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Community awareness of mosquito borne diseases in rural areas of Ballarpur Taluka, District Chandrapur, Maharashtra

Honey S Kondra[1], Dr. Imran R Mithani[1], Dr. Naresh R Dahegaonkar[2]
[1] Department of Zoology, Dr. Ambedkar College of Arts, Commerce and Science, Chandrapur, Maharashtra, India
[2] Department of Zoology, Dr. Khatri Mahavidyalaya Tukum, Chandrapur, Maharashtra, India

Abstract
Mosquito borne illness continues to spread many health challenges, particularly in rural regions with less awareness and preventive infrastructure. This study aims to determine the level of awareness among rural residents regarding mosquitoes, their breeding sites and control strategies of three rural villages- Visapur, Karwa and Bamni of Ballarpur taluka, Chandrapur District, Maharashtra. Total 150 residents were randomly surveyed through structured questionnaires to assess data on their Knowledge, Strategies and experiences related to mosquitoes and diseases associated with them. Most participants observed higher mosquito activities during late evening and night hours and reported basic protective measures use against mosquitoes. The data revealed that many respondents had some awareness on mosquito-borne illness like Malaria and dengue, misunderstanding regarding breeding grounds and preventive strategies were still prevalent. However, limited visits by health authorities and inconsistent participation in awareness activities were noted. The findings bring attention to the need for consistent community-based awareness programs and increase public involvement for mosquito control efforts in rural settings. This study concludes valuable perspective into present knowledge gaps regarding awareness and helps in planning good strategies for diseases prevention.

Keywords: Awareness, mosquito diseases, malaria, rural villages, ballarpur

Introduction

Mosquito borne diseases always play a major role in public health concern across India., especially in economically weaken areas. From the long-time mosquitoes have been consider as disease transmitting source impacting human health [9]. Over past few years in countries of South Asia, mosquito -borne illness have become serious concern for public health [10]. India carries huge burden of mosquito borne infections, contributing 34%in dengue and 11% of malaria cases respectively [3]. Improper sanitation, poor water storage, unplanned urbanization raising the risk of mosquito transmitting diseases like Malaria, dengue, Lymphatic Filariasis and Japanese Encephalitis in South Asia particularly in India [2]. For encompassing malaria and other vector related illness, the Indian government launched NVBDCP (National Vector Borne Disease Control program) in 2003 [5]. The data revealed by NVBDCP in 2019, India is world's most impacted country showing more than 1.5 million dengue cases and nearly 1 million cases of malaria [6, 11] and its report in year 2017, recorded 17710 malaria cases and 20 deaths in Maharashtra state [7].

Ballarpur taluka, which is located in Chandrapur district, Maharashtra is well known for its Urban, semi-urban and rural areas having papermill industry, dense forest region and various topographical regions, which creates ideal conditions for breeding of mosquitoes. It includes both rural and developing urban areas which faces persistent challenge on mosquito borne illness such as malaria, dengue and chikungunya. Educating people of this region regarding awareness about mosquito control and their prevention practices is important particularly in rural regions where access to hospitals and awareness regarding preventive strategies are often limited.

The village Visapur, Karwa and Bamni are the typical example of rural areas where mosquito awareness and its control and prevention are crucial for managing health outcomes. These Villages are surrounded by agricultural fields, forest areas and natural water bodies which provide ideal breeding sites for number of mosquito species. People of these area often lack in maintaining cleanliness, proper garbage, disposal system and access to preventive measures. Stagnant water, poor drainage and still rely on traditional water storage practices create breeding grounds for mosquito making local population vulnerable to mosquito borne illness. due to lack of health education, lower literacy rates, minimal government outreach and traditional belief contribute to poor awareness about transmission of diseases and less consistent use of prevention strategies in these areas. Raising awareness on mosquito life cycle, breeding sites and effective preventing methods such as use of mosquito nets, repellent cream and proper water storage methods is crucial in such areas. The aim of vector control and prevention focused on monitoring and managing arthropods like mosquitoes to decrease disease spread [8].

