Improving Health to Reduce Youth Reoffending: Results of a program providing nurse navigators to improve known predictors of reoffending

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Abstract

Background

Reducing youth reoffending is a major policy challenge. Emerging research demonstrates that poor health is a predictor of offending and that this relationship may be mediated by other known predictors of offending, including problems in education and family relationships. A new program in Queensland, Australia, aims to lower the risk of reoffending among young people by assigning them 'nurse navigators', who provide targeted health care referrals and coordination. This study examines the initial results of the program. The results show that the provision of nurse navigators improved the overall health of the participants. Importantly, the program also led to improvements in other domains that are known predictors of offending, even though in most cases no direct assistance was provided in those domains. This study, therefore, lends support to the research showing there may be causal links between health and known predictors of offending. This finding is important for decision-making about programs to reduce reoffending. It shows that assistance in health care should be considered when designing programs for young people who have been involved in the justice system.

Keywords

Health, health care, offending, reoffending, young people, nurse navigators, predictors of offending.

Introduction/Background

Reducing youth reoffending is a major policy challenge in many countries, including Australia. Forty-one per cent of Australian young people aged 10–17 who were under youth justice supervision between 2000–01 and 2019–20 returned to sentenced supervision before the age of 18 (Australian Institute of Health and Welfare, 2021). A new program has commenced in Queensland, Australia, which seeks to lessen the risk of reoffending by improving the health of youth people who offend. This study examines the initial effects of this program on the health of these young people and its effects on other known predictors of offending that may be connected to health.

Health of Young People who Offend

Young people who offend experience substantially higher levels of health problems than the rest of the population. Non-communicable diseases such as asthma, diabetes, pneumonia, and hypertension are more prevalent in this cohort (Winkelman et al., 2017), as are communicable diseases, including sexually transmitted infections (Borschmann et al., 2020; Gergelis et al., 2016; Sattler, 2017). Young people engaged with the youth justice system have higher rates of mental illness (Barnert et al., 2016; Casswell et al., 2012; Gergelis et al., 2016), neurological disabilities (Kincaid & Sullivan, 2019), traumatic head injuries (Borschmann et al., 2020), and foetal alcohol spectrum disorder (Bower et al., 2018; Jonsson et al., 2018) than the general youth population. They also have higher rates of poor dental health (Gergelis et al., 2016).

There are overlapping socioeconomic predictors of poor health and youth offending which help explain these high rates of health problems in young offenders (Caruso, 2017). Research suggests, however, that the relationship between health and offending is more complex than a simple correlation (Schroeder et al., 2011).

Predictors of offending

Various factors across different domains influence youth offending, including broad demographic factors (Agnew, 2006), and more specific measures, such as unemployment (Agnew, 2006; Freudenberg et al., 2005), poor family relationships (Hoge et al., 1996; Mowen et al., 2019; Uggen et al., 2005), and child maltreatment (Braga et al., 2017; Kazemian et al., 2011; Silvern & Griese, 2012;

Vahl et al., 2016). While the connection between mental illness and offending is well known, physical health has not typically been understood to be an important predictor of offending (Bonta and Andrews (2016). There is an emerging research base, however, that challenges this view. Stogner and Gibson's (2010) analysis of 6504 adolescents across 80 United States high schools showed that those who had experienced health problems earlier in life were more likely to have offended in the prior year. Importantly, their study showed the predictive effect of health on offending remained, even when controlling for demographic factors such as income, race, gender, and age. Similarly, Thomas et al.'s (2015) study of 1325 adult prisoners in Queensland showed that health-related factors were important predictors of reincarceration. As Thomas et al. noted, however, more research is necessary to understand and explain specific pathways that exist within this relationship.

Some researchers have theorised that this relationship may be mediated by other predictors of offending. Link et al (2019) examined three known predictors: family relationships, unemployment, and financial problems, to explore their possible role as mediators between health and offending. They studied a cohort of 1532 adult males from 12 US states in the 15 months following release from prison, examining the health of the participants and their rate of reoffending in the study period. They also assessed the participants' family relationships, employment situations, and financial problems. The study first confirmed a statistically significant association between health problems and reoffending. Their study was also able to demonstrate, through bootstrapping, that poor family relationships, unemployment, and financial problems were mediating pathways of this association.

