

# A Study to assess the effectiveness of Structured Teaching Programme on knowledge of Prevention of Leptospirosis among Agriculture Workers in Selected Community Area at Bangalore.

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## INTRODUCTION

Leptospirosis is the most common bacterial zoonosis worldwide, caused by spirochetes of the genus *Leptospira* that are transmitted from animals to humans. Infection can be acquired either through direct contact with animals, or through environmental contamination by animal urine, contaminated food or water, through mucosal surfaces, or through skin contact, particularly if there are breaks in the skin. There is a wide range of animal hosts including rats, other rodents, livestock, and dogs. Infected animals are mostly asymptomatic, act as reservoir hosts to a particular server of leptospirosis, and shed the bacteria through their urine for prolonged periods of time. However, animals can develop illness after infection with a different server. Leptospirosis is found throughout the world, particularly in tropical and subtropical regions where environmental conditions favors the survival and transmission of leptospirosis. In 2008, there were an estimated 922 million international tourist arrivals around the world, and this number is expected to increase to 1.6 billion by 2020.<sup>54</sup> most post travel cases of leptospirosis were acquired in Southeast Asia, the Caribbean Islands, and Central and South America.

There are a wide variety of diagnostic tests for leptospirosis, and their availability can vary significantly between laboratories. These include e Blood culture. A positive culture provides definitive proof of diagnosis, but leptospirosis can take many weeks illness, after which leptospirosis begin to disappear from the blood and serodiagnosis should be used. Nucleic acid testing (PCR). This test is only useful in the first 7 days of the illness, when it can rapidly confirm a diagnosis of leptospirosis during the bacteremia phase. However, it is not readily available in all laboratories. Serology for EIA IgM. This is used as a screening test, and can produce false positive results. Diagnosis should be confirmed with the microscopic agglutination test if possible. Microscopic agglutination (MAT) test. This is considered the “gold standard” test, with its high specificity being the major advantage.

## NEED FOR THE STUDY

Leptospirosis has been reported in rural areas of Brazil. However, there is limited information about the exposure risk or the risk of *Leptospira* infection for rural-based populations. A cross-sectional study was conducted to determine the prevalence and risk factors for prior *Leptospira* infection in a rural farming region of the state of Rio Grande do Norte, Brazil. The sample size was 290 farmers. Among 290 individuals enrolled, 44 (15.2%) had anti-*Leptospira* IgM antibodies as determined by IgM ELISA. Infection tended to occur with activities related to the rice fields ( $P=0.08$ ). Our findings indicate that *Leptospira* infection occurs even in the time of low rainfall, and may have an important impact among poor rural-based farmers in Brazil.

However, enhanced surveillance in 2008 only captured about a 1/3 of the total number of cases in Australia, and it is difficult to accurately determine the true number of cases acquired through recreation and travel. Most of the cases acquired internationally over the past decade were related to travel to Asia, but also to New Zealand, the Pacific Islands, and South America. Similar observations in changes in leptospirosis epidemiology have been noted in other developed countries. Hawaii has a high incidence of locally acquired leptospirosis, and cases attributed to recreation have risen from 0% in the 1970s to 50% in the 1990s.<sup>47</sup> In California, 59% of reported cases of leptospirosis from 1982 to 2001 were due to recreational exposure, increasing to 85% in the 1997-2001 period, with rising numbers being seen in return travelers from tropical destinations.<sup>48</sup> More than half of the leptospirosis cases diagnosed in the United Kingdom are now acquired abroad,<sup>49</sup> mostly from tropical and subtropical destinations. In Israel, 42% of all leptospirosis cases from 2002 to 2008 were diagnosed in returned travelers, most of whom had acquired their infection in Southeast Asia, and the majority had participated in water-related activities.<sup>50</sup> In Germany, international travel is now the single most important exposure risk factor of leptospirosis, accounting for 16% of all cases.<sup>9</sup> Shifts from occupational to recreational and travel-related risk have also been noted in the Netherlands, Italy, Portugal, and Bulgaria.

### **Problem Statement.**

“A Study to assess the effectiveness of Structured Teaching Programme on knowledge of Prevention of Leptospirosis among Agriculture Workers in Selected Community Area at Bangalore.”