According to NVBDCP report, Maharashtra state reported 17710 malaria cases and 20 deaths in 2017 [7]. Even though the presence of government health campaign coverage of these programs stays inconsistent in smaller villages like Visapur, Karwa and Bamni. However, in these communities The study aims on elevating the level of awareness among the rural villages of Ballarpur taluka with respect to mosquito borne diseases, their prevention and to understand the gap in Knowledge which influencing the rural population behaviors on mosquito control, their traditional beliefs and common practices. By analyzing awareness and attitudes of these community, this study provides visions

that can help people adapting health education campaigns more effectively and maintain prevention.

Material and Methods

Study Area: The study was conducted in three villages- Visapur, Karwa and Bamni of Ballarpur taluka, Chandrapur district, Maharashtra, India. These villages include mix of natural water bodies such as ponds, open drains, handpumps and agricultural field, vegetation which makes them potential breeding sites for mosquito, people of these areas earn a living through farming and daily wage jobs, and access to healthcare and awareness campaign is less as compared to urban areas of the study region.

Sample Collection: The fieldwork was carried out over six months from January 2025- June 2025. Random sampling has been done by selecting random selected individuals from three villages of Ballarpur taluka- Visapur, Karwa and Bamni in Chandrapur district, Maharashtra. Instead of concentrating only on household, the sample collected from various groups of residents observed in public places such as bus stands, farms, schools, market, water access spots and village meeting areas.

Data Collection: A total 150 individuals selected for the study – approximately 50 participants from each village area. The data include adult aged 18years and above, efforts were made to ensure representation from both male and female and diverse age groups, occupations and literacy levels to get balanced perspective on knowledge and practices regarding mosquito control. The selection of participants is random and voluntary they were approached in person and invited to take part in the survey. All the data is collected and systematic gather by using Excel tool.

Result and Discussion

The research was conducted to determine the awareness of rural populations regarding mosquito-borne illness and their preventive measures in three villages of Ballarpur taluka: Visapur, Karwa and Bamni. A total 150 random residents of these villages were surveyed through random face to face interviews across age groups and genders.

Demographic Characteristics of Individuals

The study included participants from different age groups, education levels and both male and female included in approximately in equal proportion.

Table 1: Demographic characteristics of Participants in Survey

Characteristics	Total(N=150) of three rural villages of Ballarpur taluka
Gender	
Male	65
Female	85
Age Group	
18-30yrs	34
31-50yrs	97
51 above	19
Literacy level	
Illiterate	43
primary	26
Secondary	68
Highest	13

Observation and Biting time of Mosquitoes

The data collected from many participants regarding their experience of biting time reported 57% of respondents revealed highest mosquito activity and bites experiencing during evening and night time concluding that late evening hours are the peak period of mosquito in rural areas. Awareness regarding day biters is lesser in rural people which can cause dangerous diseases like dengue.

Table 2: Distribution of mosquito bites across different time zone of day.

Time Zone	Biting time Experience by respondents
Morning (6-10 AM)	10
Afternoon(11-4PM)	5
Evening (5-8PM)	49
Night (After 8PM)	86

