

Urban Fijian Indigenous Families' Positive and Negative Diet, Eating and Food Purchasing Experiences During the COVID 19 Safety Protocols

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Abstract

The Greater Suva Urban Area (GSUA) is the most densely populated area in Fiji and was greatly affected by the second wave of the COVID-19 outbreak. This study explores how lockdown and other COVID-19 safety protocols impacted the diets, eating behaviour and food purchasing behaviour of iTaukei (indigenous Fijian) families living in the GSUA. In-depth interviews with 13 iTaukei mothers from diverse socio-economic and occupational backgrounds highlight that loss of income was related to food insecurity, which also affected access to balanced meals and dietary diversity. Women also noted positive changes, including (1) reduced consumption of red and processed meat, (2) increased consumption of fruits and vegetables, (3) reduction in eating out and greater reliance on home-cooked meals, (4) reduction in food wastage, (5) increase in home gardening, and (6) greater concern for health and well-being. Unhealthy eating behaviours were also recorded, including greater reliance on energy-dense foods, increased cooking and baking of unhealthy foods, increased snacking, and replacing dinner with tea, snacks and sugary foods. These findings raise concerns about the long-term effects of COVID-19 safety protocols on health and well-being and provide insights into opportunities for promoting healthier eating lifestyles, better management of resources, and enhancing food security.

Keywords: COVID-19; Food Insecurity; Diet; Eating Behaviour; Food Purchasing Behaviour

Introduction

The Greater Suva Urban Area (GSUA) is the most densely populated area in Fiji, housing approximately 29% of Fiji's population and 57% of Fiji's urban population (United Nations Human Settlements Programme [UN-Habitat], 2012). It is one of the first urban centres in Fiji to be hard hit by the second wave of the COVID-19 outbreak in April of 2021. The government's response to managing the outbreak in this area included complete lockdowns, which saw the closure of all non-essential businesses including restaurants and fast-food places, setting up of smaller containment zones within this area, and merging the entire area into one containment zone and then gradually re-opening businesses, including restaurants, with COVID-19 safety protocols. Essential businesses such as supermarkets could operate within the curfew hours throughout the lockdown, but with strict COVID-19 safety protocols that limited the number of people inside the supermarket at any given time and enforced social distancing. Wherever possible, remote working arrangements were made, and online classes were set up for universities and schools. These COVID-19 safety protocols inevitably affected family life, including dietary choices and eating habits.

The devastating impact of COVID-19 lockdowns on economies around the world is well established and loss of food security in low-income countries and communities is particularly concerning (Birner et al., 2021; Escobar et al., 2021; Food Security Information Network [FSIN], 2020). COVID-19 safety protocols have further exacerbated the situation of vulnerable populations and individuals who were already undernourished, facing acute hunger, and those who were already struggling with food security (FSIN, 2020). Studies indicate that the elderly, women and children, lower income households, individuals and households facing loss of income or changes in employment, and households with individuals with lower education have experienced higher levels of food insecurity during the pandemic (Elsahoryi et al., 2020; Escobar et al., 2021; Kharroubi et al., 2021; Niles et al., 2021; Parekh et al., 2021). Furthermore, this food insecurity has severely impacted dietary diversity, including difficulties in maintaining a balanced diet, and studies indicate significant impact on consumption of fruits, vegetables, carbohydrates, meat, poultry, and fish during the pandemic (Elsahoryi et al., 2020; Jayawardena & Misra, 2020).

In more prosperous communities, stay-at-home measures to control COVID-19 also had adverse impacts on lifestyles, diet, and eating habits. Notably, weight gain has been reported in a number of studies, and has been in part attributed to a lack of exercise and sedentary lifestyles, but also to adopting poor dietary habits such as consuming more fatty foods, sugary foods, unhealthy snacks, processed foods, and alcohol, as well as a general increase in food consumption (Abed et al., 2021; Bemanian et al., 2021; Bennett et al., 2021; Drieskens et al., 2021; Palmer et al., 2021; Miller et al., 2021; Ronto et al., 2021). Several explanations for the increase in poor diet and eating habits during COVID-19 lockdowns appear relevant. First, higher levels of emotional eating triggered by psychological distress associated with the pandemic, such as job insecurities, loss of personal finances, health concerns and interpersonal relationships have been recorded (e.g., Bemanian et al., 2021; Salazar-Fernández et al., 2021). Second, in order to reduce shopping trips, consumers resorted to bulk buying and stockpiling processed foods, non-perishable snacks, meat and meat products (Hassen et al., 2021^a; Hassen et al., 2021^b); greater access could have resulted in higher consumption of these foods (Pechey et al., 2021). Third, increased baking and cooking of unhealthy foods during COVID-19 lockdowns has also been associated with unhealthy eating (Ronto et al., 2021). Fourth, disruptions in supply and increases in prices of fruits and vegetables led to reduced consumption of fresh foods during the pandemic (Bennett et al., 2021). Last, increased snacking and consumption of sugary foods during lockdowns have also been associated with boredom and disruption in normal work and study routines, causing a general lack of structure in daily routines (Avery et al., 2021).

