

Health, wellbeing and nutritional impacts for students and families after two years of government-funded school lunches in low advantage schools in Aotearoa New Zealand.

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Abstract

Objective: In 2020, a government-funded school lunch program was introduced in a quarter of New Zealand schools selected based on high levels of socio-economic barriers. We report family (*whānau*), student and principal perspectives on the impact of the first two years of this healthy school lunch program.

Methods: We conducted five focus groups (2 with secondary students and 3 with family members) and four school principal interviews. Thematic analysis was carried out to develop themes describing the health, wellbeing and nutritional impact of the program. Participating schools represent a range of contexts: primary and secondary, and schools using on-site kitchens and cooks or schools choosing to receive meals delivered by external caterers.

Results: Family participants were 82% Indigenous Māori and self-identified as having 'borderline' (73.5%) or no financial security (8.8%). Seven positive themes were identified: improved food security, enhanced equity, increased appreciation of healthy foods for students, enhanced mana (wellbeing) for all, reduced financial hardship and stress for families, opportunities for nutritional learning and that appreciation and uptake happen over time. Four negative impact themes were identified: low uptake that created food waste, perception that healthy food is not palatable for students, lack of knowledge of the program and loss of agency for students.

Conclusions: This is the largest intervention in nutrition and food security for children ever to be introduced in New Zealand. The first two years have resulted in important wellbeing and financial benefits for students and families involved, particularly when the school environment promotes uptake. More involvement of students and family members is essential.

Lay Summary

In 2020, the New Zealand government announced free lunches for around 200,000 students attending low advantage schools. Limited data is available on the impact of this nutritional intervention that aims to improve food security, but also school attendance and student wellbeing. Through interviews and focus groups with students, families and school principals, we give evidence that the programme has reduced financial hardship, improved food security and equity and broadened students' taste preferences. However, due to perceptions that students do not like to eat the nutritious and healthy lunches, various uptake issues are also highlighted often relating to the underlying belief that students do not like to eat healthy food. More communication from the school with the students and families is requested so that families and students can feel involved in the programme and overcome the notion that the healthy school meals would not be palatable.

Introduction

Since 2020, all students in one quarter of schools in Aotearoa New Zealand receive government-funded healthy school lunches. Schools are eligible if they are in the most disadvantaged quartile of the Equity Index¹, a measure of the socio-economic barriers faced by students at the school (such as low parental income and high transience). Currently around 220,000 students (27%) nationwide in nearly 1000 schools² receive daily lunches predominantly through commercial caterers (external model, 73%) or hiring staff and using school facilities (internal model, 23%).³

The program, *Ka Ora, Ka Ako* ('being well means being able to learn'), is a response to both the economic effects of the COVID-19 pandemic, as well as indicators of rising food insecurity for children. A national report released in 2019 estimated that 19% of children aged 2-14 years lived in households where they experienced severe to moderate food insecurity.⁴ In Indigenous Māori and Pasifika communities, rates were even higher at 28.6% and 37.1% respectively.⁴

Food insecurity and poor dietary quality is linked with a higher risk of obesity^{5,6} and school lunch programs can address both food security and obesity risk in high deprivation populations. In NZ, 30.8% of young people aged 2-14 years experience overweight or obesity, reaching 39.6% for Māori and 61.7% for Pasifika children.⁷ Given these high rates, it was important that lunches in the program followed healthy nutritional guidelines.⁸ Indigenous Māori children, who experience higher food insecurity⁴, higher rates of obesity⁷ and higher deprivation⁹, represent almost half of the students in the *Ka Ora, Ka Ako* schools, against a national average of 24%.³

In Hawke's Bay, a region of New Zealand with relatively high deprivation overall¹⁰ and over a third of children of Māori ethnicity,¹¹ 62 (50%) state-funded schools and approximately 12,380 (40%) students receive lunches daily. Previous regional research identified two main barriers limiting the ability of families to provide nutritious food for their children: perceived high cost of healthy food and stressful lifestyles resulting in a lack of time available to prepare healthier food.¹² *Ka Ora, Ka Ako* has the potential to remove both these barriers through a large systemic intervention, thus achieving better health and education outcomes. An initial pilot evaluation in 2020 showed good progress to reducing hunger,¹³ and a follow-up has shown improved wellbeing for students overall, but no differences in attendance.³ However, longer-term and broader socio-cultural impacts for families have not yet been reported.

