



Original Research Article

Awareness and Attitude towards Zoonotic Diseases among Resident Adults in a Selected Village in Rural Puducherry

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Abstract: **Background:** Zoonotic disease infections remain one of the major causes of morbidity in India, particularly in rural regions where humans and animals have close contact. The diseases still prevail due to lack of knowledge and poor preventive strategies. The present study explored associated sociodemographic factors and assessed rural Puducherry residents' knowledge and attitudes toward zoonotic diseases. **Materials and methods:** 832 individuals were surveyed in a cross-sectional survey using a validated, semi-structured questionnaire. Descriptive statistics, correlation analysis, and chi-square testing were conducted to analyse the data. There were three awareness categories: poor, moderate, and good. **Results:** 28% of the 832 persons had poor awareness, 33.9% had good awareness, and 38.1% had intermediate awareness. Animal handlers' (22.0% of respondents) awareness was not significantly higher than that of non-handlers. Education, socioeconomic status, age, gender, and family size all significantly correlated with awareness ($p < 0.05$). Awareness and preventive measures in animal handlers were moderately positively correlated ($r = 0.548$, $p < 0.05$). **Conclusions:** Awareness of zoonotic diseases was moderate only in rural Puducherry and the gap in practice and understanding was high. Socioeconomic and educational status played a significant role. To promote community knowledge and preventive practices, targeted region-specific interventions are needed.

Keywords: Zoonosis, awareness, attitude, socio-demographic factors, Puducherry, rural.

INTRODUCTION

Zoonotic disease, or the spread of disease from animals to humans, is one of the main global health concerns. World Health Organization estimates almost 60% of newly emerging infectious diseases worldwide is caused by zoonotic diseases. Every year, zoonotic diseases cause around one billion illnesses and millions of deaths worldwide [1]. Zoonotic diseases are common in India. Of the 58,200 KA cases recorded worldwide each year, 42,619 (more than 70%) come from the Indian Subcontinent alone [2]. Particularly impacted are southern states like Puducherry and Tamil Nadu.

Leptospirosis, for example, is common in these areas and poses a constant threat to public health [3]. Additionally, reports of scrub typhus, which is caused by *Orientia tsutsugamushi* have been steadily rising in southern India [4]. Recent studies have shown how common mite-borne illnesses are across the nation [5].

Despite the high prevalence rates of zoonotic diseases that contribute to their maintenance and spread, rural residents still lack adequate knowledge and awareness of these diseases [4]. This ignorance highlights the necessity for focused educational initiatives to lessen the effects of zoonotic illnesses on susceptible groups. Understanding rural populations' awareness, attitudes, and habits about zoonotic illness is essential for effective public health interventions. Previous research has shown that Indian cattle producers have a high awareness and preventive practice deficiency [6]. A high awareness and preventive practice deficit among Indian cattle farmers have been highlighted by previous studies [6]. According to earlier survey, just 47.7% of Kerala's tribal people were aware of tick-borne illnesses, despite the fact that 65.7% of them frequently received tick bites. This highlights the need for improved preventive education in high-risk areas [7]. Numerous studies have evaluated health workers' knowledge of zoonotic illnesses, but few have focused

on the general public. The present study was hence conducted to assess the adult dwellers of a selected Puducherry village's knowledge (involving attitude) regarding zoonotic diseases. Also, in order to determine the degree of zoonotic disease awareness among adults in one rural Puducherry community.

Materials and Methods

A community-based cross-sectional study was conducted among all households in a selected rural village of Puducherry. One eligible adult respondent from each household was interviewed, and if a house was found locked, three follow-up visits were made. Inclusion criteria were adults aged 18 years and above who had been residing in the village for at least six months and who provided informed consent. Temporary residents, those unable to communicate due to serious illness or disability, and households that remained locked after three visits were excluded. The study was conducted over three months following Institutional Ethics Committee approval. A total of 832 households in the village participated selected through universal sampling technique.

