

Knowledge, Attitude and Practice Study on Microbiological Agents Transmitted by Ticks in Qazvin Province, Iran

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(Received: 14 April 2012; accepted: 25 May 2012)

The aims of this study were to assess factors associated with KAPs, to evaluate grade shepherds and herdsmen's knowledge about tick and microbiological agents transmitted by ticks as well as their prevention measures, to evaluate personal hygiene practices and to provide useful information for designing effective tick-borne microbiological diseases control programs. The descriptive study was carried out and interviewed in 66 herd's including a total of 72 shepherds and herdsmen in 35 villages distributed all over the Qazvin province. Knowledge about tick-borne microbiological diseases, routes of their transmission, prevalence rate was unsatisfactory and this was significantly associated with the educational level ($p \leq 0.001$). Most of them weren't aware about such diseases. Nonparametric correlations test showed that knowledge of tick-borne microbiological diseases was significantly higher among young shepherds compared with olds ($p \leq 0.001$). Health center and veterinary organizations staffs should disseminate relevant information about tick-borne microbiological diseases to help community members to be involved more in tick and tick-borne microbiological disease control.

Key Words: Knowledge, Attitude, Practice, Tick.

Tick and tick-borne diseases remain one of the most serious global health problems and is not only a major cause of suffering and death, but also the cause of many socioeconomic problems that require us to focus more on their prevention. Tick-borne microbiological diseases have been reported in different parts of Iran and are major cause of morbidity and in some cases, like CCHF,

mortality, theileriosis and babesiosis (Chinikar *et al.*, 2010; Shemshad *et al.*, 2012; Nabian *et al.*, 2007). Prevention of diseases is the need of the day and several studies highlighted the fact that control strategies require public support, case management, vector control, avoidance of contact with vectors and proper education. The extent of people's cooperation can determine the success or failure of the entire campaign against vector borne diseases (Service, 1993). Awareness program can change the attitude of the public regarding vector borne diseases including diseases that can be transmitted by ticks as a large gap between knowledge and attitude among the high risks people (Al-Adhroey *et al.*, 2010). These measures

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require individual and community participation through modification of their risk behaviors toward the practices that protect them from infection or re-infection diseases applying basic knowledge about causes and prevention of parasitic diseases (Nishtar et al., 2005).

In Qazvin province tick-borne microbiological diseases both human and animal cases were confirmed (Shemshad *et al.*, 2012; Barmaki *et al.*, 2010). So, we conducted a survey of knowledge, attitudes, and practices (KAPs) regarding tick and tick-borne microbiological diseases in Qazvin Province. The aims were to assess factors associated with KAPs, to evaluate grade shepherds and herdsmen's knowledge about tick and tick-borne microbiological diseases as well as their prevention measures, to evaluate personal hygiene practices and to provide useful information for designing effective tick-borne microbiological diseases control programs in the area and as a consequence reducing the transmission of infectious diseases, helping impacted persons live longer, healthier lives, and protecting individuals.

MATERIALS AND METHODS

Study population

Qazvin province is one of the 31 provinces of Iran that has been located in north-west of the country. The province had a population of 1.14 million people by the 2006 census, of which 68.05% lived in cities and 31.95% in villages. The ratio of men to women is 50.7 to 49.3%. The local economy is based on agriculture and trading. The sample population of the study was shepherds and herdsmen of the Qazvin province in spring and summer 2010 that were selected by a cluster

random sampling procedure. A questionnaire including some demographics (age, gender, and specialty) and twelve questions was prepared through the KAP study and interviewed for assessment. The questions that evaluated *knowledge* were: Have you heard of tick and tick-borne microbiological diseases, Can individuals control tick-borne microbiological diseases, What kinds of environmental factors affect on biology and abundance of tick vectors, Which factors affect human-tick contact, Does cultural customs and behaviors of human affect tick-borne microbiological diseases, Is there any relationship between individual protecting, e.g. using repellent and tick-borne microbiological diseases, *Attitude* and *practices* was assessed by asking: should subjects encountered ticks go for health center or local veterinary offices, Does good control of ticks result in preventing tick-borne microbiological diseases, What you do in stage of your livestock sickness, How do you manage tick-borne microbiological diseases, Was medical and veterinary consult sought, Would you inform other persons about tick-borne microbiological diseases. The responses to questions regarding their knowledge and attitude towards tick-borne microbiological diseases (TBMDs) were acquired in the format of 'yes', 'no' and 'do not know'. All answers were numerically coded on each questionnaire.

Statistical analysis

The design of the study was descriptive and cross-sectional and ran in 35 villages' shepherds and herdsmen of Qazvin province. Statistical analysis was using the performed using the Statistical Package for Social Sciences (SPSS), version 12.0. Determinants of knowledge on tick-

Table 1. Percentage of survey respondents receiving tick-borne microbiological diseases prevention information from mass media and interpersonal communication sources in Qazvin province, Iran

Source of Information	N (%)
Friends and relatives and group health talks	(45.8%)
Personal experiences	16.6%
Television	12.5%
Radio	8.3%
Health centers	8.3%
Veterinary organizations	8.3%

borne microbiological diseases and demographics such as age, gender and level of educational attainment were analyzed between the groups using univariate analysis followed by multiple logistic regression analysis and nonparametric correlations test. A two tailed 'P' value of less than 0.05 was considered statistically significant.

