

Evaluation of Community Pharmacists' Attitude and its Association with their Practice toward Dengue Prevention

Muhammad Shahid Iqbal¹, Fahad I. Al-Saikhan¹, Muhammad Zahid Iqbal²,
Nehad J. Ahmed¹

¹Department of Clinical Pharmacy, College of Pharmacy, Prince Sattam bin Abdulaziz University, Al-Kharj 11942, Saudi Arabia, ²Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, AIMST University, 08100 Bedong, Kedah Darul Aman, Malaysia

Abstract

Aims: The study aimed to evaluate community pharmacists' (CPs) attitude and its association with their practice toward dengue prevention. **Materials and Methods:** A cross-sectional study was done using a pre-validated and self-administered questionnaire developed after an intensive and relevant literature review. The convenience sampling method was used during the study period. Registered CPs were approached to achieve the sample size of 205 respondents. For data analysis, descriptive and inferential statistics were used using Statistical Package for the Social Sciences version 25.0. $P < 0.05$ was considered statistically significant. **Results:** Of 205 respondents, 15 (7.3%) of them strongly agreed and 129 (62.9%) moderately-agreed that they could play an important role in preventing dengue infection. Whereas, the majority of the respondents, 92 (44.9%) were neutral when asked whether they felt comfortable in handling dengue patients. The majority of the respondents ($n = 172$, 83.9%) had a positive attitude toward dengue infection. **Conclusion:** The respondents had a positive attitude toward dengue. There was no statistically significant association between their attitude and practices toward dengue prevention observed.

Key words: Attitude, community pharmacists, dengue prevention, practice

INTRODUCTION

Dengue is a mosquito-borne viral infection transmitted mainly by *Aedes aegypti*. In Pakistan, the prevalence of dengue is vibrant and alarming, especially in winter seasons. According to the National Institute of Health of Pakistan, approximately 15,000 cases of dengue infection had reported with 17 deaths in 2018.^[1,2] Surprisingly, the most prevalent circulating dengue serotype was serotype 2, whereas fewer cases were of serotype 3. In 2017, Khyber Pakhtunkhwa, a northern province of Pakistan, faced an epidemic of dengue reporting over 18,000 cases with numerous casualties.^[3,4]

If the figure of reported dengue cases continues to rise, more individuals would be at risk. The infected individuals can either be asymptomatic or symptomatic with symptoms such as fever, headache, muscle pain, and fatigue. Since there is neither vaccine nor specific antiviral treatment available for dengue prevention,

early recognition and prevention of dengue are essential to ensure proper management. This consequently prevents the condition of infected individuals from getting worse or with fatal complications such as dengue hemorrhagic fever or dengue shock syndrome.^[1-5]

The upsurge number of dengue cases, therefore, necessitated us to conduct a cross-sectional study to evaluate the attitudes of the community pharmacists (CPs) and its direct association with their practices regarding dengue prevention. CPs were targeted as they are placed at the first point of contact in the health-care system, which in turn drives the patients opting to obtain medicines from them. There had been an advancing

Address for correspondence:

Muhammad Shahid Iqbal, Department of Clinical Pharmacy, College of Pharmacy, Prince Sattam bin Abdulaziz University, Saudi Arabia.
E-mail: drmmisiqbal@gmail.com

Received: 10-03-2020

Revised: 28-03-2020

Accepted: 05-04-2020

role of CPs as health-care providers, but there is a great scarcity of the data regarding their professional role in the prevention of dengue. Hence, this research would enable the identification of areas that require more attention to dengue management in Pakistan.

In different countries, few studies have assessed the attitude of other health-care professions toward dengue management but not the CPs. A study conducted by Lee *et al.*, in Singapore among primary care physicians, found attitudes of them toward dengue prevention was varied depending on their age and practice setting. The older physicians did similarly as private practitioners and tended to refer more patients to public hospitals.^[6] In another study carried out by Ho *et al.* in Southern Taiwan evaluated the attitude of health-care professionals toward dengue prevention demonstrated that nurses were better in reporting suspected dengue cases to the Centers for Disease Control and Prevention than the rest.^[7]

