KNOWLEDGE, ATTITUDE AND PRACTICE OF DENGUE FEVER PREVENTION AMONG THE PEOPLE IN MALE', MALDIVES

Nahida Ahmed* Surasak Taneepanichskul

College of Public Health Sciences, Chulalongkorn University, Bangkok 10330

ABSTRACT: A study was carried out in Male' the capital of Maldives with the objective of determining the current state of Knowledge, Attitude and Practices (KAP) of the people in Male' regarding dengue fever prevention. Purposive and random sampling was used for the study and 374 households were recruited in the survey. Head of the households were interviewed using a structured questionnaire. The mean age of the participants was 36 years with a standard deviation of 9.63. The respondents who participated in this study had low level of knowledge in the areas explored (mean= 8.60, SD = 2.45) and 48% had fair practice in preventing dengue fever (mean= 4.75, SD = 1.39). This study also revealed out few knowledge deficits such as 67% of the respondents who felt that dengue fever can be transmitted from one person to another. Significant associations were found between gender and practice ($p<0.001$) and knowledge and practice ($p=0.05$). The findings of the study indicate that if people are supplied with accurate knowledge through appropriate channels, they may eventually have good practices in preventing dengue fever. Public education is necessary to address the knowledge gap revealed in the study. Therefore educational programs should be organized for improving knowledge about dengue fever, ensuring that people are receptive to the messages and to make it easier for them to adopt desired behavioral changes.

Keywords: Dengue fever, KAP, Maldives

INTRODUCTION: Dengue virus is now believed to be the most common arthropod-borne disease in the world. Dengue is a mosquito-borne infection that had become a major public health concern. The four dengue viruses (DEN-1 through DEN-4) are immunologically related, but do not provide cross-protective immunity against each other[1]. The World Health Organization (WHO) currently estimates that there may be 50 million cases of dengue infection worldwide every year[2]. The health burden of dengue in South East Asia only is estimated to be 0.42 Disability Adjusted Life Years (DALYs) per 1,000 population (52% due to premature mortality, 48% due to morbidity[3]).

Since 1979, dengue has become endemic in Maldives with periodic outbreaks during rainy seasons. Every year there is an epidemic and increase in morbidity but not that much in mortality. In 2005 the cases had increased but no deaths were reported. In 2006 the dengue cases increased to 52% (2,768 cases) and there were 10 deaths[4]. In Maldives *Aedes aegypti* is the presumed vector. In the first two weeks of 2007, a total of 71 cases were reported which is about 33% less compared with the same period of 2006 (141 cases) and about 51% more compared with the same period of 2005 (23 cases). In 2007 till October, 1,494 cases have been reported and no deaths. Maldives has potential for outbreaks so the disease and vector surveillance as well as awareness programs should be stepped up and sustained.

MATERIALS AND METHODS: **Study Area:** Male' was selected as the study area due to the high population density and availability of adequate data. It is the home of over 103,693, has an area of roughly two square kilometers. Administratively Male' is divided into four districts. Each district is divided

*To whom correspondence should be addressed.
E-mail: ahdihan@hotmail.com

by roads. Henveiru (occupies the North-East side), Maafannu (occupies the North-West side), Galolhu & Machchangolhi (lie in the centre and to the south). Majority of the island is not zoned, between residential and commercial areas. It is further divided into blocks and each block has a unique block number assigned by Male' Municipality. Each block may enclose several houses, shops, garages and many more. Every house in Male' has a name unlike a numeric address as in other countries. Maafannu has a total number of 134 blocks and 2,292 houses.

Study Design: A descriptive cross-sectional design was used involving indirect observation and a survey with the utilization of a questionnaire and an observation check list as the data collection tools.

Sampling and Sample Size: There are four districts in Male' and by purposive sampling Maafannu were selected as this district was considered to have more people living than the rest of the three districts. Out of the 134 blocks in the district 19 blocks was selected by random sampling and the sample comprised 374 residents from Male', Maldives. Head of each household was interviewed. The study was conducted during 2008 by face-to-face interview using a pretested questionnaire.

Data Management: The results were analyzed using SPSS (version 15) software. Descriptive statistics was applied using simple percentages, means, and standard deviations etcetera as appropriate depending on the nature of the variables. Chi-square test was used as appropriate, to see whether there is any association between socio-demographic characteristics and Practice scores. Lastly correlation was used to see the relationship between Knowledge and Practice and Attitude and Practice scores among the respondents.

