Assessment and Filling of Gaps of the Anti-Dengue Program in the Philippines

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Abstract

Dengue outbreaks have claimed lives of Filipinos. It has no specific treatment yet but can be prevented and controlled. The Philippine Department of Health is continually doing its program to prevent Dengue and control it. This study generally aimed to assess the gaps in the management of programs against Dengue in the Philippines. Specifically it aimed to identify the level of knowledge, attitudes and practices of chosen communities to dengue and its control; assess the gaps of the program based on the survey and perform post-evaluation on gap filling activities. The study followed a descriptive, exploratory research design for obtaining knowledge, attitudes and practices of the community residents. A survey questionnaire was used. The gap/s in the Dengue Prevention Management (DOH ABKD) in the community was analyzed using the resultant descriptive statistical analysis. An experimental design was employed for gap filling phase of the study. Majority of the respondents are well informed regarding Dengue, Dengue prevention and Management. The program of DOH to local community provided essential information to the community residents. A gap on information dissemination to children in the elementary level was identified hence tried to fill up. Lecturette-storytelling teaching strategy showed an extremely significant statistical difference from the pre to the post tests of the students. Hence knowledge on Dengue, its prevention and management was increased with the use of the above mentioned teaching style.

Introduction

Background of the study

The dengue virus infection is the most common arthropod-borne disease worldwide [1] (Day-Yu Chao, 1998) It is a disease that claimed lives even in the Philippines. Mosquito borne disease transmission is climate sensitive for several reasons namely: mosquitoes require standing water to breed, and a warm ambient temperature is critical to adult feeding behaviour and mortality, the rate of larval development and speed of virus replication [2,3,4]. With cold climate, the disaese will not propagate due to slowed viral development [4].

Other factors may also affect the prevalence of dengue. These include wooden housing, absence of screens on windows or doors, existence of mosquito breeding sites on the premises like Empty containers in the house, empty houses or ponds around the dwelling and presence of domestic animals [1]. Further it was mentioned that social and environmental factors – including increased urbanization (particularly of poor populations lacking basic health services) as well as expansion of international travel and trade – are linked to the resurgence of dengue disease [5] .

The Philippines ranked 4th in the list of Association of Southeast Asian Nations (ASEAN) member-countries afflicted by dengue in 2011 [6]. There was a 16% rise in Dengue cases still only on July 26, 2012 as reported by the Philippine Department of Health (DOH). The cases were highest in Metro Manila followed by Calabarzon then Central Luzon. The DOH National Epidemiology Center also reported that 53% of dengue patients were male..Many of the patients were children and 40% belong to the age bracket of 1-10 years of age (bracket of 1-10 years of age)[7]

The Philippine Department of Health is active in its ABKD (Aksyon Barangay Kontra Dengue) program to destroy Dengue. It is an interagency cooperation strategy . It is the government's response to reduce Dengue cases and control transmission of Dengue. One of the key initiatives to the ABKD is the installation of Ovicidal/Larvicidal Trap system to trap Aedes mosquitoes and to act as an early warning signal in prevention of Dengue outbreaks. From the DOH the program goes down to the Barangay levels. Each Barangay must intensify clean up drives, conduct campaigns on the use of OL traps to control and prevent Dengue outbreaks together with the City or Municipal Health Office, distribute the OL traps through the Barangay Health Team to the identified distribution centers for free. The City or Municipal Health Office is also mandated to conduct training and orientation relative to Dengue prevention and control and provide funds to sustainably support the ABKD program. Further they monitor health situation, provide Dengue patients with proper and timely medical attention, provide data to partner agencies of Dengue cases [8]

The Philippine Department of Health-Center for Health Development (DOH-CHD) Caraga intensified its campaign against dengue through the implementation of the Aksyon Barangay Kontra Dengue (ABKD) program. The intensification according to DOH-CHD Caraga's Regional Epidemiology and Surveillance Unit (RESU) Chief Dr. Gerna Manatad was due mainly to the increasing number of dengue cases in the region. The program includes the regular daily clean-up drive by stakeholders and the re-assessment of the situation and an extension of the clean up drive, when deemed necessary. It is basically a "search and destroy" scheme for mosquito breeding sites.She informed the public to seek early consultation for fever, joint pains, and other early signs of dengue hemorrhagic fever such as nose and gum bleeding, blood in the stool, vomitus, and abdominal pain, among others. Fogging should also be done in Dengue hot spots [9].

