Original Research Article

Knowledge, attitudes and practices regarding dengue fever in a cohort of nursing students

Abstract

Background: Good knowledge, attitudes and practices on dengue fever will result a significant effect on prevention and control. Conversely, poor knowledge helps spread of dengue vectors and virus resulting in dengue epidemics.

Objective: This study aimed to evaluate the knowledge, attitudes and practices regarding dengue fever among a cohort of nursing students in faculty of medicine and health sciences, Hodiedah University, Hodiedah, Yemen.

Methods: Data was collected from 80 students using questionnaire method consists of a set of questions during 2016–2017educational year. KAP were assessed as satisfactory or unsatisfactory using a scoring system. Data was analyzed by using the Statistical Package for Social Sciences (SPSS®). Chi-square test was used for testing associations.

Result: According to KAP scores, 12.5%, 97.5% and 25% of respondents had satisfactory knowledge, attitudes and practices respectively. While 87.5%, 2.5% and 75% of them had unsatisfactory knowledge, attitudes and practices about dengue fever. There is significant association between knowledge and practices (p= 0.001**)**. However, there is no significant association between knowledge and attitudes (p= 0.588**)** about dengue fever.

Conclusion: Present study concluded that 87.5 % and 75% of participants nursing students have unsatisfactory knowledge and practices regarding dengue infection. Therefore, it is importance to enhance their knowledge and practices before graduation and employing them for health care services in the community.

Key words: Knowledge, Attitudes, Practices, Dengue, Nursing Students

1. Introduction

Dengue fever (DF) is arthropod-borne viral disease caused by dengue virus (DENV)[1]. DENV belongs to the Flavivirus genus of the Flaviviridae family and classifies into four serotypes (DENV-1, -2, -3, and -4) [2]. It composed of three structural proteins (capsid, membrane and envelope) and seven nonstructural (NS) proteins (NS1, NS2a, NS2b, NS3, NS4a, NS4b, and NS5)[3]. DENV transmitted by female mosquitoesmainly Aedes aegypti and to lesser extent Aedes albopictus[4]. Clinically, DF characterized by fever, headache, myalgia, arthralgia, rash, leukopenia and thrombocytopenia [3, 5]. Dengue disease ranges from asymptomatic or mild to severe with high fever, hemorrhage and shock[6]. Dengue sometimes leads to shock and even death in the absence of fluid replacement and supportive care[2]. There is no vaccine or antiviral drug to prevent or treat DF[7]. DF only treated by supportive therapies including bed rest, fluids and symptomatic relief using analgesics[8]. In recent years,

DFbecomes international global public health due to its dramatic increase in tropical and subtropical regions. It is reporting that 128 countries all over the world are endemic by dengue fever[9]. In addition, there are 390 million cases of DENV infection every year[10].

In Yemen, an epidemic of DF occurred in 1954, which affected 98 % of Hodeidah governorate population[11]. In 1984, travelers returning from Yemen to USA confirmed to have the dengue[12]. The dengue hemorrhagic fever reported in Yemen since 1994 by the United Nations International Children's Emergency Fund (UNICEF)[13]. DF is endemic in Yemen, the first dengue outbreak confirmed in 2003 in Shabwah governorate. The last major outbreak was in 2011 in Hodeidah governorate with 1,500 confirmed cases. The outbreaks take seasonal patterns with highest number of cases reported from April to August. Later, the World Health Organization (WHO) says that there is a surge in the number of people infected with DF in Yemen since the current conflict [14].

Vector control is one of the most important preventive measures in combating dengue. The recurrence of DF each year and rising number of cases suggests that vector control efforts are probably ineffective and need to be improved. Extensive community educational campaigns that lead to reducing vector breeding sites recommended by the World Health Organization and Centers for Disease Control and Prevention (CDCP) as an effective way of dengue prevention [15, 16]. Various researches supported this recommendation and reported that the community education can be more effective in reducing dengue vector breeding sites than chemicals alone [17]. Several studies suggested that better knowledge and practices of dengue is one of the better strategies of dengue prevention [18, 19].

