

## Knowledge, Attitude and Practice (KAP) studies on Rabies: A Neglected Tropical Disease

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### ABSTRACT

Rabies is an ancient infectious disease affecting all mammals, which is caused by a virus called rhabdo-virus, transmitted through the biting of mad animals. In developing countries like Pakistan, the disease burden is directly related to the number of mortalities. Rabies is ranked as the 11th most infectious disease annually, causing more than 55,000 deaths worldwide and 30,000 deaths in Subcontinents due to rabies-associated mortalities. Rabies incidence varies from region to region, e.g., in India, Bangladesh, and Pakistan, 20 to 30, 13 and 8-9 cases per million people annually, respectively. A questionnaire was developed following the WHO guideline and translated into a regional language. We used the participatory approach for data collection through trained workers. The study area was divided into four regions, and 500 samples were collected from each region, representing 5% population. During the survey, we used a convenient sampling method for information collection regarding knowledge of persons, attitudes against rabies, and practices among the general population for rabies. Respondents aged 18 to 55 years included males, females, and transgender. Data collection is done under that area's proper social and cultural norms. We assumed that more than 30% of the population knew rabies signs and symptoms and preventive measures. All-inclusive, 53.6% of the respondents reported that they had pets or animals in their homes, while 25.9% had vaccinated their animals against rabies. Of the respondents from urban areas, 37% were found to have fewer pets or domestic animals in their homes compared to 64% of the respondents from rural areas. Rabies knowledge reduces the risk of rabies incidence. Control of rabid animals prevents rabies cases around the globe.

**Key words:** Rabies, Vaccine, Rabid Animals, Pets.

### INTRODUCTION

Rabies is an ancient disease affecting all mammals, which is associated with a virus called rhabdo-virus, which could be transferred through the bite of mad animals. Disease load is highly related to deaths in underdeveloped countries like Pakistan (Alie et al. 2015). High mortality rates are directly associated with the lack of effective rabies control and prevention programs (Ahmed et al. 2020). In Pakistan, more than 50,000 dog bite cases and 6000 deaths are reported annually. Rabies is ranked as the 11th most infectious disease causing more than 55,000 deaths worldwide (Altmann et al. 2019). In the Subcontinents region, 30,000 deaths are reported due to rabies-associated mortalities. Rabies incidence varies in different regions,

e.g., in India, 20-30 cases per million, 13 cases per million in Bangladesh and 8-9 cases per million annually in Pakistan (Ndour et al. 2021).

Knowledge, attitude, and practice (KAP) analysis is widely used for the prevalence of rabies worldwide. Health statistics are based on the knowledge that would enhance the seeking behaviour and practices against rabies. The changes in attitude and practice could minimize the disease burden and improve the disease (Ntampaka et al. 2019). This KAP survey has helped increase community awareness regarding dengue and its control in Thailand. This KAP survey help in identifying the knowledge gaps and barriers to controlling infectious zoonotic disorders (Burdon Bailey et al. 2018). The arrangement of public health awareness programs results in planning disease control at the national level in national

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programs and evaluation (Hasanov et al. 2018). The KAP surveys appeal to study rabies to assess essential tracking of knowledge, attitude, and awareness in the region (Davlin et al. 2014).

## MATERIALS AND METHODS

KAP survey was done in the district of Faisalabad, Punjab. The studies covered all rural as well as urban areas of the Faisalabad district, which is 58.56 square kilometers. More than 80% of the population was from rural areas and 20% from urban areas. The Study area was divided into four regions and 500 samples were collected from each region representing 5% of the population from each region. The study was conducted from September 2021 to November 2021 by trained workers to reduce the biases of the studies. A written consent form and verbal consent was done from the participants.

### Sample Size and Sampling Technique

A questionnaire was developed following the guidelines of WHO. The participatory approach was used for data collection from consent forms (Tiwari et al. 2019). and practice among the general population for rabies. The questionnaire was translated into the regional language. A random sampling technique was used to collect the responses. Respondents from the age category 18 years to 55 years were included. Data collection was done under the proper social and cultural norms of that area. Initially, it was assumed that more than 30% of the population knew rabies signs and symptoms and preventive measures. This survey includes males, females, and transgender.

A questionnaire with 20 questions that covered different aspects of rabies was used for data collection. The questionnaire was divided into three sections i.e., section 1 consisted of personal information such as age, gender, geographical information, and education section 2 and 3 were specified for evaluation of the knowledge, attitude, and practice, respectively. This questionnaire is already tested on retrospective studies conducted on rabies and approved by WHO (Ubeyratne et al. 2021). Trained persons did data collection to reduce biases. The knowledge of communities, attitudes, and practices against rabies and rabies vaccination were analyzed.

