



Knowledge Levels of Primary Healthcare Workers in Burdur Province About Viral Zoonosis Diseases

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ABSTRACT

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Objective: Most infectious diseases are zoonotic, transmitted from animals, and the knowledge level of the community and health workers is crucial for effective disease management.

Materials and Methods: Researchers investigated primary healthcare workers' knowledge of Crimean-Congo Haemorrhagic Fever, Hantavirus, WNV infection, and Rabies, determining adequate knowledge with a score of 70 or above.

Results: The study involved 61.7% healthcare workers, with 56.3% being women and 59.2% being family doctors (FD). About 46.9% of participants had undergone in-service training around two years ago. The knowledge level score for those who received in-service training was 69.90 (min 27.69-max 93.20), participation in in-service training had no effect. Adequate knowledge was found in 35% of healthcare workers. There was a lack of knowledge about the clinic of CCHF infection (86%), diagnosis of rabies infection (76%) and transmission of Hantavirus infection (62%). FHs had a high level of knowledge about CCHF ($p=0.005$), WNV ($p=0.003$) and Hantavirus ($p<0.001$). No factor was found to be associated with the knowledge level of rabies and rabies-risk contact ($p>0.05$).

Conclusion: More advanced and targeted training programs are needed to enhance their expertise in zoonotic diseases.

Keywords:

Primary Healthcare Worker; Virus; Zoonotic Diseases; Knowledge

1. INTRODUCTION

The majority of infectious diseases seen in humans are zoonotic. Zoonotic diseases can spread to humans in many ways from domestic or wild animals. Some zoonoses infect through vectors (mosquitoes, ticks etc.) from the reservoir animals (1,2). Although zoonotic diseases (rabies, brucellosis, anthrax, echinococcosis, etc.) that have existed since ancient times are seen sporadically, newly emerging infections cause epidemics, affect human and animal health, and cause economic losses (1,3). Factors such as the increase in human population, the opening of

new settlements, environmental impacts such as the shrinking of forest areas, and increased human and animal mobility have caused an increase in zoonotic diseases and the emergence of new infections (2,4,5). In programs aimed at the protection and prevention of zoonotic diseases, evaluating humans, animals, and the environment together requires a one-health approach. For this, society and the people dealing with animal husbandry must be educated, and healthcare professionals dealing with human and animal health need to act together. Also, it is important to be informed about new zoonotic factors

and zoonoses in the fight against these diseases. People should need to know the risks when they encounter in close contact with animals, and be taught about personal protection measures and methods of protection and risk reduction from vector-borne and other zoonotic diseases (4–6). Primary healthcare professionals play an important role in educating society.

The ultimate goal of the Ministry of Health regarding zoonotic diseases is increasing the society's quality of life by reducing the prevalence of zoonotic diseases in Turkey (7). One of the criteria determined to achieve this goal is to increase healthcare professionals' knowledge through in-service training. This study investigated the knowledge level of primary healthcare workers who directly encounter sick individuals and periodically receive in-service training about viral zoonotic diseases.

2. MATERIALS AND METHODS

2.1. Knowledge Level Selection of Diseases to be Researched: In selecting viral diseases, Rabies, which is a classical zoonosis, CCHF, which has recently become an epidemic in Turkey, and the newly seen Hantavirus and WNV infections were selected. These infections were picked because transmission occurs through direct contact with animals and vectors (ticks, rodents, and mosquitoes).

2.2. Study Area: Burdur is a province with a population of 280,000 and is located in the Mediterranean region. A total of 162 health personnel in Burdur, (81 family doctors (FD) and 81 family health workers (FHW)), who work in 36 Family Health Centers (FHC) affiliated with the Provincial Health Directorate were included in the study.

2.3. Study Design: All FDs and FHWs working in primary care were included in the cross-sectional planned study, without selecting a sample. Data collection forms were sent to all FHCs and collected 1 week later. Data collection was completed between March 1st and April 30th, 2016. To increase participation, healthcare personnel who did not fill out the form were called at least twice to remind them. The researchers prepared the data collection

form. It included demographic information and knowledge assessment question about the identified viral zoonotic diseases (causative agent, clinic, laboratory, treatment, and prevention). were prepared using the "Zoonotic Diseases In-Service Training Module" book used by the Ministry of Health in in-service training (8). Since in-service training was provided at regular intervals, a score above 70 points was considered as a sufficient knowledge level in scoring the knowledge assessment questions. Knowledge questions were asked as true, false and no idea, and each viral disease knowledge level was scored out of 100 points.

2.4. Statistical analysis: The data collected from the survey was analysed with SPSS version 17.0 statistical program. Descriptive features were presented as a number, percentage, mean, standard deviation, median, minimum and maximum. The chi-square test was used to compare categorical variables and the Mann-Whitney U test was used to compare continuous variables. Compliance with normal distribution was checked with the Shapiro-Wilk test. A value of $p < 0.05$ was considered statistically significant.