Having more time at home during lockdowns has also resulted in healthier eating behaviours. While experimentation with cooking led to some unhealthy eating, it also resulted in a general increase in home-cooked meals, which tend to be healthier options than fast food, takeaways and restaurant-bought meals; although the consumption of the latter decreased due to closure or reduced operations of these businesses (Abed et al., 2021; Bennett et al., 2012; Hassen et al., 2021^a; Hassen et al 2021^b; Ronto et al., 2021; Wang et al., 2021). Another positive outcome reported by multiple studies is significant increase in fruit and vegetable intakes during the pandemic (Abed et al., 2021; Bennett et al., 2021; Hassen et al., 2021^a; Hassen et al 2021^b; Wang et al, 2021). This increase in consumption can be attributed in part to a growing interest and practice of home gardening during the pandemic, which has led to increased consumption of homegrown fruits and vegetables (Mullins et al., 2021; Niles et al., 2021) and to an increase in

home-cooked meals (Bennett et al., 2021). Also, a decrease in food wastage due to improved cooking skills and better planned meals has also been reported by several studies (e.g., Hassen et al., 2021^a; Hassen et al 2021^b; Sharp et al., 2021).

It is important to consider the short-term and long-term impacts of changes in diet and eating behaviour on health and wellbeing, particularly for individuals with non-communicable diseases (NCDs) and those at risk of NCDs (Kolokotroni et al., 2021). In comparison to global data, Fiji has extremely high rates of NCD-related deaths, which are largely attributed to poor dietary practices such as low intake of fruits and vegetables and high rates of overweight and obesity in the population (Fiji NCD Risk Factors: STEPS Report 2011, 2015; WHO, 2014a; 2014b). Further deterioration of dietary practices will not only increase the risk of severe COVID-19 for individuals with underlying chronic illnesses (Bohlouli et al., 2021) but will ultimately increase the burden of NCDs on a healthcare system that is already struggling due to the pandemic. The impact of the COVID-19 safety protocols on the diet, eating behaviour and food purchasing behaviour of Fijians has not been studied. This study aims to address this gap. In Fiji, mothers play key roles in selecting food, including what is consumed and how much is consumed. This study therefore explores how COVID-19 safety protocols have impacted the diets, eating behaviour and food purchasing behaviour of iTaukei (indigenous Fijian) families living in the GSUA using in-depth interviews with iTaukei mothers (Pacific Obesity Prevention in Communities Project [OPIC]: Fiji Country Report, 2010; McCabe et al., 2011). The results of this study will be useful in creating awareness of dietary changes, especially unhealthy eating, because of the COVID-19 lockdowns within iTaukei households in the GSUA.

Methods

Participant characteristics

Thirteen iTaukei women aged 28 - 48 years ($M = 37.61$, $SD = 7.78$) from GSUA were interviewed. Most of the participants lived in suburbs around the towns and city in the GSUA, and only two of the women lived in villages within GSUA. The sample had diverse occupational backgrounds and consisted of women employed full-time ($n = 4$), employed full-time and studying part-time ($n = 1$), enrolled as full-time students and working part-time ($n = 1$), those

who had left the workforce to upskill as full-time students ($n = 1$), those who had lost their jobs recently ($n = 4$), and stay-at-home mothers ($n = 2$). Family sizes ranged from three to 10 people and five of the women were living in extended family settings whilst eight mothers lived with their nuclear families. All but two of the participants were married at the time of the interview. Household income also varied within the sample and, for the purposes of this study, participants were separated into three cohorts based on a clustering of their annual household incomes. Five families with annual household incomes ranging from FJD3,840 to FJD4,800 were classified as low-income households (LIH), five families with annual household incomes ranging from FJD15,000 to FJD35,000 were classified as middle-income households (MIH), and three families were classified as high-income households (HIH) with annual household incomes ranging from FJD45,000 to FJD80,000. All women had at least a secondary education. Nine of the women reported gaining weight over the lockdown, three women shared that there were no changes in their weight, and one participant had recently given birth. Ethical approval for the study was given by the Research and Innovation Office of The University of the South Pacific and all participants were given pseudonyms to protect their identities.

