





ORIGINAL RESEARCH

Livelihood and food acquisition challenges in island communities during the global pandemic

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ABSTRACT. The COVID-19 pandemic has greatly affected the global economy and efforts toward achieving food security. Fisheries was one of the vulnerable sectors to COVID-19 impacts but available literature on this is limited mostly to accessible areas. Hence, this study focuses on island communities in remote areas in northern Iloilo, Philippines, to understand their unique experiences with access to natural resources, livelihood services and food during the COVID-19 pandemic. Household surveys (n = 520), key-informant interviews (n = 10) and focus group discussions (n = 51) were performed. It was found that 70% of respondents depended on fisheries-related livelihoods, such as fishing and post-harvest activities. The other 30% of respondents depended on contractual jobs, small businesses, remittances from family members, farming, and boat transport services. Generally, remote-island villages had difficulty accessing natural resources as shown by lesser fishing operations (~ 0-20 days month⁻¹), limited access to livelihood inputs (e.g. crude oil and ice), and limited access to markets/ports because of restricted operating hours during the pandemic. Financial hardships and travel restrictions made access to non-fisheries food products (e.g. rice, vegetables, and meat) very difficult. The access to freshwater was also an issue because water supply come from other islands or the mainland. Overall, results showed that the COVID-19 pandemic has severely affected the livelihoods and food security of inhabitants of remote island villages. These findings are valuable for future emergency management measures especially to ensure that no one is left behind.



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Key words: COVID-19, remote islands, food security, Philippines, coastal resilience.

Desafíos en medios de vida y adquisición de alimentos en comunidades insulares durante la pandemia mundial

RESUMEN. La pandemia de COVID-19 afectó en gran medida a la economía mundial y a los esfuerzos por lograr la seguridad alimentaria. La pesca fue uno de los sectores vulnerables a los impactos de la COVID-19, pero la literatura disponible sobre este tema se limita principalmente a las áreas accesibles. Por lo tanto, este estudio se centra en las comunidades insulares en áreas remotas del norte de Iloilo, Filipinas, para comprender sus experiencias únicas con el acceso a los recursos naturales, los servicios de subsistencia y los alimentos durante la pandemia de COVID-19. Se realizaron encuestas de hogares (n = 520), entrevistas a informantes clave (n = 10) y debates en grupos focales (n = 51). Se encontró que los medios de vida del 70% de los encuestados dependía de actividades relacionadas con la pesca y las actividades post-captura. El otro 30% de los encues-

tados dependía de trabajos contractuales, pequeñas empresas, remesas de familiares, agricultura y servicios de transporte en barco. En general, las aldeas de las islas remotas tuvieron dificultades para acceder a los recursos naturales, como lo demuestra la reducción de las operaciones pesqueras (entre 0 y 20 días mes^{-1}), el acceso limitado a los insumos para el sustento (por ejemplo, petróleo crudo o hielo) y el acceso limitado a los mercados y puertos debido a las horas de funcionamiento restringidas durante la pandemia. Las dificultades financieras y las restricciones de viaje dificultaron mucho el acceso a productos alimenticios no pesqueros, como arroz, verduras y carne. El acceso al agua potable también fue un problema porque las fuentes de agua provienen del continente o de otras islas. En general, los resultados mostraron que la pandemia de COVID-19 afectó enormemente a los medios de vida y la seguridad alimentaria de los habitantes de las aldeas de las islas remotas. Estos hallazgos son valiosos para futuras medidas de gestión de emergencias, especialmente para garantizar que nadie quede atrás.

Palabras clave: COVID-19, COVID-19, islas alejadas, seguridad alimentaria, Filipinas, resiliencia costera.

INTRODUCTION

The COVID-19 pandemic was an unprecedented crisis that caused economic stress to almost all sectors globally, particularly vulnerable populations (Buheji et al. 2021; Demirci et al. 2020; Hidayati et al. 2020; Knight et al. 2020; Ferrer et al. 2021). The first case of COVID-19 in the Philippines was recorded in January 2020. Consequently, the country immediately imposed travel bans from infected countries (Atienza 2021). The Philippine National Government declared all provinces and cities under Enhanced Community Quarantine (ECQ) which translated to a total lockdown, i.e. mobility and transportation by land, air, and water were all restricted (Lau et al. 2020; Atienza 2021; Ferrer et al. 2021). People have not anticipated the lockdown to last for months and extend to years. This greatly affected global and local economies.

One of the most vulnerable groups in the Philippines is the fisheries sector, especially the small-scale fisherfolk (Ferrer et al. 2021; Dumilag et al. 2023). The impacts of COVID-19 on the fisheries sector have been the interest of many researchers to determine the effects of COVID-19 preventive measures on income and food security (Dumilag et al. 2023), operation and well-being of commercial fishers (Macusi et al. 2022a), catch per unit effort and well-being of small-scale fishers (Macusi et al. 2022b), and the production and market of aqua-

culture and capture fisheries (Manlosa et al. 2021). While these studies noted that the fisheries sector was strongly affected by market disruptions, mobility restrictions, social distancing implementation, and price increases of supplies and inputs at the height of the pandemic, they mostly focused on accessible communities on the mainland.

This work is a sub-study of a research program that was guided by the Social Well-being Framework. The framework uses a three-dimensional approach in order to obtain a thorough understanding of the well-being of remote island communities, assessing the material well-being of individuals, i.e. what people have or the objective outcomes of well-being, which include material resources such as food, income, assets, shelter, employment, access to services and natural resources, and environmental quality; the relational well-being, i.e. what people do, and how they interact with others to meet their needs and achieve a good quality of life; and the subjective well-being, i.e. people's views and how they think and feel about their situation, paying attention to the values that shape those views, aspirations, hopes and fears, and dis/satisfaction with what they have accomplished (Gough and McGregor 2007; McGregor 2009; Coulthard 2012; Britton and Coulthard, 2013).

This paper focused on the material well-being of remote island communities and the corresponding effects of COVID-19 on their livelihood and food security during the pandemic. It aimed to answer the following questions: 1) What are the livelihood

opportunities in small island villages and how did COVID-19 affect inhabitants' income? and 2) How did COVID-19 affect food acquisition in small island villages?

MATERIALS AND METHODS

Study area and research design

This study was conducted in remote island villages of northern Iloilo, Western Visayas, Philippines (Figure 1). Barangay is the smallest administrative division in the Philippines comparable to a village (LP 1974). It 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 (LP 1991).

