



Assessing Nutrition and Socio-economic
Impact of COVID-19 on Rural and
Urban Communities in Solomon Islands

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Tangio tumas to all members of communities mentioned in this report. Thank you for sharing your stories with us. It is our hope that the findings shared in this report will inform policy, humanitarian response and provide support and opportunities to all households in Solomon Islands and throughout the Pacific Islands in this tough time.

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Key Messages

COVID-19-related border lockdowns, travel restrictions and curfews have negatively impacted the tourism and other major commercial sectors and access to domestic markets in the Solomon Islands. The majority of employees have been laid off, without salary or wages and this has impacted the livelihood and wellbeing of citizens. This has had a knock-on effect on employment, incomes, purchasing power and market access of households in two peri-urban communities; Barana and Burns creek and two rural communities; Ngalimbiu and Panatina (Mataruka) on Guadalcanal that were studied. Household incomes and purchasing power have declined and families have reduced expenditure on food and non-food items. Self-employment has increased for the peri-urban communities.

Vendors have experienced difficulty in accessing markets to sell produce. After the government's directive to repatriate most of the city dwellers to their home provinces, Honiara City Council closed all market outlets, except the main central market. This resulted in a decline in sales which has discouraged many farmers who prior to COVID-19 restrictions, travelled almost daily to sell produce and for higher prices in the market.

Household food systems in the four studied communities have shifted and more households; including youth have become involved in agricultural activities such as crop and piggery production. There is decreased reliance on foods purchased from the shops and markets and increased consumption of food from gardens, hunting (jungle) and fishing (rivers and streams) to meet daily food needs. However, the mean Dietary Diversity Score (DDS) was low; 3.76 out of a possible 10.



Approximately 66% of households were found to be moderately food insecure with compromised food quality and variety. About 26-43% of households were determined to be severely food insecure; having experienced going without food for a day or more between February and July. Some households (10-30%) are relying on borrowing, bartering and exchanging gifts and other support for meeting household food needs.

Closure of schools has increased the burden on parents – especially women – who have had to adjust daily tasks to include educating their children. Children were not interested to learn while staying at home, instead preferring to run around with friends. Many children could not return to school when they reopened because parents cannot afford bus fares or school uniforms.

Households in Barana, showed a high level of concern about the disruption to livelihoods and children's education, shortages of food and medication, increased food prices and illnesses among the people. Households in Burns Creek community showed a high level of concern about the increase in food prices, travel restrictions, loss of work, and limited access to processed and local foods. Households in both Ngalimbiu and Panatina communities were mainly concerned about the disruption of medical services, disruption to sources of livelihood, increased illness and food shortages. Water insecurity in these communities is also a serious concern during COVID-19 as the demand for water has increased as people have returned to their communities.




Executive Summary

An assessment of the impact of COVID-19 on food security, *nutrition and socio-economic status as well as education*, health and well-being of households in four rural and urban communities on Guadalcanal in the Solomon Islands was carried out from 20 to 29 July 2020. The results are to be used for informing COVID-19 policy and program responses.

The assessment employed both quantitative and qualitative methodologies. The quantitative tool included a questionnaire comprising a food security and nutrition component and a non-food component. The food security and nutrition component included: (i) a 24-hour recall to calculate dietary diversity score (DDS); (ii) a diet screener; (iii) food insecurity experience scale (FIES) assessment; and (iv) food sources. The non-food components included questions to determine (i) socio-economic status, (ii) education, (iii) health and well-being, and (iv) water security. The qualitative tool used focus group discussions in each community, comprising 5-8 members per group. Data were collected and analyzed from 86 households and 16 focus groups from four communities: two peri-urban and two rural.

The Solomon Island Government ordered urban dwellers back to their rural villages/islands to reduce over-crowding and thereby reduce the risk of COVID-19 spreading quickly if it were to arrive in the Solomon Islands. This led to a decrease in the number of 'unemployed but able to work' household members especially in peri-urban communities; Burnscreek community (from 30 to 10%) and Barana community (from 44 to 22%). Most of those who were classified as unemployed but able to work before COVID-19 are now involved in self-employed activities with a marked increase recorded for three out of four studied communities. Since COVID-19, self-employment increased in the peri-urban communities of Burnscreek from 50 to 77%, and Barana from 22 to 60%, and the rural community Ngalibiu recorded an increase from 33 to 50%.

The COVID-19 crisis has negatively impacted the incomes and livelihoods of studied households. The impacts have been more severe in the two peri-urban communities. Pre-COVID-19, urban households bought produce from rural farmers in the central markets in Honiara, but this was disrupted by lockdowns and travel restrictions. Households have continued to rely on farming, informal street sales and sales in their own markets, which has benefitted women. However, sales have declined due to over-supply, as most households are growing the same produce. Peri-urban communities, especially Burnscreek, have very limited access to land for producing their own food and some walk several kilometers to access available lands. Other communities have increased their food supply from home gardens, forests, and sea. Overall, there has been a decrease in reliance on foods purchased from the shops (formal/ informal) and markets for all communities, and an increase in foods sourced from local production (gardens, jungle hunting and fishing - from rivers and streams).



All households across the four studied communities consume foods they produce. Many households produce root crops, vegetables and fruits. There is very little production of pulses and legumes, seeds, animal products such as eggs, unprocessed meat and fish in all four studied communities. About 70-80% of households purchase rice and other foods to supplement their diet. About 10-30% of households borrow, barter and exchange foods. These practices are least common in the peri-urban community of Burnscreek, which is made up of different ethnic groups and people from many places in Solomon Islands.

Households reported consuming an average of three to four different food groups per day during the COVID-19 period. The mean Dietary Diversity Score (DDS) of households was 3.76, which is lower than the DDS of 4.28 reported in a similar 2019 study. Women of reproductive age had a mean DDS of 4.0 which was about the same as the 2019 study. Households consumed around two to three servings of fruits and two to three servings of vegetables per day, but many reported consuming no fruits or vegetables in the previous 24-hour period prior to participating in the dietary recall assessment. Consumption of canned fish (especially in urban communities) and processed meat is very high amongst the studied communities.

About 66% of studied households are categorised as moderately food insecure with compromised food quality and variety. About 26-43% of studied households are in the severe food insecurity category and have experienced going for a day or more with no food. About 90% of studied households identified the need to eat more fruits and vegetables, drink more water, consume more root crops and eat the same or less whole grains. Most households especially from Burnscreek are not sure about the health recommendations for processed foods. There is a need to include awareness and education to improve nutritional knowledge at the community level, including providing specific information about the number of recommended servings of various food groups per day/week.

Closure of schools affected the education of students who were more interested in playing around the community than learning at home. The presence of children of younger age at home instead of schools increased the burden on parents, especially women who had to adjust daily tasks to include being a teacher to educate and look after their children. When schools were reopened, many children have not returned because their parents cannot afford bus fares, uniforms and school fees because of the loss of income during COVID-19.

Water insecurity is a concern during COVID-19 as the people who left the city and returned to rural communities have placed increased demand on the limited water resources in peri-urban communities. The main needs of the studied communities include access to market outlets in peri-urban areas, facilitation of income generating opportunities and support for informal economic actors such as street vendors. There is also a need for the urban communities to have increased access to land for farming and water supply and storage.



2.0 Introduction

On 27 March 2020, Solomon Islands Government declared a state of public emergency (SoPE) which has been extended to November 2020. Following the SoPE, repatriation announcements resulted in the majority of residents in Honiara city returning to their respective provinces during the period March to April. The public panic and rushed repatriation to the provinces across the country also resulted in the loss of lives. Twenty-seven (27) people were lost at sea as Tropical Cyclone (TC) Harold hit Solomon Islands during one of the repatriation exercises. The primary and secondary schools, tertiary institutions and Rural Training Centres (RTCs) in the provinces and Honiara city were ordered to close and classes were suspended for almost six months. Students and staff were asked to return to their respective provinces to await further decisions on reopening schools. The government had organized two sets of mock lockdowns and curfews in Honiara on two separate occasions and the greater Honiara area was declared as a “hot zone”. While border lockdown and travel restrictions in towns and to the provinces remained in effect, the tourism sector, the commercial sector both domestic and international as well as domestic markets continued to be negatively impacted. The majority of employees have been laid off, without salary or wages, and this has impacted on the livelihood and wellbeing of citizens.

Following the onset of the COVID-19 pandemic in Fiji, the Technical Centre for Agricultural and Rural Cooperation (CTA) and the International Fund for Agriculture Development (IFAD) agreed to conduct an assessment of its impact on the nutritional adequacy of diets and livelihoods in two targeted Pacific Island Countries (PICs), specifically Fiji and Solomon Islands. The University of the South Pacific (USP) was commissioned to undertake the assessment within the framework of the CTA-IFAD co-funded Innov4AgPacific four-year project. This assessment builds on lessons learned from studies carried out in selected urban and rural communities in 2018 and 2019 under the Community Food and Health (CFaH) and Innov4AgPacific projects in Fiji and Solomon Islands. This report presents the assessment findings for Solomon Islands. The results will be used to inform a UN Joint Socio-Economic Impact Assessment report and an inter-agency response to the pandemic.



Figure 1: Map of Guadalcanal and study sites marked in red arrows (source: <https://www.dreamstime.com/stock-illustration-guadalcanal-island-map-flag-vector-solomon-islands-image83607647>)

2.0 Study Sites

The assessment was conducted in four peri-urban and rural communities; Burns Creek, Barana, Ngajimbiu and Panatina (Mataruka) on Guadalcanal from 20 to 29 July 2020 (see Figure 1). The four communities were selected because they have received support from Kastom Gaden Association (KGA), a farmers organization and local NGO working in partnership with communities to develop the capacity of smallholder farmers and community networks to improve household food production, nutritional quality of diets and livelihoods. Barana community was selected because of a pre-existing partnership with the University of the South Pacific. Three of the study sites are on the Guadalcanal plains and are settled mainly by the indigenous landowners who are of Melanesian culture. Residents of these three communities practice matrilineal cultures which ensure that women have the rights over land and resources compared to men. Burns Creek is the exception as the community is predominantly settled by people from other provinces mainly Malaita, who are also of Melanesian descent but practice patrilineal cultural traditions.

2.1. Burns Creek

Burns Creek community is one of the fastest growing peri-urban settlements in the outskirts of Honiara with a population of about 2,456 people. The majority of households participate in piggery and subsistence farming, and in the informal sector, which provides casual employment to those living in and around the Lunga area and Honiara. Due to limited land for farming, households only have backyard vegetable gardens and a few are able to grow root crops while others have to walk long distances, more than 7 km behind St. Joseph Tenaru Secondary School to get to their gardens.



2.2. Barana

Barana community is located within the Tandai Ward of Guadalcanal Provincial boundary about 10 km, uphill from Honiara City. According to the KGA, the population for Barana Community is 738. Barana community hosts a nature park with bird watching and World War II Tours for tourists but this has been closed down since the lockdown of the country’s borders. The community’s main source of livelihood is gardening and selling of domestic agricultural produce. Since the COVID-19 there has been a rise in gardening as more people residing in Honiara City returned to live in the community. The members also participated in logging activities which has led to mass felling of trees and the depletion of forest. For Barana community COVID-19 has brought anxiety to members of some household heads in terms of livelihood, health, food security and socioeconomic concerns.