Methods and Materials

Purposive sampling was initially used to recruit participants through community leaders to ensure a diverse representation of women in the sample, and theoretical sampling was used during data collection to saturate the themes. Participant inclusion was stopped based on the theoretical saturation – i.e., when no new information related to the themes was identified. Thematic redundancy was achieved by the ninth interview, and to confirm theoretical saturation, four additional interviews were conducted (Braun & Clarke, 2021).

Due to social distancing protocols enforced by the Fijian government during the time of this study (May to August 2021), in-depth telephone and Zoom interviews were conducted using a semi-structured interview guide with open-ended questions exploring changes in dietary patterns and food purchasing and eating behaviour since the COVID-19 lockdowns in mid-April. Informed consent was also obtained over phone at the beginning of the interview. All interviews were conducted in English and lasted approximately 50 minutes. Interviews were scheduled at a time convenient to the participant and participants were given FJD20 through online money transfer.

Data analysis

All interviews were manually transcribed verbatim within two days of the interview due to critical errors in Zoom auto-transcription. Inductive thematic analysis was used for data analysis and data analysis and collection were taken as “recursive” processes by the first author (Braun & Clarke, 2008, p. 86). The transcripts were read multiple times to generate initial codes manually. These codes were then used to identify potential themes and theoretical sampling was used to further saturate these themes. The themes were continually reviewed and updated and all data pertaining to each theme was coded across all the transcripts. The process produced a clear and refined set of interconnecting themes and a set of extracts from the transcripts to support each theme.

Results

Most of the participants ($n = 11$) shared changes in their diet, eating habits and food purchasing behaviour since the second wave of COVID-19 and the ensuing lockdowns, with some families being more affected than others. Seven of the women interviewed had either been laid off since the outbreak or their existing contracts were not renewed or were on reduced hours, and all seven women reported major changes in their diets, eating behaviour, and food purchasing behaviour, which they largely attributed to loss of family income. Four women whose families had not suffered loss of income since the lockdowns, attributed changes in their diet, eating behaviour and food purchasing to social distancing restrictions, lockdowns enforced by the government, distance learning and remote working arrangements, and an increase in health consciousness due to the pandemic. The changes reported by these eleven women are presented in this section

On the other hand, two of the women who were interviewed within a month of the COVID-19 lockdown shared that there had been little to no changes in their diets, eating behaviour and food purchasing behaviour since the lockdowns. Tevi, a stay-at-home mother from an LIH, continued making the same lunch (predominantly sandwiches) for her three children during the lockdown and cooking separate meals for other family members including her elderly parents who live with her. Her shopping routine also has not changed because she shops on the day she receives her social welfare assistance from the government. Lisa, who worked remotely during the lockdown,

also shared that the diet of her family of ten had not changed during the lockdown. Lisa's family are vegetarian, and their diets consist mainly of locally grown fruits, vegetables and root crops, some of which she grows in her backyard garden. Both women also reported no changes in their weights.

Experiences and Responses to Food Security

Participants reported both positive and negative impacts of the pandemic on the availability of food and their ability to access food. Some mothers shared that, during the initial zonal lockdowns, supplies of groceries, fruits, and vegetables were momentarily disrupted, especially for communities living on the peripheries of GSUA.

Ru: [...] So, yes, it's the supply... the supply of food that we usually eat has really been impacted and apart even from what's in the market also supermarket and what the supermarket stocks up. [...] So I guess this COVID lockdown is really impacting the supply of food, supermarkets don't stock up on the foods that we normally prefer and we have to look for alternatives. But that was for a short time only. (aged 28, HIH, working mother – studying part-time, Nausori)

Faith: No, because we grow everything we eat and we only buy little stuff from the shops around the village. At one time we could not get sugar in the shop but just for a few days. (aged 30, LIH, laid off after COVID, village near Lami)

Access to food was greatly disrupted for families from LIHs who had suffered loss of income during the outbreak; participants from these families shared that they could no longer afford the food that they needed or used to consume.

Luisa: Io... you know my small baby, before he used to drink the formula milk? And then when COVID came, I lost my job and my husband has his pay cut... we had to... everything is cut down... I won't be able to buy milk for him. [...] and instead of giving him milk, I had to feed him with boiled water or lemon tea... that... for him to have. At that time our cow doesn't give birth. But after it gave birth, now we get fresh milk from the cow and he has that. (aged 35, laid off after COVID, village near Suva)

Kala: When I was working, I was earning a lot and I used to buy a lot and stock it in the fridge... chicken and sausages and now that I'm not working and I'm at home, I just have to be within my budget. (aged 44, LIH, lost her job due to company downsizing, Vatuwaqa)

On the other hand, some participants shared that access to fresh produce, including fruits, vegetables, root crops and seafood, had improved during the lockdown due to door to door selling, home deliveries, and online marketing of fresh produce, livestock and seafood. Fruits, vegetables, and seafood stalls also had drive-through options where customers could select and pay for produce from their vehicles.

