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Widening participation of Māori and Pasifika students in health careers: evaluation of two health science academies

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Abstract

Objective. The aim of the present study was to evaluate the short-term outcomes of two health science academies established by a district health board in South Auckland, New Zealand, to create a health workforce pipeline for local Māori and Pasifika students.

Methods. A mixed-methods approach was used, involving background discussions with key informants to generate an initial logic model of how the academies work, followed by secondary analysis of students' records relating to retention and academic achievement, a survey of senior academy students' interest in particular health careers and face-to-face interviews and focus groups with students, families and teachers.

Results. Academy students are collectively achieving better academic results than their contemporaries, although selection decisions are likely to contribute to these results. Academies are retaining students, with over 70% of students transitioning from Year 11 to Years 12 and 13. Senior students are expressing long-term ambitions to work in the health sector.

Conclusions. Health science academies show promise as an innovative approach to supporting Māori and Pasifika students prepare for a career in the health professions. Evaluating the long-term outcomes of the academies is required to determine their contribution to addressing inequities in the local health workforce.

What is known about the topic? Despite progress in health workforce participation for underrepresented indigenous and ethnic minority groups in New Zealand, significant disparities persist. Within this context, a workforce development pipeline that targets preparation of secondary school students is recommended to address identified barriers in the pursuit of health careers.

What does this paper add? We provide an evaluation of an innovative district health board initiative supporting high school students that is designed to ensure their future workforce is responsive to the needs of the local community.

What are the implications for practitioners? The findings have implications for decision makers in health workforce planning regarding the benefits of investing at an early stage of the workforce development pipeline in order to build an equitable and diverse health professions workforce.

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Introduction

Efforts to increase participation of underrepresented groups in the health professions are an international priority, not least because enhanced diversity of the health professional workforce is associated with improved health outcomes for underserved populations.[1–4] A common approach for addressing inequities

in the health professions involves a 'pipeline', which extends from the school sector to tertiary providers and health sector employers, and involves early exposure activities for school students, 'bridging programs' to facilitate entry into tertiary courses, access to financial and pastoral or academic support and assistance with ongoing postgraduate and professional training.[1,5–9]

Operating at the level of early exposure activities within this pipeline, career academies have emerged as one of the most prevalent models used to prepare students for tertiary study and entry into health careers. In the US, for example, a 2007 review noted that there were approximately 2000 high school career academies in operation, of which 20% were health related.[10] Defining features of a career academy include a small learning community situated within a high school, a curriculum that is career focused while also designed to meet tertiary entry requirements and a focus on establishing partnerships with community groups, including employers and tertiary organisations.[11] Although a substantial body of research points to the efficacy of the career academy model within the American school system,[10,12–14] it is less clear how this model would translate to a New Zealand (NZ) context and, in particular, what features of an academy model would support underrepresented Māori and Pasifika students in their preparation for a career in the health professions.

With these questions in mind, two health science academies were established in 2011 in South Auckland by Counties Manukau District Health Board (CMDHB) in partnership with the philanthropic Tindall Foundation with the aim of building a health workforce that better represents the diversity of the local population. CMDHB plans and provides health services for an estimated (in 2016) population of 534 750 people (11% of NZ's population), with high numbers of Māori, Pacific and Asian peoples, a high proportion of the population living in areas of high socioeconomic deprivation and high levels of inequality in health and social outcomes.[15] More specifically, health profiles for Māori and Pacific peoples in Counties Manukau reveal a picture of poorer health status compared with non-Māori and non-Pacific peoples against a range of key indicators, including avoidable mortality and hospitalisation rates.[16,17]

In terms of its workforce, a 2011 report revealed that 6% of all CMDHB staff and 6% of its clinical staff identified as Māori, and 10% of all CMDHB staff and 8% of clinical staff identified as Pasifika.[18] These figures contrasted with the population profile of Māori and Pasifika in Counties Manukau of 17% and 23% respectively.[18] Given these disparities, particularly the significant underrepresentation of Māori and Pasifika in clinical staff groups, CMDHB committed to doubling the Māori and Pasifika health professional workforce in Counties Manukau over 10 years.[19] Under the CMDHB banner of 'Grow Our Own Workforce', the Health Science Academies were formed to increase the pipeline of local Māori and Pasifika students into health careers.

