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Original Research Article

A SURVEY TO ASSESS THE KNOWLEDGE, ATTITUDE, AND PRACTICES ABOUT MALARIA TRANSMISSION, SYMPTOMS AND PREVENTION AMONG THE PEOPLE OF A RURAL COMMUNITY LAHORE

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Abstract: *Malaria is one of the deadliest diseases worldwide, and it is particularly prevalent in tropical regions. In Pakistan, malaria is a significant cause of morbidity and mortality, with over 1.6 million cases reported in 2022. According to the World Health Organization (WHO), there were an estimated 247 million incidences of malaria and 691000 malaria deaths globally in 2017. This study aims to assess the knowledge, attitude, and practices of a rural community in Lahore, Pakistan, regarding malaria prevention. A community-based, descriptive, cross-sectional study was conducted from December 2022 to May 2023. A structured questionnaire was used to collect data from survey participants who were identified using a simple random sampling technique. The participant's knowledge, attitude, and practice levels were measured. Data was analyzed using SPSS. The study found that the rural community in Lahore generally has good knowledge about malaria prevention, including its transmission, primary symptoms, and control measures. This knowledge can help improve people's attitudes and practices, ultimately leading to better prevention of malaria in the area.*

Keywords: Knowledge, Attitude, Practice, Malaria, Prevention

Introduction

Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale, and Plasmodium malaria are four prevalent species of the protozoan parasite that cause malaria, an infectious vector-borne disease. In Tropical nations, malaria is a widespread cause of fever. Acute Malarial manifestations include vague symptoms, including a general lack of well-being, headache, exhaustion, and abdominal discomfort, as well as muscle aches that are quickly followed by the tropical malarial paroxysms of spiking fever, Chills, and rigors (Kebede, Hibstu, Birhanu & Bekele, 2017).

One of the biggest causes of sickness and mortality in Pakistan's high-risk Regions, particularly Sindh, Baluchistan, and KPK, is malaria. According to estimation, Pakistan experiences 1.7 million cases of malaria each year (WHO World Malaria Report, 2011). The post-monsoon season (September to November) is when malaria is most commonly transmitted in Pakistan; nevertheless, the disease is present all year round in coastal and western border Regions. The most populous province of Pakistan, Punjab, has a persistent problem with P.vivax malaria, with an estimated population of over 8 million and a population density of 396.1 people per square km. In rural areas, where agriculture is the most frequent occupation, 70% of the population lives. There were 831,630 Probable Malaria cases reported in 2012. Punjab Health 2014; Health Department GOP (Khan, Anwar & Hashim, 2017).

In 2010, Sub-Saharan Africa accounted for 81% of cases and 91% of fatalities. Malaria is the most significant tropical parasite illness and causes more deaths than any other infectious disease, except for Tuberculosis, according to a WHO 2012 report (Menjeeta, 2021).

A Quantitative study was conducted by Joel Djoufounna et al. in the year 2022 at Makenene, center Cameroon, to evaluate the knowledge, attitude, and practices of the Makenene population towards the fight against malaria. Using a semi-structured questionnaire, a descriptive, cross-sectional household community survey was conducted in randomly chosen homes in Makenene. Results indicated that out of four hundred thirteen (413) household surveys, most participants had a good understanding and behavior but a moderate attitude towards malarial prevention. This study concluded that locals continue to complain about malaria. To enable the fulfillment of the National Malarial Control Programme (NMCP) mission, control tools should be monitored and replaced as needed (Djoufounna et al., 2022).

The extent of overlap between everyday information and biomedical concepts is evaluated. It significantly contributes to increasing the acceptability and effectiveness of programs designed to stop the spread of malaria. Understanding a community's malaria knowledge attitude and practices can help in the reformulation of control tactics, serve as the foundation for suitable health education messaging, and help to secure and retain the community's participation in monitoring and control efforts (Munzhedzi et al., 2021).

Over time, efforts to control and prevent malaria have changed. The World Health Organization (WHO) launched its malaria campaign in 1998, intending to solve the WHO Global Technical Strategy for Malaria 2016–2030, which aims to reduce the global malaria burden by 90% by 2030. In conclusion, mortality and infection prevention are the main goals of malaria control and prevention (Orish et al., 2021).