RESULTS

The descriptive and analytical study was carried out and interviewed in 66 herd's including a total of 72 shepherds and herdsmen in 35 villages distributed all over the Qazvin province. Demographic data revealed that the ages for the shepherds and herdsmen in the selected areas ranged from 25 years to 69 years old with the mean, median and standard deviation of 48, 45 and 13.04, respectively. The study participants consisted of 79.2% males and 20.8% females. The majority of the participants had only acquired primary education (45.8%) and had no college education, 41.7% literary and 12.5% had finished their high school education. 25% of interviewee's nationality were Afghanis and 75% of them were Iranian. Between the education level and the risk of TBMDs, we could obtain data which showed a tendency of increasing correct knowledge regarding the education level. Fever and headaches were the most frequently mentioned symptoms of TBMDs reported by 83.9%, 16.15%, respectively. About 1.4%, 1.4% and 97.2% of the study subjects associated the causes of TBMDs to eating infected ticks, crushing the infected ticks on the skin and the bite of ticks, respectively. Totally, Knowledge about TBMDs, routes of their transmission, prevalence rate was unsatisfactory and this was significantly associated with the educational level ($p \leq 0.001$). Most of them weren't aware about such diseases.

Nonparametric correlations test showed that knowledge of TBMDs was significantly higher among young shepherds compared with olds ($p \leq 0.001$). Herdsmen used to construct their stables with stones, brackets covered with cement and cement as well as stones and mud walls. All of the (100%, N=66) herds were kept in enclosures in the yards of the homes. 97.3% of herds were treated against ticks using pyrethroids compounds including Flumethrin 6%, 1%, Deltamethrin 5%,

Cypermethrin, Cyhalothrin and Organic phosphorus pesticides including Proptamphos 35%. The majority of the herds were treated each 20 days and in some villages that accessing to pesticides were impossible, shepherds washed the flocks using detergents in the river and they believed that this method had strong influence on their body ticks control. Sick animals were slaughtered and usually processed into family consumption. 77.7% (n=56) of the respondents stated not to wear gloves or protection products, 13.8% (n=10) had no information about protective productions and only 8.5% (n=6) of them indicated that they always used gloves encountering ticks. As all participants had heard about ticks, their attitudes towards TBMDs were stating that it could kill their ruminants if it is not treated. All of them believed that ticks breed in sand and soil and warm weather of the environmental is the main factor affect on biology and abundance of tick vectors. On their attitude toward removing ticks from their own body or ruminants' body in respondents who didn't use any protective productions (n=66), 87.8% of the respondents did not wash their hands when they were in the field. All of the respondents believed that tick-borne microbiological diseases are preventable, using complete vaccination of livestock against ticks and using pesticides. In Qazvin province, the sources of TBMDs and prevention information most commonly cited by respondents have been shown in Table 1. In shepherds and herdsmen opinion, local veterinary organizations were the most responsible for controlling TBMDs and mentioned laboratory tests for diagnosis. 87.5% of the shepherds checked their livestock routinely for presence of ticks and removing them.

DISCUSSION

There is increasing recognition among health professionals that improving the health of uneducated people depends upon adequate understanding of the socio-cultural aspects of the context in which public health programs (Launiala, 2009). Education and knowledge about vector-borne diseases is one of the most important key factors for vector borne diseases control and reducing exposure. In this way health centers and veterinary organizations have the greatest role

(Bauer, 2002; Faye, 1998; Padmawati *et al.*, 2005). Accessing to health and treatment centers and communication facilities have an undeniable role, too (Adedotun *et al.*, 2010; Enato *et al.*, 2007; Khumbulani *et al.*, 2009; Midzi *et al.*, 2011). Because of increasing human cases of TBMDs both in human and domestic animals and increasing zoonotic diseases in Iran the necessity of this survey will be cleared (Chinikar *et al.*, 2010; Shemshad *et al.*, 2012). Risk to humans is also related to frequency of disease occurrence in the animal and human (Padmawati *et al.*, 2005).

Despite this encouraging evidence, level of knowledge was far higher among persons with higher socioeconomic status. Hearing about TBMDs was enough, but should be seen as a foundation through which a whole range of issues about such diseases should be understood, for example, diseases transmission, signs and symptoms, prevention and treatment. In harmony with these findings, the present study showed that the better educational level of the rural community reflected a better knowledge of practices in TBMDs treatment and prevention. This matter is very important because most of the ticks of the study area belonged to three-host ticks (Shemshad *et al.*, 2012). High usage of commercially available acaricides for eradicating ticks by respondents partially explained the impact of socioeconomic conditions on the selection of protection means in communities. In this survey, more than 97.2% of participants got their acaricides from veterinary organization and because the thought it were not enough they prepared NGOs and unauthorized sources which can act as a hurdle to the control of the disease. Regarding the source of information on tick-borne microbiological diseases, out of 72 respondents came to know through group health talks (45.8%), personal experiences (16.6%), television (12.5%), radio (8.3%), health centers (8.3%), and veterinary organizations (8.3%). Strengthening of surveillance along with health education to the community and proper training of health personnel can go long way in control of TBMDs. In old shepherds, it is possible to have information a long with practical experience. Hand washing after tick removing is critical because of transmission of several diseases. All interviewed herdsman lived close to stables inside their own

home. This close proximity leads to an increased contact between livestock infectious disease and human activity which is unhealthy and if unchecked could create the potential for pathogen transmission and is one the main risk factors for disease transmission. All of the respondents were in favor of vaccination and believed that it prevents disease. Relatives and friends were one of the main sources of information. This illustrates good communication and common exchange of information among people. Almost all believed that they should visit veterinarian when they realized they or their livestock in infested with ticks. The results showed that, health personnel and veterinary organization personnel should be trained to give more appropriate counseling in an effort to change their attitude and practices.

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