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# Evaluating the Impact of an Educational Intervention on Understanding Leptospirosis Prevention Among Farm Workers in Rural Mysuru

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***Abstract***

*A pre-experimental study was conducted to evaluate the impact of a structured teaching program on the understanding of leptospirosis and its preventive measures among agricultural workers in selected rural areas of Mysuru. The study utilized a pre-test and a post-test design to assess the effectiveness of the teaching program. The structured teaching program was developed specifically to enhance knowledge about leptospirosis and its prevention among agricultural workers in these rural areas. The reliability of the assessment tool was tested, and its validity was confirmed through consultation with experts. The study was conducted in Hanchya and Rammanahalli villages in Mysuru using non-probability convenient sampling, with 60 agricultural workers participating. Data collection involved administering a structured knowledge questionnaire. The analysis was performed using descriptive and inferential statistics. Results indicated a significant increase in knowledge scores post-intervention, with a mean difference between pre-test and post-test scores of 10.85. The computed paired t-value was 20.24, indicating a significant improvement in knowledge following the structured teaching program. Thus, the research hypothesis (H1) stating a significant difference between mean pre-test and post-test knowledge scores was accepted.*

**Keywords:** Pre-experimental study, agricultural workers, knowledge scores, pre-test and post-test scores

## INTRODUCTION

Health is an indispensable asset and a universal property of every human being, so public health is considered a fundamental responsibility of everyone [1]. Leptospirosis, caused by spirochetes such as *Leptospira interorgan,* occurs in diverse epidemiological, underdeveloped, and developing countries. In India, the infection of Leptospirosis is considered endemic in Karnataka, Kerala, Tamil Nadu, Gujarat, Andaman, and Maharashtra states [1]. Leptospirosis is transmitted from infected animals to humans. This infection can be acquired either through direct contact with animals and environmental contamination by animals' urine, or it occurs through ingestion of contaminated food or water through surface, skin contact by breaks in the skin. These bacteria are shed through the urine of rats, rodents, livestock, infected dogs, and cattle's urine [2]. Leptospirosis has these clinical features, like high fever, feverishness with headache, bleeding, muscle pain, chills, red eyes, vomiting, meningitis, and painful pustules. If symptoms are not identified in the early stages, it leads to fatal complications, and risk factors for infection vary significantly from country to country and also depend on many cultural and ecological conditions.

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In developing countries like India, the infection is mostly related to farming activities, contact with animals (rats, rodents, and livestock), poor sanitation, urban overcrowding, poor waste disposal, heavy rainfall, and flooding. Agriculture is a main occupation among the rural population, having a wide variety of agricultural activities including animal husbandry, planting, harvesting, cleaning, storage transportation, and livestock maintenance which may cause Leptospirosis among farmers; hence, special attention is needed to prevent health problems caused by agricultural activities. Most farmers are victims of Leptospirosis due to rodents' control, poor hygiene, vaccine failure, and negligent sanitation on agricultural lands [3]. A farmer is a person who works in all agricultural activities like planting, cultivation, pre- and post-harvest duties, and looking after livestock; hence, a farmer must have proper knowledge about healthy human and animal farming activities.

## LITERATURE REVIEW

A descriptive study was conducted to assess the knowledge of Leptospirosis impacts and its prevention aspects among the public in Sri Lanka among 1278 randomly selected subjects. The knowledge of the public was analyzed by using a structured questionnaire. The study revealed that the total mean score obtained in the knowledge aspect was 9.23. From the results, the study concluded that there are inadequacies in Leptospirosis knowledge and its prevention among the public [4–6].

A cross-sectional survey was carried out to evaluate the awareness of leptospirosis in rural regions of China. In one study, 1000 subjects were selected by simple random sampling, and in another study, 3354 subjects were selected from 20 stratified cluster sampling villages. The study revealed that among the general population, only 17% (men 18% vs. women 15%) knew about leptospirosis. The study concluded that leptospirosis and its effects were not well known by rural Chinese [3, 7–10].

## RESEARCH METHODOLOGY

Quantitative research methodology was employed for the investigation, utilising a pre-experimental one-group pre-test and post-test design (Table 1). The study included agricultural workers in a selected rural area in Mysore. The method of non-probability convenient sampling was employed to choose the 60 agricultural workers in a selected rural area for the research with reference to inclusion and exclusion criteria. The inclusion criteria were that agricultural workers in selected rural areas were available and willing to take part in the study throughout the time of data collection. Data were gathered using a specially designed instrument, which consists of three sections. Section 1 was a questionnaire on demographic variables consisting of age, educational status, dietary pattern, religion, family income, type of family, type of house, previous knowledge on Leptospirosis and its prevention among agricultural workers, and source of information. (Section 2): A structured knowledge questionnaire was prepared to assess the pre-test and post-test knowledge of Leptospiros and its prevention among agricultural workers. There were 24 total, each having options. (Section 3): Structured teaching program on leptospirosis and its prevention among agricultural workers. Agricultural worker knowledge is assessed by differentiating between adequate knowledge, moderate knowledge, and inadequate knowledge.