Figure 2: Overview of the four studied communities

2.3. Ngalimbiu

Ngalimbiu community is located about 25 km from the capital city Honiara, on the Eastern part of Guadalcanal Province and has an estimated population of 1,200 people. The site is comprised of scattered hamlets that are located along the Ngalimbiu River. The community depends heavily on agriculture for subsistence. There is a market outlet close to the Guadalcanal Plains Palm Oil Limited (GPPOL) 1 substation where vegetables and other consumable goods (such as canned meats, sugar, salt etc.) are sold. A number of men and women from the community work as machine operators and office workers at the Tina Hydro Company and GPPOL Company. The main socio-economic activities include agriculture (cocoa, copra and oil palm) and the sale of oil palm fruit to the GPPOL oil palm company.

2.4. Panatina (Mataruka)

Panatina community is located about 26 km away from the capital city Honiara, also Eastern region of Guadalcanal Province. The community is located downstream from the proposed Tina Hydro national project. It has an estimated population of 648 people. Traditionally, the community is governed by the Ghaobata House of Chiefs, one of the largest wards in Guadalcanal Province. The majority of the population are farmers and depend on buying, processing and selling of agricultural products such as copra and cocoa. A few members of the community both men and women work at the Tina Hydro Company and the Guadalcanal Palm Oil Limited Company.

3.0 Methodology

A team of researchers from the Pacific Centre for Environment and Sustainable Development (PaCE-SD), USP (in Suva and Honiara Campus) collaborated with a field team from Kastom Gaden Association (KGA) to carry out the assessments from 20 to 29 July 2020. Tools were trialed and research teams were trained thoroughly on the use of Quantitative and Qualitative research tools and the tablet survey platform (Kobo toolbox) as well as the ethical research behaviors during stressful times.

The Community Food and Health (CFaH) tools (Haynes et al., 2020; Guell et al., 2020) developed by the CFaH Project, that were applied to assess Innov4AgPacific community nutrition seed funding projects in 2019 (Iese et al., 2020) was updated to include methods to assess the impacts of COVID-19 on socio-economic and income, livelihood (health, education, water) and nutrition and food systems.



The tools were pilot tested and research team members were trained to conduct the quantitative and qualitative research methods, use the tablet survey platform (Kobo toolbox) and adopt as well as apply ethical research behaviors during stressful times.

3.1 Quantitative Survey

The CFaH Quantitative tool included a questionnaire comprising a food security and nutrition component and a non-food component. The food security and nutrition component included:

- (i) a 24-hour recall to calculate dietary diversity score (DDS);
- (ii) a diet screener;
- (iii) food insecurity experience scale (FIES) (FAO);
- (iv) food sources and;
- (v) nutritional knowledge questionnaires.

The FAO/FANTA dietary diversity tool was used to calculate DDS, defined as the number of standard food groups consumed in the last 24 hours (out of a possible 10 groups):

1. grains, roots and tubers, and plantains;
2. pulses (beans, peas and lentils);
3. nuts and seeds;
4. dairy;
5. meat, poultry, fish;
6. eggs;
7. dark green leafy vegetables;
8. other vitamin A-rich fruits and vegetables;
9. other vegetables;
10. other fruits.

Applying the same guidelines, Minimum Dietary Diversity Score for Women of reproductive age (M-DDW) was calculated for women aged 15 to 49 years, and a score of five or more indicated minimum dietary diversity as a proxy to micronutrient adequacy in this population subgroup. The non-food components included questions to determine:

- (i) socio-economic status;
- (ii) education;
- (iii) health and well-being and
- (iv) water security.

The multi-component survey questionnaire was pre-installed on the tablets using Kobo Collect version 1.25.1, prior to being used for data collection in the field. A total of 86 households from the four communities were randomly selected and contacted through Kastom Garden Association and community leaders (see Table 1). In each target community, data was entered into the online Kobo Toolbox and information was checked and verified, to ensure that all the forms were filled correctly. All data were imported and cleaned in Excel 2016 xlm format. The food security and nutritional indicators; DDS, FIES diet screener, food sources, nutritional knowledge and non-food components were analyzed using R version 4.0.2. A total of 86 households were interviewed, a coverage of 14.9% of total households in the studied communities (see Table 1).

Study Community	Total Number of Households	Population	Total number of households surveyed (Quant Survey)	% coverage
Burnscreek	342	2456	23	6.7
Barana	106	738	24	22.6
Ngalimbiu	168	1200	20	11.9
Panatina (Mataruka)	104	648	19	18.2
Total	720	5042	86	14.9

Table 1: Number of households surveyed per community

3.2 Focus groups (FGD) – Qualitative Assessment

The CFaH Focus Group guide was updated to include seven sections:

- (i) food habits and preferences;
- (ii) food sources and food economy;
- (iii) interventions on the ground;
- (iv) food systems mapping and food sources before and during COVID-19;
- (v) socio-economic impacts;
- (vi) education impacts;
- (vii) water security and socio-cultural impacts.

Four focus group discussions (FGD) were conducted in each community – total of 16 FGDs. The participants (between 5-8 members per group) were selected by the KGA and the FGD lasted for one hour (see Table 2). The discussion was facilitated by the research team comprising the lead facilitator who asked the questions while the co-facilitator recorded the conversations and drew food systems and stakeholder maps based on the responses from the participants. The questions were first asked in English and then further explained in Pidgin (common vernacular). The FGD audio recordings were transcribed verbatim into English. All transcripts were uploaded into Dedoose (version 8.3.85), which is an online software for mixed method research for analysis.



Table 2: Composition of Focus Group per community

Community	Adult Male	Adult Female	Youth Male	Youth Female
Burnscreek	8	6	5	4
Barana	5	6	5	5
Ngalimbiu	7	7	7	4
Panatina (Mataruka)	7	5	2	8
Total	27	24	19	21

4.0 Results

4.1 Status and impacts of COVID-19 on Socio-economic Factors

This section describes the status and the impacts of COVID-19 on socio-economic, food and diet, education, health and water security of households in rural and peri-urban communities in Solomon Islands.

4.1.1 Employment

According to key respondents before the COVID-19 pandemic, there were more than 50% of unemployed but able to work members of the communities reside at Burnscreek and Barana and more than 20% to 50% for Ngalimbiu and Panatina respectively. The 'unemployed but able to work' members of households are the youth and men who mostly crowded around the urban centers. Many households were also self-employed (owned businesses without paid employees) including home gardening and other informal businesses such as selling goods at roadsides. Since the COVID-19 lock down, there has been a reduction of employed household members in the two peri-urban communities. More households became involved in agricultural activities such as crop and piggery production. The lockdown and restriction of movements of people in the urban areas led to youth returning to the communities and engaging in agricultural activities for food and for sale at markets. More households started growing vegetable gardens in the limited available lands they have access to. There has been an increase of households in self-employed category in peri-urban communities.

For the rural communities, there has not been much variation in sources of income before and during COVID-19 (see Figure 3). Most are employed or engaged in work that has been minimally impacted by COVID-19. These include; those who are farming and selling palm oil, copra, cocoa and garden produce, owners of transport businesses and those who work in NGOs. There are others who are employed at the GPPOL, Tina Hydro Project and the SAPE Farm.

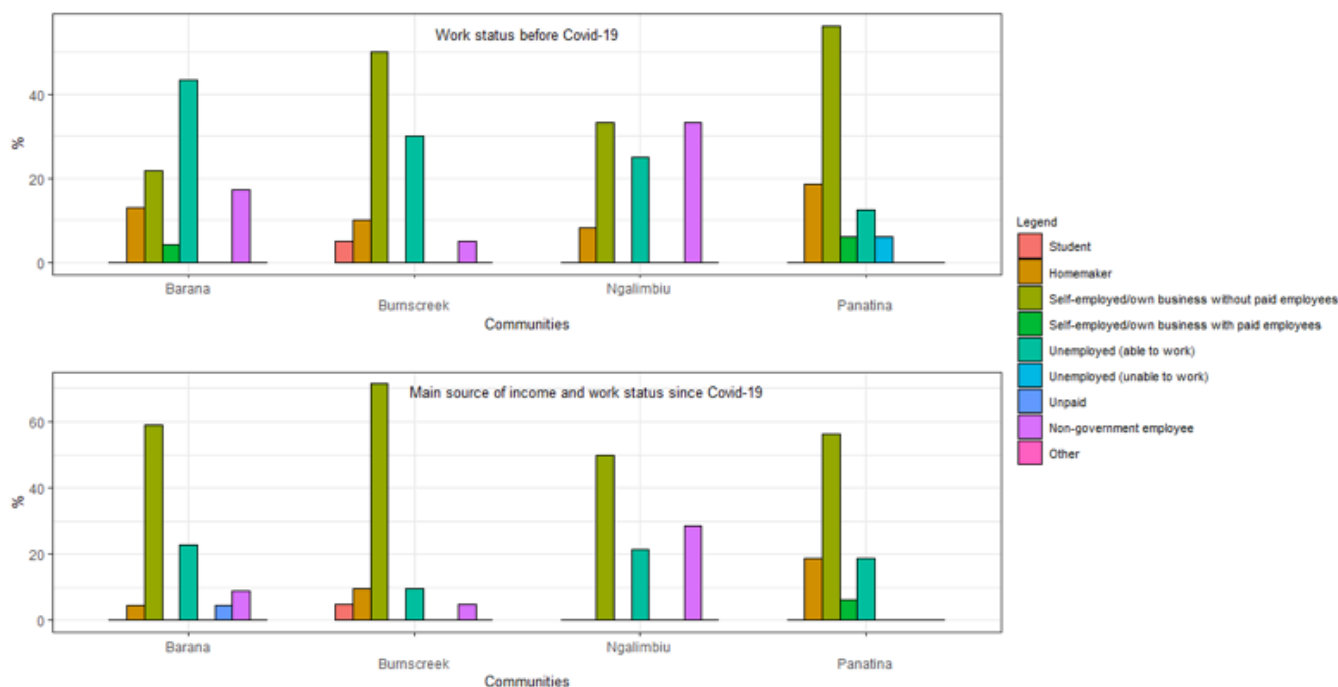


Figure 3: Work status before and during COVID-19

4.1.2 Financing Daily Needs

Households rely on borrowing money with repayment duration ranging from zero to three months. The purpose of borrowing money was mainly to meet costs of food, transport and medical expenses. For Panatina (Mataruka) and Ngalimbiu communities, they have continued their employment at Guadalcanal Plains Oil Palm Limited (GPPOL), the only oil palm plantation company in the country and the Tina Hydro but are experiencing salary cuts. In Barana and Burns creek communities, the loss of employment has forced several family members to rely on home grown food for survival.

4.1.3 Disruption of Household Income

Key informants from Burns creek community who reside in the area for more than 15 years confirmed, that most of their members had lost their jobs in both the formal and informal sectors in the Capital city, Honiara and also around the country. This has had a devastating impact on the already constrained households' income. A young father of two children from Ngalimbiu community who had lost his formal employment with the GPPOL indicated that the loss was directly related to the company's policy to consolidate its operations strategy to survive the pandemic.



