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A COMMUNITY BASED STUDY OF KNOWLEDGE, ATTITUDE AND PRACTICE ON LEPTOSPIROSIS AND ITS PREVENTION IN SOUTH INDIA

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ABSTRACT

Leptospirosis is a zoonotic infection acquired from contact through skin, mucosa or conjunctiva with water or soil polluted with the urine or faeces of diseased animals. It is of concern in Thiruvananthapuram as flooding is more common during heavy rainfall. The present study intends to determine the knowledge, attitude and practices (KAP) among selected risk group people living in and around Thiruvananthapuram district. A cross sectional observational study was carried out for a period of three months in people between the age group of 18-80 years. A self-administered questionnaire was used as study tool. Total sample size was 200, out of which 181 participants responded with a response rate of 90.5%. According to the study, 64.64% respondents are aware that leptospirosis is caused by rats. More than half of participants know that contact with rat urine can lead

to the disease condition, but most of them are ignorant of the different modes of transmission. 61.87% participants know that fever is the main symptom, but do not know all signs and symptoms of the disease. Majority are unaware of the various factors to prevent the disease. Most of participants have high attitude towards leptospirosis prevention. Regarding practice, 96.6% do not use any type of protection while handling waste. The study outcome reveals that, even though most of respondents have high attitude in disease prevention, their knowledge level and practice are less than optimum, which necessitates interventions directed at the personal and household levels to lessen threat of leptospirosis.

KEYWORDS: Leptospirosis, KAP, Flooding, Zoonotic infection.

INTRODUCTION

Leptospirosis is an infectious disease caused by leptospires, a pathogenic bacteria which is transmitted directly or indirectly from animals to humans.[1] It is therefore a zoonosis. Human-to human transmission occurs only very rarely.[2] The disease is found mainly wherever humans come into contact with the urine of infected animals or a urine-polluted environment. The number of human cases worldwide is not known precisely. Projected yearly occurrence as per WHO is 0.1 to 1 per 1,00,000 per year in moderate climates and 10 or more per 1,00,000 per year in the tropical region. Infection is acquired from contact through skin, mucosa or conjunctiva with water or soil contaminated with the urine of rodents, carrier or diseased animals in the environment. Ingestion of contaminated water may also cause infection.[1] There is no records of human to human transmission. The incubation usually lasts about 10 days (2 to 30 days). Every year, between 5,00,000 and 1.03 million cases of leptospirosis are reported in the world, with a mortality rate over 10%.[3] When a person gets an infection leptospires appears in blood and invade to tissues and organs such as kidney and liver, but it is cleared from the body by host-immune response. It may also settle in the convoluted tubules of kidney and shed in the urine for few weeks to months, and then subsequently cleared from the kidney and other organs. Endotoxins produced by the bacteria attaches to the endothelial cells and leads to capillary vasculitis, hypovolemic shock and vascular collapse.[1,3]

Assessment of people's knowledge of leptospirosis and health behaviour offers significant facts for disease prevention. It is vital to know the individual behavior between inhabitants of communities at great risk for leptospirosis, so that suitable prevention strategies at the community, domiciliary, and individual levels can be developed. In particular, surveys of

knowledge, attitude and practices (KAP) are valuable public health tools to detect efficient approaches for behaviour change to safer practices. This study focus on determining public awareness, including one who never contracted or ever heard of the disease using KAP questionnaire.

OBJECTIVE OF THE STUDY

Objective of the study was to determine the KAP associated to leptospirosis.

METHODOLOGY

Study design and study period

Cross sectional observational study was conducted over a period of 3 months from January to March 2020.

Study area

The study was conducted among selected risk group people residing in and around Thiruvananthapuram, Kerala, India. The study population resided in areas with open sewage or dumped garbage and without adequate drainage for flood water.

Inclusion and exclusion criteria

Those aged between 18-80 years residing in the study area were included in the study and all eligible individuals who fit the inclusion criteria were approached to take part in the survey. Those who are not willing to participate in the study were the exclusion criteria.

