

Comparisons between indigenous and non-indigenous secondary students transitioning to health-related tertiary education: Findings from a New Zealand longitudinal study

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Abstract

Programme Incubator (PI) is a project initiated by a District Health Board in New Zealand to raise the awareness of careers in health services. This Good Practice report presents findings of a longitudinal study undertaken to investigate whether secondary school students' participation in PI influences students' choice of tertiary education. One of the aims of PI is to encourage first nation peoples (Māori) and Pacific students to consider a career in health.

This study followed two cohorts of secondary school students; one cohort was undertaking PI and the other was not. The purpose of the study was to determine whether participation in PI influences the choice of tertiary study and the likelihood of undertaking a health-related career. PI is more attractive to first nation peoples (Māori) and diverse cultures (Pacific), than other populations. PI has been found to broaden and confirm available career options for some student.

Background and introduction

Programme Incubator (PI) is a project initiated by the Hawke's Bay District Health Board in New Zealand to raise awareness of careers in health services in the region. The programme is a 'grow your own' strategy for future workforce recruitment practices, introducing health professional role models, including but not exclusive to nurses, doctors, physiotherapists, laboratory scientists, occupational therapists, paramedics, pharmacists, health managers, mental health clinicians, physiologists, social workers and radiographers, to Year 11-13 secondary school students and whānau¹/family. One of the aims of PI is to encourage Māori and Pacific students to consider a career in health. PI is an effective conduit of information to students and whānau, on matters of healthy populations, wellness, primary health and emergency response information. PI provides a pathway to tertiary education leading to a career in the health sector.

Programme Incubator consists of a mix of interactive sessions with health professionals and experiential department visits. The success of PI lies in the collective input with individual health professionals. The programme is offered in 20 schools in Hawke's Bay reaching over 250 students. Each school has three visits per year allowing students to meet six to nine different health professionals.

¹ Central structure of Māori society, includes extended family and /or social structures such as school or church groups (Kidd, Butler & Harris, 2014)

The rationale of this study was to explore the effectiveness of PI in attracting secondary school students into a health-related career, with an emphasis on first nation peoples (Māori) and Pacific.

Aim of the study

The aim of this study was to investigate whether participating in PI at secondary school would influence the choice of tertiary education and the likelihood of undertaking a health-related career. A specific focus was a broader inclusion of minority cultures, particularly Māori and Pacific who are over-represented consumers in the health system. The objectives of this study were to:

1. investigate whether participation in Programme Incubator (PI) at secondary school impacts on the pathway to tertiary education,
2. compare likelihood of participation in PI between Māori/Pacific students and Pākehā² students,
3. compare likelihood of choosing to study health-related tertiary studies between Māori/Pacific students and Pākehā students.

Literature review

Programme Incubator (PI) was initiated in Hawke's Bay in 2007. Currently PI is offered to 44 schools across New Zealand, reaching approximately 750 students (personal communication, C. Deslandes, November 2015). Neville, Russell, Spoonley, Wilson and Adams from Massey University in New Zealand undertook an evaluation of PI in 2010. Findings were that the students were excited about the prospects of a career in health and the programme had provided them with a broader view of the specialist health professions available, and a greater understanding of what those jobs entailed. Research by Neville et al (2010) highlighted the need for more Māori/Pacific health professionals because Māori and Pacific were more heavily represented than other ethnicities in the health system. Increasing the numbers of Māori/Pacific health professionals was also an original intention of Programme Incubator (Neville et al., 2010). For many students, lack of funding was a major barrier to entering tertiary studies alongside the need to travel away from family and support (Wilson, McKinney & Rapata-Hanning, 2011).

Further research by Ericksen and Ehrhardt (2011) gathered evidence on the efficacy of PI and explored issues linked to pedagogical theory such as the use of discussion as a learning opportunity. They confirmed the conclusions of Neville et al. (2010) that PI was successful in attracting young people into careers in health where they might otherwise have not considered health as a profession. Ericksen and Ehrhardt (2011) also noted the barriers to the success of PI for some students and recommended "the instigation of culturally appropriate delivery modes" (p.5) for the programme.

Recruitment and retention issues, focus on minorities: Māori/Pacific

It has been noted by the District Health Boards New Zealand (DHBNZ) (2005) that there is major concern for ensuring a capable and skilled workforce in the health sector in the future. District Health Boards have a strong interest in health and disability workforce development because of their statutory responsibility for the health of their communities. In coming years,

² Pakeha, a person who is not of Māori descent, a white person living in New Zealand

New Zealand, like other western countries, will experience major changes in its population structure. The impact of an ageing population and the need to address health and disability disparities will drive significant changes in how we deliver health and disability services (DHBNZ, 2005, p 2).