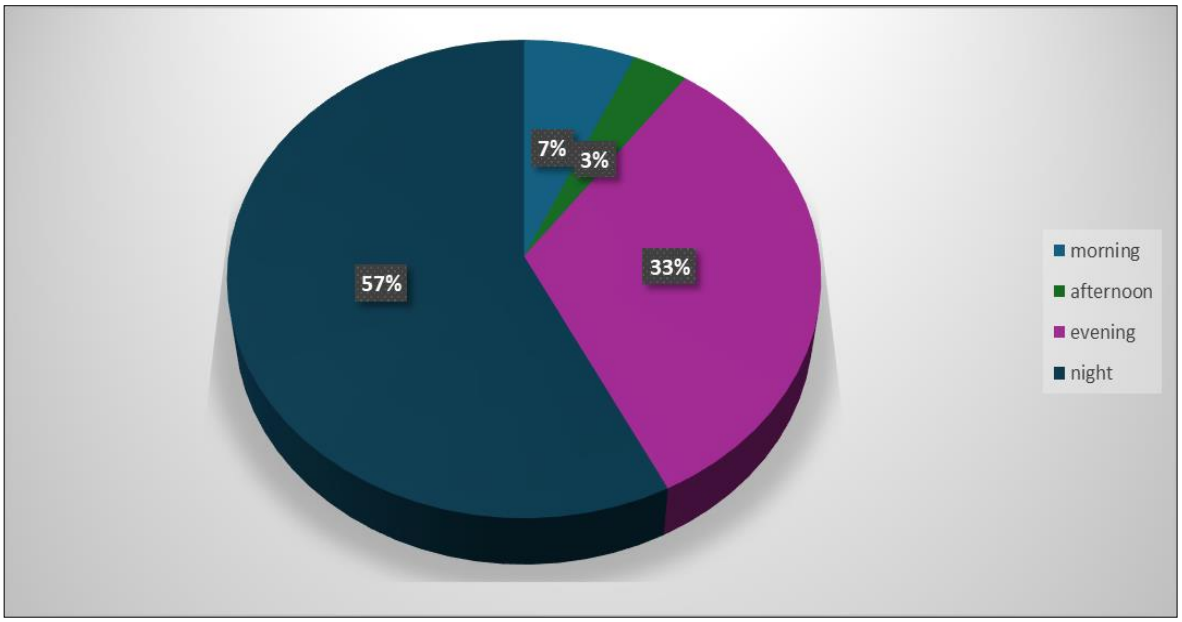

Fig 1: Peak time interval for mosquito activity and Biting.

1. Awareness regarding Mosquito Borne diseases

Out of 150 participants, approximately 90% were aware that mosquito play a major role in transmitting diseases, Malaria and dengue was most commonly identified diseases by respondents with 52% know about malaria followed by 39% known about dengue which indicate having partial awareness regarding the diseases transmitting by mosquitoes. The dominance awareness regarding malaria and dengue among participants is constant with previous surveys held in rural settings of India, where these two diseases are most commonly known due to their widespread occurrence and media coverage (Avinash 2024) [1]". Chikungunya and Filariasis are less known with only 8% and 1%.

Table 3: Diseases transmitted by Mosquitoes

Diseases	No. Of participants identifying
Malaria	101
Chikungunya	15
Dengue	75
Filariasis	2

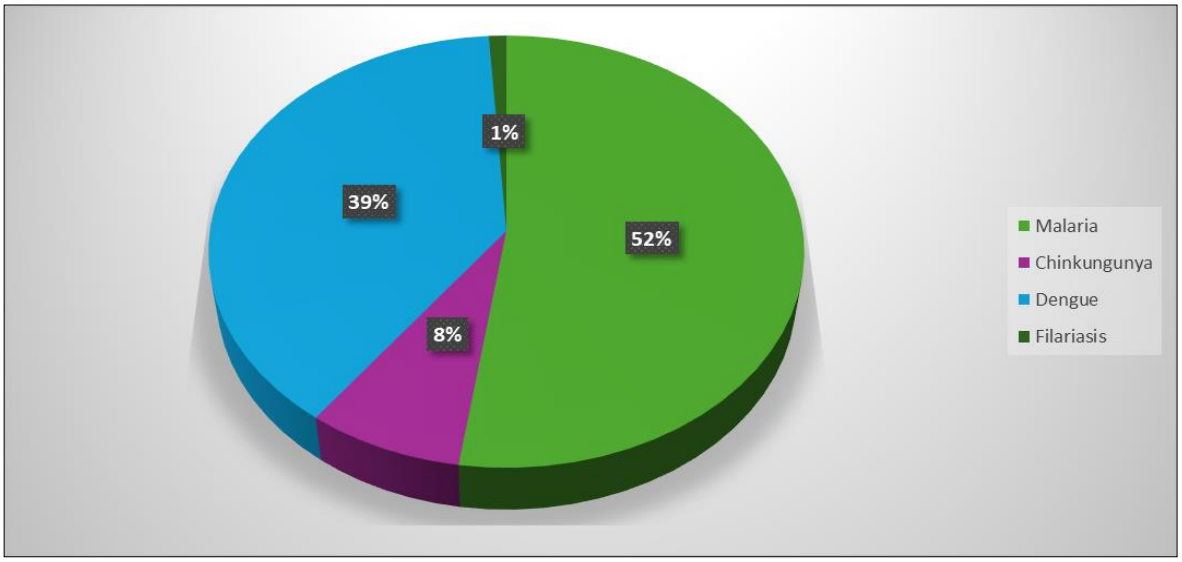

Fig 2: Awareness of Mosquito transmitted illness among rural residents

Preventive Strategies Used by Individuals

Many respondents used mosquito coils and repellent stick making it dominant choice, bed nets were second most preferred method but there are still large number of people who only use traditional methods for protection such as neem leaf smoke, burning cow dung, covering body with mustard oil which is not that much effective and some still don't use any form of protection against mosquito.

