

Community Participation in the Prevention and Control of Dengue Fever in Candon City, Ilocos Sur

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ABSTRACT

This quantitative descriptive study determined the extent of community participation on the prevention and control of dengue fever in Candon City, Ilocos Sur. It involved 80 barangay officials as raters from ten selected barangays of Candon City namely Calongbuyan, Patpata, Primero, Caterman, Darapidap, Oaig-daya, Ayudante, Balingaoan, San Jose, Tablac, and Tamurong Segundo.

Based on the thorough review and analyses, most of the respondents are adults, male, Catholic, married, college level, barangay councilors and are serving as public official for a long time. Barangays seldom participate in the dengue prevention and control in the community along measures and education on prevention strategies. Whether barangays are grouped according to their distance from CHO, barangays seldom participate in the dengue prevention and control in the community along measures and education on prevention strategies.

The researchers recommend the use of the Action Plan by the barangay officials to increase the community participation of their barangays in the prevention and control of Dengue. The Local Government Units to monitor and evaluate the roles of barangay officials in terms of the health of the community. The Rural Health Units to conduct trainings/workshops on prevention control of emerging infections/diseases in the community among its residents. Other studies should be conducted to further evaluate other variables related in the community participation of barangays in the prevention and control of certain diseases/infections.

INTRODUCTION

Dengue is a mosquito-borne viral disease that has rapidly spread to all regions of World Health Organization (WHO) in recent years. Dengue virus is transmitted by female mosquitoes mainly of the species *Aedes aegypti* and, to a lesser extent, *Ae. albopictus*. These mosquitoes are also vectors of chikungunya, yellow fever and Zika viruses. Dengue is widespread throughout the tropics, with local variations in risk influenced by climate parameters as well as social and environmental factors.

Dengue causes a wide spectrum of disease. This can range from sub-clinical disease (people may not know they are even infected) to severe flu-like symptoms in those infected. Although less common, some people develop severe dengue, which can be any number of complications associated with severe bleeding, organ impairment and/or plasma leakage. Severe dengue has a higher risk of death when not managed appropriately. Severe dengue was first recognized in the 1950s during dengue epidemics in the Philippines and Thailand.

Today, severe dengue affects most Asian and Latin American countries and has become a leading cause of hospitalization and death among children and adults in these regions (World Health Organization, 2022).

In addition, dengue is caused by a virus of the Flaviviridae family and there are four distinct, but closely related, serotypes of the virus that cause dengue (DENV-1, DENV-2, DENV-3 and DENV-4). Recovery from infection is believed to provide lifelong immunity against that serotype. However, cross-immunity to the other serotypes after recovery is only partial, and temporary. Subsequent infections (secondary infection) by other serotypes increase the risk of developing severe dengue.

Dengue has distinct epidemiological patterns, associated with the four serotypes of the virus. These can co-circulate within a region, and indeed many countries are hyper-endemic for all four serotypes. Dengue has an alarming impact on both human health and the global and national economies. DENV is frequently transported from one place to another by infected travellers; when susceptible vectors are present in these new areas, there is the potential for local transmission to be established.

The incidence of dengue has grown dramatically around the world in recent decades. A vast majority of cases are asymptomatic or mild and self-managed, and hence the actual numbers of dengue cases are under-reported. Many cases are also misdiagnosed as other febrile illnesses (Waggoner et al., 2016).

The number of dengue cases reported to WHO increased over 8 fold over the last two decades, from 505,430 cases in 2000, to over 2.4 million in 2010, and 5.2 million in 2019. Reported deaths between the year 2000 and 2015 increased from 960 to 4032, affecting mostly younger age group. The total number of cases seemingly decreased during years 2020 and 2021, as well as for reported deaths. However, the data is not yet complete and COVID-19 pandemic might have also hampered case reporting in several countries.

The overall alarming increase in case numbers over the last two decades is partly explained by a change in national practices to record and report dengue to the Ministries of Health, and to the WHO. But it also represents government recognition of the burden, and therefore the pertinence to report dengue disease burden.