The site schools were selected after an expression of interest request was sent to local schools in South Auckland. Two schools were selected using criteria adapted from the Ministry of Education Trades Academy selection process.[20,21] By 2013, 127 students were enrolled in academies across the two site schools. The academies are funded on the basis that they are targeted at Māori and Pasifika students. The ethnic composition of the academies tends to reflect ethnicity percentages of the schools involved. For Academy A, the high number of Pasifika students reflects the high percentage in the overall student population (83%), and both academies ended up with higher numbers of females expressing an interest in a health career.

The academy program is designed to support students gaining direct entry into tertiary-level health sciences. In practice, this means a strong emphasis on achieving in the relevant scientific disciplines, which has been highlighted as a critical component of early exposure activities within a pipeline approach.[6] Described as 'an intense academic program', in addition to the early focus on extra science lessons teachers also provide before and after school study, weekend work, work experience and tutoring.

An initial evaluation after the first year of the academies' operations[22] found student retention was high (85%) and students were satisfied with the program, particularly the health sector field trips, the high level of support given by the teachers and the high expectations of their performance.

This paper reports the results of a subsequent evaluation of the two health science academies that focused on two key questions: (1) are the academies meeting their objectives of supporting and encouraging Māori and Pasifika students to study and succeed in science, literacy and numeracy; and (2) how do the academies work to achieve these objectives?

Methods

A series of background discussions with key informants ($n = 9$) were held during March 2013 in order to clarify the assumptions underlying the academies. This pre-evaluation assessment[23] was used to construct an initial model of how the academies work (Fig. 1).

During April 2013, secondary analysis was undertaken of students' records from both schools. This included statistics on academy student retention across Years 11–13 and statistics on National Certificate of Educational Achievement (NCEA) results for academy students compared with data on comparison groups. NCEA is the principal qualification for NZ secondary school students.[24]

For this evaluation, three comparison groups were chosen: (1) a NZ comparison group, comprising students from Decile 1 coeducational schools from all over NZ; (2) an Auckland comparison group, comprising students from Decile 1 coeducational schools from Auckland; and (3) Site School A/Site School B comparison groups, comprising students from the relevant school (including students in the academy).

For each comparison group, results were calculated for Māori females and males, as well as for Pasifika females and males, and the results combined so that they had the same ethnic and gender composition as either Academy A or Academy B.

For the academy students, data were received from their respective schools. All other data was taken from the NZ Qualifications Authority database of secondary school results for a range of qualifications (New Zealand Qualifications Authority, unpubl. data). Results presented are from externally moderated examinations.

It was decided to show not only the NCEA results for the years that the health science academies had been operational, but also the results from 2004, the earliest year that results were available

