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Abstract

Background: One Health is a multisectoral and interdisciplinary concept that acknowledges the interconnections between people, animals and their shared environments. Understanding the views of physicians and veterinarians may help promote One Health principles.

Aim: To assess the knowledge and perceptions of physicians and veterinarians about One Health in Türkiye.

Methods: This was a descriptive mixed-methods study among 74 doctors and 221 veterinarians in Türkiye. Quantitative data were collected through a questionnaire sent by email to members of the Ankara Chambers of Medicine and the Ankara Chambers of Veterinary Medicine. Qualitative data were obtained through focus group discussions with boards of directors of both chambers. Recordings were transcribed and the data were categorized in line with the questionnaire. The data were analyzed using SPSS version 23.0.

Results: Few (6.3%) of the veterinarians had not heard about One Health while majority of the physicians (63.5%) had not heard about it (P

Conclusion: The application of One Health principles by the physicians and veterinarians was limited, and few of them had collaborated with other disciplines during their practice. Joint training and further professional and educational integration are needed in Türkiye to support the implementation of One Health.

Keywords: One Health, doctors, veterinarians, zoonosis, environment, Türkiye.

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Introduction

One Health is a multisectoral and interdisciplinary approach – at the regional, national and global level – to achieve the best health outcomes, recognizing the interconnectedness of human, animal, plant life and their shared environments. Today, the definition of One Health has been expanded to cover topics such as food safety, poverty, gender equality, health system strengthening, infectious diseases, chronic diseases, toxicology, ecology, agriculture, sustainability, preventive medicine, economics, anthropology and social sciences (1–3). It is expected that professionals working in the above-mentioned fields will work in cooperation. The COVID-19 pandemic emphasized the importance of prioritization of transdisciplinary systems, which can be attained through One Health principles (4–6). Although the One Health approach is compatible with the holistic definition of health, One Health is not fully understood and implemented in health sciences (7–9). Moreover, further studies are needed on One Health to help inform related policies and practices (10). Doctors and veterinarians have important roles to play in monitoring, planning, detecting, teaching, sharing information and policy-making related to diseases and response to disease threats. This makes it essential for them to have knowledge and awareness of One Health to enhance their ability to improve health-related policy, research and the practical implementation of One Health. One Health can facilitate collaborations between these health professionals and other related fields (11,12).

Understanding the views of doctors and veterinarians on One Health is a good starting point for promoting and implementing One Health principles to combat health threats. We hypothesized that medical doctors and veterinarians in Ankara, Türkiye may lack sufficient awareness and knowledge of the concept of One Health. Therefore, the aim of this study was to assess the knowledge, awareness and views of doctors and veterinarians in Ankara, Türkiye about One

Health and its application.

Methods

In this descriptive study, quantitative and qualitative data were collected. For the quantitative component, after reviewing the relevant literature, documents and reports, we developed a questionnaire to elicit the knowledge and views of doctors and veterinarians about One Health and their application of it. The questionnaire was sent via email to members of the Ankara Chambers of Medicine and Veterinary Medicine between 24 February and 24 April 2020. In total, 1069 members viewed the questionnaire. All members who completed the process by agreeing to fill out the questionnaire were included in the study.

Members of the boards of directors of the Ankara Chambers of Medicine and Veterinary Medicine were also interviewed online to explore the ideas and recommendations in more detail. The participants were asked about: (i) the scope of One Health; (ii) the awareness of One Health in Türkiye; (iii) ways to increase awareness of One Health; (iv) the responsibility of the professional chambers (bodies) in developing the concept of One Health; and (v) the activities related to One Health that could be undertaken in their own professional chambers. The online meeting with 6 board members of the Ankara Chamber of Medicines was held on 13 June 2020, while the meeting with 3 board members of the Ankara Chamber of Veterinary Medicine was held on 22 June 2020. With participants' permission, video recordings of the meetings done and transcribed. Recordings were re-watched and transcripts were re-read. Preliminary insights and further discussion notes were summarized following the topics of the questionnaire and categorized into different themes. The insights that emerged were grouped under subcategories and themes.

SPSS version 23.0 was used to evaluate the data. The chi-squared and Fisher exact tests were used to compare the differences between doctors and veterinarians in their knowledge and responses. P

Approval for this study was obtained from the Non-interventional Clinical Research Ethics Committee of Hacettepe University (decision number: 2019/22-16).

Results

A total of 295 professionals completed the questionnaire: 74 (25.1%) doctors and 221 (74.9%) veterinarians. Of the doctors, 29 (39.2%) worked at universities, 21 (28.4%) at the Ministry of Health and 17 (23.0%) in private health institutions. Of the veterinarians, 84 (38.0%) worked at the Ministry of Agriculture and Forestry, 71 (32.1%) at universities and 41 (18.6%) were

self-employed.

Most of the doctors (63.5%) and only a few of the veterinarians (6.3%) had never heard of One Health; P Table 1). Few doctors or veterinarians had received training in One Health, although significantly more veterinarians had received training than doctors (25.3% versus 4.1%; P Table 1
).

