

# Assessment of Knowledge, Attitude and Practices Towards Malaria in Rural and Urban Communities of Peshawar and Mardan, Pakistan

Malaria in Rural and Urban Communities of Peshawar and Mardan

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## ABSTRACT

**Objective:** To assess the knowledge, attitude and practices regarding malaria in rural and urban suburbs of Peshawar and Mardan districts, Khyber Pakhtunkhwa, Pakistan.

**Study Design:** Descriptive study

**Place and Duration of Study:** This study was conducted at the two major tertiary care hospitals of hospitals of Khyber Pakhtunkhwa from September 2020 to February 2021.

**Materials and Methods:** A structured questionnaire was used which contained detailed information about the demography, knowledge, attitude and practice of the enrolled inhabitants.

**Results:** Most study subjects (80% rural, 90% urban) knew facts about malaria. 59% rural, 92% urban knew that mosquitoes were the vectors. 31.5% rural and 43% urban community knew about destruction of mosquito sites. 84% urban while 46.5% rural inhabitants were aware of anti-mosquito sprays. 55% of the rural population and 38% of urban society was not practicing any measures against malarial prevention.

**Conclusion:** Our community is familiar with the symptoms of malaria and its mode of transmission. The knowledge about preventive measures and vector control was deficient in rural areas. The overall situation needs to be strengthened.

**Key Words:** Malaria; Knowledge; Attitude; Practice

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## INTRODUCTION

Malaria has been recognized as one of the most common diseases affecting the human being worldwide for thousands of years. It is still a severe and life-threatening illness. The major impact of the disease is almost entirely on the developing countries, with the heaviest burden in Africa

Malaria remains one of the most serious health problems in South-East Asia Region. Every year 2.3 million cases and 4200 deaths are reported with an estimation of 18-20 million cases and 100,000 deaths. The vulnerable groups that have greatest risk of deaths due to malaria are children under five years of age, pregnant women and non-immune persons.<sup>1</sup>

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According to the World Health Organization (WHO), 97% (approximately 150 million) of the Pakistani population is at risk of contracting malaria, with an estimated nationwide burden of 1.6 million cases per year.<sup>2</sup>

Malaria in Pakistan is typically unstable and major transmission period is post monsoon i.e. from August to November. Major vector species are *Anopheles culicifacies* and *A. stephensi*, both still susceptible to the insecticides currently being used. The widely distributed causative organisms are *Plasmodium falciparum* and *Plasmodium vivax*. *Vivax* malaria still dominates the transmission though significant rise in the more lethal form, *Falciparum* malaria is observed in Baluchistan and Sindh provinces.<sup>3</sup>

The malariogenic potential of Pakistan has a negative impact on its socio-economic growth and productivity, as the main transmission season is spiraled with the harvesting and sowing of the main crops (wheat, rice, sugar cane). Seasonal transmission variations, drought, irrigation systems and hydrological changes, population movements, high level anti-malarial drugs and insecticide resistance in the parasite, and vectors are the major determining factors working behind the high endemicity of these districts. Poor access of the population to early diagnosis, effective treatment and effective prevention measures have further compounded the situation.<sup>4</sup>

The objective of our study is to assess knowledge, attitude and practices of community about preventive measures against malaria in rural and urban areas of Peshawar and Mardan, Pakistan.

## MATERIALS AND METHODS

Our study is descriptive cross sectional study. The study was conducted in rural and urban areas of Peshawar and Mardan districts of Khyber Pakhtunkhwa province, Pakistan. In rural areas of Peshawar, Palosai and Pishtakhara villages while in urban areas, University Town and Hayatabad were selected. In district Mardan, Takht Bhai was the rural area, while Mardan city was selected as urban area for research purpose. Study duration was from September 2020 to February 2021. Convenient sampling technique was used. Sample size was 400, which included 200 each from urban and rural areas. All males who were permanent inhabitants of above mentioned areas and having age from 15 to 60 years were included in the study. We excluded Afghan nationals from our study.