4.1.4 Market Access

The participating communities also had difficulty in accessing markets to sell their produce. This was the main cause (40-60%) of disruption in household income (see Figure 4). After the national government had repatriated most of the city dwellers to their home provinces, Honiara City Council closed all market outlets, except the main central market. This discouraged many farmers from selling their produce at the central market. As residents of Honiara city migrated to rural areas, sales declined forcing farmers to reduce prices and not generate any surplus for family uses. Some key respondents from Barana community claimed that, their daily commute to the central market had been disrupted. They could only travel once a week to the nearest market outlet at the borderline area. In comparison to the period before the onset of COVID-19 pandemic, they used to travel almost daily to sell their produce and for higher prices in the central market.

As stated by one of the adult male participants in Barana “Yesterday, I sent my wife to the market to sell our cabbage. We sell for \$10.00 and because of fear of wastage, we later reduced the price for \$5.00 but still we cannot sell them all. In the evening I saw the truck load of cabbage coming back unsold and I was disappointed. It is very disheartening for us farmers as we would have to meet the transport cost for nothing. It is a costly loss for us and all our effort. We really need a way to store our cabbage and avoid wastage in the future” (SI-201). This sentiment is shared by Ngalimbiu and Panatina participants.

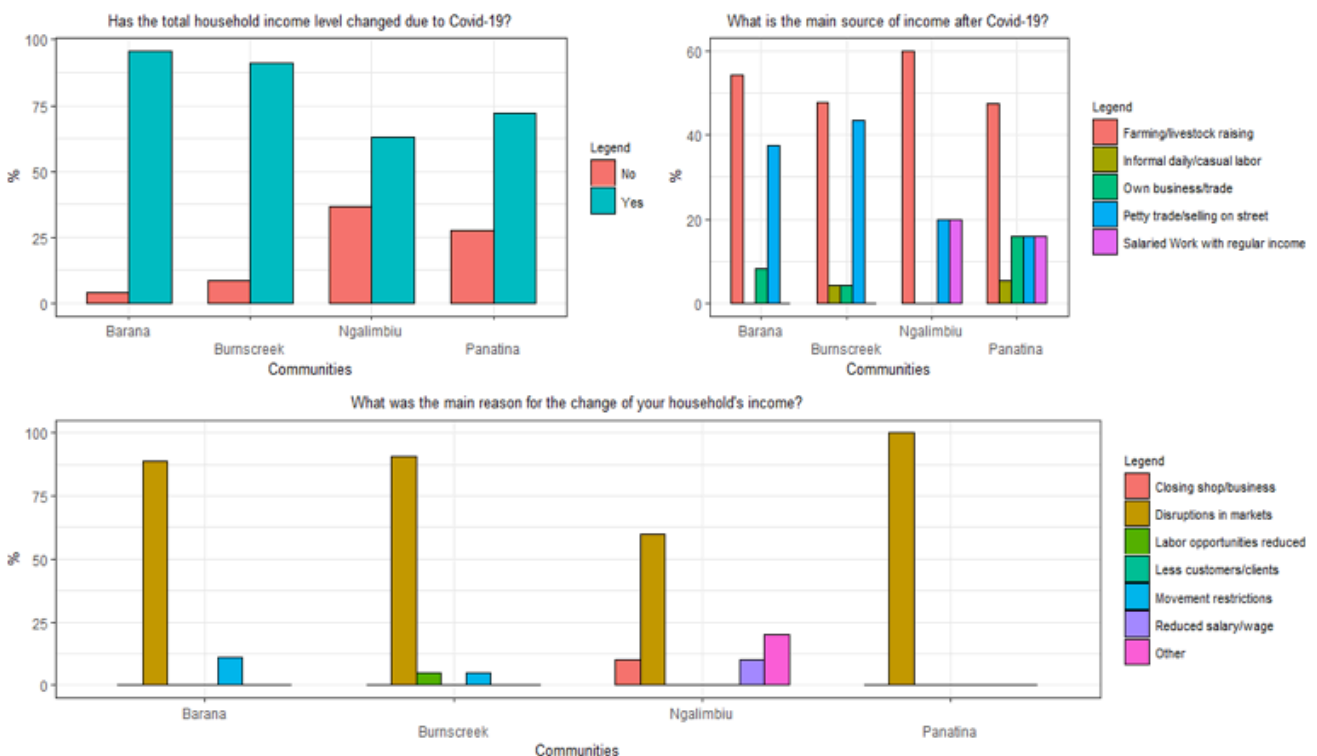


Figure 4: Causes of disruption of income

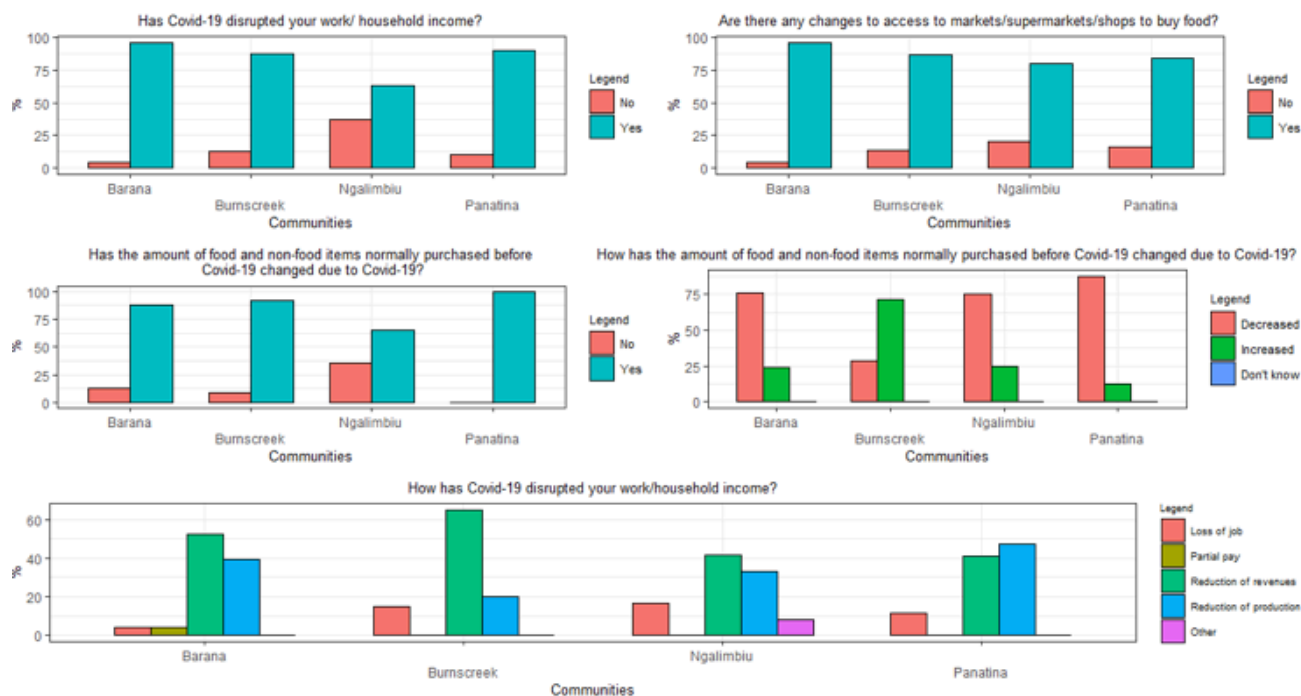


Figure 5: Disruption to household income, market access, purchasing power, food quantity and disruption to household income

4.2 Impacts of COVID-19 on Food and Nutrition

4.2.1 Food Sources

Before COVID-19, the peri-urban communities relied mainly on purchased foods (from the shops and markets). According to Sherzad (2020), about 80% of energy and food intake of urban communities are from purchases of processed foods. Rural communities on the other hand produced 80% of own food. The food systems for the four communities showed changes during COVID-19 times (see Figure 6). For example, the main food sources before COVID-19 for peri-urban Burns creek included formal and informal shops (store), and this shifted to primary market and river. For the inland communities of Barana and Panatina community, the main food sources before COVID-19 are garden, primary market, river and store (formal/informal). During COVID-19 there has been an increase in food sourced from the garden, river and jungle for both inland communities of the Barana and Panatina. Ngalimbiu community identifies store, garden, jungle, primary market and river as food sources before COVID-19. Secondary market and sea are not food sources.

Overall, there is a decrease in reliance on purchased foods from the shops (formal/ informal) and market for all communities. There is an increase sourcing of food from local production (gardens, hunting (jungle) and fishing (river and stream)).

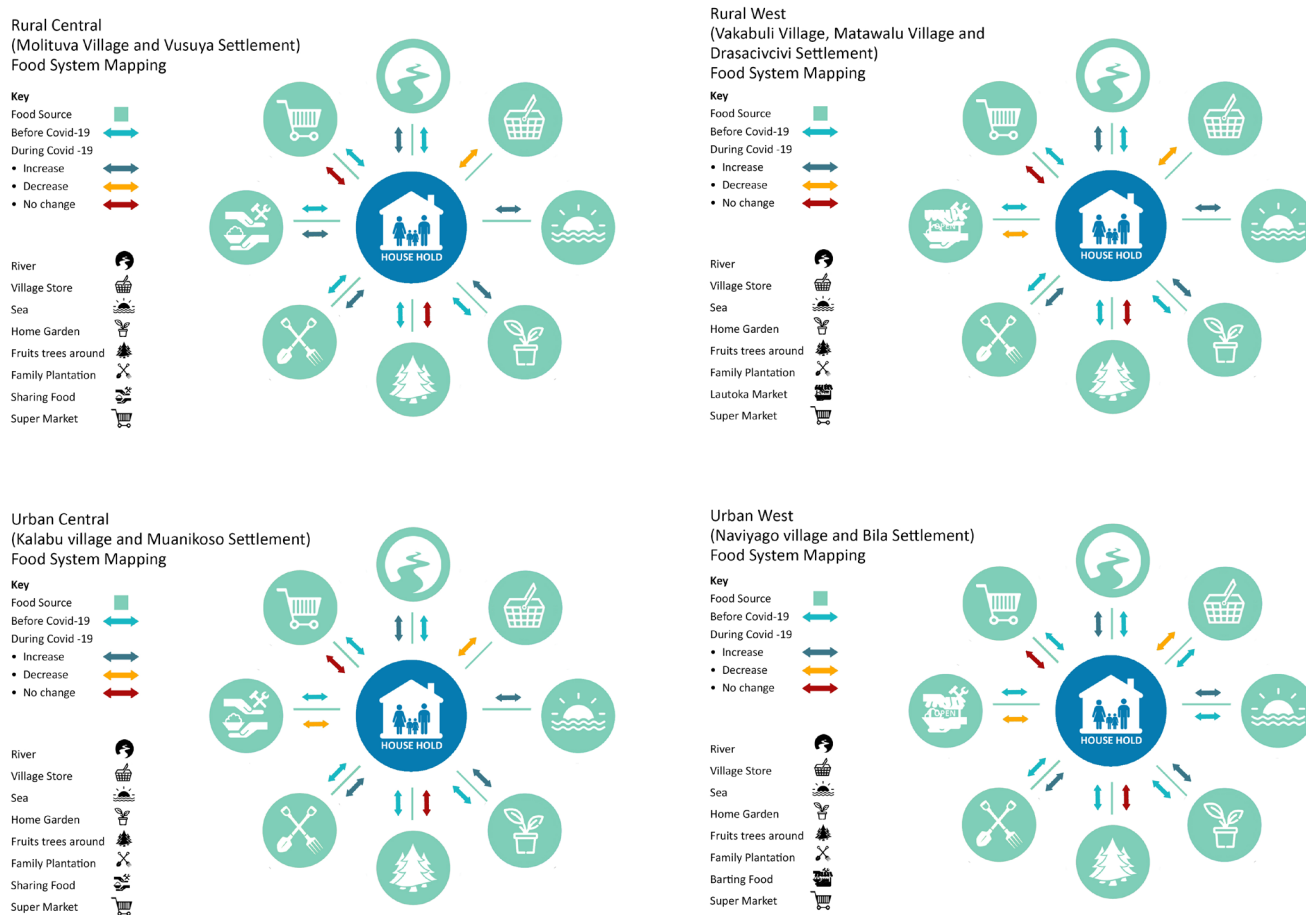


Figure 6: Main sources of food of the four surveyed communities showing trends before and during COVID-19