It was discovered that agricultural areas had the highest prevalence of malaria, primarily P. falciparum and occasionally P. vivax. In addition, foreign migrant workers

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with irregular status are frequently found working in the agricultural, food, and construction industries. They are vulnerable to illnesses and accidents and lack access to quality medical care. Additionally, it is acknowledged that migrant workers frequently contract malaria infections during the later stages of the disease's eradication since they are never adequately cared for, even in countries with advanced healthcare systems (Abdalal et al., 2022).

The burden of disease is significantly influenced by human behavior. To understand their effects and create compelling social and behavioral change strategies and interventions, it is crucial to conduct formative research into factors that affect human behavior, such as personal preferences, community characteristics, leadership styles, and the caliber of available goods and services. Additionally helpful for evaluating social and behavioral change therapies is behavioral research (Pinto et al., 2021).

It is essential to make strategies to prevent malaria. The amount of understanding, attitude, and perception of the people regarding the disease and current control methods significantly impacts how well they adopt any control program and how eager they are to take action. Therefore, it is essential to comprehend people's knowledge, attitudes, and views of the illness to encourage the adoption of malaria therapies. Surveys of knowledge, attitudes, and practices (KAP) are frequent methods that can gather crucial data to direct the creation of control interventions, ensuring community participation, acceptability, and adherence(Tairou et al., 2022).

Methodology

This study used a quantitative descriptive cross-sectional design to investigate a rural community of Mail Pur in Lahore, comprising 103 participants who were selected using a simple random sampling technique. The research followed the ethical rules and regulations set by the ethical committee of the School of Health Sciences Fatima Memorial System to ensure ethical consideration and respect for the participants' rights throughout the study.

To collect data, pre-designed and pretested demographic and personal questionnaires were used, including information on age, gender, family type, number of siblings, mother's literacy, father's educational level, socioeconomic status, knowledge, attitude, and practices of people regarding malaria prevention, housing conditions, and environmental sanitation. All questionnaires were used after obtaining permission from the participants.

The Statistical Package of Social Sciences (SPSS) version 23 was used for data analysis, employing descriptive statistics to calculate frequencies, means, and percentages using descriptive analysis techniques.

A sample size of 200 was calculated for the predicted event frequency, and research data was collected using an adapted research questionnaire. The data questionnaire consisted of three parts and 12 closed-ended questions, with five questions on demographic characteristics and 12 questions to characterize knowledge, attitude, and practices.

The researchers in the community administered the questionnaire, and the data were analyzed using SPSS Statistical Software, employing frequency and percentage analysis.

Results

The table presents a comprehensive overview of a surveyed population, capturing key demographic details across multiple categories. Regarding age distribution, the most significant proportion falls within the 21-25 age group, comprising 33.0% of the total, closely followed by the 15-20 age range at 25.2%. Individuals aged 26-30 and 31-35 each constitute 13.6%, while those aged 35-45 make up 14.6% of the surveyed population.

Educational status reveals a diverse group, with the majority having graduated (28.2%), followed by individuals with Matric (25.2%) and Intermediate (23.3%) qualifications. A significant portion, 23.3%, is not educated (Figure 1).

Regarding marital status, the population is evenly divided between married individuals (50.5%) and those who are single (49.5%). The distribution of children is varied, with 51.5% reporting no children, while 21.4%, 19.4%, and 7.8% have 1-3, 4-5, and above five children, respectively.

Occupationally, the surveyed individuals engage in diverse roles. Teachers represent the largest occupational group at 37.9%, followed by housewives (21.4%), students (17.5%), and individuals involved in agriculture (12.6%), and daily laborers (10.7%).

Table 1: Demographic characteristics of people aged 15-45 years regarding malaria in a Rural Community of Lahore (N=400).