As early as May 2011, Quezon City through the leadership of Mayor Herbert Bautista intensified its campaign against Dengue. It was emphasized that aside from information and education campaigns, cleanup drives and early illness detection training, barangay officials were also provided saplings of the Neem tree, to repel mosquitoes. Dengue brigades have been formed at the barangay level. The community residents were informed on the importance of maintaining cleanliness and sanitation to reduce the number of potential breeding grounds for the dengue-carrying mosquitoes. Residents then remove stagnant water on old tires, roof gutters, refrigerator drainers and indoor plants where these mosquitoes thrive [10]. This is a continuing campaign attested by Quezon City Health Department Director Dr. Antonieta V. Inumerable, in an interview last May 2013.

Storytelling as a teaching strategy activates students' mental process, imagination and interest which results to better understanding and recall of the information [11]. Telling stories is a valuable teaching skill.It is both entertaining and educating. It teaches important concepts, attitudes and skills [12]. Also the use of stories enhance values and character education among students in the middle school in USA [13]

It was mentioned that knowledge is affected by education but is not correlated with use of prevention measures. Also the best source of knowledge on dengue comes from the TV and radio [14]. Fortification of knowledge and community attitude on dengue is vital for its prevention.

Objectives

It generally aimed to assess the gaps in the management of programs against Dengue in the Philippines. Specifically it aimed to **:** 1. Identify the level of knowledge, attitudes and practices of chosen communities to dengue and its control, 2.Assess the gaps of the program based on the survey 3. Perform post-evaluation on gap filling activities.

Significance of the study

The results of this study will be significant to different Philippines sectors. To the Filipino people, Dengue fever occurrences will be decreased if not put on halt which plagues the Filipino community. This will reduce the economic burden placed on every household. To the Local Government Units or LGU's, they will be guided in decreasing dengue mosquito population and dengue fever outbreak through the data bank that will be left with them- storybooks with lecturette powerpoints on dengue prevention and management) that may be used by varied sectors (eg educators, Barangay Health Workers, community health team.). To the Government, the results may serve as guide in drafting and implementing of local/national policies related to socio-environmental factors that positively affect the rise in dengue in order to improve public health conditions. Change in strategies for solving the dengue problem in the Philippines may ensue and which may prove beneficial to the country at large. Lastly for researchers/academicians, it will serve as a motivation for continued quest for the improvement of socio-environmental conditions through further researches to reduce Dengue outbreak.

Methodology

Research design

The study followed a descriptive, exploratory research design for obtaining knowledge, attitudes and practices of the community residents. The survey questionnaire was adapted from Shuaib etal, 2010(Appendix A) [14] was used. The gap/s in the Dengue Prevention Management (DOH ABKD) in the community was analyzed using the resultant descriptive statistical analysis. An experimental design was also employed for gap filling phase of the study.

Locale of the Study

The study was conducted in a hot spot in Metro Manila, Philippines- Barangay Old Balara, Quezon City. The pre-identified areas were Area 1-Luzon, Area 2-Old Balara and Area 4- Sitio Payong. The gap filling phase of the study was conducted at Old Barangay Elementary School in Quezon City and Jesus the Loving Shepherd in Camsur, Bicol.