Data collection was undertaken using a pre-tested, semi-structured questionnaire developed with reference to the Zoonotic Diseases of Public Health Importance, 2016 Manual from the National Centre for Disease Control, Ministry of Health and Family Welfare. Content validity was assessed by public health experts and a veterinarian, and the tool was piloted among 20 residents of a different rural field

practice area. The questionnaire achieved good reliability with a Cronbach's alpha of 0.84. It included demographic questions (age, gender, education, income, duration of residence, and animal handling history) and an awareness section containing both knowledge and attitude items, totaling 19 dichotomous (Yes/No) questions. Data were collected by the Principal Investigator, assisted by one Sanitary Inspector and three Female Nursing Assistants, primarily in the mornings, with evening visits to houses that were initially locked. Each interview took approximately 15 minutes and around six households were surveyed daily. Animal handlers were defined as individuals, including pet owners or professionals, who regularly cared for, trained, or interacted with animals.

Participant information sheet was given to all respondents before starting the study. The objectives and procedures of the study were clearly explained to all participants and written informed consent was obtained, with confidentiality and autonomy ensured throughout the study. Data were entered in Microsoft Excel and analysed using SPSS version 23. Categorical variables were represented as frequencies and percentages while inferential analyses such as Chi-square tests, correlation, and regression were performed to determine associations. The value of "1" was assigned for correct (Yes) responses and "0" for incorrect (No) responses. The scoring of Awareness level was categorized as low (<50%), moderate (50–75%), or high (>75%) based on the responses.

RESULTS

The sociodemographic details of the 832 participants are shown in Table 1. The majority were aged ≥56 years (32.1%), followed by those in the 46–55-year group (22.3%) and 36–45-year group (21.3%). The study population was composed of 71.9% female participants. Less than four people lived in the majority of households (64.6%). Class I (23.8%) and Class III (23.4%) had the highest representations in terms of socioeconomic status. About Eighty-one percent have lived in the area for more than ten years. In terms of education, 21.0% were graduates, 20.8% had completed high school, while 21.0% reported no formal education. Animal handling was reported by 22.0% of participants, with the remainder classified as non-handlers shown in figure 1.

Table 2 shows the distribution of awareness levels on zoonotic diseases between animal handlers and non-handlers. The overall awareness of the participants was 28.0%, moderate awareness was 38.1%, and good awareness was 33.9%. Thirty-one per cent of people with good awareness were handlers, whereas 69.9% were not. In the group with intermediate awareness, handlers made up 22.4% and non-handlers made up 77.6%, whereas non-handlers made up the majority of those with low awareness (88.4%).

Table 1: Sociodemographic profile of the study participants (N=832)

Variable	Category	Non-handlers	Handlers	Overall
Age in Years	18–25	39 (68.4%)	18 (31.6%)	57 (100.0%)
	26–35	113 (77.9%)	32 (22.1%)	145 (100.0%)
	36–45	143 (80.8%)	34 (19.2%)	177 (100.0%)
	46–55	141 (75.8%)	45 (24.2%)	186 (100.0%)
	≥ 56	213 (79.8%)	54 (20.2%)	267 (100.0%)
Gender	Male	181 (77.7%)	52 (22.3%)	233 (100.0%)
	Female	468 (78.1%)	131 (21.9%)	599 (100.0%)
No. of Family Members	< 4 members	435 (80.9%)	103 (19.1%)	538 (100.0%)
	> 4 members	214 (72.8%)	80 (27.2%)	294 (100.0%)