Northern Iloilo lies in the Visayan Sea which is a major fishing ground of the Philippines (Ferrer 2009). Mackerel, threadfin, and squid are the predominant fish catch in this area (BFAR 2022) (Table 1). These islands were selected based on the following criteria: 1) inclusion in the list of Geographically Isolated and Disadvantaged Areas (GIDA); 2) relatively small size; 3) distance from the mainland; 4) resource-dependence; and 5) no or less experience in research interviews to capture the distinct set of mindset and familiarities of island respondents compared to other easily accessible coastal areas. The GIDA are villages that are specifically disadvantaged due to physical

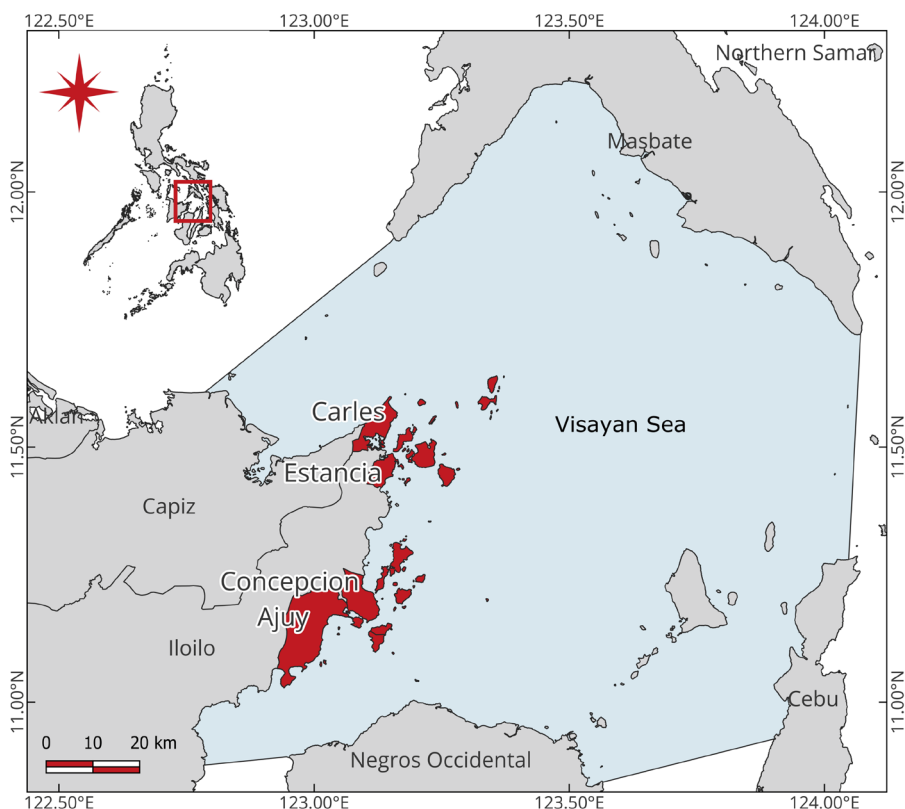


Figure 1. Map of northern Iloilo, Philippines, showing study sites: Carles, Estancia, Concepcion, and Ajuy villages.

Table 1. Profile of the remote island communities in northern Iloilo, Philippines.

Municipality	Village	Reported COVID-19 cases	Average travel time to the mainland	Schedule of boat trip (from the island to mainland and vice versa)
Carles	Isla de Caña	6	45-60 min	One passenger trip day ⁻¹
(2nd class)*	Tinigban	1	45-60 min	One passenger trip day ⁻¹
Estancia	Loguingot	0	15-20 min	Regular passenger trip
(2nd class)	Manipulon	3	20-25 min	Regular passenger trip
Concepcion	Macatunao	13	60-90 min	Private boats only/no regular passenger boat trip
(3rd class)	Salvacion	3	45-60 min	Private boats only/no regular passenger boat trip
Ajuy	Nasidman	2	20-30 min	Regular passenger trip
(4th class)	Tagubanhon	6	45-60 min	Private boats only/no regular passenger boat trip
Total		34		

*Cities and municipalities in the Philippines are classified according to the average income in the last 3 years, e.g. 1st class municipalities have an average income of at least 27.3 million dollars, while 5th class municipalities have the least income of approximately 9.0 million dollars (LP 2023).

and socioeconomic factors limiting the accessibility and availability of basic services (DOH 2020). The farthest islands are Carles, Concepcion, and Ajuy (Table 1). Although the two islands in Estancia and one island in Ajuy were relatively near to the mainland, they were included in the study sites because of their size, resource dependence, and inclusion in the list of GIDA.

Research design and sampling

Data were collected using quantitative and qualitative approaches to determine the access of island villages to natural resources/assets, livelihood services, and food during the COVID-19 pandemic. Extensive data gathering was conducted through household surveys, key informant interviews (KIIs), and focus group discussions (FGDs). Community profiling was done initially to inform data-gathering activities and establish an appropriate sample size. Based on the Philippine Statistics Office 2020 census, the total number of households

in the target island villages was 1,784, with a population of 7,775 (PSA 2021). The sample size ($n = 520$) was calculated with a 0.1 margin of error and 95% level of confidence using the Cochran (2005) formula:

$$\text{Sample size} = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N}\right)}$$

where z = z-score at the desired confidence level, p = maximum possible proportion (set at 0.5 if unsure to find maximum possible sample size), and e = acceptable margin of error.

Survey respondents were randomly selected and were sampled proportionally among villages. A list of randomized replacements was prepared to avoid biases. Researchers obtained the list of household heads of target villages from the respective Local Government Units (LGUs) to identify randomly selected individuals. Selection of KII

and FGD participants was done using a purposive sampling method. For KIIs, ten respondents from LGUs were selected and interviewed based on their function as representatives from the Municipal Agriculture Office (MAO), Municipal Planning and Development Office (MPDO), and Rural Health Unit (RHU). Additionally, fifty-one respondents were invited for the FGDs to complement and validate findings from KIIs and household surveys. The FGD respondents (i.e. captains, councilors, health workers, members of sectoral groups, and residents) were selected from the villages included in the study sites with the assistance of LGUs.

Ethics

This study was reviewed and approved by the Research Ethics Board of the University of the Philippines, Visayas. Informed consent of all respondents was secured before conducting research activities.

Data gathering

A semi-structured questionnaire was used for the household survey to determine the impact of COVID-19 on the access to natural resources/assets, livelihoods, and food of remote islands villages (Suppl. Material). The questionnaire was written in English and translated to the local language Hiligaynon to facilitate easy conversation with respondents. The translated questionnaire was reviewed by a language expert and pre-tested in one of the study sites to ensure a common understanding of questions by both the interviewer and the respondent. Questions were then revised according to observations during the pre-test. Field interviews were conducted with 520 respondents in eight remote islands villages between October 2021 and April 2022, with the help of enumerators and research assistants. Enumerators were trained on KoBo Toolbox application which was used for the paperless interview in remote island communities. KoBo Toolbox is a web-based platform for data collection wherein questions are uploaded to the application and responses are recorded in tablets.

Data collected were readily available for download and analysis from the main server.

