

Original Article

Pacific parents' rationale for purchased school lunches and implications for obesity prevention

Tasileta Teevale PhD¹, Robert Scragg PhD², Gavin Faeamani MPH¹, Jennifer Utter PhD²

¹Pacific Health Section, School of Population Health, University of Auckland, Auckland, New Zealand

²Epidemiology & Biostatistics, School of Population Health, University of Auckland, Auckland, New Zealand

Pacific children and adolescents are burdened with higher prevalences of obesity compared to other groups in New Zealand. Previous research shows Pacific young people purchase their lunch food items significantly more than other groups. The aim of this study is to describe school lunch food consumption patterns and the influences on these among low-income Pacific adolescents and their parents. Using mixed-methodology design; a self-completion questionnaire was administered to 4216 students who participated in the New Zealand arm of the Obesity Prevention In Communities (OPIC) project. Thirty Pacific households (33 adolescents and 35 parents) were interviewed in the qualitative phase of the study. Results found a greater proportion of Pacific students purchased school food items compared to other ethnic groups. Purchasing school food was related to having higher amounts of daily food money (\geq NZD 6-15) and this was associated with increased quantities of soft drink consumption and after-school food purchasing of high-fat, high-sugar snack foods. There were no differences in school food purchasing behaviour by Pacific weight status ($n=2485$), with both Healthy weight (67.6%) and Obese students (66.9%) sourcing lunch from school canteens or shops outside of school rather than from home. Time-constrained parents confirmed convenience, poverty compensation and valuing students' independence as three reasons for choosing to make money available for students to purchase lunch food items. The social effects of poverty affect the health-promoting behaviours of Pacific communities in New Zealand. Social policies that decrease social inequities should be the intervention priority.

Key Words: Polynesian, adolescent, obesity, diet, New Zealand

INTRODUCTION

New Zealand has the third highest population obesity prevalence amongst OECD (Organisation for Economic Co-operation & Development) countries, behind the United States and Mexico.¹ And like most developed countries, New Zealand's obesity rates are associated with deprivation, with higher levels observed in low-income groups.^{2,3} Obesity is a major public health problem for Pacific Peoples in New Zealand (comprising a diaspora from the South Pacific islands of Samoa, Cook Islands, Tonga, Niue, Fiji, Tokelau and Tuvalu). The conglomerate Pacific ethnic group occupy the lowest socio-economic strata in New Zealand.⁴ In terms of obesity prevalence, Pacific adults (63.7%) and children (23.3%) have an almost three-fold higher risk of being obese compared to the general population (26.5% for adults; 8.3% for children).²

Available New Zealand data on food and eating patterns of the Pacific groups shows that Pacific children (males 35%; females 34.3%) consume a higher mean percentage of daily fat intake compared to their European counterparts (32.6%; 32.3%).⁵ Pacific young people also have high-sugary diets, consuming fizzy drinks or sugary beverages significantly more than other groups,⁶⁻⁸ and while Pacific adolescents are meeting the current guidelines for fruit intake they are not eating the recommended servings for vegetables.² Pacific children,^{7,8} adolescents,⁹

and adults,^{10,11} also skip meals, particularly breakfast.^{2,12}

In the New Zealand context there is no publicly-funded school food service and most young people have the choice of bringing home-made lunch foods or purchasing foods from a school canteen within the school or shops outside the school perimeter. Previous local research on the nutritional behaviours of Pacific children and adolescents has consistently shown that Pacific adolescents and children purchase their school lunch food items significantly more than other ethnic groups, and that the most socially deprived groups in New Zealand also present these behaviours.^{5,13,14} Furthermore, there is a positive association between food purchasing behaviours and children's body weight.¹⁵ Food purchasing behaviours influence snacking frequency,⁶ and consumption of high-fat foods such as hamburgers and meat pies,^{5,7} and high-sugary foods.¹³ In the national Children's Nutrition Survey, high-sugar intake was associated with accessibility and purchasing power, with children who used the school canteen or tuckshops as their main source of school food

Corresponding Author: Dr Tasileta Teevale, Pacific Health Section, School of Population Health, University of Auckland, Private bag 92019, Auckland 1142, New Zealand.
Tel: 649 3737599, ext 89356; Fax: 649 3737624
Email: t.teevale@auckland.ac.nz

Manuscript received 21 June 2011. Initial review completed 26 December 2011. Revision accepted 31 January 2012.

being much more likely to choose fizzy drinks to consume than other drinks offered.⁶

Despite these strong consistent patterns shown by epidemiological surveys, no study to date has uncovered the influences on these critical school lunch behaviours. The aim of this study was to investigate the school lunch food habits of socio-economically deprived groups of Pacific adolescents by weight status (ie, obese and healthy weight adolescents). Qualitative methods were chosen to explore the in-depth influences on school lunch food behaviours from both the adolescent and their parents' perspectives.

