

HEALTH TRENDS AND ITS IMPLICATIONS DURING THE COVID-19 PANDEMIC IN CENTRAL VISAYAS, PHILIPPINES

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ABSTRACT

The effects of the Covid-19 pandemic have underscored for the Philippines, in particular, and all countries in general, the importance of a resilient health care system to be able to manage health emergencies and disasters. The study aimed to do a situational analysis of the health sector during the COVID-19 pandemic in the Central Visayas, Philippines. The study collected data from national government agencies in the Philippines. The article identifies gaps in the health care system which may have affected not only COVID-19 outcomes but other health indicators which was highlighted due to the pandemic. The study provides health managers and policymakers information that could be used to promote reforms in the health sector to be able to manage future pandemics and health emergencies both in local and national levels.

KEYWORDS

COVID-19; health sector; pandemic; health indicators; health system; Philippines

INTRODUCTION

People all over the world are confronted with a broad and varied range of risks related to health emergencies and disasters which includes infectious disease outbreaks such as epidemics or pandemics. The health, societal, and economic costs of these incidents can be devastating, both in the short and long term. The assessment and management of hazards and vulnerabilities related to a pandemic is crucial to protect people's health, to ensure local, national health security, and to build the resilience of communities, and health systems. During health emergencies and disasters, the health sector has a central role in managing the risks and reducing the consequences during a pandemic. But it can only fulfil these responsibilities with a whole-of-government and whole-of-society approach.

From 2012 to 2017, the World Health Organization (WHO) recorded more than 1,200 outbreaks in 168 countries, including those due to new or re-emerging infectious diseases. In 2018, a further 352 infectious disease events, including Middle East respiratory syndrome coronavirus (MERS-CoV) and Ebola virus disease (EVD), were tracked by WHO [1]. The most recent and devastating of these outbreaks is the Coronavirus disease (COVID-19). The COVID-19 pandemic is a major worldwide health threat and has quickly spread around the world with 175 987 176 confirmed cases, including 3 811 156 deaths worldwide as of the June 15, 2021 [2]. COVID-19 is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which spreads the same way as other coronaviruses, mainly through person-to-person contact. Infections range from mild to deadly [3]. COVID-19 is increasing day by day severely affecting a large population in the world [4].

Densely populated areas of countries and highly mobile populations are affected mostly showing larger transmission growth [5]. COVID-19 pandemic has damaged human lives and health. It exposes the weak health infrastructure of the countries of the world affecting the world economy.

In the Philippines there are already existing gaps and inequities in the health care system and delivery in the Philippines which could be overwhelmed during health emergencies and disasters. Thus, all of these perennial challenges in the Philippine health care system highlights the imperative to scale up risk and evidenced informed actions to reduce hazards, exposures and vulnerabilities, and build capacities to protect public health from emergencies and disasters.

In the Philippines, the first case of Covid-19 was reported on January 30, 2020. Since that time there has been a steady increase of cases and as of this writing, there are already 1 327 431 confirmed cases with 22 963 deaths [6]. One of the strategies implemented by the Philippine government are strict community quarantines which involves a temporary suspension of classes, work-from-home, and skeletal or limited workers, and restriction of the population to their homes. It allows only essential services like health care, food supply, medicines, and banking during the community quarantine.

In the case of the Philippines, total cumulative COVID-19 cases are rising day by day showing major concerns, but their recovery rate is also increasing showing good effect of control measures. Due to the COVID-19 epidemic commercial and industrial sectors are fully or partly closed in the country causing a lesser job with a lesser amount of salary and cash flow. This issue can turn into lower GDP growth. The country may face a post-COVID-19 economic recovery problem [7].

In relation to the health sector, the rising number of cases of COVID-19 infections on a daily basis is a serious concern as there are limits to hospital care capacity for patients with serious symptoms (e.g. difficulty in breathing). Should the number of infected people rapidly rise, there may come a time when the health care resources will be overwhelmed. Transport and border restrictions introduced by community quarantine measures have universally impacted health services access and delivery as well. Surveys conducted by different organizations indicated decreased access to

basic services such as food and access to health facilities in the earlier stage of the pandemic [8]. Care seeking behaviors in both health care providers and patients have also changed as a result of quarantine measures and the fear of contracting COVID-19. This change would affect preventive health programs and management of non-COVID-19 diseases. The pandemic has also affected not only the physical health of the people but also their mental health. Studies showed that Filipino respondents reported high levels of depression, anxiety, and stress during the COVID-19 pandemic [10,11].

On the supply and services side, the measures to contain COVID-19 have siphoned away significant manpower and essential resources to the community. Those areas operating with a lean health care team, task-shifting were noted to be common, with staff performing additional duties related to COVID-19 on top of their usual role [12]. Despite the huge number of health professionals that the country produces every year, there is still a shortage of health workforce employed to meet the standard requirement for the country's growing population during the pandemic [13]. A large factor of this is the continuous out migration of health professionals. The outbreak of the COVID-19 pandemic that resulted in a sudden spike in health service requirements exposed the long-standing vulnerabilities of Human Resources for Health. The inadequate number of health personnel provided by the health system has constrained the country's ability to effectively respond to the overwhelming demand for health services during this time of pandemic. The pandemic also highlights the deficiency in specific areas of medical training and expertise as evident in the lack of gerontologists and geriatricians to meet the unique needs of the large number of COVID-19-infected older people [14].

The effects of the COVID-19 pandemic have underscored for the Philippines, in particular, and all countries in general, the importance of a resilient health care system to be able to manage health emergencies and disasters. Thus, in order to address the current and emergent pandemics, there is a need to revisit the existing health system and ultimately to future proof one of the central actors during such a crisis, the health sector. This study aimed to conduct a situational analysis specifically on the health sector in Central Visayas during the COVID-19 pandemic using selected health indicators.

