

HARNESSING SOCIAL AWARENESS FOR DENGUE PREVENTION: A SOCIOLOGICAL APPROACH TO COMBATTING DENGUE FEVER IN DISTRICT SWAT

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Received	Revised	Accepted	Published
15 July, 2024	15 August, 2024	31 August, 2024	11 September, 2024

ABSTRACT

The present study, titled "Dengue Fever Awareness in District Swat," was conducted in Banr Engaro Dherai Union Council, Tehsil Babozai, District Swat, Khyber Pakhtunkhwa. The study focused on four specific Mahallahs (streets): Tahir Abad, Banr, Engaro Dehri, and Usman Abad. A sample size of 354 respondents was proportionally allocated to each Mahallah and then randomly selected. The relationship between the independent variable (awareness of dengue) and the dependent variable (practices for dengue control) was tested using the Chi-Square test. The study found a significant association between dengue control practices and awareness of dengue fever symptoms ($p = 0.002$), proper treatment of infected individuals ($p = 0.001$), knowledge of appropriate medication for dengue fever ($p = 0.004$), and awareness of alternative cures ($p = 0.0483$). Based on the findings, policy recommendations emphasize the importance of raising awareness through interpersonal communication, particularly regarding dengue vectors, their biting behavior, dengue fever symptoms, initial treatment for dengue patients, recommended medications, and alternative cures.

Key Words: Dengue Fever, Social Awareness, Dengue Symptoms, Prevention, Swat-Pakistan.

INTRODUCTION

Dengue fever is a significant communal well-being issue, especially in agricultural countries, impacting the economic conditions of their populations. Over the past thirty years, the number of dengue cases has risen (Guzman and Isturiz, 2010). Tropical and subtropical regions are particularly susceptible to dengue outbreaks, with approximately 50 million infections and 24,000 deaths occurring annually in these areas (Suaya, 2009; Xavier et al., 2021). Dengue fever, is usually considered as backbone

fever, presents with symptoms such as severe headaches, high fever, intense muscle and joint pain, and a decrease in platelet count (Gubler, 2010). This is a worm disease with four serotypes (DENV-1 to DENV-4) and is spread by female Aedes aegypti mosquitoes. It is primarily found in congested and urban sprang most populated regions between latitudes 35°N and 35°S. The intensive forms of dengue fever further include Dengue Hemorrhagic Fever and Dengue Shock Syndrome (Guzman,

2002). Dengue Hemorrhagic Fever is characterized by high temperature, hemorrhage, short of platelet counts as well as hemoglobin outflow due to decreased concentrations of proteins and albumin in the blood (Pan American Health Organization, 1994). Dengue Shock Syndrome usually develops within a week after Dengue Hemorrhagic Fever, indications of which including low-slung plasma weight, an increase heartbeat, abdominal discomfort, and agitation in overall body of the patient as well (World Health Organization, 1997; Sugiarto, 2021).

Currently, about forty-one percent of the world's population lives in areas where dengue mosquitoes are present. The dengue virus affects around 100 countries globally. According to the World Health Organization, each passing year 51 to 100 million people are infected, and approximately 22,000 die from dengue fever (Abiva *et al.*, 2012; Pozzetto *et al.*, 2015). In the Western Pacific region, including the Philippines, Vietnam, Malaysia, and Cambodia, there were 1,020,333 reported cases and 4,798 deaths from 2001 to 2008. During the same period, the dengue epidemic also spread to other Pacific islands. In the Americas (over thirty countries) from 2001 to 2007, there were 3,432,731 cases and 1,299 deaths, with a significant number of cases affecting children (World Health Organization, 2009).

