

Uptake and outcome of a community-based healthy lifestyle intervention for preschoolers identified with obesity: an audit of the Whānau Pakari preschool programme

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Childhood obesity in Aotearoa/New Zealand remains challenging to address. Eleven percent of children aged 2–14 years are affected by obesity, with Māori (16%), Pacific (28%) and children from most socioeconomically deprived areas (20%) more likely to be affected.¹ Although prevalence has declined slightly in four-year-old children between 2010 and 2016,² estimates suggest over 8,400 children were affected by obesity in 2015/16, reaffirming the need for ongoing action.²

The Raising Healthy Kids target was implemented in July 2016 as part of the New Zealand Government's childhood obesity plan.³ The target aimed for 95% of children identified with obesity at the B4 School Check (B4SC) to be offered a referral to a health professional, for clinical assessment and support from a family-based nutrition, activity and lifestyle intervention by December 2017.³ Due to the target's reporting focus on initial referral rather than follow-up and referral outcome, little information regarding uptake or outcome of intervention programmes has been collected for preschoolers referred under the target nationally.

In Taranaki, children identified at the B4SC with obesity from July 2016 were referred to Whānau Pakari—a multi-disciplinary, family-centred assessment

and intervention programme supporting children with obesity aged 4–16 years. The programme offers comprehensive home-based assessments every six months for one year, as well as additional regular group sessions. A randomised clinical trial (RCT) embedded within Whānau Pakari (recruitment January 2012–August 2014) showed modest improvements in body mass index (BMI) standard deviation score (SDS) in both an assessment-and-weekly sessions model (intervention) and an assessment-and-advice model (control) at 12 months, with high initial engagement for Māori and children from the most deprived quintile of households.⁴ Attendance was assessed as key to outcome, with a doubling of reduction in BMI SDS at 12 months (which persisted to 24 months) for those attending ≥70% of the group sessions in the intervention model.⁵

There are currently no national data on uptake of childhood obesity programmes by preschool children referred from the B4SC, and limited regional data. Therefore, the objectives of this audit were firstly, to determine what proportion of referred preschool children engaged with the Whānau Pakari preschool programme, completing at least a baseline assessment (ie, what was the *uptake* of preschoolers referred). Second, for those children who did engage, to determine the *effect* of the

Whānau Pakari preschool programme on BMI SDS after six and 12 months. The preschool programme responded to 'real-world' needs of families, offering home-based assessments at baseline, six and 12 months, alongside weekly or fortnightly sessions specifically for preschoolers (dependent on whether older siblings within the family were already attending the weekly session programme, and family and/or session availability).

A total of 143 children aged 4–5 years were referred from the B4SC to the Whānau Pakari preschool programme between July 2016 and March 2019. Of those referred, the families of 75 children (52%) engaged with the service, the families of 67 children (47%) declined any involvement when contacted, and the family of one child was excluded for not meeting eligibility criteria. No demographic differences were observed between groups (Table 1).

Among children who engaged with the Whānau Pakari preschool programme, 38 completed the six-month assessment (51%) and 24 (32%) completed the 12-month assessment. At the time of undertaking the audit, 10 (13%) children had self-discharged as caregivers reported having successfully made healthy lifestyle changes.

Among participants who completed the assessments, there was no overall change in BMI SDS from baseline at six months [-0.09 SDS (95% CI -0.23, 0.05); $p=0.18$] or at 12 months [-0.04 SDS (95% CI -0.29, 0.20); $p=0.73$]. Nonetheless, a BMI SDS reduction was observed in 55% ($n=21$) and 42% ($n=10$) of participants at six and 12 months respectively, with the remaining children displaying an increase in BMI SDS.

Participation for Māori remained similar to that for NZ European children both at six months (40% vs 42%, respectively) and 12 months (42% vs 42%, respectively). In

Table 1: Demographic characteristics of participants who engaged or declined to engage with the Whānau Pakari preschool programme.

