

# Ngātiwai Whakapakari Tinana: strengthening bodies through a Kaupapa Māori fitness and exercise programme

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## ABSTRACT

**INTRODUCTION:** Activity based weight loss programmes may result in modest reductions in weight. Despite the small successes demonstrated by these interventions, there are few examples that specifically address the disparity of obesity for Māori compared to non-Māori.

**AIM:** This research highlights the results of a Kaupapa Māori fitness and exercise programme that aimed to assist mainly Māori adults, to lose weight. The programme was designed to support participants by using Māori cultural values.

**METHODS:** A Muay Thai kickboxing exercise programme was developed with community involvement. Kaupapa Māori principles underpinned the programme, such as whanaungatanga and tino rangatiratanga. Ninety-three participants were followed for at least 3 months. Participants' blood pressure, weight, body mass index, mental wellbeing scores, and waist and hip circumferences were collected at regular intervals. Multiple linear models were used to calculate estimated changes per 100 days of the programme.

**RESULTS:** The mean duration of participation was 214 days. The estimated weight loss per participant per 100 days was 5.2 kg. Statistically significant improvements were noted in blood pressure, waist and hip circumference, systolic blood pressure and mental wellbeing.

**DISCUSSION:** The improvements in physical and mental wellbeing are thought to have stemmed, in part, from the use of Kaupapa Māori principles. The success of this programme strengthens the argument that programmes aiming to address the precursors of chronic disease need to be designed for Māori by Māori in order to reduce health inequities.

**KEYWORDS:** Obesity; Weight loss; Kaupapa Māori

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## Introduction

### Weight loss programmes

Weight loss programmes generally encourage individuals to increase their activity and decrease their caloric intake through educational advice and, occasionally, group support.<sup>1</sup> Structured programmes may lead to a 2–4% greater weight loss than no intervention.<sup>1</sup> Primary care approaches to obesity management include

prescribing weight loss medication,<sup>2</sup> referral to activity programmes<sup>3,4</sup> and brief intervention counselling. There is moderate evidence to suggest that these approaches may lead to weight loss. Weight loss medication, for example, can lead to a 3-kg reduction in weight that is maintained over the course of a year.<sup>2</sup> Referral to activity programmes by general practitioners (GPs) may result in sustained increases in energy expenditure and increases in quality of life.<sup>3</sup>

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## WHAT GAP THIS FILLS

**What is already known:** Fitness and exercise programmes may lead to weight loss for participants. Programmes that incorporate Māori values and Māori knowledge systems are more likely to prove more acceptable to Māori participants.

**What this study adds:** This study demonstrates that substantial weight loss for Māori participants can be achieved by programmes that are underpinned by Kaupapa Māori principles. In addition, the study provides an exemplar of outcomes possible from Whānau ora funding.

Brief intervention counselling by GPs can lead to weight loss, although the reduction in weight is small and is less than where more intensive support is given.<sup>5</sup> Despite the small successes demonstrated by these interventions, none of the approaches specifically address the disparity of obesity for Māori compared to non-Māori.

Māori have a high burden of obesity compared to non-Māori.<sup>6</sup> This health inequity is likely due to a multitude of factors. Some of the more 'distal' determinants of health inequity include socioeconomic deprivation,<sup>7,8</sup> structural and systematic barriers to health care,<sup>9</sup> and colonisation. Trauma due to colonisation is an ongoing process that has effect on health through psychological, biological and inter-relationship mechanisms.<sup>10</sup> Reducing the burden of obesity and associated health issues for Māori, therefore, requires a multi-pronged approach that addresses barriers facing Māori in tackling what is inappropriately labelled a 'lifestyle' disease.