Socioeconomic Status	Class I	167 (84.3%)	31 (15.7%)	198 (100.0%)
	Class II	110 (85.3%)	19 (14.7%)	129 (100.0%)
	Class III	144 (73.8%)	51 (26.2%)	195 (100.0%)
	Class IV	113 (74.8%)	38 (25.2%)	151 (100.0%)
	Class V	115 (72.3%)	44 (27.7%)	159 (100.0%)
Years in Locality	< 1 year	18 (90.0%)	02 (10.0%)	20 (100.0%)
	1–3 years	29 (90.6%)	03 (09.4%)	32 (100.0%)
	3–5 years	44 (84.6%)	08 (15.4%)	52 (100.0%)
	5–10 years	55 (88.7%)	07 (11.3%)	62 (100.0%)
	> 10 years	503 (75.5%)	163 (24.5%)	666 (100.0%)
Education Level	No Formal school Education	133 (76.0%)	42 (24.0%)	175 (100.0%)
	Primary	88 (78.6%)	24 (21.4%)	112 (100.0%)
	Middle School	79 (83.2%)	16 (16.8%)	95 (100.0%)
	High School	135 (78.0%)	38 (22.0%)	173 (100.0%)
	Higher Secondary	75 (77.3%)	22 (22.7%)	97 (100.0%)
	Graduate	125 (76.7%)	38 (23.3%)	163 (100.0%)
	Post Graduate & above	14 (82.4%)	03 (17.6%)	17 (100.0%)

Table 2: Level of awareness among Animal handlers and non-handlers regarding zoonotic diseases (N=832)

Awareness Level	Animal non handlers n (%)	Animal handlers n (%)	Overall n (%)
Good	197 (69.9%)	85 (30.1%)	282 (100.0%)
Moderate	246 (77.6%)	71 (22.4%)	317 (100.0%)
Poor	206 (88.4%)	27 (11.6%)	233 (100.0%)

Table 3: Comparison of Good Awareness Levels on Zoonotic Diseases between Animal Handlers and Non-Handlers across Selected Variables

Variable	Good awareness among Non-handlers (n=197)	Good awareness among Animal Handlers (n=85)	Chi-square / Z-value	P-value
Age Group				
≥ 56	59 (70.2%)	25 (29.8%)	$\chi^2 = 10.782$	0.032
46–55	44 (69.8%)	19 (30.2%)		
36–45	43 (69.4%)	19 (30.6%)		
26–35	42 (79.2%)	11 (20.8%)		
18–25	9 (45.0%)	11 (55.0%)		
Family members				
< 4 members	128 (71.5%)	51 (28.5%)	$\chi^2 = 2.06$	0.039
> 4 members	69 (67.0%)	34 (33.0%)		
Gender				
Female	140 (70.7%)	58 (29.3%)	$\chi^2 = 1.97$	0.048
Male	57 (67.9%)	27 (32.1%)		
SES				
Class I	45 (75.0%)	15 (25.0%)	$\chi^2 = 12.605$	p = 0.014
Class II	30 (78.9%)	8 (21.1%)		
Class III	50 (63.3%)	29 (36.7%)		
Class IV	38 (73.1%)	14 (26.9%)		

Class V	34 (64.2%)	19 (35.8%)		
Years in Locality				
<1 year	8 (100.0%)	0 (0.0%)	$\chi^2 = 7.996$	p = 0.093
1–3 years	10 (83.3%)	2 (16.7%)		
3–5 years	9 (75.0%)	3 (25.0%)		
5–10 years	11 (73.3%)	4 (26.7%)		
>10 years	159 (67.7%)	76 (32.3%)		
Education Level				
No Formal School Education	27 (65.9%)	14 (34.1%)	$\chi^2 = 26.948$	p < 0.001
Primary	20 (66.7%)	10 (33.3%)		
Middle School	21 (70.0%)	9 (30.0%)		
High School	38 (69.1%)	17 (30.9%)		
Higher Secondary	25 (65.8%)	13 (34.2%)		
Graduate	58 (74.4%)	20 (25.6%)		
Post Graduate & above	8 (80.0%)	2 (20.0%)		

Table 4: Correlation between awareness and practice score among animal handlers (n=183)

Variable	Mean $\pm$ SD	r	r ²	df	p-value
Awareness Practice	11.28 $\pm$ 4.02 7.30 $\pm$ 3.29	0.548	0.300	181	< 0.05