The aim of this research is to assess the impact of the introduction of healthy free school lunches from family (whānau), student and school principal perspectives. We aim to identify whether *Ka Ora, Ka Ako* has had an impact on finances and stress for families, and on nutritional practice, knowledge, wellbeing and engagement at school for students. We also aim to report principals' perspectives and on student wellbeing, attendance and learning outcomes.

Methods

Study Design

We use a cross sectional exploratory qualitative approach with inductive thematic analysis. We carried out stakeholder interviews and focus groups to elicit participants' lived experiences of food insecurity and the impact of the school lunch program. Elements of the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist¹⁴ were considered in the research process. The study was approved by the [blinded for review] Human Participants Ethics Committee (reference: UAHPEC22800).

Cultural Considerations and *kaupapa Māori*-Consistent Research Practices[1]

It was important for this work to align with the *kaupapa Māori*-consistent research¹⁵ approach (adhering to Māori principles of research) of the wider project and to be culturally-responsive. Accordingly, time was dedicated at the beginning of the interviews and *hui* (focus group) for the appropriate *mihi* (welcome) including *karakia* (ritual/chant/prayer) and *whakawhanaungatanga* (getting to know each other). *Kai* (food) was shared in the *whānau* (family) and student *hui* and participants were made to feel welcome, seated in a group circle. In one school *whānau* of all students were invited to share a school lunch with students and teachers and the school community on site before the *hui*. This was not possible in the others due to social distancing restrictions due to COVID-19. The *hui* were facilitated collaboratively by the first author (female, non-Māori doctoral student) and a Māori workshop facilitator who set the *tikanga* (customary practices) and brought a cultural lens to the discussions around the role of *kai* in family life. Interviews were carried out by the first author with another researcher assisting to take notes. *Koha* (customary gift) for principals was in the form of culturally appropriate books for the school library and for *whānau*, fuel vouchers were offered.

School Selection

Six schools receiving the lunches were purposively selected based on existing relationships through participation in prior research.¹⁶ A diverse group of schools were included, regarding size and type of school (primary / secondary) and lunch model (external / internal). We did not seek to reach data saturation for thematic analysis, but to represent a range of different contexts.

Principals were contacted via email with an invitation to be interviewed and to host a family focus group, plus, for secondary schools, to host a student focus group. Due to difficulties inviting parents onto school grounds in 2021/22, one family focus group was held at the local tertiary education center. This was advertised on the research team's Facebook page with caregivers across the region invited. For all other family and student focus groups, the school invited parents and students to attend directly through school apps or other communication means. Note that in communications we referred to the focus groups as '*whānau hui*' – a meeting for school families, using the term to embrace a wider notion of kinship than parents. Both of these terms are widely understood in Aotearoa New Zealand.

Interview and Hui Structure

The interview and focus group guides were developed by the research team and tested for cultural appropriateness with an independent Indigenous researcher who facilitated the student focus groups.

The interviews and family focus groups were conducted by the first author, in English with some Māori words interspersed as is custom in this context in Aotearoa New Zealand (refer to quotes for examples of this linguistic code-switching). The primary author has completed Level 4 (undergraduate) Māori language qualifications. At least one other researcher was present in the interview and focus groups to take notes and ensure logistics. These researchers had received training with the first author and gone through the research questions prior to participation. All participants gave written informed consent before the interview or focus group and agreed to audio recording.

Principal interviews took place during the school day, in the principal's office. Due to social restrictions relating to the COVID-19 pandemic, one interview was conducted through online video conferencing (MS Teams). Interviews were semi-structured with two main sections: operational questions relating to lunch delivery (how long the school had been receiving lunches, who supplies the lunches and how they manage the distribution on a daily basis); and a second section relating to subjective interpretation of the impact of the lunch program (impact on attendance, student engagement, uptake by students and whānau, feedback from students and parents, and inclusion of cultural values). All principals reviewed their transcripts for accuracy and approved the inclusion in analysis.

Student focus groups took place during school hours. They began with initial 'ice-breaker' conversations for the group to get to know each other and understand the purpose of the focus group, then researchers led the discussions around four broad topics: how the lunch program operates in the school (logistics), what was different about school lunches compared to before (the transition), perceived impact of the lunches, and student aspirations for the program.