### **Objectives**

1. To assess the level of knowledge on prevention of leptospirosis among agriculture worker.
2. To administer structured teaching programme on prevention of leptospirosis.
3. To assess the post-test knowledge on prevention of leptospirosis among agriculture worker.

4. Find out the association between pre-test knowledge scores with selected demographic variables.

5. Find out the association between post-test knowledge scores with selected demographic variables

## **HYPOTHESIS**

**H1:** There is a significant difference between pre-test and post-test knowledge scores on prevention of leptospirosis among post-test agriculture workers.

**H2:** There is a significant association between knowledge scores on prevention of leptospirosis among agriculture workers and selected demographic variables

## **METHODOLOGY**

1. **Research Approach: Quantitative approach** is used to achieve the objectives of the study.

2. **Research Design: one group pretest posttest quasi-experimental design** was selected for the present study.

3. **Variables under study:**

**Independent variables:** structured teaching programme.

**Dependent variables:** knowledge of prevention of leptospirosis.

4. **Population:** The data will be collected from the agricultural workers who are residing at selected area Bangalore

5. **Sample size:** 50 Agricultural workers who were residing at Makaliselected area of Bangalore were considered as sample for the present study.

6. **Sampling Technique:** The Purposive sampling technique is used to the select the sample.

7. **Inclusion and exclusion criteria:**

**Inclusion Criteria:** The study included Agricultural workers who are

- a. Residing in selected area, of Bangalore
- b. Willing to participate in the study
- c. Available at the time of data collection
- d. Speak and understand kannada

**Exclusion Criteria:** The study excludes Agricultural workers who are:

- a. Not willing to participate in the study
- b. Not available at the time of data collection.
- c. Not speak and understand kannada

**8. Method of Data Collection:** The instrument used for collecting the data in the present study was a structured interview technique.

### **9. Description of the Tool**

The instrument was divided into 2 parts.

**Part-I** It consists of 7 items regarding the demographic information of the subjects such as age, sex, religion, type of family, family monthly income, educational background, and sources of information regarding Prevention of Leptospirosis.

**Part-II** It consists of 31 knowledge items related to Prevention of Leptospirosis. These items were closed ended, multiple choice questions. Each correct response has been scored with one mark. Total score was 31.

### **10. Plan for Data Analysis**

Data analysis is the systematic organization and synthesis of research data and testing of research hypothesis by using the collected data.

The data were analyzed by using both the Descriptive and Inferential statistics.

- I. Demographic data were analyzed by using frequency and percentage distribution.
- II. Mean, Standard Deviation and paired' ttest were used to find out the difference between pretest and posttest assessment scores of agricultural workers.
- III. Chi-square test was used to find out the relationship between selected demographic variables of agricultural workers.

### **11. Ethical consideration**

- Permission was obtained from the Institutional Ethical Committee, Sri Venkateshwara College of Nursing, Bangalore.
- Permission was obtained from the Medical Officer, PHC Makali Village, Banagalore  
Consent was obtained from all the participants.

## **RESULT**

Result of the study were organized in the following ways

**Table – 1: Frequency and percentage Distribution of Demographic Characteristics of agricultural workers. N=50**

<b>Sample Characteristics</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
<b>Age in years</b>		
18-29years	40	80
30-39years	10	20
Above 40 years	0	0
<b>Gender</b>		
Male	38	76
Female	12	24
<b>Religion</b>		
Hindu	14	28
Muslim	35	70
Christian	01	02
<b>Family Monthly Income</b>		
<Rs. 1000 /-	9	18
Rs 1001 – Rs 2000	7	14
Rs. 2001- Rs. 3000	10	20
Rs. 3001 and above.	24	48
<b>Type of family</b>		
Nuclear family	25	50
Joint Family	25	50
<b>Residence</b>		
Urban	27	54
Rural	23	46
<b>Education of Agricultural Workers:</b>		
Illiterate	2	4
Primary education	11	22
Secondary education (PUC)	24	48
Graduation	13	26
Post-graduation	0	0
<b>Occupation</b>		
Ranchers	12	24
Farmers	25	50
Butchers	13	26
Veterinarians	0	0
<b>Source of information</b>		
Mass media	25	50
Relatives	1	2
Neighbors	1	2
Friends	11	22
Teachers	9	18
Health Professionals	3	6