When asked which areas One Health could contribute to, most participants mentioned: control of zoonoses (96.9%); facilitation of information-sharing about common health problems among humans and animals (95.9%); and ensuring food hygiene and inspection (94.2%). Other areas mentioned were: aiding detection and prevention of environmental pollution; combating antibiotic resistance; providing healthy/standardized laboratory animals; education; helping maintain ecological balance; protection against electromagnetic pollution; protecting social and mental health, animal health and nutrition; promoting a hygiene culture; supporting occupational safety; controlling pandemics, pesticides, carcinogens and obesogens; and supporting biomedical research and ecotoxicology (Table 1).

With regard to consideration of One Health during their work, 35.1% (26/74) of doctors and 73.3% (162/221) of veterinarians said that they applied the concept, always, often or rarely. When asked how One Health was applied in their work, 58.3% of the doctors and 55.3% of the veterinarians stated that this was through information-sharing and training activities. Other aspects of their work mentioned most were food safety and food consumption habits, and diagnosis and treatment practices (Table 1).

Participants were asked to name the three zoonotic diseases they thought were most common in Türkiye. The zoonotic disease listed by doctors were: brucellosis (56.8%), anthrax (32.4%), salmonellosis (29.7%), hydatid cyst (29.7%), rabies (28.4%), and tick-borne diseases–Crimean–Congo haemorrhagic fever, Lyme disease – (24.3%). The diseases cited by veterinarians were: brucellosis (88.7%), salmonellosis (43.9%), toxoplasmosis (35.3%), rabies (28.9%), anthrax (28.1%) and hydatid cyst (15.8%).

Of the doctors, 20.3% worked in zoonotic diseases, 60% of whom said that the most common zoonotic diseases they had encountered in their work were hydatid cyst, brucellosis and anthrax. In comparison, 50.7% of the veterinarians worked in zoonotic diseases and the zoonotic disease they encountered mostly were brucellosis, tuberculosis, and rabies. Majority of

veterinarians (62.5%) said that they had cooperated with different sectors or professions during their work on zoonotic diseases, mostly with other veterinarians. Of the doctors who had worked in zoonotic diseases, 40.0% said that they had cooperated with different sectors or professions during their work.

When asked about the disciplines related to One Health, medicine and veterinary medicine were the most commonly mentioned disciplines by both doctor and veterinarians (Table 1). Other disciplines they considered were related to One Health were public health, ecology, epidemiology, biology, social sciences, anthropology, bioinformatics, bioengineering, environmental sciences, economics, political sciences, zoology, dentistry, pharmacy, agricultural sciences, food engineering, food hygiene, statistics ergonomics, philosophy, genetics and chemistry.

With regard to factors that could contribute to the development of One Health, joint training activities for faculties related to medicine, veterinary medicine, public health, and environmental health were mentioned by most of the participants, as was collaborative research for the development and evaluation of new diagnostic methods, drugs and vaccines for disease prevention and control across species (Table 1).

Most doctors and veterinarians (90.5%) thought that the development of One Health was necessary for the country as a means of health protection and promotion. Other reasons given were developing new diagnoses and treatments and coordinating interdisciplinary and interprofessional studies.

Participants were asked their opinion on the best approach to developing the concept of One Health in undergraduate and graduate training. More doctors (50.4%) than veterinarians (25.8%) thought that One Health should be included in a general framework integrated into health education at the undergraduate level. More veterinarians than doctors thought that there should be subject-specific teaching of specialties, including One Health, but with interdisciplinary communication and cooperation. For graduate levels, most veterinarians and doctors supported subject-specific teaching of specialties (Table 2).

Participants were asked about the role of their professional chambers in relation to One Health: 56 doctors (75.7%) thought that the Chamber of Medicine should have some responsibility for the implementation of One Health, while 11 (14.9%) said that their chamber already undertook action on One Health. Of the veterinarians, 172 (77.8%) thought that the Ankara Chamber of

Veterinary Medicine should have some responsibility for implementing One Health, while 75 (33.9%) said that their chamber had already undertaken action on this.

The opinions of members of the boards of directors of the professional chambers for medicine and veterinary medicine about One Health are presented in Box 1 . Responses to the question on the scope of One Health focused on the joint evaluation of the concept from different disciplines with emphasis on multidisciplinary and multisector involvement. The participants considered that awareness of the concept of One Health in Türkiye was low and that there was a need to simultaneously raise awareness among health professionals and the public. In order to increase awareness of the concept of One Health, the focus group participants suggested the use of social media and implementation of promotion and training activities. With regard to the responsibilities of the professional chambers to support the development of the concept of One Health, most participants emphasized actions that require the chambers to act jointly, not alone (Box 1).

Discussion

This study gathered quantitative and qualitative information on use of, awareness of, views on and approaches to One Health among doctors and veterinarians working in different fields in Türkiye.