MATERIALS AND METHODS

DATA COLLECTION

The study utilized a descriptive survey focusing on the review of records and data on identified indicators for the health sector. The study collected the most recent available information on life expectancy among Southeast Asian countries, as well as regional data on all-cause mortality rate, maternal mortality ratio, infant mortality rate, stunting rate, COVID-19 incidence rate, death rate, positivity rate, hospital beds, primary health care facilities, and health human resources. The data collection tool utilized the Review of Records (ROR) checklist that indicates the different data to be collected from existing validated reports and published information as well those requested from the Department of Health Regional Office 7. The present study was conducted in Central Visayas (Region 7) in the Philippines. It is located at the central part of the Visayas island group in the Philippines with a land area of 15,875 km². It is bordered by the Visayan Sea and the province of Masbate in the north, Mindanao Sea in the south, Negros Occidental in the west, and the island of Leyte in the east. It consists of four (4) provinces, namely: Cebu, Bohol, Negros Oriental and Siquijor. It includes three (3) independent cities, namely: Cebu City, Mandaue City, and Lapu-Lapu City. Cebu City is its regional center.

DATA ANALYSIS

Analysis of data focused on the comparative evaluation of the findings based on trends and profiles from other provinces within the region and other countries. The data were also compared with existing standards to determine possible gaps and factors that may have implications with the COVID-19 pandemic management and outcomes. The data were presented in graphs and tables to show possible trends and comparisons based on standards.

ETHICS APPROVAL OF RESEARCH

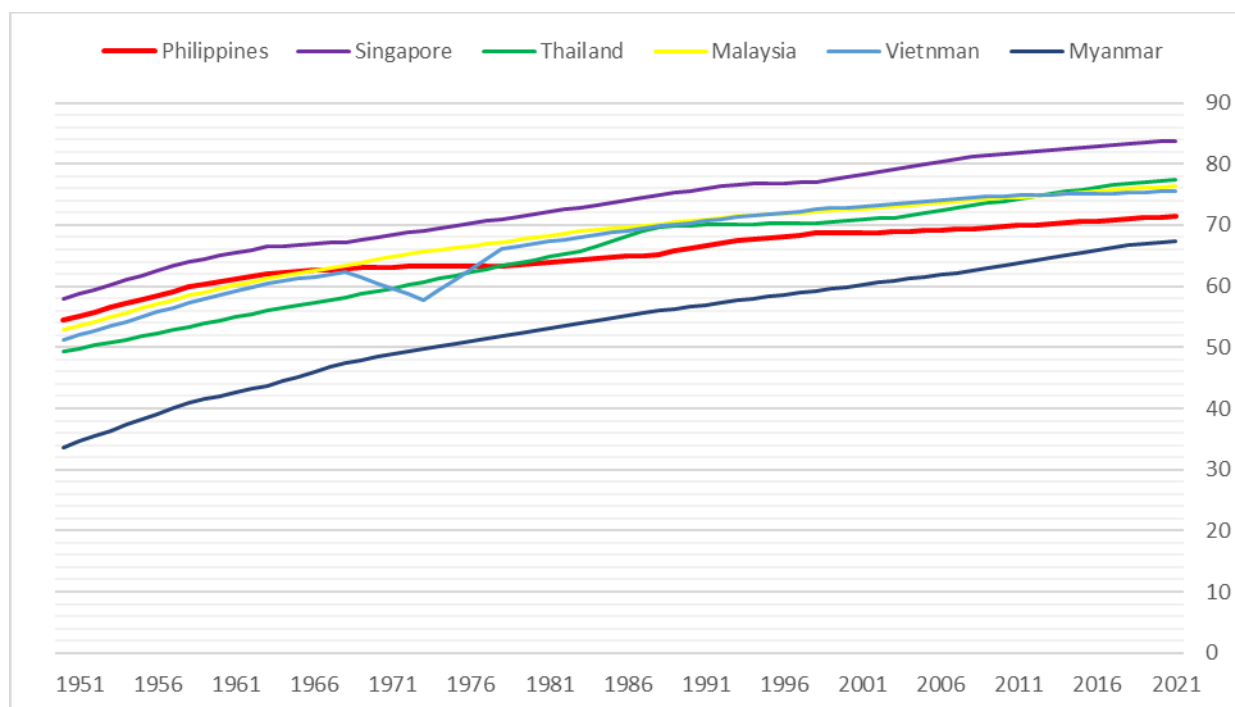
The research was approved by the Cebu Normal University Research Ethics Committee before data collection commenced. There was no identifiable human information included in the study and data were from public records and aggregated to ensure anonymity.

RESULTS AND DISCUSSION

HEALTH TRENDS IN THE PHILIPPINES AND CENTRAL VISAYAS

As shown in Figure 1, the current life expectancy for Philippines in 2021 is 71.41 years, a 0.18% increase from 2020. The life expectancy for Philippines in 2020 was 71.28 years, a 0.18% increase from 2019. Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.