4.2.2 Dietary Diversity Score

During COVID-19, the analysis of the diet diversity score (DDS) shows that households consumed food from three to four different food groups out of a possible 10 food groups (see Figure 7). The proportion of studied households according to DDS showed that about 52% achieved low DDS (consuming 1-3 different food groups), 27% achieved medium DDS (4 to 5 different food groups) and 21% achieved high DDS (6 to 10 different food sources) in Solomon Islands. The average DDS for the COVID-19 period studied is lower, 3.76 as compared to 4.28 for communities studied in 2019; Burnscreek was one of the communities in the 2019 study (Iese et al., 2020). The dietary diversity score for women (DDS-W) of reproductive age (15-49 years) for whom, meeting the minimum DDS of 5 or more indicates micronutrient adequacy is approximately 4 in 2020, similar to that of 2019, suggesting there is not much change (see Figure 7).

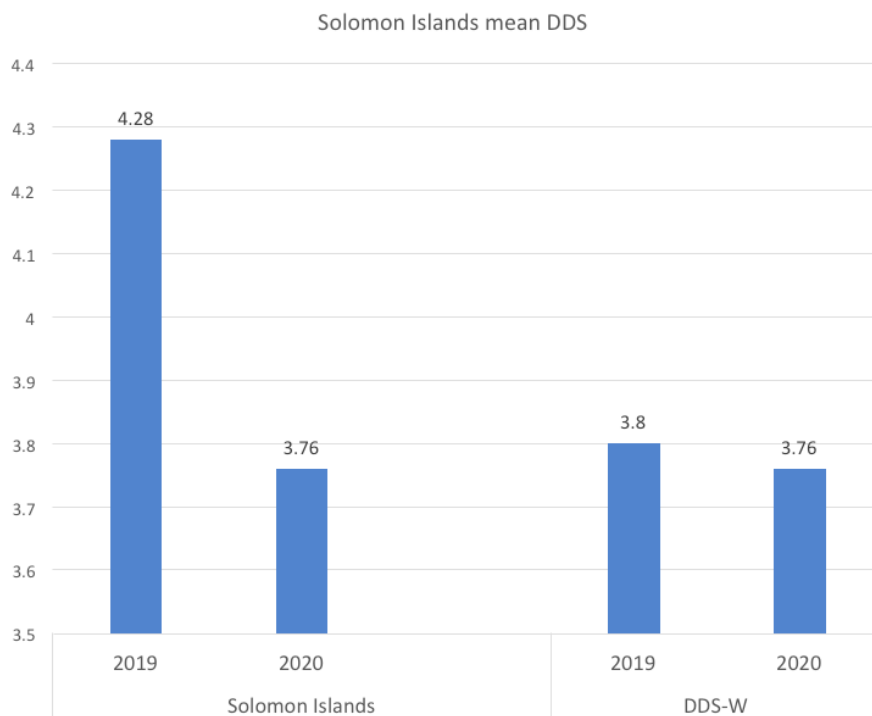


Figure 7: Comparison of the DDS for 2020 (COVID-19) and 2019 (pre-COVID)

All households across the four communities reported that they consumed own produced foods and between 70 and 80% purchased food (see Figure 8). There is some reliance (10-30%) on borrowed, barter and exchange of gift and support for meeting household food needs. According to one of the key respondents at Burnscreek community, “there were many occasions when our household does not have much to eat, on one occasion, we were fed by other members of our community” (SI-102). There is no food aid reaching the studied households.

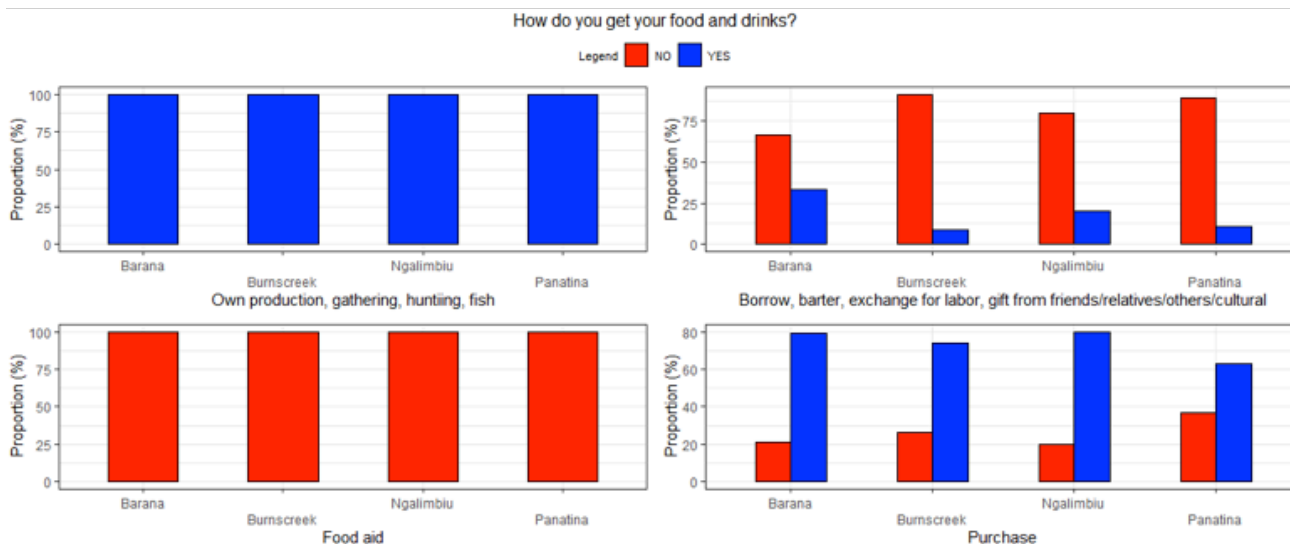


Figure 8: Main sources of food and drinks of surveyed communities

All households depend on own production and not on food aid and about 60-80% purchase food (see Figure 8). All four communities produce, vegetables, fruits (pawpaw, banana, Adam’s fruit, star fruit, Ngali Nut, mango, pomelo fruit and Cut Nut), white root tubers and plantains themselves from gardens and collected from jungle (see Figure 9).

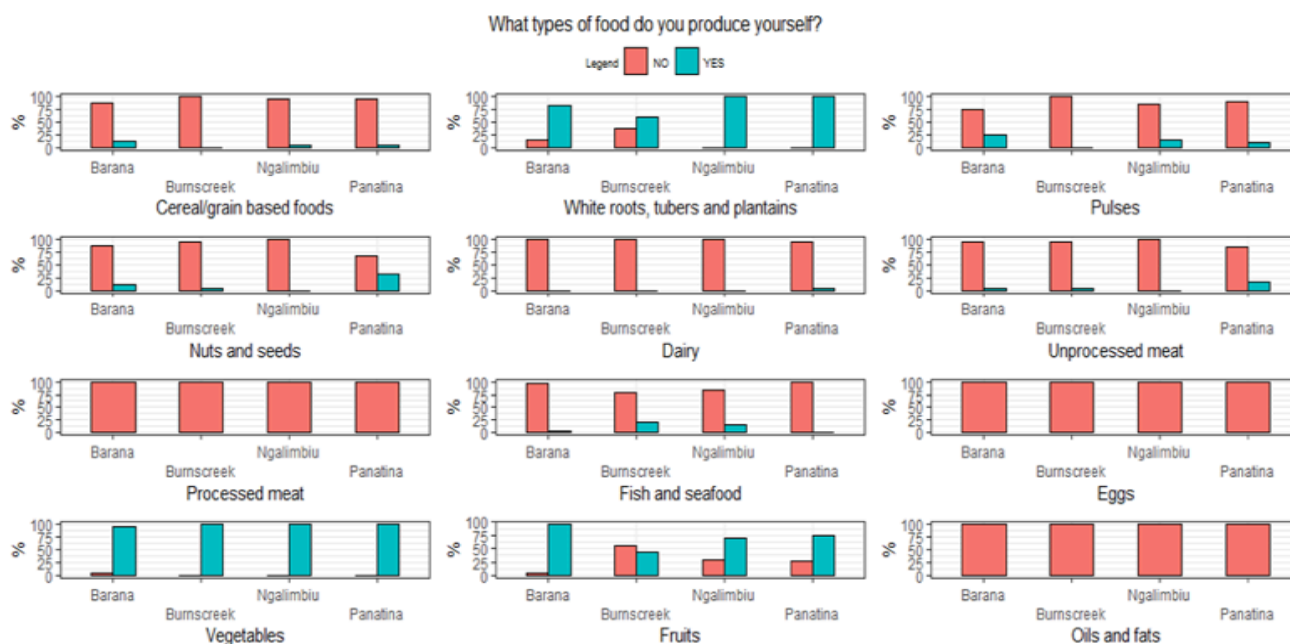


Figure 9: Types of food produced by communities



All communities produce small amounts less than 10% of cereal/grain, pulses, dairy, unprocessed meats and nuts and seeds. About 25% of households in Ngalimbiu and Burns creek are engaged in fishing activities. There is no home/own production of eggs, processed meat and oils and fats. Figure 9 shows increased production of vegetables less than 80% in all communities studied. There is a 100% increase in Ngalimbiu and Panatina households and about 60% and 80% of households in Barana and Burns creek produce white roots, tubers and plantains. 75% of households in Ngalimbiu and Panatina (Mataruka) and 100% in Barana and more than 30% in Burns creek produce fruits. Rural communities produce more of white roots, tubers and plantains, vegetables and fruits. But less than 20% protein food source (egg and unprocessed meat) were produced.

COVID-19 lockdowns have greatly reduced the communities’ buying power to acquire food from shops and the market. One respondent from Burns creek claimed that there have been occasions including after Cyclone Harold that family members were forced to live without food, because of not enough money. Despite this challenge, she thanked some individual members within the community who usually step in to provide for them during such incidences.

4.2.4 Diet Screener

The proportion of all communities reporting the number of servings of vegetables and fruits consumed daily is reflected in Figure 10. More than 40% of the households in the four communities that produce or gather fruits consumed two servings per day. Burns creek community consumed 1 or 2 servings of fruit per day. Most of the households from all communities consumed 2-3 servings of vegetables per day. More than 40% of Burns creek community consumed 3 servings of vegetable per day. Although there are many households who consumed fruits and vegetable within a week, the average number of serving per day per week is still low. About 90% of all households consumed less than 5 servings fruits and vegetable per day in a week.