### Data Analysis

Data were analyzed through SPSS 20.1 software. Respondents were divided based on level of education, rural and urban population. The sample size was 2000 and a 95% confidence level was used. Respondent's level of education and awareness are presented in tabulation form. Results were presented by using the Venn diagram and bar charts of Microsoft world 2010.

## RESULTS

### Demographic Attributes

There were total number of 2000 responses collected from four geographical areas of district Faisalabad. There were 35.4%, 29.5%, 19.5% and 15.6% responses from Faisalabad city, Samundri, Jhumra and Shahkot,

respectively. Out of these (2000), 1400 respondents were from rural areas and 600 from urban areas. Most of the respondents were males, i.e., 63.6%, while female respondents were 36.4%. Initially, we focused on all age groups between 18 to 55 years of age and dog victims. There were more than a thousand participants graduated (Table 1).

### Participant's Knowledge about Rabies

Most of the participants have awareness and knowledge about rabies. There were 92.7% responses showing positive relation about rabies (Table 1). A total of 84.43% of respondents have pets or other animals in their homes. There were more unvaccinated respondents against rabies in rural areas compared to urban areas; similarly, dog bites were more in rural areas (Fig. 1). Knowledge about rabies signs, vaccination of pets, killing of rabid dogs, or vaccination against rabies was more in urban respondents compared to rural respondents (Fig. 2).

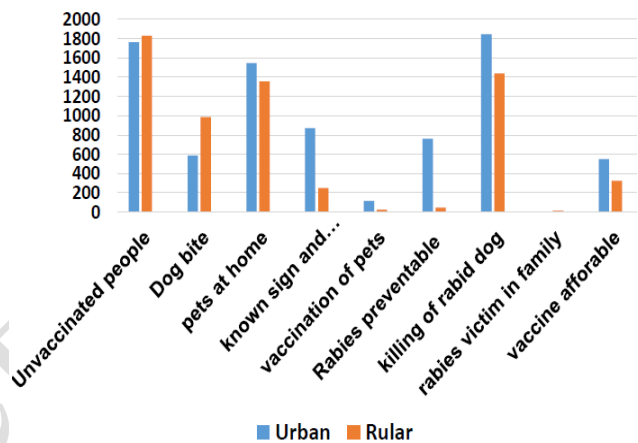


Fig. 1: Comparison of knowledge level in urban vs. rural population.

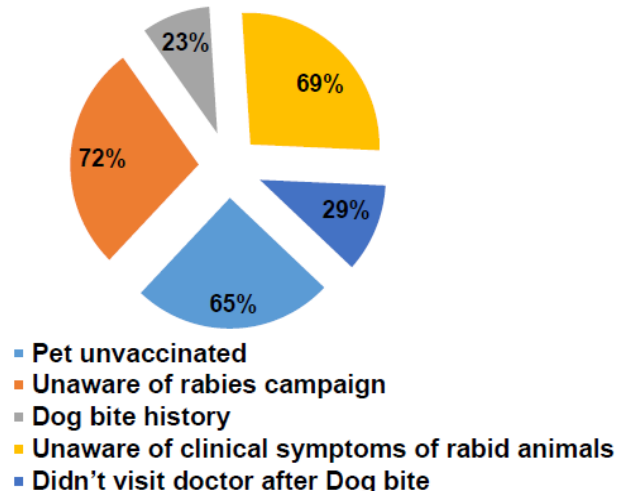


Fig 2: Population attitude while having pets in home.

Some of the respondents knew the signs and symptoms of rabies. Only 324 respondents had knowledge regarding rabies pre-exposure prophylaxis. About 32.2% knew that rabies is an avertable disease. When discussed about death due to rabies only 33.4% responded positively. A total of 42.5% families were victimized by

**Table 1:** Educational level in comparison population's responses

Educational Level	Middle	Matriculation	Intermediate	Bachelors	Total
Rabies Awareness	160	367	451	1,022	2000
Clinical symptoms of a rabid animal	228	421	231	1,120	2000
Doctor visit after a dog bite	76	651	341	875	1943 Remaining didn't answered

rabies. Only 26.5% population had a positive view about rabies vaccination with the bite of mad dogs. This study found that 44.9% considered dog bites as cause of rabies (Table 2). Almost 34% responses were that their family members got rabies (Table 2).

In this study, more than 80% of respondents have pets in their homes. Only 11.75% respondents got vaccinated to their pets (Table 3), 44.9% people considered it as a fatal disease, rabid dog killing practice responses was 43.95%, and only 43.3% considered vaccine necessary against dog bite. There were 49.2% respondents who had visited the hospital after biting of dog.