FIGURE 1. LIFE EXPECTANCY OF SOUTHEAST ASIAN COUNTRIES

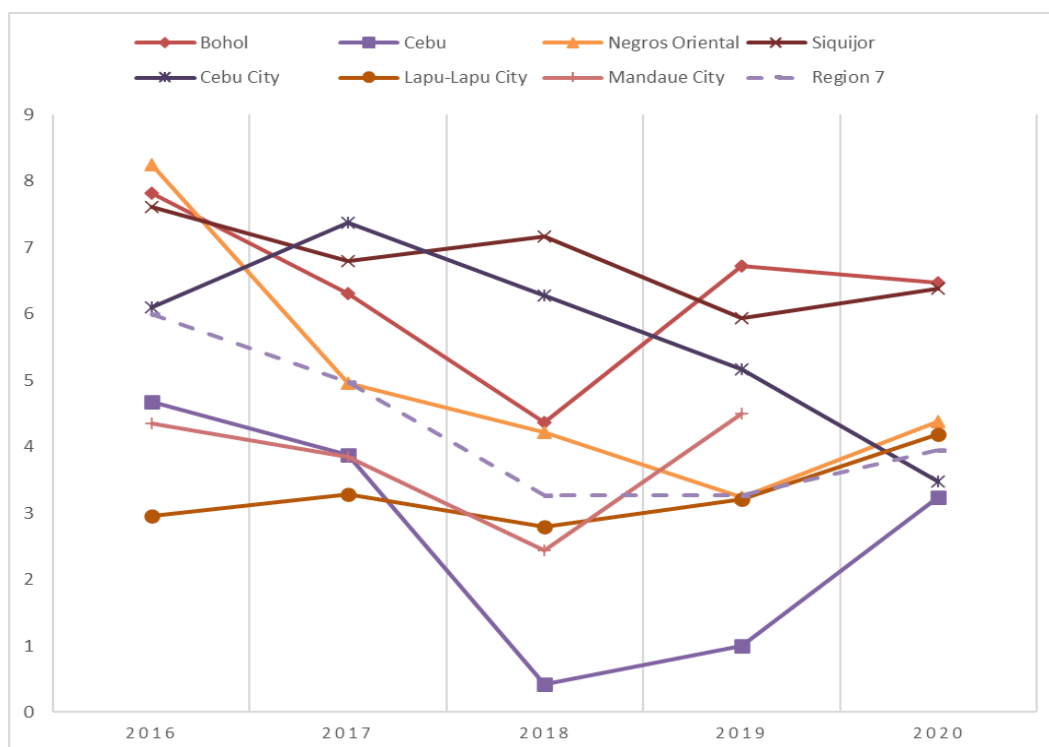


A comparison of the life expectancy of the Philippines with other ASEAN countries shows that the Philippines has the 2nd lowest life expectancy at 71.41, the highest is Singapore with 83.8 and the lowest is Myanmar at 67.37. Mortality and fertility trends are also changing. Although life expectancy has increased in all of the region's countries, there have been substantial differences in the rate of improvement. Since the 1950s, most countries have seen continual increases in life expectancy. Political regimes and a history of conflict have hampered growth in certain countries such as Myanmar and Vietnam [15]. Life expectancy improvements have slowed which has been mostly due to modest progress in adult mortality reduction [16]. Economic conditions play a significant role in determining the overall health and well-being of a population. The Philippines faces challenges such as income inequality, poverty, and limited access to quality healthcare, which can impact life expectancy. Socioeconomic factors can affect healthcare access, nutrition, education, and overall living conditions. Evidence suggests that having more health-care resources and having a greater level of socioeconomic advantage increases life expectancy [17]. In certain nations, social, political, and economic progress has resulted in significant health advances, whereas in others, minor changes have occurred. Furthermore, there is evidence that future projections of life expectancy will be affected due to the COVID-19 pandemic. Some Southeast Asian countries

have made substantial progress in controlling infectious diseases like malaria, tuberculosis, and HIV/AIDS. In the case of the Philippines, certain infectious diseases, inadequate sanitation, and limited access to clean water may contribute to a higher disease burden and lower life expectancy. Cultural attitudes toward seeking healthcare, health education, and preventive measures may also influence health-seeking behavior and affect life expectancy. A study analyzing 29 countries showed that the COVID-19 pandemic led to losses in life expectancy in 27 countries, with large losses of life expectancy of >1 year in 11 countries for males and 8 among females [18].

The all-cause mortality rate for Cebu province is 3.27 per 1,000 population in 2020, which has the highest increase of 224% since 2019 (Figure 2). Cebu City is 3.47 per 1,000 population in 2020, a decrease by 33% since 2019. Generally, there is a 21% increase in the all-cause mortality rate of Central Visayas. Disparities in health trends are observed across regional, urban–rural and socioeconomic status [19]. These disparities could be explained due to lack of health infrastructure and human resources in certain localities compared to highly urbanized areas. The cities usually have specialized health facilities and health professionals which could manage severe forms of the disease. Furthermore, variations across socioeconomic status are strongly associated with maternal education, regional location and access to health services [20].

FIGURE 2. ALL-CAUSE MORTALITY RATE IN CENTRAL VISAYAS



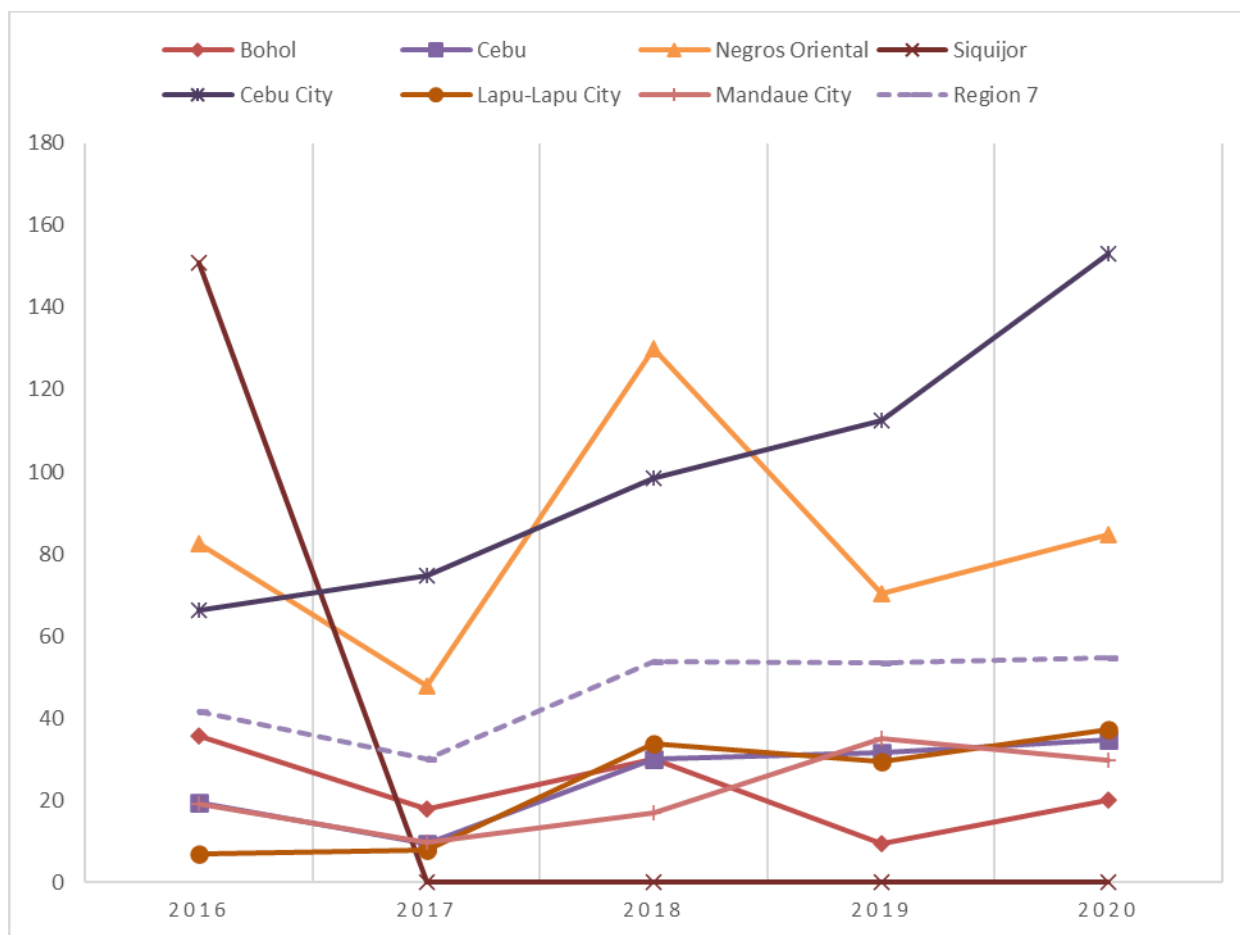
Note. Mortality Rate = Total Deaths divided by Total Population x 1000