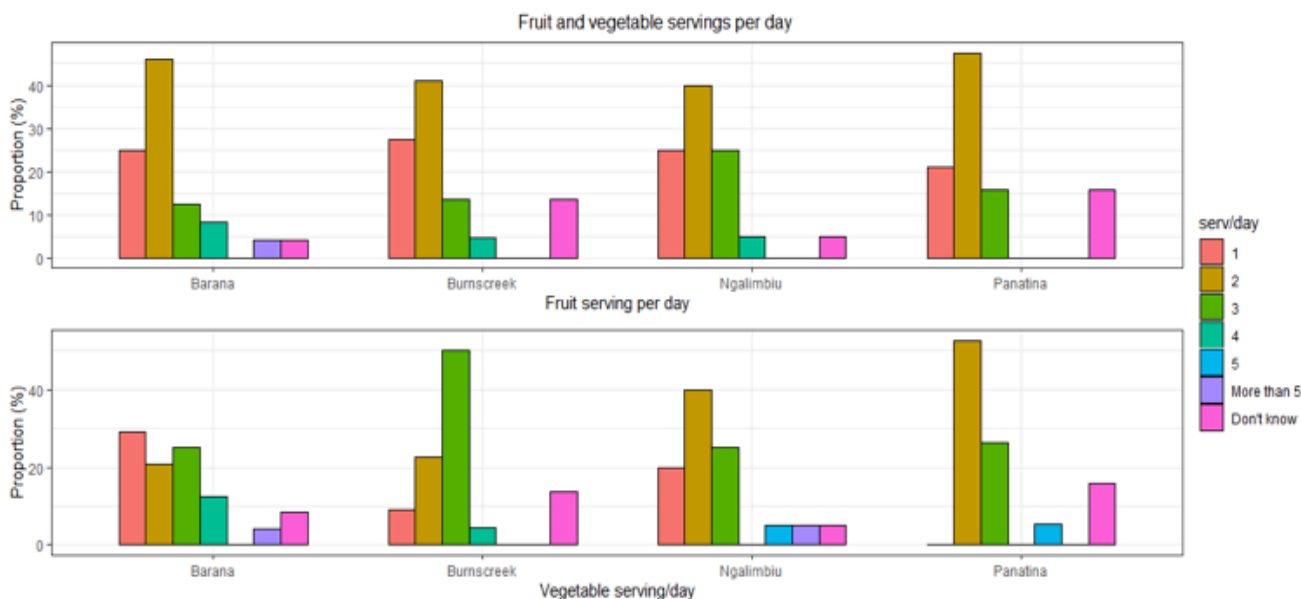


Figure 10: Number of servings/day of fruits and vegetables consumed by households in each community.



For protein, households in all communities relied on canned fish, mainly in peri-urban communities and processed red meat, mainly in rural communities. Fish and seafood are consumed 1-2 days per week by households in Barana, Burnscreek and Ngalimbiu (see Figure 11). Between 15 and 20% consumed at least 1 serving high red/processed meat per day per week. About 50% consumed less than 2 servings fish per week.

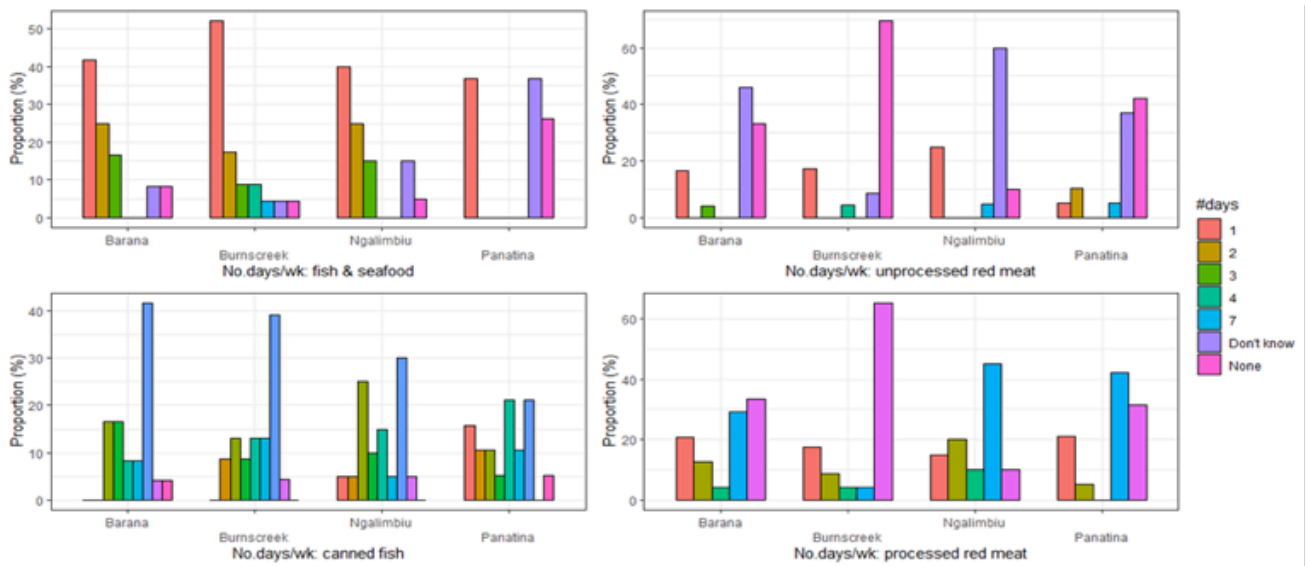


Figure 11: Number of days in a week households consumed different protein sources

Less than 20% consumed high sugar-sweetened beverages more than 7 per week. For sugar-free soft drinks, there is an increase from about 30% to more than 70% who stated that they do not know or cannot recall when they had consumed any sugar-free beverages (see Figure 12).

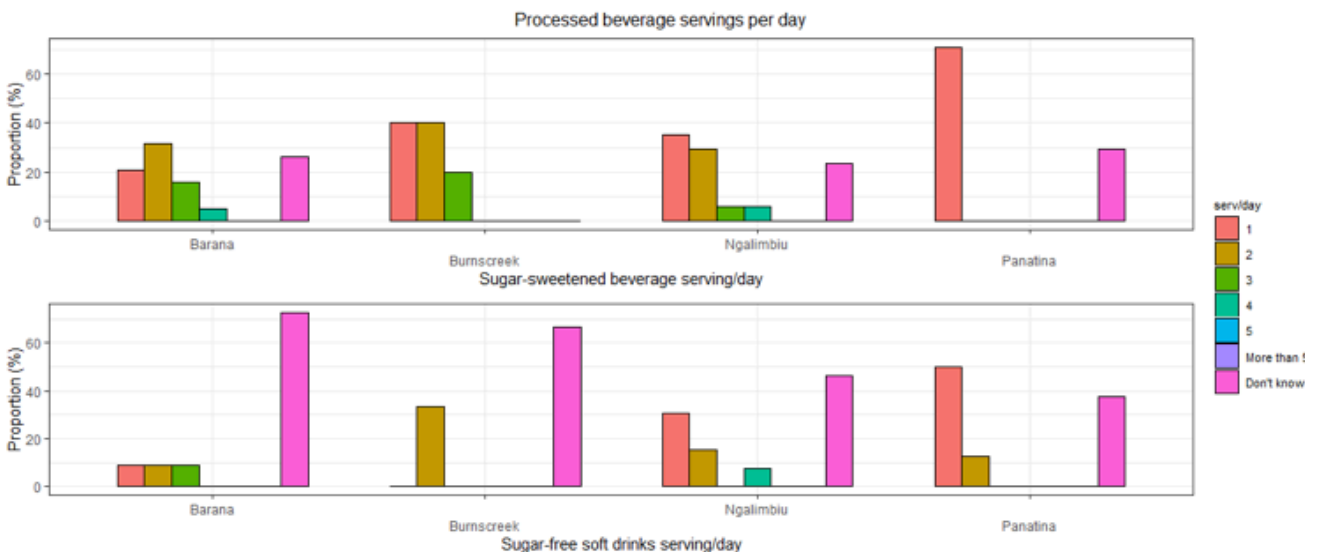


Figure 12: Proportion of respondents in Solomon Islands communities and the servings/day of processed beverages

In an analysis of the relationship between socio-economic factors and daily consumption of fruits and vegetables, income disruptions and changes were attributed for the less than 5-servings a day of fruits and vegetables consumed (see Figure 13).

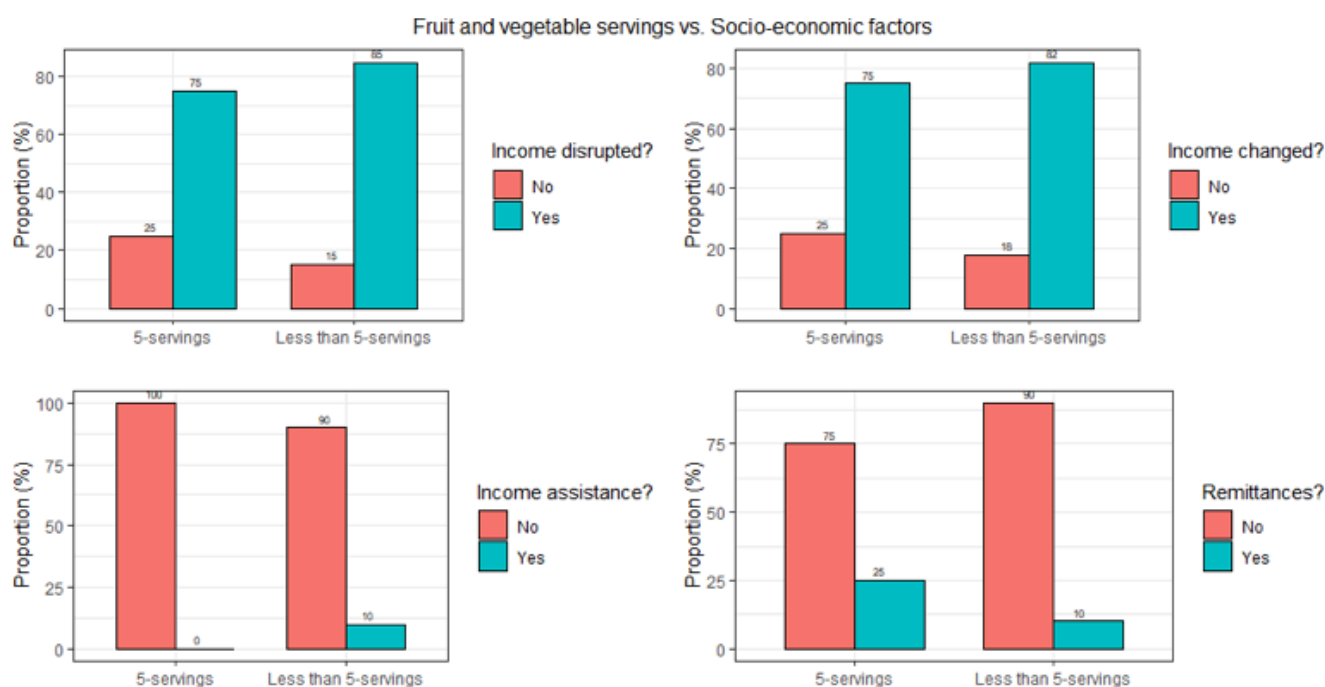


Figure 13: Solomon Islands frequency graphs of economic factors vs. quantity of fruits and vegetables consumed daily

To put the findings into perspective, before COVID-19, in Solomon Islands, 60% of the population produced their own food, for example sweet potato, cassava, banana, taro and vegetables (Grieve et al., 2013). However, in Honiara urban area, households only produced 10% of their food requirements (Horsey et al., 2019) and 80% of the dietary energy consumed was from purchase food (Sherzad, 2020).

