

*Original Research Article*

## From Tourism to Agriculture: Elucidating Community Well-being in Gunung Mulu National Park during the COVID-19 Pandemic

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**Abstract:** Local communities who live surrounding Gunung Mulu National Park (GMNP), a UNESCO World Heritage Site mostly depend on ecotourism activities held in the park. Their socio-economic status has been improved in alignment with accommodation, transportation, and tourist guide services provided. However, the COVID-19 pandemic has impacted these tourism activities in GMNP to the point where they are required to look for alternatives for subsistence due to the restriction of the tourism sector globally. Considering these challenges; their well-being, which might be more fragile due to living in an isolated area became an interest of local authorities for social welfare assistance. Consequently, this study aims to assess the well-being of the local community based on their level of satisfaction with the environmental, economic, and social attributes during the pandemic and to inform related stakeholders. A validated questionnaire was distributed to 99 local communities who lived within and near the GMNP. In addition, eight key informants, including tribal chiefs, homestay operators, boatmen, and farmers, to describe the welfare-related phenomenon that occurs in the area were interviewed. The findings indicate that most local communities are satisfied with the environment and the social aspect, but not with the economic aspect, which is their monthly income. This forces them to engage in gardening, fishing, animal husbandry, and other small-scale agriculture activities for food security despite their lack of agricultural expertise. By emphasising agricultural skills through related intervention courses, various stakeholders can implement a more effective management strategy toward building a more disaster-resilient community in the area.

**Keywords:** community resilience; agriculture; COVID-19; quality of life; well-being

**Received:** 4<sup>th</sup> March 2023

**Accepted:** 22<sup>nd</sup> June 2024

**Available Online:** 1<sup>st</sup> July 2024

**Published:** 30<sup>th</sup> December 2024

**Citation:** Ibrahim, M. S. N., Khairuddin, N., & Hassan, S. From tourism to agriculture: Elucidating community well-being in Gunung Mulu National Park during the COVID-19 Pandemic. *Adv Agri Food Res J* 2024; 5(2): a0000507. <https://doi.org/10.36877/aafri.a0000507>

## 1. Introduction

The concept of community well-being encompasses the various social, economic, environmental, cultural, and political circumstances that individuals and communities perceive as essential for their holistic development and achievement of maximum capabilities (Ibrahim *et al.*, 2019; Wiseman & Brasher, 2008). Cummins (1996) discovered that the satisfaction associated with the community well-being domain is obtained through education, neighbourhood, service, facilities, social life, and social relationships. Community satisfaction has a significant and positive influence on one's quality of life (Norman *et al.*, 1997). A variety of factors can have an immediate or indirect impact on a community's well-being. Similarly, one aspect of community well-being can influence another (Lee & Kim, 2015). A strong correlation exists between economic wealth and health (Bushell & Sheldon, 2009), community satisfaction and place attachment (Özkan *et al.*, 2019). Individual income and expenditures are an indicator of current societal economic well-being (Ma & Abdulai, 2016). People's willingness to embrace a market economy and democracy will be influenced by their level of economic satisfaction (Fidrmuc, 2000).