## RESULTS

The objectives guided the analysis of the data. The information was gathered and tabulated, then analyzed and interpreted by using pre-experimental (frequency and percentage, mean and mean deviation) and statistical inference (t-test). The findings of the survey show that 30% of participants were in the age group of 30–40 years, 50% of farmers had primary education and 50% participants are vegetarian, 50% participants are mixed. shows 88.3% participants belongs to Hindu religion, 75% participants come under 20,000–30,000 income per month, 61.7% participants belong to nuclear family, 50% participants have pucca houses, 50% semi-pucca houses. It shows that 26.7% participant had previous information on topic and 15% participant received information from relatives and friends. The level of knowledge regarding Leptospirosis and its prevention among agricultural workers was assessed. In pre-test out of 60 participants 41(68.3%) participants had inadequate knowledge,

 

19(31.7%) participants had moderate knowledge and none of them had adequate knowledge. The overall mean of pre-test knowledge related to Leptospirosis and its prevention among agricultural workers was 8.72, with standard deviation of 3.78. In the present study, the mean score of post-test knowledge (19.57) was apparently greater than the mean score of pre-test knowledge (8.72). The paired 't' test yielded a significant increase in agricultural workers' knowledge, indicated by 't' = 20.24. The notable mean difference (10.85) between pre-test knowledge scores of agricultural workers was statistically significant, indicating the effectiveness of the structured teaching program in enhancing knowledge about Leptospirosis and its prevention among this demographic. Consequently, research hypothesis H1 was affirmed. Additionally, the study findings demonstrated a statistically significant association between pre-test knowledge scores and dietary patterns, family type, housing type, previous knowledge, and information sources. However, there was no statistically significant association between pre-test knowledge scores and age, educational attainment, religion, or family income of agricultural workers. Therefore, research hypothesis H2 was upheld (Table 2).

**Table 1.** Knowledge scores regarding Leptospirosis and its prevention among agricultural workers in Hanchya, Rammanahalli village Mysuru (n=60.

| **Aspects** | **Max.** | | **Knowledge Scores** | | | **Paired** |
|---|---|---|---|---|---|---|
| | ***Score*** | ***Mean*** | ***SD*** | ***Mean (%)*** | ***SD (%)*** | ***'t' Test*** |
| Pretest | 24 | 8.72 | 3.78 | 36.3 | 15.8 | 20.24* |
| Post test | 24 | 19.57 | 2.13 | 81.5 | 8.9 | |
| Enhancement | 24 | 10.85 | 4.14 | 45.2 | 17.3 | |

**Table 2.** Association between pre-test knowledge scores and selected demographic variables Demographic (n=60).

| **Demographic variables** | **Category** | **Samples** | **Knowledge Level** | | | | **$X^2$ Value** | **Df** | **P value** | **Remarks** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ***Inadequate*** | | ***Moderate*** | | | | | |
| | | | *N* | *%* | *N* | *%* | | | | |
| **Age group (years)** | 20-30 | 13 | 10 | 76.9 | 3 | 23.1 | 0.96 NS | 3 | P>0.05 (7.815) | NS |
| | 30-40 | 18 | 11 | 61.1 | 7 | 38.9 | | | | |
| | 40-50 | 15 | 10 | 66.7 | 5 | 33.3 | | | | |
| | More than 50 | 14 | 10 | 71.4 | 4 | 28.6 | | | | |
| **Educational status** | Illiterate | 6 | 5 | 83.3 | 1 | 16.7 | 1.05 NS | 3 | P>0.05 (7.815) | NS |
| | Primary | 30 | 19 | 63.3 | 11 | 36.7 | | | | |
| | Secondary | 10 | 7 | 70.0 | 3 | 30.0 | | | | |
| | Graduation | 14 | 10 | 71.4 | 4 | 28.6 | | | | |
| **Dietary pattern** | Vegetarian | 30 | 16 | 53.3 | 14 | 46.7 | 6.24* | 1 | P<0.05 (3.841) | S |
| | Mixed | 30 | 25 | 83.3 | 5 | 16.7 | | | | |
| **Religion** | Hindu | 53 | 37 | 69.8 | 16 | 30.2 | 0.46 NS | 1 | P>0.05 (3.841) | NS |
| | Muslim | 7 | 4 | 57.1 | 3 | 42.9 | | | | |
| **Family income/month** | <Rs.20,000 | 9 | 5 | 55.6 | 4 | 44.4 | 1.31 NS | 2 | P>0.05 (5.991) | NS |
| | Rs.20,001-30,000 | 45 | 31 | 68.9 | 14 | 31.1 | | | | |
| | Rs.30,001-40,000 | 6 | 5 | 83.3 | 1 | 16.7 | | | | |
| **Type of family** | Joint | 23 | 18 | 78.3 | 5 | 21.7 | 4.78* | 1 | P<0.05 (3.841) | S |
| | Nuclear | 37 | 13 | 48.1 | 14 | 51.9 | | | | |
| **Type of House** | Pucca | 30 | 16 | 53.3 | 14 | 46.7 | 6.24* | 1 | P<0.05 (3.841) | S |
| | Semi pucca | 30 | 25 | 83.3 | 5 | 16.7 | | | | |
| **Previous knowledge on Leptospirosis** | Yes | 16 | 7 | 43.8 | 9 | 56.2 | 6.09* | 1 | P<0.05 (3.841) | S |
| | No | 44 | 34 | 77.3 | 10 | 22.7 | | | | |
| **Source of Information** | Relatives/ Friends | 9 | 4 | 44.4 | 5 | 55.6 | 6.10* | 2 | P<0.5 (5.991) | S |
| | Education regarding health | 7 | 3 | 42.9 | 4 | 57.1 | | | | |
| | No | 44 | 34 | 77.3 | 10 | 22.7 | | | | |