In addition to family relationships and employment, researchers identified four other domains for which there was evidence in each direction of association: first, problems in the domain being potentially affected by poor health; and second, problems in the domain that are risk factors for offending. These four additional domains were housing (Bruce et al., 2014; Just et al., 2008; Visher et al., 2011), participation in learning (Case et al., 2005; Ford & Schroeder, 2010; Henry et al., 2012), cultural connectedness, and connection to community (Ferrario et al., 2001; Hansen, 2018; Magliano et al., 2005).

Programs to reduce offending by improving health

Although more research in this area is required, Jackson and Vaughn (2018) have argued that there is sufficient evidence to justify programs that seek to reduce offending by improving the health of young people in high-needs categories. Young people who offend are known to have high needs generally and as shown above, have multiple and complex health needs. It is also known that young people involved in the justice system have difficulties accessing health care, owing to a lack of knowledge of, or access to, services, and experience inconvenient and fragmented care (Barnert et al., 2020; Golzari & Kuo, 2013).

Programs that assist the mental health of people leaving the justice system have already been shown to reduce rates of reoffending (Gannon et al., 2019). Recent preliminary investigations into programs aimed at overall health have shown some promise. O'Connell et al.'s (2020) study of 400 probationers found that placing a 'health navigator' in an urban probation office was associated with a rise in the proportion of individuals accessing care. Wang et al.'s (2019) study considered the impact of providing access to a community health worker to 94 individuals, who had just been released from prison, in comparison to a control group. They found that the group with the community health worker had lower rates of reincarceration for technical violations and spent shorter time periods in correctional facilities.

A health program in Queensland, Australia

Healthcare 'navigators' provide health assessments, healthcare referral coordination, and prioritisation and coordination of services to address a patient's identified healthcare needs. They have been shown to improve a variety of health measures, including overall health outcomes, patient satisfaction, access to care, and experiences of care (Carter et al., 2018; Freeman, 2013; McMurray & Cooper, 2017).

Navigators are of particular benefit for patients with complex or chronic health conditions because those patients often have poor coordination with different healthcare providers and poor communication with those providers (Burgers et al., 2010). Navigators can improve patients' capacities for decision-making and self-management, which can lead to a positive impact beyond the period of contact with the nurse navigators. (McMurray & Cooper, 2017). Nurse-led interventions in low socio-economic and vulnerable populations have been shown to have measurable improvements in health outcomes (Freeman, 2013; Olds et al., 1998), including for adult prisoners (Collett et al., 2022).

Under the 'Navigate Your Health' program, delivered by Children's Health Queensland Hospital and Health Services, young people with high unmet health needs are allocated nurse navigators. The program was first developed in 2018 to provide health assessment, referrals and health co-ordination support to children subject to Child Safety orders in Queensland (Moss et al., 2021). In 2020, the program was expanded to include young people who had non-custodial Youth Justice orders, that is, people who are subject to community-based youth justice orders, for example, probation orders. The program has been implemented for young people involved in the justice system in four Queensland locations: Brisbane, Logan, Ipswich, and Cairns. This study focuses on the Youth Justice cohort of participants. Under the program, nurse navigators provide a full health assessment of the participant, and then organise and facilitate subsequent healthcare appointments according to the specific health needs of the individual. The nurse navigators are registered nurses, who are required to have postgraduate qualifications and five years of direct clinical experience with children and young people. Maori and Pacific Islander participants and First Nations participants are matched with nurses from these backgrounds when possible.

The overall goal of this program is to improve the health of the participants. An associated anticipated outcome contemplated by the program design is that by improving their health, the program will also lessen the risk of the participants reoffending.