The dengue virus patted the demanding populated cities of the country especially, Karachi for the first time in 1994 (Jahan, 2011). Similarly, 4,500 cases were recorded in 2005 but the number of dengue cases increased to 21,204 by 2010 (Khan and Hassan, 2011). The dengue fever suddenly increased in 2005 and 3640 patients were admitted in hospitals while 40 people passed away in this outbreak. The capital of province Punjab (Lahore city) was severely hit by dengue in 2006-007 and number of cases 4500 more than the previous year (Wilson *et al.*, 2011). In eastern Punjab, 21597 cases recorded and 356 deaths occurred recently (Aysha, 2012). Similarly, in Khyber-Pakhtunkhwa the total number of registered and hospitalized patients were noted as 9420, in Punjab, 1203, followed by Baluchistan as 35 and province Sindh as 3889 numbers of patient in the previous year. Further, the Northern area of Khyber Pakhtunkhwa, particularly of district swat was stroked by dengue fever in August, 2013. In same year more than ten thousand of Dangu cases

were diagnosed as positive resulted to 45 number of death causality in particular area of the swat. The DNV-1, DNV-2 and DNV-3 were confirmed dengue virus in patients. Besides district swat, the other regions of KPK (Mardan, Shangla and Dir Lower) were also knocked by dengue virus. The executive District Officer (health) established Dengue Response Cell and Dengue Task Force to control dengue outbreak in area (World Health Organization, 2015).

There are various sociological causes like urbanization, population density, the use of non-eco-friendly products (tyres, plastic, etc.), the extraordinary movement of people, and cargo services that increase the dengue population and also have an impact on susceptible communities (World Health Organization, 2001). Dengue fever is caused by *Aedes Aegypti* mosquitoes, which are mostly present in urban areas of tropical developing countries. The people of these areas are more vulnerable to dengue fever because of poor management of water, population growth, household productive containers, and poor sanitation systems that provide a better environment for the dengue population (Gubler, 1989; Akmal, and Jamil, 2021; Rahman *et al.*, 2021).

For controlling of dengue larva, social mobilization and awareness is the best technique to inform the community people about preventive measures against dengue and the utilization of resources for the control of this epidemic. Social mobilization is not only limited to community members; other social followers like political leaders, ministries, local governments, NGOs, businessmen, religious scholars, etc. are also part of awareness campaigns in the community (Parks, 2004). The demographic profile (literacy and ranking of residential areas), media coverage (radio, television, and newspapers), and approaches of health care centers (information sources like leaflets, house visits, and health camps) were considered the effective procedure for dengue awareness in epidemic areas. Media and community education also played an important role in dengue fever awareness (Abiva *et al.*, 2012, Kshatri *et al.*, 2021; Eadie *et al.*, 2021).

Methodology

The current study was conducted in the Banr Engaro Dherai Union Council, Tehsil Babozai, District Swat, Khyber Pakhtunkhwa. The study specifically focused on four Mahallahs: Tahir Abad, Banr, Engaro Dehri, and Usman Abad. The respondents were individuals affected by dengue fever in these areas. A pilot study was first carried out to determine the number of dengue patients, revealing a total of 4,440 affected individuals. Based on Sekaran's

(2003) formula, a sample of 154 respondents was randomly selected from this total. Further, Data collection was carried out using an interview schedule and face-to-face interviews. To analyze the relationship between the independent variable (awareness of dengue fever) and the dependent variable (practices for dengue control), both variables were indexed and the Chi-Square Test was applied, as shown in Table 1. The mathematical formula of Chi Square test is as follow: (Taj, 1978).

Table -1: Conceptual framework

Independent variable	Dependent variable
Awareness of dengue fever	Practices for dengue control

The Fisher Exact Test is used wherever the conditions of chi-square were violated. The mathematical form of the Fisher Exact Test as,

$$\text{Fisher Exact Test} = \frac{(a+b)!(c+d)!(a+c)!(b+d)!}{N! a!b!c!d!} \chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - e_{ij})^2}{e_{ij}}$$

Where a, b, c, d are the observed numbers in four cells of contingency table and “N” is the total number of observations.

Results and Discussion

Frequency and Percentage Distributions

Regarding Dengue Fever Awareness

Table 2 presents various perceptions of respondents regarding dengue fever awareness. The results indicate that a significant proportion, 52%, had limited knowledge about the dengue mosquito, specifically *Aedes aegypti*, which causes dengue fever. Additionally, 40.1% of respondents had a fair understanding of the mosquito's biting time, which is primarily in the morning. Overall, the low awareness about the dengue mosquito and its biting behavior contributes to reduced vigilance and increased susceptibility to dengue fever. This finding aligns with Kumar et al. (2010) and the World Health Organization, which noted that many households lack knowledge about the biting behavior of dengue mosquitoes.