At present the globally 1/4<sup>th</sup> and population constitutes the group of adolescents and young people mainly in the age group between 10-24years and 1/3<sup>rd</sup> of Indian population

comprising 18-30years of age group as 1/3<sup>rd</sup> of its total population. The data on Table–1 describes the majority of the agricultural workers are within the age group 18-29 years (40 i.e. 80%) followed by the age group 30-39years (10 i.e. 20 %).

As for as gender or sex ratio concerned under 15-29 years of age group sex ratio is 1.061male(s)/female in India (CIA World demographic statistics 2009) and it indicates sex ratio is almost equally distributed. From the table –1, it is clear that more than three fourth (38 i.e.76 %) of agricultural worker were Male followed by Female were (12 i.e. 24%).

As far as Religion is concerned, Table–1 illustrates that more than half of the agricultural workers are belong to Muslim (35 i.e. 70%) followed by Hindu (14 i.e. 28%) and other (1 i.e. 2%). None are belonging to Christian. In India more than 3/4<sup>th</sup> are Hindus(i.e. 80.5%), then Muslims(13.4%), Christians(2.3%), and rest of belongs to other religion as Sikhs, Buddhists, Jains, etc

The average annual income of a family ranges from Rs. 25000/- to 35000/-in India (survey 2009). From the data, Table–1 illustrates that majority of the agricultural workers are having family monthly income Rs. 3001 and above (24 i.e. 48%) followed by Rs. 2001-3000 (10 i.e. 20%), less than Rs.1000 (9 i.e. 18%) and Rs. 1001-2000 (7 i.e. 14%).

Type of family is taken into consideration, Table–1 illustrates that exactly half of the agricultural workers are having nuclear family (50%) and joint family (50%). The joint family is always preferred in Indian families.

As for as residence ratio concerned from the table –1, it is clear that more than half (27 i.e.54 %) of agricultural workers were living in urban area followed by rural residence were (23 i.e. 46%).

As educational status of agricultural worker concerned, 29.3 percent are illiterate, 17.3 percent of population will receive education up to high schools, 9.1 percent are up to intermediate and 2.4 percent up to graduate level and remaining no information available (National Family Health Survey 2009). Table – 1 illustratesthat majority of the worker had acquired secondary education (24 i.e. 48%) followed graduation (13 i.e. 26%), primary education (11 i.e. 22%) and illiterate (2 i.e. 4%). No one had post-graduation studies.

As far as occupation is concerned, Table–1 illustrates that half of the agricultural workers are farmers (25 i.e. 50%) followed by ranchers (12 i.e. 24%) and butchers (13 i.e. 26%). None are belonging to veterinarians.

Concerned to sources of information, in India majority of people and students receive information through mass media (i.e. newspaper, television, radio, etc), family members and by teachers and only very less by health care personnel's and. From the Table–1 it is clear that majority of the students had acquired the information regarding climate change and its impact on health from teachers (30 i.e. 60%) followed by from friends (11 i.e. 22%), from mass media (4 i.e. 8%), from health professionals (3 i.e. 6%) , relatives (1 i.e. 2%) and neighbors (1 i.e. 2%).

## SECTION - II

This section deals with knowledge of Agricultural Workers related to Prevention of Leptospirosis. It is sub divided into,

- a. Level of knowledge of Agricultural Workers on Prevention of Leptospirosis.
- b. Frequency and Percentage distribution of level of Knowledge of Agricultural Workers in pre-test and post-test regarding Prevention of Leptospirosis.
- c. Frequency and Percentage distribution of level of Knowledge of Agricultural Workers in specific areas related to Prevention of Leptospirosis.