METHODS

A mixed-methods research design including both qualitative and quantitative research methods was used. The study used a solution-focused paradigm,¹⁶ or appreciative inquiry lens, to explore the factors that influence non-obese states. Thus, comparisons were made between healthy weight and obese adolescents. The quantitative survey was used to gather patterns of food and eating behaviours, and qualitative methods were used to allow the topic to be explored in depth.

Quantitative survey questionnaire

Information was collected between July 2005 and June 2006 from 4216 students who participated in the New Zealand arm of the Obesity Prevention in Communities (OPIC) project. Further description of the OPIC study sample and methodology is available in other sources.^{9,17} Ethnicity data from New Zealand's four major ethnic groups, European, Maori, Pacific and Asian was collected and analysed. The study population included 2485 Pacific students from 7 high schools, mostly in the Mangere ward of South Auckland, New Zealand. These schools were participating in the OPIC study, which was a three-year school-based obesity prevention trial. Participating schools were urban with highly multi-cultural school populations. Students were surveyed at secondary schools. The questionnaire items included demographic variables, anthropometry, food and nutrition behaviours, physical activity and leisure time activities, and questions relating to family, home, school and neighbourhood environments. Anthropometric measurements such as weight were taken using an electronic scale (BC418 Body Composition Analyzer, Tanita, UK), and height was measured to the nearest 0.1 cm with a standard portable stadiometer. Students' weight status was assessed using BMI measurements and international cut-off points recommended by the International Obesity Taskforce.¹⁸

This study compared prevalence of outcomes between comparison groups, which is appropriate for cross-sectional studies. Chi-square tests were used to investigate associations between categorical variables and statistical significance was set at $p < 0.05$. Only results reaching this significance level are presented. Statistical software SAS (v 9.1, SAS Institute Inc., Cary, NC, USA) was used to generate results. The Mantel-Haenszel method was used to adjust comparisons for possible confounding from covariates.

Qualitative interviews

Sixty-eight individuals (33 students and 35 parents) from

30 Pacific households participated in the qualitative phase of the study. Students were recruited for individual interviews if they had completed the OPIC baseline questionnaire. Students were randomly selected for the interviews, depending on weight status (healthy weight and obese students only). The scope of the interview included questions on participants' food and eating habits, the influences on behaviour, and knowledge, beliefs or values about the health consequences of these habits.

Household location was deemed important for comparing equivalent environmental influences so families were recruited from the catchment area of the Mangere ward, which is a low-socioeconomic area. Interview sessions included at least one adult parent or primary caregiver and a separate interview was conducted with their child/student. Five parent interview sessions included both parents present. Interview sessions progressed until information saturation was reached.

Integral to the research process and in alignment with indigenous Pacific research principles, particular cultural processes and strategies were followed for interviews.¹⁹ The exploratory nature of this study utilised open-ended Talanoa,²⁰ interview style to try and gain an understanding of the typical life routines of participants within which recurring patterns of food habits exist. Participants were therefore not only asked questions related to specific study objectives on food habits but interviews began with participants being allowed to express how life is lived on a daily basis and discussions explored how these factors influenced food habits.

Participant consent was achieved for all participants and the study met the University of Auckland's Human Participants Ethics Committee standards for undertaking research.

In the qualitative component, interview transcripts were transcribed and analysed using the grounded theory inductive approach described by Strauss and Corbin.²¹ This technique enables the systematic identification, categorising and sorting of key themes and sub-themes running through text segments in the transcripts. Computer software programme NVivo7 was used to analyse, sort and code interview data.