Table 4: Prevention methods across three villages of Ballarpur.

Prevention Methods	Visapur	Karwa	Bamni
Coil/	26	30	29
Repellent creams	2	3	4
Mosquito Net	10	11	8
sprays	2	1	1
Liquid mosquito vaporizer	10	3	7
None	0	2	1

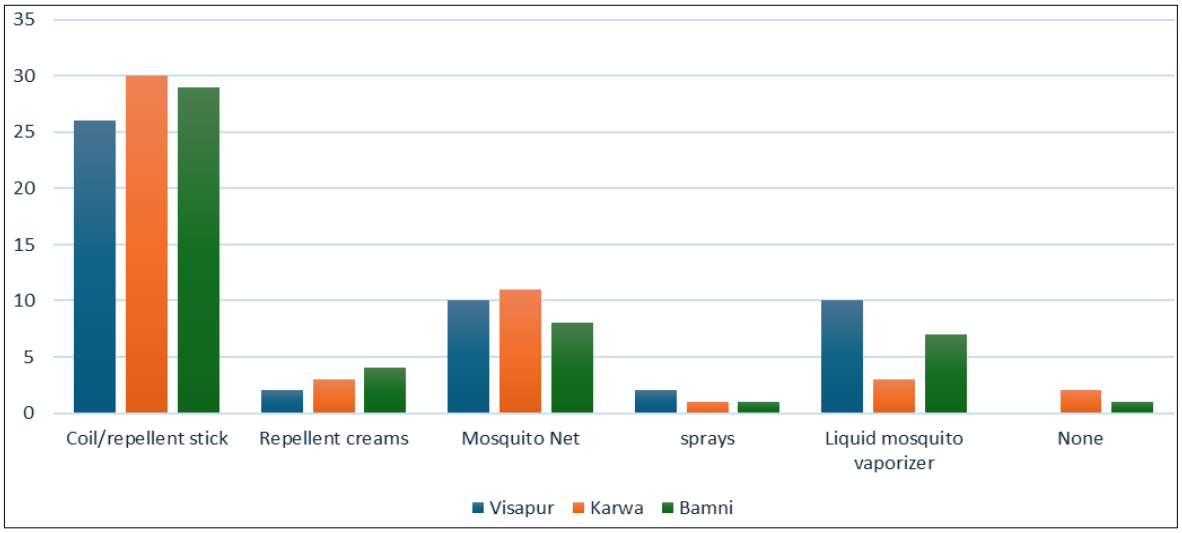

Fig 3: Comparative use of mosquito control methods across three villages.

Role of Health workers and Knowledge source

The collected data revealed that majority of participants were aware of mosquito borne illness while only few reported having zero awareness. Despite that when asked about the health workers visited their village regarding awareness, a data reflecting nearly equal split regarding health authorities. The main Knowledge source for mosquito related information and its awareness according to respondents are Television (47%) and mobile phones (31%) indicate potential of technology in spreading health messages.

Table 5: Source of Knowledge regarding mosquito awareness

Source	Number of responses
TV	71
Mobile/social media	46
Radio	5
Poster/programs/campaign	7
Health worker (Asha worker)	21

Table 6: Awareness of mosquito borne illness and Health worker visiting village for awareness