Sala: The good thing is that we also get people coming around and selling fruits and vegetables and we can also go to stalls that are like drive-through. You don't really have to get out of the vehicle. Also there are the Viber communities and Facebook pages where we can order fresh seafood as soon as they arrive. I think we get more seafood like lobsters and crabs because all the resorts are closed [laughs]. (aged 48, HIIH, currently full-time student, Nabua)

Decrease in Consumption of Red Meat and Processed Meat and Increased Consumption of Fruits and Vegetables

Most participants who had experienced loss of family income during the second wave of COVID-19 shared that one of the first things that was removed from the family shopping list was meat and especially processed meat including corned beef, corned mutton, and sausages. The omission was especially notable in LIHs, where processed red meat was generally the most common source of protein. The omission also led to greater consumption of vegetables, as these families resorted to replacing meat with cheaper options such as vegetables, some of which were homegrown.

Lu: You know before COVID, I see plenty people normally eat corned mutton, corned beef, bought from the shops but now it has really changed. People don't have the money to buy. Everyone is just planting their own vegetables and then they don't have to buy it. (aged 35, LIH, laid off after COVID, village near Suva)

Kala: Well it really depends on case by case. If you are earning more, there will definitely be more meat in your meals. Like if both the couple are earning. But like us, right now, we find it hard to buy meat because we now have a smaller budget and we depend more on vegetables. But before when I was employed we used to eat a lot of meat. [...] But I feel the more important factor is the household income because in a Fijian family, an iTaukei family, if the father, the husband is working, there is going to be meat. Like it's a must. (aged 44, LIH, lost her job due to company downsizing, Vatuwaqa)

Another reason given by participants for increased consumption of fruits and vegetables was greater health consciousness during the pandemic as evidenced by the following report.

Kala: [...] because it is COVID and we want to be healthy and fit and no one wants to end up in the hospital during an outbreak! We eat more greens and meat is usually now only on Sunday. (aged 44, LIH, lost her job due to company downsizing, Vatuwaqa)

Greater Dependence on Energy Dense Foods to Ensure Satiety

Participants from LIHs who had suffered loss of income and constricted food budgets also shared that there was a greater dependence on energy dense foods, especially root crops, to ensure satiety.

Mere: It's our root crops, Shaz. That's one thing that fills us up... the cassava, even if we have nothing else to eat, we eat boiled cassava with tea and we get full. So every meal we have root crops, and that will fill us up. (aged 49, LIH, laid off, Caubati).

Lu: Io... like if there's cassava or *dalo*, I encourage them to eat more, because these are heavy foods and they will take them all through the night. And during the day they will have the energy to do their errands, play and its helps them grow too. (aged 35, LIH, laid off after COVID, village near Suva)

Bartering of Food Items to Increase Dietary Diversity

As a response to loss of income and money to buy items, LIHs with a farming background also resorted to bartering food items to access some of the foods that they could no longer afford.

Lu: One another thing we have started doing here in the village. We barter, especially with the fishermen. So like when someone catches fish, I barter one 10kg flour bag full of cassava for a bundle of fish. I was telling them, “You this 10kg bag full, if we sell it in the town, it will be like \$20”. I have bartered *cassava* for fish... for *kaikoso*... and other things from the sea like that. We can barter vegetables, plenty of people here in the village are doing that now. (aged 35, LIH, laid off after COVID, village near Suva)

Lu’s reports were further corroborated by Kala, who lives in a suburb near Suva. She shares that her family members from the village send her fresh produce that they farm and in return she buys them food items and kerosene from the shop. However, the latter arrangement appeared more of a courtesy, rather than a business arrangement.

Greater dependence and investment on home gardening

In addition to depending on home gardening to supplement diets due to loss of income for LIHs, participants from MIHs and HIHs also shared that, with lockdowns and remote learning and working in place, their families had started not only investing in backyard gardens but also routinely incorporated vegetables from their gardens in their diets. While this meant greater inclusion of fresh home produce, it also resulted in a loss of dietary diversity for some participants who preferred the convenience of homegrown produce instead of going to the markets to buy their fruits and vegetables.