DHBNZ (2005) further suggest that tertiary education in the health sector must ensure that students understand the needs of the population using the health system. They consider it essential to increase the attractiveness of the health sector to transition more students, particularly Māori and Pacific, into a career in health.

A number of studies (Ministry of Health, 2008; Neville et al., 2010; Wilson et al., 2011) confirm the need to encourage students from diverse populations into the health workforce in order to identify with those who are more highly represented in the health system. Raranga Tupuake (Ministry of Health, 2006) noted that there were recruitment and retention issues for Māori in the health service and that Māori are highly underrepresented in the health and disability workforce, especially in the professional occupational groups. The Public Health Workforce Development Plan noted “Māori make up 33% of the workforce, yet are concentrated in lower-paid positions with limited decision-making powers” (Ministry of Health, 2007a, p. 15).

Having a culturally diverse workforce easily identifiable to minority groups will make it more probable that they will access the health services needed by their demographic (Gilchrist & Rector, 2007). The key goals in Raranga Tupuake were to increase the number of Māori and their skills in the health and disability workforce and further enable equitable access for Māori training opportunities (Ministry of Health, 2006).

When PI was first established in 2007, it was intended that the programme would enable a wider access to the pathways for Māori studying health sciences at universities. According to Wilson et al., (2011), at an international level “the recruitment and retention of indigenous minority peoples into the nursing profession is a persistent challenge” (p.59). In many cases indigenous minorities feel disadvantaged in the health system as being the less dominant culture and therefore are sometimes alienated by it (Gone, 2009). Considering a career in the health profession is therefore less likely from this perspective, especially if the student is the first in the family or community to study beyond secondary school (Gilchrist & Rector, 2007; Moxley, Najor-Durack & Dumbrigue, 2001).

Gardner (2005) noted that minority students within tertiary health programmes experienced loneliness, isolation, a feeling of differentness, insensitivity and discrimination throughout their time studying. This feeling of isolation created a barrier to their learning with many not completing their studies. One of the goals of PI was to provide on-going support to students who had joined the programme and continued on to health-related studies. It was hoped this would counter some of the feelings of isolation mentioned in Gardner’s study for minority groups and all ethnicities (Hawke’s Bay District Health Board (HBDHB), n.d.).

Growing your own concept and pathways

A further goal of PI is to introduce the health system into students’ homes and to build an awareness of the roles of health professionals by being connected through whānau/family discussion. This would provide a familiarity which would enable students to feel more inclined to choose a career in health and hopefully return to Hawke’s Bay as a health professional. One aspect noted by Neville et al., (2010) was the “strengthening relationships across the

community, with Iwi, Primary Health Organisation's NGO's, Schools, Tertiary Institutions and DHB's" (p. 5).

In the document, He Rito Harakeke (2008), the development of pathways for Māori into the workforce was discussed noting the need to focus on intervention points at various stages of the pathway. It considered that there were "five phases: pre secondary school; secondary school and second chance entry; tertiary education; transition to workforce; and the workforce" (Ministry of Health, 2008, p. 4). This comprehensive approach allowing for intervention at various levels should encourage the recruitment and retention of minority groups into the workforce. Internationally this is known as the pipeline for career awareness (Neville et al., 2010). It was considered PI would support this planned pathway by intervening at Year 12 and 13 (last two years of secondary school) and also by creating partnerships to support students whilst in tertiary education (HBDHB, n.d.). By creating quality education via the professional role models and the mentoring/counselling of students as they applied for tertiary courses, this would strengthen and ease the students' pathways to this educational opportunity which can often be very stressful. The opportunities for students to shadow a work team through an internship was another example of how the pathway could be strengthened through first-hand experience of the real workplace (Neville et al., 2010).

This study adds to knowledge gained in earlier studies to discover the progress made in PI in Hawke's Bay (Ericksen & Ehrhardt, 2011; Neville et al., 2010).

Methodology

This study was undertaken using a longitudinal cohort design whereby a population cohort is recruited and sampled at intervals over a period of time. The study also has an experimental component, used to "test a cause and effect relationship between an intervention and an outcome" (Shields & Watson, 2013, p. 175).

Research design

Secondary students from five schools in Hawke's Bay were invited to participate in the study in early 2014. Schools represented deciles 2 – 9. Contact teachers at each of the five schools were informed of the study and invited to participate. All five schools agreed to participate in the study and to collect survey responses.