As seen in Figure 3, the maternal mortality ratio for Bohol province is 20 per 100,000 livebirths in 2020, which has the highest increase of 114% since 2019. Mandaue City is 30 per 100,000 livebirths in 2020, a decrease of 16% since 2019. Furthermore, Siquijor has zero maternal deaths since 2017. Generally, there is a 2% increase in the maternal mortality ratio of Central Visayas. The maternal mortality ratio reflects the capacity of health systems to effectively prevent and address the complications occurring during pregnancy and childbirth. Common causes of maternal deaths are hemorrhage, sepsis, obstructed labor, hypertensive disorders in pregnancy, and complications of unsafe abortion. Insufficient healthcare facilities, healthcare workforce shortages, and challenges in healthcare delivery systems could affect these outcomes. For example, there

are some provinces such as Siquijor that have adequate number of midwives and nurses which could significantly improve maternal mortality outcomes.

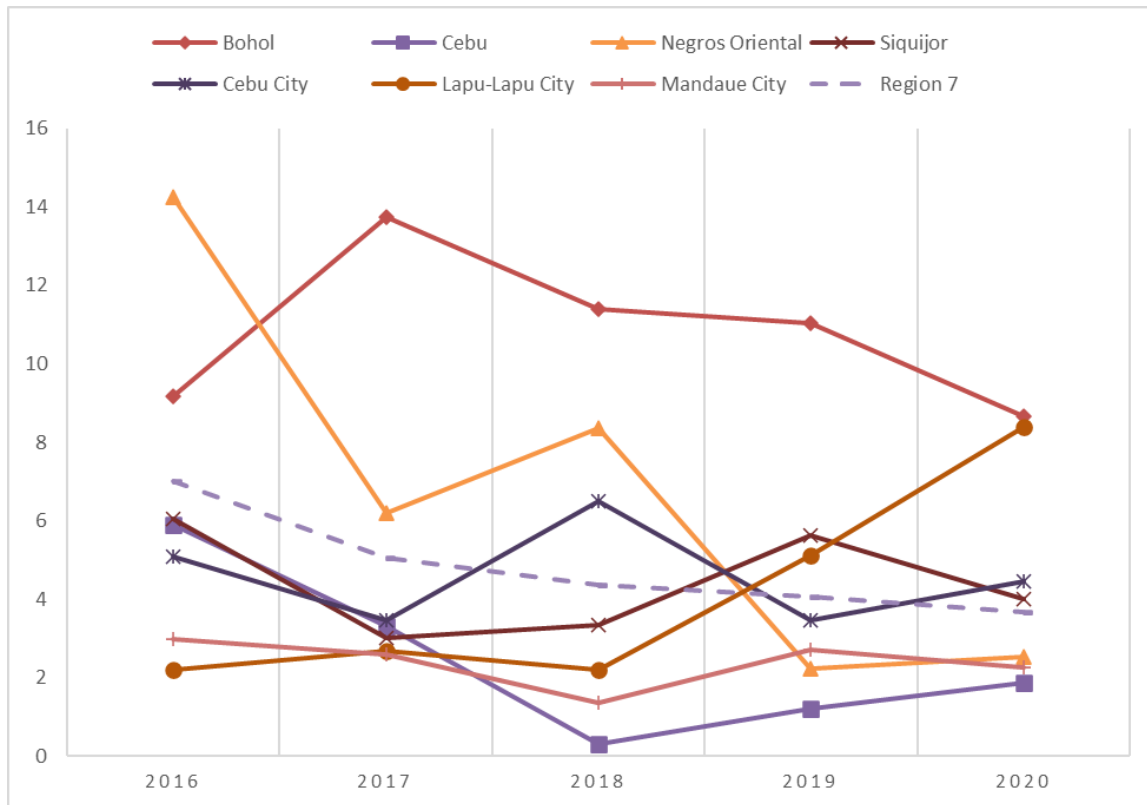
The infant mortality rate for Lapu-Lapu City is 8 per 1,000 livebirths in 2020, which has the highest increase of 64% since 2019 (Figure 4). Siquijor is 4 per 100,000 livebirths in 2020, a decrease by 29% since 2019. Generally, there is a 9% decrease in the infant mortality rate of Central Visayas. Infant mortality rate is measure of human infant deaths in a group younger than one year of age. It is an important indicator of the overall physical health of a community. Preserving the lives of newborns has been a long-standing issue in public health, social policy, and humanitarian endeavors.