Data Collection

Fifteen families per cluster where randomly selected. Both the father and the mother or the oldest persons in each family were requested to answer the formulated survey questionnaire on demographics and the segment related to the roles of health professionals and workers. They were asked to tick their corresponding answers per row and column combination. Grades V and VI students (N=291) of Old Balara Elementary School (Public) in Quezon City were the audience for the Dengue ReMoVe Information drive using lecturette-storytelling as the teaching strategy while mixed grades IV to VI (N=41) took part in the same activity in Jesus the Loving Shepherd College (Private) in Camsur, Bicol. Pre-tests and post tests were given to all students . Original storybooks Appendix B for the storybooks) with lecturettes were used.

Data Analysis

Descriptive statistics was used to analyze the knowledge, attitudes and practices of the community respondents as well as the gap/s. Two tailed t-test was employed to see the effectiveness of the strategy used to fill in the perceived gaps.

Results

On Demographics

More than a third (34%) of the population surveyed was between the ages 31 to 40 years of age. The next biggest group was those within the 41 to 50 age range. The 21 to 30 age group accounted for more than a fifth (21%) of the respondents. Those over 51 years old were a little over a tenth of the respondents (11%) while those below 20 years old accounted for only 2%.Since this study targets the sector of the community that has direct responsibility for dengue prevention and control, those belonging to the 21 to 50 years old range are considered vital. It is therefore expected that most of the surveyed population belonged to this age range. Majority of the respondents are female (56%). The rest, are men (44%).

Several inferences could be made in relation to this data. First, since the survey was done within regular working hours (8 AM to 5 PM), it will be safe to say infer that many women, who stay home most of the time, were available. Second, women, who we know are directly doing the care giving role in the family, seem to be more cooperative in endeavors such as this. A great majority of the respondents are married. This is desired as this study wishes to determine the knowledge, attitudes and practices of people in the community particularly how families view with dengue and its prevention.

Majority (60%) of the respondents are unemployed. About a quarter (24%) engage in occupation or job that require no skill (e.g., vendor, laundry worker). Five percent of the respondents are skilled while 11% are professionals.This poses a challenge to any attempt to effect change in the health behavior of the populace. The cost effectiveness of the health program should be clear to the community members so they will involve themselves in the program. Low cost but high impact activities should be planned out well.

Almost half (46%) of the survey participants are high school graduates. About a quarter (23%) are college level students and almost the same number (24%) are elementary graduates. This table is quite different from the national picture where there are more elementary graduates than high school graduates. This poses a challenge to the project proponent in a way that all health education activities should be in a level understandable to all sectors.

On Knowledge on Dengue Symptoms

Regarding the population's knowledge on Dengue, the people are cognizant of the fact that one of the tell-tale manifestations of Dengue is fever. This question though did not ask the respondents to differentiate the fever in Dengue with that of other diseases which have a similar manifestation. There are only a few individuals who are not cognizant that a person suffering from Dengue experience headache. A big portion of the respondents (88%) are aware that Dengue presents itself as flu. A very small percentage(4%) stated that Dengue does not produce joint pains while the rest of the respondents are not sure. Almost ¾ of the respondents know that Dengue causes muscle pains while almost a quarter indicated that Dengue doesn't cause muscle pain or are not aware it does. The respondents are not quite informed on whether Dengue causes pain at the back of the eyes. Forty four percent indicated it does while 66% said either no or are not aware that Dengue causes eye pain. Forty percent of the respondents say that Dengue causes itchiness. The rest knows that Dengue patients do not experience itchiness or are not sure if it does. A big majority of the respondents know that Dengue patients experience stomach or abdominal pain.

On Dengue Transmission

Majority of the respondents know, that Dengue is not brought about by flies. However, 20% of the respondents who either say that Dengue is transmitted by flies or are not sure is worth noting as they still have misconceptions regarding Dengue despite the saturated information dissemination by many sectors concerned with Dengue prevention and control. Majority of the respondent know that Dengue is not transmitted by ticks and not all mosquitoes transmit the Dengue virus. The respondents are however not well-informed on the type of mosquito that transmit the Dengue virus as only 33% answered the question correctly. Almost 40% indicated that they are not aware whether Aedes causes Dengue.They are not well-informed on the manner by which the Dengue virus is transmitted as only 35% answered the question correctly. Almost 40% indicated that Dengue is not transmitted from human to human. A quarter said they are not aware.