Community-based control programs are developed with the aim to educate the community about the measures for the extermination of mosquito breeding sites. People in a community are divided into various groups depending upon their level of education and understanding. The significance of community-based programs for elimination of dengue mosquitoes in Kerala district, Mexico and Cuba has been proven in the form of elevated awareness among the communities. Through community involvement, a variety of techniques can be integrated for maximum control of vector population such as, the combination of community-based program and chemical control of *A. aegypti* have yielded significant results in Cuba (Rather et al. 2017).

In low and lower-middle-income countries, community participation initiatives have been described as ‘critical enablers’ in the response to communicable diseases. Such initiatives may be particularly important in settings where health systems are under-resourced, and the collective capacity of communities becomes a key resource in effecting behaviour change and delivering health outcomes. With regard to health equity, there is also some evidence to suggest community participation may be effective in the prevention and management of communicable disease control (CDC) in marginalized groups. However, community participation is a broad topic, with many different delivery mechanisms and techniques. For example, ‘community participation’, ‘community mobilization’ and ‘community empowerment’ may all be classed under the wider umbrella term of community engagement (Questa, 2020).

Community participation aims at involving people in the community to get the maximum benefit for the whole society. Collective action and decision making is done by taking suggestions from all the stakeholders. Meaningful community participation involves having citizens in the decision making process. Participatory governance is this essential for the bottom up approach and community development. Community engagement results in inclusive planning and overall improvement in the community integration. Community voice when heard and acted upon results in better governance, more employment opportunities, social development, volunteerism and an overall better outcome. Involving individual citizen, young adults and community groups results in desired outcomes, better health of citizens and community inclusion (<https://planningtank.com>).

Community participation tends to be successful in countries having stable and strong political systems. Community based programs involving local authorities to participate in eliminating breeding places of dengue mosquitoes are the only cost effective and sustainable way of ensuring control in any dengue-affected country and countries deficient in resources. Mobilization of community at the level of family, community and national level has been found effective in dengue prevention and control. One such success story is the “Thai National Dengue Prevention and Control Plan” that was helpful in reducing the dengue health impacts on people. Community mobilization, however, requires decentralization of resources and powers and high level of

coordination among all stakeholders. Lack of coordination in line agencies and communities may lead to ineffectiveness of all efforts. Therefore, understanding community daily problems and developing effective coordination for dengue prevention is the need of the day. Evaluative studies on dengue control program found that proper planning and management in water supply, drainage system and discarding broken items, through active involvement of all stakeholders were considered the effective measures for successful dengue control (Claro LB, 2019).

Community participation is vital to prevent and control the spread of dengue in Latin America. Initiatives such as the integrated management strategy for dengue prevention and control (IMS-Dengue) and integrated vector management (IVM) incorporate social mobilization and behavioral change at the community level as part of a wider strategy to control dengue. These strategies aim to improve the efficacy, cost-effectiveness, environmental impact and sustainability of vector control strategies. Community empowerment is a key aspect of the strategy as it allows the local population to drive eradication of the disease in their environment. Through the patio limpio campaign, the concept of community participation has been employed in Mexico to raise awareness of the consequences of dengue. Patio limpio consists of training local people to identify, eliminate, monitor and evaluate vector breeding sites systematically in households under their supervision. A community participation programme in Guerrero State found that approximately 54% were clean and free of breeding sites. Households that were not visited and assessed had a 2-4-times higher risk of developing dengue than those that were. However, after a year, only 30% of trained households had a clean backyard. This emphasizes the need for a sustainable process to encourage individuals to maintain efforts in keeping their environment free of dengue (Tanya-Conyer et al. , 2019).

