Assessing the Knowledge, Awareness, and Preventive Measures towards Dengue in a selected Barangay in Laguna

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ABSTRACT

Dengue is a life-threatening, mosquito-borne disease that can be obtained through a bite of an infected Aedes species which can lead to fatality if severed. It happens to more than 100 countries but mostly to areas that are tropical and subtropical like Philippines. WHO acclaims the best prevention for the endemicity of dengue is the provision of knowledge, awareness, and preventive measures. However, dengue incidence is still escalating even with continuous efforts of inhibiting the manifestation of the said viral infection. The study focused on the aims of assessing the knowledge, identifying the level of awareness and preventive measures used of residents in a selected barangay in Laguna about dengue, and knowing the association of knowledge, awareness, and preventive measures with one another. The researchers used the descriptive approach research design as it is for describing characteristics of a phenomenon as it is occurring. The sample of 30 respondents are selected by using simple random sampling to resolve the objectives of the study. The data collection tool used is a structured questionnaire that encompassed the knowledge test and Likert scales. Significant relationships between the factors are calculated by using Spearman rho test while descriptive statistics in the presentation of frequency and percentage as well as the mean score are used for the results of knowledge test. The results obtained has an interpretation from the knowledge test of averagely "Knowledgeable" with a composite mean of 6.5, the level of awareness attained is averagely "Aware" with a composite mean of 3.13, and the most preventive measure used by respondents are the use of mosquito nets, followed with use of mosquito repellant and closing of container lid. In addition, the factors had a significant relationship with one another. In conclusion, most of the study population had an average knowledge about dengue while some does not possess that kind of knowledge and awareness of the said disease. Therefore, these groups need special attention in future health education programs since the study ensued that having knowledge and awareness results to better preventive practice, thus results to inhibition of the high risk for Dengue.

Keywords: Dengue, knowledge, awareness, preventive measures

INTRODUCTION

Dengue is a mosquito-borne viral infection that causes life-threatening flu-like illness and sometimes causes possibly fatal complication called severe dengue. According to CDC, dengue viruses are spread to people through the bite of an infected Aedes species (Ae. aegypti or Ae. albopictus) mosquito. It is a fast-emerging pandemicprone viral disease in many parts of the world such as Asian and Latin American countries causing hospitalizations and death among children and adults today. Dengue prospers in areas like urban poor, suburbs, and the countryside but it also affects more on the rich neighborhoods in tropical and subtropical countries. According to World Health Organization (2019), dengue incidence has increased 30-fold over the last 50 years. Now, up to 50-100 million infections are estimated to annually occur in over 100 endemic countries, putting half of the world's population at risk.

Though debates regarding awareness of people regarding dengue fever continue to concern researchers, more recent academic studies have shown apprehension about accessing the knowledge of people regarding the causes, signs and symptoms, mode of transmission and preventive measures of dengue. Several reports recommend that better knowledge of dengue leads to better prevention techniques adopted by people to inhibit dengue. In the study of Begonia, et al. (2013), 61.45 percent people had good knowledge

about causes and preventive measures regarding dengue. More than half of the respondents used dengue preventive measures such as fans, mosquito coil, and bed nets to avoid mosquitoes while only about one third utilized insecticides sprays, screen windows and a little portion used professional pest control.

Despite of the magnitude of the problem, dengue fever is a preventable disease and prevention can be carried out by eliminating inhabitant mosquitoes, having vulnerable individuals' vaccination, and getting regular health education specially during outbreaks. Many literature studies are conducted to evaluate the impact of healthcare education on dengue fever prevention, and many researchers studied the population awareness and attitudes about the disease. Knowledge and awareness varied among different studies, and some factors are reported to influence this knowledge such as gender, socioeconomic status, level of education, and computer literacy. Despite the severity and fatality of the dengue fever and its heavy endemicity among multiple factors, knowledge about the disease seems to be poor in general. More than half of the world populations are vulnerable candidates for dengue virus infection, and therefore major efforts had been exerted to improve the knowledge and understanding about the disease worldwide. A large proportion of population either adopted insufficient measures for prevention of mosquito bite or did not try to actively prevent the disease. Mosquito vaporizers, coils, and nets are the most common preventive methods used among different studies. Few participants understood that mosquito elimination is more effective, and fewer reported that they do change or get rid of stagnant water that constitutes a rich environment for vector breeding. Television, internet, friends, neighbors, and relatives are the most common sources of information about dengue fever reported in most of the reviewed studies. It is evident that it is an urgent necessity for public healthcare organizations to improve public awareness about dengue fever through television, internet, radio, medical programs, and school and college health education sessions.