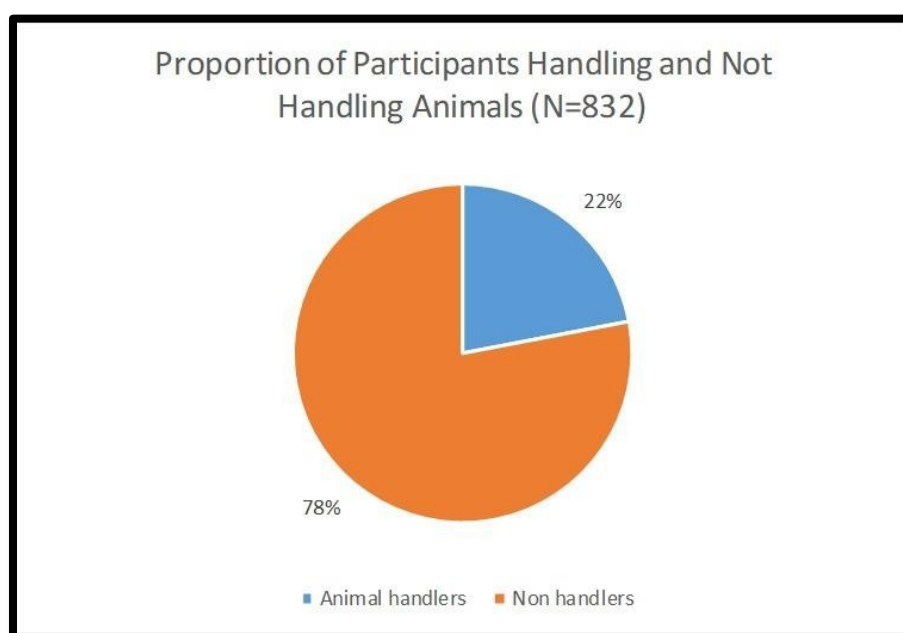


Figure 1: Proportion of Participants Handling and Not Handling Animals (N=832)

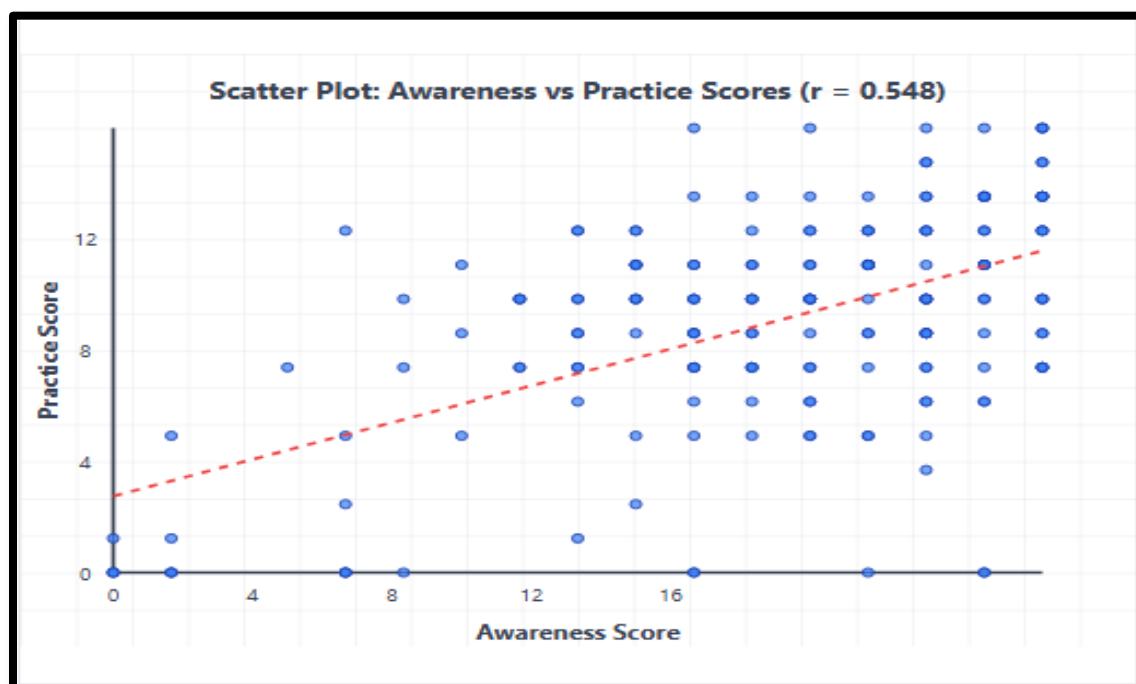


Figure 2: Scatter plot showing the relationship between awareness scores and practice scores among animal handlers (n = 183)

Figure 2 depicts the scatter plot of awareness and practice scores among handlers, with the line of best fit ($r = 0.548$) visually reinforcing the positive association between the two variables.