In Lampung Province which is one of the provinces in Indonesia with an incidence rate of 74.86/100,000 population and a case fatality rate of 0.42%, lack of community participation in the activity of eradicating mosquito nests is one of the factors that make the spread of dengue virus easier and wider. Community involvement in eradicating dengue is an important contribution and needs to be fostered to consciously live in a clean environment so as to prevent the proliferation of dengue fever vectors. Utilizing social capital bonding in rural areas as well as in urban areas is an attachment that makes it easy for them to empower, action and learning, both in urban and rural areas by linking the prevention of dengue fever with social bonding capital making it easier to increase bridging social capital for cooperation in the economic field so that it can be sustainable toward a healthy life (Farich et al. 2020).

Susceptibility to dengue fever remains high among farmers, children, and those with houses situated near gardens. The susceptibility increases with unawareness of dengue breeding sites, symptoms and cure. Dengue prevention, however, is possible through strong coordination and community participation in high dengue sites communities. The teamwork between community people and private/public agencies at the house old and community level were the effective techniques for dengue prevention (Khun, 2018).

The dengue fever situation in the Philippines in 2022, country health authorities report 160,594 cumulative cases through September 10, a 189 percent increase over the number of cases reported during the same period in 2021 (55,650). Central Luzon accounts for 20 percent of the cases nationally with 31,730. This is followed by the National Capital Region, which includes the city of Manila with 16,413 cases, and the Central Visayas, which includes Cebu, with 13,740 cases. Health officials also report that dengue-related fatalities have risen to 507 total. The Central Visayas has reported the most deaths with 84, followed by Central Luzon with 71 (<http://outbreaknewstoday.com>).

Dengue cases in the Ilocos region from January to July 5, 2022 reached 1,198, the latest data from the regional Department of Health (DOH) showed. At least 583 of the cases were traced to Pangasinan, followed by Ilocos Sur (248), Ilocos Norte (235), La Union (99), and Dagupan City (33). At least six patients were reported to have succumbed from the mosquito-borne infection, with two each in Ilocos Sur and La Union and one each in Ilocos Norte and Dagupan City. The regional DOH issued a warning to residents to not be “complacent” and to observe strict health protocols to curb the rise in dengue cases. The health agency renewed its call to the public to follow the enhanced 4-S strategy, which included searching and destroying of mosquito breeding places, self-protection, seeking early consultation, and saying no to indiscriminate fogging (<https://newsinfo.inquirer.net>).

According to WHO, dengue prevention and control depends on effective vector control measures. Sustained community involvement can improve vector control efforts substantially. On the other hand, The Department of Health (DOH) reminded the public to practice the 4-S campaign against dengue. Dengue, now a year-round disease, is an acute viral infection that affects mostly young children and infants. The Enhanced 4-S campaign stands for Search and destroy mosquito-breeding sites, secure Self-protection measures like wearing long pants and long sleeved shirts and daily use of mosquito repellent, Seek early consultation, and Support fogging/spraying only in hot spot areas where increase in cases is registered for two consecutive weeks to prevent an impending outbreak (DOH, 2022).

The Local Government Code of the Philippines Book III stipulates that as the basic political unit, the Barangay serves as the primary planning and implementing unit of government policies, plans, programs, projects, and activities in the community, and as a forum wherein the collective views of the people may be expressed, crystallized and considered, and where disputes may be amicably settled. Therefore, consistent with rules and guidelines issued by the Department of Health regarding the control and prevention of dengue, they are mandated to engage the participation of all households, and the public and private sector in the drive to abate the number of dengue cases; conduct information and education campaigns on the prevention and control of dengue; provide technical and logistical support; institutionalize an effective recording and reporting system for vector control and surveillance information; coordinate with government and private medical institutions relative to adoption of hospital-based surveillance system for suspected dengue cases; and perform other functions as it may deem necessary in the control, prevention and elimination of dengue.

Candon City, Ilocos Sur's programs in the prevention and control of dengue includes the establishment of good governance practices and management system in support to dengue prevention and control; generate and utilize quality and timely information for PDPCP policy direction, planning, implementation and management; expand and sustain the provision of quality diagnostic and treatment services; promote behavior change among communities towards practice of early consults and responsive personal and environmental vector prevention practices; operationalize area stratified integrated vector management; institutionalize mechanism to ensure PDPCP protocol compliant LGUs; support financing schemes to reduce out-of-pocket expenses for dengue especially among the poor; strengthen advocacy and mobilization of support and involvement of all concerned partners at various levels.