Nursing students will be plays an important role in health care system after their graduation in both institutionalized settings and community care centers. Therefore, adequate knowledge can help the nursing students in providing health education to public and patients to reduce the occurrence of dengue. Therefore, this present study aims at evaluating the knowledge, attitudes and practices toward dengue feveramonga cohort of nursing students in faculty of medicine and health sciences, Hodiedah University, Hodiedah city western part of Yemen. Understanding the nursing students' knowledge, attitudes and practices might help in identifying the requirements for training them in this disease.

2. Methods

2.1. Study design, area and period

This study is a descriptive cross-sectional study conducted among a cohort of nursing students of faculty of medicine and health sciences in Hodiedah University, Hodiedah City, Yemen during the 2016–2017educational year.

2.2. Sample size

Total of 80 students selected from nursing division to participate in this study.Convenience sampling used to select the participants from four levels of nursing divisions.

3.3. Study subjects

The target subjectswere80 nursing students of faculty of medicine and health sciences in Hodiedah University, Hodiedah City, Yemen.

3.4. Data collection instruments

Data was collected using questionnaire method consists of a set of questions to assess the knowledge, practices and attitudes of 80 nursing students regarding dengue fever. The questionnaire consisted of four parts. The first part consisted of items regarding demographic data such as age, gender, educational level, marital status, residence, employment status and monthly income. Second part included questions on knowledge of dengue fever and sources of information about dengue fever. Knowledge part included questions on dengue fever transmission, dengue vector, clinical manifestations and control of denguevector. Third part assessed attitudes towards dengue fever prevention. This part included questions about the role of governmental councils and family towards dengue control. Fourth part addressed practices of dengue prevention. It included questions about use of mosquito repellent, covering water tanks, mosquito net, smoke and personal activities in vector control. The questionnaire comprised of both close-ended questions where the respondents could select answer (yes / no questions) and open-ended questions.After collecting questionnaire from students an hour class taken by investigators focusing on prevention of dengue fever. Students also provided with pamphlets that include complete information regarding dengue fever.

3.5. Statistical analysis

Data was analyzed by using Statistical Package for Social Sciences (SPSS®) (version 16, IBM, Armonk, NY). Chi-square test was used for testing associations. KAP were assessed as satisfactory or unsatisfactory using a scoring system. Questions were given one (for yes/ correct answer) and zero (for no/incorrect answer). The scores for each part were added to arrive at a single value out of a possible total seven scores for knowledge, five scores for attitudes and five scores for practices. Participants who scored 5 out of 7 in knowledge, 3 out of 5 in attitudes and 3 out of 5 in practices were assessed as 70% and considered as satisfactory.

3.6. Ethical Consideration

The objectives of study were explained to respondents and they assured about voluntary participation and confidentiality of the taken information. Written informed consent was obtained from each participant who agreed to participate in this study.

3. Result

This study evaluated knowledge, practices and attitudes regarding dengue fever among 80 nursing students of faculty of medicine and health sciences, Hodiedah University, Hodiedah, Yemenbased on previous study parameters[20].

3.1. Socio-demographic characteristics of respondents

In the present study, 80 respondents were selected to participate in study consisting of 40 males (50%) and 40 females (50%). The ages of the participants were ranged from 17 to 25 years with age meanof 21 ± 4. Of the total respondents, 78 (97.50%) were non-employed in either government or private sectors and 2 (2.50%) were employed. Half of respondents were from urban area and another half from rural area. The majority of respondents were single (72=90%) and only 8 (10%) respondents were married. 38 (47.50%) respondents families had a monthly income less than 200$, 35 (43.75%) respondents had a monthly income between 200 and 500$ and only 7 (8.75%) respondents had a monthly income more than 500$. 20 (25%) respondents were selected from each educational level. Table 1 shows respondents distribution according to the demographic characteristics.

