

# A Mixed-Method Study on Rural Community's Response to Public Health Emergency in the Philippines: Lessons from the First Wave of the COVID-19 Pandemic

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## ABSTRACT

**Background.** People from rural communities are not spared from COVID-19. But implementing preventive measures and strategies can be made to control the spread.

**Objective.** This study was conducted to describe the epidemiologic situation and the healthcare capacity of the locality, determine the responses and strategies implemented in the control of COVID-19, and explain the activities performed in relation to the epidemiologic situation in Tarangnan, Samar – a low-income class municipality in the Philippines.

**Methods.** A mixed qualitative–quantitative design was employed in this study. Descriptive documentary research design through review of records from March to October 2020 was utilized. For the qualitative context, a case study design was employed whereby focus group discussions and key informant interviews using open-ended questions were performed.

**Results.** A total of 66 individuals were recorded as having COVID-19 in the municipality from March to October 2020. The first recorded confirmed cases of COVID-19 in Eastern Visayas were two adults in Tarangnan, Samar, in March 2020. Since then, additional confirmed cases have been recorded every month, but confirmed COVID-19 dramatically reduced from August to October 2020. Qualitative analysis revealed stringent COVID-19 preventive measures reflected in the confirmed case numbers. The tailwinds of the COVID-19 response include: the SARS pandemic precedent, coordination and communication, outpouring of support from other government and non-government partners, and innovative community-based approaches. The headwinds of COVID-19 response were challenges in imposing minimum health and safety precautions, stigmatization, and discrimination.

**Conclusion.** Even if challenges have arisen in implementing measures against the spread of the disease, good outcomes have been achieved through persistent good practice, positive modifications, and community-based innovations.

**Keywords:** community action, community health services, COVID-19, rural health, Philippines



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## INTRODUCTION

The coronavirus disease 2019 (COVID-19) that initially surfaced in Wuhan, China, in December 2019 has become a global burden.<sup>1</sup> The disease, caused by the novel coronavirus SARS-CoV-2, was declared a Public Health Emergency of International Concern by the World Health Organization on January 30, 2020.<sup>2</sup> This disease is now regarded as a pandemic, more contagious than SARS, and has significantly threatened global public health security.

The rapid spread of COVID-19 and the uneven responses of different countries to the pandemic have implied no single universal strategy to bring it under control. Several studies overseas have recently documented experiences, lessons learned, and various strategies and responses against COVID-19. China has adopted several robust public health measures such as handwashing, staying at home, mandated contact tracing, community quarantine, and mass testing to aggressively contain the virus. Epidemiological data were published on government websites. Further, the country used technologies such as social media for information dissemination, telemedicine, navigation and real-time location identification, and mobile applications to categorise COVID-19 patients. Strong evidence exists that COVID-19 emerged in this country first and that China was the first to experience the ill effects of the outbreak, making its experiences deeply instructive.<sup>3</sup> On the other hand, rural areas in Lebanon valued teamwork and the significance of preparation – healthcare facilities, medical staff, and the community were made ready for COVID-19. Recommended interventions to contain the disease were also adopted, with a focus on early detection, isolation, and treatment.<sup>4</sup> Apart from the COVID-19 preventive measures and outbreak management in Mauritius, an enhanced communication strategy was added to contain the outbreak. The government engaged the population by constantly informing them that they had a significant role in fighting the disease. Prompt implementation of community confinement, contact tracing, and early testing are essential.<sup>5</sup> The South Korean experience of rapidly controlled transmission while implementing less stringent national social distancing measures than other countries has led to substantial interest in a “test, trace, isolate” strategy.<sup>6</sup>

Studies on community-driven responses and protocols for any health emergency situation have been conducted in foreign settings. A study on resilience as a response to a water crisis in a local community in the State of Michigan has been conducted emphasizing an achieved resilience through collaboration, people engagement, and community science.<sup>7</sup> In another study in a refugee community, it demonstrated that structural inequities and deprivation of resources are the main aggravating factors in times of public health crisis. This study recommended on reducing barriers to community health services and other resources, enhancing communication, and upgrading competencies of health professionals in the

refugee community.<sup>8</sup> In a religious community setting, community organizations have been identified as the trusted source of information, reliable spots of basic needs and social support in times of health crisis like the COVID-19 pandemic.<sup>9</sup> Furthermore, Gomez et al. claimed that well informed and engaged community people play significant roles in local health and human prosperity.<sup>10</sup>

The first positive COVID-19 case in the Philippines was reported on January 20, 2020: a 38-year-old female Chinese national.<sup>2</sup> Shortly after, the Department of Health (DOH) issued “Interim Guidelines on the Preparedness and Response to 2019-nCoV” to guide all national health security partners and stakeholders on essential precautionary measures and prompt action on potential cases.<sup>11</sup>