RESULTS

Study population demographics

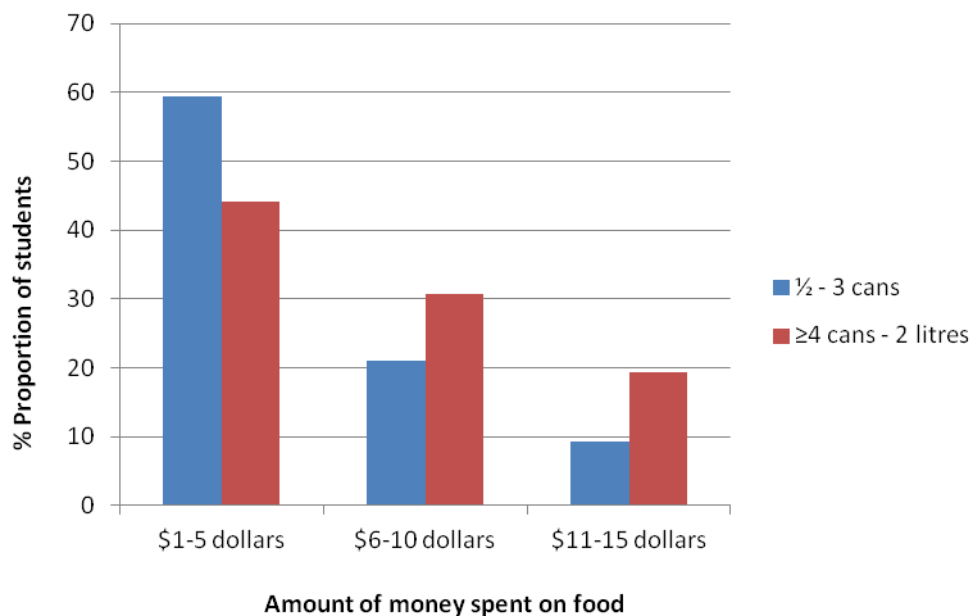
In the quantitative survey, female (50.6%) and male (49%) participants were between the ages of 12 and 17 years (51% aged 12 to 15; 49% aged 16-17). By weight status there were 31% obese students, 36% overweight and 32% healthy weight students.

Of the thirty-three Pacific students interviewed in the qualitative survey, 11 identified with multiple ethnicities. Most of the households had one or more adults who were employed (83%), and they had a combined parental income in the low-mid range of \$30-\$60 thousand dollars-per annum (not adjusted for total household size). Most families (70%) lived in large extended families (average household size 7.4; range 3-13), with many dependent children (average of 3.5; range 1-7). Most parents were Island-born (86%), bilingual (86%), and 30% were mixed parental-ethnicity households.

Table 1. Students' usual source of lunch and the amount of money they spent on food or drinks on previous school day, by ethnicity ($n=4216$)

Variable	Category	Ethnicity (%)				<i>p</i> -value
		Pacific	Maori	Asian	European	
Source of school lunch	Home	27.4	38.3	52.1	59.1	<0.0001
	School canteen or shop outside of school	67.7	55.2	39.0	28.9	
	Friends	1.1	2.2	0.0	2.2	
	Don't eat lunch	3.7	4.3	8.9	9.8	
Amount of money spent on food and drinks on previous school day	\$0	12.6	18.5	38.7	40.9	<0.0001
	≤\$5	56.4	44.6	41.8	42.1	
	\$6-10	21.2	24.5	13.7	11.2	
	\$11-15	9.8	12.4	5.6	5.8	
n		2485	837	447	447	

Note: significant *p*-value set at <0.05

**Figure 1.** Proportion of Pacific students' quantity of soft drink consumption on previous school day, by amount of money spent on food on the previous school day ($n=2485$). Note: significant *p*-value set at <0.05

School lunch food sources & consumption patterns

In the quantitative survey, students were asked to indicate their usual source of school lunch, by responding to the question 'Where do you usually get your lunch from?' Results showed that a higher proportion of Pacific students purchased their lunch from their school canteen or shop outside school (68%) than other ethnic groups (Table 1). Students were also asked to report the amount of money they spent on food or drinks at takeaway shops or dairies (not including school canteens) for their own consumption, on the previous school day. Closed item responses ranged from NZD \$0 to \$15 dollars. Pacific students (87.4%) were much more likely to spend money (\$1-\$15) on food during the previous school day, compared to other ethnic groups. Pacific students spent higher amounts of money (\geq \$6) on food on the previous school day than European and Asian students.

Analysis of Pacific students only ($n=2485$) showed that greater levels of money (\$6-\$15) available to spend on food was associated with purchasing of school foods. Higher amounts of spending money (\$6-\$15) was also positively associated with consumption of soft drinks (carbonated sugar-sweetened beverages, see Figure 1) as well as after-school purchasing of some high fat and high sugar snack foods (Table 2). Greater proportions of Pacific students reported buying biscuits, potato chips, pies, takeaway, fried foods, and chocolates, sweets and ice-cream everyday or most days after school, when they had spent more than \$6 on food.