During interviews, researchers observed health protocols and provided respondents with masks and alcohol. Respondents were asked about their experiences in the islands before the lockdown in March 2020 to assess their livelihoods and access to food before the COVID-19 pandemic. The interview instrument presented questions on the socioeconomic characteristics and livelihoods of respondents, challenges encountered in their livelihoods during the COVID-19 pandemic, interventions initiated by the government and non-governmental organizations (NGOs) relative to COVID-19 pandemic, expenditures and acquisition of food in the island. Access to livelihood needs and food staples were also compared before and during the pandemic in terms of the level of difficulty of access using the Likert scale (i.e. from very easy access to very difficult access).

Preliminary results from the household survey were presented during the FGDs for validation and feedback. Additional information was also gathered during the FGDs through a seasonal calendar activity to capture information on access to natural resources in their areas. A total of seven FGDs were conducted between April and May 2023. KIIs were also conducted with respondents from MAO, MPDO, and RHU in the four municipalities to determine measures and interventions taken by the LGUs to alleviate the adverse effects of the COVID-19 pandemic to households, especially in remote island villages.

Analysis

Data from the survey were downloaded from Kobo Toolbox in XLS form, encoded and analyzed using descriptive statistics (e.g. frequency, percentages) to determine the severity of impacts of COVID-19 on livelihoods, income, and food acquisition in the remote island communities. Data gathered from the KIIs and FGDs were transcribed, encoded and textual analysis was conducted for emerging themes and trends in the transcriptions.

RESULTS

Socioeconomic characteristics of respondents

Fifty-four percent of respondents were male and 46% female (Table 2). Most respondents were married (69%) and Roman Catholic (66%) believers. Many of respondents were elementary under-

graduates (29%) and only a few attended tertiary education (6%). Most households comprised five members (74%), of which 88% had one to five working adults who were primarily into fishing activities. Most houses were made of concrete and wood, usually owned by respondents but built on land held by someone else (68%). Following Typhoon Haiyan in 2014, private organizations donated some of the houses in the island villages to affected residents.

Table 2. Sociodemographic characteristics of respondents (n = 520).

Sociodemographic characteristic	Frequency	Households (%)
Sex		
Male	283	54
Female	237	46
Age		
≤ 30 years	73	14
31-40 years	115	22
41-50 years	95	18
51-60 years	111	21
> 60 years	135	26
Civil status		
Single	30	6
Married	359	69
Widow/widower	61	12
Separated	9	2
Living together but not married	61	12
Religion		
Roman Catholic	342	66
IFI/Aglipay	84	16
Born again Christian	25	5
Seventh Day Adventist	12	2
Baptist	45	9
Others (Church of Nazarene, Fundamental Christian, Pentecostal)	19	4
None	4	1

Table 2. Continued.

Sociodemographic characteristic	Frequency	Households (%)
Educational attainment		
No formal education	6	1
Elementary level	150	29
Elementary graduate	108	21
High School level	91	18
High School graduate	93	18
College level	32	6
College graduate	27	5
Vocational course graduate	11	2
Post-graduate	1	0.2
Household size		
1-5	387	74
6-10	128	25
> 11	7	1
Working adults		
0	60	12
1-5	460	88
House ownership		
Owns the house and lot	143	28
Owns the house but not the lot	355	68
NHA <i>Pabahay</i> , Donated by Nun, Redcross	64	12
Living with relatives	19	4
Occupant with annual rent	36	7

Livelihood opportunities in remote island villages

Sixty-two percent of respondents indicated that fishing was their primary source of income (Figure 2). Of this, 75% were municipal fishers, 14% were commercial fishers, and 11% were gleaners. Half of the municipal fishers used fishing nets, 43% used lines, and 29% used traps. The municipal fishing gear included gillnets, surrounding nets, seine nets, falling nets, filter nets, and stationary lift

nets. These fishing gears largely targeted pelagic fishes such as herrings, sardines, mackerels; also, shrimps, squids, and crabs. Line fishing gears included simple handlines, multiple handlines, and longlines that caught pelagic fishes (e.g. trevally and scads) and some demersal fishes (e.g. breams, mojarra, barracuda). Jigger fishing gear was used to catch squid and was recorded mostly in the municipalities of Carles and Estancia. Due to the abundance of blue swimming crabs in the fishing grounds, respondents from all study sites also used

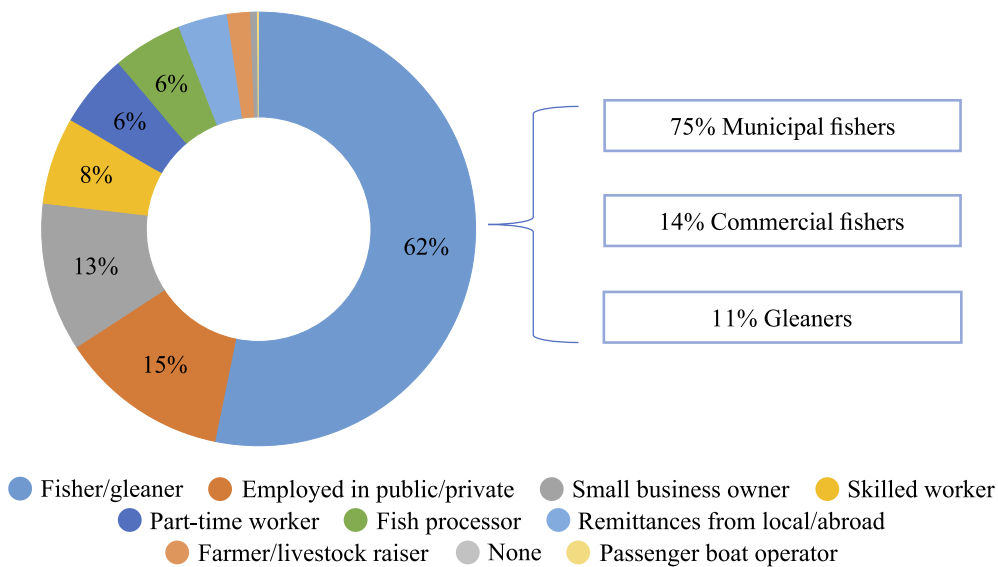


Figure 2. Livelihoods in remote island villages during the COVID-19 in northern Iloilo, Philippines (n = 520).

crab pots and crab gill nets to capture this highly valued species.

All study sites have municipal fishers (i.e. fishers operating within 0-15 km from the shoreline seaward), but only six of the eight island villages had commercial fishers (i.e. fishers operating 15.1 km from the shoreline seaward). Villages of Loguingot (Estancia), Nasidman (Ajuy), and Tinigban (Carles) were the top villages involved in commercial fishing using trawl nets, gill nets, seine nets, ring nets, and surrounding nets to catch mackerels, sardines, squids, among others. Fishing was the main source of income in the island villages; however, aquatic resources were not always available for the entire year as shown in the seasonal calendar prepared by the respondents during FGDs (Table 3).

During interviews and FGDs, the majority of fishers claimed that the sea was not dependable anymore and we quote:

‘The fish catch from the sea is decreasing; fish are scant hence we can only sell a little. The income cannot afford the allowances of my students (school children), cannot even buy rice’
–Code 103.