Despite the efforts of the City Health Office (CHO) of Candon City, Ilocos Sur, according to the Provincial Health Office (PHO) of Ilocos Sur, from January to December 2022, there were 103 total cases of dengue in which there were 2 deaths. Among its top 10 barangays with the highest number of dengue cases are Calongbuyan (12); Patpata Primero (11); Caterman (10); Darapidap (6); Oaig-daya (5); Ayudante (4); Balingaoan (4); San Jose (4); Tablac (4); and Tamurong Segundo (3).

With these, the researchers who are advocates of health were prompted to conduct a study on the community participation of the barangay in the prevention and control of Dengue Fever among residents in Candon City, Ilocos Sur.

METHODOLOGY

This study utilized the descriptive cross-sectional design to determine the extent of community participation in the prevention and control of Dengue Fever.

According to Calmorin (2016), descriptive research involves the description, recording, analysis and interpretation of the present nature, composition, or process of phenomena. The focus is on the prevailing conditions, on how a person, group, or thing behaves or functions at the time of the study. On the other hand, A cross-sectional study is a type of observational study that describes data gathered from a given population at a designated point in time. Cross-sectional research studies are a type of descriptive research that provides information from groups. Because it is a snapshot of a moment in time, this type of research cannot be used to define cause and effect relationships between variables. Additionally, researchers in cross-sectional studies do not influence the variables of the study but merely observe them.

The study is descriptive as it determined the demographic profile of the respondents and the extent of community participation of the barangays in the prevention and control of dengue. While, the study is cross-sectional as it determined the significant difference in the extent of community participation of the barangays in the prevention and control of dengue when grouped according to their distance from the City Health Office.

The study was conducted in Candon City, Ilocos Sur among its top 10 barangays with the highest number of dengue cases as seen in Figure 5. According to the Provincial Health Office (PHO) of Ilocos Sur, from January to December 2022, there were 103 total cases of dengue in which there were 2 deaths. From the cases, Calongbuyan (12); Patpata Primero (11); Caterman (10); Darapidap (6); Oaig-daya (5); Ayudante (4); Balingaoan (4); San Jose (4); Tablac (4); and Tamurong Segundo (3).

This study utilized the total population sampling. With total population sampling a researcher chooses to examine the entire population that has one or more shared characteristics. This kind of purposive sampling technique is commonly used to generate reviews of events or experiences, which is to say, it is common to studies of particular groups within larger populations.

The respondents of the study were equally distributed across ten barangays, with each barangay contributing eight participants, resulting in a total of 80 respondents. The barangays included Calongbuyan, Patpata Primero, Caterman, Darapidap, Oaig-daya, Ayudante, Balingaoan, San Jose, Tablac, and Tamurong Segundo. This equal representation ensured a balanced and fair sampling across different communities, allowing for a comprehensive assessment of community participation in the prevention and control of Dengue Fever.

The researcher based his instrument on the study entitled "Community-based Approach for Dengue Prevention and Control in Sta. Cruz, Laguna, Philippines" by Carandang et al. (2015), other articles and readings of the researcher related to the prevention and control of Dengue Fever.

The questionnaire is composed of 2 parts. The first part dwells on the demographic profile of the respondents while the second part presents the extent of community of participation of the barangay in the prevention and control of dengue fever.

The researcher secured permission from the Dean of the Graduate School to conduct the study. Then the permission from the barangay captains was secured through a letter of request to conduct the survey. The study involved barangays officials who were willing to participate. The respondents served as raters on the extent of their barangay did they participate in the prevention and control of dengue. After the respondents answered the survey questionnaire, researcher gathered the survey questionnaires from the barangay officials. The data were tallied and subjected to appropriate statistical treatments.