Besides, various studies on attitude toward dengue prevention among CPs had been done in different countries. A study performed by Nalongsack *et al.* in Laos reported that respondents had a positive attitude toward the treatment of dengue infections.^[8] Another study done by Sharma *et al.* in Nepal revealed that practitioners had a positive attitude toward dengue prevention.^[9] However, on the other side, different findings were reported in different studies in different countries such as Sri Lanka, Thailand, Brazil, and Laos, where most of the respondents had shown a negative attitude toward dengue prevention and management.^[10-13]

The assessment of attitude among CPs would help to increase awareness of the importance of having a positive attitude to ensure appropriate management of dengue. If suspected, the CPs would show a positive attitude and advise their customers for a further check-up/investigation from their physicians rather than dispensing the medications requested by them. The study was designed to determine the attitude of CPs and its association with their practices toward dengue prevention and management.

MATERIALS AND METHODS

A cross-sectional study was conducted between August 2018 and February 2019 using a pre-validated and self-administered research tool which was developed after an extensive literature review. Necessary content addition and modifications were incorporated into the research questionnaire to cater the needs of the research. The questionnaire was comprised of two parts; (1) sociodemographics and (2) attitude and its association with their practices toward dengue infection management. The questionnaire was initially pre-tested and its internal consistency and reliability were tested through Cronbach's alpha coefficient. The alpha-value was 0.71. Hence, the questionnaire was assumed to be reliable.

Convenience sampling technique was used during the study period and only registered CPs were approached to achieve the sample size of 205 respondents. Written informed consent was acquired before the start of the study. Each respondent was distributed with a study information sheet explaining the objectives of the study attached to the questionnaire. Those respondents that agreed to participate in the study either verbally or in the written form were included and kept strictly confidential.

For data analysis, descriptive and inferential statistics were used and data were analyzed using Statistical Package for the Social Sciences version 25.0. The responses against attitude questions were ranked from score 1 to 5, where score 1 represented the most negative attitude, whereas score 5 represented the most positive attitude. The score obtained was then added together to achieve a single value. Respondents were considered as having a positive attitude based on the 75% arbitrary cutoff point. Spearman's correlation was used to determine the association between attitude and practice questions.

RESULTS

A total of 205 CPs agreed to participate in the study. Table 1 represents the sociodemographics of the CPs. In terms of gender, female 128 (62.4%) outweighed the male 77 (37.6%) with almost half of them being single 101 (49.3%). The age

Table 1: Sociodemographic details of the community pharmacists

Description	n (%)
Gender	
Male	77 (37.6)
Female	128 (62.4)
Age (years)	
24–34	152 (74.1)
35–44	36 (17.6)
>44	17 (08.3)
Mother tongue	
Urdu	197 (96.1)
Others	8 (03.9)
Experience (years)	
<10	142 (69.3)
>10	63 (30.7)
Infected with dengue	
Yes	27 (13.2)
No	178 (86.8)
Family members infected with dengue	
Yes	55 (26.8)
No	150 (73.2)

of the respondents was varied and respondents aged 24–34 were the largest group. All the respondents were well-educated, with 180 (87.8%) holding undergraduate degrees and minority, 25 (12.2%) having postgraduate degrees.

Table 2 lists the responses to questions on the attitude of CPs toward dengue management. Of 205 respondents, 15 (7.3%) of them strongly agreed and 129 (62.9%) moderately-agreed that they could play their professional role in preventing dengue infection. Whereas, the majority of the respondents, 92 (44.9%) were neutral when asked whether they felt comfortable in handling dengue patients. When asked whether they would feel afraid when dealing with dengue infected patients, 117 (57.1%) respondents answered “disagree,” while 70 (34.1%) of the respondents disagreed to be afraid if one of their family members infected with dengue. Nevertheless, an alarming 50 (24.4%) of the respondents would be afraid if anyone of their family members was infected with dengue.

A large proportion of the respondents, 125 (61.0%), believed that it was possible to recover completely from dengue infection. It was also encouraging to note that 102 of 205 respondents disagreed with the statement that dengue patients should be treated in isolation only. Most participants denied that eradication of larval breeding sites was a waste of time ($n = 101$, 49.3%) and disagreed that this was solely the responsibility of public health-care staff and health volunteers ($n = 86$, 42.0%).