Sluggish growth of cases occurred until the end of February 2020, when the total number of positive cases recorded was three. By March 9, 2020, the confirmed cases of COVID-19 had increased to ten (10). The DOH raised the COVID-19 Alert System to Code Red sublevel 1, signifying local transmission.<sup>12</sup> A “State of Public Health Emergency” was declared for the execution of mandatory reporting, strengthening government measures and actions, and implementing quarantine and disease control strategies. As a precaution, suspension of classes at all levels in both private and public schools was declared in the National Capital Region (NCR), Central Luzon, and Southern Tagalog regions.<sup>13</sup>

By March 13, 2020, the total confirmed COVID-19 cases in the country had risen to 64, and the COVID-19 Alert System was escalated to Code Red sublevel 2. This marked the first time that health authorities confirmed the presence of COVID-19 community transmission in the Philippines.<sup>14</sup> On the recommendation of the Interagency Task Force on Emerging Infectious Diseases (IATF), the national government issued a memorandum on strict social distancing measures and enhanced procedures for the management of the COVID-19 situation.

The Philippines' COVID-19 response continues to evolve as scientific experts and program implementers learn more about the virus. The DOH is continuously working to codify the COVID-19 experience of government leaders, health authorities, and communities to provide the country's planners, decision-makers and program implementers with an evidence-based guide towards effectively cutting coronavirus transmission and controlling the spread of the infection. The DOH released Department Memo No. 2020-0439 or the “Omnibus Interim Guidelines on the Prevention, Detection, Isolation, Treatment, and Reintegration Strategies for COVID-19.” The first sentence of the interim guidelines says, “The DOH continuously recalibrates its strategies targeted to address the overall objective of the COVID-19 response.”<sup>15</sup> Thus, lessons from field implementation of the COVID-19 response must be documented so these can inform the review, revision, and recalibration of DOH plans, strategies, and interventions against COVID-19.

Local government units (LGUs) all over the country were instructed to impose preventive measures following the directives from the DOH and the Department of Interior and Local Government (DILG). A report on March 16, 2020, presented 140 confirmed cases in the country.<sup>16</sup> On this same date, the government placed the whole country under a state of calamity. All LGUs and government agencies of the nation were instructed to impose appropriate and timely disaster response measures and assistance to eliminate the threat of the disease to their respective areas of authority.<sup>17</sup> As of October 27, 2020, the total number of confirmed cases in the Philippines was 373,144, the majority of whom were from NCR (49%), Calabarzon (18%), and Central Visayas (6.4%).<sup>18</sup>

The Philippine health system is primarily characterized by decentralization and devolution. This means that local governance, health and social welfare services, and maintenance in the operation of the municipal health facilities were controlled by the LGUs.<sup>19</sup> The lead health agency of the country – the Department of Health, is involved in the governance, leadership, and regulation of the special tertiary health care services.<sup>20</sup> The most recent reform in the health care system is the implementation of the law on universal health coverage.<sup>21</sup> However, despite of these health system reforms, the country is continuously experiencing health and service delivery challenges and issues. There are prevailing issues such as the inequities of the health care services, and the maldistribution of health human resources, facilities, and finances across geographic areas. In addition, the country is struggling on the triple burden of disease – communicable disease, non-communicable disease, and natural disasters.<sup>22,23</sup> The existing inequities and challenges in the health system place the country in a more difficult situation in addressing a large scale crisis such as the COVID-19 pandemic.<sup>24</sup>

The Municipality of Tarangnan in Samar Province was the first COVID-19 epicentre in the Eastern Visayas region,<sup>25</sup> making it an excellent potential source of strategies, interventions, and activities that had been locally implemented and found to be effective in controlling the local spread of COVID-19. With a population of 25,000, it was the first and hardest-hit municipality in the region, with 35 confirmed cases, including one (1) death. Among the confirmed cases were government employees and emergency responders, who were later subjected to discrimination from nearby municipalities who sometimes closed their borders and prevented residents from Tarangnan from entering.

The municipality's 10-bed community hospital served as the initial isolation facility for the confirmed cases even as the municipality built its own quarantine facility for the close contacts of these cases. Contact tracing was conducted up to the second generation of contacts in the locality, unlike in other municipalities where contact tracing was done only up to the first generation of contacts.

At the end of October 2020, no confirmed cases were reported in Tarangnan, even as other municipalities in

Samar Province continued to report positive cases. Given the municipality of Tarangnan's success in controlling the spread of COVID-19 in their area and considering its status as the first COVID-19 epicentre in the Eastern Visayas region, it had become instructive to document the municipality's exemplary practices and experiences so other municipalities could replicate these practices to control the spread of COVID-19 in their jurisdictions and prepare for health emergencies in the future. Thus, this study was conducted to describe the epidemiologic situation and the healthcare capacity of the locality, determine the responses and strategies implemented in the control of COVID-19, and explain the activities performed in relation to the epidemiologic situation in Tarangnan, Samar.