On a more positive note, 52.5% of respondents had good knowledge about preventive measures against dengue mosquitoes, such as covering water containers, fogging, and using insecticides. Furthermore, 50% identified clean stagnant water as the main breeding site for dengue mosquitoes, and 52% understood that removing and filling places of standing water is crucial for dengue control. This

indicates a strong understanding of breeding sites and their management, which is essential for controlling the dengue mosquito population. These results are consistent with Jogdand and Yerpude (2012), who found that communities generally had good knowledge about dengue breeding sites. However, 65.2% of respondents had poor knowledge about the signs and symptoms of dengue fever. This finding supports the study by Jogdand and Yerpude (2012), which revealed that most respondents were unaware of dengue symptoms, with only a few recognizing symptoms such as fever, headache, and bleeding. Conversely, 56.8% of respondents believed that individuals with dengue symptoms should be admitted to hospitals for better treatment, which aligns with Nalogsak et al. (2009), who reported a positive perception towards seeking medical treatment for dengue. Moreover, a majority of 51.4% and 83.9% of respondents correctly identified paracetamol as an appropriate medication and apple juice with a few drops of lemon as a potential remedy during dengue fever, respectively. This finding supports Shaukat et al. (2012), who recommended apple juice with a few drops of lemon for dengue patients.

Table 2: Frequencies and percentage distribution of respondents according to their perception about dengue fever awareness (N=354)

Statements	Options	Frequency & Percent	Awareness Level
Dengue is cause by biting of which mosquito?	Ades Aegyptis	153 (43.2%)	Good
	Female Black Mosquito	17 (4.8%)	Fair
	Do not know	184 (52%)	Poor
What is the timing of biting by dengue mosquito?	Dawn	119 (33.6%)	Good
	Morning	142 (40.1%)	Fair
	Do not know	93 (26.3%)	Poor
Which one is the preventive measure against mosquito?	Covered water tanks, Fogging & chemicals	186 (52.5%)	Good
	Bed Net	122 (34.5%)	Fair
	Do not know	46 (13%)	Poor
What is the breeding place of dengue mosquito?	Clean Stagnate water	177 (50%)	Good
	Tires	136 (38.4%)	Fair
	Do not know	41 (11.6%)	Poor
How would you control mosquito breeding?	Fill stagnant water	185 (52.3%)	Good
	Removed unused materials	104 (29.4%)	Fair
	Do not know	65 (18.4%)	Poor
What are the symptoms of dengue fever?	Headaches, high Temperature, bleeding.	121 (34.2%)	Good
	Low blood pressure	2 (.6%)	Fair
	Do not know	231 (65.3%)	Poor
What should you do when find a person with dengue symptoms	Hospitalize	201 (56.8%)	Good
	Home treatment	153 (43.2%)	Fair
	Do not know	0 (0%)	Poor
What is the appropriate medicine for dengue fever?	Peracetamol	182 (51.4%)	Good
	Penadol	171 (48.3%)	Fair
	Do not know	1 (.3%)	Poor
What is the other cure for dengue fever?	Apple juice & lemon	297 (83.9%)	Good
	Cold drinks	39 (11%)	Fair
	Do not know	18 (5.1%)	Poor

Association between awareness and practices for dengue control

The outbreak of dengue fever in Pakistan, particularly in Swat, is a recent development. It is not surprising that populations living in remote, underserved areas, who may be less educated and have limited access to information, possess inadequate knowledge about the causes, symptoms, and treatment of dengue fever. Consequently, the impact of this disease is expected to be significant.

To evaluate the relationship between awareness of dengue fever and control practices, awareness was assessed based on several key statements, as detailed in Table 3. The analysis revealed a highly significant association ($p = 0.002$) between awareness of dengue fever symptoms and control practices. This finding suggests that respondents with limited knowledge of dengue symptoms were less likely to adopt effective control measures. This aligns with Jogdand and Yerpude (2012), who found that a lack

of awareness about dengue symptoms delays appropriate treatment.