A medicalised focus on behaviour change tends to introduce barriers that play into disengagement of Māori from long-term condition (LTC) management. These include transportation barriers, the need to care for children at home, disempowerment,<sup>11</sup> discrimination<sup>12</sup> and socioeconomic disadvantage.<sup>13</sup> Some programmes, while not specifically focused on obesity, have attempted to mitigate these barriers. For example, Hotu *et al.*<sup>14</sup> describe a medicalised programme providing intensive individualised LTC management with ethnically 'similar' health-care assistants. Despite an initial improvement in several health indicators, long-term follow up failed

to demonstrate meaningful improvement in health.<sup>15</sup> While medical approaches to managing LTC are critical, Labonté and Laverack<sup>16</sup> argue that sustainable long-term changes to people's health and their health behaviour are more likely to occur through community activation and empowerment than a 'top-down' approach. Some examples of recent successful community-led, Māori-focused LTC programmes include the Ngāti and Healthy Prevent Diabetes Project,<sup>17</sup> Project REPLACE<sup>18</sup> and Kaupapa Māori exercise and lifestyle programmes.<sup>19,20</sup> All programmes were underpinned by a Māori world view. In addition, participants in these programmes were encouraged to modify their eating habits and increase their exercise through social engagement. Group-based or social activity programmes tend to be very acceptable to Māori.<sup>18</sup>

Social activity may have greater benefits than just supporting and encouraging fitness and exercise, and subsequent weight loss. Social activity has been linked to improvements in quality-of-life scores for Māori.<sup>21</sup> One explanation for this relates to the concept of whanaungatanga, in which participants make reciprocal relationships with each other that leads to the formation of a whānau.<sup>18</sup> The process of whanaungatanga creates accountability and may result in participants persisting with activity because they have the support of others and a mutual commitment to support these others. Grace<sup>20</sup> demonstrated that whanaungatanga and manaakitanga (caring and support), inherent in a group-based fitness programme, was consistent with Māori tikanga (ways of doing things) and participants' values. The concepts of social activity and whanaungatanga underpin the programme presented in this paper – a Kaupapa Māori fitness and weight loss programme delivered by a Tai Tokerau-based iwi health provider, Ki A Ora Ngātiwai.

## Rationale for the programme

The genesis of this programme started when a group of Māori women approached Ki A Ora Ngātiwai and asked for assistance in losing weight. In response, Ki A Ora Ngātiwai used whānau ora funding, via Te Pou Matakana, to deliver a fitness and exercise programme. This programme consisted of a 1-h workout, at least

three times per week, using the principles of Muay Thai kickboxing, a non-contact martial arts-based workout that involves both high repetition resistance training and low-intensity long duration aerobic exercise.<sup>22</sup> Resistance exercise can result in weight loss, reduction in adiposity, improved glycaemic control<sup>23</sup> and reduction in insulin resistance.<sup>24</sup> For adults with type 2 diabetes, resistance training may result in greater improvements in glycaemic control and lipid profile than aerobic exercise, perhaps mediated through an increase in glucose transporter proteins in skeletal muscle.<sup>25</sup> Workouts involving non-contact martial arts may result in higher consumption of calories compared to aerobic-only workouts.<sup>23</sup> However, the defining features of this programme were that it was community-led, focused on whānau, developed supportive environments rather than focusing on individual behaviours, and was embedded in a Kaupapa Māori paradigm.

### Kaupapa Māori Theory

Kaupapa Māori refers to something that is for Māori, by Māori and underpinned by a Māori world view. The Kaupapa Māori principles demonstrated in this study occurred at three levels. The first level involved organisational principles. The second level involved principles operating at the programme implementation level. The third level involved the principles operating in the study analysis.

Other authors have suggested that Kaupapa Māori operationalises the principle of tino rangatiratanga or self determination<sup>26–32</sup> that underlies Article Two of Te Tiriti O Waitangi, which recognises the right of iwi to organise as iwi and control the resources that they own.<sup>33</sup> Ki A Ora Ngātiwai is an iwi-mandated primary health-care organisation. In this context, tino rangatiratanga meant that ownership, development and control of this programme rested with Ki A Ora Ngātiwai.

Matauranga Māori, or Māori knowledge and Māori ways of knowing, guided both staff and clients in implementation of the programme. Matauranga Māori encapsulates Māori theory on the world and is considered a natural or

‘normal’ way of being.<sup>34</sup> Kaupapa Māori is not an individualistic-focused paradigm – it emphasises whānau.<sup>27,35</sup> Whānau involvement made the implementation of this programme a collective responsibility. Whānau does not necessarily mean a literal family but instead, as in this programme, may mean a metaphorical family developed through the process of whakawhanaungatanga. The underlying intent is that the benefits of the programme accrue to the collective whānau rather than individuals.<sup>27</sup>

The final level of Kaupapa Māori present in this study is the critical analysis approach taken by the authors.<sup>26</sup> The study by Smith<sup>35</sup> suggested that Kaupapa Māori needs to address power differentials and that this can be achieved in a way that de-centres Western world views by articulating a positive and proactive view of Māori strengths.

