the consumption of well-cooked chicken and eggs is safe, and 90.6% understood they should wash their hands after touching a dead bird.

Additionally, both an understanding of avian influenza transmission methods and symptoms are unclear for a significant percentage of people. This was apparent in our study when 2465 respondents (88.1%) reported that humans cannot suffer from 'bird flu', while almost half (42%) reported that avian influenza can be transmitted from human to human. In contrast to this, 2441 of the Greek school children in our study (87%) reported that 'bird flu' is transmitted by ill birds to humans, and only 364 (13%) said by birds in general. There was some confusion, however, regarding symptoms with 1060 study participants (37.8%) answering that they are similar to those of a common cold-like illness, while 1745 (62.2%) reported that they are different. This is a vital issue, because rapid recognition of and response to avian influenza symptoms facilitates early isolation and containment of the H5N1 virus. International dissemination of accurate information, and the adoption of a WHO-auspiced strategic plan by all nations may be the key to prevention of a 'bird flu' pandemic.

Preparedness should begin with public health departments, schools and community centers providing public education regarding the importance of personal and domestic hygiene (hand washing and kitchen-surface sanitation) and the adoption of safe cooking methods[5,13]. People of all ages should be equipped with an understanding of avian influenza transmission methods, symptoms and preventive measures. Providing the public with accurate information and keeping them updated will contribute greatly to preventing a future pandemic[2,13].

It has been proven that domestic birds can excrete large quantities of a highly pathogenic virus without showing any signs of illness[14]. People from rural and remote areas are more likely to come across an ill bird than urban dwellers. Fortunately, in our study the understanding of rural students regarding avian influenza was equal to that of students from urban districts.

Regarding the perceptions of the predominantly media-informed Greek students about the presence of avian influenza in Greece, 63.5% reported that a case of avian influenza, either in humans or in animals, had occurred in Greece. This reinforces the conclusion that information about avian influenza provided by the media is inadequate, and that public health educational programs are essential in Greek schools.

Conclusion

The level of information about avian influenza among Greek students aged 8 to 15 years was found to be satisfactory, if not ideal. Although the students were adequately informed on some aspects, they were unfamiliar with other important issues. In the light of a potential future avian influenza pandemic, our findings highlight the need for intensified health education programs in Greek schools in order to deal with this serious public health problem.

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