Results show that most households in communities studied are producing three different food groups namely: (i) white root crops, tubers and plantains; (ii) vegetables and (iii) fruits. There is very little production of pulses, cereals/grains, and no production of processed and unprocessed meat, eggs and dairy products. The household production system reflects the initiatives from governments and development partners to address COVID-19, which have focused on increasing home gardens and crop production. These have resulted in increased production of root crops, vegetables and fruits at households in urban and rural areas. However, the non-inclusion of protein rich foods such as pulses and livestock products remain an issue. Loss of employment and loss of markets have reduced household food purchasing power.



The main food groups consumed by households included root crops, vegetables, fruits, grains (rice) and processed food (canned fish) and this was reflected by the low DDS (3.76). Before COVID-19, a study in Malaita (Horsey et al., 2019), showed high consumption of white rice (94.7% of households). Only a small proportion of households (24.1%) consumed dairy, meat and eggs food groups. Moreover, DDS ranged between 2 and 12 food groups with a mean DDS of 7.27 (in 12 food groups assessed), with women scored a higher DDS of 7.55 ± 1.609 . This was higher compared to 6.90 ± 1.706 in Auki (urban area in the outer island of Malaita) and 6.54 in Honiara (Capital city of Solomon Islands). Based on stories from studied households in this study, there is less diversity and quality of food consumed especially in informal communities during COVID-19 as compared to before COVID-19.

4.2.5 Food Insecurity

This component of the survey focused on capturing the level of food insecurity amongst the sampled populations using a self-reported, experiential measure of food insecurity that can be recorded at the individual-level. The eight questions were mainly focused on access to healthy and nutritious food, consumed in the last six months (prior to July 2020). The food insecurity experience survey model estimates the level of food insecurity experienced by the percentage of household that answered “Yes” to each of the eight questions. Households that answered “Yes” to Question 1 are categorized by the FIES statistical model as “food security to mild food insecurity”. Households that answered “Yes” to Question 2 are categorized as “moderate food insecurity (lower level)”. Households with “moderate food insecurity (upper level)” answered “Yes” to Questions 3, 4, 5, 7. Households categorized as “severe food insecurity” answered “Yes” to Questions 6 and 8.

The FIES analysis for all studied communities (see Table 3) showed that about 83% have experienced reductions in quantity of food available and have had to skip meals. About 66% are categorized as moderately food insecure (lower level) with compromising food quality and variety.

About 26-43% are in the severe food insecurity category and have experienced going for a day and more with no food. There is a difference between rural and urban households. About 87-92% of the studied households in urban communities as opposed to 53-65% in rural communities are categorized with “mild food insecurity” which means there is “uncertainty regarding the ability to obtain food”. Moreover, about 21-46% of households in Barana and 35-61% of households in Burns creek are experiencing severe food insecurity. For the rural communities, 20-25% of households in Ngalimbiu and 26-37% in Panatina were experiencing severe food insecurity during the time of the study.

Table 3: Solomon Islands respondents to 8 questions corresponding to the FAO-FIES severity scale

Variables	FAO's Food Insecurity Experience Scale (FIES)							
FIES	Uncertainty regarding ability to obtain food	Compromising on food quality and variety	Reducing food quantity, skipping meals				No food for a day or more	
Severity level	Food security to mild food insecurity	Moderate food insecurity (lower level)	Moderate food insecurity (upper level)				Severe food insecurity	
8-Questions	Q1 (yes)	Q2 (yes)	Q3 (yes)	Q4 (yes)	Q5 (yes)	Q7 (yes)	Q6 (yes)	Q8 (yes)
Solomon Islands whole (n=86)	65(76%)	57(66%)	71(83%)	60(70%)	64(74%)	45(52%)	37(43%)	22(26%)
Communities								
Barana (n=24)	22(92%)	18(75%)	20(83%)	17(71%)	18(75%)	13(54%)	11(46%)	5(21%)
Burns creek (n=23)	20(87%)	14(61%)	20(87%)	21(91%)	20(87%)	12(52%)	14(61%)	8(35%)
Ngalimbiu (n=20)	13(65%)	14(70%)	16(80%)	9(45%)	13(65%)	11(55%)	5(25%)	4(20%)
Panatina (Mataruka) (n=19)	10(53%)	11(58%)	15(79%)	13(68%)	13(68%)	9(47%)	7(37%)	5(26%)



4.2.6. Nutritional Knowledge

The knowledge of communities surveyed in terms of nutritional requirements recommended by health experts provided mixed results (see Figure 14). There seemed to be good knowledge of some key health recommendations. More than 70% responded that more fruits, root crops, vegetables and water should be consumed according to health experts but there was mixed response on consuming more wholegrains. More than 70% also indicated that they should consume less sugar sweetened beverages, fatty foods and fast foods and snacks. Although there were positive responses on consuming more fruit and vegetables; they could not state clearly how much is required per day as part of a healthy diet.

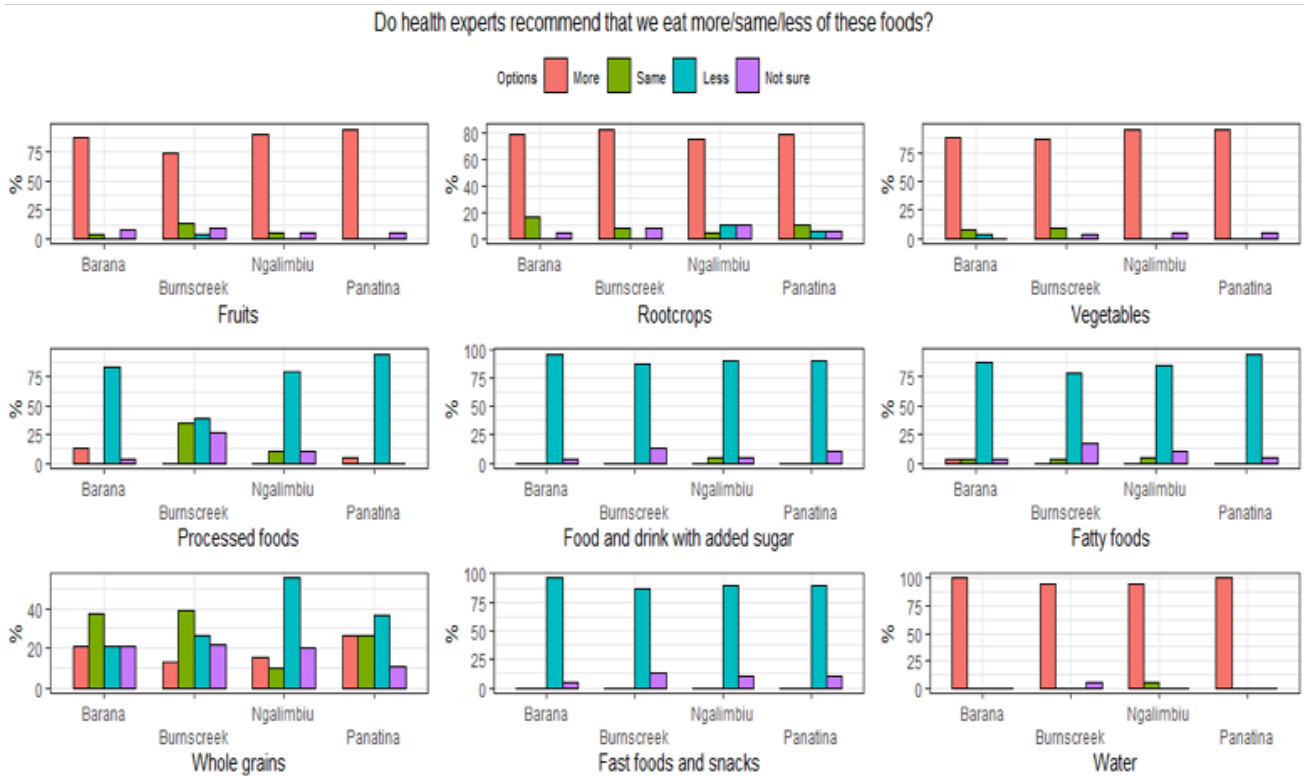


Figure 14: Proportion of respondents from communities surveyed on how they perceived nutrition messages

4.3 Livelihood

4.3.1 Health

Although Solomon Islands has not recorded any positive case of COVID-19, there were reported cases of other illnesses; malaria, pneumonia, cough and other minor sicknesses in the communities studied. Community members expressed fear that there may be a shortage of medication if the pandemic persists and borders remain closed.



Households expressed a range of concerns during COVID-19 (see Figure 15). Barana households showed a high level of concern about the disruption of livelihood and schools, shortage of food and medication, increase in illness among the people, and increase in food prices. These are important concerns for an agricultural community whose livelihoods depend on access to market and the subsequent decrease in opportunities to generate income. The concerns of the Burnscreek Community included the increase in food prices, travel restrictions, loss of work, and limited access to both processed and local foods.

Ngalimbiu and Panatina communities’ main concerns are the disruption of medical services, disruption to sources of livelihood, increase in illness and shortage of food. Ngalimbiu community has experienced food shortages, sickness, disruption of medical services and sources of livelihood due to previous flooding events. There are also a lot of concerns about the disruption of educational services in Panatina Community.