Review of Literature

Knowledge about Dengue

The government in the Philippines continues to give extensive campaign regarding awareness and knowledge about dengue however the problems faced are the residents in the community still do not have greater access to the accurate information. It is known that in areas are the disease is mostly happening, public education is given to the students regarding the knowledge about disease like dengue, the vectors and how it will be transmitted. Due to this, the intersectoral coordination meetings should be conducted to identify possible partners for public education dengue control campaigns to help finance and add or correct the information taught in the program/activities (Yboa, 2019).

According to a study in Malaysia regarding to the comparison of the people living in hot spot and non-hot spot areas, those who are with low education or knowledge, and low socioeconomic status tend to have a poor practice in prevention. Due to this result of an investigation, the campaigns should be given or focused to those people with lower education and awareness.

One of the information acquired is in the community of Puducherry, India where a high percentage of the neighbors thought the Aedes breed of mosquitos are happening garbage instead of water which is alarming due to the lack of education to this people and should be given a prioritized action. The knowledge these people get may put themselves into their own harm too. Thus, before the case gets worse, programs or activities should be done by the health personnel and village health volunteers to help these people who are deficient with the idea. Also, with lack of education, preventive measures like covering water containers with lids, change water containers weekly, use of fish to eat larvae, and changing water in small vases and potted plants may not be given notice by the people living in the said community which could make them be more at risk than they are now.

However, another difficulty that is still encountered by countries like Philippines is that people, regardless of their level of knowledge or education, relies to the government for preventing the dengue instead of making the preventive measures themselves. A good local government and community partnerships help to promote successful dengue prevention, which leads to lower household risk behavior,

reduced environmental risk, and effects on mosquito numbers. The government may continue to keep their job to continue informing the people about the ideas of dengue but the prevention still under the practices of the people.

Proven by the study of Affendi, the knowledge is highly related with dengue preventive activity; given that people have strong self-efficacy. The study shows that to ensure successful preventive dengue programs, it is important to give knowledge and influence the efficacy of people while giving health education (Nurul Akmar Ghani, 2019). Dengue can cause life-threatening illness but if control measures are followed, it can be prevented easily. The dengue control success mostly depends on the adequate knowledge and good preventive measure activities of the aimed population. One possible effective approach to prevent the said infection is involving the community in educational campaigns and mass media. It is said that mosquitoes are effectively reduced in breeding sites through giving the community education, rather than just using of insecticide sprays.

Awareness on Dengue

According to WHO (2019), Dengue fever is a deadly viral infection. In the Philippines, there are already 720 deaths for the past few months. During the week 30 of the year 2019, there are reportedly a total of 12,880 dengue cases nationwide. On July 27, 2019, the cumulative number of cases is 167,607 with 720 deaths, this turns to be higher compared to the same period in 2018 with 85,011 cases, 464 deaths. There is an estimate of 50-100 million cases of affected with dengue fever and there are approximately 0.5 million cases of affected with hemorrhagic dengue fever. In 112 countries especially at Asia, dengue fever is endemic. Given that the said countries are populated by more than half of the population of the world, it shows that at least half of the world population are at risk for having either dengue fever or hemorrhagic dengue fever which carries significant morbidity and mortality. Dengue fever is a mosquito-borne viral infection caused by the dengue virus and its symptoms are headache, high fever, myalgia, joint pain, vomiting, and characteristic skin rash which occurred after an incubation period of few days or weeks after the mosquito bite.