Family focus groups took place after work for two groups and during school hours in one school. They were structured around four main questions: how the program was functioning and what parents knew about the program (logistics and knowledge), how the transition was experienced, perceived impact for whānau and for students (from parents' perspectives) and how the program impacts on the Indigenous concept of *mana* (sense of self-worth, pride, autonomy). In two family focus groups (when there was time) parents initially shared their ideas in small groups of 2-3 people, before sharing with the group using Post-It notes as prompts. We anticipated that this would make participants feel more comfortable and allow everyone in the room to contribute their thoughts. In addition to the family focus group oral discussions, basic demographic information (ethnicity, gender, number of children in household and number of children receiving the lunches) was collected confidentially on paper. Two additional questions on financial hardship were asked relating to how financially secure each participant was (not at all, borderline or secure) and how often they struggle to have money for food (never, seldom, frequently or every time they go shopping).

Thematic Analysis

All interviews and focus groups were fully transcribed in English by an independent transcriber with editing to remove hesitations. The first author went through each transcript to check for accuracy, particularly with respect to localized terms (references to local places or people) and Māori terms that the

transcriber had not picked up. Any uncertainties were checked with a fluent speaker of Māori. Focus group participants were identified in the transcripts where possible.

Thematic analysis was descriptive and exploratory, in the aim of giving a voice to people that are often unheard.¹⁷ Researcher-derived codes were assigned to the transcripts and themes were developed inductively. A thematic map was constructed and refined to establish a list of final themes. The first author undertook all coding and thematic analysis.

Participants were combined into three thematic groups representing the views of principals, students and families. Themes are described per participant group, and where necessary, specifically for the internal or external model. Illustrative quotes, with participant details and context where possible without revealing identity, are used.

[1] Note that in this section Māori terms are used to align with the language used with participants. They are not used in other parts of this manuscript to facilitate reading by an international audience.

Results

Results overview

Four schools participated involving two student focus groups (n = 6, n = 12), three family focus groups (n = 6, 12 and 16) and four school principal interviews, conducted between September 2021 and November 2022 (Table 1).

Table 1
Participating schools, levels, lunch models and types of interview of focus groups

	School level	Lunch model	Interviews/ Focus groups
School 1	Secondary	External caterer	Principal interview, student focus group
School 2	Secondary	Internal cook	Principal interview, student focus group
School 3	Primary	Internal cook	Principal interview, family focus group
School 4	Primary	Recently transitioned from external to internal	Principal interview, family focus group
Multiple schools	Primary, intermediate and secondary	External and internal	Family focus group

Characteristics of family members (whānau) participating in the focus groups are described in Table 2.

Table 2
Participating family characteristics

Family (whānau) characteristics	N (%)
Female	29 (85.3)
Māori ethnicity	28 (82.4)
New Zealand European	4 (11.8)
Cook Island Māori, Samoan, Indian*	5 (14.7)
Mean number of children in household (range)	3.4 (1–8)
Mean number of children in household receiving the school lunches (range)	2.3 (1–6)
Financial security	
Secure – “I have enough money left at the end of the month”	3 (8.8)
Borderline	25 (73.5)
Not at all secure – “I do not have enough money to meet my basic living costs”	3 (8.8)
Prefer not to answer	3 (8.8)
Experiences with food insecurity - “How often do you struggle to have enough money to go shopping for food?”	
Never	7 (20.6)
Seldom	16 (47.1)
Every time / frequently	11 (32.3)
*multiple ethnicity options can be selected so the totals are greater than 100%	

Table 3 gives an overview of the themes developed from each group of participants, indicating the source of the theme (ie. From Principals, family or students or a mix).

Table 3

Thematic analysis of impact of the *Ka Ora, Ka Ako* healthy school lunches in low advantage New Zealand Schools

Theme	Group reporting the theme (Students, families, principals)
<i>Positive</i>	
Improved food security	All
Enhanced equity	All
Increased appreciation of new healthy foods / better nutritional knowledge	All (internal only)
Enhanced mana (wellbeing) for all	Families
Reduced financial hardship and stress	Families
Opportunities for learning	Principals (internal only)
Appreciation takes time	Students (internal only)
<i>Negative</i>	
Issues with low uptake (creating food waste)	All
Healthy food is not preference food for students	All
Lack of knowledge of the programme / not enough communication	Students and families
Loss of agency	Students

The following sections describe the themes developed for each group of participants in more detail.

Family themes

Five main themes were developed from the transcripts of family focus groups. (See Table 3 for an overview.) In general, parents felt the program had a positive impact for them and their children. At the household level, financial hardship was reduced:

It's \$60 or \$70 off your grocery bill, it's huge.