**Data Collection Tool:** A structured questionnaire was used covering questions on socio-demographic data, knowledge on transmission, preventive measures against malaria and practices used by community for prevention. The respondents were interviewed according to the questionnaire.

**Study Variables:** The study variables were age, area of residence, occupation, marital status, education, income, knowledge (about sign and symptoms and mode of transmission of malaria), attitude (community level preventive measures) and practices against prevention of malaria at community level.

**Age:** Further age-wise categories were made. Individuals having age between 15-30 years, 30-45 years and 45- 60 years were labeled as category 1, 2 and 3 respectively.

**Area of Residence:** Further two categories were made, a) rural b) urban

**Occupation:** The participants were asked about their occupation and was recorded

**Marital Status:** Participants were classified according to their marital status as single or married.

**Education:** The education status was coded to distinguish between respondents who had received no school education (illiterate), schooling at primary level but had not completed secondary schooling (below matric), those who had completed secondary schooling (matric), those who had completed F. A or F. SC(intermediates), those who had completed B.A or BSC (graduates) and those who had qualification above graduation were coded as post graduates.

**Economic Status:** The economic status was established by asking about their monthly house hold income in rupees. Those who had income below ten thousand rupees per month were coded as poorest; 10000-25000

were coded as poor, 25000-40000 medium and above 40000 were coded as well off.

**Knowledge:** In order to evaluate knowledge of respondents about malaria they were asked about the sign and symptoms and mode of transmission of malaria. The effect of education and economic status on knowledge was also established.

**Attitude:** Both community and personal level attitude towards preventive measures against malaria was recorded. The individuals were asked to specify the methods which they think are better preventive measures at community level and personal level. The effect of education and economic status on attitude was also established.

**Practices:** In order to know about community level practices, participants were asked about spray in their locality and stagnant water treatment. Spray in locality and/or stagnant water treatment was considered as positive community level practice.

**Data Analysis:** Data was coded, compiled in statistical package for social sciences (SPSS 22) software for windows 7.

## RESULTS

**Rural Area:** In rural area majority of the respondents (69.5%) were between 15-30years of age, as shown in table 1. 106 respondents (53.0) were single while 94 (47%) were married. Single largest occupation was that of business accounting 31.5%. Table 2. Most of the participants were graduates (26.5%) followed by intermediate pass (22.5%) and illiterates (20%). Table 3. Most of the respondents belonged to poor socioeconomic status (46%) followed by medium class (13.5%) and well off family (4.5%) Graph 1. About 80% of the respondents were aware of the sign and symptoms of malaria and 59% knew that mosquito is the transmitting agent.

**Urban Area:** In urban area majority of the respondents (78%) were between the age 15-30 years as shown in table 1. Single largest occupation was that of student (80%). Table 2. Most of the participants were graduates (58.2%), intermediate pass (22%) followed by illiterates (1.5%). Table 3. Most of the study subjects belonged to poorest (32%) family. This was followed by medium class (28%) and well (20%) Graph 1. About 94% of the respondents were aware of the sign and symptoms of malaria and 92% knew that mosquito is the transmitting agent.

**Table No.1: Age Groups in Rural and Urban Areas**

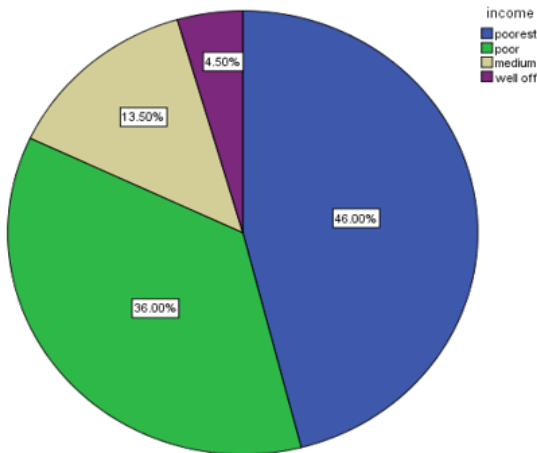
Sr. No.	Age Groups (years)	Rural		Urban	
		Frequency	%age	Frequency	%age
1	15-30	139	69.5	156	72.9
2	31-45	45	22.5	36	16.8
3	46-60	16	8.0	8	3.8
	Total	200	100	200	100