As shown in Table 3, significant association ($P < 0.0001$) was found between the questions whether the respondents felt comfortable or afraid in handling dengue patients with the question of whether respondents practice advising preventive measures to their customers.

Based on Table 4, the majority of the respondents ($n = 172$, 83.9%) had a positive attitude toward dengue infection.

Table 2: Attitude of community pharmacists toward dengue prevention

S. No.	Attitude questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
		<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
1	I feel myself comfortable in handling dengue patients	5 (2.4)	21 (10.2)	92 (44.9)	81 (39.5)	6 (2.9)
2	I can play an important role in preventing dengue infection	1 (0.5)	4 (2.0)	56 (27.3)	129 (62.9)	15 (7.3)
3	I am afraid in dealing patients infected with dengue	44 (21.5)	117 (57.1)	39 (19.0)	5 (2.4)	0 (0)
4	It is not possible to recover completely from a dengue infection	54 (26.3)	125 (61.0)	17 (8.3)	6 (2.9)	3 (1.5)
5	I am afraid of getting dengue infection if one of my family members is infected with dengue	36 (17.6)	70 (34.1)	40 (19.5)	50 (24.4)	9 (4.4)
6	Dengue patients should be treated in isolation only	41 (20.0)	102 (49.8)	40 (19.5)	19 (9.3)	3 (1.5)
7	Fogging is the only way to prevent dengue	65 (31.7)	117 (57.1)	17 (8.3)	6 (2.9)	0 (0)
8	Elimination of larval breeding sources is a waste of time and very complicated in preventing dengue outbreaks	101 (49.3)	83 (40.5)	12 (5.9)	8 (3.9)	1 (0.5)
9	Eliminating the breeding places of <i>Aedes aegypti</i> is the only responsibility of the public health-care staff and health volunteers	78 (38.0)	86 (42.0)	17 (8.3)	16 (7.8)	8 (3.9)

Table 3: Association of attitude with practice of community pharmacists regarding dengue prevention

S. No.	Statements	Correlation coefficient	<i>P</i> value
1	I feel comfortable in handling dengue patients versus. In the case of dengue outbreaks, do you usually advise preventive measures to your customers?	+0.284**	0.0001
2	I can play an important role in preventing dengue infection versus In the case of dengue outbreaks, do you usually advise preventive measures to your customers?	+0.261**	0.0001
3	I am afraid of dealing with patients infected with dengue versus In the case of dengue outbreaks, do you usually advise preventive measures to your customers?	+0.184**	0.005

**Correlation is significant at the 0.01 level (2-tailed)

Table 4: Respondents' attitude toward dengue prevention

Attitude scores	Frequency (n)	Percentage
Negative	33	16.1
Positive	172	83.9

DISCUSSION

The objective of this study was to evaluate the attitude of CPs toward dengue infection prevention and its association with their practice at their pharmacies. The present study demonstrated that CPs had a positive attitude toward dengue prevention which was consistent with the study done by Hairi *et al.*^[14] Our study results, however, were in contrast to two other previous studies conducted in Laos^[13] and Sri Lanka,^[10] where the negative attitude was observed. This finding suggested that our CPs had a positive attitude toward dengue prevention as compared to them.

More than half 129 (62.9%) of CPs replied positively on the statement that respondents felt that they could play a key role in preventing dengue which reflected a better attitude. The findings were similar to the study done in the Philippines which revealed that CPs' role was important in preventing dengue.^[15] Those CPs' positive attitude paralleled with their high level of knowledge. Another study conducted in Thailand stated that health personnel was the main source of information on dengue fever and played a positive role in disseminating dengue information to the general public.^[7,16] In conjunction with these responses, the majority of the respondents believed that it was possible to recover completely from dengue infection.