Quite often pay day will be Tuesday and that's when you'd get your groceries and after the weekend, that Monday, it would be like I can't even do a sandwich. That's the last piece of fruit, which kid is going to get it.

The savings on groceries during term time were particularly noticeable when the grocery bills increased during school holidays. However, the overall reduction in the grocery bill for lunch items had been counter balanced by recent cost of living increases and rising food prices for the food they purchased for other

meals. Reductions in financial hardship were lower if parents were still providing alternative snacks due to perceptions that their children did not like the school lunch food offered.

Provision of lunches was associated with reduced stress in the mornings.

“There’s not that morning dash to the shop because they ate the bread.... So, now I don’t care, they’ll get fed at school. They get breakfast and they get lunch and leftovers to come home.”

I’m definitely less stressed about filling up that lunchbox.

Caregivers mentioned that through exposure to new foods in the school lunch program, they felt their children’s taste preferences were changing, making previously picky eaters ‘less fussy’ and introducing healthier foods into their preferences. This extended into the home environment.

We notice with our college *moko* (grandchild), she was taking packets and packets of biscuits just to give to her mates at school because that’s what they lived on, biscuits and noodles. But now that they’ve got lunches at the college, she leaves them sitting in the cupboard.

My daughter asked me to buy a pumpkin at the supermarket. “Mum, can we get a pumpkin?” “What for?” “Pumpkin soup.

“And the things they eat in their *kai* (*food*) what they never eat at home. Vegetables and other stuff... now they’re saying names of food that we don’t put on the *marae* (traditional meeting house) table. Like chickpeas!”

This openness to try new and healthy foods was partially attributed to students eating with their peers.

‘Watching all the other students eat the vegetables too has helped my daughters. They used to turn their nose up at vegetables. I used to have to try and hide them but now they’re more than happy to try them.’

We asked if parents felt that school meals were a good use of government funding and whether it was *mana*-enhancing, that is, creating wellbeing and pride, or whether it could be seen as another government handout that did not support families to become autonomous. All responses indicated that the program enhanced *mana* for both families and students. It was seen to enhance the *mana* of the previously hungry children, but also of the children who used to feel ashamed that they had more food than their friends. The equitable approach was interpreted positively because the same food was eaten by all. The practice of eating together and sharing the experience was also highly valued, particularly as a place where cultural values could be expressed.

It is [*mana*] enhancing, not only for us as a school but for us as *whānau* (family) too, because we know that our kids are happy here getting fed what they need to, makes us happy back home too.

I think for our *tamariki* (children), yes. I think it is *mana* enhancing for them to be able to come to a place they come to every day all year long and to know that they are valued enough to have *kai* (food).

And everyone is equal

For us personally, it's just normal to have a moment together [for *karakia/ prayer*] before you have *kai* in the morning and at night time. I think that's awesome that you've got it at school because then they're still bringing their *kaupapa* (practices) home.

In addition, some parents had observed attendance changes for their children,

Before the program came along, if my *mokos* (grandchildren) didn't have lunch, I wouldn't let them go to school because I didn't want them going to school knowing that Timmy's eating lunch and my *moko* is not.

My kids love coming to school. But I'm not going to lie, I'm going to say it's because they get lunches at school.

Notwithstanding the clear benefits mentioned above, caregivers had concerns about the lack of variety in the menu and food that was seen to be overly healthy. They felt that their children did not like eating many of the healthier options and they wanted their children to enjoy their food and be well fed. This was a challenge due to the underlying belief many held that children were fussy and picky eaters who did not enjoy eating healthy food. As such, many were still providing alternative food, resulting in lower uptake of the school lunches.

They just complain about the lunches, that it's not nice, so I do pack them a full lunchbox as well.

My son doesn't really talk about the lunches because I pack his lunch. I think it's partly because he's fussy and there's some of the things that he doesn't like.

Some parents spoke of how they had managed their own children's fussiness, 'being tough' and telling their kids that they must either eat the school lunches or go hungry. For others, they found it difficult to enforce rules which would make their children unhappy, or hungry, so continued providing alternative snack food.

Concerns about the program were associated with a lack of knowledge theme. There was a generalized feeling that parents did not know much about the program. They did not receive much information from the school about the program or about the weekly menus. They were able to glean information from their children, but mentioned they usually only talked about the negative aspects such as when they had not liked the lunch.