## MATERIALS AND METHODS

### Study Design and Participants

This study collected both quantitative and qualitative data, employing a mixed-methods approach. In this study, quantitative data were collected and analyzed prior to the qualitative data. Hence, a sequential explanatory design was employed. The researchers expected a diverse range of participants and sought a deeper understanding of the process and experiences in the occurrence and management of COVID-19. As such, this method suited these targets.

A secondary data review of documents provided quantitative data from the Department of Health Eastern Visayas Center for Health Development (DOH-EV-CHD) through the Regional Epidemiology and Surveillance Unit (RESU), Provincial Health Office (PHO), and the Municipality of Tarangnan, Tarangnan Rural Health Unit (RHU) and Tarangnan Community Hospital. The secondary review of data focused on the local healthcare capacity per 10,000 population; confirmed cases in the municipality from March to October 2020; demographic characteristics; health information; and mortality information of confirmed cases.

The participants were key staff and stakeholders or heads from the PHO of Samar, the Local Government Unit (LGU) of Tarangnan and its RHU, the Barangay Health Emergency Response Team (BHERT) from various barangays in Tarangnan, and selected barangay officials. These were the front line health workers, health authorities, and officials who have the rich and direct experience in the first wave of the COVID-19 pandemic in the locality. They provided the qualitative data for the study, obtained through focused group discussions (FGDs) and key informant interviews (KIIs). They were selected through purposive sampling.

Interview guides were used for the FGDs and KIIs of key staff and stakeholders. Open-ended questions were used to gather wider information from their experiences and lessons learned in the COVID-19 outbreak. Data saturation was considered in the qualitative context through a series of FGDs and KIIs. The interview guide were categorized into introductory questions, key questions, probing questions, and

closing questions. Finally, the participants were asked for any further thoughts or additional information they would like to share in relation to the topics of interest as a way also to achieve data saturation. Questions were translated to the local language of Samarnon Waray-Waray.

### Study Settings

This study was conducted in Tarangnan – a fourth class municipality in the Province of Samar. This coastal municipality is politically subdivided into 41 barangays with a population of 25,713.<sup>26</sup> According to the Cities and Municipalities Competitiveness Index, the competitiveness score in terms of the capacity of health services in Tarangnan, Samar in 2020 is only 0.0675.<sup>27</sup>

### Data Collection Process

Administrative approval to conduct the study was obtained from the DOH-EV-CHD, PHO Samar, Municipal Health Office (MHO), Tarangnan Community Hospital and selected Barangay Councils. For quantitative data, the researchers and research assistants coordinated with the agency heads and coordinators for the secondary data review. Records that helped achieved the research objectives were only retrieved. Personal identity of those individuals confirmed with COVID-19 were secured and excluded in the data analysis.

For the FGDs and KIIs, informed consent was obtained before the interview. This indicated that the study was thoroughly understood: its purposes, benefits, and possible risks. Volunteerism was observed, with participants able to withdraw at any time during the study.

### Data Analysis

After careful collation and gathering of the needed information, the data were categorized, processed, and analysed based on the design. Descriptive statistics such as frequency counts, percentages, weighted arithmetic means, and standard deviations were used to describe quantitative variables. Research data were summarised and presented using tables.

For the qualitative data, all FGDs and KIIs were transcribed and printed by the research assistants. Recorded interviews via Zoom were transcribed verbatim. Recordings in local dialect (Waray-waray) were translated and back-translated by the researchers themselves who happened to be native Waraynons. These data were subjected to NVivo 12 analysis and integrated with the quantitative data. The DOH interim guidelines on the prevention, detection, isolation, treatment, and reintegration strategies for COVID-19 has been used as a framework in integrating the quantitative and qualitative data in order to answer the research questions and objectives.

### Ethical Considerations of the Study

Ethical clearance was secured from the regional ethics board to conduct this study (EVHRDC-ERC-2021-002).

Likewise, administrative clearance was secured from heads of various government agencies and offices involved in this study. For the interviews, the researchers and research assistants communicated with the chosen participants using platforms from formal letters to emails. Participants were given copies of the invitation letter and informed consent forms to secure approval to participate. Voluntary participation was observed on a basis of the participant's consent to participate in the interview. This reflects that enough information about the project had been provided: its purposes, benefits, and possible risks or discomforts, as well as the implications of participation prior to interview or actual data collection. Possible risks of this study included breach of confidentiality and its possible consequences. To avoid this, strict confidentiality, privacy, and anonymity of the participants were ensured throughout the study. Their names were coded and completely anonymised during the analysis of data. The interviews lasted from 30 to 45 minutes. Actual interviews with the study procedures were made through zoom platforms and phone calls. They were not paid for participation in the study but were given tokens of appreciation. All data collected were secured and not be used for any other purposes. The researchers had no authority over the participants; hence, no conflict of interest was involved. Furthermore, the participants were not personally known, have been co-workers in their previous employment, or collaborator to any previous activities or events. The participants had the freedom to withdraw at any point in the study. All forms of communication in this study were done with honesty and transparency.

