

The Impact of COVID-19 on Food Security in Some Rural Areas of the Ayeyarwaddy Delta

Aye Ei Ei Aung Than*, Hein Myat Thu

Department of International Relations and Political Science, University of Yangon

Abstract

The Coronavirus disease 2019 (COVID-19) pandemic in 2020 and 2021 hit severely Myanmar. The death tolls reached up to approximately 22,000 in the first three waves and the locals faced difficulties in their socioeconomic condition. The lock down policies to control the spreading rate of pandemic had certain impact on the economy of the country. Against this backdrop, this research aims to explore the condition of food security based on the impact of COVID-19 in some rural areas of the Ayeyarwaddy delta. In order to do so, the research focuses on three dimensions of food security: food accessibility, food availability and dietary pattern during the second and third waves of COVID-19 pandemic. It was found that COVID-19 pandemic had affected the food security of some parts of the Ayeyarwaddy delta. The rural food utilization was worsened due to the disruption in the rural community's food accessibility and food availability during the pandemic. The major causes were the COVID infection and the lock down policies adopted to protect the spread of the virus.

Keywords: food security, Coronavirus disease 2019 (COVID-19), pandemic, Ayeyarwaddy delta, households (HH), infection

1. Introduction

Myanmar remains one of developing countries in the world, with the majority of people struggling for physical, social and economic access to sufficient, safe and nutritious food. According to World Food Program (WFP), among Myanmar's 54 million population, 13.2 million suffered from food insecurity. Populated Ayeyarwaddy Delta is one of the zones which has high food insecurity rates. Located in the South of Myanmar, Ayeyarwaddy delta is surrounded by Bay of the Bengal to the West, the Andaman Sea to the South, Rakhine State and Bago Region to the North, and Yangon Region to the East. The Ayeyarwaddy delta is the region covered by a sprawling fertile area of around 35,963-kilometer square (km²). Comprising 12 percent of the national population, the Ayeyarwaddy delta is the home to 6.1 million people. Historically, the delta has been noted as country's major agricultural producer and fishery hub.¹

Although it has been once named as the rice bowl of Myanmar, the Ayeyarwaddy delta is a place of contradiction. The Ayeyarwaddy delta is devastated by poverty although it owns rich environment such as nutrients and resources for intensive agriculture. According to the 2017 Myanmar Living Condition Survey (MLCS),² the Ayeyarwaddy delta was rated as the region with the highest number of poor inhabitants with about 1.8 million poor people, followed by Shan State and Sagaing Region. According to the same survey, compared to the household assets of other rural states and regions, the Delta's household assets ownership is relatively lower and, the region's housing quality is the second worst. Moreover, only 15 percent of the household in

* Aye Ei Ei Aung Than, Department of International Relations and Political Science, University of Yangon

¹ *The State of Local Governance: Trends in Ayeyarwaddy*, United Nations Development Programme (UNDP), February, 2015, p.14

² *Myanmar Living Condition Survey 2017*, Poverty Report, World Bank and United Nations Development Programme (UNDP), June, 2019, p.10

Ayeyarwaddy delta get the electricity and the region follows the second place in lack of access to safe drinking water after Rakhine state. In case of chronic malnutrition, the Ayeyarwaddy delta is positioned in the third place compared to that of other states and regions. 32 percent of children under five years of age are affected by stunting.¹ In the Ayeyarwaddy delta, the rural population is 88 percent of the 6.1 million people. The rural areas have higher poverty rates which means higher levels of food insecurity. This condition was exacerbated by the outbreak of the novel coronavirus pandemic in March 2020.² To avoid the spread of the disease, Myanmar governments responded with a series of actions including travel restriction, self-isolation, lock down, quarantine and curfews. The socio-economic conditions of the country have been largely affected by the pandemic. Researches show that these kinds of emergencies had impacted the nutritional and food security of individual, household and the community.³ Based on the background, this research aims to explore the effects of Coronavirus disease 2019 (COVID-19) on the food security of some rural areas of the Ayeyarwaddy delta during the second and the third waves.

2. COVID-19 Containment Measures

In Myanmar, the first wave of the COVID-19 pandemic started on 23 March 2020 when its first COVID-19 case was reported. The infection then spread quickly across the country. During the first wave, the casualties of the pandemic was largely small, 379 confirmed cases, of which 359 were recovered with only 6 deceases. The second wave started on 19 August 2020. Compared to the first wave, there was a dramatic increase in the number of cases in the second wave. According to the Ministry of Health and Sports (MOHS), as of 26 May 2021, there were 143,328 confirmed cases. Among them 132,264 recovered and 3216 deceased.⁴ In the final week of May 2021, the third wave started to strike the country. Between June and August 2021, Myanmar was seriously hit by the third wave of COVID-19. According to MOHS, starting from 14 July 2021, there were more than 6,000 daily confirmed cases and more than 300 deaths starting from 22 July 2021. Moreover, confirmed cases of COVID variants such as Alpha, Delta, Kappa and Beta were detected since June 2021. As a consequence, there was an increased transmissibility and more serious illness. The third wave reached its peak on 22 July 2021 followed by a gradual fall of death and transmissibility. It took 56 days from the start of the third wave to reach its peak.⁵