Similarly, there was a significant association ($p = 0.001$) between awareness of proper treatment for infected individuals and control practices. This result is consistent with findings from Nalogsak et al. (2009) and the World Health Organization, which noted that respondents with a positive perception of dengue treatment were more likely to seek medical help when symptoms appeared. Additionally, a highly significant association was found between knowledge of appropriate medication for dengue fever and control practices ($p = 0.004$). Knowledge of alternative remedies, such as apple juice with lemon, was also significantly associated with better

control practices ($p = 0.04$). Shaukat et al. (2012) supported these findings, recommending apple juice with a few drops of lemon as an effective alternative cure for dengue fever.

Conversely, no significant association was found between knowledge of the dengue vector and control practices ($p = 0.248$). Similarly, awareness of the mosquito's biting behavior and timing ($p = 0.117$), preventive measures against dengue mosquitoes ($p = 0.162$), and breeding sites ($p = 0.186$) were not significantly associated with control practices. Moreover, the relationship between controlling breeding sites of dengue mosquitoes and control practices was also non-significant ($p = 0.536$).

Table-3: Association between awareness of dengue fever and practices for control (N= 354)

Statements about dengue fever awareness	Perception	Practices for control		Total	Chi-Square (P=Value)
		Yes	No		
Dengue is cause by biting of which mosquito?	Good	136 (38.4)	17 (4.8)	153(43.2)	$\chi^2= 2.791$ (0.248)
	Fair	13 (3.7)	4 (1.1)	17 (4.8)	
	Poor	155(43.8)	29(8.2)	184(52)	
What is the timing of biting by dengue mosquito?	Good	106(29.9)	13(3.7)	119(33.6)	$\chi^2= 4.299$ (0.117)
	Fair	124(35.0)	18(5.1)	142(40.1)	
	Poor	74(20.9)	19(5.4)	93 (26.3)	
Which one is the preventive measure against mosquito?	Good	165(46.6)	21(5.9)	186(52.5)	$\chi^2=3.642$ (0.162)
	Fair	103(29.1)	19(5.4)	122(34.5)	
	Poor	36 (10.2)	10(2.8)	46 (13)	
What is the breeding place of dengue mosquito?	Good	158(44.6)	19(5.4)	177(50.0)	$\chi^2= 3.342$ (0.186)
	Fair	112(31.6)	24(6.8)	136(38.4)	
	Poor	34(9.6)	7(2)	41(11.6)	
How would you control mosquito breeding?	Good	161(45.5)	24(6.8)	185(52.3)	$\chi^2=1.248$ (0.536)
	Fair	90(25.4)	14(4.0)	104(29.4)	
	Poor	53(15.0)	12(3.4)	65(18.4)	
What are the symptoms of dengue fever?	Good	107(30.2)	14(4.0)	121(34.2)	$\chi^2= 12.878$ (0.002)
	Fair	0(0.0)	2(0.6)	2(0.6)	
	Poor	197(55.6)	34(9.6)	231(65.3)	
What should you do when fine a person with dengue?	Good	183(51.7)	18(5.1)	201(56.8)	$\chi^2=10.245$ (0.001)
	Fair	121(34.2)	32(9.0)	153(43.2)	
	Poor	0(0.0)	0(0.0)	0(0.0)	
What is the appropriate medicine for dengue fever?	Good	164(46.3)	18(5.1)	182(51.4)	$\chi^2=11.031$ (0.004)
	Fair	140(39.5)	31(8.8)	171(48.3)	
	Poor	0(0.0)	1(0.3)	1 (0.3)	

What is the other cure for dengue fever	Good	255(72.0)	42(11.9)	297(83.9)	$\chi^2= 1.454$ (0.043)
	Fair	35(9.9)	4(1.1)	39(11.0)	
	Poor	14(4.0)	4(1.1)	18 (5.1)	

Conclusion and Recommendations

The study concludes that the general population has limited or no awareness of how to identify dengue mosquitoes or understand their biting behavior, which hampers effective self-protection. However, there is a good level of awareness regarding the breeding sites of dengue mosquitoes and the measures needed to eliminate these breeding areas. Despite a lack of awareness about the symptoms of dengue infection, individuals are generally well-informed about the appropriate treatments and medications for those diagnosed with dengue fever. To address these gaps in knowledge, the study recommends enhancing awareness through interpersonal communication. Efforts should focus on educating the public about the dengue vector, its biting behavior, the symptoms of dengue fever, initial treatment options for dengue patients, and the use of recommended and alternative medicines for dengue fever.

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