As there is no typical treatment for dengue infection, but still, some supportive therapies can help to minimize the symptoms. In general, avoiding dehydration, the use of pain killers (not strong), and complete bed rest are thought to be enough to support to combat patients' immunity with this infection. Due to the nonexistence of any particular dengue treatment, prevention and precautionary measures are considered as the key factors to prevent this disease. Patients can adopt various precautionary measures such as usage of the mosquito nets, proper drainage of the water ponds (smaller or bigger), avoid visiting areas of standing water, wearing long pants, and full-sleeve shirts, use of mosquito repellents, especially with permethrin and some efficacy-proven such as DEET, closing windows, and doors, especially if in any specific area where chances of acquiring dengue infection are high.^[17,18]

It was worth noting that most of the respondents (49.3%) denied that the elimination of larval breeding was a waste of time. This figure was higher than the figure reported in a study done by Al-Dubai *et al.* (32.7%).^[19] Besides, in this study, a higher percentage of respondents (80%) supported the statement that elimination of larvae breeding sites was not solely the responsibility of health-care staff and health

volunteers, as compared to only 64.9% as observed in another study.^[13] One comparable study done in Malaysia reported that the public had the primary role in preventing dengue^[17] which was similar to another study done in Puerto Rico.^[20]

Surprisingly, a higher percentage of respondents commented to have fear dealing with dengue cases which involved their family members ($n = 50$, 24.4%), in comparison to others dealing with non-family related dengue patients ($n = 5$, 2.4%). Respondents that had been infected with dengue before demonstrated a similar positive attitude as compared to those who had not suffered from dengue themselves earlier. This result suggested that those who had dengue infection before did not reflect to have a better attitude toward dengue prevention. This finding was different from Wan Rozita *et al.*^[21] study and also in contrast to Uma *et al.*^[22] study in which they reported that those that had earlier experienced dealing with dengue infection showed a higher score in attitude toward dengue prevention compared to those who had not experienced dengue infection.

There was no statistically significant association ($P > 0.05$) observed between attitude and practice toward dengue prevention among the respondents. This finding was also inconsistent with a previous study done where the respondents had a positive attitude but were not associated with good practice.^[14] However, in opposition, a study carried out in Laos concluded that the participants had better practice toward dengue prevention despite having a poor attitude in managing dengue infections.^[8] Thus, this suggested that respondents with a positive attitude did not necessarily do satisfactory practice toward dengue prevention.

CONCLUSION

The respondents had a positive attitude toward dengue prevention. There was no statistically significant association observed between attitude and practice toward dengue prevention among CPs. The current study also highlighted an urgent need for public awareness regarding dengue infections in general, while continuous professional education courses and comprehensive campaigns for CPs, in particular, for effective prevention of dengue infection in Pakistan.

LIMITATIONS OF THE STUDY

Our study was done using the convenience sampling technique in a mid-sized populated city. This sampling design and less awareness of the public have a limitation of the generalizability of results and the results obtained could not be a representation of all CPs. Besides, due to time and budget constraints during the data collection, the respondents may tend to phrase the questions differently and hence resulting in different responses. As only multiple-choice and Likert-scale questions were included in the study, the reasons behind each

of the responses were thus not explored comprehensively. However, this study would serve as guidelines for future measures to better dengue prevention. This study would also make the CPs more aware that attitude is a prerequisite of professional practice toward dengue prevention.

ACKNOWLEDGMENT

The authors would like to thank the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University, Al-Kharj, Saudi Arabia, for the support in the publication of this manuscript. The authors would also like to express their sincere gratitude to all of the participants involved in this study in any capacity.