More than half of the pathogens that cause disease in humans are animal-borne, which emphasizes the impact of zoonotic infectious diseases on human health (13–16). Hence, most of the doctors and veterinarians who applied the concept of One Health in their work said that they applied it with zoonotic diseases, although more than half of both groups did this through information sharing and training activities. No doctors and only a few veterinarians applied One Health through interprofessional or interinstitutional coordination. The study indicated that the doctors and veterinarians did not have many joint communication or common working environments at policymaking institutions. The board members of both professional chambers considered that the following activities could be carried out to develop One Health further: joint training for faculties of medicine, veterinary medicine, and schools of public health and environmental health; joint research; and establishment of communication platforms for related professions and intersectoral collaborations.

The knowledge of our respondents of the most common zoonotic diseases in Türkiye concurred with the study by the Turkish Institute for Health Policies (17). Neither group collaborated much with different professions or sectors apart from other veterinarians and doctors. Other disciplines should also be included while planning research and developing policy related to One Health (14,18). Systematic planning to provide continuous communication between

different disciplines and sectors can contribute to collaborative networks and research. Intersectoral application of the one-health concept provides successful results against a common health threat when good intersectoral communication and trust are ensured (19). Our participants considered that integrated surveillance systems and joint training activities could contribute to the development of One Health. Participants believed that One Health was necessary for health protection and promotion. After the avian influenza pandemic, the importance of communication and coordination between sectors and institutions was better understood, and local and international conferences and agreements focused on the pandemics (14). In addition, integrated systems with a One Health approach started to be established for early detection and effective prevention and control of emerging, re-emerging or increasing infectious diseases that can cause epidemics and pandemics, such as severe acute respiratory syndrome, avian influenza and dengue. Furthermore, it has become essential to make these systems sustainable by expanding them at local and international levels (14,20). Sustainable workflows are needed for the joint processing of data and unified implementation of actions in light of the information created (14,21).

The One Health concept is not only limited to the relations between animal and human health, but also to the environment. Examining the effects of environmental factors on disease dynamics and effective use of surveillance programmes that include animal and the environmental data can increase our understanding of related diseases and help develop timely interventions (13,22,23). Our participants thought that the environment was neglected in their work. Intersectoral and interprofessional communication and joint health data monitoring and analysis are needed to create unified outputs, understand the relationship between human–animal–environment health, evaluate disease transmission and create an adequate response (1,2,14).

Although there was a consensus on One Health gaining importance in the fight against antibiotic misuse, most participants have not applied it. Trans-disciplinary and trans-sectoral strategies to control antibiotic use in animals and humans under a One Health approach can support plans and policies on antimicrobial resistance (22–25).

More than half of the doctors who participated in the study had never heard of One Health and had never thought of applying the concept in their practices. The professionals who applied it had only implemented the concept through information-sharing and educational activities.

For undergraduate education, general training was preferred, while for postgraduate education, specialized training and subject-specific education was preferred. Including the One Health approach in medicine and veterinary curricula will likely have positive results and lead to greater

professional practice (14). Postgraduate public health education can help professionals prevent future epidemics by establishing programmes that evaluate human–animal–environmental health issues in connection with a multidisciplinary education (26).

The Ankara Chambers of Medicine and the Ankara Chambers of Veterinary Medicine had declared that One Health training, legislation and practice should be carried out. However, most participants of both groups agreed that their professional chambers had not undertaken action to support the implementation of One Health. Joint planning and implementation in a sustainable way and better dissemination of information may be very helpful for both chambers.

Our study has some limitations. First, the descriptive nature of the study limits the generalizability of our results. Second, we used an online survey which limited our access to the professionals and in-depth examination of the participants' views. Further studies are needed to include other related professionals such as those in environmental health, food-related sciences and pharmaceutical sciences. Despite these limitations, this study helped us better understand the awareness of veterinarians and doctors of One Health and their views on the concept.

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Connaissances et perceptions des médecins et vétérinaires concernant l'approche « Une seule santé » en Türkiye

Résumé

Contexte : L'approche « Une seule santé » est un concept multisectoriel et interdisciplinaire qui tient compte des liens entre les humains, les animaux et leurs environnements communs. Comprendre les perspectives des médecins et des vétérinaires peut contribuer à promouvoir les principes de cette approche.

Objectif : Évaluer les connaissances et les perceptions des médecins et des vétérinaires concernant l'approche « Une seule santé » en Türkiye.

Méthodes : Il s'agissait d'une étude descriptive de méthodes mixtes menée auprès de 74 médecins et 221 vétérinaires en Türkiye. Des données quantitatives ont été recueillies au moyen d'un questionnaire envoyé par courriel aux membres de la Chambre de médecine et de la Chambre de médecine vétérinaire d'Ankara. Des données qualitatives ont été obtenues par le biais d'un groupe de discussions thématiques réunissant les membres des conseils d'administration des deux chambres. Les enregistrements ont été transcrits et les données ont été classées conformément au questionnaire. Elles ont été analysées à l'aide du logiciel SPSS version 23.0.

Résultats : Parmi les vétérinaires, seulement 6,3 % ne connaissaient pas l'approche « Une seule santé », tandis que la majorité des médecins (63,5 %) n'en avaient pas entendu parler (p