**Table – 2 Level of knowledge of Agricultural Workers regarding Prevention of Leptospirosis.**

<b>Level of Knowledge</b>	<b>Percentage</b>	<b>Range of score</b>
Low	0 to 50%	0-16
Average	51 to 75%	17-24
High	Above 75%	25 and above

The table reveals the knowledge of sample on Prevention of Leptospirosis. The knowledge of sample was assessed by using a structured interview schedule, with 31 items on Climate Prevention of Leptospirosis. The tool score was 31. The Agricultural Workers who score between 0-16 were considered to have Low knowledge; the subjects with score between 17-24 were considered to have Average knowledge and who score 25 and above (25-31) were considered to have High knowledge about Prevention of Leptospirosis.

**Table – 3 Frequency and Percentage Distribution of Levels of Knowledge of Agricultural Workers regarding structured teaching programme on knowledge of Prevention of Leptospirosis.**

**N= 50**

<b>Levels of Knowledge</b>	<b>Pre Test</b>		<b>Post Test</b>	
	<b>Frequency</b>	<b>Percentage</b>	<b>Frequency</b>	<b>Percentage</b>

High Knowledge	0	0%	5	10%
Average Knowledge	16	32%	21	42%
Low Knowledge	34	68%	24	48%

The Table represent that overall knowledge level of Agricultural Workers regarding Prevention of leptospirosis, before (pre test) and after (post test) structured teaching programme. Among Workers about more than half (34 i.e. 68%) had low knowledge followed by average knowledge (16 i.e. 32%) and none had high knowledge in pre test and majority of the Agricultural Workers had low knowledge (24 i.e. 48 %) followed by average knowledge (21 i.e. 42%) and (5 i.e. 10%) had high knowledge in post test. It is very important point here that none had high knowledge before giving the structured teaching programme and improved in high and average knowledge after structured teaching programme. This indicates the effectiveness of structured teaching programme on Prevention of Leptospirosis.

**Table – 4 Frequency and Percentage Distribution in Pre test and Post test of Knowledge levels among Agricultural workers in specific areas of Prevention of Leptospirosis**

N=50

Knowledge In specific areas	Pre –test						Post – test					
	Low < 50%		Avg 51-75%		High > 75%		Low < 50%		Avg 51-75%		High > 75%	
	F	%	F	%	F	%	F	%	F	%	F	%
<b>Overall</b>	34	68	16	32	0	0	24	48	21	42	5	10
<b>Leptospirosis</b>	46	92	4	8	0	0	34	68	15	30	1	2
<b>Causes, incidence, &amp; risk factors</b>	28	56	14	28	8	16	25	50	15	30	10	20
<b>Signs &amp; symptoms</b>	30	60	13	26	7	14	31	62	8	16	11	22



<b>Diagnosis</b>	15	30	17	34	18	36	15	30	16	32	19	38
<b>Treatment</b>	38	76	11	22	1	2	33	66	11	22	6	12
<b>Complications</b>	45	90	4	8	1	2	40	80	8	16	2	4
<b>Preventions</b>	17	34	13	26	20	40	18	36	16	32	16	32

Table – 4 depicts the percentage distribution of the agricultural workers as per their levels of knowledge in specific areas related to the prevention of leptospirosis. The areas included were: leptospirosis, its causes, incidence & risk factors, signs & symptoms, diagnosis, treatment, complications, and prevention of leptospirosis.

### SECTION –III

This section deals with Mean and Standard Deviation of pre test and post test knowledge scores.

**Table – 5 Mean and Standard Deviation of Pre test and Post test Knowledge scores of Agricultural Workers in specific areas of Prevention of Leptospirosis**

Specific areas	Pre		Post	
	Mean	SD	Mean	SD
<b>Overall</b>	16.98	4.76	20.26	5.85
<b>Leptospirosis</b>	3.86	1.55	5.34	2.27
<b>Causes &amp; risk factors</b>	2.38	1.02	2.48	1.07
<b>Signs &amp; symptoms</b>	2.02	1.02	2.34	1.15
<b>Diagnosis</b>	2.94	1.03	2.96	1.04
<b>Treatment</b>	1.58	1.03	1.9	1.18
<b>Complications</b>	1.32	0.91	1.66	1.02
<b>Prevention</b>	2.88	1.15	3.58	1.47

Table – 5 indicates the mean and standard deviation of knowledge scores of the agricultural workers in pre test and post test regarding prevention of leptospirosis.