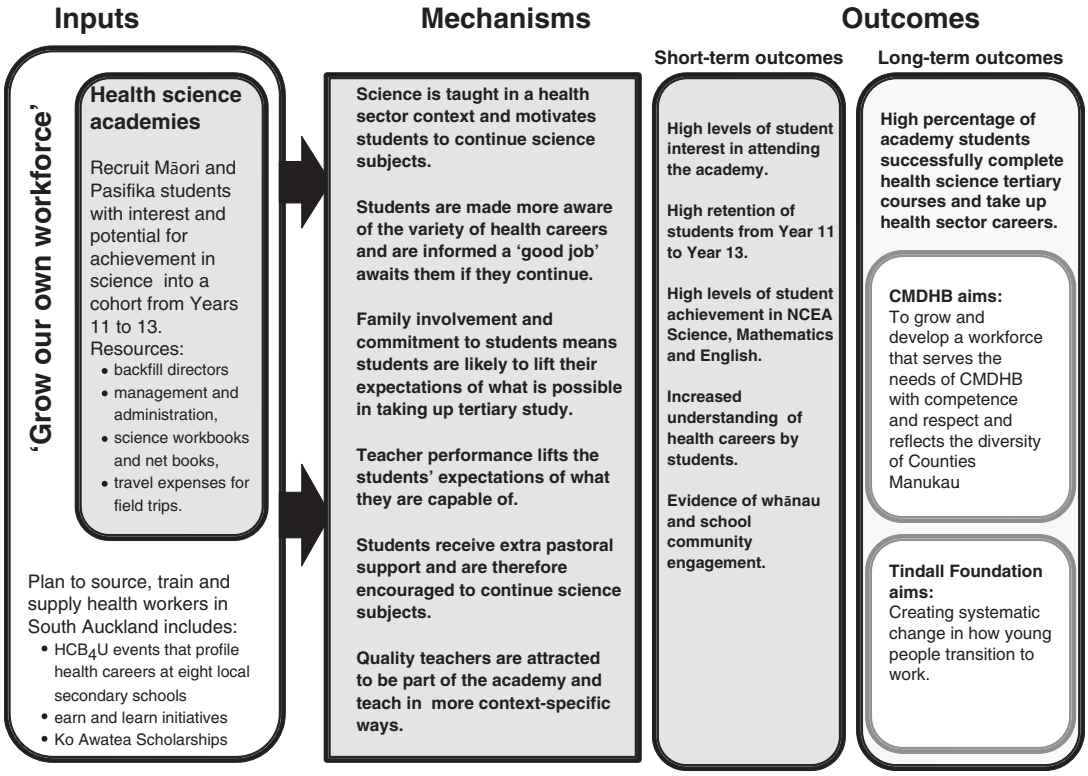

Fig. 1. Initial logic model.

Table 1. Health science academy breakdown showing student numbers, gender and ethnicities in 2013

	Academy A			Academy B		
	Year 11	Year 12	Year 13	Year 11	Year 12	Year 13
Total no. students	25	19	20	29	20	14
Gender						
Male	8	5	4	11	7	2
Female	17	14	16	18	13	12
Ethnicity						
Pasifika	23	18	18	15	13	10
Māori	2	1	2	11	7	3
Non-Māori, non-Pasifika	–	–	–	3	–	1

from the database. This provides an assurance that the years the academies were running were not discrepant years.

In addition, during May 2013, a survey of Year 13 Academy students in both schools was undertaken to identify their interest in particular health careers. Alongside this quantitative information, perspectives were gathered from students and whānau/families using kanohi ki te kanohi and talanoa faafesagai (face-to-face) interviews on how the academies were working to achieve their objectives. Interviews and a survey of teachers were also undertaken. The researchers were present at parent and whānau evenings at both schools and offered attendees the opportunity to be interviewed in person or to attend a small focus group to discuss their perspectives on the academy. Several of these interviews were conducted in Samoan.

Table 1 provides a snapshot of the two academies and Table 2 outlines the scope of the fieldwork.

Results

Retention of academy students

Statistics on academy student retention across Years 11–13 for the period studied reveal that Academy A has maintained over 80% of students in the academy. The first cohort (commencing in 2011) retained 92% of students from Year 11 to Year 12 and 83% of students from Year 12 to Year 13. The second cohort (commencing in 2012) retained 83% of students from Year 11 to Year 12. For Academy B, the first cohort demonstrated retention figures of 70% from Year 11 to Year 12 and 86% from Year 12 to

Table 2. Health science academy summary of qualitative fieldwork (May 2013)

	Year 11 students	Year 12–13 students	Students who had left	Teachers	Parents/whānau[A] of students
Academy A	1 focus group ($n=9$)	2 focus groups ($n=14$)	1 interview	Survey ($n=3$) 1 interview	13 interviews
Academy B	3 focus groups ($n=14$)	4 focus groups ($n=20$)	2 interviews	1 focus group ($n=3$) 1 interview	16 interviews

[A]Whānau refers to extended family.

Year 13. The second cohort retained 70% of students from Year 11 to Year 12. Attrition overall has been a result of students choosing an alternative career path or failing to meet the demands of Level 1 NCEA. Those who stayed through Level 2 continued to Level 3, except for a small number who either changed schools or were looking at other career options.

The overall rates of those staying and moving to senior classes in the Academies compares well with the national retention figures of all those who remain at school to age 17 years in NZ. In 2012, Māori and Pasifika students had 68.9% and 80.8% of students respectively remaining at school to 17 years of age.[25] These national retention figures are not directly comparable to the academies' retention figures because the academies' figures include students who left an academy but stayed in school, yet they do demonstrate the generally higher amount of school engagement being achieved by the academies compared with the mainstream experience.

Achievement of academy students

NCEA Level 1 qualifications

Fig. 2 shows how academy students in each school performed at NCEA Level 1 (relevant for each of the Year 11 cohorts at each school), alongside data on comparison groups. At Site School A in 2011, academy students had a higher success rate in NCEA Level 1 than the comparison students; in 2012 they did even better. The overall NCEA results for all comparison students in Site School A reveal an increase overall, which may be due, in part, to the results of the academy students (their results are included in the overall school results), but also suggest non-academy students have had improved results. For Site School B, the academy students also had higher NCEA results than non-academy students, but have not shown the same overall increase between the years. A more detailed picture that looks at the external results across the three main subjects of NCEA Science, Mathematics and English is provided in Text S1, available as supplementary material to this paper.