Responses	Aware	Visit
Yes	137	77
No	13	73

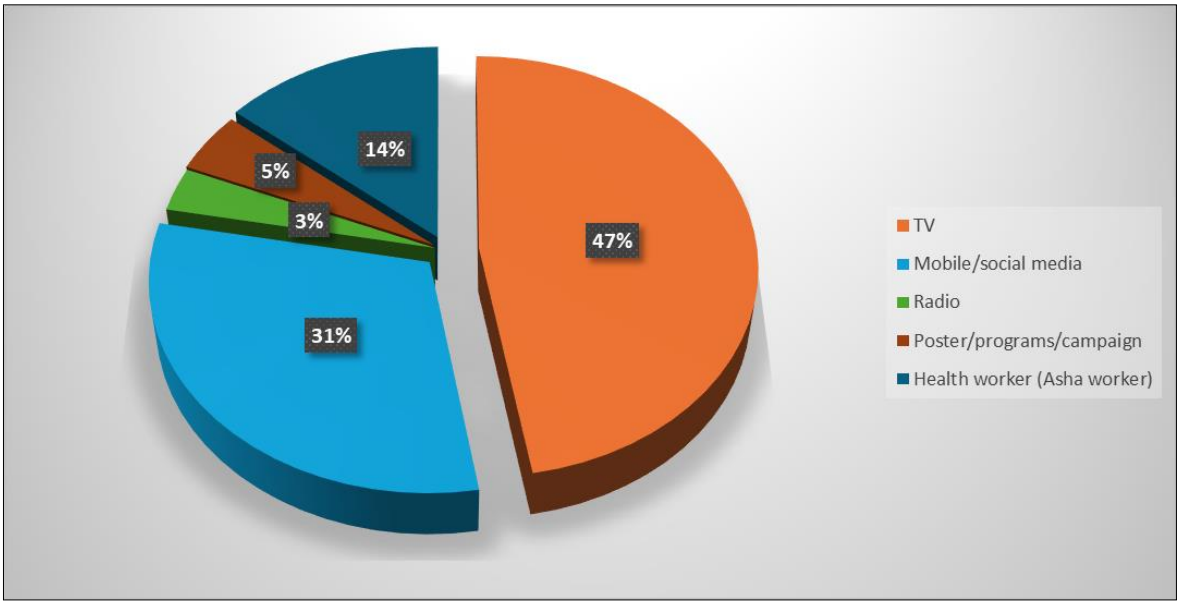

Fig 4: Awareness source among rural villages of Ballarpur.

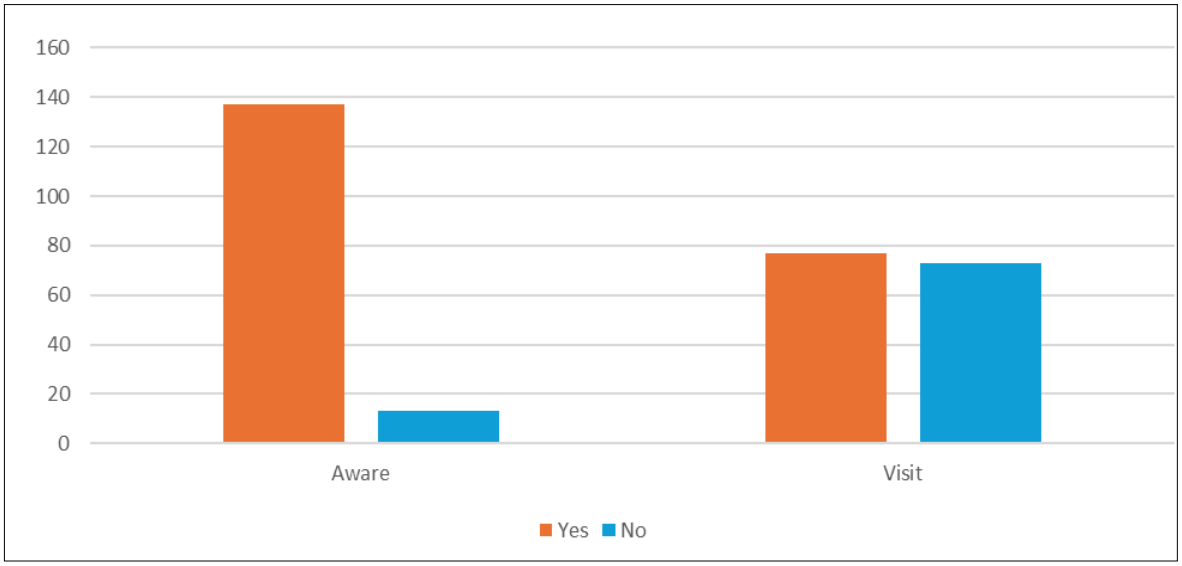

Fig 5: Outreach of local health authorities in study rural regions.