The condition is mild or even asymptomatic and can completely recover within a week in most cases (85%). However, there is a small portion of cases, about 5%, that develops to a life-threatening phase wherein there is a plasma leakage across the blood vessel wall resulting to shock and hypotension, or intense fatal bleeding takes place. Each year there are 10,000 to 20,000 patients that die with dengue shock syndrome and dengue hemorrhagic fever. Inspite of the magnitude of the problem, dengue fever is a preventable disease and prevention can be carried out by eliminating inhabitant mosquitoes, having vulnerable individuals' vaccination, and getting regular health education particularly during outbreaks. (Almuhanna, 2018). Dengue fever, in its recent cases, became a global public health concern due to the sudden surge of the disease in hot spot or tropical countries. According to the World Health Organization, dengue fever in its severest form is a leading cause of serious illness and death among children in some Asian and Latin American countries - is endemic in more than 100 countries. It had cases that flow from 50-500,000 worldwide with 1.8 billion or higher than 70 percent is in greater risk due to the region the people belong to. Emergence of dengue could be the result of growing levels of urbanization, international trade and travel which disseminate both vector and viruses (Egger et al., 2013).

In the Philippines, the case of Dengue is no less severe than how it is being portrayed worldwide. In fact, the first confirmed epidemic of dengue fever is recorded in the Philippines in 1953-1954 (Yboa et al., 2013). Due to this happening, various ways have been made to control the incidence of the disease. However, the cases of dengue are continuing to increase as years pass by and are mostly evident during this year 2019 especially with the announcement of national dengue epidemic last august 6. As of October 2019, the World Health Organization reports a total of 322,693 dengue cases, including 1,272 deaths, reported from 1 January to 21 September 2019 which is 115% higher than in 2018. However, the weekly case fatality rate or CFR shows a lower rate than in the same period as of last year 2018 with 0.45 to 0.17% today. The said organization continue to advice an extensive community educational campaigns that emphasize reducing vector breeding sites as an effective way of dengue prevention. This recommendation is supported

by various research showing that American Journal of Public Health Research 48 community education can be more effective in reducing dengue vector breeding sites than chemicals alone (Yboa et al., 2013). The idea of high proportions of knowledge comes with high regards to preventive practices is still a common premise which gives logic. Thus, even with the possibility that it could turn the other way around, the persistence of giving education to the public is still given since this could be a starting point to preventing the disease.

Preventive Measures to Dengue

People living in hot spots have made ways how to prevent the occurrence of the disease. Primary prevention which includes use of mosquito repellents, mosquito bed nets, mosquito coils, protective clothing and regularly removing sources of stagnant water to prevent mosquito breeding is suggested as the most effective measure in dengue prevention and control (Atefi et al., 2015). In tropical countries, the said means are very frequent since it is where Dengue mostly occurs due to the nature of the Aedes mosquitoes.

In Malaysia, the use of volume fogging or spraying of chemical insecticides is used if the incidence of dengue outbreak has been reported. However, the City Council in the said country believes that the effectiveness of the prevention relies on the education of the community itself regarding dengue. The public should have an awareness and knowledge on the prevention of dengue by means of being instructed on improving the environmental sanitation, water reserves, and modifying of the behavior of the public thru Communication for Behavioral Impact (COMBI). (Wong et al., 2015). Knowledge and awareness factors are also associated with prevention against dengue (Abubakar et al., 2015). It has been conveyed that individual with higher knowledge or awareness knows more regarding prevention of a disease, specifically Dengue. This shows a direct proportion when it comes to the relationship between the factors and preventive measures. However, this does not always happen. Evidence regarding the contrast of the statement is existent which means that having knowledge or awareness does not always end to having practice of preventive means. This instance happens to Philippines in which despite the extensive campaigns made by the government regarding the prevention of dengue, the statistics in morbidity rate continue to increase. Living conditions are also factors that could impact the practice of preventive measures. An area with homes that are densely populated with low escalation and clustered houses allows the transmission of the infection by mosquitoes. Researchers in Brazil showed that a high population density of low socioeconomic status, insufficient garbage collection and water supply provide ideal conditions for mosquito proliferation, especially Aedes aegypti (Shakir et al., 2015). According to various studies, dengue outbreaks mostly occur in areas with high mosquito density. It has been noticed that mosquito density is a factor for practicing the avoidance of dengue. Countries like Papua New Guinea and Africa tend to use mosquito nets, coils, and sprays instead of preventing the disease. There is no current vaccine for Dengue or is still under further investigation which is the reason why prevention is a very important step next to avert the disease from happening as of now.