RESULTS: Demographic Characteristics: Majority of the participants were female (60%). The mean age of the participants was 36 years with a standard deviation of 9.63. The age ranged from 20 to 62 years. More than half of the respondents (86%) were married. Most of them were educated both in primary school (44%) and in secondary school (44%) and most of them were employed (65%). Out of those who were employed and economically active the common income was above Ruffiyya 3001/month {USD 235/month} (44.7%). Most of the families had a family size of less than 10 people (80.5%) and children below 15yrs were 83.4%. 73 (20%) households had a history of dengue fever in the last 2 years.

Among the respondents, 90% had received some sort of information regarding dengue fever while 10% hadn't received any. Audiovisual media was the main source of information. Smaller percentages reported receiving it from magazines, leaflets, newspapers or friends.

Knowledge on Dengue Fever: Participants answered a total of 14 close ended questions about dengue fever. Each correct response was given one mark with a total of 14 marks. The mean knowledge score for the respondents was 8.60 out of possible 14 points (SD = 2.45). Most of the respondents had a low level of knowledge (46%) and moderate level of knowledge (41%). Only 12% had high level of knowledge as shown in Table 1.

Table 1 Number and percentages of the respondents by the level of knowledge about dengue fever prevention.

Level of Knowledge	Number (n = 374)	Percentage
High level (12 – 14 scores)	47	12.6
Moderate level (9–11 scores)	155	41.4
Low level (0 – 8 scores)	172	46.0
Total	374	100

Ninety one percent of the respondents knew that empty stagnant water from old tires, trash cans, and flower pots can be breeding places for mosquitoes. Seventy nine percent of the respondents knew that the main mosquito vector for dengue is *Aedes aegypti*. Around 67% of the respondents felt dengue fever can be transmitted from one person to another.

Attitude towards Dengue Fever: The attitude level of respondents regarding dengue fever was classified as positive (47-60 scores), neutral (41-46 scores), and negative (12-40 scores). 42.5% of the respondents had a positive attitude, 42.2% had a neutral attitude, and 15.2% had a negative attitude (Mean = 45.63, SD = 5.66).

Practice regarding dengue fever prevention: The dengue fever preventive practices of the respondents were classified as good (≥81%), fair (60-80%), and poor (<59%). Nine percent of them had good practices, nearly 48% had fair practices, and 43% had poor practices. (Mean = 4.75, SD = 1.39).

Ninety percent of the 374 respondents covered water jars in their houses which is a very good practice. Community participation in dengue fever prevention was very poor (28%). One percent of the respondents protected themselves from mosquito bites during day time. Forty one percent of them protect during night and 30% during day and night time. The most popular preventive method was using mosquito mats.

Observation Results: Twenty five percent of the households had water collection on the plates supporting flower pots at home and only 5% of the household had stored water containers in the toilet. None of the houses had dirty water in indoor plants or vases.

Of the interviewed households 59% had dirty housing environment. Most of the houses doors and windows remain closed all daytime and the inside was relatively dark. This can be a preferable resting place for *Aedes* mosquitoes. Forty seven percent of the households had empty cans and discarded bottles that can hold water around the house. Also 54% of the households had not covered the stored water containers/tanks.

Comparison of Practice score between the grouping variables: No statistically significant difference was found between any of the independent groups except for gender and knowledge. Gender had association with level of practice behaviors among the respondents in this study (p=0.03). Females had higher practice behavior than males in prevention of dengue fever. Knowledge also had statistically significant positive association with level of practice behaviors regarding dengue prevention among the respondents (p=0.00). This means that people who have high knowledge about dengue fever tends to have good practice behavior against dengue fever.

DISCUSSION: Clearly, the respondents who participated in this study had a low level of knowledge (46%) in spite of the fact that 90% of the respondents had received information regarding dengue fever. This might be because people do not absorb all the information they get and tend to forget most of the information. It is also a matter of motivation and perceived benefits. If people do not see the benefit of a given behavior they do not practice it, regardless of understanding. It might be that the educational information is insufficient to address people's understandings of disease transmission and/ or the education methods used are flawed. Forty one percent of the respondents had moderate level of knowledge and it could be because that the respondents who filled questionnaires had previous history of dengue fever themselves or either a member of their family.

Nearly half (54%) of the respondents are unaware that dengue can occur in all seasons. Lack of knowledge regarding dengue fever which can occur throughout the year would make people lack of awareness on preventive behavior of dengue fever.

This study revealed out some incorrect knowledge about dengue fever among the respondents. Such as 67% of the respondents felt that dengue fever can be transmitted from one person to another. This is an important issue which needs to be emphasized on.

Gender had association with level of practice behaviors among the respondents in this study. Females had higher practice behavior than males in prevention of dengue fever. This might happen

because it is believed in the population that females should take care of the households while kids and male have other responsibilities.

