

Impact of Sociodemographic Factors on Knowledge Perception and Preventive Measure Awareness regarding Dengue Fever

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Abstract

Background: Although Dengue fever is affecting various tropical and sub-tropical regions but it is common disease in Pakistan at time of floods. It can be easily managed with appropriate knowledge of disease and preventive measures only.

Objective: To estimate knowledge perception and prevention awareness of individuals with respect to sociodemographic characteristics towards Dengue fever.

Study type, settings & duration: This cross-sectional study was conducted at Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad from February to April 2023.

Methodology: Close-Ended structured questionnaire with non-probability convenience sampling was used, where 384 participants belonged to age groups between 15–60 years. Total 25 questions were employed to calculate disease knowledge whereas 11 Questions to investigate prevention awareness. Chi-Square Test was used to evaluate categorical values and their association was estimated with p -value <0.05 .

Results: It was observed that 44% of the participants had good disease knowledge and prevention awareness (45.05%) among young participants belonging to 15-30 years. Moderate disease knowledge (31.51%) and prevention awareness (33.59%) was observed among participants belonging to 31-40 years of age, while poor disease knowledge (23.43%) and prevention awareness (23.43%) was demonstrated among participants belonging to 41-60 years of age (p -value = 0.001).

Conclusion: Overall Dengue disease knowledge and prevention awareness among young participants (15-30 Years) was better as compared to middle age and elderly participants.

Key words: Age, awareness, dengue, knowledge.

Introduction

Incidence and prevalence of Dengue fever in Pakistan has inflated due to extensive flooding which has created hype in the country. It is highly communal disease that is affecting various tropical and sub-tropical regions especially Pakistan. It is a

mosquito borne viral infection which is not only life threatening but it leaves a very strong long lasting impact on mental and physical health of any individual.¹ The climatic changes in Pakistan especially heavy rains and floods are responsible for outbreaks of this viral infection.² According to WHO incidence of this disease has increased up to 40.0% globally, in turn imposing greater burden on the socio-economics as well.¹ Currently, it has become a major public-health problem that has affected about 390.0 million people worldwide having fatality rate of 2.50% approximately.¹ As of now, true global picture of side effects of Dengue fever could not be attained due to poor diagnosis, inadequate data reporting and surveillance thus, estimating that 60.0% of world's population (6.10 billion people) is at risk of catching this disease by end of the year 2080.^{3,4} Proper management of Dengue fever via adequate timely vector

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Received: 17 September 2023, Accepted: 16 April 2024

Published: 09 May 2024

Authors Contribution

AM conceptualized the project. AM, EM, AS & MMJ did the data collection, literature search and drafting, revision & writing of manuscript. AM & KH performed the statistical analysis.

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management can reduce the chances of elevated death risk caused by the disease.⁵

Pakistan has vast subtropical area where recent floods have converted its one-third land into stagnant water ditches eventually giving rise to the mosquito breeding sites.^{6,7} The outbreak of this mosquito borne viral infection in Pakistan increased with the increase in floods with the passage of time^{8,9} which in turn increased the reported cases of Dengue fever from 22,938 cases (2017), 26,138 cases (2018), 24,547 cases (2019), 34,442 cases (2020) to 48,906 cases (2021). Unfortunately, these increased out breaks of Dengue fever increased the mortality in the year 2021 where deaths became 183 in our country.¹⁰ Recently, these cases of Dengue fever increased to 41,746 (2022) which is alarming and needs surveillance.¹¹ In order to combat this disease, community awareness of dengue's spread and mosquitoes' reproduction sites is essential, health promotion should be a target.

Due to up surging number of dengue cases, it is imperative to investigate knowledge and awareness, as these Vector borne diseases can be easily managed by knowledge, awareness, behavior and attitudes that are considered as key controlling segments.^{10,12} Multiple studies related to knowledge perception and preventive measure awareness have been reported but investigation attributed to the different age groups in Pakistani population have not been reported as of yet.^{13,14} Therefore, it is an important area of study to determine and enhance the knowledge about the signs and symptoms of the disease as well as the preventive measures for the proper control and management of the disease due to limited availability of the resources in Pakistan. The current study is performed to investigate the perception of this disease among people of Islamabad with respect to their sociodemographic characteristics to educate them about the preventive measures through which this disease can be controlled in near future.

Methodology

This is a cross-sectional study, conducted in School of Dentistry (SOD), Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad from February to April 2023. Sample size determination utilized the formula: $n = (Z^2 * P * (1-P)) / E^2$:¹⁵ with 95% confidence interval, where $Z = 1.96$, $P = 0.5$, and $E = 0.05$. This computation resulted in a sample size of 384 individuals aged 15 to 60 years, who consented to participate and were receiving various dental treatments at Hospital SOD.

Participants visiting Hospital SOD for different dental treatment purposes belonging to age group 15–60 years.

Participants less than 15 years old or greater than 60 years old were excluded from this study.