3.2. Knowledge regarding dengue fever

Out of 80 participants, 70 (87.50%) were aware about the dengue infection. Majority of respondents (70= 87.50%) were knew that dengue transmitted by a mosquito bite, 9 (11.25%) respondents were said that dengue transmitted by blood transfusion and only 3 respondents were said that dengue transmitted by contaminated food and water. None of the respondents were said that dengue transmitted by flies and airborne droplets. When respondents were asked about the symptoms of dengue, fever was the most common response (85%) followed by severe headache (68.75%), muscular pain (55%), arthralgia (53.75%), loss of appetite (46.25%), pain behind eyes (43.75%) and nausea (31.25%). However, only 20% and 17.50% of respondents were identified bleeding and skin rash respectively as a symptoms of dengue. Majority of respondents (88.75%) were answered that dengue is an infectious transmissible disease. 60% of participants were answered that Aedes mosquito transmit dengue virus and 25% said that Anopheles mosquito transmit dengue virus. However, 8.75% or respondents do not know the name or type of mosquito, which transmit dengue virus. When respondents were asked about the type of dengue feeding, blood was the most common response (70%)

followed by dirty water (21.25%) and cleans water (3.75%). 11.25% of respondents do not know about dengue nutrition. Regarding biting time of dengue mosquito, 50% of respondents were answered mosquito bites during nighttime, 22.50% were answered during daytime and 23.75% have no knowledge about biting time. 63.75% of respondents were thought that dirty water is common breeding site for dengue vector followed by garbage\trash (37.50%), water storages (36.25%), tires (22.5%) and overhead tanks (13.75%). %). However, only 10% and 3.75% of respondents were identified coolers and plants\vegetation as breeding sites for dengue vector and 8.75% of respondents have no knowledge about breeding sites for dengue vector. Finally, when respondents asked about preventive methods from mosquito bite, mosquito net (68.75%), mosquito sprays (57.50%) and window and door screen (50%) were most common choices. However, 28.75% and 12.50% of respondents were chosen repellant cream and covering of body with clothes respectively as preventive methods from mosquito bite. Table 2 shows respondents awareness and Knowledge regarding dengue fever.

3.3. Attitudes towards dengue fever prevention

The attitudes of the respondents were assessed using questions regarding prevention, vaccination and need for treatment and hospitalization. 98.75% of respondents were thought that it is possible to prevented mosquitoes that cause dengue fever. However, 1.25% werethought that it is not possible to prevented mosquitoes that cause dengue fever. 33.75% of respondents had consensus that the government has the prime responsibility to prevent dengue fever by vaccination whereas 63.75% of respondents correctly answered no availability of vaccine for dengue fever. Majority of the respondents (91.25%) would seek doctor and hospital treatment in case any of their family members have dengue fever.However, 8.75% would treat the family members who have dengue fever at home. Table 3 shows respondents attitudes toward dengue fever prevention.

3.4. Practices of dengue fever prevention

The practices section of the questionnaire contained questions that assessed the practices to eradicate breeding sites of dengue mosquitoes as well as usage of preventive interventions. Majority of the respondents were thought that preventing collection of water near houses (61.25%) and preventing water stagnation in discarded empty containers, tires and pots (60%) will eradicate mosquito-breeding sites followed by covering water containers (55%), covering overhead water storage tanks (52.50%) and frequent water change in coolers (28.75%). Few respondents (12.50%) were thought that cutting trees and vegetation near houses will eradicate mosquito breeding sites. Common preventive practices prevalent in respondents were using mosquito net(66.25%), prevent water stagnation in coolers, covering

empty containers, covering tires and overhead tanks (51.25%), using window and door screen (48.75%), using insecticide spraying (42.50%) and using mosquito repellents (31.25%). Few respondents (18.75% and 15%) were used covering body with clothes and smoke to drive mosquitoes away respectively. Table 4 shows respondents practices toward dengue fever prevention.

3.5. Sources of Information about dengue Infection

Most of participants (89.7%) were aware about dengue. The main sources of information were medical staff (41.25%) followed by social media (33.75%), friends and relatives (27.50%) and television (22.50%). The least sources of information were newspaper/magazine (18.75%) followed by personal doctor and phone messages (8.75% for both). Table 5 shows sources of information about dengue infection.