FIGURE 3. MATERNAL MORTALITY RATIO IN CENTRAL VISAYAS



Note. Maternal Mortality Ratio = Total Maternal Deaths divided by Livebirth x 100,000

FIGURE 4. INFANT MORTALITY RATE IN CENTRAL VISAYAS



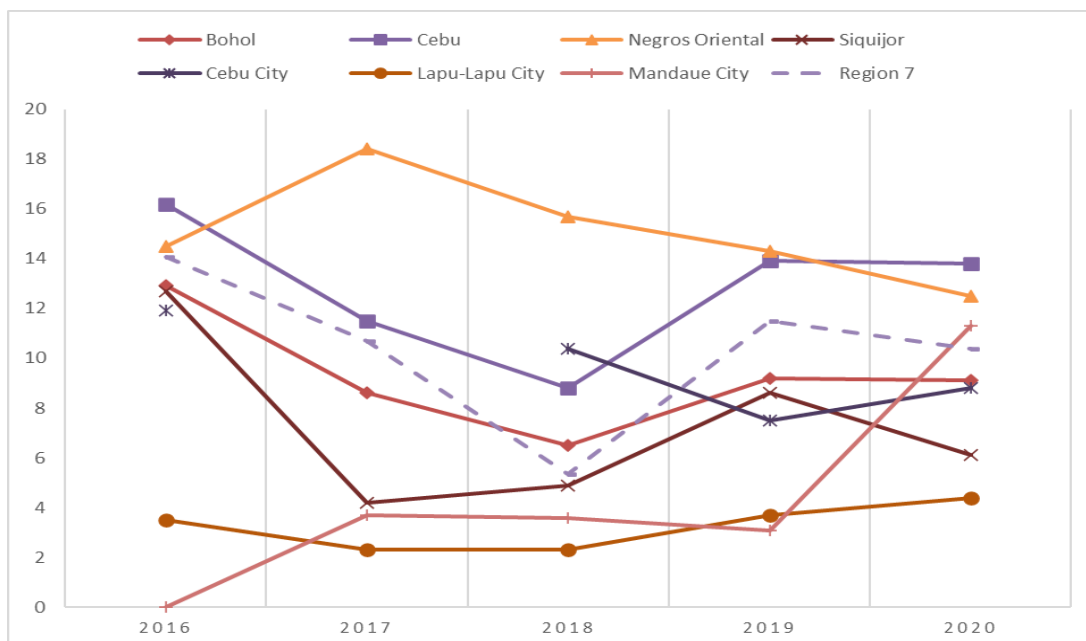
Note. Infant Mortality Rate = Total Infant death divided by Livebirths x 1,000

High infant mortality rates and maternal mortality ratio are generally indicative of unmet human health needs in sanitation, medical care, nutrition, and education, all of which may have been affected by the pandemic. Globally, the COVID-19 pandemic has disrupted family planning and maternal and newborn health services, and these indirect consequences in the Philippines may dramatically increase

or slow the improvement in the annual maternal and infant mortality in 2020 as compared to pre-COVID years [21].

The stunting rate for Mandaue City is 11.3% in 2020, which has the highest increase of 265% since 2019 (Figure 5). Siquijor is 6.1% in 2020, a decrease of 29% since 2019. Generally, there is a 10% decrease in the stunting rate of Central Visayas.

FIGURE 5. STUNTING RATE IN CENTRAL VISAYAS

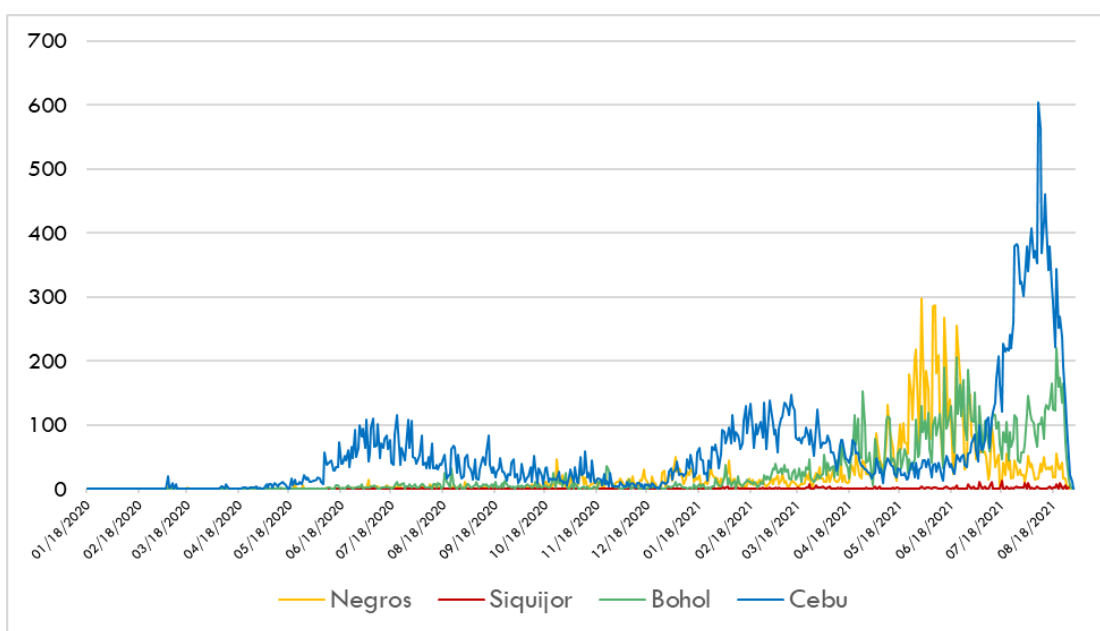


Stunting is the impaired growth and development that children experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation. Children are defined as stunted if their height-for-age is more than two standard deviations below the WHO Child Growth Standards median. Several factors could affect stunting, including improvements in maternal and paternal education, household socioeconomic status, sanitation conditions, maternal health services access, and family planning [22]. Moreover, the mental health impact, social isolation, the economic crisis, as well as interruptions in food and health systems caused by the COVID-19 epidemic, threaten to increase undernutrition in low- and middle-income nations, which includes the Philippines [23,24,25].