In the Ayeyarwaddy delta, after the general election which was held on 8 November 2020, the number of the cases of COVID-19 doubled and there was a surge in death rates which was six times to the previous one. According to the Ayeyarwaddy Region Public Health Department, on 8 December 2020, there were 3,313 confirmed cases compared to the 1,430 confirmed cases on 8 November 2020. Moreover, 18 people died from COVID-19 within a

¹Vicol, M. and Pritchard, B., *Rethinking rural development in Myanmar's Ayeyarwady Delta through a historical food regimes frame*, Singapore Journal of Tropical Geography, 2021, pp.264-283

²Kakaei, Hojatollah, etc., "Effect of COVID-19 on food security, hunger, and food crisis.", PMC PubMed Central, July, 2022, p. 3

³Jafri, A., Mathe, N., Aglago, E.K., Food availability, accessibility and dietary practices during the COVID-19 pandemic: a multi-country survey. *Public health nutrition*, 24(7), 2021, pp.1798-1805

⁴A Win, *Rapid rise of COVID-19 second wave in Myanmar and implications for the Western Pacific region*, 2020, p.5

⁵Ye Minn Htun, Tun Tun Win, Nyan Htet Shan, Zin Thu Winn, *Impact of containment measures on community mobility, daily confirmed cases, and mortality in the third wave of COVID-19 epidemic in Myanmar*, December, 2022, p.23

month. At the start of the second wave, most confirmed cases were reported from the townships that are bordering Yangon Region, and later the infection spread to other townships in the Ayeyarwaddy delta. Those who were responsible for the spread were the people who had travelled to Yangon and returned to Ayeyarwaddy, and infected truck drivers and conductors. On 3 October 2020, the first death was reported from Myaungmya township.¹ On 25 September 2020, the MOHS issued the Stay-at-Home Order 110/2020 for 11 townships in Mon, Mandalay, Bago and Ayeyarwaddy. Pathein, Pyapon and Maubin townships in the Ayeyarwaddy delta were included.² On 27 December 2020, the Stay-at-Home Order in Pyapon and Maubin was ended by MOHS' Order 159/ 2020. The Stay-at-Home Order in Pathein was lifted on 4 October 2021 through MOHS' Order 54/2021.³

During the third wave of COVID infection, nearly 90 percent of the country was affected. Among 330 nationwide townships, 296 townships reported the confirmed COVID-19 cases.⁴ Among the eight districts in Ayeyarwaddy delta, eight townships in four districts were ordered to stay at home from May to June 2021. These townships were Hinthada township and Kyonpyaw township in Hinthada District, Thabaung township, Pathein township and Kangyidaunt township in Pathein District, Myaungmya township in Myaungmya District, and Bogalay township and Pyapon township in Pyapon District.⁵

3. Research Questions and Assumptions

This research aims to ask the effects of Coronavirus disease 2019 (COVID-19) on the food security of some rural areas of the Ayeyarwaddy delta. Specifically, this study targets to focus on the impact on the second and the third waves of COVID-19 pandemic.

According to World Food Summit (1996) and Rome Declaration on World Food Security, “food security is a situation where all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life”.⁶ Under this definition, the following four dimensions of food security are encompassed; food availability, food access, food utilization, and sustainability.⁷ Therefore, individuals or households have food security, if they have access to adequate food at all times and they do not have any risks “to sudden shocks of economic or climatic crisis or cyclical events”.⁸

To assess the impact of COVID-19 pandemic on food security, this research focuses on food utilization, food access, and food availability of the rural community during the second and the third waves of COVID-19. The research assumes that due to the lock down measures and

¹Myanmar's policy Response, <https://www.mm.times.com/news/myanmar-govt-reduces-curfew-hours.html>.

²*Coronavirus disease 2019 (COVID-19)*, MOHS, the Republic of the Union of Myanmar, September, 2020, p.2

³ Salai Thant Zin, COVID-19 Cases in Ayeyarwaddy Spike Ater Myanmar's Election, December 2020, <https://www.irrawaddy.com/specials/myanmar-covid-19/covid-19-cases-ayeyarwady-spike-myanmars-election.html>

⁴*Coronavirus disease 2019 (COVID-19)*, MOHS, the Republic of the Union of Myanmar, September, 2020, p.4

⁵Ibid, p.3

⁶Vicol, M. and Pritchard, B., *Rethinking rural development in Myanmar's Ayeyarwady Delta through a historical food regimes frame*, Singapore Journal of Tropical Geography, 2021, pp.264-283

⁷*Report of the World Food Summit*, Food and Agriculture Organization of the United Nations, Rome, November, 1996, p.1

⁸*The State of food Insecurity in the World 2006*, Food and Agriculture Organization (FAO), ISBN 92-5-105580-7, <https://www.fao.org/3/a0750e/a0750e01.pdf>, 2006

COVID infection during the second and third waves, the availability of food, access to food and utilization of food altered.

Assumption 1: COVID lock down and movement restrictions interrupt the food utilization.

Assumption 2: COVID infection interrupts the food utilization.

Assumption 3: COVID lock down and movement restrictions interrupt the households' availability of food from the markets, own gardens and farm animals.

Assumption 4: COVID infection interrupts the households' availability of food from the markets, own gardens and farm animals has a disruption.

Assumption 5: COVID lock down and movement restrictions reduce the households' income reduce and leads to contraction in purchasing of food items and consumption of food items.

Assumption 6: COVID infection reduces the households' income and leads to contraction in purchasing of food items and consumption of food items.