Due to the dwindling catch and seasonality of resources, fishing households started to engage in other alternative livelihoods such as employment (15%) in contractual jobs in public and private sectors (e.g. contract-based employee, permanent employee, or being an appointed barangay official with honoraria or allowances). Other families ran businesses (13%) such as convenient stores, fish buying and selling (middleman/broker), food vending/peddling, and online sales (Figure 2). Eight percent of respondents were skilled in construction, boat building, driving, cooking, manicure and hairstyling, and also earned money in and out of the island villages. Some of them were part-time workers (6%), especially female respondents, who diligently helped their husbands with the income they earned from laundry services, fetching water for other people, and carrying boxes of goods from the docks to the houses of other residents in the island villages. Women were also hands-on in processing the catch (6%) of their husbands, especially if the fish catch was not sold immediately within the day. Elderly respondents were mostly dependent on pensions and remittances of family members working outside the island villages (4%). Those

Table 3. Continued.

Fishing gear	Common name	Species	J	F	M	A	M	J	J	A	S	O	N	D	Total volume (kg)
Manual collection	Sea cucumber	<i>Holothuria</i> sp.			x	x	x								
Manual collection	Seaweeds	<i>Kappaphycus</i> sp.	x	x	x	x	x	x	x	x	x	x	x	x	
Farm resources															
Manual collection	Cassava	<i>Manihot</i> sp.	x	x											x
Manual collection	Banana	<i>Musa</i> sp.	x	x	x	x	x	x	x	x	x	x	x	x	

^aDuring full moon.

^bDuring last quarter phase of the moon.

^cDuring low tide.

who owned a piece of land or were entrusted by a property owner to cultivate his/her land engaged in farming (2%) producing cassava, banana, copra (dried coconut meat), bamboo, logs/lumbers, and even woods which were sold as firewood or charcoal. Backyard farming, such as raising chickens and hogs, was also observed in Tinigban (Carles), and Loguingot (Estancia). In addition, the selling of bamboo and copra was predominant in Ajuy and Concepcion, respectively. Passenger boat operators (1%) were also recorded from the three (3) islands (Manipulon and Loguingot villages in Estancia, and Nasidman village in Ajuy), providing regular trips from the islands to the town proper.

Impacts of COVID-19 pandemic on livelihoods and income

Following the March 2020 lockdown in the Iloilo Province, Philippines, a strict household quarantine was imposed, allowing only those persons who were able to access and/or meet their basic needs to leave their respective homes with an ECQ pass (PI 2020). All establishments were closed, except those providing necessities. People were advised to stay home to mitigate the spread of the COVID-19

virus. Precautionary measures adopted include restriction of movement from one border to another, curfews, closure of areas like schools and churches from public gatherings, social distancing, and wearing of protective materials such as face masks and face shields. Amidst these instituted measures, livelihood activities of people in the remote island villages stopped, i.e. fishermen stopped fishing, and casual (temporary) workers went back to their respective homes because of the implementation of border closure in provinces and municipalities. The restricted mobility and absence of cash flows during the pandemic greatly affected the respondents in remote island villages due to the drastic reduction in the monthly income of households (Figure 3).

Respondents who claimed that their livelihoods were not affected by COVID-19 pandemic (11%) were mostly senior citizens and dependents. Notably, almost 90% of respondents explicitly stated that the COVID-19 pandemic has affected almost all aspects of living (Figure 4). Since the majority of respondents were fishers, the main impact identified included relatively low product price (27%), which was largely attributable to their limited access to market and port (23%), and reduced number

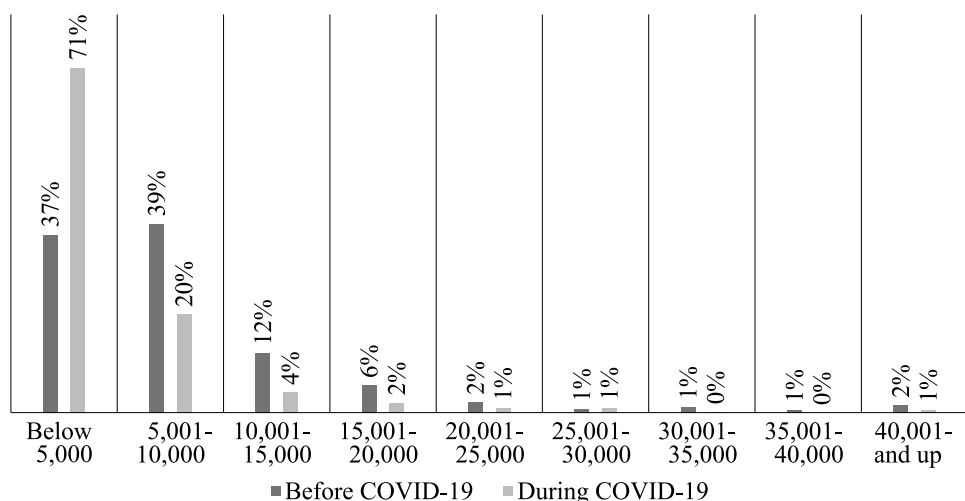


Figure 3. Monthly income (Php) of remote island communities in northern Iloilo, Philippines (n = 520) before and during COVID-19.

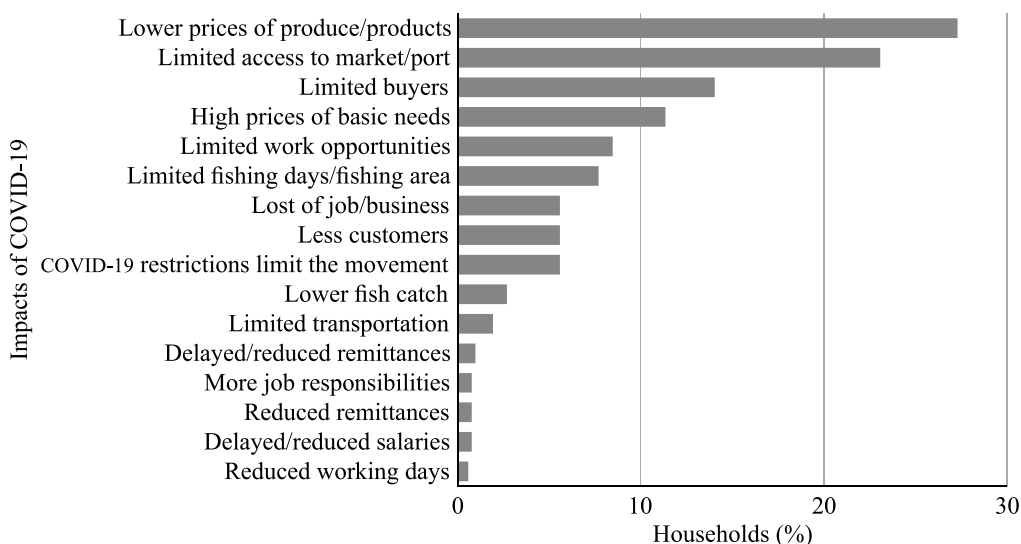


Figure 4. Impacts of COVID-19 on the livelihood of remote island villages in northern Iloilo, Philippines (n = 457). Note: multiple responses were recorded.

of buyers of their catch (14%) (Figure 4). Interestingly, while prices of products spiraled down, there was an upward spike (11%) in the prices of inputs for fishing operations (e.g. crude oil and ice) during the pandemic. The high price of inputs and the lower fish catch due to limited trips and shortened fishing operations caused some fishers to stop fishing.