The developed questionnaire was given to five experts for validation. There were 1 research expert; 1 licensed physician; 1 registered nurse; 1 registered medical technologist; and 1 sanitary inspector. The result of the validation yielded 4.72 which means its highly valid.

This study upheld key ethical principles, ensuring participants' safety, dignity, and rights throughout the research process. It followed non-maleficence by avoiding any harm or threat to participants and upheld benevolence by aiming to assess community involvement in Dengue Fever prevention. Respect for autonomy was maintained through informed and voluntary consent, while justice was ensured by fair and equal participant selection. Confidentiality and privacy were strictly observed to protect respondents from judgment or misunderstanding. Additionally, the researcher properly cited all referenced works and securely handled collected data.

To ensure the accuracy and validity of the results, appropriate statistical tools were employed in this study. Percentage was used to analyze the demographic profile of the respondents, while the weighted mean was applied to determine the extent of community participation in Dengue Fever prevention and control, using a five-point Likert Scale for interpretation. The scale ranged from "Never" to "Always," indicating varying levels of participation. Additionally, Analysis of Variance (ANOVA) was utilized to determine any significant differences in community participation among barangays based on their distance from the City Health Office. All data were processed using statistical software, with a significance level set at 0.05, where the null hypothesis was rejected if the p-value was less than or equal to 0.05.

RESULTS AND DISCUSSIONS

Demographic Profile of the Respondents

In terms of age, majority of the respondents are aged 51-60 years old (32, 40.0%) while least of them are aged 30 years old and below (2.5%). In terms of sex, majority of the respondents are male (60, 75%) while 20 (25%) of them are female. Along religion, most of them are Catholic (72, 90%) while 10% (8) of them are non-Catholic. As regards civil status, majority of the respondents are married (66, 82.5%) while only 6 (7.5%) are widow/er. Along highest educational attainment, 27 (33.75%) of them are college level whereas 3 (3.75%) of them did not finish elementary. As to position, most of them are barangay councilors (70, 87.5%) while there were 10 (12.5%) barangay captains in the study. Lastly, in terms of number of years as barangay official, most of them have been serving the public for 7 years and above (43, 53.75%) while 37 (46.25%) of them have been public servants for 4-6 years.

Extent of Community Participation in the Prevention and Control of Dengue Fever

Measures on Dengue Prevention and Control

Most of the barangays sometimes verify that there are no larvae or pupae in stored water (empty the container, wash walls with a brush to remove eggs, rinse, and cover) (2.63); and maintain running water in fountains, artificial lakes or estuaries. place fish (guppies, betas) in ornamental fountains that are always filled with water (2.6).

On the other hand, they seldom participate in the conduct of monthly clean-up drive in the barangay (2.59); place a tight lid on containers used for water storage (buckets, drums) (2.56); clear off all sources of standing water including barrels, vases, basins or even cups and unused tires (2.51); repair broken septic tanks and cover vent pipes with wire mesh (2.49); ensure that sewage and drainage systems are well covered at all the times (2.41); request fogging operations to kill, or 'knock-down', any adult dengue mosquitoes that may be carrying the dengue virus when there is outbreak (2.39); observe early medical consultations (2.36); and use insect repellants daily and wear light-colored clothes, long sleeves, and long pants (2.35).

As a whole, most of the barangays seldom (AWM=2.45) participate in the dengue prevention and control in the community.

Education on Prevention Strategies

Most of the barangays seldom attend in the massive information campaign on the prevention and control of dengue (2.45); participate in the information campaign relative to Ovicidal / Larvicidal Trap System. (OL-Trap) as a strategy to control and detect impending dengue outbreaks (2.41); aware of the DOH's 4S Strategy, which is prevention and control strategy against dengue fever (2.39); and use the DOH provided dengue prevention and control materials and disseminate them among their family members (2.34).

In general, most of the barangays seldom (AWM=2.42) participate in the education prevention strategies against dengue fever.

