



Health Education Program on Leptospirosis among College Students in Chennai, South India

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Authors' contributions

This work was carried out in collaboration between all authors. Author SMJ did the study design and author KS wrote the protocol. Author KMS contributed to acquisition of data and author GT did the literature searches. Editing was done by author DA and drafting of the manuscript was jointly done by authors AG and SMJ. All authors read and approved the final manuscript.

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Short Research Article

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ABSTRACT

Aim: To determine the level of knowledge on leptospirosis among college students in Chennai, India before and after the health education program.

Study Design: Interventional study

Place and Duration of the Study: Seven Arts and Science colleges in Chennai, India between January and June 2014.

Methodology: After getting prior permission from the Principals of the colleges, the students who were willing to take part in the study were requested to fill serially numbered and labeled semi-structured questionnaire (A&B). Questionnaire included demographics and questions on awareness of leptospirosis, risk factors, mode of transmission, symptoms and human vaccine. Questionnaire A was filled (anonymously) and collected after which the education on leptospirosis was provided as a power point presentation. At the end of the program, students filled questionnaire B and submitted.

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Statistical analysis was done using McNemar test.

Results: Out of 501 students, 28% were males and 72% were females. Age of the students ranged from 16 to 37 years with mean of 20.46 years, SD 3.477. Seventy five percent were Hindus, 20% were Christians and 5% were Muslims. Only 36% of the students were aware that Leptospirosis was common in Chennai while after the program 84% were aware of leptospirosis ($P < .001$). Knowledge on the risk factors of leptospirosis increased significantly after the program ($P < .001$). Pre awareness assessment revealed poor knowledge on the modes of transmission of leptospirosis and on symptoms of the disease such as fever and jaundice which increased significantly after the intervention ($P < .001$). Knowledge on human vaccine was found to be less in the initial survey which improved significantly after the awareness program ($P < .001$).

Conclusions: There was significant increase in the knowledge on leptospirosis among the students after the health education program. Such programs are needed to be carried out for a wider dissemination of information.

Keywords: Leptospirosis; college students; health education; Chennai.

1. INTRODUCTION

Leptospirosis is a global bacterial infection caused by Gram negative pathogenic spirochete of the genus *Leptospira*. It is a reemerging zoonotic disease [1-3] because of its occurrence in developed and developing countries. The most recent outbreaks have been observed in Nicaragua, Sri Lanka and Thailand [4-6]. Humans usually become infected through contact with water or soil contaminated by the urine of mammalian reservoirs such as rodents, dogs, cattle and pigs [7]. It is also an occupational disease mainly seen in sewage workers, veterinarians and farm workers.

It is estimated that 0.1 to 1 per 100 000 people living in temperate climates are affected each year, with the number increasing to 10 or more per 100 000 people living in tropical climates. During epidemics, the incidence can soar to 100 or more per 100 000 people [8].

Leptospirosis is endemic in India. Most of the outbreaks were reported from Gujarat, Maharashtra, West Bengal, Orissa, Kerala, Tamil Nadu, Karnataka and the Andaman Islands [9]. Chennai is the capital of Tamilnadu and is one of the largest cities in South India. The city has a polluted Coovam river and inadequate drainage system. The monsoon season is from October to December. The tropical climate of Chennai is ideal for the survival of leptospires particularly during the rainy season where there is much stagnation of contaminated water and inadequate drainage facilities. The prevalence of leptospirosis has been increasing in Chennai for the past few years. Studies suggest the year-wise prevalence of leptospirosis in 2004, 2005 and 2006 were 14.7, 24.9 and 32.3 per cent,

respectively [10]. In 2011, our laboratory recorded 20% of patients with fever were positive for leptospirosis [11]. The disease is associated with fever to severe jaundice and multiorgan failure [9]. Therefore Leptospirosis is a significant public health concern in Chennai. Awareness programs among the community are essential for tackling the disease during outbreaks. There are no published data on awareness programs in the country on leptospirosis among students. Therefore increasing the awareness of leptospirosis among college students will decrease its incidence. The objective of this study was to determine the level of knowledge related to leptospirosis among Arts and Science college students in Chennai, Tamil Nadu, South India before and after health education program.