The study employed a close-ended structured questionnaire, adapted from existing literature sources,^{6,16-20} utilizing non-probability convenience sampling. Participants who provided consent were within the age range of 15 to 60 years, encompassing diverse sociodemographic characteristics. Disease knowledge perception was evaluated through a set of 25 questions, while prevention awareness perception was assessed using 11 questions. Disease knowledge perception was categorized into Poor (0-7 Correct Scores), Moderate (8–16 Correct Scores), and Good (17–25 Correct Scores). Similarly, prevention awareness perception was classified into Poor (0-2 Correct Scores), Moderate (3–7 Correct Scores), and Good (8–11 Correct Scores) categories.²⁰ Statistical analysis was conducted using the Pearson Chi-Square Test, with significance set at p -value < 0.05 . IBM SPSS Version-26 software used for the statistical analysis.

The ethical approval was obtained from the Ethical Review Board, School of Dentistry, Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad vide letter no. SOD/ERB/2023/22-01.

Results

Present study, comprising 384 participants from various age demographics, employed a validated questionnaire to assess knowledge and awareness pertaining to the prevention of dengue fever. The participants' responses were categorized as indicating poor, moderate, or good levels of knowledge perception and prevention awareness. Findings revealed that younger participants (15-30 years) generally exhibited good knowledge perception and prevention awareness, while middle-aged participants (31-40 years) showed moderate levels, and elderly participants (41-60 years) displayed poor levels.

Regarding educational qualification, a significant proportion of younger participants (77.51%) had university education compared to middle-aged (33.4%) and elderly participants (27.17%), who had higher representation from secondary and primary schooling. Occupational status varied across age groups, with younger participants mostly being self-employed (75.15%), middle-aged participants primarily government-employed (70.73%), and elderly participants largely

laborers (61.95%). Socioeconomic status indicated a higher proportion of high-income earners among younger participants (65.68%) compared to middle-aged (29.27%) and elderly participants (23.91%). Residential areas also differed among age groups, with younger participants predominantly residing in Islamabad (80.47%).

Statistical analysis revealed significant differences in knowledge perception and prevention awareness across age groups. Younger participants demonstrated higher levels of both knowledge (83.43%) and prevention (81.07%) respectively, while older participants exhibited lower levels of knowledge (28.27%) and prevention (14.13%). These findings underscore the importance of targeted interventions tailored to different age groups to enhance knowledge and awareness of dengue fever prevention. (Table)

The Pearson Chi-Square Test showed significant association between Dengue fever knowledge and age ($p = 0.001$), education ($p = 0.012$), occupation ($p = 0.009$), and socioeconomic status ($p = 0.021$). However, insignificant association was observed with residential area (p -value $= 0.511$). Likewise, the awareness of Dengue fever among participants exhibited a statistically significant positive relationship with age ($p = 0.001$), education ($p = 0.015$), occupation ($p = 0.017$), and socioeconomic status ($p = 0.024$), while no significant association was evident with residential area (p -value $= 0.978$).

Discussion

Certain vector borne diseases are very common in Pakistan such as leishmaniasis, malaria and above all dengue fever. Since 2011, Pakistan has witnessed documented rise in the confirmed cases of dengue fever. This might have been possible due to the lack of knowledge and awareness attributed to the preventive measures in our community. Although, Pakistani population in various regions and cultures strongly believe that they have enough knowledge and awareness when it comes to the dengue fever.²¹ A study was conducted in Pakistan where 97.50% participants claimed about their appropriate dengue disease knowledge and its preventive measures.²² In another study, 89.99% participants claimed that they possessed enough knowledge of the disease.²³ About 80% of our population has heard about the dengue fever but they claim of their complete knowledge regarding the disease.²⁴ In spite of the strong belief of Pakistani population that they had enough dengue fever disease knowledge, the severity of the disease has been increasing on

regular basis. Therefore, the current study focused not only on the disease knowledge and its awareness but also on other factors associated with it such as educational qualification, socioeconomic status, occupation and residential area. The young participants were well qualified as they were more educated in comparison to 59.34% middle age participants and elderly participants. Similar results were attained by previous researchers, where education played the key role in enhancing the knowledge and awareness of population related to the dengue fever.²²⁻²⁴ The educational qualification, socioeconomic status, occupation and residential area of young participants (15-30 years) might have been the sole reason in upgrading their knowledge of the disease and awareness towards the preventive measures.

Despite the fumigation, waste management, active finding of contact and cases, breeding site destruction, vector surveillance, indoor residual spraying in the capital city of Islamabad,²⁵ still confirmed cases of Dengue fever are at great rise with every passing day that is panicking the community residing in the area on the larger extent. The possible rise of this infection might be the lack of disease knowledge and prevention awareness among the people of the city belonging to different age groups. This study revealed a strong association between the ages of the participants and their disease knowledge and prevention awareness regarding the Dengue fever (Table). The young participants ranging between 15-30 years revealed good disease knowledge and prevention awareness toward dengue fever in comparison to the middle age participants that depicted the moderate disease knowledge and prevention awareness. On the other hand, the elderly participants displayed poor disease knowledge and prevention awareness toward the viral infection (Table).

