

# The importance of rurality data in understanding access to healthcare services for childhood obesity

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**O**besity rates in Aotearoa/New Zealand (henceforth referred to as New Zealand) are characterised by marked inequalities across both ethnicity and socioeconomic status. Approximately 17% of Māori children and 30% of Pacific children are affected by obesity, compared with 10% of New Zealand European/Other children.<sup>1</sup> The risk of obesity is also two times higher for children living in the most versus the least deprived areas of New Zealand.<sup>1</sup> Given the high risk of weight-related comorbidities,<sup>2</sup> these inequities are alarming, and it is important that government and obesity-related services work to address this to improve access across the population.

Concerns about the ability of rurality statistics in New Zealand to accurately identify disparities have previously been highlighted by Fearnley, Lawrenson and Nixon (2016).<sup>3</sup> Very little data are collected on urban/rural differences as they relate to obesity in New Zealand. Data that have been collected have not demonstrated the same inequalities present in other similar countries.<sup>3</sup> In developed countries where data exist, the frequency of obesity and related comorbidities is higher in rural populations.<sup>4</sup> This is not only due to high deprivation and lower levels of education that characterise many rural areas, but also due to poor access to adequate and acceptable healthcare in rural areas.<sup>5</sup> Given this pattern in similar developed countries, as well as evidence of rurality disparities across other health and access indicators in New Zealand,<sup>6,7</sup> it is reasonable to hypothesise that inequities in rurality relating to obesity might also exist in New Zealand. We

sought to determine if urban/rural disparities existed in our cohort of children and adolescents with obesity.

Whānau Pakari is a multi-disciplinary, family-centred obesity assessment and intervention programme for children/youth based in Taranaki, a semi-rural region of New Zealand where approximately 26% children aged 5–15 years live in rural areas (compared with 15% in New Zealand overall).<sup>1,8</sup> The results of the randomised clinical trial, comparing an assessment-and-weekly-sessions model (intervention) with an assessment-and-advice model (control), have been previously reported, and showed improvements across both the intervention and control in body-mass index standard deviation score (BMI SDS), cardiovascular fitness and health-related quality of life at 12 months.<sup>9</sup> Whānau Pakari increased reach and initial engagement with Māori and New Zealand European (NZE) families, each comprising 47% and 43% of trial participants respectively, and with 28% of participants from the most deprived household quintile,<sup>9</sup> demonstrating improved access for these groups.

This secondary analysis assessed inequities by rurality in Whānau Pakari, in order to improve access for all. Analysis was comprised of n=199 participants who were randomised to either the high-intensity intervention (n=100) or low-intensity control arm (n=99) after exclusions.<sup>9</sup> Rurality was classified according to 2006 meshblocks using the Statistics New Zealand Urban/Rural Profile: Geographic Concorance file,<sup>10</sup> and was grouped into two categories: urban (including main urban

**Table 1:** Demographics of participants in the Whanau Pakari randomised clinical trial, according to rurality (prioritised ethnicity).

	Urban	Rural	p-value
<b>N</b>	160	39	
<b>Ethnicity n (%)</b>			
NZE	59 (37)	26 (67)	0.002
Māori	82 (51)	12 (31)	
Other	19 (12)	1 (2)	
<b>Sex n (%)</b>			
Male	75 (47)	18 (46)	0.94
Female	85 (53)	21 (54)	
<b>Age (years) mean ± SD (range)</b>	10.9±3.1 [7.8–14.0]	9.9±3.5 [6.4–13.4]	0.14
<b>NZDep2006 decile<sup>11</sup> median (IQR)</b>	7 (4.0)	5 (3.0)	0.001

SD standard deviation; IQR interquartile range.

area, satellite urban area, and independent urban area) and rural (including rural area with high urban influence, rural area with moderate urban influence, rural area with low urban influence and highly rural/remote area), due to the small sample size of some of the categories.<sup>10</sup>

Overall, 80.4% (n=160) of the cohort lived in households in urban areas with 19.6% (n=39) in rural areas (Table 1).

There were no differences at baseline assessment between rural and urban participants for primary or secondary outcomes, and for those with 12-month assessments (n=138), there was no difference between urban (n=111) and rural (n=27) participants in BMI SDS at 12 months (p=0.91) or in the change in BMI SDS from baseline (p=0.98). In addition, there were no differences between urban and rural participants across a range of secondary outcomes. There was also no difference between urban (n=74) and rural (n=22) participants in the proportion who attended ≥70% (n=96) of the intense intervention sessions, which would suggest similar levels of access between urban and rural groups.

Initially, the encouraging lack of difference between participants living in urban versus rural households at both baseline and 12-months might suggest that either inequities in obesity rates by rurality do not exist, or that this community-based intervention

programme is equally effective for urban versus rural dwelling children. However, this contrasts with the published literature, which identifies that typically rural children have higher rates of overweight and obesity than urban children.<sup>12</sup> What is more likely is that the lack of difference is an artefact from a lack of reliable rural health data, as argued by Fearnley and colleagues (2016), who highlight that Statistics NZ's current rurality definition does not account for health service access.<sup>3</sup> Moreover, Statistics NZ regards their rurality classification as 'experimental', only releases selected data by rurality, and has not released rurality data since 2006, which limits further analysis.<sup>10</sup>

There was a comparatively low proportion of rural Māori and high proportion of rural NZE children in this cohort. Only 13% of Māori participants resided in rural areas, whereas 18% of Māori in Taranaki live in rural areas.<sup>10</sup> This may suggest that inequities in rural Māori in relation to obesity do not exist; an alternative and more likely explanation is that there are societal and social issues that affect rural Māori that act as a barrier to engagement with the service in the first place—yet this remains difficult to address without accurate, reliable data which captures the complexities of accessing healthcare in rural New Zealand.

We recommend that comprehensive data on rurality is reported alongside more common demographic data such as

ethnicity, age, sex and appropriate deprivation measures. It is important that the current definition and classification of rurality in New Zealand is reviewed and updated, as per Fearnley and colleagues' suggestion, in order to more reliably and confidently analyse any differences by rurality, and better serve the population. Routinely collecting data on rurality is

necessary in order to identify and address inequities, and improve accessibility to healthcare services, especially for Indigenous population groups. Without accurate data, we lack a full understanding of the state of rural health in New Zealand, and we miss the opportunity to further address potential inequities in childhood obesity.

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Nil.

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