The qualitative data were consistent with the findings from the quantitative data, with 88% (29 out of 33) of Pacific students reporting regular school lunches were purchased rather than homemade. The most stated foods purchased by Pacific students were meat pies, fizzy drinks, cookies, hot potato chips and chocolates. Pacific

Table 2. Proportion (%) of Pacific students' after school food purchasing behaviours by money spent on food on the previous school day ($n=2485$)

After school food purchasing behaviours	Frequency of after school food purchasing (%)		<i>p</i> -value
	Every day/most days	Some days/Never/Hardly never	
How often do you usually eat biscuits, potato chips or snacks such as instant noodles after school?	n=886	n=1599	
Amount of money spent on food on the previous school day			
\$0	7.1	18.3	<.0001
\$1-5 dollars	51.0	56.5	
\$6-10 dollars	26.1	17.0	
\$11-15 dollars	15.9	8.2	
How often do you usually eat pies, takeaways or fried foods such as French fries after school?	n=747	n=1738	
Amount of money spent on food on the previous school day			
\$0	3.7	20.2	<.0001
\$1-5 dollars	48.0	57.1	
\$6-10 dollars	30.0	16.2	
\$11-15 dollars	18.4	6.5	
How often do you usually eat chocolates, lollies, sweets or ice-cream after school?	n=783	n=1341	
Amount of money spent on food on the previous school day			
\$0	5.6	18.4	<.0001
\$1-5 dollars	22.3	35.6	
\$6-10 dollars	37.0	31.3	
\$11-15 dollars	35.1	14.7	

Note: significant *p*-value set at <0.05

students reported that they brought items that were cheaper and readily available at the school canteens or local dairies (neighbourhood convenience stores).

Money was readily available from parents and extended family members usually living within the same household and lunch money would often be given on a daily basis. Twenty-nine students from 33 (or 87%) received weekly pocket money ranging from five to fifty dollars per week. An average of \$23 dollars per week pocket money was available for students to purchase food items. Some students explained different adult members or older working siblings, were often approached for money daily and students would collect whatever money was given for lunch, as highlighted by a student's quote below.

I usually get money from my dad [to buy lunch], but on other days, I go to my older brother and ask him and he gives me some, cos he works after school. Sometimes I ask my uncle for some money and he normally gives me about \$6 and then I ask my oldest sister for some money again, cos she's 21 [years], and then I ask my older brother for some more money
So after asking around everybody for some money, how much would you get to spend each day?
About \$10 bucks."

Tongan male, Age 15, Classified Healthy Weight.

Parents confirmed the role of extended family members in making money available to students for purchasing school lunches, as illustrated by a parent's quote below.

The kids buy their lunch and because their Nana [grandmother] give them money too...Yeah the Nana she loves those kids so she just gives them money
Samoan Mother with 4 dependent children, household size 6.

Parents' rationale for purchased school lunches

At the qualitative interviews, parents were asked to explain why they chose purchased school lunch arrangements for their children. Parents' rationale for purchased school lunches for the students fell into three categories. 1) convenience; 2) compensation; and 3) valuing independence.

A parent's statement below highlights that convenience was a key factor in making money available for students to purchase daily lunch. Parents who worked long hours, particularly shift work arrangements, often had no time or energy left to prepare school lunches. Their default choice of convenience was to make money available for students to purchase lunches, as one mother explained,

"I finish work at 11pm at night, but sometimes I work double shift, I start at 3pm and I come home at 7am o'clock, and when I get home, I always prepare lunch for them but like if I'm tired then I just give them money, like \$5 dollars each."

[Interviewer] "Do they tell you what they buy for lunch?"

"Oh I ask them, they buy pie, chips and a drink. I don't know what kind of drink they buy at school."

Niuean/Samoan Mother of 4 dependent children, household size 7.

Secondly, parents expressed feelings of compensation for their and their children's poverty status as a reason for making money available for students to purchase desirable lunch food items. The dialogue below highlight that parents were concerned about the assessment their children may make with other children at school and not wanting them to feel that they may have less than others. Parents particularly on welfare, were motivated to com-

pensate for poverty by making desirable foods available for their children despite experiencing money insecurity.

"I make lunch for them at home, even Risati [son/student], I do a sandwich for him and usually a bottle of juice, but sometimes if I feel sorry for them, just only once a week, I give \$3 for the pie and \$1 drink [laughs] to buy their lunch"

[Interviewer] "When you say, you feel sorry for them, what do you mean by that?"

"Because I don't want my son to feel...well because he can see those other kids like eating that or wear good clothes, something like that, so its hard for me, so that's why I tried to, even if I can't afford to, so I try to faasoasoa (distribute/hand out/give) to them."

Samoan Mother of 4 dependent children, household size 6.

Third, parents explained that homemade lunches were often prepared for younger children, particularly primary school aged children, but as children grew older, they expected older children to prepare and regulate their own food intake. Valuing children's independence by giving students money to purchase their own lunch was also related to larger household size and greater numbers of dependent children. Some home-based parents were constrained by being busy looking after younger children, elderly or chronically ill family members.