The COVID-19 pandemic restrictions have also constrained livelihood opportunities due to lockdowns and limited transportation services. Working family members lost their jobs and thriving informal businesses struggled because of the reduced income of target customers. Respondents who depended on remittances from family members experienced delays and a reduction in received al-

lowances when employed family members faced a decrease in working days and compensation adjustments. Village officials, teachers, and other government employees incurred more responsibilities at work because of enormous tasks added to their usual workloads.

Respondents were also asked to assess the difficulty in accessing natural resources, livelihood inputs, processing plants, fishing ports and markets, which were the major considerations in their livelihoods before and during the COVID-19 pandemic. Notably, remote island communities have experienced difficulty in accessing resources and facilities (Figure 5). Interviews revealed that some fishers either stopped or reduced their fishing trips due to restrictions and lockdowns. Twenty-nine percent of respondents said that the frequency of their fishing operations was reduced to 0-10 days during the pandemic, while 28% of respondents claimed fishing for 11-20 days, on average. Reduction in fishing operations during the COVID-19 pandemic was notably more pronounced in Carles and Concepcion, Iloilo (Figure 6).

Fishers in Carles said that they were only allowed to operate three to six times a week, and we quote:

‘The police officers told us to stop fishing, which means we will pay fines if we don’t follow. We just waited for the advice of the barangay captain on when to resume fishing’ –Code149.

Comparing before and during the pandemic, one respondent explained:

‘Before, we have the freedom to go fishing; now that there’s COVID-19, we follow the protocols and we seldom go out of our house if there’s a lockdown’ –Code222.

Fishers from municipalities of Estancia (46%), Concepcion (42%), and Ajuy (38%) had to put up with limited fishing trips during the pandemic especially when fishing activities were allowed within

the nearshore waters only and operating near the other islands is prohibited. This restricted fishing activities from their desired location and we quote:

‘It was very difficult. We were not allowed to go near the other islands, we were restricted by the watchers. It was very strict...’ –Code482.

Further, livelihood inputs such as crude oil, ice, lubricants, and fishing gear/ fishing boat accessories were also difficult to access during the pandemic because mobility was restricted to particular days only. Interestingly, respondents in Ajuy, Iloilo, noted no difference in their expenses before and during COVID-19. This was expected since roughly 33% of fishers in the area have non-motorized boats that did not require fuel, while others were boat crew members and were not familiar with the expenses of their employers. Some respondents adapted to the situation through budget cutoff and we quote:

‘When the pandemic happened, we did not pack food anymore because the budget was used to buy crude oil instead. We also did not fish in farther areas anymore to reduce our crude oil consumption given that prices of catch are much lower’ –Code75.

Respondents had to reduce their expenses because the price of their catch was relatively lower during the pandemic, since regular buyers from Boracay, Iloilo city, Antique and Manila could no longer access fishing ports. Interviewees said:

‘During COVID, the price of catch decreased because buyers from other municipalities can’t go to Estancia (the biggest fishing port in Northern Iloilo); thus, there was no market competition resulting in a price decrease’ –Code504. ‘I don’t go fishing anymore because there was no one to buy my catch’ –Code232. ‘There was a time that I just brought back my fish catch and it spoiled because of lack of ice’ –Code005c.

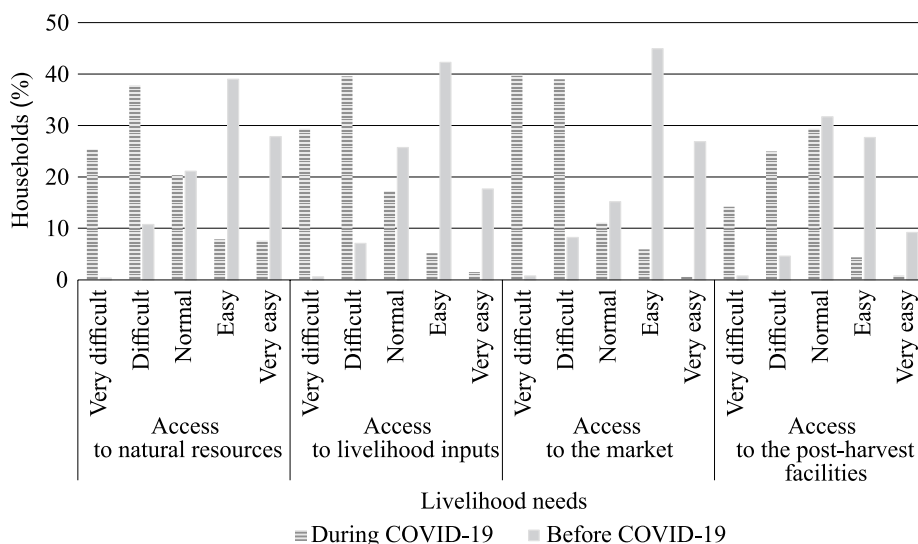


Figure 5. Access to livelihood needs before and during COVID-19 of remote island communities in northern Iloilo, Philippines (n = 520).

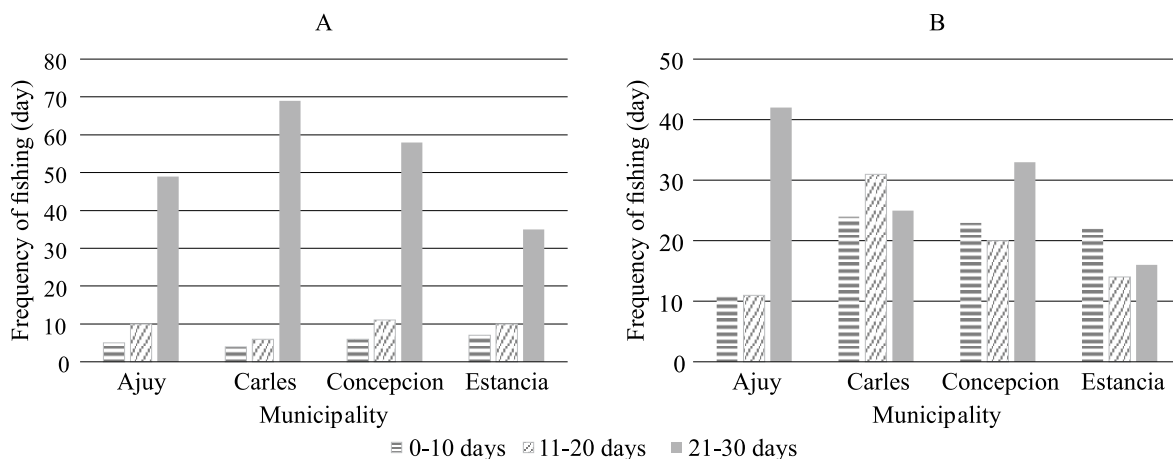


Figure 6. Frequency of fishing before (A) and during (B) the COVID-19 pandemic (n = 271).