### Methods

The programme consisted of a series of workouts (as previously described). The workouts were supervised by a qualified fitness instructor and a health promoter. An active Facebook page connected participants when not engaged in gym work. One hundred participants were enrolled into the Ki A Ora Ngātiwai fitness and exercise programme by word-of-mouth from community members or by referral from the Ki A Ora Ngātiwai clinical team. Participants were not involved in any other exercise or gym programmes. Data were collected from participants 3 monthly by the nursing staff of Ki A Ora Ngātiwai. These data included weight, height, blood pressure (BP), waist and hip circumference and a wellbeing survey – the Warwick-Edinburgh Mental Wellbeing Scale (WEMWS). This wellbeing scale is a validated and reliable measure of positive aspects of mental health.<sup>36</sup> There are 14 items in the scale with a maximum score of 70, indicating excellent mental wellbeing, and a minimum score of 14. The population mean is estimated to be ~51.<sup>37</sup> A change of three units indicates a minimal clinical important difference for individuals.<sup>38</sup>

Data were analysed in Stata 11 (StataCorp, College Station, TX, USA). Descriptive statistics were calculated for each measurement category. Multiple linear models (using the xtmixed

command in Stata) were developed to analyse the repeated-measures data with adjustments for age and gender. Predicted changes per 100 days in the programme were calculated.

This study is considered a minimal-risk audit under the New Zealand Health and Disability Ethics Committee guidelines and is therefore exempt from ethics approval.

## Results

Most participants (93%; 93/100) continued with the programme for at least 3 months, with a mean duration of participation of 214 days. Of the 93 participants, 74 were female, 89 were Māori and 83 were aged 20–49 years. Mean

weight at the start of the programme was 103 kg (range up to 210 kg), mean body mass index (BMI) was 37 kg m<sup>-2</sup> (range up to 71), mean systolic BP was 134 mmHg (range up to 180) and mean WEMWS wellbeing score was 44 (interquartile range 25–67). Change in weight from baseline for each participant is displayed in Figure 1. Predicted changes per 100 days in the programme, based on multiple linear models, are displayed in Table 1.

## Discussion

The results of this Kaupapa Māori fitness and exercise programme demonstrate substantial weight loss. The weight loss achieved is greater than the average weight loss seen with individual dietary education programmes or medication, suggesting that the social aspects of this programme or the form of exercise undertaken was the key difference. As seen with other studies on weight loss, decreases in BP also occurred, despite the mean BP not being excessively high.

A weakness of this research is that metabolic markers, such as HbA1c and lipid levels, were not collected. Primarily, this was because the programme was not designed as a research project and the participants had few underlying medical conditions that warranted regular laboratory measurements.

A significant increase in mental wellbeing was noted in the programme. The baseline WEMWS wellbeing score was 44 (below the estimated population mean of 51). While the WEMWS is a validated measure, it has not, to our knowledge, been studied in New Zealand before. Therefore, the significance of a baseline of 44 is unknown. This baseline increased to a predicted figure of 50.5 after 100 days of the programme. The increase in mental wellbeing is likely due to the social and cultural aspects of the programme, although the effects of weight loss and the emotional lift from undertaking exercise cannot be excluded.

This programme was developed with Whānau Ora funding. Whānau Ora was introduced nationally in 2010.<sup>39</sup> Despite a large number of initiatives, there are few, if any, examples of Whānau Ora in the scientific literature. This is,