Study tool

A self-administered questionnaire was prepared using information and detailed review from the literature survey and factors used in previous studies. The questionnaire was authenticated by specialists in the field of pharmacy practice. The level of KAP on leptospirosis among respondents was evaluated by using this questionnaire. The questionnaire comprised of four sections concerning KAP and socio-demographic information. First section contains seven questions to assess the knowledge of participants. Second section covers people's attitude and contains five statements whereas the third section includes three questions to assess the preventive practices by the public. Fourth section includes four questions about demographic information.

Data analysis

All the numerical data were entered into Microsoft excel and validated in Statistical Package for Social Sciences (SPSS) version 20.

RESULT

Out of 200 people identified, 181 responded with a response rate of 90.5%.

Socio-demographic characteristics

Socio-demographic details shows that, there were slightly higher female respondents (n=103) than male respondents (n=78) (fig. 1), with the mean age of 36.03 years. Almost 31.7% went through higher secondary education, 25% each went through degree and matriculation and 18.3% went through PG. Main source of health information is from broadcast media (76.7%), followed by newspapers and brochures (68.3%). 23.3% obtained health information from relatives or neighboures and 21% from local health unit(fig. 2).

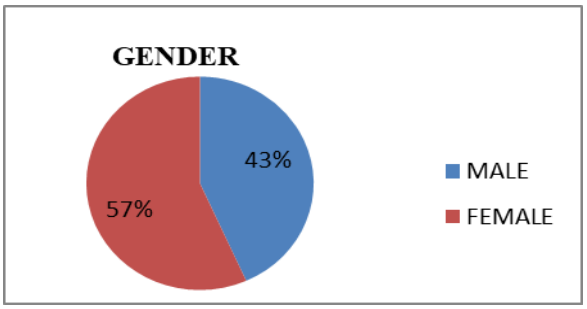

Fig. 1: Gender distribution of respondents.

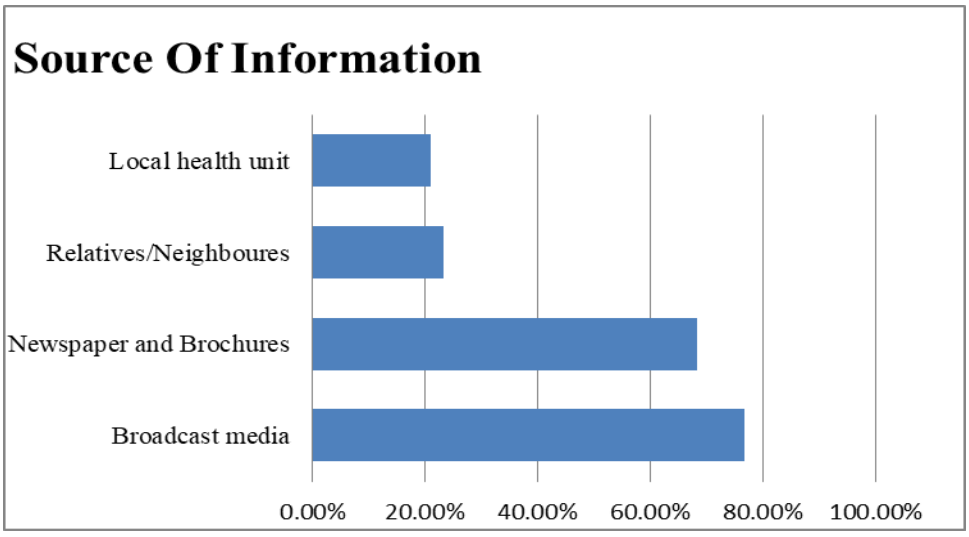

Fig. 2: Source of information.