3. RESULT

The study included 61.7% (100/162) of Burdur province's primary healthcare workers, with women accounting for 56.3%. The demographic characteristics of the healthcare professionals who participated in the study and the length of time they worked in the profession and unit are presented in Table 1. 59.2% of healthcare workers were working as FD and 40.8% were FHW. 72.2% of FDs were male and 97.5% of FHWs were female. The duration of employment in the professions of FD and FHWs were 17.6 ± 7.7 and 17.2 ± 5.9 years, respectively and the duration of employment in the unit was 5.4 ± 2.4 and 5.5 ± 2.6 years, respectively.

8% of primary healthcare professionals attended post-graduate training such as congresses and symposiums two years ago (minimum 1-maximum 10). Approximately half of the primary healthcare workers (46.9%) attended in-service training held

Table 1: Demographic Characteristics of Participants

Variables	Female (%)	Male (%)	Total (%)
Family doctor	14	41	56
Practitioner Dr.	9	40	49
Specialist Dr.	5	1	6
Family Health Worker	40	1	41
Midwife	25	-	25
Nurse	12	-	12
Medical Officer*	3	1	4
Age (year) (mean±SD)	37.8±5.5	45±8.5	41.1±7.7
Profession working time (year) (mean±SD)	16.2±6.3	18.8±7.8	17.4±6.9
Unit working time (year) (mean±SD)	5.2±3.1	5.9±2.2	5.5±2.7

*Medical officer: laboratory, public health and emergency medical technician (EMT); Dr: Doctor

periodically by the Ministry of Health about fighting zoonotic diseases two years ago (minimum 1-maximum 10). Of those who attended these trainings, 63.0% were FD and 37.0% were FHW. It was found that the total knowledge level about CCHF, Rabies, Hantavirus and WNV infections among those who received in-service training and those who did not receive in-service training was sufficient for 43.4% of those who attended the training and 27.7% of those who did not attend. No statistically significant difference was found between the percentages of knowledge levels ($p>0.05$). The knowledge level of WNV and Hantavirus among those receiving in-service training was significantly lower than other viral zoonoses ($p<0.001$; $p<0.001$). Similarly, 19.2% of

those received could not answer correctly for WNV and 17.4% for Hantavirus.

The percentages of having sufficient knowledge of viral zoonotic diseases included in the study was found to be statistically significant and higher in FDs than in FHWs ($p=0.007$) (Table 2).

The Zoonotic Diseases Total Score (ZDTS) and each viral zoonotic disease score are given in detail in Table 3. The knowledge level of those who received in-service training was 69.9 (minimum 27.7-maximum 93.2). The knowledge level of those who did not receive in-service training was 67.6 (minimum 23.3-maximum 83.9). It was also found that there is no statistically significant difference between ZDTS of those received in-service training and those who did

Table 2: Factors Affecting the Knowledge Level of Primary Healthcare Personnel on Zoonotic Diseases

Variables	Sufficient n(%)	Insufficient n(%)	P Value
Gender			
Female	16 (29.6)	38 (70.4)	0.267
Male	17 (40.5)	25 (59.5)	
Age			
≤40 years	16 (33.3)	32 (66.7)	0.936
>40 years	14 (34.1)	27 (65.9)	
Profession			
FD	27 (45.8)	32 (54.2)	0.007
FHW	8 (19.5)	33 (80.5)	
Working time in the profession			
≤17 years	17(37.8)	28 (62.2)	0.873
>17 years	17 (36.2)	30 (63.8)	
Working time in FHC			
≤5 years	13 (32.5)	27 (67.5)	0.637
>5 years	19 (37.3)	32 (62.7)	
Status of receiving in-service training			
Yes	20 (43.5)	26 (56.5)	0.101
No	15 (27.8)	39 (72.2)	

Table 3: Points were received based on correct answers given by participants to questions about viral zoonotic diseases.

Zoonotic Diseases	Median	Minimum point	Maksimum Point
CCHF Disease	60.03	35.85	80.04
Hantavirus Infection	70.00	0	100.00
Rabies and Rabies Risk Contact	63.70	18.20	100.00
WNV Infection	57.20	0	100.00
PGZD	67.58	23.3	93.2

CCHF: Crimean-Congo Hemorrhagic Fever, WNV: West Nile Virus, PGZD: Point of General Zoonotic Diseases

not ($p > 0.05$).

The knowledge level of FDs about CCHF, WNV and Hantavirus infections was significantly higher than the level of FHWs ($p = 0.005$, $p = 0.003$, $p < 0.001$, respectively). In addition, the knowledge level of males ($p = 0.003$) and participants over the age of 40 ($p = 0.009$) regarding Hantavirus infection was significantly higher. There was no statistically difference between knowledge level of rabies and rabies-risk contact in any variable ($p > 0.05$).

The data collection form revealed a lack of knowledge among healthcare workers on certain topics. In particular, 86% did not know about the CCHF clinic, 76% did not know about rabies diagnostic methods, and 62% did not know about hantavirus transmission routes. Additionally, 19% of healthcare workers were unable to answer any questions correctly regarding WNV, and 16% were unable to answer any questions correctly regarding Hantavirus infections. On a positive note, 75% of participants answered correctly regarding protection against WNV, and 81% answered correctly regarding protection against CCHF infections.

