

# HOUSEHOLD'S KNOWLEDGE, PERCEPTION AND SELF-REPORTED PRACTICE ON RABIES IN SELECTED TOWNSHIPS OF MYANMAR

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## ABSTRACT

Rabies is a vaccine-preventable viral disease which occurs in more than 150 countries and territories. In Myanmar, 56,296 cases of dog bite occurred in 2016, among those, 1.3% were rabid dog bite. Community awareness about rabies is very crucial in rabies prevention and control. A cross-sectional study was conducted in adult household members of both sexes in urban and rural areas of 27 townships during 2019 Residential Field Training period, by using pre-structured questionnaires. Association of categorical variables was analyzed with Chi<sup>2</sup> statistical test (Alpha 0.05). By comparing by residence, there is significant difference of knowledge on rabies between urban and rural areas ( $p < 0.01$ ). Transmission of rabies by the bite of infected dog was well known in both areas, 98.2% in urban and 96.2% rural areas. For 100% mortality by rabies infection, over 60% of respondents from both urban and rural areas was known. Prevention of rabies by vaccination was known in round about 85% of both urban and rural residents. Regarding perception, 47.7% of urban population was highly perceived and 50.7% had high perception. The habit of feeding stray dogs was found in 35% in urban and 27.3% of rural populations. Over 40% of urban people vaccinated their pets but this practice was found among 22.1%

in rural people. Having High perception level was associated with vaccination after dog bite in both urban and rural areas ( $p < 0.01$ ). The suitable stray dog control strategies which will acceptable and affordable for the community was recommended. Continuous health education about the benefits of immunization for rabies prevention ought to be imparted.

*Keywords:* Knowledge, Perception, Practice, Rabies, Myanmar

## INTRODUCTION

Rabies is a vaccine-preventable viral disease which occurs in more than 150 countries and territories. Dogs are the main source of human rabies deaths, contributing up to 99% of all rabies transmissions to humans. Rabies is an infectious viral disease that is almost always fatal following the onset of clinical symptoms. In up to 99% of cases, domestic dogs are responsible for rabies virus transmission to humans. Yet, rabies can affect both domestic and wild animals. It is spread to people through bites or scratches, usually via saliva<sup>1</sup>. An estimated 59 000 people die from rabies each year. That's one person every nine minutes of every day, 40% of whom are children living in Asia and Africa<sup>2</sup>.

An estimated 21476 human deaths occur each year in Africa due to dog-mediated rabies. Rabies is a major burden in Asia, with an estimated 35 172 human deaths per year. India accounts for 59.9% of rabies deaths in Asia and 35% of deaths globally. There are estimated to be 1875 human deaths in Central Asia and 229 human deaths per year in the Middle East. Limited information is available on the burden of disease in these areas<sup>3</sup>. According to Public health statistics (2014-2016) in Myanmar, (56,296) cases of dog bite occurred in 2016, among those, 1.3% were rabid dog bite and 64% of dog bite cases had taken anti-rabies vaccines. Regarding to morbidity of dog bite, (111) cases per 100,000 population was seen. Bago and Yangon had highest morbidity followed by Kachin and Mandalay<sup>4</sup>. Deaths from rabies could be prevented by the timely application of appropriate prophylaxis. Community awareness about rabies is very crucial in rabies prevention and control. For efficiently increasing awareness, the knowledge gap among the community should be identified and targeted<sup>5</sup>.

There has been a limited study on knowledge, attitudes and practices about rabies in Myanmar. This study was carried out to understand knowledge, perception and practices on rabies among community of selected townships in Myanmar. Understanding people's knowledge, perceptions and practices about rabies, within their social and cultural context is important in order to provide relevant evidence for planning appropriate interventions.

## **MATERIAL AND METHODS**

A cross-sectional study was conducted in adult household members of both sexes in urban and rural areas of 27 townships of Shan State (South), Kayah State and Sagaing Region, Myanmar as a part of Residential Field Training, Final Part I MBBS (1/2019) by using pre-structured questionnaires. The questionnaire contains questions on demographic characteristics, socio-economic characteristics of the respondents, knowledge, perception and practice on animal contact and rabies. The items of the questionnaires were developed by reviewing the various literatures and translated into local Myanmar Language. During the field training period, house to house and face to face interview survey was performed by trained Final Part I MBBS students as interviewers. Each student in each RFT group was assigned to interview 8 participants (4 from urban and 4 from rural area). Collected data from questionnaires were systematically entered into Epi data version 3.1 software. Data cleaning and checking were done for data completeness and data consistency and data analysis was done by using Statistical Package for Social Science (SPSS) version 20. For knowledge level, 25 questions scoring 1 point for each was considered and 50% cut-off level was set as division point for high and low level. For perception, scores 45 and above were taken to be high perception and below 45 are low perception based on 15 questions by 5point Likert scale. Association of categorical variables was analyzed with Chi<sup>2</sup> statistical test (Alpha 0.05). For

ethical consideration, entirely voluntary participation, strict confidentiality and written inform consent were considered.