## RESULTS

Eastern Visayas has a total of 51 health facilities and an overall total bed capacity of 907. The total beds were categorised into wards, isolation units, and intensive care units (ICUs). Samar Province, where Tarangnan town is located, has only eight health facilities with 30 total beds, and Tarangnan has only one health facility with 10 beds, which were all allotted for isolation purposes at the height of the COVID-19 outbreak. Notably, no ICU beds existed in the whole of Samar Province. Table 1 presents the summary of the local healthcare capacity of Region VIII in terms of the number of hospital beds and their subcategories. Primarily, the records were drawn from the DOH Eastern Visayas CHD and RHU Tarangnan.

**Table 1.** Local Healthcare Capacity in Eastern Visayas, Samar Province, and Tarangnan Municipality

Locale	No. of facilities	Total no. of beds	Type of beds		
			ICU	Isolation	Ward
<i>Tarangnan</i>	1	10	0	10	0
<i>Samar Province</i>	8	130	0	108	22
<i>Eastern Visayas</i>	51	907	76	599	232

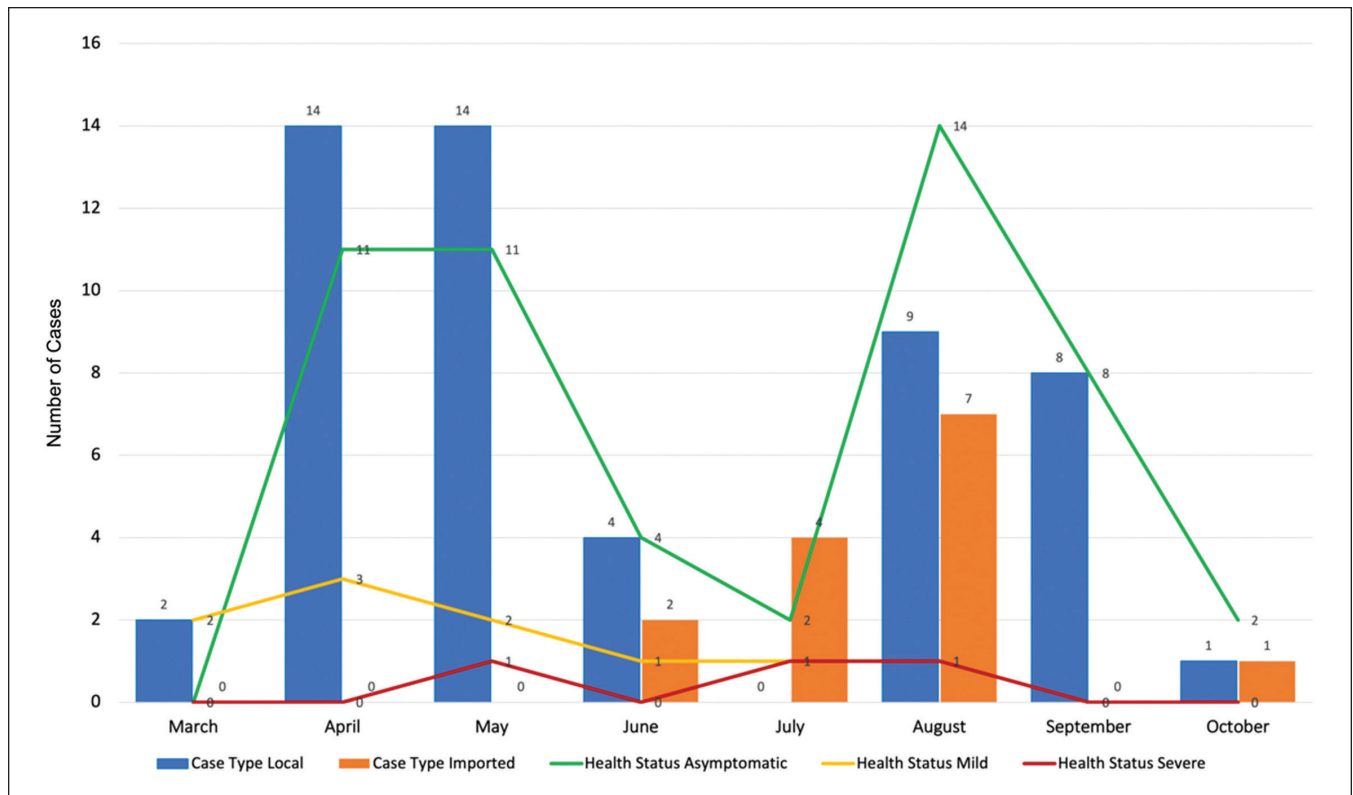


Figure 1. Type of COVID-19 confirmed cases in Tarangnan, Samar (N = 66).