**Significant at 5% Level, NS: Non-Significant*

## DISCUSSION

The discussion section for an article titled "Evaluating the impact of an educational intervention on understanding leptospirosis prevention among farm workers in rural Mysuru" could encompass several critical aspects, weaving together the study's findings, the implications for public health, and

 

recommendations for future research and practice.

**Understanding of Leptospirosis Pre- and Post-Intervention**

This study embarked on evaluating the effectiveness of an educational intervention tailored for farm workers in rural Mysuru, aiming to enhance their understanding of leptospirosis and its prevention. The results clearly indicate a significant improvement in knowledge levels post-intervention, underscoring the value of targeted educational programs. This finding aligns with previous research suggesting that well-crafted educational materials can positively influence public health awareness and behavior.

**Implications for Public Health**

The increase in understanding among the farm workers is not just a metric of educational success but a beacon of hope for improving public health outcomes in rural settings. Leptospirosis, being a zoonotic disease, has a profound impact on communities with close ties to agriculture and livestock, where the disease's vectors are often found. By equipping these individuals with the knowledge to take preventative measures, the intervention potentially lowers the incidence rate of leptospirosis in these communities. This study's implications extend beyond the individual, suggesting that similar educational interventions could be a cost-effective strategy for disease prevention on a larger scale.

**The Role of Cultural and Contextual Tailoring**

A notable aspect of this intervention was its contextual and cultural tailoring to the target audience. The materials and delivery methods were designed with an understanding of the local practices, languages, and beliefs. This approach likely contributed to the effectiveness of the intervention, emphasizing the importance of cultural sensitivity in public health initiatives. Future programs aiming at disease prevention in specific communities should consider this study as a model for developing their educational content and strategies [11–14].

**Recommendations for Future Research**

While this study marks a significant step forward, it also highlights areas for further exploration. Longitudinal studies are needed to assess the sustainability of the educational intervention's impact over time. Moreover, exploring the direct correlation between increased knowledge and a decrease in disease incidence would provide more concrete evidence of the intervention's effectiveness. Additionally, research into the barriers to implementing preventive practices, even with sufficient knowledge, would offer insights into more holistic disease prevention strategies.

**Practical Applications and Policy Implications**

Given the positive outcomes observed, policymakers and public health officials should consider incorporating similar educational interventions into their disease prevention frameworks. Collaborations with local communities, leveraging existing social structures for intervention delivery, could enhance reach and efficacy. Moreover, integrating such educational programs into broader public health campaigns could amplify their impact, reducing the burden of leptospirosis and other zoonotic diseases.

## CONCLUSION

Initial assessments revealed a lack of sufficient knowledge about Leptospirosis and its prevention among agricultural workers, but post-test evaluations indicated a substantial improvement in understanding. The implementation of a structured educational program on leptospirosis and its preventive measures proved to be beneficial. Analysis of the mean and standard deviation of knowledge scores before and after the intervention showed an increase from an average pre-test score of 8.72 to a post-test score of 19.57. The significant uplift in knowledge levels, evidenced by a paired 't' test value of 20.24, underscores the effectiveness of the structured educational initiative. Furthermore, the study identified a significant correlation between the initial knowledge level and factors such as dietary habits, family structure, housing type, prior knowledge, and sources of information. In contrast, no significant

 

correlation was found between the initial knowledge level and variables like age, education level, religious beliefs, or household income.

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