**Table No.2: Occupation of Participants in Rural and Urban Areas**

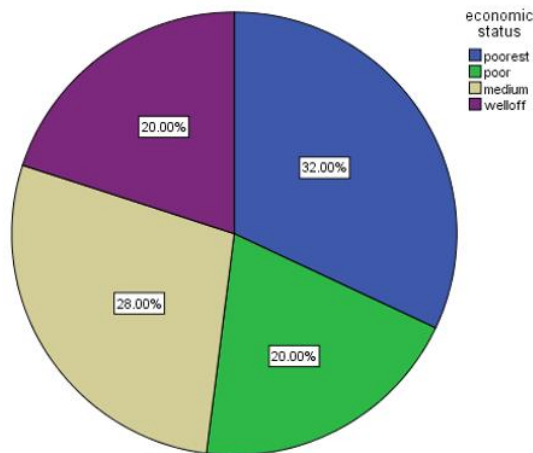
Sr. No	Occupation	Rural		Urban	
		Frequ-ency	%age	Frequency	%age
1	Student	41	20.5	160	74.9
2	Laboured	34	17	20	9.3
3	Salaried	27	13.5	12	5.6
4	Businessman	63	31.5	0	0
5	Others	35	17.5	8	3.7
	Total	200	100	200	100

**Table No.3: Educational Statuses in Rural and Urban Areas**

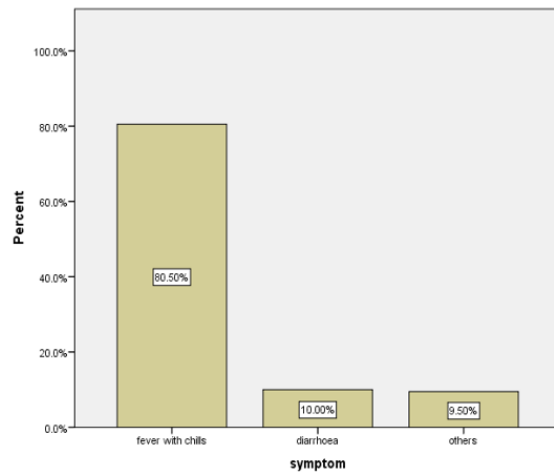
Sr. No	Education	Rural		Urban	
		Frequ-ency	%age	Frequency	%age
1	Uneducated	40	20	3	1.5
2	Below Matric	26	13	18	8.4
3	Matric	28	14	4	1.9
4	Intermediate	45	22.5	47	22.0
5	Graduate	53	26.5	116	54.2
6	Post-Graduate	8	4.0	12	5.6



**Figure 1.1: Economic Status Rural**

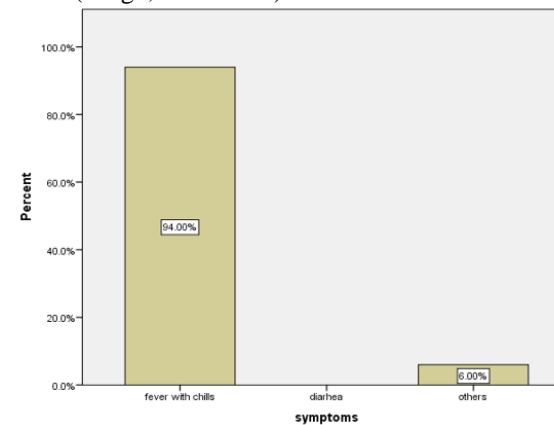


**Figure No. 1.2: Economic Status Urban**



**Figure No. 2.1: Sign and Symptoms of Malaria in Rural**

Fever with chills is determined by maximum respondents (80.5%), 10% stated diarrhoea, 9% stated others (cough, sore throat).