Conceptual Framework

The diagram shows the main components of the research namely: awareness, knowledge, and preventive measures. The significant relationship between the following factors will be determined further for the purpose of research outcome with the use of questionnaire as an instrument.
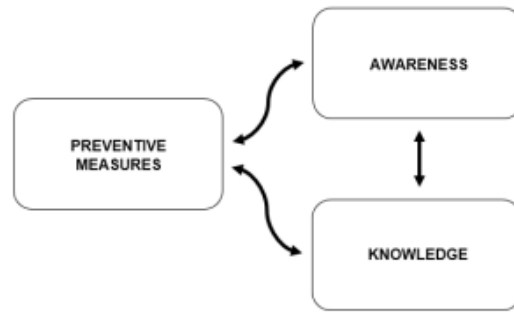
Figure 1. Conceptual Framework of the Study

Objectives of the Study

This study aims to assess the knowledge, awareness, and preventive measures towards dengue in a selected barangay in Laguna. It also explores in the relationship between the variables.

METHODOLOGY

The researchers utilized the descriptive approach of conducting research to determine the knowledge, awareness, and preventive measures used by the respondents in relation to Dengue. The respondents of this study are 30 selected residents Laguna. They are chosen through simple random sample. Sampling is a process used in statistics used to describe pre-defined representative amount of data from a larger data population. For the purposes of this research, structured questionnaire is utilized. It comprises four (4) sections, each are covering the demographic profile, knowledge, awareness, and the preventive practices respondents use. The first part included questions regarding demographic data, such as gender, age, and occupation. The second part included ten (10) statements regarding respondents' knowledge on cause, signs and symptoms, transmission, and prevention of dengue. The single-answer multiple choice is utilized. The third part involved five (5) statements that measured the respondents' level of awareness on dengue. The fourth part involved ten (10) questions that is about the respondents' preventive practices on dengue. Five (5) point scale: 5-Always, 4-Often, 3-Sometimes, 2-Seldom, 1-Never is used for the response of both third and fourth part. The questionnaires are personally given to the participants and immediately gathered after completing them. The researchers of the study used weighted mean as the formula and treatment of the gathered data for determining the knowledge, awareness and preventive measures collected from the chosen participants. With the use of Statistical Package for the Social Sciences (SPSS) Program version 22.0, descriptive statistics is conducted to determine the respondents' measurement of knowledge using the questions in examination type. Then, the researchers will obtain its frequencies and percentages. The Likert scale is the instrument for getting the level of the respondent's awareness and preventive measures towards dengue. Spearman rho is the method to obtain the objectives of the study regarding the correlation between variables.

RESULTS AND DISCUSSIONS

Table 1 shows the mean score of the knowledge test based on the demographics. 6.5 are the average score for the knowledge test and it is in the range of 1.8 people out of 30.

Table 1. Knowledge of the respondents towards dengue

	Mean Score	Std. Deviation
	6.5	1.8708

Table 2 shows that only 4 (13.3%) of the subjects are not knowledgeable about dengue. However, 13 (43.3%) of the population are knowledgeable and the rest (i.e., 13 or 43.3%) of the subjects are highly knowledgeable. The results are based on the score of each respondent and not on speculation and should therefore be reliable. It is also interesting to note the high number of subjects who participated is mainly students. The results show that the respondents are generally knowledgeable about dengue.

Sources of information played a significant role in providing knowledge to people in the community (Sayavong, et al., 2015). The said sources must be reliable and effective for the betterment of the validity of the information. With the Barangay chosen for this study, numerous schools are placed. This could be a reason to why most of the respondents obtained are students. Those participants stated that most of the information is provided in learning institutions while elder people acquired knowledge from several seminars about dengue.

Table 2. Interpretation of knowledge level test results

	Frequency	Percentage
Not knowledgeable	4	13.30
Knowledgeable	13	43.30
Highly Knowledgeable	13	43.30
Total	30	100

Table 3 shows the respondent's weighted mean for participation in any dengue campaign is 2.57 (sometimes); involvement in any health promotion activities on dengue within the last 14 days, 2.40 (seldom); received information on dengue within last 14 days, 3.33 (sometimes); engagement in dengue prevention activities after encountering the health information and promotion on dengue within the last 14 days, 2.87 (sometimes); and often exposed to dengue information, 3.57 (often). The results showed that in overall, awareness in dengue is sometimes consistent for those who have resources of information at hand.