In pre test, the overall mean score of the sample was  $16.98 \pm 4.76$  where as in post test; it was improved  $20.26 \pm 5.85$ . The mean score of the agricultural workers in pre test was  $3.86 \pm 1.55$  regarding leptospirosis, where as it was higher  $5.34 \pm 2.27$  in post test. With causes, incidence & risk-factors, the mean score of agricultural workers in post test i.e.,  $2.48 \pm 1.07$  was slightly more than the mean score of the agricultural workers in pre test, i.e.,  $2.38 \pm 1.02$ . Related to signs & symptoms, mean score of the agricultural workers in pre test was  $2.02 \pm 1.02$  where as it was slightly improved in post test i.e.,  $2.34 \pm 1.15$ . The mean score of the agricultural workers in pre test was  $2.94 \pm 1.03$  regarding diagnosis, where as it was slightly higher in post test i.e.  $2.96 \pm 1.04$ . With concerned to treatment, the mean score of agricultural workers in post test i.e.,  $1.9 \pm 1.18$  was more than the mean score of the agricultural workers in pre test, i.e.,  $1.58 \pm 1.03$ . With concerned to complications, the mean score of agricultural workers in post test i.e.,  $1.66 \pm 1.02$  was more than the mean score of the agricultural workers in pre test, i.e.,  $1.32 \pm 0.9$ . Related to prevention, mean score of the agricultural workers in pre test was  $2.88 \pm 1.15$  where as it was improved in post test i.e.,  $3.58 \pm 1.47$ . On the whole it is clearly that, the mean scores of the agricultural workers in post test were relatively higher than the mean scores of the agricultural workers in pre test.

#### SECTION – IV

This section deals with the comparison of pre test and post test assessment scores by paired ‘t’ test to evaluate the effectiveness of structured teaching programme on prevention of leptospirosis in Makali Village, Bangalore.

**Table – 6 Comparison of knowledge scores of agricultural workers before and after structured teaching programme on prevention of leptospirosis.**

N= 50

Specific areas	Mean diff	SD Difference	SE differe	Paired t test
<b>Overall</b>	3.28	2.80	0.39	8.28
<b>Leptospirosis</b>	1.5	1.4	0.20	7.23
<b>Causes &amp; risk factors</b>	1.00	0.30	0.04	2.33

<b>Signs &amp; symptoms</b>	0.32	0.55	0.07	4.10
<b>Diagnosis</b>	0.02	0.31	0.04	0.44
<b>Treatment</b>	0.32	0.55	0.077	4.10
<b>Complications</b>	0.34	0.65	0.09	3.65
<b>Prevention</b>	0.70	0.90	0.13	5.44

(d.f. = 49, \* - NS )

Table-6 presents the comparison of knowledge scores of the agricultural workers in pre test and post test to find out the effectiveness of structured teaching on prevention of leptospirosis.

Paired't' test was done to determine the significance of difference between the knowledge scores of pre test and post test in specific areas with degrees of freedom 49. For overall, the calculated't' value was 8.28. The obtained't' value was more than the critical value, which indicated statistically significant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was accepted.

With regard to leptospirosis, the calculated't' value was 7.23. The obtained't' value was more than the critical value which indicated statistically significant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was accepted.

Related to causes, incidence & risk-factors, the calculated't' value was 2.33. The obtained't' value was more than the critical value which indicated statistically significant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was accepted.

With concerned to signs & symptoms, the calculated't' value was 4.10. The obtained't' value was more than the critical value; hence it indicates statistically insignificant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was accepted.

With respect to diagnosis, the calculated't' value was 0.44. The obtained't' value was less than the critical value; hence it indicates no statistically significant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was not accepted.

Related to treatment options, the calculated't' value was 4.10. The obtained't' value was more than the critical value which indicated statistically significant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was accepted.

With concerned to complications, the calculated 't' value was 3.65. The obtained 't' value was more than the critical value; hence it indicates statistically insignificant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was accepted.