4. Methodology and Data Collection

Based on the above dimensions, this research constructs the household survey questionnaire, in terms of food utilization, food access, and food availability. The questionnaire involved 56 questions under six sections: the biodata of the respondents, dietary practices prior and during the pandemic, food availability situation during pandemic, food accessibility during pandemic, the infection situation and, food and money aids during pandemic. The data used in this study was collected from 500 households in ten villages within the Ayeyarwaddy delta. These villages are Kyauk Kone village, Pauk Kone village and Hmawe Lone village within Hinthada township, Daung Kyi village and Ooh Bo Village within Zalun township, Eai Kyi village and Tar Kone village within Einme township, Kyone Tarate village within Wakema township and, Boot Eai village and Yadanar Myae village in Pantanaw township. Pilot survey was conducted in Hmawe Lone village within Hinthada township, Ayeyarwaddy delta. Data collection was conducted during 2022 and 2023. Figure 1 shows the distribution of 500 respondents from ten villages under five townships.

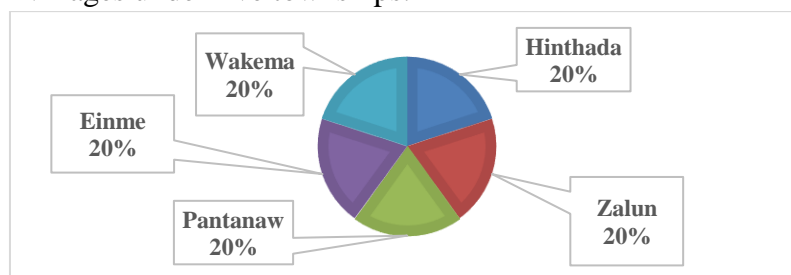


Figure 1. Distribution of the Respondents by Townships

5. Results and Discussion

5.1 Food Utilization

According to World Food Summit (1996), "Food utilization refers to the consumption of food through adequate diet, clean water, sanitation, and health care to reach a state of nutritional well-being where all physiological needs are met."¹ Generally, for the general population, Myanmar government developed national food-based dietary involving six healthy food groups.

¹Jafri, A., Mathe, N., Aglago, E.K., Food availability, accessibility and dietary practices during the COVID-19 pandemic: a multi-country survey. *Public health nutrition*, 24(7), 2021, pp.1798-1805

They are starchy staples; vegetables; fruits; dairy; animal-based group involving meat, fish, eggs and legumes; and nuts and oil.

Based on the food groups defined by the government, this study assessed the general dietary pattern of the rural households. This research chooses eight food items. Such items involved rice, flour, various kind of beans, milk and dairy products, vegetables, meat, fish and eggs. The study investigated the food eating pattern of the focused community. In the starchy staples group, the mainly consumed food item was rice that all households eat on a daily basis. From the same group, less than two percent eats flour, bread and noodles on a daily basis. Vegetables was the second major food that 33 percent of the respondents consumed on a daily basis. Beans and nuts consumption was 5 percent on a daily basis. In protein food group, fish was consumed by 8 percent, meat was 2 percent and, egg was 6 percent on a daily basis. Milk and dairy product were consumed only by 4 percent on a daily basis. Fruit was the least consumed items on a daily basis. Meat, fish and eggs were consumed more on a weekly basis: 22 percent, 19 percent and 21 percent respectively. Nearly 20 percent of the respondents consumed nuts and 8 percent consumed flour and the related food on a weekly basis as shown in figure 2 (A), 2 (B), and 2 (C).

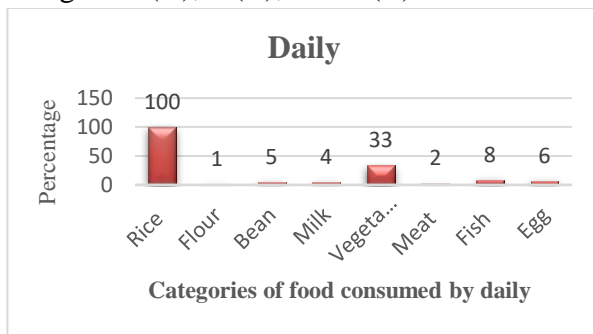


Figure 2. (A) Food consumption bases on daily

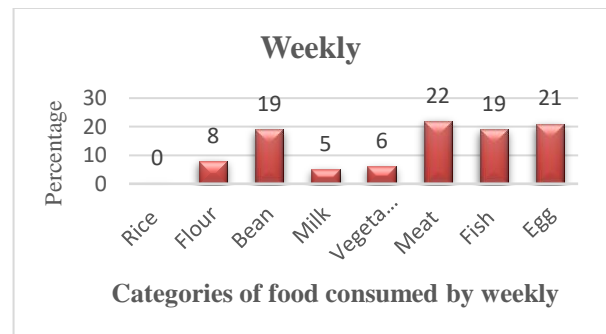


Figure 2. (B) Food consumption bases on weekly

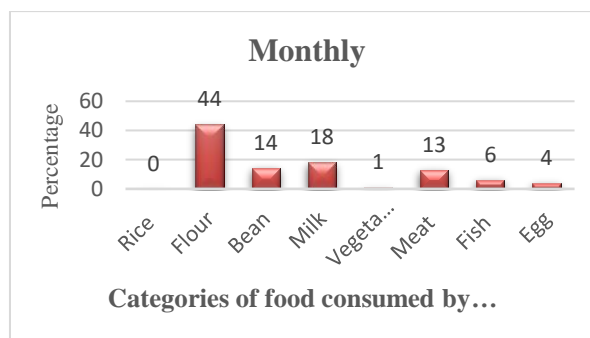


Figure 2. (C) Food consumption bases on monthly

According to respondents’ response on their eating pattern, most households were dependent on their diet on rice and vegetables. Other groups of diet were not proportionately eaten on a daily basis. Fruit was not eaten by almost all rural households. Therefore, it is generalized that these households diet pattern does not meet the healthy and nutritious diet. Concerning the accessibility to cleaned water, 61 percent had the clean water while 39 percent still using the water from river or lake or stream or canal. According to Food and Agriculture Organization (FAO), healthy and nutrient diet includes “a variety of foods from different food