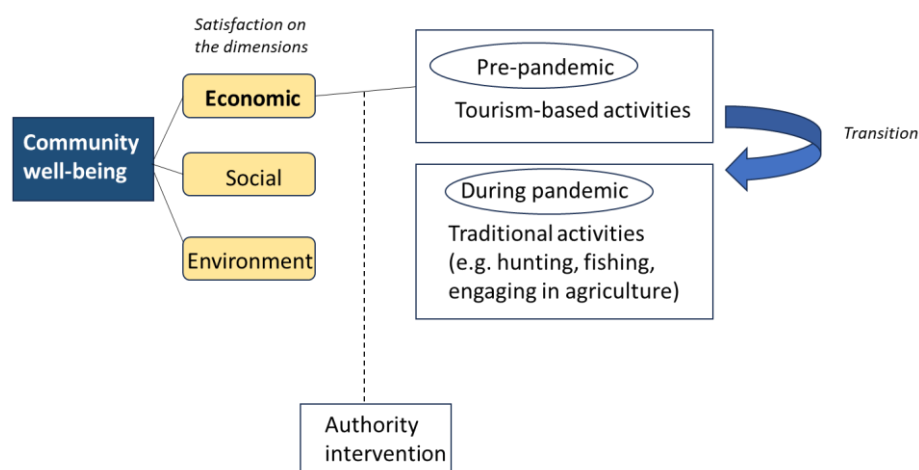
Well-being is defined as the condition of individuals' life situations, and several researchers have evaluated community well-being by utilising individual characteristics such as contentment, joy, standard of living, personal effectiveness/control, and social assistance (Kerstetter & Bricker, 2012). Measuring well-being now incorporates broader dimensions, such as social and environmental factors and human rights (Sumner, 2006). The COVID-19 pandemic has caused significant changes in these dimensions, resulting in the emergence of a phenomenon known as 'anthropause'. This term especially refers to a substantial worldwide deceleration of contemporary human activities, particularly travel (Rutz *et al.*, 2020). Thus, this had a significant impact on the tourism industry due to the near absence of tourists at the time. Aware of this phenomenon, this study focuses on ethnography at one of the UNESCO World Heritage Sites in Malaysia, namely Gunung Mulu National Park (GMNP), which is a major international natural tourism attraction. In this study, the effects of the pandemic on the community's well-being are a concern. Local communities who live at GMNP are mostly depending on ecotourism activities held in the park. Their socio-economic status has been

improved in alignment with accommodation, transportation, and tourist guide services provided. However, the COVID-19 pandemic has impacted these tourism activities in GMNP to the point where they are required to look for alternatives for subsistence due to the restriction of the tourism sector globally. Considering these challenges; their well-being, which might be more fragile due to living in an isolated area became an interest of local authorities for social welfare assistance. Consequently, this study aims to assess the well-being of the local community based on their level of satisfaction with the environmental, economic, and social dimensions during the pandemic and to inform related stakeholders.

## 2. Conceptual Framework

The conceptual framework was built by drawing upon pertinent literature evaluations pertaining to various dimensions of community well-being. The concept of community well-being encompasses a range of factors, including social, economic, environmental, cultural, and political situations. These factors are recognised by individuals and communities as essential for their overall growth and the realisation of their full potential (Ibrahim *et al.*, 2023; Wiseman & Brasher, 2008). According to Cummins (1996), individuals experience satisfaction within the community well-being domain when they are content with several aspects such as education, neighbourhood, service, amenities, social life, and social relations. The contentment of the community plays a substantial and favourable role in shaping the attitudes of community members regarding their overall quality of life (Norman *et al.*, 1997).