## FINDINGS

### Socio-demographic characteristics of the respondents by residence

As shown in table 1, the majority of the respondents (42% and 39%) were 41-60 years age group in both urban and rural area. Most of the respondents (65% and 67%) were female in each area. Nearly seventy percent of the respondents were married in both areas. Most of the respondents in the urban and rural areas

were primary and middle school level. In urban area, one fourth of the respondents were own business and dependent and in rural area, most of the respondents (43%) were farmer. Average monthly household income ranged from 1 Lakh to 5 Lakhs. There was half of the respondents belong to any animals on pets. Majority of the respondents in both urban and rural area had the stray dogs in village or wards. In urban area, the nearest health centers were (55.4%) government hospital and (34.1%) private clinic. In rural area, the nearest health centers were (40.6%) RHC and (24.2%) sub-center.

Table 1. Socio-demographic characteristics of the respondents by residence

Socio-demographic characteristics	Urban (n=1533)	Rural (n=1497)
Age		
18-25yr	183(11.9%)	182(12.2%)
26-40yr	440(28.7%)	491(32.8%)
41-60yr	648(42.3%)	586(39.1%)
more than 60yr	262(17.1%)	237(15.8%)
Sex		
Male	537(35%)	484(32.3%)
Female	996(65%)	1013(67.7%)
Marital status		
Single	304(19.8%)	316(21.1%)
Married	1066(69.5%)	1045(69.8%)
Divorced/Widow /Separated	163(10.6%)	136(9.1%)
Educational level		
Illiterate/Can read and write/Primary school level	549(35.8%)	761(51%)
Middle school level	405(26.0%)	368(24.60%)
High school level/	585(38.2%)	368(24.6%)
University/ Graduate/ post-graduate		

<b>Occupation</b>		
Farmer	213(13.9%)	648(43.3%)
Dependent	365(23.8%)	232(15.5%)
Government staff	181(11.8%)	75(5.0%)
Manual worker	115(7.5%)	103(6.9%)
Own business	367(23.9%)	251(16.8%)
Others	292(19.0%)	188(12.6%)
<b>Income</b>		
Less than 5 lakh	141(9.2%)	205(13.7%)
1-5 lakh	1300(84.8%)	1216(81.2%)
More than 5 lakh	92(6%)	76(5.1%)
<b>Belong to any animals on pets</b>		
	702(45.8%)	810(54.1%)
<b>Stray dogs in village or wards</b>		
	1134(74.1%)	964(64.4%)
	397(25.9%)	553(35.6%)
<b>Type of health center near your residence</b>		
Government hospital	850(55.4%)	295(19.7%)
Private Clinic	522(34.1%)	231(15.5%)
RHC	88(5.7%)	608(40.6%)
Sub-center	73(4.8%)	363(24.2%)

### Household's knowledge on rabies

According to figure 1, in urban area, 65.3% of respondents knew more than 50% regarding rabies and the rest 34.7% had 50% and less level of knowledge

level. In rural area, 61.3 had more than 50% knowledge level and 38.7% had had 50% and less level respectively. By comparing by residence, there is significant difference between urban and rural areas ( $p < 0.01$ ).



Figure 1. Knowledge level on rabies among respondent by residence

Regarding knowledge on transmission of rabies by the bite of infected dog in table 2, 98.2 % and 96.2% of respondents from urban and rural areas knew the mode of

transmission respectively. On assessing signs of rabies infected dog, biting without anger was known by 55.4% of urban residents and 57.1% of rural residents. In

both urban and rural areas, more than 50% knew that biting strange materials is one of signs of rabies infected dog. Running to and from with restlessness was known as signs of rabies infected dog by 76.1% of urban respondents and 72.8% of rural respondents. Round about 34% of respondents from both urban and rural areas knew that changing the sound of barking was sign of rabies infected dog. Dribbling saliva from the mouth was knew by 83% of urban residents and 78.3% of rural residents. Foaming at the mouth was known as the sign of rabies infected dog by 69.6% in urban and 61.1% in rural respectively. Over 95% of both urban and

rural respondents knew that immediate management in health facility after dog bite is important. Regarding knowledge to inform municipal if suspected rabid dog is found, only 20.5 in urban and 9% in rural areas were known. For 100% mortality by rabies infection, over 60% was known by respondents from both urban and rural areas. In urban areas, 85.2% knew that rabies can be prevented by vaccination and 84.1% from rural areas had this knowledge. Free availability of rabies vaccine in township hospital was aware by 55.3% of urban residents and 51.9% of rural residents.