**Figure No. 2.2: Sign and Symptoms of Malaria in Urban**

Fever with chills is determined by 188 respondents (94%). Other than fever and chills is determined by 12 respondents (6%)

**Table No.4: Mode of Transmission**

Sr. No.	Mode of Transmission	Rural		Urban	
		Frequ-ency	%age	Frequ-ency	%age
1	Mosquitoes	118	59	184	93.5
2	Flies	15	7.5	0	0
3	Others	67	33.5	16	7.5

**Table No.5: Attitudes**

Sr. No.	Attitudes	Rural		Urban	
		Frequ-ency	%age	Frequ-ency	%age
1	Destruction of mosquitoes breeding sites	63	31.5	92	43
2	Use of anti-mosquito sprays	93	46.5	84	39.3
3	Others	44	22	24	11.3
4	Total	200	100	200	100

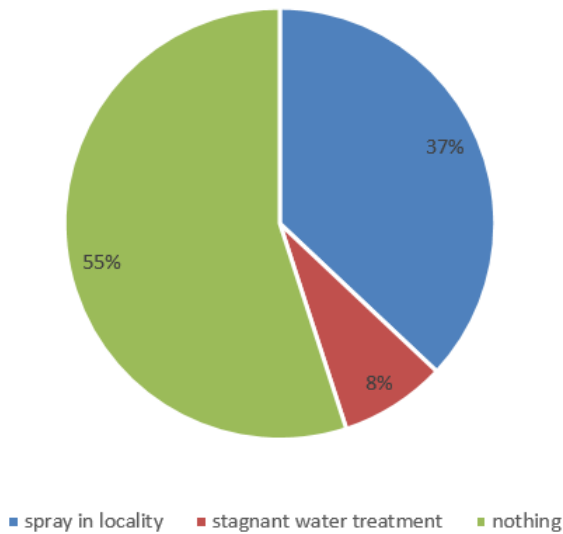


Figure No.3.1: Practices at Community Level

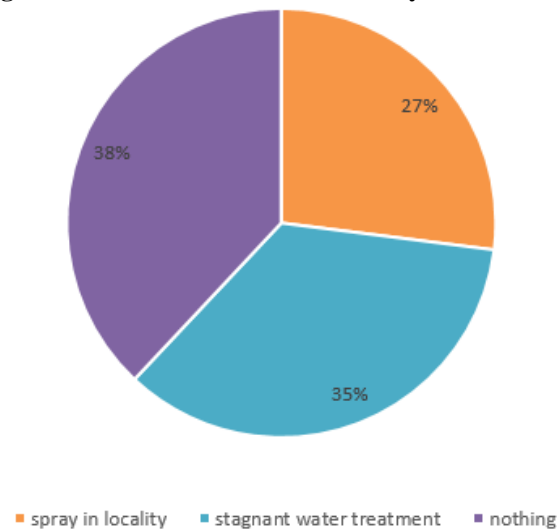


Figure No.3.2: Urban

## DISCUSSION

Malaria is a global problem and is the fourth leading cause of death. In Sub-Saharan Africa, malaria is the most important tropical disease, with 1.5 to 2.5 million deaths per year. One of the four childhood death in Africa is caused by malaria and Africa accounts for 80% of malarial morbidity and 90% of malarial mortality.<sup>5</sup>

Findings of our study indicated that the people of urban areas of Peshawar and Mardan city had better knowledge about symptoms and mode of transmission of malaria compared to people of rural areas where knowledge was slightly deficient. This could be explained by the better educational level and increase access to mass media in urban areas compared to rural areas. So efforts to increase the educational level in rural areas and bringing awareness in people through public awareness campaigns and seminars will increase

their knowledge level.