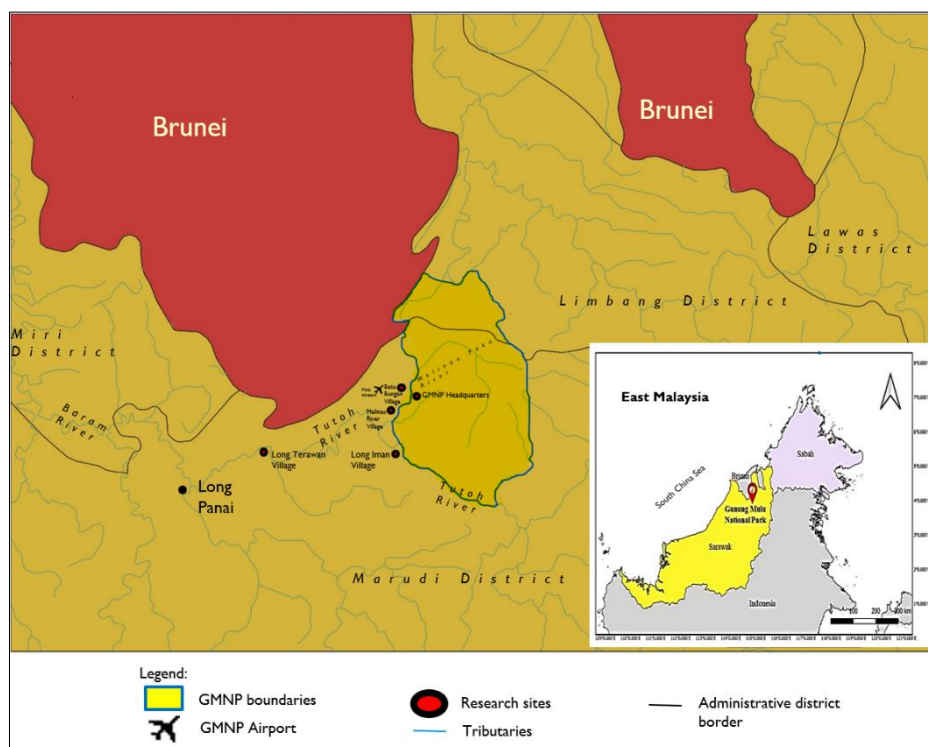
The conceptual framework depicted in Figure 1 illustrates the study's incorporation of the environment, economics, and social dimensions, with the inclusion of an authority intervention and the mediating role of the COVID-19 epidemic. The pandemic has had a significant impact on the social community, leading to increased isolation and disruptions to the societal economy.



**Figure 1.** Conceptual framework used in the study.

### 3. Methods

GMNP is a national park located in the Marudi Division of northern Sarawak, Malaysia (Figure 2), and its area encompasses approximately 52,864 ha of mountainous terrain. It is distinct from other developing areas that lie between the headwaters of the Tutuh River and the tributary of the Limbang River, the Medalam River. Its location along the Brunei-Sabah-Sarawak-North Kalimantan Transboundary Landscape makes it one of Borneo's six priority landscapes (WWF-HoB Programme, 2017). The majority of Penan and Berawan communities, who are indigenous to the park, reside in GMNP and its surrounding villages, including Sungai Melinau Village, Batu Bungan Village, Long Iman Village, and Long Terawan Village. Berawan's Sungai Melinau Village is the most involved in tourism-related services such as homestays and transportation (e.g., longboats and cars) in Mulu. Other members of the community are predominantly farmers or fishermen for a living.



**Figure 2.** Location of GMNP, Sarawak, Malaysia.

This study employed a mixed-methods approach, specifically a concurrent nested design, which was more appropriate considering time constraints and respondent comfort during data collection. By convenience sampling, the validated Likert scale questionnaire was distributed to a total of 99 different local communities in April 2021. The respondents who are local communities were asked to state their satisfaction level on community well-being dimensions, particularly on environment, economics, and social aspects. Participating

members of the local community were inhabitants of the settlement areas surrounding GMNP, such as Long Iman Village, Batu Bungan Village, and Long Terawan Village. Local communities with a minimum age of 18 and a residency at the study site for a period exceeding five years were the required respondents for this research.

For the qualitative methodology, a series of personal interviews were conducted with eight key informants, comprising tribal chiefs, homestay operators, boatmen, and farmers. The informants were selected using a snowball sampling technique based on their acknowledged expertise and direct engagement within the community. These interviews aimed to elucidate the phenomenon related to welfare in the area. The narratives provided by these key informants contribute a meaningful, significant, and comprehensive qualitative perspective, enriching our understanding of the subject matter (Tashakkori *et al.*, 2020). The characteristics of eight key informants who were interviewed during different sessions are detailed in Table 1.