REFERENCES

- International Federation of Red Cross and Red Crescent Societies, Emergency Plan of Action (EPOA); Pakistan: Dengue Outbreak. Available from: <http://www.adore.ifrc.org/download.aspx?fileid=170525>. [Last accessed on 2019 Oct 18].
- Centers for Disease Control and Prevention. Dengue; 2010. Available from: <http://www.cdc.gov/dengue>. [Last accessed on 2013 Oct 16].
- World Health Organization. Dengue and Severe Dengue; 2013. Available from: <http://www.who.int/mediacentre/factsheets/fs117/en/index.html>. [Last accessed on 2013 Oct 24].
- Ali A, Fatima Z, Wahid B, Rafique S, Idrees M. Cosmopolitan A1 lineage of dengue virus serotype 2 is circulating in Pakistan: A study from 2017 dengue viral outbreak. *J Med Virol* 2019;91:1909-17.
- Gibbons RV, Vaughn DW. Dengue: An escalating problem. *BMJ* 2002;324:1563-6.
- Lee LK, Thein TL, Kurukularatne C, Gan VC, Lye DC, Leo YS. Dengue knowledge, attitudes, and practices among primary care physicians in Singapore. *Ann Acad Med Singapore* 2011;40:533-8.
- Ho TS, Huang MC, Wang SM, Hsu HC, Liu CC. Knowledge, attitude, and practice of dengue disease among healthcare professionals in Southern Taiwan. *J Formos Med Assoc* 2013;112:18-23.
- Nalongsack S, Yoshida Y, Morita S, Sosouphanh K, Sakamoto J. Knowledge, attitude and practice regarding dengue among people in Pakse, Laos. *Nagoya J Med Sci* 2009;71:29-37.
- Sharma B, Regmi S, Aryal B, Neupane MS, Lopchan M. Knowledge and attitude of dengue fever among clients from dengue prevalent areas. *Int J Pharma Biol Arch* 2012;3:1383-8.
- Gunasekara TD, Velathanthiri VG, Weerasekara MM, Fernando SS, Peelawattage M, Guruge D. Knowledge, attitudes and practices regarding dengue fever in a suburban community in Sri Lanka. *Galle Med J* 2012;17:10-7.
- Leera K, Kedsuda S, Dusit S, Sutee Y. Dengue hemorrhagic fever: Knowledge, attitude and practice in Ang Thong Province, Thailand. *Southeast Asian J Trop Med Public Health* 2003;34:385-92.
- Dos Santos SL, Cabral AC, Augusto LG. Knowledge, attitude and practice on dengue, the vector and control in an urban community of the Northeast region, Brazil. *Ciênc saúde Coletiva* 2013;16:1319-30.
- Mayxay M, Cui W, Thammavong S, Khensakhou K, Vongxay V, Inthasoum L, *et al.* Dengue in peri-urban Pak-Ngum district, Vientiane capital of Laos: A community survey on knowledge, attitudes and practices. *BMC Public Health* 2013;13:434-9.
- Hairi F, Ong CH, Suhaimi A, Tsung TW, bin Anis Ahmad MA, Sundaraj C, *et al.* A knowledge, attitude and practices (KAP) study on dengue among selected rural communities in the Kuala Kangsar District. *Asia Pac J Public Health* 2003;15:37-43.
- Solidum JN. The roles of pharmacists in relation to medical doctors, nurses and BHWs in preventing dengue. *J Life Sci Tech* 2013;1:14-8.
- Swaddiwudhipong W, Lerdlukanavong P, Khumklam P, Koonchote S, Nguntra P, Chaovakiratipong C. A survey of knowledge, attitude and practice of the prevention of dengue hemorrhagic fever in an urban community of Thailand. *Southeast Asian J Trop Med Public Health* 1992;23:207-11.
- Mohammed Yusuf A, Abdurashid Ibrahim N. Knowledge, attitude and practice towards dengue fever prevention and associated factors among public health sector health-care professionals: In Dire Dawa, Eastern Ethiopia. *Risk Manag Healthc Policy* 2019;12:91-104.
- Harapan H, Rajamoorthy Y, Anwar S, Bustamam A, Radiansyah A, Angraini P, *et al.* Knowledge, attitude, and practice regarding dengue virus infection among inhabitants of Aceh, Indonesia: A cross-sectional study. *BMC Infect Dis* 2008;18:96.
- Al-Dubai SA, Ganasegeran K, Mohanad Rahman A, Alshagga MA, Saif-Ali R. Factors affecting dengue fever knowledge, attitudes and practices among selected urban, semi-urban and rural communities in Malaysia. *Southeast Asian J Trop Med Public Health* 2013;44:37-49.
- Pérez-Guerra CL, Seda H, García-Rivera EJ, Clark GG. Knowledge and attitudes in Puerto Rico concerning dengue prevention. *Rev Panam Salud Publica* 2005;17:243-53.
- Wan Rozita WM, Yap BH, Veronica S, Muhammad AK, Lim KH. Knowledge, attitude and practice (KAP) survey on dengue fever in an urban Malay residential area in Kuala Lumpur. *Malays J Public Health Med* 2006;6:62-7.
- Uma DA, Gan CY, Ooi GS. A knowledge attitude and practice (KAP) study on dengue/dengue haemorrhagic fever and the *aedes* mosquitoes. *Med J Malaysia* 1986;41:108-15.

Source of Support: Nil. **Conflicts of Interest:** None declared.