To be honest, I don't really know much about it besides it's free lunch ... We don't really know where it comes from or anything like that.

I don't know unless I ask my son every day after school. I never know unless I ask him.

I have one child here, not that she talks too much about what's good. She just tells me what she doesn't like.

The lack of knowledge was attributed to the feeling that schools had not communicated or consulted with them about the different options in the beginning (for example, the choice between the internal or external model). They would have liked to receive communication, to see menus printed in the newsletter or on the school app, to hear about the vision for the program and to see pictures of the children eating together. They would like to think that the children know the cooks (in the internal model) and speak to them regularly about the types of food they like and do not like.

Student Themes

Six themes overall were identified for students. They are described according to school lunch model (internal with cook on site) or external (caterer delivering food to school) as opinions of the program differed based on the two models (cf. Table 3 for overview).

Overall, students recognized *food security and equity benefits*. They felt that for many students who used to go hungry, the lunches, morning tea and leftover food available to take home were fulfilling an essential need and enhancing equity. They were conscious that the provision of lunches in school had alleviated financial hardship at home.

For students in the internal model, they felt that *learning to appreciate the lunches had taken time*. The program had been in place for 18 months at the time of the focus group and there was evidence that, after initial hesitations, their taste preferences were changing:

Yeah I didn't really like the food at the start, but I guess my tastes are changing and I get used to it now and I like it. .

I eat better now. I like the lunches... Good for my health as well.

The initial resistance to the program related to the loss of their school tuck-shop which had sold highly palatable (tasty) and affordable food that could be purchased throughout the day. While this was in part connected to the change in food type, deeper consideration shows that this was linked to a theme of *loss of agency* for these adolescents who had been able to enjoy the freedom of eating what they wanted, when they wanted it throughout the school day, rather than at the prescribed morning tea and lunch serving time.

"The choices, like they felt in control because they were able to choose their own lunch. To a lot of teenagers, that's quite big, because maybe they won't get that at home or something. Having that choice for one meal a day is huge for their self-esteem and confidence and everything." (Senior student)

The transition time was also linked to a theme of *uncertainty and confusion about the new school lunch program due to a perceived lack of communication from the school*, unfamiliar process and unfamiliar

foods. Whereas students had enjoyed exercising their own free will to decide what they would eat, to purchase items to bring to school and to purchase treat items on occasion, what they ate was now under school control. These moments of enjoyment were lost through the introduction of a one-size-fits-all program where each meal was healthy and nutritious but considered to lack variety. In addition, the introduction of the lunches was accompanied by changes in school policy around food used in celebrations (like end of term lunches or bake sales). These were not allowed under the new system which they regretted, feeling that these logistical issues had not been discussed with them nor resolved.

Students in the external model school, in contrast, did not show any evidence of having moved through these transition difficulties and the two main themes were low uptake of lunches and perceived poor quality of food / lack of palatability. The lunches were seen as a free hand out for hungry students as they were in a low advantage school.

“It’s seen as free food rather than ‘this is our lunch’”.

These negative perceptions were exacerbated by logistic difficulties such as late deliveries, episodes of frozen food, and hot meals delivered cold and no ability to reheat them, such that the students had, in majority, set their minds to not liking the food.

Yeah, I’d say once or twice a week the food is late. If you’ve got completely frozen corn, heaps of time, then how can you justify that? It wasn’t just one person had frozen corn. The whole school got them! Of course they’re going to throw it around when we can’t even call it kai. It’s like dog tucker.

This, combined with the school canteen offering alternative food perceived to be much more palatable than healthy lunches, and that students were still allowed to bring their own food to school, meant there was *limited uptake of the lunches*. Only two students in this focus group said they ate the meals almost every day – one because ‘he would eat anything’ and another ‘because her parents told her to and she should be grateful’. This links in to the underlying theme of the belief that healthy food is unlikely to be tasty. Students felt that the meals were too healthy, thus lacking variety and taste.

Who wants to be waiting for a *kai* (food), getting ‘hangry’ (hungry and angry), and then it comes and then it’s not even something nice? You know, I’m not being ungrateful, it’s just I feel like if I was them [the caterer],... I would be trying to make something that reaches the most people, that the most people like.

Accordingly, on any given day there were left over lunches (surplus which was redistributed to other schools or community groups) but also wasted food, like salad taken out of wraps, that was either put in pig bins or directly in landfill.