COVID-19 TRENDS

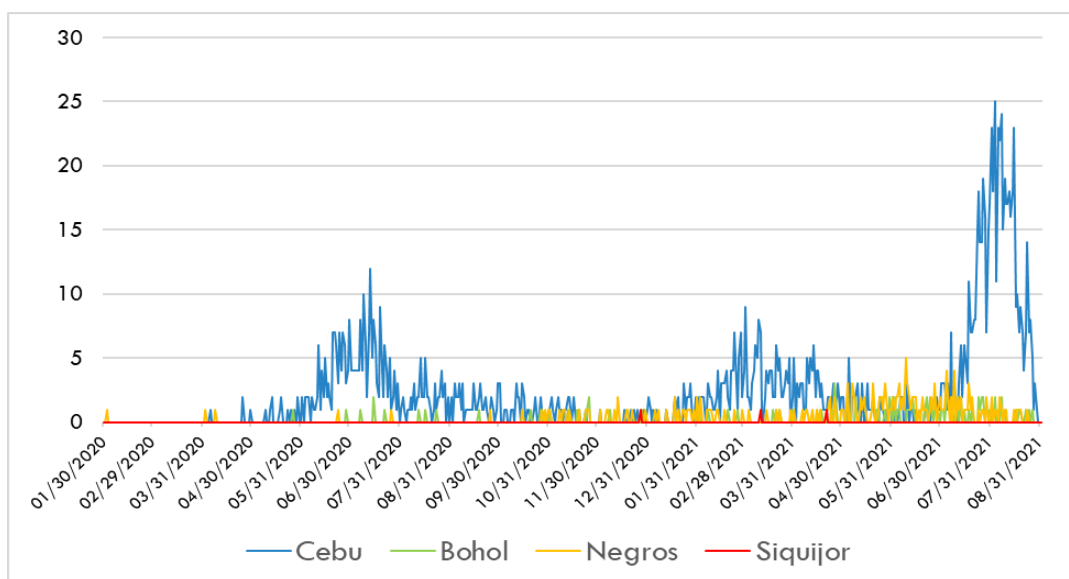
Cebu has the highest number of cases (32,678; Figure 6), death rate (3%; Figure 7), and has experienced several surges in cases since the start of the COVID-19 pandemic. This indicates higher transmission level of SARS-CoV-2 in this area. Moreover, Cebu's death rate is higher than the national cumulative death rate of 1.5% [26]. Strategies implemented by the national and local government are strict community quarantines which involves a temporary suspension of classes, work-from-home, and skeletal or limited workers, and restriction of the population to their homes. It allows only essential services like health care, food supply, medicines, and banking during the community quarantine.