Fishers also mentioned that it was difficult to sell in fishing ports due to the strict checking of travel pass requirements. This is true for fishers who used to deliver their catch to landing sites in other municipalities. For instance, fishers from Carles typically sell their fish catch in Estancia feeder port, while Ajuy fishers sell their fish catch in the ports of Concepcion, Banate, Iloilo and Manapla in Negros. However, fishers were not allowed to dock and transact

business personally with the buyers during the pandemic. As explained by one respondent from Ajuy:

‘When we deliver our fish catch to Banate, we can’t leave our boats and we can’t dock. They (buyers) were the one who get our fish catch (from our boat), decide on the price (of our fish catch), and hand us the sales while we were waiting at sea’ –Code4.

The money from sales was secured inside a plastic bag and thrown to fishermen who were on board their boats to comply with the social distancing protocol. Interview respondents from MAO and MPDO explained that Carles (Iloilo) has crab-picking plants, Estancia (Iloilo) has processing plants for squids and crabs, and Concepcion (Iloilo) has crab-picking and canning plants. In Ajuy (Iloilo) crabbers used to sell their catch to processing plants in Manapla on the island of Negros Occidental. The closure of these big companies during the COVID-19 caused a drastic fall in prices, and we quote:

‘He just sells (his crab catch) within the island. The price of crab decreased; now, it only costs USD ~ 2.18 kg⁻¹ from USD ~ 4.55-5.45 kg⁻¹ price before. The processing plant has stopped buying) –Code480.

Impacts of COVID-19 pandemic on food access

During the pandemic, remote island villages were not only affected by the challenges in livelihood but also experienced difficulty in accessing food and nutrition. While island villages supplied fish to the mainland, they depended on the mainland for their supply of rice and other non-fishery foodstuffs. The limited entry to the town proper on the mainland caused serious problems for fishers who were used to going back and forth to the mainland to sell their catch as well as to buy basic needs. In contrast to the pre-pandemic condition, 45% of respondents who were asked to evaluate their access to basic food needs before and after the pandemic stated that it was extremely difficult to obtain non-fishery food products such as rice during the pandemic (Figure 7). One respondent explained that during the pandemic their access to staples foods was significantly impacted by their low income, restricted market access, and shortage of transportation service providers. The respondent clarified that if they can sell their catch every day at the port or in the market, they can also buy their

needs with their earnings. We quote:

‘During the pandemic, we do bulk buying. But how about if you don’t have money, how can you buy all your needs in bulk. If there was no pandemic, we can survive the day by buying (our needs) for the day only’ –Code130.

Residents of island villages were given a chance to travel to the mainland but only once or twice a week, with only a limited number of people. Even if the fishers have their boats, they cannot easily go to the mainland without the necessary papers because a travel pass is checked upon entry to the mainland.

As with access to potable water, although 28% of respondents from the eight remote island villages expressed ease of accessing drinking water, challenges were encountered during the pandemic due to restrictions. Only three of the eight remote island villages had drinking water supply, namely: Tinigban, Carles (spring), Macatunao, Concepcion (spring), and Tagubanhon, Ajuy (pump well). The other five islands, Manipulon and Loguingot of Estancia, Isla de Caña of Carles, Salvacion of Concepcion, and Nasidman of Ajuy depended on nearby villages or the mainland for their water supply. However, the lockdown during the pandemic prohibited residents of these islands from crossing to neighboring villages hence, access to drinking water also became a challenge, especially for residents of villages of Manipulon (Estancia) and Nasidman (Ajuy). This challenge was addressed when a dialogue was held between village captains on water sharing and delivery of purified water in the affected areas.

In terms of access to fisheries products, responses varied from easy access (26%), difficult to access (24%), and just a normal situation (22%). This was very different from the experience of respondents before the pandemic when they felt that the access was easy (41%) since they can fish anytime. Respondents were also asked whether they were able to meet for the needs of their families during

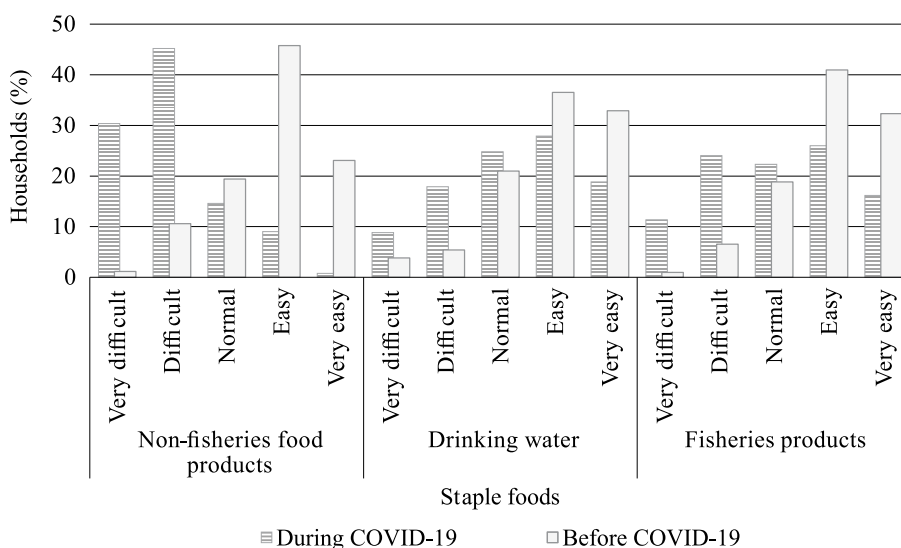


Figure 7. Perceived difficulties in accessing food staples in remote island communities in northern Iloilo, Philippines before and during COVID-19 (n = 520).

the pandemic given the reported decline in their income (Figure 3) and challenges they encountered in their livelihoods (Figure 4). Interestingly, 72% of the respondents said they could provide for the needs of their family. They were satisfied as long as they had rice, drinking water and some fish. To save money, they subsisted on fish and vegetables which they had grown in their backyard. They also did shell gleaning along mudflats during low tide and engage in fishing (using hook and line) for their daily consumption. The majority of respondents believed that as long as they continue to work hard and maintain good health, they could provide for the needs of their family during the pandemic, and we quote:

‘Because if you work hard, you will not get hungry. The viand here on the island is not a problem’ –Code028e.

Another respondent added:

‘As long as I still have the strength and there’s still sweat running in my body, I will work really hard’ –Code355.