Principal Themes

Five main themes were developed from principal interviews. (See Table 3 for an overview). All principals spoke of food insecurity in their schools, for example, giving examples of the hunger that had been

present in their schools prior to the introduction of the program and the resulting behavioral issues. For instance, in an episode of bad behavior:

“When I got to the bottom of it, I’d say it was the Wednesday lunchtime, she hadn’t eaten since breakfast the Tuesday” (Secondary School Principal, internal model)

The second theme relates to equity benefits. Having all the students enjoy the same food with no questions or stigma attached was mentioned as a major positive attribute of the program, as it was not always obvious which children needed more support.

“We had breakfast club and stuff, and we did what we could for lunches but it’s not the same [as a universal program] because what about that kid that’s amazing, that dresses beautifully, always polite, on with it with their work? How the hell are you going to know [that they’re hungry]? ” (Secondary School Principal, internal model)

The third theme relates to opportunities for learning which were identified only in internal model schools. In a primary school, the principal mentioned daily learning opportunities involved in serving the lunches:

“Our junior class, the first thing she’s going to do is just get them to go in and count the plates, count the forks. That’s a tiny bit of math, just getting them in there and getting them involved in a really tiny way first of all.” (Primary School Principal, recently transitioned to internal model.)

Exposure to nutritious lunches was also considered to give life-skills and knowledge and break a cycle for these students in low advantage communities who need better ‘understanding around how best to feed themselves’:

“We want the students to leave here knowing that there are healthy options, and that they like the taste of a whole range of foods that they would never otherwise have had because they’re too expensive, basically, the fresh stuff. ” (Secondary School Principal, internal model)

These wider benefits, including embedding more nutritional learning in the curriculum, integrating cultural values such as eating together and saying karakia (prayer), and opportunities for school pride, were mentioned only in the internal schools. In the external model school, the focus was more on the food insecurity theme of feeding students that may have otherwise gone hungry.

With regard to the quality of the food, the three schools using an internal model felt that they were providing tasty and nutritious food with some variability in whether the children liked the food (which was reflected in the number of uneaten lunches and used as immediate feedback for the cooks). The school using an external caterer were not as happy with the quality of the food:

“OK, well the food has been a little bit of a journey ... in general, everything that is being produced is edible. And no, there's nothing wrong with the food as such. Some of it is better than others, and there's

been the odd occasion where food has not been very appetizing or look very appetizing either.” (Secondary School Principal, external caterer model)

The school who had recently transitioned cited the poor quality of the food delivered as the major motivation to change to an internal model.

“The food we were receiving from the external provider was rubbish.” (Primary School Principal.)

Poor quality food from external providers was further attested to by the other principals who spoke of their awareness of this through discussions with other principals. When food was considered unappetizing by the kids it was left uneaten. Each school had a solution, both for uneaten lunches (i.e. redistributed to students who wanted more, taken home by students to their families, given to other schools, or used in the next day’s cooking) and for food waste (generally put in pig buckets).

Principals were aware that the food presented through the school lunches was different to food presented in homes and this was seen as a positive thing to teach kids about new foods; but they recognized that food was being wasted (particularly in the external model school) because kids were picky eaters.

“It [wasted food] depends on what they’re cooking and presenting. It seems to be any new food that the kids haven’t seen before or tried before, there’s a little bit of resistance and so both the leftover and the waste does tend to be more on those days.” (Primary School Principal, Internal model)

“But the kids are quite picky. The food that they [the caterer] do is nice and it is healthy. But you know, like our kids will pull the chicken out of stuff or pull the fish out of stuff and leave the greens.” (Secondary School Principal, external caterer model)

All principals recognized that introducing the school lunch program at their school had taken time and thought, in particular for schools who had chosen to use the internal model. Recruiting trustworthy staff to manage the kitchen, purchase and cook for the students every day, was a responsibility that fell to principals. Similarly, setting up the infrastructure with a functional on-site kitchen was a challenge that required space and investment, but the resulting quality of food was considered to make the investment worthwhile. The external model school cited that the investment required to have a functioning kitchen at school was the reason they did not choose the internal model.

Principals recognized the necessity of parental support for the program, speaking of parents who were considered to pander to their children letting them pick and choose what to eat at home. This was seen to influence uptake of the healthy school lunches. Finally, all principals wanted to see the program continue and expressed concern about the potential impact of removing free lunches now that many students were receiving food daily through *Ka Ora, Ka Ako*.