**Table 1.** List of key informants involved in the in-depth interview in different sessions.

Key informant	Study site	Gender	Occupation
K1	Batu Bungan Village	Male	Tribal Chief
K2	Long Terawan Village	Male	Tribal Chief
K3	Sungai Melinau Village	Male	Homestay operator
K4	Sungai Melinau Village	Female	Homestay operator
K5	Long Terawan Village	Male	Park guide (freelance)
K6	Long Iman Village	Male	Boatman
K7	Batu Bungan Village	Male	Boatman
K8	Sungai Melinau Village	Male	Farmer

The analysis of the descriptive data, encompassing sociodemographic information and the well-being of the respondents' community, was conducted utilising the IBM Statistical Package for Social Sciences (Version 24). The key informants' narratives were analysed using ATLAS.ti version 8 software, employing a deductive approach. The three themes were deduced which include the transition of economic activities; adaptability; and emotional condition during the pandemic.

The Sarawak Forestry Corporation (reference number: SFC.PL&RS/2020-005) has officially provided permission and approval for this study, in compliance with the National Parks and Nature Reserves Ordinance of 1998. Furthermore, the research conducted in this study passed a thorough assessment and received authorisation from the University Ethics Committee for Human Research (JKEUPM), with the reference number JKEUPM-2020-403. The study participants were granted informed permission, and the protocol received approval from the JKEUPM.

## 4. Result and Discussions

### 4.1 Sociodemographic

The demographic background of the respondents is presented in Table 2. From the total, 60.6% ( $n=60$ ) of respondents were male, while 39.4% ( $n=39$ ) were female. The majority of respondents (67.7%) were indigenous to GMNP, which is the Orang Ulu, Penan, and Berawan tribes. In Mulu, the majority have attained at least a secondary education and are employed in the hospitality and transportation industries (e.g., longboat and car). Their monthly income in the tourism sector was less than MYR2500, placing them in the low-income bracket in Malaysia (Department of Statistics Malaysia, 2020).

**Table 2.** Demographic background of respondents.

Variable/ Item	Frequency (%)
Gender	
Male	60 (60.6)
Female	39 (39.4)
Race	
Natives (e.g. Malay, Sarawak, and Sabah natives)	94 (94.9)
Chinese	4 (4.0)
Indian	0 (0.0)
Others (e.g. Non-Malaysian which include Caucasian, Bruneian, and Indonesian)	1 (1.0)
Ethnicity	
Penan	22 (22.2)
Berawan	45 (45.5)
Others (e.g. Malay, Iban, Chinese)	32 (32.3)
Marital status	
Married	73 (73.7)
Single	24 (24.2)
Others (e.g. divorced)	2 (2.0)
Age	
19-25	7 (7.1)
26-30	13 (13.1)
31-39	25 (25.3)
40-50	20 (20.2)
More than 50	34 (34.3)
Level of education	
No formal education	7 (7.1)
Primary education	20 (20.2)
Secondary education	58 (58.6)

Variable/ Item	Frequency (%)
Tertiary education (e.g. PhD, Master, First degree, diploma, certificates)	14 (14.1)
Occupation	
Government servant	14 (14.1)
Private employee	24 (24.2)
Self-employed	42 (42.4)
Retiree	2 (2.0)
Student	2 (2.0)
Unemployed	15 (15.2)
Monthly income	
Less than MYR2500	83 (83.8)
MYR2500-MYR4849	13 (13.1)
MYR4,850-MYR7,099	0 (0.0)
MYR7,100-MYR10,959	0 (0.0)
More than MYR15,039	0 (0.0)
Others (e.g. Prefer not to say)	3 (3.0)
Observations	99 (53.2)

Note: MYR1.00= USD0.22 (Based on currency exchange in February 2023).

#### 4.2 Community Well-Being from Respondents' Perspectives

Table 3 shows the mean analysis of community well-being based on the respondents' perspectives. In the context of this study, community well-being is assessed through their satisfaction with the dimensions of well-being in terms of the environment, economy, and social.