Two groups of students were recruited: students who indicated they would participate in PI during the year (experimental group), and students who were not part of the PI (control group). Students were informed of the study and given the Participant Information Sheet during the first PI session for the year. Completed surveys were collected by the PI team. Administrative staff at each of the five schools were then asked to recruit the same number of participants for a control group.

Ethical considerations

Approval for this study was obtained from the Eastern Institute of Technology's Research and Ethics Approval Committee, reference number 02/14, on 28 February 2014. Potential participants were invited to participate in the research during school time, and were given the Information sheet for participants. All those who agreed to participate were given the PI Longitudinal Cohort Study Survey.

Data collection

Following distribution of the initial surveys at secondary schools, school administrators were asked to collect the completed surveys in an anonymous box, and return them to the PI team at the District Health Board. Following the pre-test survey, 47 completed surveys were returned from the experimental group (those who indicated they would participate in PI during 2014). Of the control group, (students who were not going to participate in PI), 45 returned completed surveys.

Of the 47 experimental group students invited to complete the survey post-intervention, 20 students completed the survey, representing a response rate of 42.6%. Of the 45 control group students invited to complete the post-test survey, 7 completed the survey, represented a response rate of 15.5%. Table 1 shows the sample population of each of the five schools and the numbers of students recruited in the experimental and control groups, pre- and post-intervention.

School	Population attending Programme Incubator	Experimental group pre-intervention (n)	Control group pre-intervention (n)	Experimental group post-intervention (n)	Control group post-intervention (n)
School A	28	22	19	12	1
School B	11	8	10	2	1
School C	10	8	10	3	2
School D	9	7	6	3	3
School E	9	2	0	0	0

Table 1: Recruitment from participating schools

Data analysis

Survey results were uploaded onto spreadsheets. Data were then collated by individual team members, who each had specific questions on which to focus. The same process occurred following the post-test survey, enabling team members to review the same questions, thus establishing comparisons between pre- and post-intervention data. Data were then cross-checked using SPSS software, enabling further linkages across questions.

Results

Characteristic	Group	Experimental group pre-intervention % (n)	Control group pre-intervention % (n)	Experimental group post-intervention % (n)	Control group post intervention % (n)
Age group	15y	2.0 (1)	0	0	0
	16y	40 (19)	33.3 (15)	30 (6)	14.2 (1)
	17y	49 (23)	55.5 (25)	45 (9)	71.4 (5)
	18y	10.6 (5)	11.1 (5)	25 (5)	14.2 (1)
Gender	Female	87.2 (41)	64.4 (29)	85 (17)	85.7 (6)
	Male	12.7 (6)	35.5 (16)	15 (3)	14.2 (1)
Ethnicity	Māori	27.6 (13)	28.8 (13)	20 (4)	42.8 (3)
	Pacific	6.3 (3)	4.4 (2)	10 (2)	0
	Pākehā	65.9 (31)	71.1 (32)	65 (13)	57.1 (4)
Iwi	Ngāti Kahungunu	6.3 (3)	13.3 (6)	20 (4)	42.8 (3)
	Ngāti Pāhauwera	0	2.2 (1)	5 (1)	42.8 (3)

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	Tainui	0	2.2 (1)	0	0
	Ngāpuhi	2.1 (1)	4.4 (2)	0	0
	Ngāti Porou	2.1 (1)	4.4 (2)	0	0
Pacific Island	Cook Island	0	2.2 (1)	0	0
	Samoa	2.1 (1)	2.2 (1)	0	0
	Lao	0	2.2 (1)	0	0
	Fijian	4.4 (2)	0	5 (1)	0
	English	100 (47)	100 (45)	100 (20)	100 (7)
First language	Māori	2.0 (1)			

Table 2: Demographic characteristics of respondents

Table 2 provides demographic characteristics of survey respondents. Females are more likely to participate in PI than males. Most students are aged between 16 and 17. Most participants in the experimental and control groups were Pākehā New Zealanders (72.1% experimental; 75% control) with similar Māori representation (13), slightly more Pacific in the experimental group.

Of those students who identified as Pacific, Fijian was the most dominant ethnicity in the control group with Samoan being equal in both groups. English was the most dominant first language with all the control group cohort and all but one of the experimental group. One student in the experimental group identified their first language as Māori.

Students in the experimental group had gained more credits in National Certificate in Education Achievement (NCEA) in all three levels than students in the control group. All students in the experimental group had heard of Programme Incubator, with just over half of the control group replying “yes” to this question.