The respondents are not well-informed on the manner by which the Dengue virus is transmitted. 43% claimed that the Dengue virus can be transferred via blood transfusion. 33 % indicated that the Dengue virus is not transmitted through blood transfusion. Less than a quarter of the respondents are not sure . Almost half of the respondents know that Dengue cannot be transmitted via injection. Majority knows that Dengue is not sexually transmitted.

On General Knowledge on Dengue

Most of the respondents know that the dengue mosquito bites in the morning and both morning and evening. Almost the entire respondents know that the dengue mosquito multiply in stagnant water. Majority of the respondents know that putting screen, mosquito nets and insecticide spraying reduce the number of mosquitoes Majority of the respondents know that covering water containers and removing stagnant water reduce the number of mosquitoes. Majority of the respondents know that using mosquito repellants drives away mosquitoes, trimming of well grown plants and pouring chemicals in stagnant water can kill mosquito larvae hence reduce mosquitoes. Also majority believe that fogging can kill mosquito larvae hence decrease dengue outbreaks but that majority is not aware that fogging has harmful effects. Only a quarter says that fogging can produce harmful effects. Only a small percentage indicated that Dengue incidence increases after fogging. Almost half are uncertain. Many are uncertain whether Ovi traps lessen the number of dengue mosquitoes. A factor that should be looked into is whether the people in the community know what an Ovi trap is. Many are uncertain whether Ovi traps lessen the number of dengue cases. Again it may be because the people do not know what an Ovi trap is.

Most of the respondents know that medical attention should be sought for Dengue. The respondents also know that aspirin should not be taken with Dengue. This information is very important as aspirin could contribute to bleeding among patients suffering from Dengue.

Table 1 below shows us the sources of information related to dengue. It can be seen that television is the most significant source of information with regards to dengue. Information is also secured from health workers. Newspaper is the least source of information about dengue. This table also shows that parents do not get information about Dengue from their children.

Table 1 Sources of Information Related to Dengue

	Yes	No	Not aware
TV	96%	4%	0%
Radio	88%	12%	0%
School	84%	12%	4%
Health workers	93%	7%	0%
Mass meetings	71%	29%	0%
Loud speaker	76%	23%	1%
Brochure	72%	28%	0%
Neighbors	63%	37%	0%
Child	52%	48%	0%
Newspaper	44%	56%	0%

Attitude towards Dengue

Majority of the respondents believe that Dengue is dangerous (99%) and a person suffering from Dengue is placed in a perilous condition (95%). However, many believe that dengue can be prevented (97%).

On Practices related to Dengue Prevention

Many respondents practice the following in lessening dengue-causing mosquitoes: using insect spray, asking professional help, putting screen in windows, using mosquito nets, using mosquito coils, removing stored water, trimming bushes and lush areas. Half of the respondents use mosquito-eating fish.

The community respondents said that DOH linked local government programs are exhaustive in their area since it is a hotspot in Metro Manila, Philippines. That explains their generally good knowledge on Dengue, its prevention and management except for their uncertainty of the effectiveness of ovi/larvi trap which must be assessed by the DOH. Sources of information related to Dengue also abound. However, information from children to parents are low at 52% relative to TV at 96%. It is presumed that if children would be able to learn measures to prevent and manage Dengue, other children will learn from them and their own household members will also be informed. The best way to teach children is by making them enjoy the lessons on Dengue. Lecturette-storytelling was employed to inform children from Old Balara Elementary School (Urban Dengue hot spot location) and Jesus the Loving Shepherd College in Camsur (Low Dengue incidence rural location).