Kesa: Yes, COVID 19 has really, really, really changed a lot of things for my family, because everything was, you know, you have been confined to just one environment in one space, your own home. [...] Yes, yes so now we have a little

bit more time now with all of us at home, we have been growing things here in our backyard ...we have lots of cabbage at home now and we well, apart from our normal bele and rourou. So I don't have to buy that. I use the cabbage with carrots and celery for stews and chop suey as well. I hardly go to the markets now, and just use the vegetables from the backyard garden and buy carrots and celery from the supermarket. [...] No, because we have young kids and they are not going to be vaccinated, we have been avoiding going to the markets [to buy fruits and vegetables]. (aged 27, MIH, full-time student and working part-time, Kinoya)

Increased Consumption of Herbal Medicine

Participants also shared that they had started to consume traditional herbal medicines during the outbreak to prevent sickness and ill-health. Some participants routinely used these, while others consumed them less frequently.

Kala: We tend to drink a lot of Fijian medicine during COVID. Like pawpaw leaves, we boil that and drink that in the morning on an empty stomach. That is a really really good medicine. Its good for blood, for your immune system and your muscle. We also drink *layelaye* which is like a ginger, it's a family of a ginger. And the normal ginger too with hot water. We have started all of these during COVID. But before COVID, nope [laughs]. Because who ever even had the time to blend the pawpaw leaves [laughs]? (aged 44, LIH, lost her job due to company downsizing, Vatuwaqa)

Api: Because my husband was brought up in the village he knows about herbal medicine. He makes a few things, and we take it reluctantly every now and then but not that much because I'm not a fan. So he makes *vevedu* that is being talked about and do you know *kavika*, the leaf? My husband makes them. (aged 41, MIH, on reduced hours, Caubati)

Reduction in Social Eating

Participants varied in terms of number of social and communal gatherings (e.g., weddings, birthday parties, work functions, funeral functions and church meetings) that they attended before COVID lockdowns. Some participants shared that would attend one to two such gatherings in a month, whilst others reportedly attended up to four such gatherings per month, with the highest being four to five times per week. Regardless of the number of times participants attended these functions, it was widely shared that food, and especially meat, was the main feature of any iTaukei gathering, overeating was encouraged, and takeaways were common as evidenced by the following reports of participants.

Kesa: In iTaukei gatherings, the meat is important. So it's usually the pork and maybe fish, but generally the pork and chicken and you will have root crops like cassava. And some palusami. But the main dish is always the meat. (aged 27, MIH, full-time student and working part-time, Kinoya)

Api: [...] Because when we go to a gathering, the food is in abundance so from my point of view, people just gorge themselves. And I am ashamed to say but some iTaukei families when they come to these gatherings, they come with their containers for takeaways for the family that didn't attend. And when people dish a little bit, others will keep encouraging, "C'mon c'mon, there's more, there's more. Have some more! There's plenty of food for everybody." So you are opening that door for people to overeat. So you can go for seconds, thirds and takeaways! (aged 41, MIH, on reduced hours, Caubati)

Sala: Also in parties or social gatherings, you find that people keep nudging each other, sort of encouraging each other to eat more. Like "mai kana, mai kana" [come food]. And it seems to be a cultural thing too. Like part of iTaukei hospitality is to encourage your visitors to eat more. It's a Pacific culture... (aged 48, HIH, currently full-time student, Nabua)

At the time of the interview, social gatherings of any form were strictly prohibited by the Fijian Government and funerals were limited to ten individuals. Participants shared that

the moratorium on social gatherings had major impacts on social eating as evidenced by the following conversation with Api.

Api: Yes, I have found that during COVID, compared to when we had the freedom, with COVID, because we are not allowed to have functions, we have had a few deaths in the church, with the limited number that can attend, that person that's coming to the funeral, straight after the formalities, you are just given a takeaway and there's no other food dished, you just take that and you go and that's it. [...] We have saved a lot of money in terms of these functions and especially in funerals, because funerals is a time when families flock all over from Fiji to attend and they will stay with the family till the end of the function. So that family has to then cater for all of the meals for everybody that has come in for like week or so. And there's a lot of eating and drinking. People are just gorging themselves! And it's just all about the food! (aged 41, MIH, on reduced hours, Caubati)

Changes in Grocery Shopping

There was a general decrease in shopping from grocery stores and supermarkets for most of the participants and participants shared several reasons for the decrease. First, due loss of income some participants were no longer able to afford store-bought items. Second, social distancing protocols enforced by supermarkets meant that shopping trips required more time than usual and, third, participants reduced shopping trips to avoid contracting COVID. In the latter two situations, participants resorted to bulk buying and there was a greater dependence on smaller neighbourhood shops to replenish any urgently needed items. The following reports demonstrate these three reasons.