Table (2) Knowledge on rabies among respondent by residence

Knowledge	Urban Number (%)	Rural Number (%)
Transmitted by the bite of infected dog	1522/1550 (98.2)	1483/1541(96.2)
Signs of infected dog		
Biting without anger	827/1493(55.4)	835/1463(57.1)
Biting strange materials	746/1474(50.6)	766/1456(52.6)
Running to and from with restlessness	1146/1506(76.1)	1086/1492(72.8)
Changing the sound of barking	490/1455(33.7)	495/1427(34.7)
Dribbling saliva from the mouth	1260/1518(83)	1174/1500(78.3)
Foaming at the mouth	1042/1497(69.6)	894/1462(61.1)
Importance of immediate management in health facility after dog bite	1487/1556(95.6)	1479/1552(95.3)
Knowledge to inform municipal if suspected rabid dog is found	311/1518(20.5)	136/1507(9%)
100% mortality by rabies infection	977/1556(62.8)	998/1552(64.3)
Prevention by vaccination	1326/1556(85.2)	1305/1552(84.1)
Free availability of rabies vaccine in township hospital	860/1556(55.3)	806/1552(51.9)

### Household's perception on rabies

According to figure 2, 47.7% of urban population was high perceived and 52.3 %

was low. Meanwhile in rural, 50.7% was high perceived and 49.3% was low.

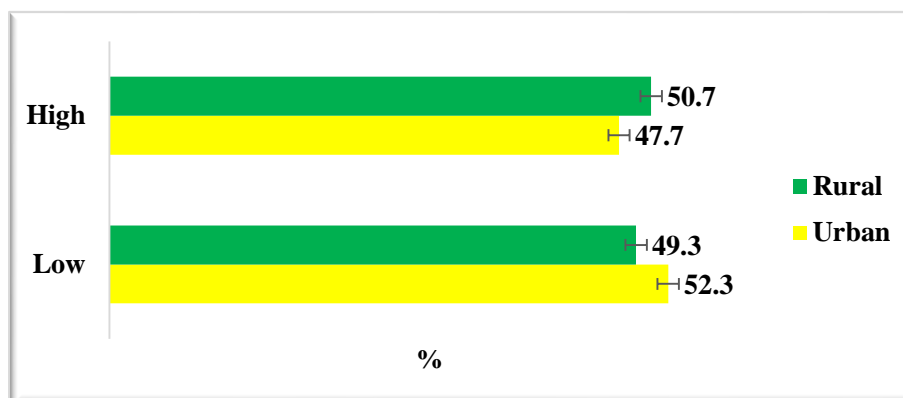


Figure (2) Perception on rabies of the respondents by residence

### Household's self-reported practice on rabies

According to the habit of feeding stray dogs, 550 (35%) of urban respondents said that they have the habit of feeding whereas there were only 424 (27.3%) of rural populations who feed the stray dogs. By the presence of dogs and cats in houses of respondents, 469(30%) respondents said they had dogs and cats at home in urban whereas 417 (26.8%) in rural. Among 469 of the urban respondents who have pets at home, 189 (40.3%) had their dogs and cats vaccinated. Among 417 of the rural respondents who have pets at their home, only 92 (22.1%) got their pets vaccinated at veterinarian. Regarding the questionnaire of dogs biting family members, 592 (38.3%) of urban respondents were bitten. Among 592

people who had bitten, 425 (71.8%) were vaccinated with rabies vaccine and 309 (72.7%) of those were vaccinated according to doctors' instructions. On the other side, 494 (31.7%) of rural respondents said their family member were bitten by dogs. Among 494 people who had bitten, 264 (53.5%) of those who were bitten were vaccinated. 176 (66.8%) of those who get vaccinated were instructed by their doctors.

Figure 3 shows the association between vaccination after dog bite according to doctor's instruction and perception score by residence. People who had highly perceived were significantly more likely to be vaccinated according to doctor's instruction when they were bitten by dog compared to those who had low perceived in both urban and rural area ( $p < 0.01$ ).

Table (3) Practice on rabies of the respondents by residence

Practice on rabies	Urban			Rural		
	Yes	No	Total	Yes	No	Total
	Number (%)	Number (%)		Number (%)	Number (%)	
Habit of feeding the stray dogs	550 (35.4%)	1005 (64.6%)	1555 (100%)	424 (27.3%)	1131 (72.7%)	1555 (100%)
Dogs or Cats at home	469 (30.1%)	1086 (69.8%)	1555 (100%)	417 (26.8%)	1138 (73.2%)	1555 (100%)
If yes, Rabies vaccine to Dog or Cats	189 (40.3%)	280 (59.9 %)	469 (100%)	92 (22.1%)	325 (77.9%)	417 (100%)
Bitten in family member	592 (38.3%)	963 (61.7%)	1555 (100%)	494 (31.7%)	1061 (68.3%)	1555 (100%)
If yes, family member who have bitten was vaccinated	425 (71.8%)	167 (28.2%)	592 (100%)	264 (53.5%)	230 (46.5%)	494 (100%)
If yes, family member who have bitten was vaccinated according to doctor's instruction	309 (72.7%)	116 (27.3%)	425 (100%)	176 (66.8%)	88 (33.2%)	264 (100%)