Table 3 compares good awareness between handlers and non-handlers across selected sociodemographic variables. Age group ($p = 0.032$), number of family members ($p = 0.039$), gender ($p = 0.048$), socioeconomic status ($p = 0.014$), and educational attainment ($p < 0.001$) all showed significant differences in awareness. Class III socioeconomic group (36.7%), families with more than four members (33.1%), persons without formal education (34.1%), and the 18–25 years age group (55.0%) had the highest percentage of handlers with good awareness. Duration of residence in the locality did not show a statistically significant association with good awareness ($p = 0.093$).

Table 4 shows the correlation between awareness and practice scores among animal handlers. A moderate positive correlation was observed ($r = 0.548$, $p < 0.05$), shows that higher awareness scores were associated with better practice scores shown in figure 2.

DISCUSSION

A Community-based study conducted in rural Puducherry revealed that majority of respondents had moderate to poor knowledge about zoonotic illnesses, with only one-third having good awareness. Sociodemographic characteristics like age, gender, family size, education, and socioeconomic level all had a substantial impact on awareness. Significantly, there was no apparent disparity in awareness between people who handle animals and those who do not, despite the latter being more sensitive.

Similar results have been seen in various parts of India. Despite frequent contact with animals, Rajkumar *et al.* from Puducherry found that livestock owners had little knowledge of zoonotic transmission and preventive measures [6]. In a similar vein, Hundal and associates in Punjab found that farmers had little awareness of the zoonotic dangers connected to

occupational exposure [8]. Additionally, a research by Singh *et al.* showed that preventative measures like vaccination and the use of personal protective equipment remained insufficient despite frequent interaction with animals [9].

In our study, education was a significant predictor of awareness, with educated groups having higher levels of knowledge. This finding is in line with the findings of Bodhare *et al.* in Tamil Nadu, who showed that vulnerable groups continued to have low levels of awareness while those with higher levels of education and socioeconomic status had noticeably higher levels [10]. Wright A. *et al.*'s study in North India similarly highlighted how cultural customs and inadequate literacy influenced people's views of animal illnesses more than biological causes [11].

Awareness regarding specific zoonotic diseases, such as leptospirosis, remains suboptimal. Another study

by Rathinam et al. in South India reported that, although leptospirosis was recognized as a public health problem, the understanding of risk factors and preventive practices was limited, which is similar to our study findings in Puducherry [12]. The present study demonstrated a positive correlation between awareness and practices among animal handlers, suggesting that increasing knowledge could improve preventive behaviours. Deka RP et al. in Assam and Bihar reported that while dairy farmers had some knowledge of brucellosis, risky practices such as consumption of raw milk persisted [13]. Similarly, Kelly et al. in Nepal found that smallholder farmers were aware of zoonotic diseases but often failed to implement preventive practices [14]. At the International level, Tebug et al. in Senegal also documented low adoption of preventive measures despite awareness of zoonotic risks [15].

Taken together, these findings highlight that awareness alone is lacking. Knowledge must be translated into behaviour through targeted educational strategies that address socio-demographic determinants and bridge the gap between risk perception and practice.

CONCLUSION

The present study identified that rural residents of Puducherry possessed a moderate awareness about zoonotic diseases, with significant correlations being detected with family size, age, gender, education level, and socioeconomic status. Non-handlers were not significantly more alert than handlers despite being at higher risk. These findings emphasize the need for focused health education programs that have been customized to fit regional socio-demographic contexts to generate awareness and promote zoonotic disease prevention.

ETHICAL CLEARANCE

The study received ethical clearance from the Institutional Ethics Committee (Human studies) of Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry with Approval Number: NO.83/SVMCH/IEC-Cert/ July 2025.

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