Figure 1. Change in weight from baseline per participant

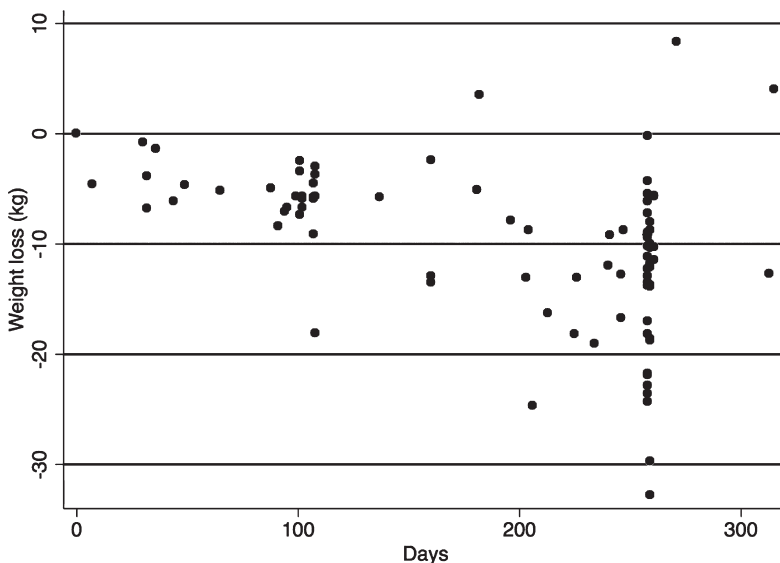


Table 1. Estimated change in measures of the Kaupapa Māori fitness and weight loss programme delivered by Ki A Ora Ngātiwai

Measure	Estimated change per 100 days*
Weight	−5.2 kg
Body mass index	−1.8 kg m <sup>-2</sup>
Systolic blood pressure	−3.4 mmHg
Waist circumference	−4.3 cm
Hip circumference	−4.0 cm
Warwick–Edinburgh Mental Wellbeing Scale	6.5 points

\* All changes are statistically significant at  $P < 0.001$ .

therefore, one of the few studies demonstrating the outcomes possible through Whānau Ora.

Participants recorded video interviews as a component of the programme, but due to the retrospective audit nature of this study and the lack of pre-existing consent, these interviews were not analysed nor presented in this paper. A qualitative study may have helped identify aspects of the programme that led to its success. Anecdotal evidence, based on conversations with participants and observations from staff, indicated that whakawhanaungatanga and manaakitanga acted as powerful motivating factors in retaining participants in the programme. Staff observed participants encouraging each other outside of the gym by texting each other to ensure that people would come along to a gym session, as well as giving each other dietary advice when they bumped into each other in the supermarket. Some participants included their entire whānau - grandparents, parents and children (the latter attended a separate programme for tamariki). Participants also remarked to staff that they did not feel judged for the shape of their bodies, unlike contemporary gyms. Warbrick *et al.*<sup>40</sup> noted how Māori men valued camaraderie, as well as a non-judgmental gym culture.

The whanau-centric and generational aspect of the programme emphasised interdependence. The concept of interdependence is consistent with the assertion of Henry and Pene<sup>41</sup> whereby Kaupapa Māori sits outside paradigmatic categorisations and that it is the underlying assumptions and processes, such as interdependence, that determine Kaupapa Māori. Similarly, Warbrick *et al.*<sup>42</sup> argues that iwi-centric weight loss initiatives that focus on collectivity and whānau, rather than individuals, are examples of a Māori epistemology. In this positioning, the Muay Thai component of the programme, although drawing from a non-Māori cultural tradition, is simply a vehicle of exercise discipline and it is the intrinsic processes and relationships of the programme that reflect Kaupapa Māori principles and encourage participation and adherence.

While weight loss programmes through exercise are not unique or novel, it is the Kaupapa Māori framework that underpins this programme and

makes it unique from a non-Māori perspective. From a Māori perspective, there is nothing novel about whakawhanaungatanga. This is a normal part of being Māori and lends support to the argument that programmes aimed to address the precursors of chronic disease need to be designed for Māori by Māori if they are to reduce health inequities.