Age	Frequency	Percentage
15-20	26	25.2
21-25	34	33.0
26-30	14	13.6
31-35	14	13.6
35-45	15	14.6
Marital status		
Married	52	50.5
Single	51	49.5
No of children		
1-3	22	21.4
4-5	20	19.4
Above 5	8	7.8
No	53	51.5
Occupation		
Agriculture	13	12.6
Teacher	39	37.9
Daily laborer	11	10.7
Student	18	17.5
House wife	22	21.4

Table 2 provides a detailed insight into the knowledge levels of individuals aged 15-45 regarding malaria in a rural community in Lahore, with a sample size of 400 participants. The first key aspect explored is the understanding of malaria transmission through mosquito bites. Most respondents, constituting 93.2%, correctly identified that malaria is transmitted through mosquito bites. This high percentage indicates a commendable awareness among the participants about the primary mode of malaria transmission.

Moving on, the table investigates participants' knowledge regarding the timing of mosquito bites. Interestingly, only 22.3% of individuals believe that mosquitoes predominantly bite during the day, while a significant majority, 77.7%, hold the opposite belief. This finding suggests a potential

gap in awareness about the diurnal habits of mosquitoes, highlighting an area that could be targeted for educational interventions to enhance community understanding.

The third aspect examined in the table pertains to participants' knowledge of mosquito breeding sites. Here, 86.4% of respondents correctly identified stagnant water as the breeding site for mosquitoes, showcasing a robust understanding of the environmental conditions conducive to mosquito reproduction. This awareness is crucial for community-based efforts to eliminate breeding sites and reduce the risk of malaria transmission.

Lastly, the table investigates participants' familiarity with the symptoms of malaria. An overwhelming 95.1% of individuals demonstrated awareness of common malaria symptoms such as fever, headache, shivering, and backache. This high percentage indicates a firm grasp of the clinical manifestations of the disease among the surveyed population.

Table 2: Knowledge of people aged 15-45 regarding malaria in a Rural Community in Lahore (N=400).

Malaria is transmitted through mosquito bite	**Frequency**	**Percentage**
Yes	96	93.2
No	7	6.8
Mosquitos mainly bite during this time.		
Yes	23	22.3
No	80	77.7
Mosquito breeding site is stagnant water.		
Yes	89	86.4
No	14	13.6
Symptoms of malaria are fever, headache, shivering and backache.		
Yes	98	95.1
No	5	4,9

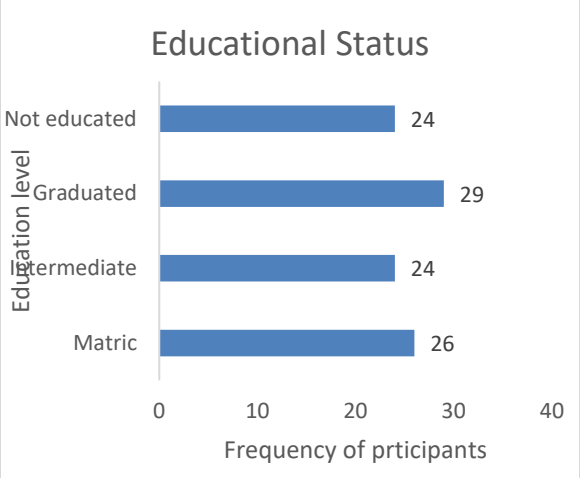

Figure 1 Education Levels of the study population

The data presented in Table 3 unveils the practices of individuals aged 15-45 in a rural community in Lahore concerning malaria prevention. Notably, 94.2% of participants reported a proactive approach to health, consistently visiting health centers or clinics when they or their family members fall ill. This emphasizes a commendable health-seeking behavior within the community. The use of mosquito nets, a crucial preventive measure against malaria, was reported by 58.3% of respondents, indicating a moderate but significant adherence to recommended practices. Moreover, the majority engages in habitat modification practices, with 71.8% trimming bushes around their homes and an even higher percentage (92.2%) actively draining stagnant water. These practices underscore a community actively participating in reducing mosquito breeding sites and preventing malaria transmission.

Table 4 delves into the attitudes of individuals aged 15-45 toward malaria in the same rural community. A noteworthy 85.4% of participants recognized the necessity of a blood smear for accurate malaria diagnosis, demonstrating a positive attitude toward diagnostic procedures. Additionally, 96.1% expressed a positive attitude toward seeking professional healthcare, emphasizing the importance of prompt medical attention when feeling unwell. Almost all participants (97.1%) held a positive attitude, recognizing malaria as a preventable disease and aligning with public health messages advocating preventive measures. The acknowledgment of risks associated with improper and incomplete usage of malaria medicine by 94.2% of respondents indicates a responsible attitude toward treatment compliance within the community.