Most respondents’ average monthly expenditures for basic food needs during the COVID-19 pandemic were around USD 54 (Figure 8). This was within their average monthly income of USD 91. However, this amount excluded expenses for grocery items (e.g. coffee, sugar, and milk), medicine, and children’s education. According to respondents, even if they worked hard and managed their income well, they could hardly cover their necessities, and we quote:

‘It was hard to look for a living and the basic needs were expensive. There was a time that we only ate one meal for breakfast and lunch because it was really difficult (to have money) that time’ –Code406.

A senior citizen shared her experience:

‘It was really hard and we can’t go out from our houses to look for food. We just budget our food and we do rice porridge always’ –Code162.

Some respondents (28%) were concerned about not being able to provide for the needs of their

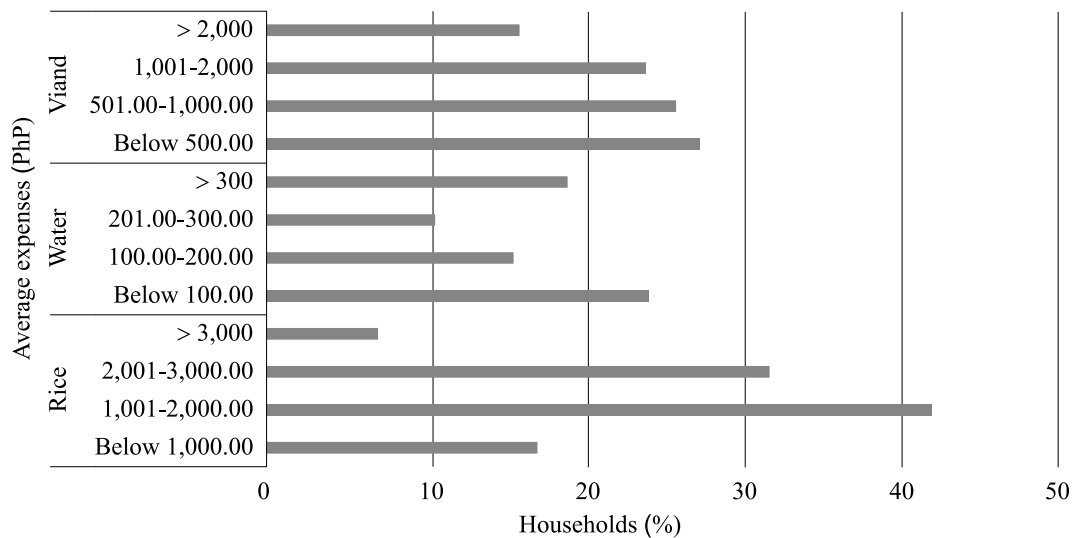


Figure 8. Remote island communities' monthly expenses for food during COVID-19 in northern Iloilo, Philippines (n = 520).

families. The lockdown made the fishing sector more vulnerable because they had no other options to supply the requirements of their families. We quote:

'We just agonized life here in the island, it's extremely difficult. We can't travel outside the village, we just sat and waited for nothing; scared and just trying to protect ourselves against COVID-19' –Code165.

Difficulties in looking for ways to provide food for their families also affected the mental health of some respondents, and we quote:

'We try so hard to stretch our budget. Sometimes, I stare blankly thinking how to budget (our meager income)' –Code512.

DISCUSSION

The COVID-19 pandemic has exacerbated existing inequalities within and between countries with the most vulnerable populations and the poor-

est countries being severely affected (UN 2021). In August 2020, the World Bank and the Department of Social Welfare and Development (DSWD) conducted a high-frequency social monitoring survey to assess the impact of the COVID-19 pandemic on the poorest and most vulnerable rural communities in the Philippines through telephone interviews involving 180 respondents comprised of community volunteers and village officials identified by the DSWD through the Kapit-Bisig Laban sa Kahirapan-Comprehensive and Integrated Delivery of Social Services (Kalahi-CIDSS), National Community-Driven Development Project (WB-DSWD 2020). According to the report, the curtailment of domestic economic activities and the effects of global economic shock resulted in the sharpest contraction in the gross domestic product (GDP) of the country in three decades, resulting in a lack of income opportunities and reduced wages, insufficient food supply and poor health, sanitation, and nutrition in communities. While some of these pressing problems were already a main concern before the COVID-19 pandemic, the assessment concluded that this situation worsened significantly as a result of the pandemic (WB-DSWD 2020).

The Iloilo Province was not under complete lockdown at all times. However, travel restrictions, curfews, and health protocols continued for most of 2020 and 2021. The ECQ, Modified Community Quarantine, and Modified General Community Quarantine protocols were generally implemented from March 2020 until August 2021. Then alert levels system 1-4 were implemented from September 2021 until late 2022. Although this allowed more flexibility among LGUs in imposing restrictions based on local COVID-19 conditions, people were adamant about their safety because of the risks of exposure to new COVID-19 variants that were highly contagious and deadly (Yap 2021, 2022). The implementation of border closure in provinces and municipalities in Iloilo Province greatly affected livelihood activities in the remote island villages. For instance, primary livelihood of most respondents was fishing, and mobility restrictions during the global pandemic led to a drastic reduction in household monthly income, which has rippling effects on purchasing power and, consequently, household food security.

Negative effects of the COVID-19 pandemic were far worse for household members who were part of the informal economy, i.e. 'all economic activities by workers and economic units that are –in law or practice– not covered or insufficiently covered by formal arrangements' (ILO 2015). According to the International Labor Organization (ILO), informal economies are heterogeneous and are typically characterized by a high incidence of poverty, inequality, and vulnerability to decent work deficits (ILO 2017). Since small-scale fisheries are considered an informal economy in the Philippines, small-scale fishers lack social protection that could have helped them mitigate the adverse income of the COVID-19 pandemic. Ferrer et al. (2021) examined the impacts of and responses to COVID-19 of small-scale fisheries in six (6) southeast Asian countries (including the Philippines), and observed that the global pandemic further highlighted the vulnerabilities of small-scale fisher households, considering that small-scale fishers have few assets

and limited capacity to mitigate the adverse impact of crises and shocks.

The absence of cash flows during the COVID-19 pandemic profoundly affected the inhabitants of island communities due to the drastic reduction in household income caused by lower prices of produce, limited access to ports/markets, and limited buyers. In addition, working family members lost their jobs, and informal businesses shut down because of the pandemic. Respondents who relied on remittances from family members experienced delays and a reduction in received allowances because family members in the informal economy also faced a decrease in working days and compensation adjustments. The informal nature of informal workers' economic activities put them at a higher risk of vulnerability and precariousness due to insufficient income and lack of legal or social protection compared to workers in the formal economy who shifted to working from home arrangements and continued to receive their monthly salary from the government or companies they work for.