With concerned to prevention, the calculated 't' value was 5.44. The obtained 't' value was more than the critical value; hence it indicates statistically insignificant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was accepted.

## SECTION –V

This section includes the association between post test knowledge score and selected variables of Agricultural Workers in specific areas of Prevention of Leptospirosis in Makali Village, Banagalore.

**Table – 7 Relationship of knowledge scores of Agricultural Workers of Makali Village, Banagalore with their variables**

S. No	Variable	Chi-square ( $\chi^2$ )value	Association	df	Chi-square( $\chi^2$ )table value at 5% level
1	Age	0.721	NS	1	3.84
2	Gender	0.025	NS	1	3.84
3	Religion	0.206	NS	1	3.84
4	Educational status	0.023	NS	1	3.84
5	Residence	8.58	S	2	3.84
6	Type of family	1.282	NS	1	3.84
7	Family monthly income	0.6416	NS	1	3.84
8	Sources of information	5.265	S	1	3.84

(Note: S – significance, NS – Not significance).

## **Relationship of knowledge scores of Agricultural Workers of Selected Area of Bangalore with their variables:**

The chi-square values computed for the knowledge scores of agricultural Workers and Age ( $\chi^2 = 0.721$ ), Gender ( $\chi^2 = 0.025$ ), religion ( $\chi^2 = 0.206$ ), family monthly income ( $\chi^2 = 0.641$ ), type of family ( $\chi^2 = 1.282$ ) and educational background of agricultural Workers ( $\chi^2 = 0.023$ ) were less than the critical value at 5% level of significance which indicated no statistical significance between them. Hence the researcher failed to support the research hypotheses.

The chi-square values computed for the knowledge scores of agricultural Workers and residence ( $\chi^2 = 8.58$ ), source of information ( $\chi^2 = 5.265$ ) were exceed the critical value at 5% level of significance which indicated there is statistical significance between them. Hence the researcher not failed to support the research hypotheses.

## **CONCLUSION**

The following conclusions were drawn from the findings of present study.

1. In pre test, among 60 Agricultural Workers more than half participants (34 i.e. 68%) followed by average knowledge (16 i.e. 36%), whereas in post test, majority of the subjects improved their knowledge level as more than quarter (24 i.e. 48%) had low knowledge followed by average knowledge (21 i.e. 42%) and rest of the agricultural workers (5 i.e. 10%) had high knowledge.

2. Paired 't' test was done to determine the significance of difference between the knowledge scores of pre test and post test in specific areas with degrees of freedom 49. For overall, the calculated 't' value was 8.28. The obtained 't' value was more than the critical value, which indicated statistically significant difference between the knowledge levels of the agricultural workers in pre test and post test. Hence, the research hypothesis was accepted

3. The chi-square values computed for the knowledge scores of Agricultural Workers and Age ( $\chi^2 = 0.721$ ), Gender ( $\chi^2 = 0.025$ ), religion ( $\chi^2 = 0.206$ ), family monthly income ( $\chi^2 = 0.641$ ), type of family ( $\chi^2 = 1.282$ ) and educational background Agricultural Workers ( $\chi^2 = 0.023$ ) were less than the critical value at 5% level of significance which indicated no statistical significance between them. Hence the researcher failed to support the research hypotheses.

The chi-square values computed for the knowledge scores of Agricultural Workers and residence ( $\chi^2 = 8.58$ ), source of information ( $\chi^2 = 5.265$ ) were exceed the critical value at 5% level of significance which indicated there is statistical significance between them. Hence the researcher not failed to support the research hypotheses.

## RECOMMENDATIONS

- ✓ A similar study can be undertaken on a large scale for making a more valid generalization.
- ✓ A similar study can be undertaken in other areas of Bangalore.
- ✓ A similar study can be conducted to find the attitude of Agricultural Workers about Prevention of Leptospirosis.
- ✓ A similar study can be conducted on people with other age groups.
- ✓ A descriptive study can be conducted among the Agricultural Workers.
- ✓ A similar study can be replicated with experimental and control group.
- ✓ A comparative study has to be conducted to evaluate two different teaching methods.

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