Table 3. Awareness in dengue

	Weighted Mean	Verbal Interpretation
Have you participated in any dengue campaign in your area?	2.57	Sometimes
Have you get involved in health promotion activities on dengue within the last 14 days?	2.40	Seldom
Have you received information on dengue within the last 14 days?	3.33	Sometimes
Have you been engaged in dengue prevention activities on your own after encountering the health information and promotion on dengue within the last 14 days?	2.87	Sometimes
How often are you exposed to dengue information?	3.57	Often
Composite Mean	3.13	Sometimes

Legend: 1.00-1.49 Never; 1.50-2.49 Seldom; 2.50-3.49 Sometimes; 3.50-4.49 Often; 4.50-5.49 Always

Table 4 shows that 9 (30%) of the respondents are not aware of dengue. On the other hand, 8 (26.67%) of the subjects are aware and the remaining 13 (43.33%) are very aware about dengue. Results are based on the average of the answers of each respondent on the awareness level test. In general, the results present that the participants are aware of dengue.

Table 4. Interpretation of awareness level test results

	Frequency	Percentage
Not aware	9	30.00
Aware	8	26.67
Highly Aware	13	43.33
Total	30	100

Though majority heard about dengue, some people do not follow any method of mosquito bite prevention practices. Community awareness is a key role in improvising dengue prevention practices (Chellaiyan, et al., 2017). Acquiring the information given by the resources must be reflected upon the spontaneous methods with the cooperation of the locale itself.

Table 5 shows that respondents weighted mean for closing every and any container lid they'll see or after using it and changing water containers at home every week is 3.40 (sometimes), checking for Aedes Larva in vase and using fan is 2.70 (sometimes), checking for any garbage/rubbish that can block the drainage system around the house and putting it into its bin to clear the drain is 3.23 (sometimes), using mosquito repellent is 3.80 (often), using widow screens or mosquito nets is3.97 (often), cutting down bushes in the yard is 2.43 (seldom), checking and cleaning the house drain and roof during the rainy seasons is 3.30 (sometimes) and using any cream/oil/gel/bangle is 2.73 (sometimes) which overall presents a composite mean of 3.27 (sometimes) that most of respondents practice these preventive measures sometimes.

Table 5. Preventive measures used towards dengue

	Weighted Mean	Verbal Interpretation
Do you close every container lid you see or use quickly after using it?	3.40	Sometimes
Do you change the water in every container at your home every week?	3.40	Sometimes
Have you checked for Aedes larvae in your vase?	2.70	Sometimes
Do you check for any garbage/rubbish that can block the drainage system around your house? If yes, have you put the garbage into its bin to clear the drain?	3.23	Sometimes
Do you use any mosquito repellent in your house?	3.80	Often
Do you use window screens and/or mosquito nets?	3.97	Often
Do you cut down bushes in the yard to reduce mosquitoes?	2.43	Seldom
Do you check and clean your house drain and roof during the rainy season?	3.30	Sometimes
Do you use any cream/oil/gel/bangle to avoid Aedes mosquitoes?	2.73	Sometimes
Do you use fan to reduce mosquitoes?	2.70	Sometimes
Composite Mean	3.27	Sometimes

Legend: 1.00-1.49 Never; 1.50-2.49 Seldom; 2.50-3.49 Sometimes; 3.50-4.49 Often; 4.50-5.49 Always

Relationship amongst practices and participation of individuals for dengue control shows that dengue trajectories can be manipulate through community self-effort (Spiegel et al. 2012) while the major breeding sites of Aedes mosquitoes are bath basins and water containers, insecticides also became most

used strategy (Araújo et al., 2015) are results acquired from another study. The same with this study, data about water containers and other practices are used which are accurate in helping each individual and community to reduce mosquitoes and prevent dengue.

The Spearman's Rho test is utilized to know the relationship between two variables. This test only explains whether there is a significant relationship or not between the knowledge, level of awareness, and preventive measures the selected residents and state how strong the relationship. Significant level utilized is the confidence level of P≤0.05 as reflected in Table 6.