## References

1. Gudzone KA, Doshi RS, Mehta AK, et al. Efficacy of commercial weight-loss programs: an updated systematic review. *Ann Intern Med.* 2015;162(7):501–12. doi:10.7326/M14-2238
2. LeBlanc ES, O'Connor E, Whitlock EP, et al. Effectiveness of primary care-relevant treatments for obesity in adults: a systematic evidence review for the U.S. Preventive Services Task Force. *Ann Intern Med.* 2011;155(7):434–47. doi:10.7326/0003-4819-155-7-201110040-00006
3. Elley CR, Kerse N, Arroll B, Robinson E. Effectiveness of counselling patients on physical activity in general practice: cluster randomised controlled trial. *BMJ.* 2003;326(7393):793. doi:10.1136/bmj.326.7393.793
4. Swinburn BA, Walter LG, Arroll B, et al. The green prescription study: a randomized controlled trial of written exercise advice provided by general practitioners. *Am J Public Health.* 1998;88(2):288–91. doi:10.2105/AJPH.88.2.288
5. Appel LJ, Clark JM, Yeh HC, et al. Comparative effectiveness of weight-loss interventions in clinical practice. *N Engl J Med.* 2011;365(21):1959–68. doi:10.1056/NEJ-Moa1108660
6. Ministry of Health. Annual update of key results 2014/15. New Zealand health survey. Wellington: Ministry of Health; 2015.
7. Marrone S. Understanding barriers to health care: a review of disparities in health care services among indigenous populations. *Int J Circumpolar Health.* 2007;66(3):188–98. doi:10.3402/ijch.v66i3.18254
8. Jatrana S, Crampton P. Primary health care in New Zealand: who has access? *Health Policy.* 2009;93(1):1–10. doi:10.1016/j.healthpol.2009.05.006
9. Barwick H. Improving Access to Primary Care for Maori and Pacific Peoples. Wellington: Health Funding Authority; 2000.
10. Reid P, Robson B. Understanding Health Inequities. In: Robson B, Harris R, editors. *Hauora: Maori Standards of Health IV. A Study of the Years 2000-2005.* Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare; 2007. p. 3–10.
11. Porter T, Le Lièvre C, Lawrenson R. Why don't patients with diagnosed diabetes attend a free 'Get Checked' annual review? *J Prim Health Care.* 2009;1(3):222–5.
12. Jansen P, Bacal K, Crengle S. He Ritenga Whakaaro: Māori Experiences of Health Services. Auckland: Mauri Ora Associates; 2008.
13. Baxter J. Barriers to Health Care for Maori with Known Diabetes. Wellington: New Zealand National Working Group on Diabetes; 2002
14. Hotu C, Bagg W, Collins J, et al. A community-based model of care improves blood pressure control and delays progression of proteinuria, left ventricular hypertrophy and diastolic dysfunction in Maori and Pacific patients with type 2 diabetes and chronic kidney disease: a