The studies showed that, half of the participants 53.6% delineated that they have indoor pets and animals 25.9% had vaccinated their pets and animals against rabies (Table 3). In the urban communities around 37% had pets in comparison with rural population 64% they had pets or animals. Despite the facts that, a huge proportion of respondents 75.6% responses that they bring rabies vaccination but only 24.6% of the people vaccinated themselves against rabies (Table 3). It is assessed that geographical background, pets in the homes, and vaccinated pets' rates were remarkably connected with each variable and its outcome. (i.e., victim of rabies in the near or extended family).

Participants answered, they are visiting hospital sometime only 40.6% went in the hospital after dog or cat bite against rabies. About killing of the rabid dog is practiced in the area, 63.2% of respondents reported (Table 3). It was assessed only 44.9% had awareness

**Table 2:** Rabies knowledge assessment among the general population

Variables	Responses	Frequencies	Percentage
Do you have a pet or other animals in the house?	YES	1686	84.3
	No	314	15.7
Have you heard about rabies?	YES	1854	92.7
	No	146	27.3
Do you know about the clinical signs of rabid animals?	YES	422	21.1
	No	1578	78.9
Do you know about rabies pre-exposure prophylaxis?	YES	324	16.2
	No	1676	83.8
Rabies victim in the family?	YES	675	33.7
	No	1325	66.2
Do you know rabies causes deaths?	Yes	850	42.5
	No	1150	57.5
Do you know rabies can be prevented?	Yes	644	32.2
	No	1356	67.8
Vaccine work after a dog bite?	Yes	525	26.2
	No	1475	73.75

**Table 3:** Attitude and practice related responses

Variables	Responses	Respondents	%
Do you consider dog bite causes rabies?	Yes	899	44.9
	No	1001	50.0
Rabid dog killing practice in your area?	YES	879	43.95
	No	1121	56.05
Do you consider a vaccine against rabies necessary?	Yes	866	43.3
	No	1134	76.8
Had you visited a doctor after a suspected dog bite?	YES	985	49.25
	No	1015	50.75
Do you consider rabies vaccination in humans affordable or not?	YES	456	22.8
	No	1544	77.2
Do you like to receive vaccines against rabies?	YES	870	43.5
	No	1130	56.5
Unaware of rabies vaccine campaigns?	YES	1456	72.8
	No	544	27.2
Should a dog bite patient vaccinate after initial treatment?	Yes	1160	58
	No	840	42
Have adequate rabies-related healthcare facilities in hospitals?	YES	777	38.5
	No	1223	61.1
How should the dog bite wound clean?	With Soap	1452	72.6
	With soap and Antiseptic	548	27.4
Should a dog bite wound suture or not?	Yes	1230	61.5
	No	770	38.5
Have you vaccinated your pet against rabies?	YES	235	11.75
	No	1765	88.2
Untreated dog bite wound dangerous or not?	YES	1258	62.9
	No	742	37.1
How long dog bite wounds should be irrigated with water?	5 minutes	544	27.2
	10 minutes	201	10.05
	20 minutes	1255	62.75

about local hospital facilities of rabid biting treatments. There were more than half participants 57.9% considered vaccination against rabies, which is non-affording. (Table 3). There were a specific number of the respondents 60% did not went in any health care professional following a suspected rabid animal bite. This attitude was found higher amongst 69% urban respondents in comparison to 54% of the rural respondents.

## DISCUSSION

A major public health problem named rabies, which is globally spread, specifically in the developing countries like Pakistan. This is a highly neglected tropical disease, having less awareness programs and campaigns in the world. Studies aimed zero rabies in next 10 years by WHO, in which countries have to strive to reduce the risk of rabies from the biting of mad dogs (Tiwari et al. 2019). Given knowledge have some limitations of the local people, at start there were 50% population showed basic knowledge necessary for clinical manifestation, precautionary measures, and infection to control dog bites and rabies (Khan et al. 2019). There is awareness, initially, based on this basic knowledge of rabies, they assumed that they could use appropriate practices in their lives to avoid rabies and contact with rabies (Kiffner et al. 2019). The survey analysis of 2000 participants, the results are in the margin with error of 2.5% is the expected frequency of acceptable practice and knowledge (Ahmed et al. 2020). Our results highlight the most important analysis regarding the state of consciousness of people with higher risk of developing rabies (Laorujisawat et al. 2022).