groups, meets the individual needs for calories and nutrients, safe and sufficient each day and all year round”.¹ Therefore, it can be analyzed that the rural households’ unhealthy diet and lack of clean water express the insecurity in food consumption.

This situation was exacerbated by the COVID pandemic. During the second and third waves of the COVID-19, the responses of respondents upon the consumption on the food items mentioned above were varied. About 52 percent of the respondents remained unchanged in their consumption pattern while 35 percent said they consumed less food and only 13 percent of the respondents said they ate more on some food items. See in Figure 3.

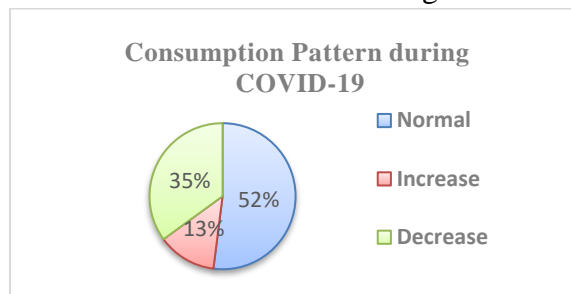


Figure 3. Percentage of HH changes in consumption pattern

5.2 Food Accessibility

This section examines the economic access and physical access to food by the focused rural community during the second and third waves of COVID-19. According to FAO, food access is achieved when all individuals within the households have adequate resources to acquire appropriate food for the nutritious diet. This study focuses on households’ most important resource to access to food during the COVID-19 such as income and job conditions of the respondents. The distribution of the percentage of households based on the occupation are as follows: farmers (36 percent), casual workers (40 percent), own account workers (16 percent), government employee (3 percent), and others including people who were dependent on remittance (5 percent) as shown in figure 4. During the second and third waves of COVID-19 pandemic, the number of working people among the focused households were varied. More than 70 percent of households had only one breadwinner while 16 percent had 2 laborers, 5 percent had 3 breadwinners, 4 percent had four laborers and only 1 percent had 5 breadwinners. See Figure 5. Among the households, 30 percent said they had enough income for the household expenses while 70 percent did not have enough income.

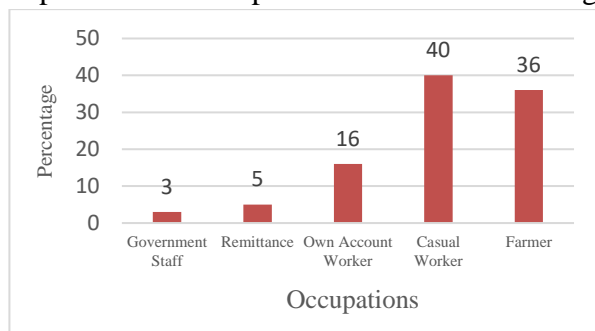


Figure 4. Percentage of HH with different occupations

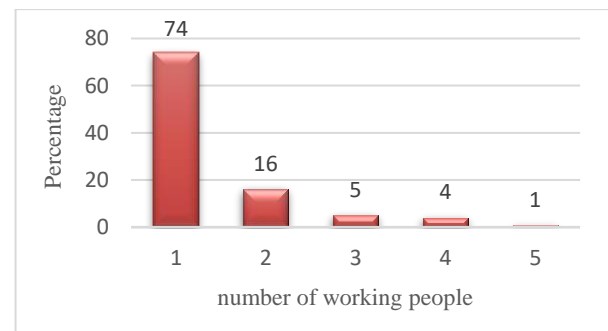


Figure 5. Percentage of HH with different number of working people

¹Jafri, A., Mathe, N., Aglago, E.K., Food availability, accessibility and dietary practices during the COVID-19 pandemic: a multi-country survey. *Public health nutrition*, 24(7), 2021, pp.1798-1805

During the second and third waves of COVID-19, income changes occurred among the households. The most impacted group in terms of the number of working people was the group which had one breadwinner (92 percent), followed by the group of households with 2 breadwinners (88 percent). It was found out that there were more employed people if the family had a larger family size. Households with 3 working people did not have a change in their income, and 75 percent of household with 4 working people did not. However, not all the larger size families had enough income for the accessibility to food. Households with 5 working people changed their income during the second and third waves of COVID-19. It was due to their work nature.

With regards to occupation, the group with the greatest percentage of income decrease or alter was the group of casual workers compared to the other occupations groups. 87 percent of casual workers encountered income decrease due to a sharp reduce in offering jobs during the COVID waves. Own account workers followed the second place in which 64 percent experienced income decrease because they had to stop and shut down their businesses. Households relying on the remittance also had a hard time: not being able to get the remittance on time, people who were sending money back their homes lost their jobs due to the shut-down of the businesses. 57 percent of total farmers underwent a decrease in their income due to COVID restrictions and not being able to result in productive farming or cultivation. Government staff was the only group, that did not encounter income change. Moreover, households with more than one earning persons, households (farm owners) receiving government COVID loans and casual workers with pre-paid work less affected in their incomes, as shown in Figure 6.