As reflected in Figure 1, in Tarangnan, Samar, the local type of case was the most common (52/66) from March to October 2020. Local transmission was occurring during this period. However, there were 14 imported cases, indicating residents were exposed to the virus from outside of their municipality, either through travel to areas with a high case burden or from returning overseas workers and locally stranded individuals. Of the total cases, 52 were asymptomatic, 10 had mild signs and symptoms, and 3 had severe COVID-19.

Table 2 presents the health information of confirmed cases in Tarangnan, Samar. These findings showed high number of confirmed cases with risk of exposure to infected individuals (78.8%) and travel history (72.7%). Despite the initial limitations of testing capacity at the early stages of the local outbreak in Tarangnan, all positive cases were eventually identified via laboratory confirmation. Among those who were admitted to a health facility for appropriate management (around 26%), it took an average of one week (7.44 days) from the onset of symptoms to admission. The average length of stay was more than two weeks (16.86 days).

A composite symptom score was derived by counting the number of symptoms reported by confirmed cases. A similar approach was used to derive a comorbidity score to measure the relative risk posed by having more associated comorbidities among confirmed cases. Although limited by the lack of a validated and robust relative risk scoring

instrument, to look at the relationship between the presence or absence of risk factors, these ad hoc risk scores show a clear trend. Table 3 shows that those with worse outcomes (i.e., death) tended to have higher symptom scores and comorbidity scores.

Four KIIs and two FGDs were conducted. Participants in the KIIs included the municipal mayor, the OIC provincial

Table 2. Health Information of Confirmed Cases in Tarangnan, Samar (N = 66)

Health Information	Frequency (%)	Mean (SD)
History of travel	48 (72.7)	
Exposure history	52 (78.8)	
Laboratory confirmation	66 (100)	
Admission to facility	17 (25.8)	
Average number of days from onset to admission		7.44 (10.86)
Average length of stay (days)		16.86 (7.44)

Table 3. Symptom Severity, Comorbidities, and Outcomes of Confirmed Cases (N = 66)

Risk Scores	Outcomes	
	Recovered, M (SD)	Death, M (SD)
Symptom score	0.18 (0.42)	0.67 (0.75)
Comorbidity score	0.07 (0.25)	1.20 (1.5)

health officer, the DOH development management officer assigned to Tarangnan, and one public health nurse. The FGD participants included one barangay nutrition scholar, two from the human resource for health, three barangay health workers, one rural health midwife, four barangay captains, one barangay secretary, and two barangay tanods. The themes represent the experiences, roles and responsibilities, and lessons learned from Tarangnan's COVID-19 experience.

## Qualitative Findings

### *Health System Fragmentation as an Initial "Obstacle" to Discovering "Patient EV-Zero"*

One informant relayed that they found out about Patient EV-Zero "a bit late" because the first case was employed in a community hospital, which was separately managed by the Provincial Government of Samar. The informant related that they initially thought "EV-Patient Zero" would know how to follow protocol because the person was a health professional and had just returned from a seminar on COVID-19 in Manila.

On finding out that the health professional and employee of the community hospital was a confirmed case of COVID-19, the informant still had to speak first with DOH officials so they would in turn recommend to the Provincial Government of Samar the temporary cessation of operations of the province-run hospital. Patient EV-Zero already had been in the hospital for four days until it became public knowledge that he was confirmed with COVID-19 so a quarantine of the hospital was warranted.

### **Challenges on Implementation of Early Evolving Protocols**

At the time of the Tarangnan outbreak, official protocols for dealing with the prevention, detection, isolation, and treatment of COVID-19 were still evolving. This created several challenges for the local government officials, particularly in contact tracing and detection of cases who would need to be quarantined or isolated. For instance, the municipal mayor of Tarangnan related that at the time of the outbreak, the protocol was that only symptomatic close contacts would be swabbed for an RT-PCR test. As a result, close contacts without symptoms were not obliged to submit for swabbing. Nevertheless, even with only the symptomatic close contacts being swabbed, the mayor revealed that two patients eventually tested positive as well.

The 2–3-week period between specimen collection and release of results compounded the testing limitations. According to the municipal mayor, the 2–3-week waiting time was even longer than the required quarantine period. Thus, the appearance in Tarangnan was that only a few cases existed in the locality, which would not require a community quarantine.

Only a month after the first cases in Tarangnan were documented, the DOH revised its testing protocol to

include even non-symptomatic close contacts. This was in consideration of emerging scientific evidence that some cases of COVID-19 can remain asymptomatic and may even transmit the virus to others. With the revision in the testing protocol, the LGU found that the majority of those who tested positive did not show COVID-19 signs and symptoms. This realisation prompted the municipality to impose a community quarantine of the Tarangnan poblacion (town proper).