Lu: The money... the price of food is important because things are expensive now. And I lost my job too. So what we did was cut down on things we normally buy from the shop. Before we used to like buy plenty of tinned stuff from the store like tinned fish and corned beef and corned mutton and chicken and now

during the pandemic, we just make do without it. (aged 35, LIH, laid off after COVID, Village near Suva)

Sala: For us, the grocery shopping has changed, instead of shopping weekly, now we shop monthly. One shopping trip now takes a bit longer and you have to adjust what time you go to avoid crowds so we try to now shop once a month. You know, we don't want to catch COVID or anything. And do bulk shopping. (aged 48, HIH, currently full-time student, Nabua)

Kesa: Shopping now requires more time to, like they have limits on the number of people who can be in the shop and at times, you end up standing in long lines outside, so the monthly shopping minimizes that. And if we forget something in the list, then we might go to the small stores just to avoid those long lines. (aged 27, MIH, full-time student and working part-time, Kinoya)

Participants who had faced loss of income also shared that they only focused on buying essential items and avoided unnecessary shopping by preparing grocery lists according to their revised budgets.

Kala: Well now I just focus on getting the essentials. I have cut our list down and focus on just getting the important things. Like even, if I see something, I have to tell myself, "No, I have to stick to the list." Like setting priorities is more important now rather than buying based on wants. So it's just sticking to what we need that fortnight and that's it. (aged 44, LIH, lost her job due to company downsizing, Vatuwaqa)

Decrease in Food Wastage

Participants who had lost income during this pandemic also shared that they avoided food wastage in several ways. First, grocery shopping was more focused and unnecessary food items that may not be used were avoided.

Api: Like before, I would buy things like those different sauces and pasta that may sit in my cupboard for a while and even expire before I use them [laughs].

Now it's just what we need and that's it... (aged 41, MIH, on reduced hours, Caubati)

Second, participants also shared that they would cook enough for individual meals and reuse food the next day to avoid food wastage.

Mere: No Shaz, this is because of COVID and now we just have to use our money wisely so I just make enough and there's no wastage. So whatever, I serve, whatever I put on the table, my family just eat from that (aged 49, LIH, laid off, Caubati).

Kala: And one thing, food wastage at home has really decreased. Like because we are on a small budget, we just make enough and leftovers are always used for the next meal, like dinner leftovers, someone will have it for breakfast. There's no food sitting in the fridge and rotting away. So that's improved in that way. (aged 44, LIH, lost her job due to company downsizing, Vatuwaqa)

Increased Snacking, Cooking and Baking

All the participants in this study were spending more time at home since the lockdown due to loss of employment, reduced working hours, and working and/or studying remotely. Participants also reported increased snacking during lockdowns, which they attributed to (1) boredom, (2) access to the kitchen and snacks, (3) bulk buying of snacks, (4) increased cooking and baking, and (5) experimenting with new foods as evidenced by the following reports.

Kala: One of the things we have been doing more often during COVID is eating fried food. And snack eating has gone up too, like we eat bongo, twisties and bean and peanuts and this is from you know the corner shops. We will just buy it when we are craving for it. Everyone's just bored and I suppose we eat when we are bored [laughs]. (aged 44, LIH, lost her job due to company downsizing, Vatuwaqa)

Ru: I eat a lot, I'm constantly eating. [...] I mean, we're under lockdown and all, and you can't perform unless you are eating right? I mean there's the thermos, the

milk and the tea! And then that does become a problem because you've got access to food all the time at home. (aged 28, HIH, working mother – studying part-time, Nausori)

Sala: That's a downside, so we end up buying all the snacks that we need for a month in that same trip and I find that the girls just finish it within a few days, a week tops. (aged 48, HIH, currently full-time student, Nabua)

Kesa: And you know people keep posting on social media the different foods they make, so we have been trying some of these like let's try this, let's try that. I have baked pizza. And I tend to feel like, you know, it's becoming too much, again, maybe the word for it is overconsumption of food, I guess, because you're staying at home, and you no longer have that routine so you end up eating and snacking a lot. (aged 27, MIH, full-time student and working part-time, Kinoya)

Reduction in Restaurant Meals and Fast-food and Greater Reliance on Home Cooked Meals

Participants also reported reduction in restaurant meals and especially fast-food, either due to loss of income, reduced access due to lockdowns, or concerns around minimizing the spread of COVID-19. However, it was also very clear from the interviews that participants missed their restaurant meals and fast foods as evidenced by the following reports.