In the experimental group, 42/47 of students knew that PI provided them with knowledge of health careers. Comments included:

- *an opportunity for students with an interest in medical careers to get a closer look at specific fields and workplace that they otherwise may not have been exposed to*
- *health professionals talk*
- *it's highly interesting and teaches about the health sector*
- *that you learn about the health industry and career pathways*

Most students in the control group had no comment or no knowledge about PI (28/45), with 14/45 identifying some knowledge about PI and 3/45 describing PI as an option at school. Comments included:

- *something to do with a hospital*
- *I know it's about working in the health department and hospitals. People learn first aid*
- *just that it is a course outside of school, it will give me more experience which will give me more confidence in the future.*

Students in the experimental group thought PI would either help them decide/choose a career path (13/47), or that it would show them different options (14/47). Of the pre-intervention control group, 60% had no response, with four students stating that PI would help decide an interesting career path that would help get a job. When asked if they were considering a career

in health, 45/47 (95%) of students in the experimental group responding “yes”. Of the control group, 7/45 (15%) responded “yes”.

Students who responded that they were considering a career in health were then asked to indicate their anticipated career choice. The most popular choice was nursing, then paediatrics, followed by doctor/general practitioner, and surgeon.

Students were asked to tick options which influenced their career decisions. Some students ticked more than one option. Family member/friends had the biggest influence on career options, closely followed by personal experience as demonstrated on Figure 1 below.

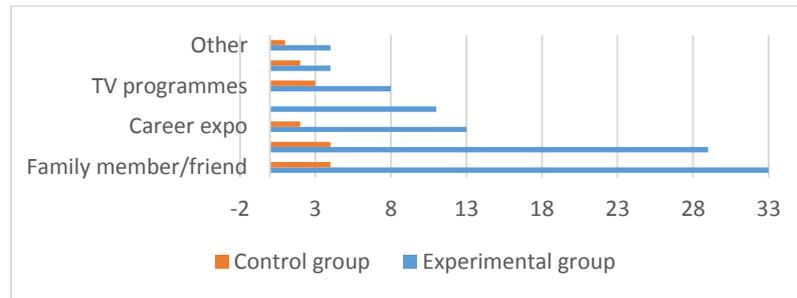


Figure 1: Influences on career decision-making

The final question in the pre-test survey asked whether students were considering tertiary study after secondary school. Of the experimental group, 45/47 (98%) indicated “yes” to this question. In the control group, 25/45 (55%) answered “yes”, 13/45 (29%) answered “no” and 7/45 (16%) did not answer this question.

Post intervention

Participants were asked what they knew about PI. 95% (19/20) participants in the experimental group had knowledge of the programme. Their comments about the programme included:

- *a fun way to learn more about what positions are available while working in a health care system such as a hospital*
- *a programme for Year 12 and 13 students where people from different areas of the health profession come and speak to the students about their line of work*

For participants in the experimental group, the major impact of PI was to show different available career options in health, to provide useful information/advice, to help make decisions about career pathways. The personal stories of health practitioners added to the impact.

15/20 (75%) of the experimental group were considering a career in health with 4/7 from the control group also considering a career in health. If participants were considering a career in health, the most popular career choice was nursing as in the pre-test survey, followed by paediatrics. Other choices indicated were mental health, doctor, radiology, optometry, midwifery, laboratory technician, physiotherapist, physiology and pharmacy.

Influences on career decisions are noted for both groups in Figure 2. As in the pre-test survey, family and friends and personal experiences had the most influence on career decisions.

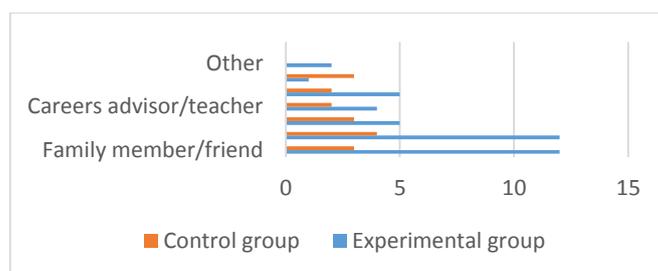


Figure 2: Influences on career decision-making: post intervention

Participants were asked if they were considering tertiary study after high school. 100% (7/7) of the control group answered yes and 95% (19/20) of the experimental group answered yes to this question.