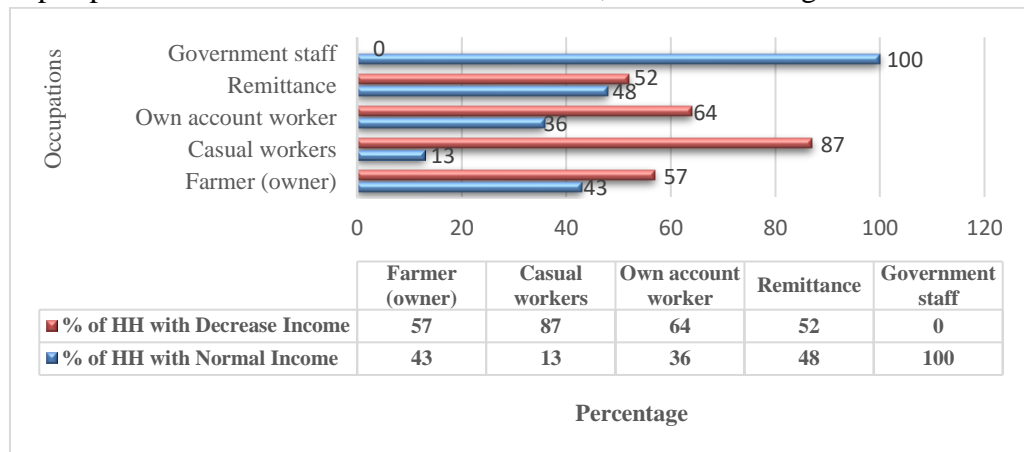


Figure 6. Percentage of HH with income alteration during the COVID-19

Households were then asked the reason for their income decrease during the second and third waves of COVID-19. Due to government lock down orders and movement restriction orders, 71 percent of households suffered from income decrease. 9 percent of the households were affected in their income because they were infected by the virus. The income of 15 percent of households decreased by both government’s lock down policies and COVID infection. 5 percent gave other reasons not related to COVID pandemic, as shown in Figure 7.

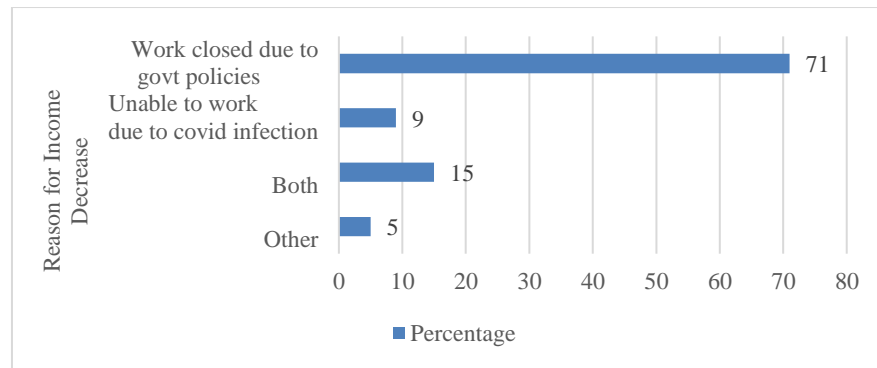


Figure 7. Percentage of HH with different reasons for decreased income

Due to the decrease in income, 88 percent had difficulties in accessibility to food. Households could not buy the food items they used to buy and reduce buying their food items. 83 percent bought lesser than they used to buy. Casual workers were the most impacted people who suffered most in accessibility to food. Among those households with decreased income, about half of the households changed their normal eating pattern. Lack of ability in buying and getting food some had to eat frugally (68 percent) and some had to reduce times of daily consumption (32 percent).

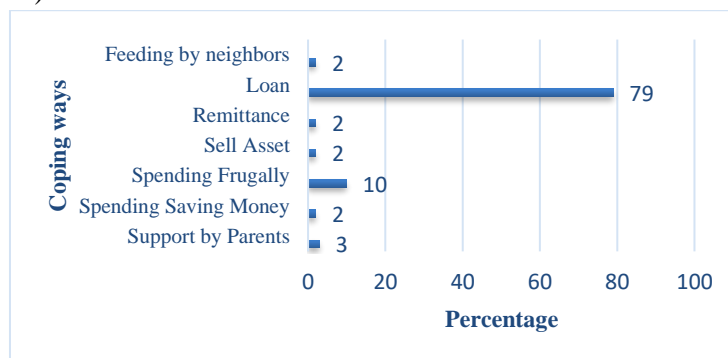


Figure 8. Percentage of HH with different copings ways for financial shortage

Figure 8 shows the percentage of households using different coping ways to settle the decreased income due to COVID-19. Nearly 80 percent of the households used loan money, most of which were with interest while some were without interest rate. Some households did not borrow but they spent frugally. Less than 12 percent of respondents settled the financial shortage through the help of relatives, neighbors, selling assets and spending saving money.