2. MATERIALS AND METHODS

This interventional study was conducted from January to July 2014 by the Department of Experimental Medicine, The TN Dr.MGR Medical University, Chennai, after obtaining approval from the Institute Ethics Review Board. Chennai is capital of Tamil Nadu, one of the southern states of India, located in the Coromandel Coast of Bay of Bengal with 4.68 million residents.

There are more than 90 arts and science colleges in Chennai. Health education programs are often conducted in these colleges through National Service Scheme. Hence prior permission was obtained from the Principals of the Arts and Science Colleges for conducting the health education program on Leptospirosis and to assess the knowledge of students before and after the program. The program was conducted at seven Arts and Science colleges in Chennai. The students who were willing to fill the questionnaire were included in the study.

Each student was given a pair of pre tested semi-structured questionnaire, serially numbered and labeled as A and B. Students were instructed to fill the Questionnaire A before the awareness program and Questionnaire B at the end of the awareness program anonymously. The filled A questionnaire was collected from all students after 10 minutes before the start of the education program. The questionnaire was in English and included age, gender and religion. The questions on leptospirosis included awareness of the disease, risk factors, mode of transmission, signs and symptoms and if any human vaccine was available. Each question was given three responses 1- Yes, 2- No and 3- do not know. Students were instructed to mark one response accordingly. A 20 minute visual health education session was administered with the help of powerpoint presentation on the above aspects of Leptospirosis. At the end of the program, the students were asked to fill the Questionnaire B and the same was collected.

All the completed forms were entered in the excel sheet and analyzed using SPSS software Version 11. The results of the study were analyzed using non parametric test-McNemar test.

3. RESULTS

A total of 501 students had participated in the study from seven colleges. Age of the students ranged from 16 to 37 years with mean of 20.46 years, SD 3.477. Twenty eight percent (28%) were male students and 72% were female students. Seventy five percent (75%) were Hindus, 20% were Christians and 5% were Muslims. Only 36% of the students were aware that leptospirosis was common in Chennai while after the program 84% were aware of leptospirosis ($P < .001$). The knowledge on risk factors for leptospirosis increased significantly after the health education program (Fig. 1).

Only 43.3% of students knew that leptospirosis increases in the rainy season while after the program 85.5% were aware of this ($P < .001$). Merely 36% of students were aware that leptospira can be transmitted through cut injuries from a contaminated water source while after the awareness program 80% of them responded correctly. The awareness with regard to transmission through contaminated food and water increased from 65% to 88% after the program. Few students (30%) were aware that there is no vaccine for human leptospirosis in

India while after the awareness program 67% knew. Almost half of the students (46%) knew that leptospirosis can cause fever and jaundice while this knowledge increased significantly (83%) after the awareness program ($P < .001$).

4. DISCUSSION

Our study determined the knowledge and awareness of leptospirosis before and after conducting awareness program among college students in Chennai. The program significantly increased the knowledge on leptospirosis. Students were aware of "rat fever" which is the term used colloquially for leptospirosis. This term was also used among the general public in Sri Lanka [12]. Prior to the awareness program 36% of students had some knowledge on leptospirosis. This implies the need of health education among students especially in a developing country such as ours where this disease is endemic. Almost half of the students were aware that environmental factors such as poor sanitation and inadequate drainage and presence of animals were some of the risk factors for the transmission of leptospirosis. This knowledge increased considerably after the awareness program. In a study from Gujarat, India, the authors disseminated knowledge on Leptospirosis using street plays which increased the knowledge on the modes of transmission among villagers from 2% to 42% [13]. However another study from northeastern Brazil reported that two thirds of the residents of an urban slum community identified the modes of transmission [14]. There are studies that confirm that swimming in contaminated water can cause leptospirosis [15-17]. Only 19% of the students knew that swimming in contaminated waters can cause leptospirosis. After the awareness program this knowledge increased to 83%. Less than half of the students were aware that leptospirosis increases in the rainy season. Studies have confirmed that heavy rainfall and water logging increases cases of human leptospirosis in many countries [18-20] and in India [21,22]. However Leptospirosis occurs in Chennai throughout the year although the number and positivity of cases increased during the monsoon season [11]. Therefore this information needs to be disseminated to the general public. The knowledge increased significantly to 86% after the awareness program among the students. At present human vaccines for leptospirosis are available in few countries like Cuba, China, Japan and Vietnam [23]. However currently there are no vaccines