Relationship between knowledge and awareness, knowledge and preventive measures, awareness and preventive measures are analyzed. The result showed that there is significant relationship between all factors, but it is not that strong. Based on the Rule of Thumb, coefficient correlations guidelines, the strength of the relationships shows a moderately strong interpretation [r=0.421, sig=0.021; r=0.457, sig=0.011; r=0.424, sig=0.019]. With a positive correlation, this then shows a significant interpretation to the p-value as it is also within the range of the said category.

According to Aminrad, Z., et. al (2013), there is an assumption that people who become more knowledgeable tend to become more aware too, therefore making them act more responsibly. Many factors are reported to be associated with good knowledge such as the level of education and the computer literacy (Almuhanna, R., et. al, 2018). In an environmental study of Kuppusamy, S. and Mari, T. S. (2017), it is observed that students' knowledge is influenced by their immediate involvements and by the content of books they use, making them sensitive of the environment. The study shows that increases in environmental awareness are correlated with increases in environmental knowledge. The said study relates to this research as the knowledge of people towards dengue turns to be influenced by their community involvement and exposure to dengue information through different media, which results to being well-informed of dengue disease within the community. This proves that knowledge and awareness do have significant relationship.

People who had good knowledge of dengue vector control measure are times more likely to exhibit good overall preventive measures regarding dengue control measures. (Sayavong, et al., 2015). It is a matter of fact that knowledge and preventive measures to be inclined with one another. It could be difficult to do a certain action without adequate knowledge about the thing being avoided. However, due to different status of every individual, the idea of slimming the gap remains a challenge for all. There should be enough ways to keep the information disseminate especially with the modern technology provided in this era.

Table 6. Relationship between the factors

	Rho-value	p-value	Interpretation
Knowledge vs. Awareness	0.421	0.021	Significant
Knowledge vs. Preventive Measures	4.57	0.011	Significant
Awareness vs. Preventive Measures	0.424	0.019	Significant

Students with knowledge of the disease more frequently reported the use of preventive measures in this study indicating that educational programmes are main tool in dengue prevention at least if an effective vaccine is not present. (Abbasi, et al., 2016) Even simple programmes could help people acquire information. Prevention is a good way to defend oneself from certain disease like dengue and it could be acquired with enough information. Study confirmed that increased knowledge and use of prevention measures decrease the risk of dengue infection (Abbasi, et al., 2016).

The same with the importance of knowledge to preventive measures, awareness seems to be also significant for the actions needed. Information from trimedia and from health centers also enhances the awareness of other preventive measures to the community (Abiva, et. Al, 2012). As stated earlier, media plays a very vital role nowadays. With the media being a tool to make people aware then acquire knowledge, it could result to an appropriate preventive measure to be done. Having enough knowledge but inability to be aware of the current situation about it could still end up to the occurrence of the disease. Being aware is essential to initiate the practice of preventing dengue.

CONCLUSIONS

The interpretation from the knowledge test shows an equal percentage for "Highly knowledgeable" and "Knowledgeable". Though, with the mean score of 6.5 acquired from the said test, this shows that the participants are averagely "Knowledgeable" about dengue. The awareness of the respondents falls under the category of "Sometimes", with a high percentage for the exposure to the dengue information for the last 14 days. The interpretation from the level of awareness test shows that respondents are averagely "Aware" of dengue basing on the composite mean of 3.13 from the said test but most of the respondents falls from the category of "Very Aware". Lastly, the used preventive measures show the same category with awareness, "Sometimes". The use of mosquito nets or screens had the highest percentage for the provided preventive practices, followed with the use of mosquito repellant, closing of container lid after using, and changing of water in every container every week.

According to the results gathered from the data, the researchers concluded that there is a significant relationship and positive correlation between the three correlated factors used in the study namely: knowledge and awareness, knowledge and preventive measures, and awareness and preventive measures.

Recommendations

Based on the findings, improvement of health promotion activities on dengue within the community is recommended. Seminars against dengue that will explain the history and the transmission of the virus and implementation of clean up drive every month can also be considered. Furthermore, it is recommended that the activation of local leadership with active participation of the barangay officials for initiation of preventive strategies, emphasizing the importance of seeking medical attention when one individual shows dengue symptom can be looked into.

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