Only 4 households of the 30 confirmed that student lunches were regularly sourced from home. Cost was the main factor for these parents and a lack of money, particularly related to the numbers of dependent school-aged children in the household. More children meant care was taken to budget food resources carefully and discretionary money was not always available to give out to children to purchase school lunches. These parents were also not concerned about compensating for poverty status despite feeling pressured by their children's desire for particular foods, monetary constraints were not negotiated.

Food context

Figure 2 summarises the contextual factors which surround participants' food habits which were relevant for the majority of participants. When participants comments noted "tiredness" as a reason for choosing particular food habits, like the convenience of purchasing takeaway foods, contextual analysis showed that "tiredness" was influenced by a number of factors. Parents' accounts showed that managing insufficient income levels which must be stretched for greater numbers of people in the household (ie Pacific families live in large extended family arrangements) was part of their daily living reality. To provide enough income to support large families, parents would often work long hours, particularly extended shift work. Pacific households had young and elderly members to care for and it was normal for households to have chronic illnesses like asthma, diabetes, strokes, lupus and children with disabilities that required regular medical attention. A few participants ($n=4$) who were from non-employed households voiced substance abuse and family violence issues also existed in their homes. Non-employed households also were managing adults with work-related injuries.

Nearly three-quarters (73%) of the qualitative study sample reported low-to medium total household income levels (\$30-60,000) which have not been equivalised to overall household size. Current measures of family poverty equalise disposable household income taking into account the numbers of adults and children usually resident in homes.²² Given that the participants in this study had low levels of total parental income to large household size, study participant households can reasonably be described to fit within current impoverished standards of living definitions. This fits current statistical patterns showing the study area of Mangere being of a low decile area with lower economic standards of living,²³ and of Pacific people generally having lower personal median income levels, and of being over-represented in child

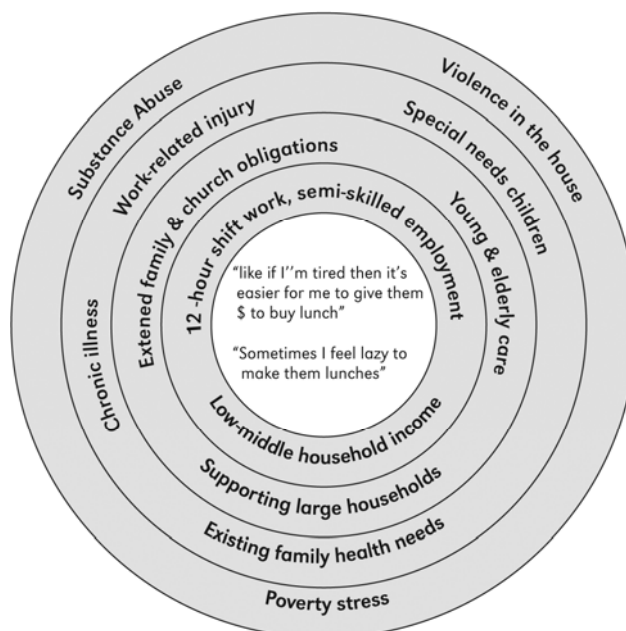


Figure 2. Contextual factors affecting Pacific household food habits

poverty statistics compared to non-Pacific.^{22,24} Within this framework, daily life circumstances or contextual factors have been combined and described as 'Poverty Stress'.

DISCUSSION

Despite long-standing patterns of obesity prevalence being burdened on the most impoverished population groups in Western societies, surprisingly very little research has been completed in the area of poverty and its association with obesity. This is an obvious limitation which future research in the field should address.

The key environmental constraint on adolescent school lunch time food habits, is the lack of sufficient time by parents to prepare healthy foods. Parents of obese students tended to work longer hours through double shift arrangements and often over evening, early-morning hours and weekend days.²⁵ Time constraints were also a big factor for households with two working parents with parents managing time by choosing food behaviours that were time-convenient. Longer hours away from home meant little time was available to give attention and effort towards healthy food preparation, and purchased school lunches and takeaway convenient meals became the default choice for time-constrained parents. Research has shown that long hours of parental employment, especially maternal employment are associated with an increased obesity risk for children.^{26,27} Time pressure, whether real or perceived, exerts further stress onto vulnerable households and can result in less time to monitor children's food intake, and also in stressed parents fostering "time guilt" and acceding to children's demands for energy-dense foods.^{28,29}