Kala: Man I miss my takeaway. Especially my fried chicken and chips and burgers. I really do miss it. Sometimes I really crave for McDonalds, I really crave for fried chicken and chips, you know my body just wants it. Like I really crave for it. But can't do much about. Either I eat that one meal or feed my family an entire meal. Before when I was working I would have takeaways for lunch and even bring takeaways for everyone else, like on pay days. (aged 44, LIH, lost her job due to company downsizing, Vatuwaqa)

Api: For us, it has stopped dramatically. Because of the zonal lockdowns, we couldn't even go to places like Burger King, McDonalds, Wishbone to all those well know fast foods. And now because of the curfew, again it's hard to go out at

night. So we now depend mainly on whatever I whip up at home and I am trying my utmost best to be creative about it. (aged 41, MIH, on reduced hours, Caubati)

Ru: And for me it's just a big no no for takeaways right now. I miss junk food, I do miss takeaways, I miss Joggi's, I miss Macca's. But if it's coming at a price of the safety of my community members of my family members, family members of either other families who have to go out to work in this food service industry. And I think the decision is clear, you know, go force yourself to be healthy and not eat fast food... for now. (aged 28, HIH, working mother – studying part-time, Nausori)

Changes in Meals and Eating Patterns

Another impact of lockdowns and remote working and studying practices was a shift in meal patterns. Participants shared that, since family members were now studying and/or working from home, brunch was more common where families combined breakfast and lunch, followed by a lighter dinner, which was usually high in carbohydrates.

Kesa: Sometimes, sometimes, when it is a heavy lunch, like right now during COVID that we are having brunch, then we have a tea and bread for dinner. But we have kind of changed during COVID. Before COVID and lockdowns, we would focus on dinner as the most important meal of the day. Like I would cook a proper meal but then we are starting to have a something heavy for lunch, like what we would have for dinner and then just have tea and bread for dinner. (aged 27, MIH, full-time student and working part-time, Kinoya)

Sala: Yes, now we have brunch. Like they wake up late so we combine lunch and breakfast. Or if we have a late breakfast, then combine lunch and dinner and have something light in the evening like I would bake pies and cake and we will have that with tea. (aged 48, HIH, currently full-time student, Nabua)

Discussion

This study explored the impact of the COVID-19 lockdowns on the diets, eating behaviour and food purchasing behaviour of iTaukei families living in the GSUA. The study documented positive and negative changes and recorded the various ways in which these families navigated the COVID-19 safety protocols and the changes brought on due to the lockdowns, including loss of income and changes in work and study routines.

Consistent with other studies, food insecurity was featured prominently in the interviews. The disruptions in household food supply reported in this study have also been recorded in other countries, prompting a re-analysis of the food supply chain (FSC) due to the impact on food security in these countries (e.g., in Southeast Asia by Musa & Basir, 2021). However, according to the participants of this study, initial disruptions in food supply due to lockdowns were resolved fairly quickly and food providers such as supermarkets and fresh produce vendors rapidly adapted to the changed circumstances by introducing services such as online shopping (for more established supermarkets), door to door selling, home deliveries, and drive-through market options. Local farmers, livestock owners, and fishermen also increased their outreach to potential customers through advertisements on social media groups. Musa and Basir (2021) suggest that this increased reliance on domestic produce will be fundamental to resolving any future disruptions in FSC. Moreover, similar success of online business platforms and social media marketing for small food service providers during lockdowns has also been recorded in other urban centres (e.g., Patma et al., 2020) and can be another important approach for promoting and increasing domestic food consumption.

Food insecurity was prolonged and seemingly permanent for LIHs and MIHs in this study who had experienced loss of income, and it affected dietary diversity and access to balanced meals for these families. Escobar et al. (2021) suggest that COVID-19 lockdowns and social distancing protocols have disproportionately affected occupational statuses and incomes of individuals of lower socioeconomic backgrounds because they tend to be employed in sectors such as tourism, manufacturing, retail, and food services, which have been severely affected by the pandemic. In addition to the impact of loss of income on diet of LIHs and MIHs, this study also documented how these families effectively managed their resources and finances to meet family meal demands on a reduced budget. A prominent feature of their adaptation was reallocating resources

and reorganizing shopping lists by focusing on the essential food items to meet the changes in their budgets, which resulted in three main positive dietary outcomes: (1) a reduction in consumption of red meat and processed meat, (2) increase in consumption of domestic fruits and vegetables, which were either home grown or were relatively cheaper options, (3) a reduction in eating out and greater reliance on home cooked meals. Participants also shared that they greatly reduced food wastage through better meal planning, and some used bartering of farm produce to increase dietary diversity. However, a concerning behaviour reported by participants who had suffered loss of income was greater reliance on energy dense root crops to ensure satiety, which can further increase rates of overweight and obesity in these populations. Similar reliance on energy dense foods and particularly inexpensive starchy foods was recorded in a two-city study in Bangladesh for residents from LIHs and those who had experienced loss of income due to COVID-19, and it raises serious concerns about the long-term impact of food insecurity on the health of vulnerable populations (Ruszczuk et al., 2021).