4. CONCLUSION

In primary healthcare, preventive and therapeutic services are provided in FHCs by FDs and FHWs (midwives, nurses, health officers, etc.). The first place that people apply for as patients is usually FHCs. Primary healthcare workers are an essential target group for plans to reduce the prevalence of zoonotic diseases in Turkey. Therefore, researches should be conducted to determine knowledge levels both for planning in-service training and for evaluating training effectiveness. In this study, the majority of primary healthcare workers who received in-service training for zoonotic diseases approximately two years ago

were FDs (59.2%). In addition to prioritizing FDs in in-service training, FHWs may have attended these trainings less frequently because topic of the training did not attract the attention of FHWs or their workload. Simultaneously, to increase the level of knowledge, provincial health directorate transfers information to FDs and FHWs via information notes through the Ministry of Health Electronic System. The participation of FDs in the in-service training for zoonotic diseases is increasing.

Since 2002, studies on CCHF have been conducted to determine the knowledge level of healthcare professionals in various regions where CCHF infection has been observed in Turkey. In these studies, it was reported that doctors' level of knowledge was high (9-12). In this study, the knowledge level score of FDs was found to be higher. No significant differences were found in other independent variables. Individuals apply to their FDs to obtain information about their disease. This may be because of the high participation of FDs in in-service training to provide accurate information. Studies have reported a lack of information about the laboratory findings of CCHF infection (13,14). However, in this study, 86% of the participants were determined to have insufficient knowledge of the CCHF infection clinics. Primary healthcare workers were found to care about preventive measures for CCHF (75%) and WNV (81%) infections. It has been revealed that increasing the knowledge of CCHF among healthcare professionals increases the use of personal protective equipment in patient follow-up and reduces the fear of this zoonosis (15).

This study found no significant difference between the knowledge level score of participants about rabies and rabies-risk contact. However, 76% of the

participants lacked knowledge about the diagnosis of rabies infection. Researchers have reported that healthcare personnel have low and insufficient knowledge of transmission methods and basic and clinical knowledge of Rabies (16,17). Unlike these studies, it has been reported that healthcare personnel in Kenya have sufficient knowledge about rabies (18). This may be because of the different incidence and control methods between countries about rabies. In Türkiye, after rabies exposure or risky contact is occurred, vaccination and follow-up procedures are being held by registered centres. These procedures are performed by hospitals that provide secondary healthcare services. Therefore, knowledge level of primary healthcare workers may remain insufficient.

In studies conducted in regions where hantavirus infections occur frequently, the knowledge level of healthcare personnel regarding pathogens, infection, transmission, and risk factors was low. A correlation was found between the knowledge of household members of people infected with hantavirus and their adherence to infection-preventing measures (19,20). In this study, knowledge level of the participants about Hantavirus was found to be low. This may be attributed to the low level of knowledge of healthcare workers about zoonotic diseases and the fact that this disease is infrequently seen in our country.

In our study, the knowledge level of FDs regarding WNV infection was found to be high. 19% of participants could not correctly answer any of the questions regarding WNV. In the literature review, no similar study was found concerning the knowledge and attitudes of healthcare personnel regarding WNV infection. Therefore, our findings are the first of their kind.

The knowledge level of healthcare personnel about infectious diseases is important in protecting against diseases and reducing their spread. A relationship was found between the lack of diagnosis and notification of zoonotic infections. Knowledge level of physicians is important for developing appropriate

behaviour on diagnosis and notification (21,22). In our study, participating in in-service training did not affect the knowledge level. Various studies have reported that a lack of knowledge decreases significantly with education (9,11). Therefore, information regarding the content and the continuity of both education in health education institutions and in-service training needs should be updated. There are suggestions to increase the number and quality of training to improve intervention in zoonotic infections (23-25).

As a result, patients receive primary healthcare from FHCs, where FDs and FHWs work. The knowledge level of healthcare personnel is important in managing zoonotic infections. Knowledge is important in the early diagnosis, follow-up, and reporting of diseases. The theoretical and practical skills of healthcare workers should be properly kept up-to-date to contribute to disease control by the educated community and to develop correct behaviour. The results of our study revealed that in-service training on viral zoonotic diseases for healthcare personnel should be planned according to their professions. It has been revealed that more importance should be given to up-to-date information in in-service training to be given to healthcare personnel regarding viral zoonotic diseases. It was observed that the level of knowledge of the participants was not at the desired level and participation in in-service training was not up to date. In our country where zoonotic diseases are common, equipping trainings with up-to-date information and making them compulsory will contribute to disease control and prevention. For this reason, continuity of training ensures that the level of knowledge is at a certain level. As in adult education, the quality of education should be increased by determining educational subjects in line with people's interests, and ensuring the continuity of this situation.

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Conflicts of Interest: The authors declared that there is no conflict of interest.

Ethical Statement: For this study, a research permit was obtained from the Akdeniz University ethics committee dated 11.01.2016 and numbered 70904504/18, and from Burdur Public Health Directorate dated 21.01.2016 and numbered 708.02-E.39.

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