**Table 3.** Respondents' perspectives on community well-being.

Dimensions	Mean	Standard deviation	Satisfaction level
Environment	4.39	0.806	Good
Economic	2.46	1.264	Poor
Social	4.06	0.980	Good

Most respondents are very satisfied with the environmental and social aspects of this GMNP. More precisely, the participants expressed their contentment with the current state of the environment, which remains in a state of good health, characterised by minimal pollution and clean air. The social dimension pertains to the perception that neighbourhood relations, living and social interactions, services and amenities, education, and culture remain satisfactory. Although both the environment and social on average show good satisfaction among the respondents, they were not satisfied with the current monthly income due to the COVID-19 pandemic, which was quite limited. During this pandemic, the tourism industry

cannot rely solely on international visitors; in fact, they must be able to adapt to these changes. Therefore, a strategy that must be emphasised is a community with a high level of resilience, as it positively affects their psychological well-being (Sagone, 2017).

Indigenous communities like the Penan and Berawan face heightened vulnerability to COVID-19 due to socio-economic fragility. Additionally, some may lack adequate agricultural skills, further exacerbating their vulnerabilities. They have responded to the pandemic with revival of traditional knowledge, and diversification of livelihoods. These measures help them cope with immediate challenges and strengthen their resilience against future crises. Over-reliance on tourism can undermine the adaptive capacity of indigenous communities by causing economic dependency, and loss of traditional practices. It is essential for these communities to balance tourism with sustainable practices and diversified livelihoods to reduce vulnerability to external shocks like the COVID-19 pandemic.

#### *4.3 From Tourism to Agricultural Activities for Livelihood*

The COVID-19 pandemic caused dissatisfaction among communities regarding their monthly income. Therefore, for continuous living, they shifted their activities to gardening, fishing, hunting, raising animals, and small-scale agriculture activities to sustain food supplies. Prior to the pandemic, they relied heavily on fresh foods brought from the main city, Miri; however, it is becoming increasingly difficult for them to obtain sufficient food supplies due to the authorities' restrictions on air and water transport caused by the pandemic. Despite this, the local population has other options for resolving this issue due to the fact that they live outside of Sarawak's major areas and the low accessibility factor.

*I grow long beans, kale and spinach just to eat myself. (K2)*

They still view agriculture as a potential solution to the problem of inadequate food supply. Consequently, a few residents began cultivating crops for non-commercial purposes. There are, in fact, a few residents who are eager to earn money by selling forest-collected edible plants. This demonstrates that neither has adequate agricultural and marketing integration skills.

*There was no other way for us to survive, so we looked for edible young shoots and sold them to the villagers. However, the income is still uncertain. (K4)*

Before the pandemic, the communities could obtain vegetables and other food items from the market, often sourced from Miri City. However, during the pandemic, with limited supply from Miri City due to transportation disruptions and restrictions, they have had to



resort to planting their own food to ensure access to essential sustenance. This shift reflects a necessity to rely more on self-sufficiency and traditional agricultural practices to meet their nutritional needs amidst disruptions in market access and supply chains.

The challenge of this pandemic can possibly increase food insecurity and poverty (Lindsey *et al.*, 2020). The solution to food insecurity is agriculture (Gassner *et al.*, 2019). Even though the GMNP area and surrounding area previously engaged in micro-farming, stakeholders believe that their farming skills must be improved through efficient training. This pandemic exacerbated the situation because the population was forced to engage in agricultural activities, but their lack of farming skills and knowledge prevented them from achieving adequate crop yields for survival.

Given the long-standing tradition of farming, the majority of the local people, consisting of Penan and Berawan, have a minimum level of understanding and proficiency in farming, as evidenced by K1. This demonstrates that due to their semi-nomadic lifestyle, they are now skilled at farming rather than hunting for survival. Since the pandemic drastically altered their lives, they are now more cognisant of the significance of these abilities.

*Previously, our income was so stable because of tourism. However, the COVID-19 pandemic has caused us considerable difficulty. (K4, K6, K8)*

Prior to the pandemic, women were more likely to sell forest-made handicrafts. Many men are employed as boatmen. Now, however, this circumstance is shifting due to challenges posed by dependence on natural resources and demand.