### *Local COVID-19 Actions Mostly Negotiated Between LGU and DOH*

Given the incongruence between the ground experiences and the publication of official COVID-19 protocols, LGU actions to control the spread of the disease were usually negotiated with the DOH Regional Epidemiological and Surveillance Unit (DOH-RESU). The first issue resolved in this manner was the scope of the community quarantine. The DOH-RESU recommended a community quarantine of the entire municipality, but the LGU recommended that only the poblacion (proper area of the municipality) should be quarantined since the COVID-19 cases were concentrated in the town proper only.

Even then, the municipal mayor recalled that he insisted on waiting for the third batch of swab test results before making a decision on placing any part of the town under quarantine. The mayor emphasised that he wanted to validate the magnitude of the problem before making a decision. The decision to impose a community quarantine in Tarangnan highlighted the early tension between keeping the economy afloat, which is the primary interest of the LGU, and the health and safety of the people, which is the primary consideration of the DOH. For instance, the municipal mayor said that he would not have locked down the poblacion if only three cases existed, which he considered "not serious". On the other hand, the DOH-RESU thought that three cases would be enough to cause an escalation of the outbreak, thus justifying a community quarantine.

### **The "Tailwinds" or the Positive Events of the Tarangnan COVID-19 Response**

Several factors may have led to the successful COVID-19 response of Tarangnan, Samar, including: a.) the SARS pandemic precedent (2003); b.) the outpouring of support from other government and non-government partners; and c.) innovative community-based approaches. One factor that made the imposition of the community quarantine easier was the existence of previous government issuances governing community quarantines. In 2003, during the SARS-CoV1 pandemic, the then DILG secretary issued Memorandum Circular 2003-95 (MC-2003-95) enjoining all local chief executives to create the Barangay Health Emergency Response Teams (BHERTs). The BHERTs were then primarily tasked to monitor arrivals from SARS-affected countries and perform other functions related to contact tracing, quarantine, and isolation of SARS cases.

This MC made it easier to re-organise or re-constitute the BHERTs for the local COVID-19 response in Tarangnan. The BHERTs, comprised of barangay officials, barangay police, and community health volunteers, were mobilised to ensure the strict imposition of the community quarantine.

In hindsight, the BHERTs then were not yet affected by quarantine fatigue and so were reliably productive and helpful. The roles and responsibilities of BHERT members concerning the COVID-19 pandemic are reiterated in DILG Memorandum Circular 2020-023, issued in February 2020. During the FGDs, the BHERT members articulated that in their tour of duty, they performed these tasks: a.) BHERT members took care of procuring households' necessities since household members were not allowed to leave their homes; b.) The BHERT members, especially the barangay tanods, took turns on duty at border checkpoints and roving the community to monitor people's compliance with the quarantine restrictions. In this way, they were also able to monitor people's whereabouts.

When asked to provide details as to what activities they performed in terms of the disaster management cycle, they mentioned these activities:

**a. Prevention and mitigation** [i.e., 1.) the barangay used loudspeakers every afternoon for information dissemination to the public, 2.) the BHERT made an outpost or checkpoint at the borderline of every barangay to ensure that the public were following the health standard protocols, such as that one individual (except vulnerable groups) in each household was allowed to go out of the house if necessary, with wearing of masks and face shields, 3.) they prepared home quarantine passes to be used by one individual in every household who was allowed to go out, 4.) every outpost prepared sanitising materials, such as alcohol, hand soap, and water, 5.) they monitored the temperature of every individual entering the barangay and had them sanitised, 6.) the BHERT members created an improvised pathway (a specific pathway where the individuals who needed to go out of the house used and were restricted by a rope) to monitor who was going out of the house, where they were going and whether they were strictly following protocols, 7.) border control points regularly coordinated with the RHU to inform that person under investigation (PUI) (a person who has exposure to a patient with COVID-19, with COVID-19 signs and symptoms, but with pending result of the COVID-19 confirmatory test), and person under monitoring (PUM) (a person with exposure to a patient with COVID-19, has no COVID-19 signs and symptoms) would enter Tarangnan, and 8.) regular monitoring of PUI and PUM.]

**b. Preparedness** [i.e., 1.) contingency planning at the RHU level, 2.) regular meetings and planning at the barangay level, 3.) listing and quarantine of PUI and PUM, 4.) identification of an isolation facility, which was later decided to be Tarangnan Elementary School, 5.) ongoing community quarantine based on Executive Orders, and 6.) activation of BHERT].

**c. Response** [i.e., 1.) RHU personnel in coordination with the BHERT have updated the master list of vulnerable populations in every barangay to prioritise their basic needs, 2.) house-to-house distribution of vitamins and hypertensive and diabetes mellitus maintenance medications for hypertensive and diabetic patients. Hygiene kits were also distributed containing alcohol, face masks, face shields, and soaps, and 3.) LGU assigned a point person to buy goods in Catbalogan City (the capital city in Samar Province) that were delivered in the border units only and to buy medicine and essentials for babies (diaper, milk, etc.)].