When the COVID-19 pandemic broke out, there were changes in the household incomes due to government's lock down order, stay at home order and travel restriction orders. The workplaces were closed and some became jobless because the number of workers was reduced. While the casual workers could not earn their daily income, the own account workers stopped or closed their businesses. Household which was dependent on the remittance did not receive the money as usual. Although the government staff did not change their income, COVID infection, lock down and stay at home policies had impacts on households with irregular jobs and incomes. This also had a consequence in diet and eating pattern of rural community. Except from the government staff, other occupations experienced a change in their incomes. Among the different groups of work, casual workers who earned money through the unstable and low-paid jobs were already very poor and vulnerable to any changes. COVID infection, the lock down policies and movement restrictions added already vulnerable conditions.

Concerning physical accessibility, this research investigates the COVID infection of the households during 2020-2021 and whether the infection leads to difficulty in the accessibility to food or not. Only 29 percent of the respondents infected while 71 percent said they did not suffer from COVID during 2020-2021. Among the infected households, half of them had the difficulty to access to food while the other half did not have any problem in access to food. The difficulties they faced were (1) not being able to prepare food because of the infection and (2) not allowed to go out because they were infected. 43 percent said that although they were infected, they had physical access to food by themselves while 47 percent said the family members helped each other to access to food and 10 percent said they needed to get help from the neighbors. This study found out that the rural population had difficulties to access to medical care for the COVID infection as most of the villages lack medical personnel and facilities. There were no proper facilities for the quarantine.

5.3 Food Availability

Food availability is ensured “when sufficient quantities of food are consistently available to all individuals within a country”.¹ The rural community within five townships in the Ayeyarwaddy delta normally get food from markets including the town markets, village bazaars, village small grocery shops and vendors, and from their own vegetables’ gardens and farm animals. This research assessed whether there was disruption over the availability of food.

In the distribution of household’s reliance on food sources, 64 percent relied on food from markets while 36 percent depended on their garden, farm animals and markets. The percentage of the households which faced lack of food availability from the markets due to COVID lock down and restriction policies are as follows. Except Kyone Tarate village in Wakema township which had the highest households experiencing food shortage (74 percent), the number of households within other villages which experienced food shortage from market was below 20 percent. Some villages mainly relied on the availability of food from the village’s small grocery shops. Due to lock down restrictions, purchasing of food items at the towns’ market was impossible. This was the major reason of food shortage in some villages.

Figure 9 expresses the percentage of households experiencing limitation of the availability of the food items from markets. Only 18 percent experienced it. Major shortage and limited food items were oil, onion, meat, seasoning powder, eggs, rice and fish. See Figure 10.

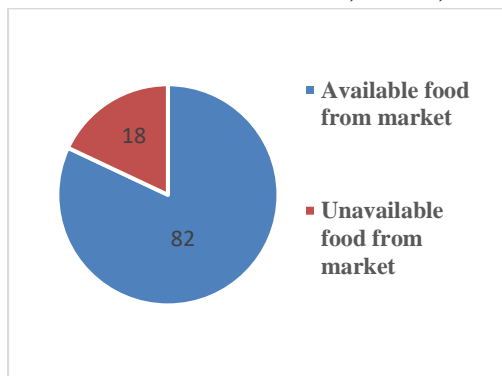


Figure 9. Percentage of HH with the availability of food from market

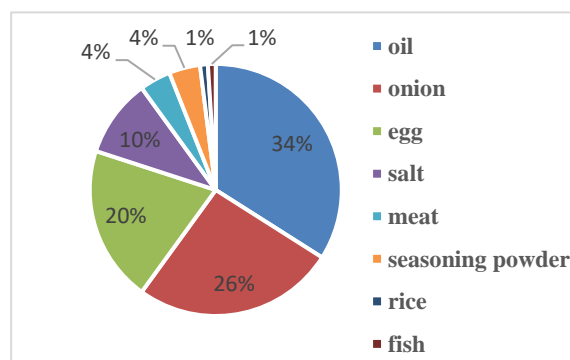


Figure 10. Percentage of HH unavailable different food items from market

¹David Andersen-Rodgers and Kerry F. Crawford, “Human Security Theory and Action”, *Second Edition*, 2018, p.5

Although there were shortages and limitation in getting some of the food items from the markets during the COVID waves, no households experienced difficulty in their daily consumption. Only 15 percent of the respondent had to reduce in buying some of the food items because of the limitation in getting those from market. Among those who encountered limitation in the availability of food items from the market, 15 percent ate frugally on those items. Among the households who got food from home garden and farm animals, 22 percent struggled getting food from them mainly due to COVID infections and shortage in fertilizer.

5.4 Food Aid and Cash Aid

Getting and having food aid during the global health crisis is an important aspect which supports the availability of food from the shortage or limitation and accessibility to food items. Hence this research explored the conditions of getting food aid as well as cash aid during the COVID-19.