*Now there are no tourists, so we have to rely on small-scale farming. (K1)*

*Here there is also chicken and fish sold by the residents of the house, but the price is very expensive due to the very limited supply. (K8)*

During this pandemic, the population's purchasing power for fresh products such as fish, chicken, and seafood is significant. According to the resident, there are still those who sell chicken and fish, but their prices are excessive and unreasonable. Based on Bairagi *et al.* (2022), both supply and demand in food markets were affected by COVID-19, resulting in higher food prices. Additionally, limited options make rural communities more susceptible to environmental and social shocks (Whelan *et al.*, 2021). During this pandemic season, most communities in GMNP are not afforded to buy meat, poultry, or fish.

Upon examining the accommodation business that previously offered a satisfactory level of income, it becomes evident that the homestay operator is currently facing limitations due to apprehensions around the contagious pandemic, as well as a lack of agricultural skills.

*Due to the pandemic, I do not dare to open a homestay service currently, even though there is still very little demand. (K3)*

Homestay operators in GMNP believed that visitors were exposed to COVID-19-transmitting pathogens while travelling or returning home (Poulos *et al.*, 2018). Due to the high likelihood of the outbreak, locals were hesitant to engage in any business involving individuals from outside GMNP. This supports both the financial precariousness of many small businesses and the significant impact COVID-19 had on these businesses in the weeks following the onset of disruptions caused by COVID-19 (Bartik *et al.*, 2020).

#### *4.4 Poor Job Adaptability During COVID-19 Pandemic*

It has been ascertained that the Indigenous community exhibits a deficiency in their capacity to effectively cope with the alterations precipitated by the ongoing pandemic. Existing factors, such as living in rural areas that were remote from access or facilities, and a lack of entrepreneurial skills to operate a business, were also their primary obstacles to implementing it.

*It seems to me that there is no other alternative to market handicrafts. As for doing it online during this pandemic, it is quite difficult because the post office is also located very far from our area. So, it limits everything. (K1)*

*For us to change careers in this pandemic situation is very difficult because we have been living dependent on tourism for many years. If we want to start any business, we don't have enough capital. (K5).*

*We do a little business to cover the purchase of necessities at home. If you want to go to Miri, it is quite difficult because we need to apply for a special permit to cross the area. (K4)*

*If we are under the control of the national park management, it is quite limited because we have to follow the boat operation schedule according to a certain rotation during this pandemic season. On the other hand, freelance boat operators like me are freer to run boat services for tourists. (K6)*

According to Mtisi (2020), inadequate transportation and communication, a lack of skilled labour, a lack of technology, limited business management skills, and limited access to business support prevent local residents from becoming a resilient community during this pandemic. They might have minimum abilities to adapt as they have geographic limitations (Pyke *et al.*, 2018). The local population was also seen to have an average low to moderate income before the pandemic. Consequently, this also supports the findings of Rahman *et al.* (2021) that low-income households were less resilient and more likely to fall back into poverty because of COVID-19 than high-income households.

The Indigenous community encountered the dual challenges of navigating the COVID-19 pandemic and grappling with the complexities of modernity and capitalism, all while striving to safeguard their cultural legacy and traditional lifestyle. Gomes (2004) states that the indigenous communities of Semai in West Malaysia primarily engage in the trade of forest products. They engaged in various subsistence activities, such as fishing, hunting, gathering, and swidden cultivation. Additionally, they participated in cash-earning activities like rubber tapping, forest product gathering, and wage labour. The primary forest products cultivated in the region include petai, durian, and rattan. The community in question is widely recognised for its economic resilience. Conversely, the Penan and Berawan communities reside in protected areas that have been granted UNESCO protection. These groups have a greater inclination towards using forest resources as handicrafts, mostly catering to the tourism market. In contrast, the Semai ethnic group demonstrated a higher degree of diversification in their offerings. Through an analysis of the strategies employed by many indigenous people to reconcile traditional livelihoods with engagement in market economies and adapt to contemporary economic systems, the Penan and Berawan communities can acquire significant insights that can contribute to the improvement of food security and resilience in the context of forthcoming calamities. This entails investigating sustainable farming methods, community-driven endeavours for food production and distribution, and enhancing social networks and community solidarity to facilitate reciprocal aid during periods of emergency. These observations can provide valuable guidance for the formulation of a holistic plan that combines traditional knowledge and practices with contemporary methodologies to tackle the issue of food scarcity and bolster resilience within the Penan and Berawan communities in the face of forthcoming calamities.