Table 3: Practice of people aged 15-45 regarding malaria in a Rural Community in Lahore (N=400).

You visit a health center/clinic when you and a family member fall sick	**Frequency**	**Percentage**
Yes	97	94.2
No	6	5.8
You used to sleep in mosquito nets to prevent malaria.		
Yes	60	58.3
No	43	41.7
You trim bushes around your home		
Yes	74	71.8
No	29	28.2
You drain stagnant water around your home		
Yes	95	92.2
No	8	7.8

Table 4: Attitude of people aged 15-45 regarding malaria at a Rural Community Lahore (N=400).

Blood smear is necessary for malaria diagnosis	**Frequency**	**Percentage**
Yes	88	85.4
No	15	14.6
I visit health center/clinic when I feel sick		
Yes	99	96.1
No	4	3.9
Malaria is preventable disease		
Yes	100	97.1
No	3	2.9
It is risky when malaria medicine is not taken properly and completely		
Yes	97	94.2
No	6	5.8

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The combined findings from Table 3 and Table 4 depict a rural community in Lahore with commendable health practices and positive attitudes toward malaria prevention. These practices and the positive attitudes observed contribute to a holistic approach to malaria control. However, targeted health education interventions could further enhance community practices and attitudes, particularly regarding the proper use of mosquito nets and the awareness of the timing of mosquito bites during the day. Public health initiatives should leverage the existing positive attitudes and practices while addressing specific areas for improvement to create a more robust malaria prevention framework within the community.

Discussion

This study, conducted in the rural expanse of Lahore, presents a meticulous exploration of malaria-related knowledge, attitudes, and practices among 103 participants. Employing a simple random sampling technique, our research has unearthed significant findings that enrich the understanding of malaria awareness and prevention strategies. While an impressive 93.2% of participants demonstrated prior knowledge regarding malaria transmission through mosquito bites, a nuanced 22.3% recognized the diurnal propensity of mosquito bites. Additionally, 86.4% acknowledged stagnant water as a mosquito breeding site, and an overwhelming 95.1% exhibited a commendable awareness of malaria symptoms.

Delving into the demographic composition, individuals aged 21-25 dominated the cohort, constituting 33% of the sample. Educational qualifications revealed a diverse distribution, with 25.2% having matric education, 23.3% falling into the intermediate and non-educated categories, and 28.25% holding graduate degrees. Occupationally, the study portrayed a mosaic, with 12.6% engaged in agriculture, 37.9% serving as teachers, 10.7% as daily laborers, 17.5% as students, and 21.4% as housewives. The prevalence of teachers in the sample could be attributed to their heightened awareness of malaria, fostering active participation in the study.

Comparison with analogous studies conducted in Halaba Town, Southern Ethiopia, and the Ho Municipality, Ghana, underscores the universality of malaria-related concerns across diverse geographical contexts (Menjeeta, 2017; Konlan, Amu, Konlan & Japiong, 2019). The study has identified a robust level of awareness, with 93.2% possessing knowledge about malaria transmission, 95.1% recognizing symptoms, and 94.2% adopting health-seeking behaviors during illness. Notably, 96.1% of participants subscribed to the belief that malaria is preventable.

Acknowledging the study's limitations, including its single-setting focus, the quantitative methodology restricting participant perspectives, and the researchers' novice status, our findings underscore the imperative for tailored public health interventions. These interventions should address specific lacunae in malaria awareness and prevention practices, with the potential for broader applicability in national and international contexts.

Conclusion

The results of this study help us to evaluate that people have awareness about malaria, and their practice shows that they are very well concerned with prevention from malaria, and it should be enhanced through proper seminars and programs that play an effective role in promoting and optimize the level of well-being. Media plays an important role in exploring many complex health problems and diseases. Knowledge of people raised by the provision of health education, and maintenance of a healthy lifestyle to minimize the risk factors regarding malaria.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned.

Consent for publication

Approved

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Conflict of interest

The authors declared absence of conflict of interest.

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