Results of this study support others which found that poverty stress can lead parents to make poorer food choices and despite having sound food knowledge, parents can become more non-compliant to healthy food and eating guidelines and exhibiting less desirable feeding habits. Less desirable feeding habits include using food as a compensatory positive experience to overcome negative feelings of living in adverse poverty stricken conditions. For example, Gundersen *et al.*³⁰ found low-income chronically-stressed mothers tended to make "comfort foods" more available to children. This could be described as coping mechanism with low-income people using food as a "tranquilliser" to impoverishment. Elements of this phenomenon were found in the dialogue with parents who admitted to purchasing highly palatable takeaway food items for their children despite being on government welfare and experiencing chronic financial constraints. This may be parents' way of mitigating feelings of inadequacy for not providing certain living standards for their children and family, which is a similar finding to other studies on food choices of low-income people.³¹⁻³³

The use of food as a coping strategy for stress is further supported by Kumanyika,³² who explains that being an ethnic minority exacerbates stressful states, which may explain differential obesity prevalences amongst majority and minority groups. Ethnic minorities who may be exposed to daily environmental and psychological stresses like economic security, racial discrimination, violence, personal safety, and a perceived inability to improve

one's life circumstances could purchase and consume highly palatable foods as a coping strategy for daily stress.

Pacific students had ready access to discretionary money to purchase lunch food items, given by both parents and other extended family members. The access and involvement of extended family members in adolescent life is characteristic of communal living which is customary to Pacific families. Despite years of established settlement in the New Zealand environment, Pacific people continue to hold strong traditional family values and preferences for extended family living.^{4,34} All adults within an extended family group are expected to be responsible for the welfare of younger members and having greater numbers of working adults in the household can be advantageous for sharing resources.³⁵ This cultural practice seems salient for both obese and healthy weight student households, with both sets of students confirming the custodial role of older family members.

This is a key implication to note for future interventions with Pacific populations, where wider extended family involvement is common and considered preferable to the typical nuclear parental structure of non-Pacific families. In addition, educating parents without cultivating changes of behaviour of other adults in the home can seriously limit any positive intervention influence by inconspicuous sabotage. In this regard, family interventions using Pacific definition of wider extended family groups is the recommended standard.³⁶

A key point for future interventions is that changing structural barriers, such as poverty status and its associated mindset, will be difficult to achieve in the short-term. It is therefore highly unlikely for prohibitionist advice to parents to limit money available to students to purchase lunches will succeed under these current conditions. For example, parents cannot make healthy home-based lunches when employment hours encroach on their time and presence within their homes, and when there is simply not enough money to purchase healthy foods.^{25 37 38} It is likely that students with ready access to working extended family members will continue to have access to discretionary spending money; and long-term sustainable changes in the school and community food environment will be the best strategy for preventing childhood obesity for this group.

Both central and local government agencies have a role to play in setting public health policy in institutions under their influence. The Healthy School Food policy requiring all public schools to report on the provision of quality school food that must meet current nutritional guidelines is a step in the right direction for this group in the community.^{39,40} This policy which was implemented by New Zealand's previous government, and overturned by its current, should be re-established.⁴¹

Conclusions

It is likely that there is not one factor that increases the likelihood for obesity through particular food habits but the combined effect of compounding determinants that increases the risk of childhood obesity. Children raised in highly obesogenic environments with insufficient household monetary resources to source and supply healthy food, and little parental time available to prepare healthy

food, will have a greater compounding effect that will only serve to promote and increase obesity levels. This indicates that poverty stress needs to be addressed by structural environmental changes in intervention efforts. Results of this study illuminate the complexity of behavioural determinants and suggest that impoverished circumstances may exert a particular dynamic which has not been fully considered by past research.

ACKNOWLEDGEMENTS

This research was kindly funded by Wellcome Trust UK, Health Research Council NZ, University of Auckland OPIC Research Fellowship Award, and the Ministry of Health Emerging Researcher PhD Scholarship. The authors also gratefully acknowledge participating Pacific students, parents, and NZ OPIC schools; the NZ OPIC Research team; and the Pacific Health & Social & Community Health departments (School of Population Health, The University of Auckland).

AUTHOR DISCLOSURES

The author(s) declare that they have no competing interests.