From the May 2012 interview with Dr. Antonieta V. Inumerable, Quezon City Health Department Director, she mentioned that massive campaigns to prevent rise in Dengue outbreaks have long been in place in Quezon City and is still continuing. The exhaustive information dissemination to adults showed in the good results from the survey given to Old Balara community. She revealed that there are no specialized information campaign for children which was also reflected in the answers to the survey given. The gap on the lack of information drive among children in Dengue prevention and control then was filled by using lecturette-storytelling teaching strateg. The activity was administered to elementary students in the chosen urban Dengue hot spot community, Old Balara Elementary School. It was also administered to a rural Dengue non-hot spot community in Camsur, Bicol-Jesus the Loving Shepherd College.

By using paired two tailed t-test, it showed that the difference of the means for the pretest of Grades V and VI (am,pm section) of Old Balara Elementary School are extremely statistically significant (Table 2)from the means for the post test. The children got higher scores after employing the lecturette storytelling teaching strategy as opposed to the lecture only teaching strategy from where their pretest knowledge on Dengue came from.

Table 2 T-test result of Grade V Morning Section of OBES

Group	Pre test	Post test
Mean	14.71	17.31
SD	2.19	5.24
SEM	0.25	0.6
N	77	77

t=4.3210
df=76
standard error of difference=0.601
mean pre test and post test difference= -2.60
95% confidence interval of the difference is at -3.79 to -1.40
Two tailed p value is less than 0.0001 thus extremely statistically significant

Table 3 T-test Result of Grade V Afternoon Section of OBES

Group	Pre test	Post test
Mean	15.22	18.47
SD	2.38	3.09
SEM	0.31	0.40
N	59	59

t=9.3202
df=58
standard error of difference=0.349
mean pre test and post test difference= -3.25
95% confidence interval of the difference is at -3.95 to -2.56
Two tailed p value is less than 0.0001 thus extremely statistically significant

Table 4 T-test Result of Grade VI Morning Section OBES

Group	Pre test	Post test
Mean	16.93	20.94
SD	2.00	3.11
SEM	0.22	0.34
N	84	84

t=11.6912
df=83
standard error of difference=0.343
mean pre test and post test difference= -4.01
95% confidence interval of the difference is at -4.69 to -3.33
Two tailed p value is less than 0.0001 thus extremely statistically significant

Table 5 T-test Result of Grade VI Afternoon Section of OBES

Group	Pre test	Post test
Mean	16.38	21.48
SD	2.49	2.25
SEM	0.3	0.27
N	71	71

t=15.0249
df=70
standard error of difference=0.339
mean pre test and post test difference= -5.10
95% confidence interval of the difference is at -5.78 to -4.42

Two tailed p value is less than 0.0001 thus extremely statistically significant

By using paired two tailed t-test, it showed that the difference of the means for the pretest of mixed grade students from Camsur are extremely statistically significant from the means for the post test. The children got higher scores after employing the lecturette storytelling teaching strategy as opposed to the lecture only teaching strategy from where their pretest knowledge on Dengue came from.

Table 6 T=test Result of Mixed Grades (IV to VI) of Camsur

Group	Pre test	Post test
Mean	15.37	19.68
SD	3.18	4.33
SEM	0.5	0.68
N	41	41

t=7.8589
df=40
standard error of difference=0.549
mean pre test and post test difference=-4.32
95% confidence interval of the difference is at -5.43 to -3.21
Two tailed p value is less than 0.0001 thus extremely statistically significant

Based on the gap filling activities it was observed that children in both public and private, Dengue hot spot and non-hotspot understood and recalled the concepts on Dengue, its prevention and control through the lecturette-storytelling strategy than the previous regular school based lecture alone.

Conclusions

Majority of the respondents are well informed regarding Dengue, Dengue prevention and Management. The programs of the DOH and the local community provided essential information to the community residents. A gap on information dissemination to children in the elementary level was identified hence tried to fill up. Lecturette-storytelling teaching strategy showed an extremely significant statistical difference from the pre to the post tests of the students. Hence knowledge on Dengue, its prevention and management was increased with the use of the above mentioned teaching style.