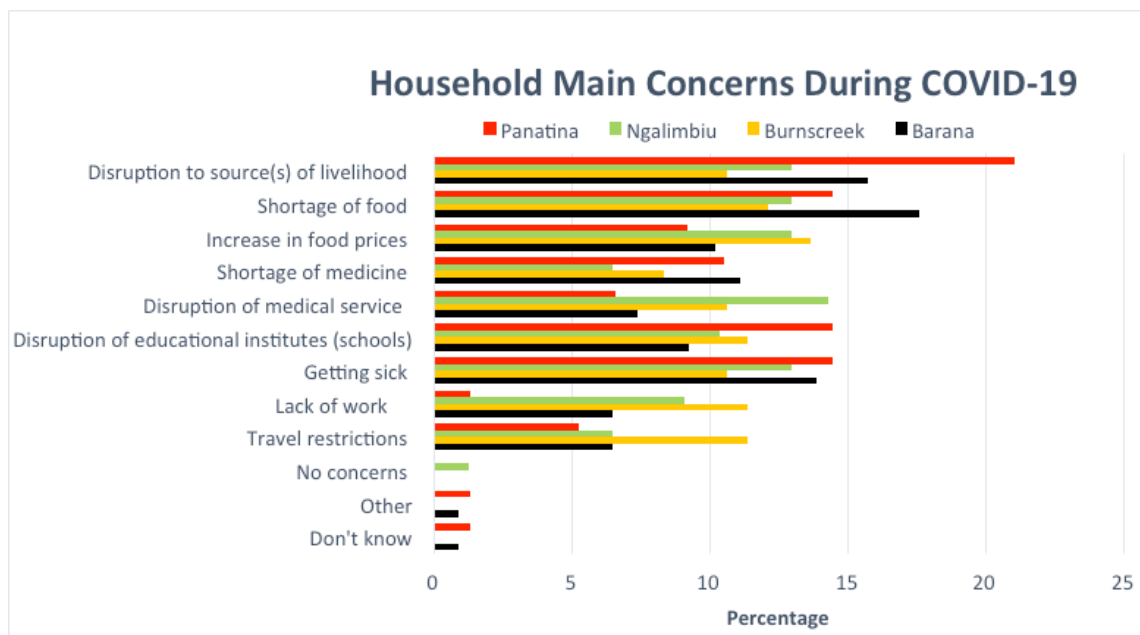


Figure 15: Community household concerns during COVID-19



4.3.2 Water Security

The main water sources and effectiveness of access are shown in Figure 16. The main sources of water in the Burns creek community are from the borehole (hand pump), wells and tanks. Water for washing, swimming, and cooking is taken from community wells. Water for drinking from boreholes is shared among 5-10 households. For boreholes with generator operated water pumps, access normally costs around SBD\$2.00 (USD0.24) per pumping. This is purposely to pay for fuel for the generator pumps. There is an abundance of community water wells thus the majority think their water is moderately accessible and readily available. However, this is not often the case during rainy season when these ground water sources are being inundated by flood waters.

In the case of Barana community, water for drinking is mainly from mountain streams. Household members have to take turns to use this source and the activity of fetching water for drinking from the streams can take from 30 minutes to 5 hours, depending on the number of households wanting to use the streams on a daily basis as and during prolonged dry seasons. Water tanks are used only for schools. Water for washing and swimming is fetched from community wells. Majority of respondents more than 40% in Barana Community think their access to water resources is either moderate or too difficult to access.

For the Ngalimbiu community, water for drinking is sourced from a borehole that is accessed through standpipes. Accessibility to water for drinking can be an issue when there is problem with the water pump. In the event where water supply is disrupted, the community voluntarily uses community freshwater wells. There are also a very few households who have access to private household water tanks. Majority of respondents think water is easily accessed as most of their water for drinking is from a water supply system sourced from a borehole.

For Panatina community, streams are the main source of drinking water. There are a number of households who have access to community water tanks and there are others that often collect water through containers and drums from the roofing catchments for drinking, bathing, cooking and sanitation purposes. The streams can be unsuitable for drinking during rain and flooding as well as dry seasons when the water table is very low. Panatina is similar to that of Barana, where water from bush streams is available and only disrupted during flooding events and drought.

At the study sites with the exception of Burns creek, communities experienced an influx of returning community members from Honiara, which has drastically increased the demand on the limited water infrastructure and sources.



For example, according to Chief Peter Tabiru of Barana Community, he had to spend almost 3 hours to fill drinking water bottles from the stream, an activity which normally takes 40 to 50 minutes before the COVID-19. The same sentiment was also expressed by a female respondent at Panatina Community. She stated that most of the time normally spent to attend to family and food preparation was used to queue with women each day for water collection.

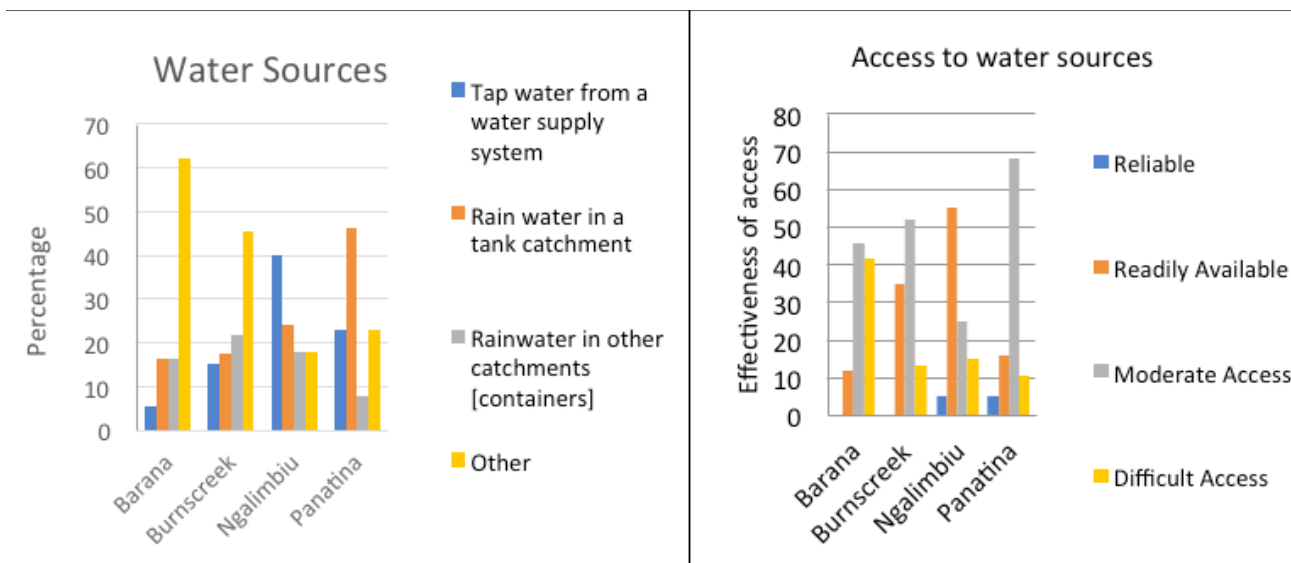


Figure 16: Community water sources and effectiveness of supply

4.3.3 Education

The majority of the respondents at the selected sites have attained either primary level or did not complete secondary school education. Key respondents at selected communities also acknowledged that COVID-19 had impacted the education of their children (see Figure 17). In response to the impact of COVID-19, the national government, through the Ministry of Education and Human Resource Development (MEHRD) had temporarily closed both primary and secondary schools in and around Honiara City they were deemed as high risk zones to the potential impact of COVID-19. Some schools had introduced, social distancing, hand washing facilities, morning and evening classes, and alternating school days for exam and non-exam classes.



As of August, most of the schools have resumed classes, but the disruption on the learning progress of the students may be unrepairable. For example, one youth from Panatina (Mataruka) community has expressed unhappiness at her father’s decision to withdraw her enrollment from 6th form at Honiara National Secondary School for the entire year. During the research trip, this young girl could not hold back her dissatisfaction. She reiterated that although she shall continue her classes in 2021, she will miss classmates, friends and colleagues who are continuing their education. Another young female participant from Ngalimbiu shared the same sentiment that “due to COVID-19, I had to withdraw from tertiary studies, due to problems in acquiring school fees” (SI-303). She also noted that “due to the pandemic she could not have graduated after completing tertiary education, as graduation ceremonies were being cancelled”. In regards to virtual teaching, in particular school radio programs, a father from Barana Community said that, “the challenge with radios is that our children are only used to the teacher training them in class while writing on the board. This allows the students to see and be in direct contact with the teachers. The radio programs on the other hand is a bit difficult for our children to grasp plus the non- direct interactions places our children susceptible to household disturbance during the radio program” (SI-202). A participant from Burnscreek stated that “since the reopening of the schools, I fear for the children” (SI-102). Another parent from Burnscreek stated that “some of the children are willing to attend school, since it has reopened but as parents cannot afford school fees, they cannot attend schools anymore” (SI-101). A young father from Barana Community opined that “I am happy with the reopening of the school. What I am not happy about is the fact that despite the closure of schools and limited time our children spent at school, the school fees have not changed. I was thinking like some of these costs should be reduced as our children are being forced to go to school in lesser number of days’ despite paying for the same school fee” (SI-201). A father commented that home schooling was a disadvantage for parents like him who were not educated. A mother from Panatina Community said “I am a teacher, and the lockdown has allowed me to spend more time with my young children” (SI-402). This implies that COVID-19 has impacted on access to education and to a certain extent this could be determined by the socio economic and education status of the parents and heads of households.

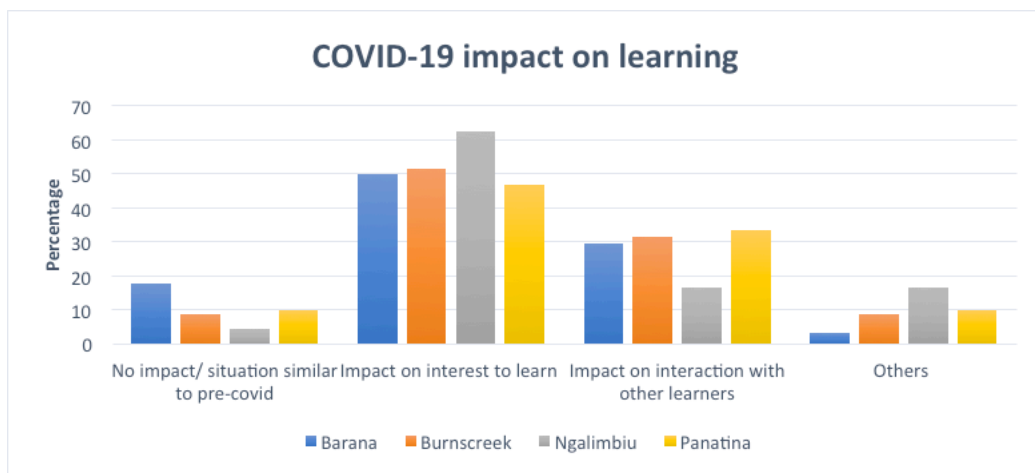


Figure 17: COVID-19 Impact on learning



4.3.3.1 Impact on Learning on Children

The COVID-19 lockdown and closure of schools also impacted the ability of students to learn. The students were reported to be distracted and not interested to learn. As one respondent mentioned, “many of the children are becoming lazy to learn maybe because of the duration of the school closure do to COVID-19” (SI-101). Parents shared different responses to spending more time with children at home. Dependent learners had impacts on parents’ time for doing chores in the home and garden. On the other hand, some parents enjoyed the time they spent with their children at home - “they have a good time interacting with their children and understand their behavior and the type of student their children are at school” (SI-203).

4.3.3.2 Option Available for Support to Education

The majority of the participants in all four communities stated the school fee subsidy provided by the government had helped the households. Other support included provision of reading books, course material (especially for secondary and tertiary students). Free internet was also provided by the Solomon Islands Telekom company for Tertiary education (Solomon Islands National University) to access online learning materials, however not all households have access to internet.