NCEA Level 2 qualifications

Because the academies had only had one cohort of students sitting NCEA Level 2 when the evaluation was undertaken, comparison with other groups is limited to results achieved in 2012. Students from both academies performed better than their peers. For Academy A, 86% of enrolled students achieved NCEA Level 2 qualifications, compared with 61% of the Site School A comparison group, 55% of the Auckland comparison group and 55% of the NZ comparison group. For Academy B, 57% of enrolled students achieved NCEA Level 2 qualifications, compared with 51% of the Site School B comparison group, 49% of the Auckland comparison group and 53% of the NZ comparison group.

Health careers

A survey of Year 13 Academy students identified which type of health sector jobs the students were most interested in. Eighty-five per cent of Year 13 Academy students completed the survey and were predominantly Pasifika (Samoan, Cook Island Māori, Niuean) and female.

When asked to identify which health careers were of greatest interest to them (Fig. 3), doctors and nurses featured highly at both academies, along with midwife and health promoter roles at Academy A and radiographers at Academy B.

When they were asked to reflect on 'What is most important to you about the careers you are interested in?', students from both academies emphasised doing something that increases the well being of their local community and seeing an immediate impact as a result of their work in a hospital or clinic. When students were asked, 'How has being in an academy helped you think about which health career you may want to do?', they acknowledged that being able to meet someone in the health career that interested them clarified the job and enabled them to see themselves in that role, and that participation in the academy had given them a head start in preparing for their chosen career.

How do the academies work to achieve their objectives?

Fig. 4 provides a summary statement of the results of the fieldwork that explored the reasoning of the students, parents and teachers involved in the initiative, via interviews and focus groups. Those features underlined are the ones most regularly identified as the most important or influential. Results suggest that the difference between the initial list of mechanisms and the refined list of mechanisms informed by the fieldwork is not large, with the refined list highlighting the congruence of student, family and teacher perspectives on the importance of wider family and whānau involvement in the academies.

Discussion

The present evaluation investigated the short-term effect of two health science academies piloted in an NZ context by examining student retention, academic achievement and how students, staff and families thought the initiative worked to retain and motivate students. The findings reveal that academy students are collectively achieving better NCEA results than their contemporaries. The findings also show good outcomes in terms of retaining