The post intervention survey added one further question; if the student had changed his/her anticipated career options since the beginning of 2014, what influenced career choice. 8/20 (40%) of the experimental group had changed their mind with the remaining 12/20 (60%) not changing their mind. Participants gave reasons for their change of mind including:

- *Definitely the Incubator programme, it has really opened my eyes*
- *Inspirational and passionate people talking about their jobs in PI.*
- *Better awareness of what jobs involve*
- *Family*

Discussion

The first objective of this study was to investigate whether participation in PI at secondary school impacts on choice of tertiary education. In the pre-test survey, 100% of the experimental group and 66% of the control group were already considering tertiary education. Post intervention 100% of 26 participants responding to the impact of PI on choice of tertiary education answered in the affirmative, thus prior to PI students have already made a choice about tertiary education and participation in PI does not influence that choice.

However, PI did have an impact on projected career pathways to tertiary education. PI enabled students to think about different options available, broadening ideas of available options, encouraging decision-making about possible careers and empowering them to gather more information. This is supported by studies in the UK, which argue that weak knowledge of the tertiary programme had led to a wrong choice of study. Insufficient consideration prior to their university course, was a contributing factor in poor retention and lack of success at university (Yorke & Longden, 2008). For some PI participants, undertaking PI confirmed their career decisions. This further reinforces the earlier findings of Neville et al., (2010).

Increasing the numbers of Māori/Pacific health professionals was one intention of PI (Neville et al., 2010). Regarding the likelihood of participation in PI between two different cohorts, predominantly Māori/Pacific students and predominantly Pākehā, in the experimental group, all students wanted a career in health (Pākehā n=30; Māori n=8; Pacific n=4). In the control group of the Pākehā respondents, 25% wanted a career in health but chose not to participate in PI. All Māori/Pacific students wanted a career in health. Twenty-nine percent of the control group did not know if they wanted a career in health. Prior to participating in PI most participants knew what career they wanted, with only 8.5% not knowing their anticipated career choice and only 2.3% did not want a career in health.

Participation in PI was representative of the Hawke's Bay population. This study has found that Māori/Pacific students are more likely to elect to undertake PI; 27.6% for Māori and 6.3% for Pacific, than their representation in the Hawke's Bay population suggests (Maori, 25.3% and Pacific, 3.7%) (Ministry of Health, 2015). Thus PI is achieving one of its objectives of attracting Māori/Pacific to PI. This study has found that PI is more attractive to first nation peoples (Māori) and diverse cultures (Pacific), than Pākehā populations. This finding supports the earlier recommendations of Ericksen and Ehrhardt (2011) that there needs to be "the instigation of culturally appropriate delivery modes" (p.5) for the programme. The use of storytelling and hearing from passionate, inspirational health practitioners is having a positive influence, particularly on Māori/Pacific students.

The likelihood of choosing to study a health-related career was the final study objective. All participants who indicated in the pre-test survey that they were going to study a health-related career, remained consistent with this decision in the post-test survey. In the pre-test survey, those students who indicated they were going to study a health-related career were as follows: 74% Pākehā; 19% Māori, 7% Pacific. Post-intervention, 17 answered the question about their choice of health-related career studies, all responded "yes" and of those 70% were Pākehā, 17.6% were Māori and 11.8% were Pacific. Students entering tertiary education from PI are well prepared for their first year in higher education, as they bring with them knowledge about health professions. PI thus enhances the teaching/learning environment (Felder et al., 2010), raising students' awareness of types of knowledge required in their tertiary programme.

PI broadened understanding of career options. A number of factors influenced students' career choices. Personal experiences were significant in influencing the experimental group but TV programmes, careers advisers/teachers and career expos were also important. Advertising in the media was more important to the control group. However, one of the most important influences on students from the experimental group regarding their career decisions is family and friends. This reinforces the findings of earlier studies. Neville et al. (2010) found that students considered that the "personal family networks and health sector involvement are important influences on predisposition and interest" (p. 41). Therefore, family must be considered instrumental in encouraging or discouraging students towards an avenue of study. Though not specifically stated by students in this study, financial constraints and support networks may be a factor in deciding whether students study further afield in a health related career (Wilson et al., 2011).

Limitations

A limitation of this study was the small sample of participants. Ninety-two students participated in the pre-test survey which was approximately as proposed. However there was limited response to the post-test survey with only 20 responses from the experimental group and seven from the control group. This may have created some study bias and these numbers limit the ability to generalise from the findings.

Conclusion

Programme Incubator is attracting secondary students who identify as Māori or Pacific, a key population given the initial aims of PI and the need to recruit more Māori/Pacific into the health workforce. The focus of PI on broader social inclusion is successfully encouraging a health-related pathway. By Year 12 most students have already decided on an anticipated career pathway and are considering tertiary study options. The main impact of PI is to broaden and confirm available career options.

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