#### 4.5 Unhappy with the Monthly Income Throughout the Pandemic

Since the pandemic, they have felt pressured by their difficult monthly income to the point where they have chosen to engage in small-scale non-agricultural businesses.

*I am very unhappy because of the lack of income. So, we do small businesses such as selling drinks, cigarettes, and fried chicken. Young people are also now losing their jobs.*

(K4)

In addition to those who are self-employed, a small number of residents who work as park guides have also been laid off due to the high utility and maintenance costs in national parks.

Both informants observed the contrast in conditions experienced by boat drivers hired by the national park compared to those who are self-employed. Specifically, they highlighted the differences between boat drivers under park supervision and those who are independent contractors.

*We must take turns to operate the boat service. Only four people are granted permission to steer the boat in succession. There are 31 boats here in total.* (K7)

According to K8, a free-lance boat operator, the fluctuating income during this pandemic and the small number of tourists (less than ten per month) was very unfortunate. This was also the case with boat operators in Bako National Park, who were affected by the extremely low number of tourists, causing them to charge more per boat than they did before the pandemic (Ibrahim *et al.*, 2021). Similarly to the increase in the price of fresh food in GMNP, the boating community in both national parks has had to increase service rates for visitors during the pandemic.

All of the accounts provided by informants demonstrated that the community in GMNP was in poor well-being during this pandemic as a result of the numerous survival obstacles they faced. According to Nguyen (2021), more disadvantaged individuals, such as the poor and rural were likely to be affected by the pandemic. Negative effects on economic outcomes are the causes of unhappiness (Lim *et al.*, 2020).

## 5. Conclusions

Most local communities are content with their environment and social aspects, but not with their monthly income. To ensure food security, individuals are compelled to participate in gardening, fishing, animal husbandry, and other small-scale agricultural activities, even in the absence of specialised agricultural knowledge. These abrupt changes

make adaptation to the pandemic extremely challenging for local communities in GMNP and the surrounding areas. Preparing the populace with sound agricultural knowledge and techniques is a viable strategy for addressing the issue of food scarcity caused by future disasters. Every household should engage in small-scale farming so that they are less reliant on imported organic products from another area. The previous generation of Penan and Berawan communities has practised the culture of sharing food whereby it should be re-established. However, they should be instilled to share vegetables such as okra, chillies, onions, eggplants, and long beans. Various stakeholders can implement a more effective management strategy to build a more disaster-resilient community in the region by emphasising agricultural skills through related intervention courses. This pandemic has taught all stakeholders the significance of agriculture in terms of food security, which has a significant impact on rural communities with limited access that are subject to extreme environmental, economic, and social pressure.

**Author Contributions:** Conceptualisation, M.S.N.I.; methodology, M.S.N.I.; software, M.S.N.I. and N.K.; validation, N.K. and S.H.; formal analysis, M.S.N.I.; investigation, M.S.N.I.; writing—original draft preparation, M.S.N.I.; writing—review and editing, M.S.N.I. and S.H.

**Funding:** No external funding was provided for this research.

**Acknowledgements:** We would like to thank to the respondents who were willing to participate in this survey. Special thanks are also due to Acaditor Malaysia for proofreading the manuscript. Next, Dr. Modin Ambau, Miss Erra Fazira Abdul Rahim, Mr. Farhan Ismat and those who contributed directly or indirectly in the completion of this study.

**Conflicts of Interest:** The authors declare no conflict of interest.

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