Discussion

From the perspective of students, parents/caregivers and principals, the introduction of government-funded healthy school lunches for all students in low advantage schools in New Zealand has had three main benefits: alleviation of hunger, reduced financial hardship and broadened taste preferences for students. The majority of participating families (> 80%) were experiencing significant food insecurity and through the introduction of the program, they reported a reduction in grocery bills and less stress in the morning. Wider taste preferences, increased nutritional awareness and more consumption of healthier food was mentioned by both parents speaking of their children and students themselves. Of note however, students mentioned that trust in the program had taken time and that a transition was necessary to give up the old model of lunches from home and snack food from the canteen. All participants shared the opinion that there was greater equity between students which enhanced mana and wellbeing, as well as generalized behavioral benefits like more concentration in class and enjoyment of school. Principals recognized generalized satiety and behavioral benefits, particularly when uptake was good and the food was prepared on site.

However, there were several themes that identify a lack of quality in the externally provided lunches, which affected student uptake and increased food waste. This was related to the general belief that the healthy food provided in the lunches was not highly palatable. This has been observed in other studies where healthy food is not seen to be preference food.^{18,19} Taste preference is important for uptake of school meals even when they are offered for free.^{20,21}

Mauer et al. report that the most important factors contributing to participation in free school meals in Oslo, Norway were the popularity of the food served, competition with the nearby shopping center, social aspects, and predictability.²⁰ In a study on free school breakfasts in the United States of America, unfulfilled food preferences were a barrier to participation, and students accepted to go hungry rather than eat the school breakfast if they did not like it.²² Improving the attractiveness and acceptability of free school lunches represents a major challenge for uptake of *Ka Ora, Ka Ako* given the program's healthy nutrition guidelines.⁸ Principals in this study indicated that there was more flexibility to achieve this with the internal model with an on-site cook. Following a recent nutritional evaluation of the school lunches²³, the nutritional guidelines have been reviewed in 2023 to "provide more flexibility to design appealing menus that are also healthy"². The nutritional evaluation found that lunches were low in carbohydrates, energy, calcium and iron.²³ The new 2023 guidelines now allow, for example, white rice or pasta, baked savory items and a lower minimum weight for salad items.²⁴

The increased food waste when preferences are not met that our participants mentioned has also been observed in other studies.^{20, 25-27} In all schools there were solutions in place to re-distribute or re-use the uneaten food and, where possible, to adjust the menu to provide more of the popular food. While limited uptake was seen as problematic for the program, it should be noted that overseas research has shown that the introduction of free universal lunch programs increases participation, but that it does not generally reach 100%.²⁸⁻³⁰

An important theme for senior students was that the introduction of school lunches and the rules that accompanied them (such as banning external food) represented a loss of autonomy. They desired a lunch system with transparent communication, student involvement in menu and program planning, and more variety and choice. Adolescence is an important developmental period marked by a transition from primarily parental-controlled eating to self-directed and peer-influenced eating.²⁷ The processes described of introducing meals in schools did not appear to take this loss of agency into account.

In addition, parental preferences are essential to determine uptake of the lunches, both for acceptability and healthiness.^{31,32,21} Parents desired access to the lunch menus, as observed in Bailey-Davis et al.'s work.²² This highlights the importance of involving parents as partners in the setup of the program and keeping them informed, and the potential to improve participation by improving parental perceptions^{33,34} which has not happened in these *Ka Ora, Ka Ako* schools. In fact, principals appeared somewhat unfamiliar with the breadth and extent of family and student concerns, as well as aspirations, for the program. This is likely due to a lack of co-design and ongoing communication. There was limited discussion of the magnitude of the transition from lunch boxes to school lunches and the associated mindset shift required. Principals did not mention many opportunities to get parents involved or communicate about the program. There was concern that communicating the lunch menu may mean that some children would not attend on certain days, or that they would bring their lunch. However, not communicating the lunch menu has left parents and students feeling out of the loop and consequently many bring alternative food every day.

Of note, the need to involve students, families and communities is not new. A working paper to the New Zealand government in 2013 outlining a framework for school food recommended parental and student involvement, as well as taking a health-promoting approach and curriculum integration.³⁵ This appears to have been neglected in these schools where parental discourse indicates that handing the responsibility for feeding children over to the school, with limited consultation, removed their control and created anxiety for some. In one family focus group, the parents interrupted the questions to applause the researchers as this was the first time family had been allowed to 'have a say'. Weaver's work highlights the difficulties of school meal programs, with school food being different to any other part of school infrastructure.³⁶ It is considered to sit 'at the boundary' of appropriate government interference in child-rearing³⁷, and as such, the introduction of this wide-scale program represents a large shift in cultural practice. The above themes have illustrated that parental perceptions of the program were deeply rooted in their own relationships to food and nourishment.