Generally, the gender prejudice was not associated with the possible factors which are victims is first relatives and extended family members. Geographical areas have been found a powerful associated factor with death due to rabies (Madjadinan et al. 2020). This is because of the lack of vaccinations and awareness campaigns in rural areas and the fact that dogs are often free to roam the streets (Rinchen et al. 2019). Pets and other animals are not vaccinated regularly in affected areas, the risk of rabies transmission from animals to human enhanced (Mapatse et al. 2022). Some studies have argued about children under the age of 18 have most susceptible of rabid animals biting than adults (Mbaipago et al. 2020). Most of these respondents found that their pets were not vaccinated opposed to rabies. The result was congruence with the results in the previous studies and surveys conducted in Ethiopia, Grenada, and India, which is a disturbing situation because these animals are leading cause of disease transmission in human (Nejash et al. 2017). Also, while other respondents were unaware of rabies and its deadly nature, many have knowledge of the clinical manifestations directed with rabies (Ahmed et al. 2020).

One of the key findings of this study was compatible with an alike study showed in Pakistan, stating that most of the respondents did not receive emergency medical care after being bitten by a dog (Ntampaka et al. 2019). However, this in contrasts with previously published rabies studies in developed countries around the world. Multiple factors identified that residents with the studies

fields are always have chances of developing the health problem due to participants do not have enough information of the possible sources, avidness and management of rabies (Barroga et al. 2018). Respondents with majority had knowledge about the vaccination activities along with rabies information spread in their area. Results are important to eliminate and control the rabies (Ross et al. 2022). Knowledge of rabies in terms with etiological factors, transmission ways, mainly host and reservoirs are anticipated to reduce the number of cases of rabies in Pakistan (Saqlain et al. 2020). The knowledge which leads to behavioral change and the attitudes of un-vaccinated animals, especially those in close contact with dogs (Premashthira et al. 2021). People attitude towards dog bites and ultimately care of wounds can be significantly improved; the awareness directly associated with risk factors (Rine et al. 2017). Care of wounds after being bitten by the dog is an important act as preventing disease. Unluckily, many of the respondents in our survey lacked sufficient knowledge of the importance of this practice (Tandon et al. 2017). Inappropriate wound care immediately with first priority being bitten by rebids, or if medical care is not sought, will inevitably result in death if the animal rages. This can be prevented by this important measure in Pakistan (Matibag et al. 2009).

The eradication of rabies in the developing countries which including Pakistan that increases the knowledge and awareness among people, especially those from rural areas (Tiwari et al. 2019). Common sources of information about mad dog disease are disseminated through face-to-face contact, the media (television, radio, newspapers), and professional people such as researchers, health care workers, schoolteachers and others (Ross et al. 2022). Pakistan's rabies education program is a long way off and all these channels should be used instead of raising awareness of rabies through public hospital signs and posters (Hasanov et al. 2018).

Most of the participants in the survey have hadn't heard about vaccine as preventive measures of rabies. There are some people had knowledge about the transfer of disease from rabid animals (Wu et al. 2016). Analysis indicated the comparative KAP studies conducted in the different countries but respondents in this survey with less knowledge of prophylaxis after exposure and a lot of rabid animals in their regions. There was a vaccine campaign in different countries (Rine et al. 2017). The comparison of more than 90 percent in the Sri Lanka, Ethiopia Tanzania, and Bhutan. Participants didn't care for hospital treatment after mad dog biting. The practice and attitude can be observe as a leading cause of death in the Pakistan (Hagos et al. 2020).

It has also been observed that some people are seeking home treatments and remedies including psychological therapists to treat the diseased rather than going to the hospital (Ahmad et al. 2021). This practice of looking for spiritual healers for patients with potential rabies has also been reported in Africa and India (Savader et al. 1989). The survey did not specifically consider this topic, but it can also explain why the survey showed that 60% of respondents did not seek traditional treatment. People should probably have looked for a spiritual healer. Many of them offer free treatment (Ahmed et al. 2020). For this reason, it should be considered ultimately wise which is important to involve traditional treaters in helps

to eradicate rabid animals from all Pakistan. These traditional treaters need guidance and can be useful with the effectiveness for people includes individuals and whole communities. When there will be incentive for people to assist for their true level of rabies.

### Conclusion

According to studies population have more than 70% basic knowledge about rabies, only 40% had advanced knowledge about rabies. People ignore the basic measures and have low resources and medical facilities. A little population was vaccinated after the dog bite or pet bite. The urban and educated population had a positive attitude and practiced against pet bites. There is a need for knowledge-based based campaigns in rural and urban areas of Pakistan. So, people should be aware of rabies and its consequences. It will improve the practice and attitude against rabies.

### Author's Contribution

Hafiza Saba Javed: Study design, data collection, analysis, and writing. Shumaila Abdul Rehman: Data collection. Aysha Mobeen: Intellectual revision. Imran Asghar: Data analysis and interpretation. All authors read and approved the final manuscript.

### Conflict of Interest

There is no conflict of interest in the text.

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