FIGURE 6. COVID-19 EPIDEMIC CURVE IN CENTRAL VISAYAS



Note. Data as of September 1, 2021

FIGURE 7. COVID-19 DEATH RATE IN CENTRAL VISAYAS



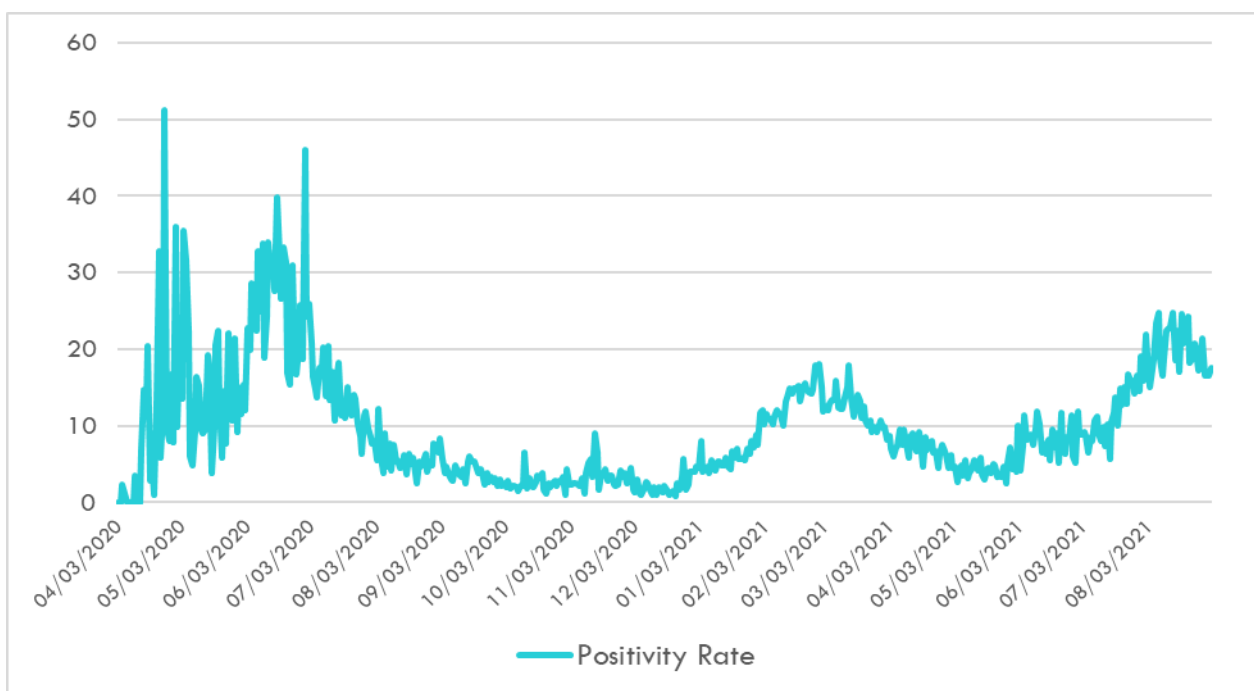
Note. Data as of September 1, 2021

The decision to impose, extend or lift a community quarantine in provinces, highly urbanized cities and independent component cities were determined by the Inter Agency Task Force (IATF) and Office of the President. Regional IATFs and their respective LGUs can decide for their component municipalities within their provinces, but the degree of stringency cannot be lower than what was recommended at the provincial level. LGUs are not to declare their own community quarantine measure without concurrence with their respective regional IATFs. As a result, across different localities and regions, the level of stringency may greatly differ. Siquijor has the lowest number of cases (401), death rate (1%). Death rates at low levels and in small

geographical regions, can be sensitive to minor fluctuations (e.g. one versus two deaths).

As seen in Figure 8, the cumulative positivity rate of Central Visayas is 9.74% and the highest rate of 51% was on April 24, 2020. The WHO has recommended a standard of a positivity rate of 5% for 2 weeks to consider the pandemic is under control. The percent positive will be high if the number of positive tests is too high, or if the number of total tests is too low [27]. A higher percent positive suggests higher transmission and that there are likely more people with coronavirus in the community who have not been tested yet. This is also influenced by surveillance system performance, testing policy and laboratory capacity [3].

FIGURE 8. COVID-19 TESTING TRENDS IN CENTRAL VISAYAS



Note. Data as of September 1, 2021

Early in the outbreak, testing focused more on symptomatic patients who seek care, so milder and asymptomatic cases are less likely to be detected, leading to overestimation of positivity rate and death rates; this overestimation may decrease as testing and active case finding increase [3]. Despite the alarming rise in COVID-19 cases, testing and contact tracing of suspected COVID-19 cases remained behind target [28]. The government fell short of its goal of doing 30,000 polymerase chain reaction (PCR) tests by the end of May 2020 and 50,000 by the end of June 2020. Currently, the Philippines has yet to implement random testing and surveillance due to limited capacity and resources. Among Southeast Asian countries, SARS-CoV-2 has been successfully controlled or eliminated due to Singapore and Vietnam's comprehensive surveillance

strategy to detect and contain as many cases as possible [29].

HEALTH CARE CAPACITY

Capacity standards provides the number of health infrastructure and workers required to attain the objectives of the health system and meet population needs. As seen in Table 1, in terms of the capacity of the health care system to meet the health needs of the population, the hospital beds to population ratio in Region 7 is 1:1198, which is lower than the ideal ratio of 1:1000. The province of Cebu still needs around 2,701 beds to meet the ideal ratio. Only Cebu City (2,132) and Mandaue City (297) have more than enough hospital beds given the concentration of hospitals, especially private health facilities, in these areas. Moreover,

majority of the tertiary hospitals in the region (71%) is concentrated in Cebu while there is none in Siquijor. Health facilities may become congested, and this problem is exacerbated by the limited capacities of primary care providers to provide quality preventive and primary care.

There is also lack of health personnel, equipment, supplies and other resources needed to provide quality care in the communities, Therefore, even management of primary cases is being referred to higher level facilities which adds to the congestion of the hospitals.

TABLE 1. HOSPITAL BEDS IN CENTRAL VISAYAS

Province/ City	Estimated 2020 Population	No. of Hospital Bed Capacity			Current Bed to Population Ratio	Bed Requirement	Surplus/(Gap)
		Gov't	Private	Total			
Bohol	1,365,108	505	586	1091	1251	1365	-274
Cebu	3,226,286	225	300	525	6145	3226	-2,701
Negros Oriental	1,406,275	350	400	750	1875	1406	-656
Siquijor	100,456	75	0	75	1339	100	-25
Cebu City	1,012,802	798	2347	3145	322	1013	2,132
Lapu-Lapu City	398,110	50	260	310	1284	398	-88
Mandaue City	448,009	50	695	745	601	448	297
Central Visayas	7,957,046	2053	4588	6641	1198	7957	-1,316

Note. General hospitals only

The impact of the COVID-19 pandemic has affected hospitals beginning March 2020. The capacity of hospital beds was at the verge of coming under great pressure. There is a shift of regular beds to specific COVID-19 beds due to special hygiene measures, and the increased need for Intensive Care [30].

As seen in Table 2, for primary health care facilities, there were not enough rural health units/city health offices, as shown by the RHU to population ratio of 1:34,747 for Region 7 compared to the ideal 1:20,000 ratio. Cebu province had

the biggest gap in RHUs (-106). Only Siquijor had more than enough RHUs (7) to serve its population.

Moreover, Region 7 did not have enough barangay health stations (BHS) to adhere to the ideal of 1:5,000 BHS to population ratio. Specifically, there are gaps in the number of BHS in Cebu Province (-619) and the three cities of Cebu (-123), Mandaue (-53), and Lapu-Lapu (-51). The rest of the provinces have more than enough BHS to serve its population.

TABLE 2. PRIMARY HEALTH CARE FACILITIES IN CENTRAL VISAYAS

Area	Total Population	RHU/CHO to Pop Ratio	No. of RHUs/CHOs	RHU/CHO Needed	Surplus/(Gap)	BHS to Pop Ratio	No. of BHS	BHS Needed	Surplus/(Gap)
Bohol	1,365,108	13,001	105	68	37	2,585	528	273	255
Cebu	3,226,286	58,660	55	161	-106	124,088	26	645	-619
Negros Oriental	1,406,275	28,126	50	70	-20	2,807	501	281	220
Siquijor	100,456	8,371	12	5	7	1,522	66	20	46
Cebu City	1,012,802	202,560	5	51	-46	12,660	80	203	-123
Lapu-Lapu City	448,009	448,009	1	22	-21	11,487	39	90	-51
Mandaue City	398,110	398,110	1	20	-19	14,745	27	80	-53
Central Visayas	7,957,046	34,747	229	398	-169	6,280	1,267	1,591	-324

Moreover, the Local Government Code mandates that all barangays (native Filipino term for a village and the smallest administrative division in the Philippines) should have at least one (1) barangay health station (BHS), but about 50% of the total barangays in the country do not have a BHS [31]. Half of Filipinos do not have access to a nearby primary care facility or one that patients can reach within 30 minutes.