3.6. The overall Knowledge, Attitudes and Practices

According to KAP scores, 12.5%, 97.5% and 25% of respondents had satisfactory knowledge attitudes and practices respectively. While 87.5%, 2.5% and 75% of them had unsatisfactory knowledge, attitudes and practices about dengue fever (Table 6). This study reported that there is significant association between knowledge and practices ($p= 0.001$**)**. However, there is no significant association between knowledge and attitudes ($p= 0.588$**)** about dengue fever (Table 7).

Table 1: Demographic characteristics of study population

Variable	Number(n=80)	(%)
Age (years)		
≤ 20	37	46.25
> 20	43	53.75
Total	80	100.00
Gender		
Male	40	50.00
Female	40	50.00
Total	80	100.00
Occupation		
Employed	2	2.50
Non employed	78	97.50
Total	80	100.00
Residence		
Rural	40	50.00
Urban	40	50.00
Total	80	100.00
Marital status		
Single	72	90.00
Married	8	10.00
Total	80	100.00
Family income		
< 200$	35	43.75
200 - 500$	38	47.50
> 500$	7	8.75
Total	80	100.00
Educational Year		
First	20	25.00
Second	20	25.00
Third	20	25.00
Fourth	20	25.00
Total	80	100.00

Table 2:Knowledge regarding dengue fever

Questions	Number	%
Are you aware about dengue fever?		
Yes	70	87.50
No	10	12.50
Total		
How dengue fever transmitted to a person?		
Mosquito bite	72	90.00
House fly	0	00.00
Airborne	0	00.00
Blood transfusion	9	11.25
Contaminated water or food	3	3.75
What are the symptoms of dengue fever?		
Fever	68	85.00
Severe headache	55	68.75
Muscular pain (myalgia)	44	55.00
Arthralgia	43	53.75
Skin rash	14	17.50
Bleeding	16	20.00
Nausea	25	31.25
Pain behind eyes	35	43.75
Loss appetite	37	46.25
Is dengue fever infectious disease?		
Yes	71	88.75
No	9	11.25
What is the type of mosquito that transmits dengue fever?		
Anopheles	20	25.00
Aedes	48	60.00
Don't know	7	8.75
What is the type of dengue mosquito feeding?		
Blood	56	70.00
Flower nectar	0	00.00
Dirty water	17	21.25
Clean water	3	3.75
Don't know	9	11.25
Where dengue mosquito breeds in?		
Dirty water	71	88.75
Cleans water	10	12.50
Don't know	0	00.00
When is usually dengue mosquito active to bite?		
Day time	18	22.5
Night	40	50.00
Don't know	19	23.75
What are common breeding sites of dengue mosquitoes?		
Water storage	29	36.25
Tires	18	22.5
coolers	8	10.00
Overhead tanks	11	13.75

Dirty water	51	63.75
Garbage/Trash	30	37.50
Plants/Vegetation	3	3.75
Don't know	7	8.75
What are the methods to prevent mosquito bite?		
Mosquito Spray	46	57.50
Mosquito repellant cream	23	28.75
Mosquito Net	55	68.75
Window & Door Screen	40	50.00
Covering of body with clothes	10	12.50

Table 3: Attitudes toward dengue fever

Question	Number	%
Can dengue fever be prevented?		
Yes	79	98.75
No	1	1.25
Can dengue fever be vaccinated?		
Yes	27	33.75
No	51	63.75
What will you do if your family member has dengue fever?		
Treat the patient at home	7	8.75
Take the patient to a doctor/Hospital	73	91.25

Table 4: Practices toward dengue fever

Question	Number	%
What you do to eradicate breeding sites of dengue mosquitoes?		
Prevent water stagnation in discarded empty containers/tires/pots	48	60.00
Covering water containers	44	55.00
Frequent water change in coolers	23	28.75
Covering overhead water storage tanks	42	52.50
Cutting trees and vegetation	10	12.50
Prevent collection of water near houses	49	61.25
What practices you use at your home for mosquito control?		
Mosquito Spray	34	42.50
Mosquito repellant cream	25	31.25
Mosquito Net	53	66.25
Window & Door Screen	39	48.75
Covering of body with clothes	15	18.75
Use of Smoke to drive away mosquitoes	12	15.00
Prevent Water Stagnation in coolers/ empty containers/tires/overhead tanks	41	51.25