Knowledge on leptospirosis

Among 181 respondents, 64.64% (n=117) reported that leptospirosis is caused by rats, where as 10.49% do not know about the disease and 24.86% said that it is an infectious disease (Table I). Out of 181 respondents, 40.33% (n=73) had no idea about the causative agent, 35.35% (n=64) know that leptospirosis is a bacterial disease and 24.3% (n=44) consider it as a viral disease. Most of respondents (81.21%) were not aware that leptospirosis can be detected through blood test. Only 4.41% (n=8) reported it correctly. 51.38% of respondents thought that the mode of transmission is through contact with urine of rats, followed by contact with flood water (48.06%) and walking without shoes (48.06%). 39.77% believed that contact with garbage can cause the disease while 33.1% considered cleaning open sewers as mode of transmission, where as 15.46% do not know the transmission route. Regarding signs and symptoms of leptospirosis, 61.87% chose fever over weakness (39.77%) and headache (34.80%). 28.17% (n=51) have no idea about signs and symptoms of the disease. About leptospirosis complications, 36.46% (n=66) of respondents chose death over breathing difficulty, kidney failure and liver damage. 37.01% (n=67) do not know about the complications of the disease. Relating to prevention of disease, majority of them (52.48%, n=95) preferred using shoes while 54.14% (n = 98) favoured avoiding contact with flooding, 47.51% chosen avoiding contact with garbage.

Table I: Knowledge about leptospirosis.

Knowledge items	**Number N=181(%)**
What is leptospirosis	
It is an infectious disease	45(24.86%)
It is a disease caused by rats	117(64.64%)
Do not know	19(10.49%)
What is the causative agent of the disease	
Bacteria	64(35.35%)
Virus	44(24.3%)
Do not know	73(40.33%)
Can leptospirosis be detected through blood test	
Yes	8(4.41%)
No	26(14.36%)
Do not know	147(81.21%)
What is the mode of transmission of leptospirosis	93(51.38%)
Contact with urine of rats	87(48.06%)
Walking without shoes	87(48.06%)
Contact with flood water	60(33.1%)
Cleaning open sewers	72(39.77%)

Contact with garbage Do not know	28(15.46%)
What are the signs and symptoms of leptospirosis Fever Myalgia Jaundice Headache Weakness Gastrointestinal pain Do not know	 112(61.87%) 46(25.41%) 36(19.88%) 63(34.80%) 72(39.77%) 18(9.94%) 51(28.17%)
What are the complications of leptospirosis Death Breathing difficulty Kidney failure Liver damage Do not know	 66(36.46%) 47(25.96%) 34(18.78%) 33(23.3%) 67(37.01)
What can be done to prevent leptospirosis Using shoes Keep away from contact with flooding Keep away from contact with garbage Avoiding leftover food at home Usage of protective clothing/equipment Avoiding garbage accumulation Do not know	 95(52.48%) 98(54.14%) 86(47.51%) 82(45.3%) 79(43.64%) 35(19.33%) 17(9.39%)

Questions given in the table were open ended and more than one response noted for each participant for 4th, 5th, 6th and 7th questions.

Attitude towards leptospirosis

Attitude items involved 5 statements describing acceptable and unacceptable attitude with regard to leptospirosis prevention. Majority of participants had good attitude about leptospirosis and its prevention. 85.63% respondents expressed a positive attitude that their house should be free from rats, where as 90.60% participants stated a positive attitude about the need to work along with health authorities to prevent and control leptospirosis. Only 19.88% participants figured that, they do not mind protective equipment's while managing garbage, 11.6% are not worried if their house is dirty and 18.78% do not mind walking through flood water.

Table II: Distribution of attitude items on leptospirosis.

Attitude items	Positive attitude N=181(%)[a]
I do not mind walking through the flood water	34(18.78%)
I do not mind if my house is dirty	21(11.6%)
I do not mind if I am not wearing boots, face mask etc. while managing garbage	36(19.88%)
I should make sure that my house is free from rats	155(85.63%)
I have to work together with the health authority to prevent and control leptospirosis	164(90.60%)

a = Percent of positive attitude of participants who replied "strongly agree" or "agree" for attitude that they should have complied and "strongly disagree" or "disagree" for attitude that they should not have complied.