- randomized controlled trial. *Nephrol Dial Transplant*. 2010;25(10):3260–6. doi:10.1093/ndt/gfq168
15. Tan J, Manley P, Gamble G, et al. Long-term effectiveness of a community-based model of care in Māori and Pacific patients with type 2 diabetes and chronic kidney disease: a 4-year follow up of the DElay Future End Stage Nephropathy due to Diabetes (DEFEND) study. *Intern Med J*. 2015;45(8):843–9. doi:10.1111/imj.12788
  16. Labonté R, Laverack G. *Health Promotion in Action: From Local to Global Empowerment*. Basingstoke, UK: Palgrave MacMillan; 2008.
  17. Tipene-Leach DC, Coppell KJ, Abel S, et al. Ngāti and healthy: translating diabetes prevention evidence into community action. *Ethn Health*. 2013;18(4):402–14. doi:10.1080/13557858.2012.754406
  18. Hamerton H, Mercer C, Riini D, et al. Evaluating Maori community initiatives to promote healthy eating, healthy action. *Health Promot Int*. 2014;29(1):60–9. doi:10.1093/heapro/das048
  19. Rolleston AK, Doughty R, Poppe K. Integration of kaupapa Māori concepts in health research: a way forward for Māori cardiovascular health? *J Prim Health Care*. 2016;8(1):60–6. doi:10.1071/HC15034
  20. Grace N. *The Hauora Homies: An Evaluation of a Kaupapa Māori Weight Loss and Lifestyle Change Model*. MA thesis. Wellington: Victoria University; 2016.
  21. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. *J Phys Act Health*. 2013;10:699–707. doi:10.1123/jpah.10.5.699
  22. Stoner L, Shultz S, Lambrick D, et al. The combating obesity in Māori and Pasifika adolescent school-children study: COMPASS methodology and study protocol. *Int J Prev Med*. 2013;4(5):565–79.
  23. Bellinger B, St Clair Gibson A, Oelofse A, et al. Energy expenditure of a noncontact boxing training session compared with submaximal treadmill running. *Med Sci Sports Exerc*. 1997;29(12):1653–6. doi:10.1097/00005768-199712000-00016
  24. Lee S, Bacha F, Hannon T, et al. Effects of aerobic versus resistance exercise without caloric restriction on abdominal fat, intrahepatic lipid, and insulin sensitivity in obese adolescent boys: a randomized, controlled trial. *Diabetes*. 2012;61(11):2787–95. doi:10.2337/db12-0214
  25. Cauza E, Hanusch-Enserer U, Strasser B, et al. The relative benefits of endurance and strength training on the metabolic factors and muscle function of people with type 2 diabetes mellitus. *Arch Phys Med Rehabil*. 2005;86(8):1527–33. doi:10.1016/j.apmr.2005.01.007
  26. Smith GH, Hoskins TK, Jones A. Interview: Kaupapa Maori: the dangers of domestication. *N Z J Educ Stud*. 2012;47(2):10.
  27. Bishop R. Freeing ourselves from neo-colonial domination in research: a Maori approach to creating knowledge. *Int J Qual Stud Educ*. 1998;11(2):199–219. doi:10.1080/095183998236674
  28. Walker S, Eketone A, Gibbs A. An exploration of kaupapa Maori research, its principles, processes and applications. *Int J Soc Res Methodol*. 2006;9(4):331–44. doi:10.1080/13645570600916049
  29. Naepi S. Navigating the currents of Kaupapa Māori and Pan-Pacific research methodologies in Aotearoa New Zealand. *MAI Journal*. 2015;4(1):71–84.
  30. Barnes HM. *Kaupapa maori: explaining the ordinary*. *Pac Health Dialog*. 2000;7(1):13–6.
  31. Smith L. *Decolonizing methodologies: research and indigenous peoples*. London: Zed Books; 2012.
  32. Pihama L. Kaupapa Māori theory: transforming theory in Aotearoa. *He Pukenga Korero*. 2010;9(2):5–14.
  33. Stokes E. Maori geography or geography of Maoris. *N Z Geograph*. 1987;43:118–23. doi:10.1111/j.1745-7939.1987.tb01111.x
  34. Royal T. Politics and knowledge: Kaupapa Maori and matauranga Maori. *N Z J Educ Stud*. 2012;47(2):30.
  35. Smith G. Kaupapa Maori Theory: Theorizing Indigenous Transformation of Education & Schooling. In *Proceedings Kaupapa Maori Symposium - NZARE/AARE Joint Conference*, Auckland; 2003.
  36. Tennant R, Hiller L, Fishwick R, et al. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): development and UK validation. *Health Qual Life Outcomes*. 2007;5:63. doi:10.1186/1477-7525-5-63
  37. Stewart-Brown S, Janmohamed K. *Warwick-Edinburgh mental well-being scale (WEMWBS) user guide*. Parkinson J, editor. Warwick, Scotland: University of Warwick; 2008.
  38. Maheswaran H, Weich S, Powell J, Stewart-Brown S. Evaluating the responsiveness of the Warwick Edinburgh Mental Well-Being Scale (WEMWBS): group and individual level analysis. *Health Qual Life Outcomes*. 2012;10:156. doi:10.1186/1477-7525-10-156
  39. Office of the Auditor General. *Whanau Ora: The first four years*. Wellington: Office of the Auditor General; 2015.
  40. Warbrick I, Wilson D, Boulton A. Provider, father, and bro – Sedentary Māori men and their thoughts on physical activity. *Int J Equity Health*. 2016;15:22. doi:10.1186/s12939-016-0313-0
  41. Henry E, Pene H. Kaupapa Maori: locating Indigenous ontology, epistemology and methodology in the academy. *Organization*. 2001;8(2):234–42. doi:10.1177/1350508401082009
  42. Warbrick I, Dickson A, Prince R, Heke I. The biopolitics of Māori biomass: towards a new epistemology for Māori health in Aotearoa/New Zealand. *Crit Public Health*. 2016;26(4):394–404. doi:10.1080/09581596.2015.1096013

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**COMPETING INTERESTS**

None.