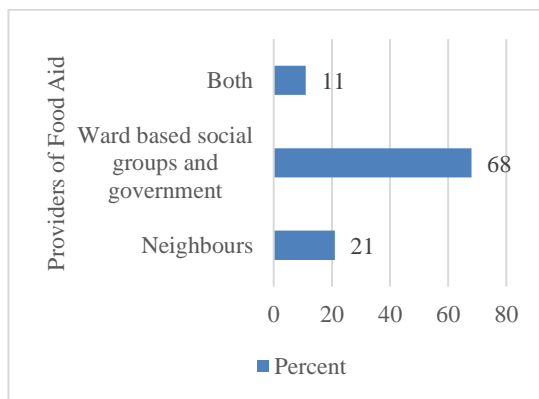


Figure 11. Percentage of HH getting food aid from different providers

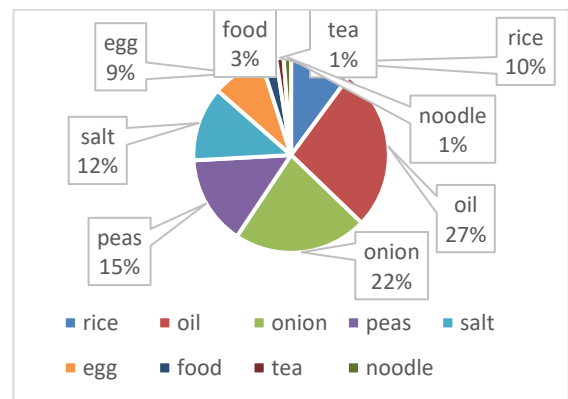


Figure 12. Percentage of HH getting different food items

According to figure 11, among the total respondents, 21 percent got food aid from neighbors, 68 percent of households got aids from ward based social groups and government, and 11 percent received from both. As shown in figure 12, the supported food items were rice, oil, onion, peas, salt, eggs, food, tea and noodle. Among these received food items, rice was the major food item that the supporter supported, followed by oil received by 22 percent, onion-18 percent, peas-12 percent, salt-10 percent, eggs-7 percent, tea-1 percent and noodle-1 percent. 47 percent received only one-time food support while two-time food support got by 11 percent, three-time food support by 26 percent, four-time food support by 11 percent, six-time food support by 2 percent and seven-time food support by 3 percent. See Figure 13.

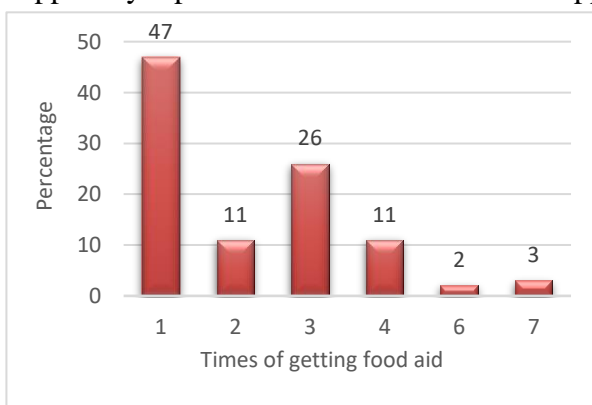


Figure 13. Percentage of HH with different times of getting food aid

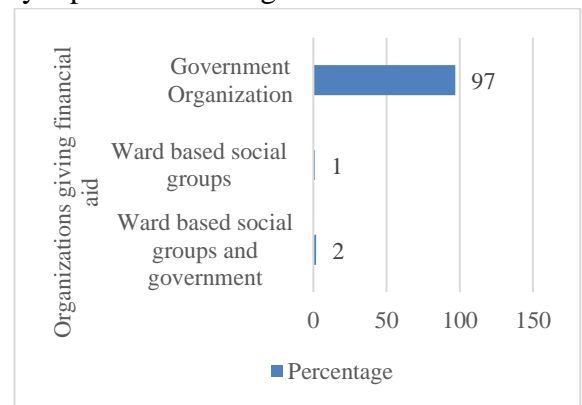


Figure 14. Percentage of HH getting financial aid from different organizations

Financial support was an important aspect to access to food. During the two waves of the COVID- 19, the financial support was available especially from the government. As shown in figure 14, the percentage of the households that received financial support from the government was 97. The contribution of the ward based social groups was received by 1 percent of the total respondents. 2 percent of the households received financial support from the government, ward based social groups and neighbors.

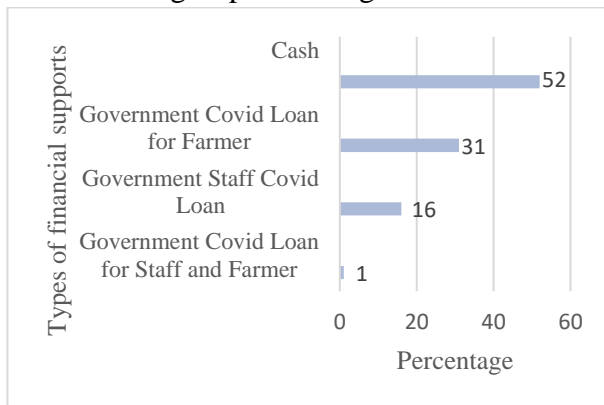


Figure 15. Percentage of HH getting different financial support

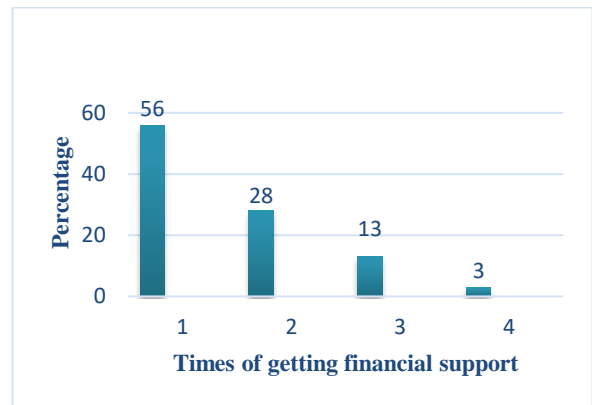


Figure 16. Percentage of HH getting different times of financial support

Types of financial support varied during 2020-2021. Cash was the major financial support which was received by 52 percent of total households, followed by government COVID loan for farmer which was received by 31 percent. The loans which were given to farmers who own farms and was given on the basis of possession of farm acres: 50,000 kyats for an acre. 16 percent of the households received government staff COVID loan, and one percent of the households got both government staff loan and COVID loan. See in Figure 15. Figure 16 shows the times of the financial support received by the respondents: 56 percent got only one-time financial support, while 28 percent got two times, 13 percent got three times and only 3 percent received four times financial support respectively.