REFERENCES

1. OECD Organisation for Economic Co-operation & Development. Overweight and obesity among adults. *Health at a Glance 2009: OECD Indicators*: OECD Publishing. DOI 10.1787/health_glance-2009-22-en; 2009. pp. 56-7.
2. Ministry of Health. A portrait of health: Key results of the 2006/07 New Zealand Health Survey. Wellington: Ministry of Health, 2008.
3. World Health Organization. Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation. Geneva: WHO; 2003.
4. Statistics New Zealand. Quick Stats About Pacific Peoples: Census 2006, 2006.
5. Ministry of Health. NZ Food NZ Children: Key Results of the 2002 National Children's Nutrition Survey. Wellington: Ministry of Health; 2003.
6. Utter J, Schaaf D, Ni Mhurchu C, Scragg R. Food choices among students using the school food service in New Zealand. *N Z Med J*. 2007;120(1248):U2389.
7. Utter J, Scragg R, Schaaf D, Fitzgerald E. Nutrition and physical activity behaviours among Maori, Pacific and NZ European children: identifying opportunities for population-based interventions. *Aust N Z J Public Health*. 2006;30:50-56.
8. Utter J, Scragg R, Schaaf D, Fitzgerald E, Wilson N. Correlates of body mass index among a nationally representative sample of New Zealand children. *Int J Pediatr Obes*. 2007;2:104-13.
9. Utter J, Faeamani GL, Malakellis M, Vanualailai N, Kremer P, Scragg R, Swinburn B. Lifestyle and obesity in south Pacific youth: baseline results from the Pacific Obesity Prevention In Communities (OPIC) Project in New Zealand, Fiji, Tonga and Australia. Auckland: University of Auckland; 2008.
10. Amosa T, Rush E, Plank L. Frequency of eating occasions reported by young New Zealand Polynesian and European women. *Pacific Health Dialog*. 2001;8:59-65.
11. Vainikolo F, Vivili P, Guthrie BE. Food consumption patterns and beliefs of Tongans living in Dunedin. *Journal of the New Zealand Dietetic Association* 1993;47:6-9.
12. Utter J, Scragg R, Ni Mhurchu C, Schaaf D. At-home breakfast consumption among New Zealand children: associations with body mass index and related nutrition behaviors. *J Am Diet Assoc*. 2007;107:570-76.
13. Helu SL, Robinson E, Grant S, Herd R, Denny S. Youth '07 The health and wellbeing of secondary school students in New Zealand: Results for Pacific young people. Auckland: University of Auckland; 2009.
14. Regan A, Parnell W, Gray A, Wilson N. New Zealand children's dietary intakes during school hours. *Nutrition & Dietetics*. 2008;35:205-10.
15. Duncan JS, Schofield G, Duncan EK, Rush EC. Risk factors for excess body fatness in New Zealand children. *Asia Pac J Clin Nutr*. 2008;17:138-47.
16. Robinson TN, Sirard JR. Preventing childhood obesity; a solution oriented research paradigm. *Am J Prev Med*. 2005; 28(2S2):194-201.
17. Swinburn BA, Pryor J, McCabe M, Carter R, de Courten M, Schaaf D, Scragg, R. The Pacific OPIC Project (Obesity Prevention in Communities) objectives and designs. *Pac Health Dialog*. 2007;14:139-46.
18. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. *Br Med J*. 2000;320:1240-3.
19. Health Research Council of New Zealand. Guidelines on Pacific Health Research. Auckland, NZ: Health Research Council of New Zealand; 2005.
20. Vaiolleti TM. Talanoa research methodology: a developing position on Pacific research. *Waikato Journal of Education*. 2006;12:21-34.
21. Strauss AL, Corbin JM. Basics of qualitative research: grounded theory procedures and techniques. California: Sage Publications; 1990.
22. Fletcher M, Dwyer M. A Fair Go for all Children: Actions to address child poverty in New Zealand. Wellington: Office of the Children's Commissioner & Barnados; 2008.
23. Crampton P, Salmond C, Kirkpatrick R, Scarborough R, Skelly C. Degrees of Deprivation in New Zealand. An Atlas of Socioeconomic Difference. Auckland: David Bateman; 2000.
24. QuickStats about Incomes. 2010/11/30; Available from: <http://www.stats.govt.nz/census/2006censushomepage/quickstats/quickstats-about-a-subject/incomes.aspx>.
25. Teevale T, Thomas DR, Scragg R, Faeamani G, Nosa V. The role of sociocultural factors in obesity etiology in Pacific adolescents and their parents: A mixed-methods study in Auckland, New Zealand. *N Z Med J*. 2010;123:26-36.
26. Phipps SA, Lethbridge L, Burton P. Long-run consequences of parental paid work hours for child overweight status in Canada. *Soc Sci Med*. 2006;62:977-86.
27. Anderson PM, Butcher KF, Levine PB. Maternal employment and overweight children. *J Health Econ*. 2003; 22:477-504.
28. Devine CM, Connors MM, Sobal J, Bisogni CA. Sandwiching it in: spillover of work onto food choices and family roles in low- and moderate-income urban households. *Soc Sci Med*. 2003;56:617-30.
29. Broom DH, Strazdins L. The harried environment: Is time making us fat? In: Dixon JM, Broom DH, editors. The seven deadly sins of obesity : how the modern world is making us fat. Sydney: UNSW Press; 2007. pp. 35-45.
30. Gundersen C, Lohman BJ, Garasky S, Stewart S, Eisenmann J. Food security, maternal stressors, and overweight among low-income US children: results from the National Health and Nutrition Examination Survey (1999-2002). *Pediatrics*. 2008;122:e529-40.
31. Jain A, Sherman SN, Chamberlin LA, Carter Y, Powers SW, Whitaker RC. Why don't low-income mothers worry about their preschoolers being overweight? *Pediatrics*. 2001;107:1138-46.