In an Ethiopian study it was reported that less than half (47.5%) of the study participants mentioned mosquito bites as a mode of malaria transmission. The knowledge level of respondents about the mode of malaria transmission was very low when compared to the findings in previous studies carried out in Ethiopia which reported awareness levels of up to 93%,<sup>6,7</sup>. Findings in this study are also lower than those reported in other studies across Africa<sup>5,8,9</sup>, and in countries like India and Mexico<sup>10,11</sup>.

The 2004 NetMark survey did report a slightly lower level of knowledge about modes of transmission (39.5%)<sup>12</sup>. Majority of respondents reported mosquito bites and mosquito disturbance during sleeping as nuisances. However, only a small proportion (29.9%) of the respondents mentioned the role of mosquitoes as a vector for malaria transmission, indicating their limited knowledge of the relationship between mosquitoes and malaria. This lack of awareness may also contribute to misconceptions about causes of malaria.

Similarly, a study from Iran demonstrated that the illiteracy level of the studied population was high (44.2%) and significantly affected the knowledge and practices of the respondents about the route of malaria transmission. 72.1% knew that mosquitoes were the vector.<sup>13</sup>

In the present study, exposure to dirty environments and hot weather, drinking dirty water, poor personal hygiene, eating contaminated foods, and exposures to the sun were identified as possible causes of malaria. Such misconceptions have also been reported from different studies from Ethiopia and other countries.

Results of our study showed that attitude of both rural and urban communities towards preventive measures was positive i.e. they viewed that preventive measures should be adopted against malaria but the attitude of urban community was better compared to rural community.

It might be because of better education in urban area and poor educational level in rural area. Also in rural area some people follow cultural traditions and beliefs which could be responsible for their negative attitude towards preventive measures.

Community members' attitude towards malaria as a disease is important in understanding their health seeking behavior and use of preventive methods. Study from Malaysia showed Promising results about treatment-seeking behavior; almost all the rural participants and two thirds of the aboriginal participants seek treatment at health centers within 24 hours of the onset of symptoms. Previous studies in rural areas in Southeast Asia showed that more than half of the population opts for self-treatment without visiting a

health facility<sup>14, 15</sup>. The better behavior reported by the Malaysian study could be due to the availability of health facilities and access to their services to all Malaysians throughout the country.

It has been observed in our research that community level practices of rural area were poor as compared to urban area. It might be because of the reason that government is giving priority to urban areas where anti mosquito spray is done more frequently. Also the economic status of urban community is better compared to rural population enabling to carry out such projects on self-sustained basis.

The present study revealed that education has impact on malaria knowledge i.e. educated people have more knowledge regarding different aspects of malaria. This corroborates with the evidence of studies in Zambia, Ethiopia and Gambia where high level of education was associated with improved knowledge.<sup>16, 17</sup>

We observed from the present study that economic status affects practices regarding preventive measures of malaria. This might be because of the reason that economically stable people can better afford to buy nets, coils, mats etc.

## CONCLUSION

It is concluded that education level affects practices regarding preventive measures of malaria. Subjects of rural area have deficient knowledge compared to that of urban area. Attitude of both rural and urban subjects was positive regarding preventive measures of malaria, but the attitude of urban community is better than rural community.

**Recommendations:** Based on our study findings we recommend following:

1. Health education should be given through mass communication about the knowledge of malaria, preventive measures, especially those who live in rural areas. This will increase the level of awareness and change the attitude of community.
2. Rural areas should be given proper considerations regarding preventive policies of malaria.
3. Insecticidal house spraying should be done on regular basis.
4. Insecticide treated nets should be provided to people in endemic areas.
5. Health authority should use larvicidal sprays for treating stagnant water in the locality.
6. Measures should be taken for proper drainage of stagnant water.
7. Proper screening of houses should be done.
8. Personal protective measures like use of mosquito repellents should be adopted

### Author's Contribution:

Concept & Design of Study: Ziauddin  
Drafting: Shah Zeb

Data Analysis: Ziauddin,  
Muhammad Abbas  
Revisiting Critically: Ziauddin, Shah Zeb  
Final Approval of version: Ziauddin

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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