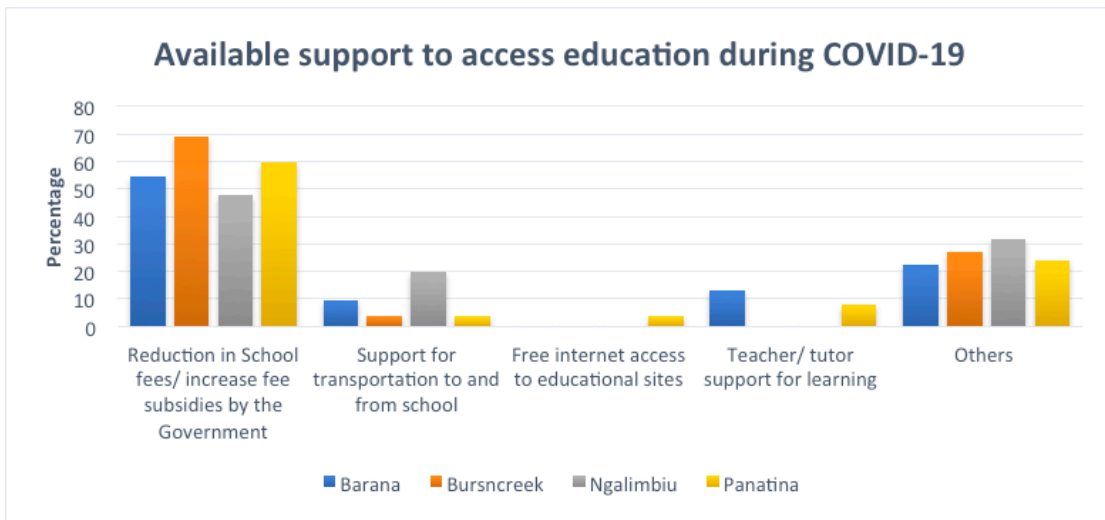


Figure 18: Support to education during COVID-19



4.4 Stakeholder Mapping

The stakeholder map shows stakeholder engagement with communities during COVID-19 (see Figure 19). KGA worked with all four communities before and during COVID-19 mostly supplying vegetable seedling and planting material from their nursery and training. Salvation Army only reached out to Burns Creek community during COVID-19. The Government through The National Disaster Management Office (NDMO) supplied food items to Ngalimbiu community and Panatina (Mataruka) as part of response and relief due to Tropical Cyclone (TC) Harold, but the problem was the relief supplies were received by the community a month after TC Harold. During COVID-19, the Government supported a commercial farm through its economic stimulus package with the Ngalimbiu Sape farm (family own). The outreach of international NGOs was only to two of the studied communities and focused on COVID-19 awareness and distribution of cooking utensils. The Solomon Tobacco Company (private sector) through its environment programme provided assistance through KGA which included distribution of seeds to Ngalimbiu community.

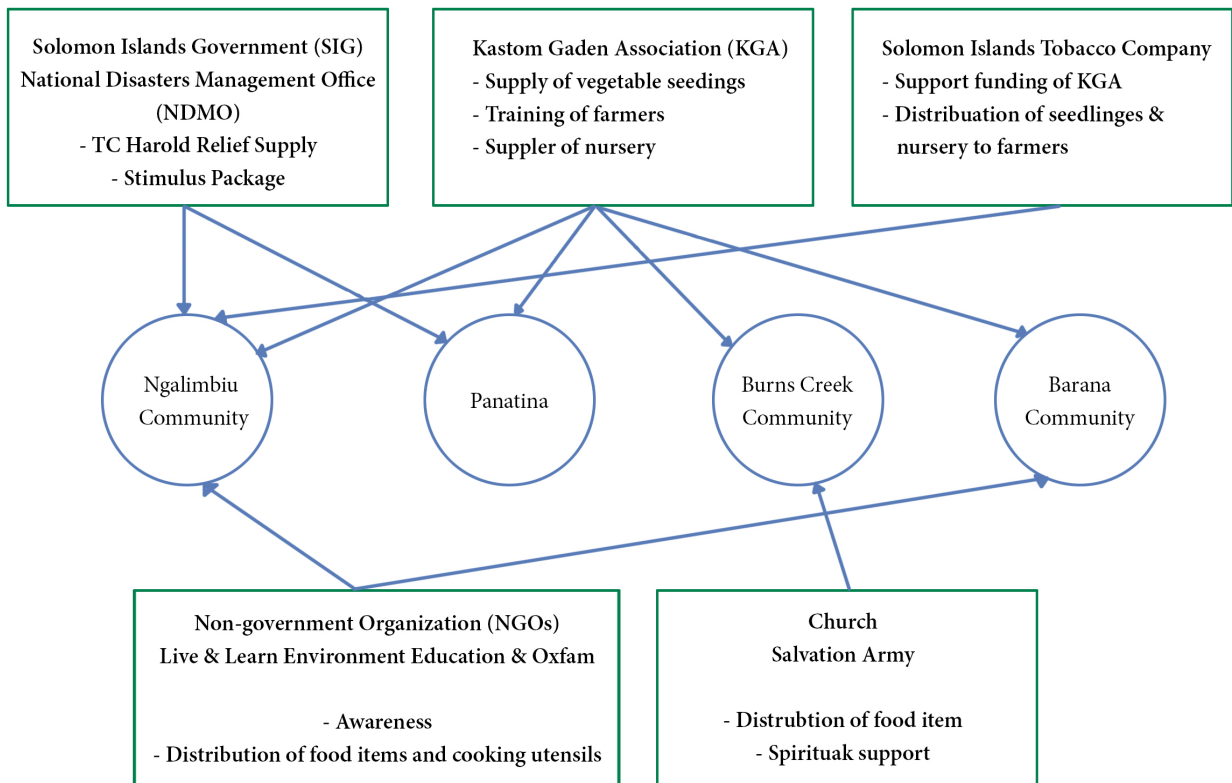


Figure 19: Map of stakeholder supporting communities

4.5. Community/ Household Needs

Specific needs of communities were also documented during the study. The specific needs; socio-economic, education, livelihood, health, wellbeing food, nutrition knowledge and water are listed in Table 4.

Table 4: Identified community needs

Sector	Burnscreek	Barana	Ngalimbiu	Panatina (Mataruka)
Socio-economic	Provision of Market outlets, Improve water Sanitation, Diversification of community income. Improved access to income generating activities. Need for improved sanitation practices.	Provision of market outlets, market house etc. Need for better organised markets and farming patterns. Need for improved sanitation practices.	Provision of Market outlets. Food processing plant to allow improved food preservation and lower wastage. Need for improved sanitation practices.	Provision of Market outlets, Improved road and infrastructures. Improved access to income generating opportunities as well as job opportunities Need for improved sanitation practices.
Education	Provision of basic quality education Awareness and training on usage of online education platforms. Need for Staff house and school ablution block. Need for more improved classroom facilities.	Provision of basic quality education. Need for School Staff houses and school Ablution block.	Provision of basic quality education Improve of internet coverage for educational purposes	Provision of basic quality education Improve of internet coverage for educational purposes. School ablutions block. School staff house
Livelihood	Micro-income activities, ease of access to government assistances	Micro-income activities, ease of access to government assistances	Micro-income activities, ease of access to government assistances	Micro-income activities, ease of access to government assistances



Sector	Burnscreek	Barana	Ngalimbiu	Panatina (Mataruka)
Health	<p>Clinics and Health Centres ease access</p> <p>Proper drainage systems Proper Sanitation facilities.</p> <p>Awareness on hygiene and introduction of improved Pig waste management.</p>	<p>Clinics and Health Centres ease access.</p>	<p>Ease of access to affordable and quality health services.</p>	<p>Clinics and Health Centres ease access</p>
Wellbeing	<p>Awareness of social security, rights and safety nets</p>	<p>Awareness of social security, rights and safety nets</p>	<p>Awareness of social security, rights and safety nets</p>	<p>Awareness of social security, rights and safety nets</p>
Food Source	<p>Identify new food garden sites and locations.</p>	<p>Introduction of fruit trees and farming techniques that can reduce the vulnerability of garden produces to wild pigs and other pest.</p> <p>Need more highly productive planting materials.</p>		<p>Introduction of fruit trees and farming techniques that can reduce the vulnerability of garden produces to wild pigs and other pest.</p> <p>Need more highly productive planting materials.</p>
Food - Insecurity	<p>Diversification of food gardens.</p>	<p>Diversification of food gardens.</p>	<p>Diversification of food gardens</p>	<p>Diversification of food gardens</p>
Nutrition Knowledge	<p>Awareness & Training on food types and nutritional value</p>	<p>Awareness & Training on food types and nutritional value</p>	<p>Awareness & Training on food types and nutritional value</p>	<p>Awareness & Training on food types and nutritional value</p>
Water security	<p>Proper Water infrastructure, Tanks, Proper Water supply</p>	<p>Water Tanks, Water Supply, Water catchment area reservoir</p>	<p>Water Tanks, culvert water wells, Water Supply, Water catchment area reservoir</p>	<p>Water Tanks, Water Supply, Water catchment area reservoir</p>

4.5.1 Needs Analysis and Prioritization

The identification and prioritization of community needs was deduced through a series discussion (formal and informal), and further analysis of FGD transcripts. For each sector, the priority needs mentioned by the participants were identified and ranked 1- low priority, 2- medium priority and 3- high priority (see Table 5). For the highest priority, the community had to indicate they were lacking in a specific area under consideration.

4.5.1.1. High Priority

Burnscreek community is classified as ‘High’ priority based on their social and economic needs, as the people depend on cash and associated sources of income to enable their survival as a peri-urban community. Similar findings are also prevalent to other study sites as majority of respondents experienced economic hardship during the pandemic period.

4.5.1.2. Medium Priority

Food insecurity is identified as a medium priority for the studied sites outside of Honiara, because households could easily produce their own food from their gardens. But there is a major concern because of high reliance on purchased processed foods to supplement diets (sources of proteins).

4.5.1.3. Low Priority

Health holds a relatively low priority in both rural communities; Ngalimbiu and Panatina (Mataruka) due to the close proximity of health facilities. This is different for Burnscreek and Panatina (Mataruka) community members who need to travel 6 km – 10 km to reach the nearest health facilities.

Table 5: Community Needs Analysis

Community	Sector								
	Socio-economic	Education	Livelihood	Health	Wellbeing	Food Source	Food Insecurity	Nutritional knowledge	Water Security
Burnscreek	High	High	High	Medium	High	High	High	High	High
Barana	High	High	Medium	Medium	Medium	Medium	Medium	High	High
Ngalimbiu	High	High	Medium	Low	Medium	Medium	Medium	High	Medium
Panatina (Mataruka)	High	High	Medium	Low	Medium	Medium	Medium	High	High



7.0 Conclusion

The COVID-19 preventative interventions implemented by the Government of Solomon Islands to safeguard its people are affecting the socio-economic status of communities in Guadalcanal. The reduced income from loss of jobs, decreased working hours and closure of markets has affected all four communities. Burns creek that relied heavily on cash income for food, suffered severely compared to communities outside of Honiara. More people are returning to their communities and are involved in farming and informal labor for their livelihood. Many households have increased home gardening and are producing vegetables, fruits and root crops as a source of fresh foods. This is working well, however, there is a need to increase the diversity of inputs provided by government and NGOs. Inclusion of pulses/legumes and small livestock such as chicken, ducks and pigs for meat and eggs should be considered to increase protein sources and the diversity of local diets. Other key livelihood assets such as access to land, water, and education are impacted by COVID-19 and increasing the stress and poverty levels of both urban and rural communities in the study.

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