32. Kumanyika S. Environmental influences on childhood obesity: ethnic and cultural influences in context. *Physiol Behav.* 2008;94:61-70.
33. Ministry of Health, Health Sponsorship Council. Healthy Eating Healthy Action Focus group research: Commissioned by the Health Sponsorship Council on behalf of the Ministry of Health; 2004.
34. Poland M, Paterson J, Carter S, Gao W, Perese L, Stillman S. Pacific Islands Families Study: factors associated with living in extended families one year on from the birth of a child. *Kotuitui: New Zealand Journal of Social Sciences Online.* 2007;2:17-28.
35. Koloto A, Sharma S. Pasifika Women's Economic Well-being Study. Wellington: Report prepared for Ministry of Women's Affairs; 2005.
36. Moata'ane LM, Muimui-Heata S, Guthrie BE. Tongan perceptions of diet and diabetes mellitus. *Journal of the New Zealand Dietetic Association.* 1996;50:52-56.
37. Lanumata T, Heta C, Signal L, Haretuku R, Corrigan C. Enhancing food security and physical activity: the views of Maori, Pacific and low-income peoples. Wellington: Health Promotion and Policy Research Unit, University of Otago; 2008.
38. Rush E. Food security for Pacific Peoples in New Zealand. A report for the Obesity Action Coalition. Wellington: Obesity Action Coalition; 2009.
39. Carter M, Swinburn BA. Measuring the 'obesogenic' food environment in New Zealand primary schools. *Health Promot Int.* 2004;19:15-20.
40. Sacks G, Swinburn B, Lawrence M. A systematic policy approach to changing the food system and physical activity environments to prevent obesity. *Australia and New Zealand Health Policy.* 2008;5:13.
41. Utter J, Scragg R, Percival T, Beaglehole R. School is back in New Zealand--and so is the junk food. *N Z Med J.* 2009; 122:5-8.

Original Article

Pacific parents' rationale for purchased school lunches and implications for obesity prevention

Tasileta Teevale PhD¹, Robert Scragg PhD², Gavin Faeamani MPH¹, Jennifer Utter PhD²

¹*Pacific Health Section, School of Population Health, University of Auckland, Auckland, New Zealand*

²*Epidemiology & Biostatistics, School of Population Health, University of Auckland, Auckland, New Zealand*

太平洋裔家長對於購買上學午餐的理由及其對肥胖預防之影響

居住於紐西蘭之太平洋裔兒童及青少年，與其他種族相比，肥胖盛行率較高，而且在選購午餐時購買較多的食物項目。本篇研究目的為探討低收入之太平洋裔青少年的上學午餐食物攝取型態，及父母對此之影響。利用混合方法論設計進行研究。提供自填式問卷給 4216 位參與肥胖預防計畫(OPIC)之學生。研究的質性部份，是對 30 個太平洋裔家戶(33 位青少年及 35 位家長)進行面訪。結果顯示，與其他種族相比，有較高比例的太平洋裔學生在上學時購買食物，而這樣的行為與較多的食物零用錢(\geq NZD 6-15)有關，並與含糖飲料攝取較多及課後購買高脂高糖點心的行為相關。另外也發現，太平洋裔學生，不論體重為何，其購買上學食物之行為沒有明顯差異；有 67.6%的正常體重者與 66.9%的肥胖者，未從家中帶午餐來，而去學校餐廳或校外商店購買。研究結果也指出，時間緊迫的父母承認給與小孩金錢去購買上學食物，乃是基於便利、貧窮的代償反應、及看重學生自主性等三點理由。鑑於貧窮的社會效應著實影響太平洋裔社群的健康攸關行為，因此以降低社會不公為目標的社會政策應為優先。

關鍵字：玻里尼西亞、青少年、肥胖、飲食、紐西蘭