The financial and food aids were given according to the households’ wealth index promulgated by the government. As a consequence, the whole focused community did not receive aids evenly. Most of the households run by casual workers received food aids and cash aids while the government staff, farm owners, own account workers were not counted as the population that should give the aids. Generally, the government provided cash at least four times to each household with the amount of 8000 kyats, 10,000 kyats, 15,000 kyats and 20,000 Kyats respectively during the first and the second waves of COVID-19.

Farmers who own the farms did not receive food and cash aids given by the government. Moreover, farmers who had not fully paid back their loans from the projects like Emerald Green project, Myanmar Agricultural Bank, etc. prior COVID-19 and farmers who had more than ten acres of farm land were not allowed to get COVID loans. During the third wave of COVID-19, there were no food and financial supports from the government.

6. Conclusion

It is evident that COVID-19 pandemic had impacted on the food security of the rural community of Ayeyarwaddy Delta. The study found out that the rural community’s food utilization can be regarded as an unbalanced, unhealthy and innutritious diet. This background

had been exacerbated by the outbreak of COVID-19 pandemic mainly through the disruption in the community's food availability and food access. Food access had been corrupted by the government lock down policies and COVID infections due to the decrease in the income. The most impacted group is the people who already did not make proper income and this led them to distort their daily diet and nutrition. In addition, food availability was also distorted to some extent although this was not very evident. Although food aids were provided, this was not enough for already very poor households. Most of the households needed to rely on the loans with interest rates. Although the cash aid was given in the first two waves of COVID pandemic, this was not the case in the third waves. To sum up, the COVID-19 pandemic affected households' food insecurity to some extent to rural community of Ayeyarwaddy delta.

Acknowledgements

The authors would like to express appreciation for the support of the sponsors funding for this research from the Asia Research Centre (ARC), University of Yangon. We would also like to thank Dr. Cho Cho, Pro-rector of the University of Yangon, for her encouragement and permission to conduct this research. Moreover, we would like to appreciate Dr. Thida Aung, Professor and Head of the Department of IR and PS, UY, for providing useful suggestions and comments. Our acknowledgement also goes to our survey team especially Dr. Myint Zu Win, Associate Professor of Department of IR and PS (UY), Daw Khaing Khaing Soe, Lecturer of Department of IR (YUFL) and the students for their times and supports in data collection. Lastly, we recognize Mai Betty for her valuable help in conducting data analysis.

References

- Abegaz, K.H.**, (2017) *Determinants of food security: evidence from Ethiopian Rural Household Survey (ERHS) using pooled cross-sectional study*. *Agriculture and Food Security*, 6 (1)
- A Win**, (2020) *Rapid rise of COVID-19 second wave in Myanmar and implications for the Western Pacific region*,
- Coronavirus disease 2019 (COVID-19)**, MOHS, the Republic of the Union of Myanmar, September, 2020
- David Andersen-Rodgers and Kerry F. Crawford**, (2018) "Human Security Theory and Action", *Second Edition*
- Jafri, A., Mathe, N., Aglago, E.K.**, (2021), Food availability, accessibility and dietary practices during the COVID-19 pandemic: a multi-country survey. *Public health nutrition*, 24(7),
- Kakaei, Hojatollah, etc.**, (July, 2022), "*Effect of COVID-19 on food security, hunger, and food crisis.*", PMC PubMed Central
- Myanmar Living Condition Survey 2017**, Poverty Report, World Bank and United Nations Development Programme (UNDP), June, 2019
- Myanmar's policy Response**, <https://www.mm.times.com/news/myanmar-govt-reduces-curfew-hours.html>.
- Report of the World Food Summit**, FAO of the United Nations, Rome, November, 1996
- Salai Thant Zin**, (December 2020), COVID-19 Cases in Ayeyarwaddy Spike Ater Myanmar's Election, <https://www.irrawaddy.com/specials/myanmar-covid-19/covid-19-cases-ayeyarwady-spike-myanmars-election.html>,

- The State of food Insecurity in the World 2006***, Food and Agriculture Organization (FAO), ISBN 92-5-105580-7, <https://www.fao.org/3/a0750e/a0750e01.pdf>, 2006
- The State of Local Governance: Trends in Ayeyarwaddy*, United Nations Development Programme (UNDP), February, 2015
- Vicol, M. and Pritchard, B.**, (2021), *Rethinking rural development in Myanmar's Ayeyarwady Delta through a historical food regimes frame*, Singapore Journal of Tropical Geography.
- Ye Minn Htun, Tun Tun Win, Nyan Htet Shan, Zin Thu Winn.**(December, 2022), *Impact of containment measures on community mobility, daily confirmed cases, and mortality in the third wave of COVID-19 epidemic in Myanmar*,