Reduction in social eating, which according to participants encouraged overeating, and a reduction in the consumption of fast foods, takeaways and restaurant meals, which are often associated with unhealthy meals (Partridge et al., 2020), were also reported by the majority of the women in this study due to COVID-19 safety protocols and/or loss of income. Additional time at home also meant that families invested more time in home gardening, included home produce in their meals and generally relied more on home cooked meals, which studies indicate contributes to healthy eating (e.g., Bennett et al., 2021). Another promising response to the second wave of COVID-19 was a greater concern for health resulting in a focus on healthy eating through inclusion of more fruits and vegetables in diets.

Furthermore, unhealthy eating was also reported due to increased cooking and baking of unhealthy snacks and food, feelings of boredom due to changes in work and study routines, and bulk buying and stockpiling, which resulted in increased snacking. Another cause for concern was the changes in meal patterns reported by participants, whereby two main meals such as breakfast and lunch were combined followed by a lighter snack for dinner, usually consisting of sugary foods like cakes, bread and tea. These two practices may explain why ten of the thirteen women indicated having gained weight during the lockdown. This is especially concerning as

higher rates of obesity and overweight are already observed within the iTaukei population and amongst women in Fiji (Fiji NCD Risk Factors: STEPS Report 2011, 2015).

The increased concern for health and the healthy changes in diet and eating behaviour none-the-less offers several opportunities for further enhancement of healthy eating. The increased interest in home gardening during COVID-19 lockdowns provides an avenue for supportive activities, including through outreach, and can serve as a mechanism to address food insecurity for families who have gardening space (Mullins et al., 2021; Niles et al., 2021). With limited skills and resources, most of the families in this study focused on leafy greens, which are easier to grow, and their dietary diversity can be enhanced through more training on home food procurement skills. Bartering of food items for families who had experienced loss of income to increase their dietary diversity was another interesting response to food insecurity, which solidifies the importance of development of home food procurement skills and facilities, especially for families vulnerable to food insecurity (Mullins et al., 2021; Niles et al., 2021). These findings also provide support for the Fijian Government's emphasis on home gardening initiatives for addressing food security in Fiji and especially in meeting the 2030 Agenda on Zero Hunger (Fijian Government, 2021). Families who had also experienced loss of income demonstrated better management of finances and resources, including through avoidance of food wastage and unnecessary buying; these behaviours present an opportunity to further enhance these skills and practices. The findings of this study also highlight the need for food literacy for mothers who cook for the family, as some mothers viewed a "lighter tea" comprising of energy dense foods, sugary snacks, or bread and tea for dinner as a healthier option.

Limitations

This study has several limitations. Firstly, the study did not consider the impact of lockdowns and remote work and studying on sedentary lifestyles, which can also have serious implications on weight, health, and NCD risk (Muhammad & Abubakar, 2021). Furthermore, while the study recorded experiences of iTaukei families in the GSUA in relation to diet, eating behaviour and food purchasing behaviour, these findings are open to social desirability biases, and experiences of other Fijians may differ. Future research should explore experiences of other sections of the Fijian population, especially non-metropolitan Fijians, and consider triangulation of findings using mixed methods research design, which include quantitative surveys with larger samples.

Participants also self-attributed changes to COVID-19 safety protocols or to loss of income, and future research should explore whether the positive behaviours continue after the lockdowns. For instance, while there was a decrease in consumption of fast foods and takeaways in this sample, participants also shared how much they missed these foods.

Conclusions

None-the-less the findings of this study highlight some of the ways that COVID-19 safety protocols have impacted the diet, eating behaviour, and food purchasing behaviour of families living in the GSUA. The positive changes in diet, eating behaviour, and overall management of resources to address food insecurity provide great insights into how iTaukei families in GSUA navigated the COVID-19 safety protocols and provide opportunities for promoting healthier eating lifestyles, better management of resources, and enhancing food security. However, the unhealthy eating practices and the self-reported weight gain recorded in this study are concerning as they can further increase the burden of NCDs, which account for 80% of all deaths in Fiji (WHO, 2014a, 2014b). While the focus of the Ministry of Health of Fiji has been largely around containing the outbreak, the long-term effects of the COVID-19 safety protocols on health need to be also considered, and interventions to mitigate unhealthy eating and weight gain need to be considered for any future situations.

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