Recommendations

It is recommended that lecturette-storytelling teaching strategy on the prevention of Dengue outbreaks be used continuously in all schools, both public and private, in Quezon City as Metro Manila Dengue hot spot and in other schools in the Philippines. It is suggested to be incorporated in elementary science curriculum as endorsed by the Philippine Department of Education. A follow on survey on the effect of the above said teaching strategy to household knowledge on Dengue will be assessed. The exhaustive DOH program ABKD should be continued with emphasis on the effectiveness of Ovi/Larvi trap.

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APPENDIX A

Questionnaire for Sources of knowledge on Dengue; Sociodemographics, Knowledge, Attitude and Practices on Dengue and its control (subject to Filipino translation)

Sociodemographics

Name
Age
Gender
Status
- Single
- Married
- Divorced
- Widowed
- Common law

Address
Occupation
- Unemployed
- Unskilled/vendor
- Semi skilled
- Skilled
- Professional

Educational Attainment :
- Elementary
- High School
- Vocational
- College
- Post Graduate MS
  PhD

Knowledge on Dengue

Knowledge of symptoms

	Yes	No
Is fever a symptom of dengue		

Is headache a symptom of dengue fever(DF)
Is joint pains a symptom of DF
Is muscle pains a symptom of DF
Is pain behind the eyes a symptom of DF
Is rash a symptom of DF
Is abdominal pains a symptom of DF

Knowledge of transmission

Do flies transmit DF
Do ticks transmit DF
Do all types of mosquitoes transmit DF
Does Aedes mosquito transmit DF
Does person to person contact transmit DF
Can DF be transmitted by blood transfusion
Can DF be transmitted by needle stick
Can DF be transmitted by sexual intercourse

When are Dengue Mosquitoes (DM) likely to bite
- Night
- Day
- Both day and night
- Don't know

	Yes	No
Dont know		
Mosquitoes breed in standing water		
Window screens and bed nets reduce mosquitoes		
Insecticide sprays reduce mosquitoes and thus prevent DF		
Covering water containers reduce mosquitoes		
Removal of standing water can reduce mosquito breeding		
Mosquito repellant prevent mosquitoes		
Cutting down bushes can reduce mosquitoes and dengue		
Pouring chemicals in standing water can kill mosquito larvae		
Use of fogging decrease DM		
Use of fogging decrease DF		
Use of fogging resulted to adverse effects		
Use of fogging resulted to higher incidence of DF		
Use of ovi trap decrease DM		
Use of ovi trap decrease DF		
Use of ovi trap resulted to higher incidence of DF		

	Yes	No
Don't know		

Knowledge on Management

Would you take aspirin for DF
Would you get plenty of rest for DF
Would you drink plenty of water for DF
Is there a treatment for DF
Would you consult a physician for DF

Sources of knowledge

	Yes	No
TV		
Radio		
School		
Health workers		
Mass meetings		
Loud speaker		
Brochure		
Neighbors		
Child		
Newspaper		

Attitude towards dengue

	Strongly agree	Agree	Disagree	Strongly Disagree	Not sure
Dengue is a serious illness					
You are at risk of getting dengue					
DF can be prevented					

Preventive practices against dengue

	Yes	No
Preventing mosquito –man practice		
Use insecticide sprays to reduce mosquitoes		
Use professional pest control will reduce mosquitoes		
Use screen windows to reduce mosquitoes		
Use bed nets to reduce mosquitoes		
Use mosquito-eating fish to reduce mosquitoes		
Use mosquito coils to reduce mosquitoes		
Eliminate standing water around the house to reduce mosquitoes		
Cut down bushes in the yard to reduce mosquitoes		
Does nothing to reduse mosquitoes		

	Always	Often	Sometimes	Never
Eliminating mosquito breeding sites				
Covered water containers in the home				
Frequency of cleaning water filled containers around the house				
Frequency of cleaning water filled ditches around the house				

(Shuaib, F et al, 2010).

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