Choice of model (internal or external) appears to affect uptake, due mostly to perceived low-quality food from the external providers. As the funding per student is the same irrespective of model, more money is available to spend on food in internal school meals³⁸, given the lack of transportation and reduced overhead costs. The proportion of schools electing to cook meals at school is low in *Ka Ora, Ka Ako* at 23%³ compared to 56% globally.³⁹ Further, the Ministry of Education's recent evaluation of the nutrition value of the lunches has identified that all significant nutrients and meal size were in higher amounts in

the internal meals compared to meals from external providers.²³ While anecdotally we know of schools shifting from external to internal models, data to show the size of the shift is not currently available. Principals in our study cited set-up difficulties and cost as the reason not to adopt the internal model. External model schools select a supplier from a Ministry of Education list of approved suppliers containing 230 suppliers across the country for 1000 schools. At the time of publication, over 90 of the entries (40%) were the fast-food chain suppliers Subway® and Pita Pit².

With regard to whether the lunches were considered to promote self-determination and autonomy for families, the universality and commensality of the program were both cited as values that fit well with Indigenous Māori values, promoting wellbeing for all. Overseas research has shown that increasing opportunities for sociality during eating can increase participation in lunch programs²⁰ and these broader values around food were evident in several of the schools' practices.

There are several limitations to this study. Firstly, the findings are drawn from a small regional area of Aotearoa NZ, where schools had been receiving the lunches for only around 12–18 months. Some of the issues highlighted in this paper could be reasonably expected in any large-scale program roll out. In addition, we did not look at impact of lunches on purchasing practices outside of school and we only have the experiences of two schools involved with an external caterer. However, it is the first article to systematically record and present the views of those most directly impacted by the program.

In summary, the rich discussions showed the complexity of reasons for uptake of *Ka Ora, Ka Ako* lunches. It is too simplistic to think that provision of free school meals would lead directly to all students being nourished with healthy food. While *Ka Ora, Ka Ako* does have the potential to break the cycles of food and time poverty identified in earlier research,¹² this research identified that parental acceptance, and accessibility and attractiveness of other (unhealthy) foods in the school food environments are important considerations. *Ka Ora, Ka Ako* can only disrupt these patterns when implemented with accompanying policies for health-promoting school food environments. Providing food in schools, without policies in place to protect school food environments from the influence of the external factors of highly accessible, attractive and affordable unhealthy food has limited the uptake of the lunches and reduced opportunities for increased wellbeing, pride in the school and promoting cultural values around kai.

IMPLICATIONS FOR RESEARCH AND PRACTICE

At a time when the New Zealand government must decide whether to maintain, expand, reduce or cancel the funding of healthy school lunches,⁴⁰ this paper provides important evidence of the socio-economic and wellbeing impact for students and families benefitting from the program. These families and students have genuine lived experiences of food insecurity and have witnessed how daily healthy school lunches offer multiple advantages. These include reduced financial hardship and stress for whānau, increased appreciation for healthier foods for students, and greater equity for all. The internal model hiring kitchen staff and utilizing school facilities is generally perceived to offer the greatest opportunities for high quality appealing food that will be appreciated by students and allow for variety in the menu.

Parents and caregivers felt that direct provision of food in schools enhanced their *mana* through better wellbeing and equity for their children.

However, the magnitude of the transition and mindset shift required was underestimated and not accompanied by supportive communication for whānau and students. Many students and parents have still not fully embraced the program and some students still bring other 'preference' food to school. This situation is exacerbated in schools that have not closed their tuck-shops selling cheap and highly palatable snack food; in schools where students can bring food from home; and in schools where the food provided from the external caterer is perceived to be of poor quality. The belief that healthy food is unpalatable for children is strong in communities with limited exposure to some of the foods served in the program. Now that *Ka Ora, Ka Ako* is in its third year, efforts must be made at the program and school levels for co-design with the school community to develop appreciation of the wider benefits and work within nutrition guidelines while limiting food waste.

Declarations

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Conflicts of interest

The authors declare no conflicts of interest.

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