		Engaged	Declined to engage	p-value
n		75	67	
Female		34 (45%)	36 (54%)	0.32
Age (years)[†]		4.5±0.2	4.5±0.2	0.27
BMI SDS[‡]		2.68±0.62*	2.50±0.63	0.10
Ethnicity[§]	Māori	31 (41%)	22 (33%)	0.26
	NZ European	34 (45%)	41 (61%)	
	Pacific	3 (4%)	3 (4%)	
	Asian	4 (5%)	1 (1%)	
	Other European	2 (3%)	-	
	Latin American/Hispanic	1 (1%)	-	
Deprivation quintiles[‡]	1 (least deprived)	6 (8%)	6 (9%)	0.50
	2	8 (11%)	14 (21%)	
	3	19 (25%)	14 (21%)	
	4	22 (29%)	15 (22%)	
	5 (most deprived)	20 (27%)	18 (27%)	

BMI SDS, body mass index standard deviation score.

Age and BMI SDS data are means ± standard deviations; remaining data are n (%).

[†]Age and BMI data at point of referral.

*Referral height and weight not available for one child.

[§]Prioritised ethnic group.

[‡]Quintiles of household deprivation based on the NZ Deprivation Index 2013.⁶

addition, participation for children from the most deprived quintile of households remained relatively high at 29% and 25% at six and 12 months, respectively (vs 15% background population rate).⁷ Despite the Raising Healthy Kids target being an initiative driven by the Ministry of Health, reporting of referral outcomes (including uptake of weight management support) has been largely overlooked in this process, making it difficult to interpret a 52% uptake into the Whānau Pakari preschool programme. More than half of preschoolers referred engaged with the support service available, receiving a comprehensive assessment focused on addressing weight-related comorbidities and screening of wider aspects of wellbeing. However, a substantial proportion of families declined to engage after the B4SC referral. Preliminary results from an evaluation of South Island children identified at the B4SC with obesity between 2016 and 2017 suggested low uptake of community interventions, yet this was not quantified.⁸ Overall, these findings are notable, given recommendations relating to early intervention, and the prevalence of weight-related comorbidities identified in older New Zealand children with obesity.^{9,10} To maximise uptake of family-based interventions for this age group, it is essential to understand the reasons why caregivers decline weight-related support for their preschoolers. Focus groups are underway to explore caregivers' views relating to the referral process and uptake into such programmes.

Uptake of the Whānau Pakari preschool programme for Māori was comparable to that of NZ European children, mirroring previous results.⁴ However, in contrast to the Whānau Pakari RCT that found a lower rate of continued participation among Māori, participation at six and 12 months remained similar for both groups. This indicates that Māori preschoolers in Taranaki are receiving relatively equitable access to

weight-related assessments, as well as investigation of weight-related comorbidities once on the programme. This is important given the disproportionate prevalence of obesity for Māori children, and the population demographics for children aged under five years in the region, with 83% identifying as European and 33% as Māori.¹¹

While no change in BMI SDS was observed overall at six or 12 months from baseline, these findings are difficult to interpret given the small sample size, high entry BMI SDS, and loss of those who self-discharged reporting to have made healthy lifestyle changes. Importantly, the lack of an effect was not surprising due to the programme's focus on achieving persistent healthy lifestyle change rather than weight reduction per se. Given this approach, the primacy of BMI SDS as the key outcome measure of this audit may be questioned. However, this raises the tension that exists for intervention programmes when navigating high-level drivers for action against obesity that differ to the drivers at a community level. Nevertheless, it cannot be ignored that a reduction in BMI SDS is still key to a reduction in weight-related comorbidities over time for children affected by obesity. Additionally, international population data show that BMI SDS increases between four and five years of age in those identified with overweight or obesity.¹² While this is not an ideal counterfactual for this cohort, the lack of an overall increase in BMI SDS in this cohort may be more encouraging than results imply.

In conclusion, the Whānau Pakari preschool programme provided an appropriate assessment *and* intervention solution for the Raising Healthy Kids target, embedded within a pre-existing model addressing obesity across the paediatric lifecourse. Understanding ways to enhance programme uptake from the referral and improvements in BMI SDS are areas of further research.

Competing interests:

Nil.

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