When the total community quarantine was imposed, one resident from Tarangnan who worked in an outlet of a large pharmaceutical distribution company was regularly in contact with the BHERTs to facilitate the household purchase of essential drugs and medicines and facilitate the transport and delivery of the goods via pick-up vehicle. BHERT members of every barangay initiated buying the basic needs of the community people. Every household was instructed to list the things they needed to buy with their money that would be collected every 6 am and 4 pm. Water was fetched for households without access to water.

Another factor that lightened the burden of imposing the community quarantine was the outpouring of support from the Provincial Government of Samar, other municipalities, and various non-government groups. The LGU strengthened its ties with other government agencies to augment its meager resources. The municipal mayor said that they would not have been able to provide for the needs of their constituents during the community quarantine if they merely relied on their own resources. The LGU was the first COVID-19 epicenter in the Eastern Visayas administrative region of the Philippines; thus, outside entities and organisations were at their most generous.

Initially, support consisted of cash and in-kind donations. However, when the community quarantine was imposed, stores from outside the municipality would no longer accept cash from Tarangnan households for fear of contracting the disease. Thus, the LGU decided to request the donors to refrain from donating cash and instead donate in-kind such as food.

### The "Headwinds" or the Negative Events of COVID-19 Response in Tarangnan

The following were identified by the focus groups as the barriers and challenges confronting the LGU during its experience dealing with COVID-19:

1. Difficulty imposing minimum health and safety precautions, particularly in imposing mandatory masking. Many of the constituents caught violating the mandate would complain that they find it hard to breathe through the mask. In response, the LGU imposed fines on violators and this resulted in the decline in the number of violators.

2. Discrimination and stigma against COVID-19-positive individuals and the LGU as a whole. One of the participants related that even the regional referral hospital, hesitated to admit their first patients. They were forced to confine the patients in their community hospital, which doubled as isolation facility. The more severe cases were eventually transferred to the provincial hospital.
3. Lack of resources. This was also an offshoot of the discrimination against the LGU as a whole. The LGU decided that it could not change people's views so it should think of ways to take care of itself by relying on its own resources.

### Innovative Approaches Implemented by LGU Tarangnan

As relayed by the participants, the following innovative approaches were implemented by the LGU in the course of its COVID-19 response: 1.) Zumba sessions for health workers in quarantine and isolation facilities. Healthcare workers held regular physical exercise in the form of Zumba sessions. This was intended to relieve limitations on activity and prevent burnout of the healthcare workers. 2.) Backyard gardening for patients. Patients confined to quarantine and isolation facilities were encouraged to plant in the backlot of the facility. This was implemented to relieve the boredom of patients since at that time repeat swabs were still required before they could be declared recovered. Patients would usually spend around a month inside the facility because the swab result usually took around 2–3 weeks to return. 3.) In-kind incentives for health workers and frontliners were provided by the LGU in the form of food such as pork, chicken, fruits, and vegetables.

## DISCUSSION

The study findings highlight the occurrence of COVID-19, its fast increase in the early period but the responsive decrease of confirmed cases after a few months, and the strategic and innovative practices to control the spread of COVID-19 from March to October 2020 in the rural municipality. This period was the first wave or first surge of COVID-19 cases in the Philippines and the rest of the world. This was entirely new, and everyone in this period was very cautious and afraid of contracting the disease. Because this disease had no known cure and vaccines were not yet available, non-pharmaceutical interventions (NPIs) were critical in reducing the spread. NPIs were broadly categorised into three types: 1) separating individuals with the disease, including their contacts; 2) reducing contact between those with the disease and vulnerable people (macro-distancing); and 3) preventing transmission between individuals confirmed with the disease and vulnerable people (micro-distancing).<sup>28</sup> In our study, several preventive interventions were practiced in the municipality that generally fell into these categories. These were border management, quarantine and

isolation, contact tracing, mobility restrictions, strict social distancing, wearing of masks, hand hygiene, and effective public communication and coordination. In addition, previous experience of the SARS pandemic in 2003 contributed to the immediate imposition of these control measures. The confirmed cases of COVID-19 at the national level in this same period showed a rapid and exponential increase: at the end of March 2020, 128 cases were confirmed. This rapidly increased in thousands of cases every month, and at the end of October 2020, the cases surged to 380,729.<sup>18,29</sup> Likewise, in the Eastern Visayas region, confirmed cases increased rapidly from two in March 2020 to 6,889 at the end of October 2020.<sup>30</sup> This trend seemed contrary in Tarangnan, Samar: after two confirmed cases in March 2020 and its peak in August, it eventually returned to two in October 2020. Although many factors must be considered with this downward trend, the data generally indicate a positive response to the municipality's stringent practices against the spread of COVID-19 – the contagiousness and transmissibility of this disease is under control. This study did not explore the specific data of the municipality's health care capacity before the pandemic but literatures showed that the Philippine data in terms of its health care system reflected a poorly distributed resources and capacity.<sup>31</sup> The country has 10 hospital beds and six physicians per 10,000 people where a concentration of these resources are found in urban areas. In the rural areas, the data showed a ratio of one physician for a population of 20,000 people or one hospital bed for a population of 1,000.<sup>32</sup> Having this trend, if the COVID-19 situation in the municipality of Tarangnan, a fourth class-rural municipality, was not immediately controlled, the healthcare system in the locality may collapse.