The level of Dengue disease knowledge was good among the young participants of our study in comparison to the middle age participants and bit elderly participants. These results about Dengue disease knowledge matched the literature but only in the young participants because another study in Pakistan was conducted among the students ranging between 18-23 years only.²¹ Other studies also reported high knowledge about the disease among the young students of Pakistan^{6,16} as well as other countries of South Asia.^{20,26-28} The focus of these aforementioned studies was young generation only instead of the whole population. This current study could be better because it targeted the general population belonging to different age groups visiting a public sector hospital for the dental

Table: Association of various characteristics of study population with age groups.

Parameters		Age Groups			p-Value
		15-30 years [n=169 (44%)]	31-40 years [n=123 (32%)]	41-60 years [n=92 (24%)]	
Education	University	131 (77.51%)	41 (33.34%)	25 (27.17%)	0.002
	Secondary School	27 (15.97%)	73 (59.34%)	16 (17.39%)	
	Primary School	11 (6.52%)	9 (7.32%)	51 (55.43%)	
Occupation	Self employed	127 (75.15%)	31 (25.21%)	17 (18.48%)	0.003
	Government job	25 (14.79%)	87 (70.73%)	18 (19.57%)	
	Laborer	17 (10.06%)	5 (4.06%)	57 (61.95%)	
Socioeconomic Status	High income (>40,000)	111 (65.68%)	36 (29.27%)	22 (23.91%)	0.004
	Middle income (20,000-40,000)	49 (28.99%)	77 (62.60%)	15 (16.31%)	
	Low income (<20,000)	9 (5.33%)	10 (8.13%)	55 (59.78%)	
Residential area	Islamabad	136 (80.47%)	32 (26.02%)	22 (23.91%)	0.002
	Rawalpindi	22 (13.02%)	84 (68.29%)	12 (13.04%)	
	Barakahu	11 (6.51%)	7 (8.13%)	58 (63.05%)	
Knowledge Perception	Good	141 (83.43%)	39 (31.71%)	26 (28.27%)	0.001
	Moderate	15 (8.88%)	76 (61.78%)	19 (20.64%)	
	Poor	13 (7.69%)	8 (6.51%)	47 (51.09%)	
Prevention Awareness	Good	137 (81.07%)	29 (23.58%)	13 (14.13%)	0.001
	Moderate	25 (14.79%)	88 (71.54%)	27 (29.35%)	
	Poor	7 (4.14%)	6 (4.88%)	52 (56.52%)	

diseases treatment. Among them, the young participants (15-30 Years) demonstrated better knowledge about the disease in terms of its spread, mosquito type, communicability, affected age groups, breeding sites, incubation period, serotypes, immunity, recovery, severity, signs, symptoms and medication as compared to the other middle (31-40 Years) and elderly (41-50 Years) age groups participants.

Past literature revealed that similar to this study, education played key part in enhancing awareness & knowledge of populace related to this ailment.²⁹⁻³¹ The Data analysis for Dengue fever awareness revealed that good prevention awareness was found among the young participants of our study as compared to the middle age participants and bit elderly participants. The results of prevention awareness among young participants were very much similar to the other studies performed in the students only^{6,9,20} but our study provided the more extensive prevention awareness data regarding other community members as well. These young participants displayed better prevention awareness regarding disease in terms of preventing the spread, vector and breeding site control, using mosquito nets, insecticides, mosquito repellents and fumigation. The possible reason for better Dengue disease knowledge and prevention awareness among young participants could be due to their enhanced command on the electronic media. This young generation can easily get the updated day-today disease knowledge and prevention awareness in no time as compared to the other age groups.

Implications and future recommendations: This research will act as tool to produce new stratagems among the students and within community and will likewise facilitate in the formulation of pragmatic suggestions/ recommendations that can divulge awareness about prevention and severity of the ailment.

All stakeholders can work together to improve students' knowledge & awareness, which will lower risk of illness even further. There is dire need of conducting researches, educational programs, healthcare campaigns, training workshops and interventional strategies that could be helpful in enhancing the Dengue disease knowledge and prevention awareness in the Pakistani population as the disease is persistently on rise in the country.

Limitations of this study include small sample size, single centered study. If students from other institutions had also been included and their enrollments from private and public colleges had been compared, the findings would have been more broadly applicable. Studies with larger sample size should be conducted in future.

The overall Dengue disease knowledge and prevention awareness among young participants (15-30 Years) was better as compared to the middle age participants (31-40 Years) and bit elderly participants (41-60 Years) in this study. The risk of Dengue fever disease in community population can be controlled properly in future by enhancing the disease knowledge and prevention awareness at the governmental and non-governmental level jointly.

Acknowledgement

Authors acknowledge the, School of Dentistry for their cooperation.

Conflict of interest: None declared.

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