Table 5: Sources of knowledge about dengue fever

Question	Number	%
What is your source of knowledge about dengue fever?		
Television	18	22.50
Newspaper/magazine	15	18.75
Radio	8	10.00
Friends and relatives	22	27.50
Medical staff	33	41.25
Personal Doctor	7	8.75
Phone messages	7	8.75
Social media	27	33.75

Table 6: Overall knowledge, attitudes and practices regarding dengue fever

Score	Knowledge		Attitudes		Practices	
	No.	%	No.	%	No.	%
Satisfactory	10	12.50	78	97.50	20	25.00
Unsatisfactory	70	87.50	2	2.50	60	75.00

Table 7: Association between knowledge with attitudes and practices about dengue fever

Independent variables	x^2 Value	P value
Attitudes	**0.293**	**0.588**
Practices	**11.299**	**0.001**

4. Discussion

Vector is an important tool in transmission of mosquito borne diseases as dengue fever. Thus, protection from vector is one of the best strategies for disease prevention and control. Personal protective measures included repellents creams and liquids, mosquito nets, mosquito coils, electric rackets, mats, smokeless coils, incense sticks and naphthalene balls are most useful actions in disease prevention and control. Population should be aware about protective measures and its usage correctly. Community participation in prevention depends on awareness, knowledge and practices towards the disease and its prevention. Therefore, it is important to assess the existing knowledge and practices regarding the disease for designing effective prevention strategies[21, 22, 23]. Good knowledge on dengue fever will result a significant effect on prevention and control. Conversely, poor knowledge helps spread of dengue vectors and virus resulting in dengue epidemics[20].The nursing students should have higher level of knowledge and practices on dengue, which they are the prime personals contacting people and can be an important source of educating them**.** The present study assessed the knowledge, attitudes and practices of nursing students towards dengue fever. KAP were assessed as satisfactory or unsatisfactory using scoring system. This study demonstrated that 87.5 % and 75% of respondents have unsatisfactory level of knowledge and practices respectively. This result indicates the limitation in dengue education courses through education years and weakness in awareness campaigns efforts of the government to

raise the level of knowledge and practices on dengue. However, 97.5% of them have satisfactory level of attitudes regarding dengue fever. This result indicates nursing students have positive attitudes about dengue fever. In our country there are no studies carried out to assess knowledge, attitudes and practices toward dengue fever. Worldwide, many studies assessed knowledge, attitudes and practices (KAP) as satisfactory and unsatisfactory by using scoring system in different population groups. Gunasekara et al. found that the 58%, 37% and 85% of participants had satisfactory knowledge, attitudes and practices towards dengue respectively[24].ELyas et al. in 2016 reported that 58%, 70% and 27% of participants had satisfactory knowledge, attitudes and practices towards dengue respectively[25].

Present study reported that there is significant association between knowledge and practices (p= 0.001**)**. This result suggests that knowledge about dengue fever must translate to improve preventive measures.However, there is no significant association between knowledge and attitudes (p= 0.588**)** about dengue fever. This result indicates that nursing students have positive attitudes about dengue but they have not more knowledge about dengue and its preventive measures in order topractice these attitudes. Some studies agree with our result and other differs. Al-Dubai et al. found that significant association between practice and knowledge and not significant association between attitudes and knowledge among selected population from urban, semi-urban and rural areas within the states of Selangor and Kuala Lumpur in Malaysia[26]. ELyas et al. reported that there is an association between knowledge with both attitudes and practices about dengue fever among household in the rural areas of Jazan region, Saudi Arabia[25]. Kwon and Crizaldo demonstrated that no significant association between knowledge with attitudes and practice level among Rowenas community in the Philippines[27].

Conclusion

Present study concludedthat 87.5 % and 75% of participants nursing students have unsatisfactory knowledge and practices regarding dengue infectionand this below our expectation. The findings highlighted the importance of enhancing their knowledge and practices before graduation and employing them for health care services in the community.

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