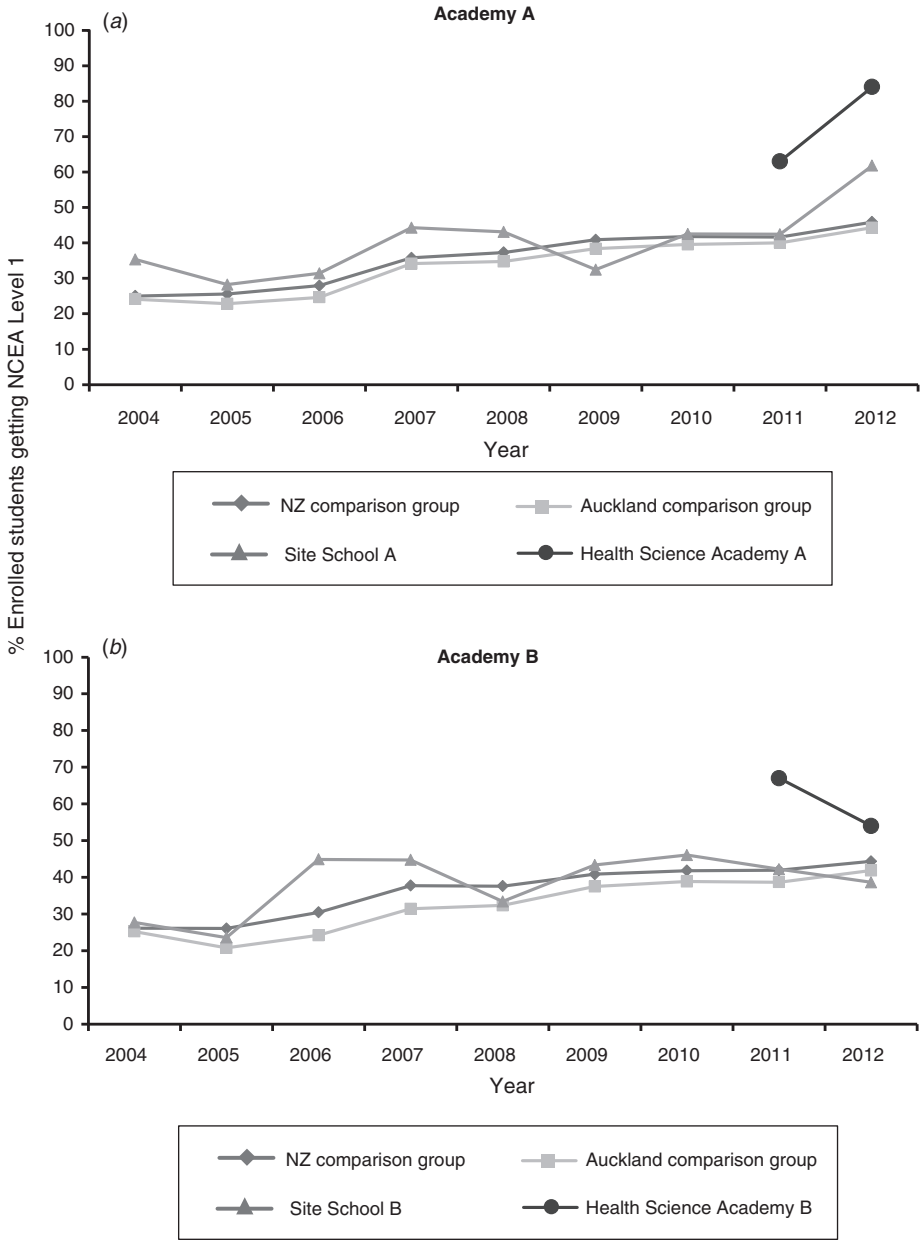

Fig. 2. Percentage of enrolled students obtaining National Certificate of Educational Achievement Level 1 qualifications in (*a*) Academy A and (*b*) Academy B compared with New Zealand, Auckland and respective site school comparison groups.

students in the academies. Further, positioning the academies as a collaborative endeavour between students, teachers, families and whānau was identified by those involved in the academies as a critical component of how the academy model achieves its outcomes. Further research is needed to build a deeper understanding of the relationship between schools, and families/whānau. By offering their child for internship and mentoring in the academies, families may have potentially identified opportunities to not only support individual success, but also to grow community and whānau capability.

Selection of students into these learning communities is determined by each site school's selection process. Evidence of student willingness to commit is essential, alongside an interest in a health career and some academic ability. The site schools are not just selecting their top students; rather, they highlight that a mix of ability naturally occurs within the cohort, with the understanding that once in the academy the expectations placed on students can have an effect on how they perform. Nevertheless, students selected to be in the academies are those with high motivation as well as demonstrated academic ability.

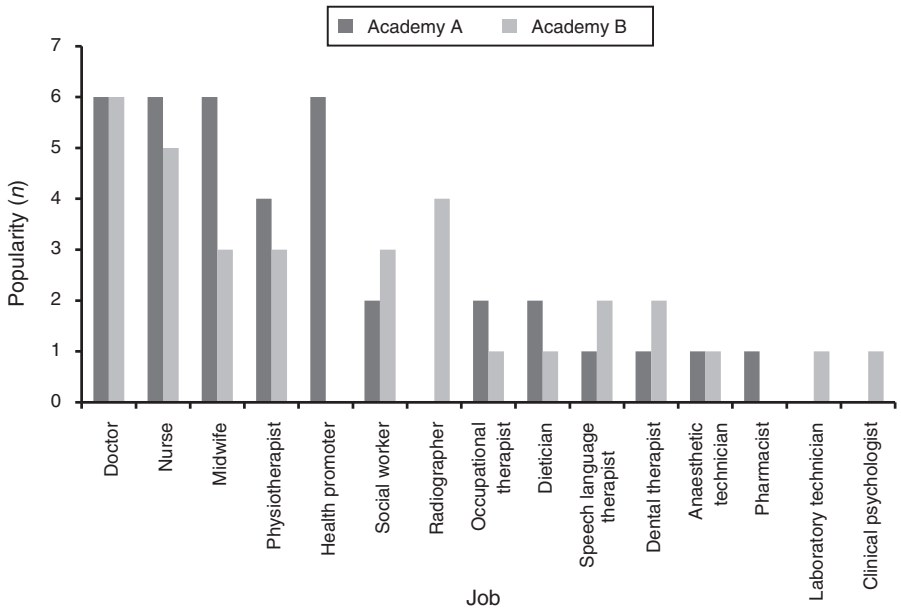

Fig. 3. Health sector jobs of greatest interest to senior academy students.