Difference in the extent of community participation of the barangays when grouped according to their distance from the City Health Office

The computed p-value (0.15) is more than the 0.05 level of significance. This means that there is no significant difference in the extent of community participation if the barangays are grouped whether near or far from CHO.

The findings of the current study, which revealed that most barangays seldom participate in dengue prevention and control efforts and that there is no significant difference in the extent of participation regardless of proximity to the City Health Office, are corroborated by several previous studies both internationally and locally. For instance, the quasi-experimental study by Farich et al. (2020) in Indonesia demonstrated that without structured and empowered community interventions, knowledge and behavioral changes toward dengue prevention

remained limited. In contrast, communities that received focused empowerment efforts through socialization, education, and practical interventions such as planting mosquito-repellent plants showed significant improvements in their dengue-related knowledge and practices ($p < 0.05$). This highlights that passive proximity to health authorities does not necessarily translate to increased participation, aligning with the present study's finding that even barangays near the City Health Office did not demonstrate significantly higher levels of engagement.

Similarly, Zahir et al. (2016) in Swat, Pakistan, emphasized the importance of active community organization and leadership in successful dengue control practices. Their study found that areas with strong community involvement—especially where local leaders, religious figures, and NGOs were actively participating—had significantly better dengue prevention outcomes. Conversely, the lack of coordinated community action and limited individual participation led to poor control efforts. This further supports the conclusion that mere awareness or geographic advantage is not sufficient without mobilization, structure, and resources, which also mirrors the seldom participation found in this study.

Further reinforcing this point, Othman et al. (2017) through their Dengue-Free Community approach, demonstrated that inter-agency partnerships and social mobilization could dramatically reduce dengue cases. Their findings showed that dengue prevention is most effective when communities are supported through coordinated efforts that provide not just education, but tools, materials, and continuous collaboration among stakeholders. The lack of such coordinated support may explain the low community engagement in dengue efforts observed in the current study, where education and preventive practices like fogging, water container management, and cleanup drives were seldom practiced.

Reyes et al. (2019) also emphasized the importance of intersectoral collaboration (ISC) in vector-borne disease control, noting that while community-level efforts are vital, they often suffer from lack of resources, inadequate training, and policy support. Their scoping review concluded that effective ISC models require more than just community involvement; they demand structured support across the socio-ecological spectrum. The observed low levels of barangay participation in this study may reflect these national gaps in coordination and resource allocation, as also echoed in the findings by Jarabejo et al. (2019) in Quezon City, which revealed a lack of mechanisms for shared decision-making and dialogue in dengue prevention programs. They stressed the importance of empowering communities not just through education, but through active participation in planning and execution of dengue control strategies.

Finally, the study by Carandang et al. (2015) in Sta. Cruz, Laguna, offered a model for effective community-based dengue control. Their program, which included structured education, core group training, and strategic communication (e.g., posters and jingles), successfully enhanced both knowledge and practice at the household level. This again contrasts with the current study's findings where barangay officials rarely participated in even the basic information campaigns or mosquito breeding source reduction. Carandang's results suggest that when communities are equipped, trained, and supported, participation significantly improves—a strategy lacking among the respondents in this study.

Based on the thorough review and analyses, the following are therefore concluded:

Most of the respondents are adults, male, Catholic, married, college level, barangay councilors and are serving as public official for a long time.

Most of the barangays seldom participate in the dengue prevention and control in the community along measures and education on prevention strategies.

Whether barangays are grouped according to their distance from CHO, barangays seldom participate in the dengue prevention and control in the community along measures and education on prevention strategies.

In the light of the conclusions, the following recommendations are hereby advanced:

The use of the Action Plan by the barangay officials to increase the community participation of their barangays in the prevention and control of Dengue,

The Local Government Units to monitor and evaluate the roles of barangay officials in terms of the health of the community.

The Rural Health Units to conduct trainings/workshops on prevention control of emerging infections/diseases in the community among its residents.

Other studies should be conducted to further evaluate other variables related in the community participation of barangays in the prevention and control of certain diseases/infections.

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