Preventive practice towards leptospirosis

Practice items contained three questions related to preventive practice followed by respondents. 96.6% participant's uses nothing while handling waste while 1.7% uses gloves and 1.7% uses both gloves and boots while handling waste. 89.5% use rat traps to prevent rodents at home, followed by closure of rat burrows (87.84%), closure of rodent access to house (81.21%), use of rat poison (77.9%) and 1.6% was not taking any step to control rat population. 33.7% of participants reported that garbage was eliminated at the maximum of 3-4 days per week and 11.6% reported 1-2 days per week.

Table III: Practice related items.

Practice related items	Number N=181(%)
Which type of protection is used while handling waste	
i. Nothing	175(96.6%)
ii. Gloves	3(1.7%)
iii. Gloves and boots	3(1.7%)
What are the activities done to prevent rodents at home	
i. Use of rat traps	162(89.5%)
ii. Closure of rat burrows	159(87.84%)
iii. Closure of rodents access to house	147(81.21%)
iv. Use of rat poison	141(77.9%)
v. Nothing	3(1.6%)
What is the frequency of garbage elimination	
i. 3-4 days per week	61(33.7%)
ii. 5-6 days per week	57(31.49%)
iii. 7 days per week	42(23.20%)
iv. 1-2 days per week	21(11.60%)

Questions given in the table were open ended and more than one response noted for each participant for second question.

DISCUSSION

In the present study 64.64% respondents know that leptospirosis is caused by rats but majority of them are unaware that the disease is caused by bacteria. More than half of participants know that contact with rat urine can lead to the disease condition, but most of them are ignorant of the different modes of transmission. Regarding knowledge about signs and symptoms, more than 60% participants know that fever is the main symptom, but they do not know all signs and symptoms of the disease. Also 28% respondents are not at all aware of signs and symptoms. Around 37% of the respondents do not know the complications of the disease.

Concerning knowledge about prevention of leptospirosis, more than half of respondents are aware that using shoes and avoiding flood water can prevent the disease, but majority are unaware of the various factors to prevent the disease. So the study reveals that the overall knowledge level of participants is less than optimum. This finding was similar to several other studies conducted both in urban and rural settings. A study conducted among lakeshore communities of Philippines revealed poor level of knowledge.[4] Another study conducted among 300 villagers in Thailand found that most of participants had poor knowledge (80%).[5] Recent study conducted in India by combining both rural and urban setting had also similar finding regarding the knowledge of leptospirosis.[6] A similar study conducted among 315 participants in Selangor, Malaysia, also revealed poor knowledge level.[7]

In the present study, a large percentage of participants had revealed good attitude towards leptospirosis prevention. More than 90% of participants realise the fact that they have to work along with health authorities for effective prevention and control of disease. Less than 20% respondents said that they are not worried about wearing protective equipment's while handling waste, walking through flood water and do not mind if their house is dirty. All these show that participants had a positive attitude regarding prevention of disease. About practice on leptospirosis prevention, high proportion of the participants was considered as having unsatisfactory practice. Most of the participants do not use any type of protection while handling waste and 23% participants removed garbage once in a week which revealed their poor practice in disease prevention. These results were more or less similar to the study conducted in Selangor, Malaysia, that revealed good attitude, and unacceptable practice towards leptospirosis and its prevention. The study in Brazil also reveals that majority of participants had good attitude and unacceptable practice in leptospirosis prevention.[8] Result

obtained in this study was also similar to that of previous study conducted in South Chennai and various parts of world.[9-11]

CONCLUSION

The present survey shows that people lack knowledge regarding leptospirosis. Their knowledge and preventive practices were not considered as good but they have positive attitude about it. Thus proper incorporation of knowledge and preventive practices can lead to decrease in leptospirosis transmission. Based on our findings there is a necessity of awareness class and programs such as community based health education to improve knowledge and preventive practice. This study suggests interventions at personal and household level to minimise risk of the disease. Also, it demands more involvement of the local health unit that may take active measures to reduce the leptospirosis transmission, via organizing campaign.

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