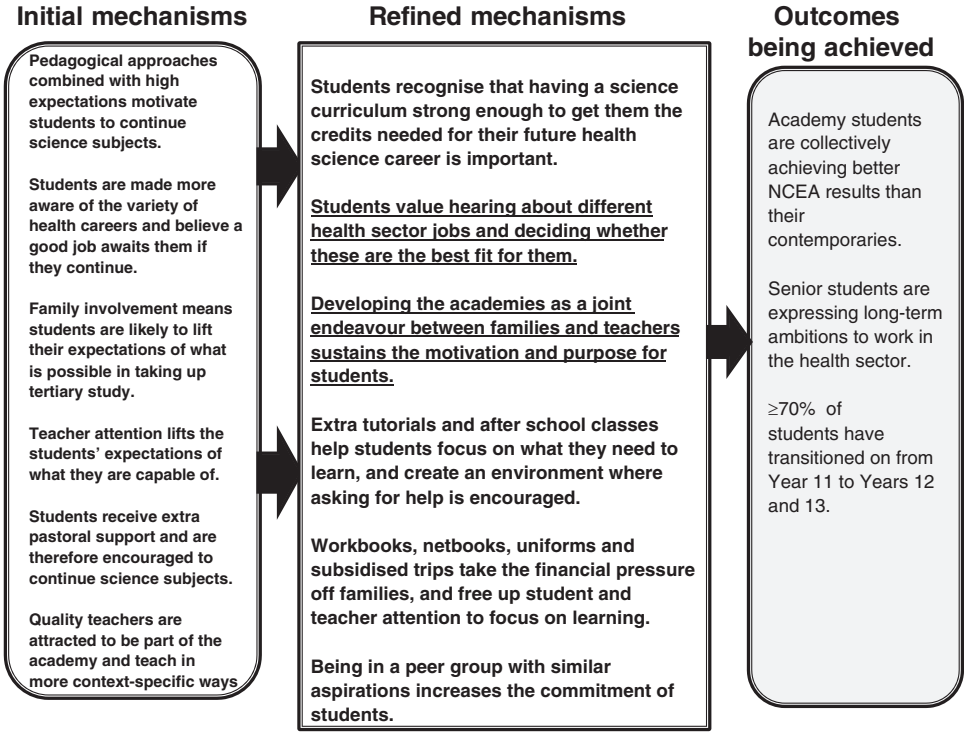

Fig. 4. Updated mechanisms in the logic model. The underlined features are those most regularly identified as the most important or influential.

Consequently, the NCEA results reported need to be viewed in the context of a group of students with a high likelihood of successful results. What this research cannot show is whether the academy students are performing better academically than they would have been had they not been in an academy.

With only 2 years' worth of findings, it is difficult to identify consistent trends over time. Site School A had been able to improve its NCEA Level 1 results from 2011 to 2012 and there were signs that results for non-academy students in the school improved overall. For Site School B, the 2011 results for

academy students had not been maintained, although two data points do not constitute a trend. Site School B did undergo a period of change during that time with regard to processes and staffing, however no one reason was signalled out for the reduction in results in the second year. The early experience highlights the vulnerability of such interventions to wider organisational changes, resulting in the academy board making a commitment to supporting stability and tracking progress in future years.

Achieving the appropriate credits to meet tertiary entry requirements for health professional study is central to the academy mission. Moreover, academic prerequisites for tertiary health professional programs in NZ are higher than those for most other tertiary programs.[26–28] Yet, Māori and Pasifika students face the challenge of lower NCEA results, including lower average credits in science subjects, in their aspirations to enter health careers,[26,29] indicating that mainstream secondary schooling is currently failing to ensure Māori and Pasifika students are well prepared for tertiary health science study.[30] Features of the academy model identified in the present evaluation as supportive of Maori and Pasifika achievement echo insights from other studies exploring what constitutes best practice.[6,31]

Conclusion

The health science academies established by CMDHB and funded by the Tindall Foundation show promise as an innovative approach to supporting Māori and Pasifika students prepare for a career in the health professions. Key enabling features of the Academy model identified by the present evaluation include access to a strong science curriculum, provision of high-quality careers advice via connections with the local health provider and the development of the academies as a joint endeavour between families and teachers to create a powerful learning community for students. Further work to evaluate the long-term outcomes of the academies in terms of the percentage of Māori and Pasifika students entering health careers is required to determine the academies' contribution to addressing inequities in health workforce participation.

Competing interests

The authors declare no conflicts of interest.

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