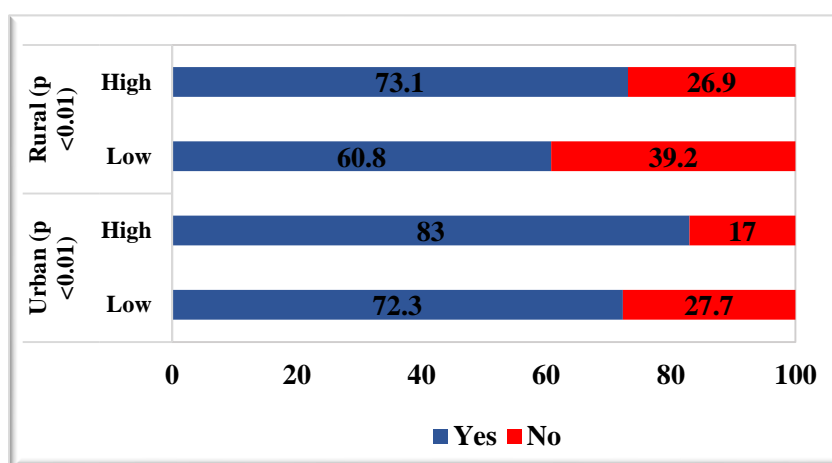


Figure (3) Association between vaccination after dog bite according to doctor's instruction and perception score by residence

### DISCUSSION:

Most of the respondents in urban area were more educated than the rural area. In

rural area, most of the respondents were farmer because our country is agricultural

country. Nearly half of the respondents had any animals or pets. Majority of respondents in both urban and rural area had the stray dogs in village or wards. Therefore, we have to emphasize the prevention of rabies by control of stray dogs and appropriate care of pets.

In addition to it, awareness raising about rabies was needed in rural areas where there are more risks of exposure to stray dogs and wild animals. For mode of transmission, majority of respondents from both urban and rural areas had knowledge which was consistent to the study in India and Ethiopia <sup>5,6</sup>. Importance of immediate management in health facility after dog bite was well known by more than 95% in both urban and rural areas. Therefore, health services from nearest health facilities are important to be ready to give immediate treatment. In this study, dribbling saliva and foaming at the mouth; and unusual sound were known more than the study in Grenada where there was 21.3% and 7.3% respectively<sup>7</sup>. However, 100% mortality was known compared to the studies in India <sup>6,8</sup>. Prevention by vaccine was known by nearly 85% of urban respondents but it was lower than that of Indian study where there was 94% in urban areas. However, knowledge in rural areas was similar in both studies <sup>6</sup>. Knowledge to inform municipal about suspected rabid dog was found only among 20% in urban and 9% in rural areas respectively. Therefore, this knowledge was necessary to be raised by giving health education for timely action of prevention. More than half of both urban and rural residents knew about free availability of rabies vaccine in township

hospital which was important for effective prevention to reduce morbidity and mortality.

High perception on prevention of rabies was found in nearly half of both urban and rural residents. Therefore, they were likely to do good practices for prevention of infection and dog bite. The rest of respondents had poor perception for preventive measures and so mass health education campaign are necessary to improve good perception within the community.

Feeding practices in this study (35% in urban and 27% in rural) was more or less similar to the finding of a study in Western India (39%) <sup>8</sup>. As an animal lover, it has very tempting to feed the poor dogs but it is not always the best thing to do. In our country, not all stray dogs are well vaccinated yet there is an increasing uncontrollable population of dogs and even getting near to them is very dangerous and can increase the risk of contracting rabies. According to this study, urban people had their pets more vaccinated than that of rural because rabies vaccine was not easily accessible in rural area. The respondents who did not receive vaccination visited traditional healers for quack methods and most of the elderly people still believe that some superstitions can help overcoming the danger of rabies virus. Vaccinating pet helps protect furry little animal not only from rabies but also helps lessen the spread of infectious diseases. In both urban and rural area, perception was associated with vaccination after dog bite.



## CONCLUSION

The respondents had quite enough knowledge about rabies. There was no significant difference between high and low perception scores by residence. Vaccination after dog bite was associated with perception on rabies prevention in both urban and rural areas. It is recommended to implement the suitable stray dog control strategies which are acceptable and affordable by the community. Moreover, continuous health about the benefits of immunization for rabies prevention education ought to be imparted.

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**CONFLICT OF INTEREST:** There is no conflict of interests.

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