Our study found some innovations in Tarangnan's COVID-19 response. The Zumba sessions for health workers and the backyard gardening for community people under quarantine and isolation imply concern for their mental health, since these addressed boredom and burnout. Previous studies have shown that aerobic activities and exercise reduce stress and burnout,<sup>33</sup> especially during quarantine and isolation.<sup>34</sup> Additionally, individuals are recommended to stay physically active even in quarantine because maintaining an active lifestyle is integral during the pandemic, to reduce mental health issues and to promote overall health. Likewise, a recent study revealed that active engagement with nature, such as backyard gardening, addresses psycho-pathological distress during quarantine.<sup>35</sup> The in-kind incentives for health workers and frontliners were a good mechanism to further prevent the spread of coronavirus. Despite no clear evidence to confirm or disprove the transmission of COVID-19 through coins or banknotes, the significant amount of handover of these materials predisposes carrying of harmful microorganisms including SARS-CoV-2.<sup>36</sup> Additionally, discrimination towards Tarangnan households has been reported, and stores from outside the municipality refused to accept cash from them for fear of contracting the disease. The non-cash incentive became an avenue to address this



issue. In connection with this, an outpouring of donations and pledges occurred from various agencies and organisations, but donations in kind rather than money were requested.

Notwithstanding these preventive measures and innovative approaches, the KIIs and FGDs revealed some challenges in dealing with the infection, especially in the initial phase. In health crises and outbreaks, government and health authorities must impose immediate, organised and strategic policies and procedures that will contain the spread of infection or immediately control the situation. In Tarangnan, Samar, local government authorities and health workers experienced difficulties in immediately addressing the outbreak because of the fragmented local health system. The local chief executive of the municipality had to follow the bureaucratic flow of reporting and communication, which resulted in delayed containment of positive individuals. This led to more and longer exposures of close contacts. No laboratory was available in the region to test for COVID-19. As such, specimens needed to travel to the nearest laboratory centre, Cebu, and it took at least 2 weeks to know the results. This led to even more and longer exposures of close contacts. The constant wearing of face masks has proven effective in reducing droplet or airborne transmission.<sup>37</sup> However, in our study, participants relayed that many community people were not used to this kind of practice, and they found it hard to breathe through the mask. Hence, they refrained from wearing it. This resulted in the imposition of a monetary penalty for violators. In addition, discrimination and stigma have also been serious problems in the municipality. Sick patients from Tarangnan, Samar, who had COVID-19 or exhibited flu-like symptoms were refused admission even to the referral hospital of the region. Scarcity of resources was initially experienced in the LGU, brought by discrimination. Thus, they relied solely on what available resources they had. Nevertheless, these were learning experiences for the government, health workers, and community to direct themselves in formulating strategies and interventions in counteracting these kinds of challenges during crisis.

The main limitation of this study was social desirability bias. Social desirability bias happens when participants state an answer in a manner where it deemed more socially acceptable than stating the “true” answer.<sup>38</sup> The questions in the KIIs and FGDs specifically explored how the local government and frontliners responded to the crisis. The participants were authorities and workers of the local government, who might have responded in a manner that would reflect positively on the local government or leadership. Secondly, available data are based primarily on the frequency and percentage value of the confirmed cases. Consequently, the results of the study cannot be generalised to other government units or health organisations. Nevertheless, efforts were made to minimise risk and bias through data triangulation. Likewise, the findings of the study provide significant insights and exploratory data on how to improve the health system and crisis management for health emergencies like the COVID-19 pandemic.

## CONCLUSION

People from rural communities were not spared from COVID-19. The occurrence of COVID-19 cases in the municipality prompted the local government authorities and health workers to respond and counteract the situation. Challenges in implementing measures and strategies against the spread of the disease arose. However, persistent good practice, positive modifications, and community-based innovations led to good outcomes in fighting COVID-19. Identifying and implementing the best strategies to end the spread of COVID-19 is key to stopping its physical, psychological, social, and economic consequences.

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## Statement of Authorship

CCF has substantial contributions to the conception or design of the work; acquisition, analysis, and interpretation of data for the work; drafting the work or revising critically for important intellectual content; final approval of the version to be published; agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. FDT, CEL, AGR, CNF and RNV have substantial contributions to the conception or design of the work; acquisition, analysis, and interpretation of data for the work; final approval of the version to be published; agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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