This study shows that Knowledge had significant positive association with practice of dengue prevention. In light of the survey's done on dengue fever it is shown that knowledge is associated with the preventive behaviors of the people. A study[5] done showed a direct link between knowledge on dengue prevention and container protection practices, whereas measures against adult mosquitoes are used only when people experience a mosquito nuisance problem. Besides another study showed that adequate knowledge of dengue and prevention methods are found in close association with high rates of domiciliary infestation by *Aedes aegypti* [6]. A different study showed that people with knowledge of dengue reported a significantly higher use of prevention measures than people without knowledge of dengue[7].

This showed that correct knowledge was needed in order to prevent from dengue fever. Along with all the support, we need to provide the community with the precise knowledge regarding the disease and to clarify any doubts they have.

Evidently, the respondents who participated in this study had a positive attitude. In spite of that they are not concerned about practicing the preventive behaviors. The possible reason might be that most of the respondents are employed (65%) and therefore they don't find time to do activities related to practicing dengue fever prevention or there might be many other factors hindering. Such as motivations, perceived benefits, social factors, taboos, etc. Further studies should actively look for factors hindering preventive practice of dengue fever as behavior depends on many other factors beside knowledge.

Thirty seven percent of the respondents felt that dengue control should be the responsibility of the government. Maybe these people believe and might not appreciate the importance of their role in disease prevention. The participation of the community in relation with dengue fever was 28% only. The Ministry of Health, by itself, is in no position to meet the challenge of increased disease transmission in the island. There is need for a determined effort of collaboration with various public and private organizations.

Majority of the respondents (41%) used mosquito coils or mosquito mats during night time only and 28% of the respondents did not use anything. Thirty percent used day and night time and only 1% used during day time. This shows that almost half of them did not know the biting time of dengue mosquitoes. To know the biting time of dengue mosquitoes is quite important because most people tend to protect from mosquito bites only at night and fall short to protect themselves during the day, which raises the risk of dengue infection. Future health education efforts should emphasize on this point as well.

When observed 47% of the households had empty cans, discarded bottles that can hold water around the house but as per questionnaire 76% of the respondents reported that they examined around their house for any discarded item and 56% dispose them. Discarded containers in a house play a role as potential breeding sites. This might be because when people were asked they might have reported disposing discarded containers even though they are not practicing it. A previous study reported that discarded containers contained plenty of organic matter and subsequently tended to produce large number of adult *Aedes* mosquitoes which had faster development and better survival[8]. Fifty four percent did not cover the water containers and this will create a good environment for mosquitoes breeding places.

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ความรู้ เจตคติและการปฏิบัติในการป้องกันโรคไข้เลือดออกของประชาชนในเมืองมาลี ประเทศมัลดีฟ

นาฮิดา อาเหม็ด* สุรศักดิ์ ฐานีพานิชสกุล

วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย กรุงเทพฯ 10330

บทคัดย่อ: การศึกษานี้ได้ทำการศึกษา ณ เมืองมาลี ประเทศมัลดีฟ โดยมีวัตถุประสงค์ทางการศึกษาเพื่อศึกษาถึงระดับความรู้ เจตคติ และการปฏิบัติในการป้องกันโรคไข้เลือดออกของประชากรในเมืองมาลี ประเทศมัลดีฟ จำนวนครัวเรือนที่ทำการสำรวจทั้งสิ้น 374 ครัวเรือน อายุเฉลี่ยของผู้ถูกสัมภาษณ์ คือ 36±9.63 ปี จากการศึกษาพบว่าประชาชนมีความรู้เรื่องการป้องกันโรคไข้เลือดออกในเกณฑ์ต่ำ อย่างไรก็ตามร้อยละ48 มีการปฏิบัติ การป้องกันโรคไข้เลือดออกที่อยู่ในเกณฑ์พอใช้ นอกจากนี้ยังพบว่า เพศและความรู้มีความสัมพันธ์อย่างมีนัยสำคัญกับการปฏิบัติการป้องกันโรคไข้เลือดออก จากการศึกษานี้แสดงให้เห็นว่า การให้ความรู้ในการป้องกันโรคไข้เลือดออกแก่ประชาชนที่ถูกต้องจะนำไปสู่การปฏิบัติที่ดี จึงจำเป็นอย่างยิ่งในการที่จะให้ความรู้แก่ประชาชน ในการป้องกันโรคไข้เลือดออกและมีการสื่อสารที่เข้าใจง่ายแก่ประชาชน ทั้งนี้เพื่อเปลี่ยนพฤติกรรมของประชาชนในการป้องกันโรค

คำสำคัญ: โรคไข้เลือดออก เคเอพี ประเทศมัลดีฟ

*ติดต่อได้ที่ ahdihan@hotmail.com โทรศัพท์ 0 89766 3130