Awareness regarding symptoms of mosquito transmitting diseases

Many respondents reported fever as a common symptom followed by headache and very few knew about other symptoms such as fatigue, muscle pain also associated with mosquito-borne illness indicating less awareness regarding symptoms of mosquito borne illness (Figure.6). Kumar *et al*., 2022 [4] documented similar trend in study among four districts, the participants of study area were aware about most common symptom high-grade fever and headache.

Table 7: Symptoms of mosquito borne diseases

Symptoms	Number of Responses
Fever	135
Vomiting	12
Headache	96
Body pain	30
Any other	6

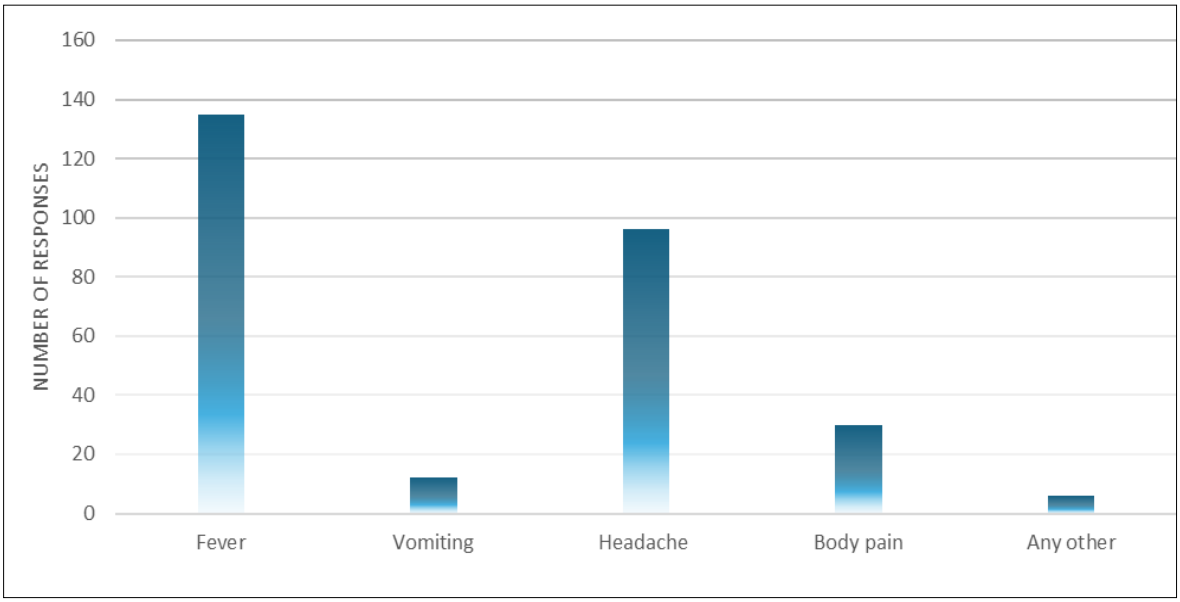

Fig 6: Symptoms awareness associated with mosquito borne illness.

Conclusion

The research highlights the present awareness level and prevention practices related to mosquitoes and mosquitoes borne illness in the rural villages of Ballarpur taluka. The study indicates that majority of respondents are aware that mosquitoes are responsible for diseases like dengue and malaria, there is still lack of knowledge regarding other diseases such as filariasis, chikungunya and Japanese encephalitis also transmitted by mosquitoes and gap in knowledge about breeding ground controls and prevention methods. Use mosquito repellents and mosquito net was observed but not across all participants. Many people observed mosquitoes at late evening night hours but some species of mosquitoes are there which can bite at day time and causes infectious diseases. The data also suggests that regularly visits by health worker and having correct knowledge through media or local programs play a major role in awareness among individuals. In conclusion, there is need for more active involvement from local health authorities, awareness campaigns and programs to improve community level participation and understanding regarding mosquito control. Elevating knowledge and encouraging simple preventive measures consistency can reduce the risk of mosquito-borne illness in rural areas of this region.

Author's Contributions: All the authors contributed equally.

Conflict of Interest: Authors declare no conflict of interest.

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