Primary health care (PHC) is the initial point of contact for individuals, families, and communities into the healthcare system. PHC ensures that people receive comprehensive and continuous care, ranging from promotion, prevention, treatment, rehabilitation, and palliation [32]. Ideally, it should be delivered in communities closer to the people [1]. This is a crucial component during pandemics since they are the ones that will be the first lines of defense for prevention of transmission within the community. More importantly, PHC leads to better health outcomes. Meta-analyses show that the supply of PCP and continuity of care reduce all-cause

mortality [33]. Primary care interventions, such as the use of community health workers (CHWs) reduce maternal, child and neonatal mortality in low and middle-income countries [34, 35]. Furthermore, variations in access to services are frequently caused by social, economic, and geographic constraints, resulting in disparity in health outcomes [19]. The poor are frequently located in rural and difficult-to-reach places, making it difficult for them to access health care when they need it.

As seen in Table 3, for the health human resources, Region 7 does not have enough physicians and midwives but have more than enough nurses. Cebu province has the biggest gap for physicians (-138) and midwives (-481) while for the three cities of Cebu, Mandaue, and Lapu-Lapu, have gaps for physicians, nurses, and midwives. The other provinces have more than enough health professionals for their population. Estimates are limited by the unavailability of data for private health facilities.

TABLE 3. HEALTH HUMAN RESOURCES IN CENTRAL VISAYAS

Area	Total Population	Physicians	Nurses	Midwives	Physician needed	Nurse needed	Midwives needed	Physicians Surplus/ Gap	Nurses Surplus/ Gap	Midwives Surplus/ Gap
Bohol	1,365,108	73	535	505	68.3	136.5	273.0	5	398	232
Cebu	3,226,286	23	496	164	161.3	322.6	645.3	-138	173	-481
Negros Oriental	1,406,275	49	373	422	70.3	140.6	281.3	-21	232	141
Siquijor	100,456	7	53	53	5.0	10.0	20.1	2	43	33
Cebu City	1,012,802	32	84	108	50.6	101.3	202.6	-19	-17	-95
Lapu-Lapu City	448,009	9	32	44	22.4	44.8	89.6	-13	-13	-46
Mandaue City	398,110	4	35	34	19.9	39.8	79.6	-16	-5	-46
Central Visayas	7,957,046	197	1608	1,330	397.9	795.7	1,591.4	-201	812	-261

In response to the COVID19 pandemic, provincial targets established by the DOH include at least: one epidemiology and surveillance officer for every 100,000 population, one contact tracing personnel for every 800 population, Barangay Health Emergency Response Teams (BHERT) for every 1,000 population, and 10 trained testing staff [31]. Moreover, one reason for this shortage may be because the Philippines has been exporting human resources for health around the globe and to richer nations due to weak local economic conditions [15]. Among the key factors that push health professionals to migrate are insufficient salary, frustrations on job security, non-recognition, and

unfavorable work conditions. Another concern is that health human resources are spread inequitably across various areas of the country; most are concentrated in highly urbanized areas. Although the financial benefits of this strategy appear to be substantial, equity concerns about the negative effects of international trade in health services and workforce migration on national health systems have surfaced, particularly in terms of widening disparities in the rural-urban or public-private mix. During the COVID-19 pandemic, one of the numerous challenges connected to health human resources that has been identified is a scarcity of medical supplies and equipment,

which has resulted in a number of deaths among health care professionals [36]. As the COVID-19 situation worsens, healthcare personnel have reported a lack of personal protective equipment (PPE), supply chain problems, higher workload, psychological distress, stigmatization, and lack of incentives [37,38].

CONCLUSIONS

The outbreak of the COVID 19 pandemic that resulted in a sudden spike in health service requirements exposed the long-standing vulnerabilities of health human resources in particular, and the country's health system in general. The inadequate number of health personnel and facilities provided by the health system has constrained the country's ability to effectively respond to the overwhelming demand for health services before and during the pandemic. It is important to underscore the long-standing issues related to the HRH such as low pay, high turn-over rate of trained personnel and out migration of the country's experienced health professionals. PHC as an approach to achieving community health, pinpoint the persistent need for national level public health interventions to be targeted to community health and social determinants of health as well as individual health, with the assumptions that good community-level health care and holistic development can redound to good national health outcomes. Enhanced healthcare investment could strengthen the country's ability to respond to emergencies effectively. Investments in infrastructure, medical equipment, and personnel training can lead to better emergency preparedness, faster response times, and more efficient management of healthcare resources during crises. This can help save lives, reduce the burden on healthcare facilities, and mitigate the negative impacts of future health emergencies.

Therefore, there are preexisting problems in the Philippines' healthcare system and capacity, which might be exacerbated during health emergencies such as pandemics. All of these recurring issues in the Philippine health-care system underline the need to scale up risk-based and evidence-based interventions to minimize risks, and vulnerabilities, as well as strengthen capacity to safeguard public health from health crises.

LIMITATIONS OF THE STUDY

Secondary research data were gathered from international and local sources during the period of data collection that are publicly available or were requested

directly from the agency concerned. Accuracy of data was dependent on the data collection methods of the sources, but the authors provided measures to verify data through evaluating the source, content and methods of data collection of the original source. Data gathered is only up to the 3rd quarter of 2021 and may not be able to cover the entire duration of the COVID-19 pandemic in the Philippines.

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CONFLICT OF INTEREST

The authors declare no potential conflicts of interest concerning this research.

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