The difficulty of accessing fishing ports and the additional expenses for protective supplies (e.g. face masks and face shields) which were mandatory in public locations at the height of the COVID-19 pandemic, forced some fishers to sell their catch to middlemen. This allowed them to reduce crude oil consumption during transportation while saving time and money on protective gear. However, the pricing of middlemen was far lower. Low prices for fish catches can also be attributed to the closure of processing plants and the cessation of export activities for high-value products such as lobsters, squids, and crabs. While commodity prices have declined, prices of inputs for fishing operations, such as crude oil and ice, have increased during the pandemic. People in island communities had to obtain a travel pass from the village to guarantee entry to the market or any establishment on the mainland following a timetable. Even during the set schedule, only a few people from the islands were allowed to cross to the mainland. Respondents have no choice but to request that people who

have obtained permits to travel to the mainland to acquire their necessary livelihood inputs and household needs on their behalf; they pay an additional fee for these services and for the delivery of the goods they have purchased. This expense comes on top of the growing operation costs during COVID-19.

According to the United Nations, the COVID-19 pandemic has also intensified vulnerabilities and inadequacies of global food systems which pushed millions of people into chronic hunger (UN 2021). Our study respondents fell below the poverty threshold because of inadequate income to cover their basic food and non-food needs during the COVID-19 pandemic. For example, in 2023, the monthly per capita poverty line for a person in the Western Visayas region (where our study sites were located) was approximately USD 52. This means that a family of five would need about USD 251 per month to cover their basic food and non-food items in 2023 (PSA 2023). Our findings show that 39% of the monthly income of respondents ranged between USD 91-182 before to the COVID-19 pandemic. However, during the COVID-19 pandemic, 71% of the respondents' income fell below USD 91.

Angeles-Agdepa et al. (2022) found that the poorest households were nearly twice as likely as middle-income households to become moderate to severely food insecure during the COVID-19 pandemic. Our respondents in remote island communities expressed their difficulty accessing natural resources, livelihood inputs, processing plants, fishing ports, and marketplaces, which were the major considerations in their livelihoods, during the COVID-19 pandemic. Ferrer et al. (2021) reported the highest decline (7.02%) in municipal fisheries production in the Philippines during the second quarter of 2020, coinciding with the early months of the strictest level of community quarantine. Municipal fisheries production picked up in the next quarter as selected areas of the economy were partially opened, but the increase was insufficient to offset the fish catch decline in the previous months (Ferrer et al. 2021).

The lack of income opportunities and low income was already a concern in remote small island communities even before the COVID-19 pandemic hit. However, this situation has worsened significantly as a result of extensive job losses caused by the pandemic. This is especially problematic because most of these island communities are underserved and marginalized.

In general, while most of the islands in the Philippines have rich biodiversity, many have fragile ecosystems and very limited freshwater resources, as in the case of the study sites where people rely on the mainland or neighboring islands for drinking water. In general, this situation is commonplace in fishing communities. Several studies have noted that existing challenges and vulnerabilities faced by the small-scale fisheries sector in the southeast Asian region include poverty, market access, financial services, livelihoods, poor access to public services such as health care, clean water, and sanitation, social protection, political and economic marginalization, gender inequity and natural disasters-have been exacerbated by the negative effects of COVID-19 (Knight et al. 2020; Ferrer et al. 2021; Marschke et al. 2021). The interplay of challenges and vulnerabilities, combined with the additional difficulty brought on by the COVID-19 pandemic made it worse for remote island communities.

During FGDs, interview respondents also underscored the seasonal and unpredictable nature of fish catch from the wild (Table 3). Small-scale fishers have been especially vulnerable because of mobility restrictions imposed during COVID-19 since many of our respondents are subsistence fishers. This was consistent with previously reported frequency of fishing operations. The reported seasonality and unpredictable fish catch from the wild corroborate findings of earlier studies showing empirical evidence of the declining catch in the Visayan Sea (a fishing ground shared by the municipalities covered in this study) despite a seasonal fishing closure enforced by the government (Bagsit et al. 2021; Ungkabay-Bagsit et al. 2023).

Island communities also face a continuing threat of isolation from the mainland due to distance from political and economic centers. According to Christian Aid (2011), this situation is compounded by poor transportation and communication networks, unfavorable social and political conditions, and inherent vulnerabilities because of their size, remoteness, and available resources. Thus, it is not surprising that they are also the least served (Christian Aid 2011). A study by Collado (2024) highlighted the key role of geography as one of the core factors why individuals are left behind, deprived, and continue to experience inequality in access to (quality) healthcare facilities and services. Collado (2024) stressed that while inter-island transportation in the Philippines can be challenging due to infrastructure and communication difficulties, particularly in GIDA, it is important to understand the intersections of these factors and intra-island travel issues in order to highlight the urgent need for the government to respond to underserved populations in isolated communities.

The GIDA communities were generally safe from COVID-19 but not from hunger (Aguilar 2021). The remoteness of these isolated areas has become both a boon and bane for members of these communities. For example, the remoteness of our study sites in island communities enabled these groups to establish protection boundaries through geographical separation from the mainland. However, the isolation of communities also caused difficulty for inhabitants to access government support compared to their counterparts in densely populated urban centers across the country (Oliver et al. 2021). In our study, the average travel time from the mainland to the island villages was approximately 50 min by boat. Compared to mainland villages, which are more densely populated areas, island villages in rural areas have smaller populations and less direct exposure to urban centers and large gatherings which could have been one of the reasons for the few COVID-19 cases reported in the areas.

CONCLUSION

Our study underscores the need for government and non-governmental organizations to be mindful of the special circumstances that geographically isolated and disadvantaged places face while managing crises, particularly island communities in remote locations. The disruption caused by the global pandemic to key economic sectors brought exponential impacts to these underserved and marginalized communities, especially remote island populations that rely heavily on undiversified and already fragile economies like fisheries. The lack of social protection for fisheries workers in the informal economy puts them in a more disadvantaged position particularly because of the nature of their livelihoods.

Results show that the global pandemic exacerbated the existing vulnerabilities of many communities in isolated and remote areas. Our findings call for urgent attention, as well as deliberate and informed planning to ensure the protection of the poorest and most vulnerable sectors of society in the face of a crisis. Although the global pandemic brought negative impacts to nations, it also provided an opportunity for communities to learn and build from their unique experiences toward efficient crisis management, specifically in improving current programs and services delivery to geographically isolated and disadvantaged areas. This effort is vital in realizing the United Nations' No Left Behind principle, which is the core of UN Member States' commitment to eradicate poverty, discrimination, and exclusion, to reduce inequalities and vulnerabilities that undermine people's potential.

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Author contributions

Farisal Ungkakay-Bagsit: conceptualization; project administration; investigation; methodology; formal analysis; supervision; validation, writing-original draft; writing-review and editing. Mary Barby P. Badayos-Jover: conceptualization; funding acquisition; project administration; investigation; methodology; supervision; validation; writing-review and editing. Raymundo P. Pavo: conceptualization; investigation; methodology; supervision; validation; draft review, and editing. Pearlyn Cambronero-Tumabiao: data curation; formal analysis; writing-original draft; writing-review and editing.

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