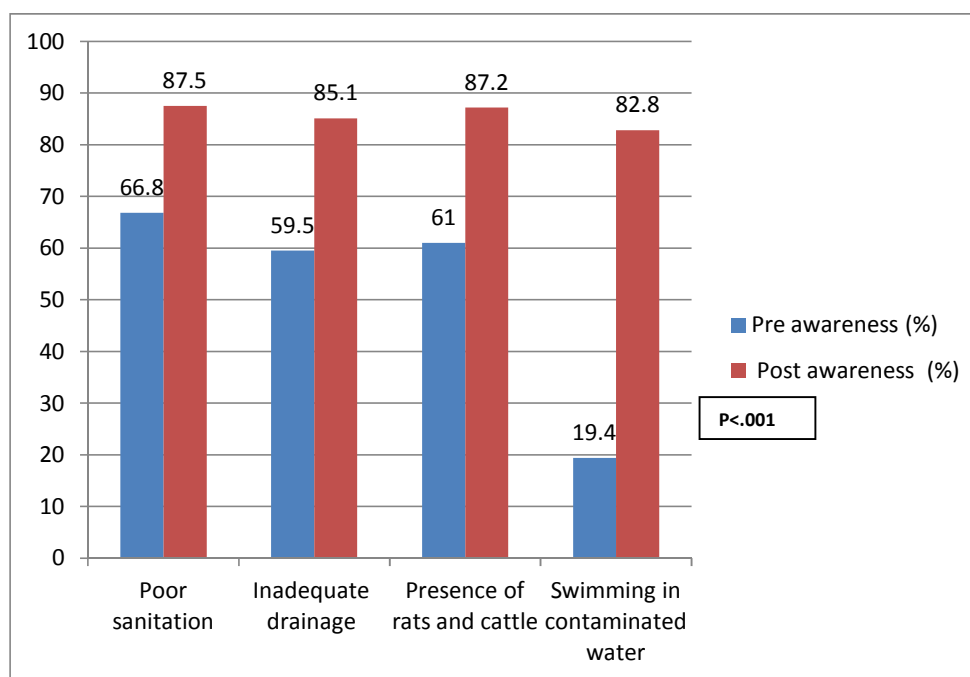


Fig. 1. Level of knowledge on the risk factors of Leptospirosis among college students

commercially available in India. Sixty seven percent of students were aware of this after the program. Before the awareness program only 46% of students knew that fever and jaundice are some of the symptoms for leptospirosis. Among the residents of urban slum community in Brazil 52% knew that infected person can have fever and 15% were aware that jaundice can also be a symptom [14]. A household survey in Sri Lanka reported 86% of respondents were aware of fever as a clinical feature of the disease [12]. Only 9% of village residents of Gujarat was aware that leptospirosis can cause fever and 0.82% knew that jaundice is also one of the symptoms. After the street plays and poster exhibition in local language, 73% and 50% knew that fever and jaundice were symptoms of leptospirosis respectively [22]. However in our study awareness program significantly increased the knowledge to 83% among the students.

5. CONCLUSION

Few reports have been published on the knowledge on leptospirosis from India. Overall the knowledge on leptospirosis improved significantly after the awareness program among college students. Such health education programs need to be carried out for a wider dissemination of information.

CONSENT

Prior permission was obtained from the Principals of the colleges. Only students who were willing to participate were asked to fill the questionnaire. Besides, no names were entered in the questionnaire.

ETHICAL APPROVAL

The study was approved by the Tamilnadu Dr MGR Medical University Ethics Committee.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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