The Current Study

This study investigates whether participation in the Navigate Your Health program has led to changes in health as well as housing, cultural connectedness, family relationships, participation in learning, engagement in employment, and connection to the community. To explore the relationship between health and involvement in the justice system, we also specifically examined the cohort of participants with poor initial wellbeing scores in comparison with other participants. Finally, we examined whether there was an overall reduction in the number of people experiencing problems in these domains.

The research questions of this study were:

- Did the Navigate Your Health program lead to changes in participants' wellbeing and other key predictors of offending?
- How did changes in the cohort of participants with poor wellbeing at the beginning of the program compare to other participants?
- Did the number of participants experiencing problems in wellbeing and other key predictors of offending reduce and was that reduction statistically significant?

Methods

Data Collection and Variables

The Department of Children, Youth Justice and Multicultural Affairs maintains a database that contains demographic characteristics and program information for all young people referred to Navigate Your Health. At the point of referral, a case worker assesses the young person's wellbeing (encompassing overall physical and mental health), and in the six domains identified as possible

pathways between health and risk of offending: housing, cultural connectedness, family relationships, participation in learning, engagement in employment, and connection to community. The case worker then reassesses those domains when the young person leaves the program. At each assessment, the case worker applies detailed criteria to determine the young person's position on a five-point Likert scale: 1) could do a lot better, 2) could do better, 3) OK, 4) doing well, and 5) doing great.

Data was provided by the Department of Children, Youth Justice and Multicultural Affairs for the purpose of this study. Ethics approval was provided by the Queensland University of Technology Human Research Ethics Committee (approval number 5124, 15 December 2021). This research was also approved by the Youth Justice Governance Group on 2 November 2021. Written consent to participate in the program was obtained from the young person (when they were competent to do so) and from a parent or other person with legal authority in relation to the young person. This consent included permission to collect and use the information for the purpose of evaluation of the Navigate Your Health project and research.

Participants

Data were collected pre- and post-program between 1 January 2020 and 20 September 2022. During this period, 178 participants were discharged from the Navigate Your Health program and therefore have before and after participation records.

Table 1: Cohort Summary

Cohort	Participants	Age M (SD)*	Female (%)	Male (%)	Time spent in program M (SD)
Full cohort	178	15.41 (1.36)	25.3	74.7	189.33 (117.15)
Engaged cohort**	112	15.40 (1.42)	19.6	80.4	200.65 (98.43)

Table 1 shows the demographic breakdown of the participants in the program.

**M=mean; SD=standard deviation*

***Engagement is the attending of healthcare appointments organised by the Nurse Navigator.*

Of the 178 participants, 112 (62.9%) engaged in the program by attending healthcare appointments organised by the Nurse Navigator. To focus on the results of the provision of Nurse Navigation to young people subject to Youth Justice orders, the following results and analysis consider the 112 participants who engaged. Some measures were recorded as not applicable, for example, if a person was no longer attending school and was not seeking further education, the 'participation in learning' domain was not scored. These data were excluded from the analysis.

Analysis

First, repeated measures ANOVA was employed to test whether the change in each domain was reliable. The ANOVA test is appropriate to test change in continuous outcomes.

Second, domain scores were dichotomised into 'poor' (1 or 2) or OK/good (3, 4 or 5). Outcomes were examined separately for those with initial poor wellbeing status and those with initial OK/good wellbeing status. Repeated measures ANOVA were used to test whether the change in each group was reliable.

Third, the proportion of participants who changed status between poor and OK/good in each domain was examined. A McNemar test was employed to determine if this change in status in each domain

was reliable. The McNemar test is the appropriate chi-square test for change in the proportion of dichotomous outcomes when measures are repeated for the same participants (Adedokun & Burgess, 2012).

Results

Figure 1 presents the results of the ANOVA test showing mean participant scores in each domain before and after participation in the program. Figure 2 presents the results of the ANOVA test showing whether the change in all domain outcomes for the initial-poor wellbeing group and initial-OK/good wellbeing group was reliable. Table 2 presents the results of the McNemar test showing whether the change in status between poor and OK/good scores in each domain was reliable.

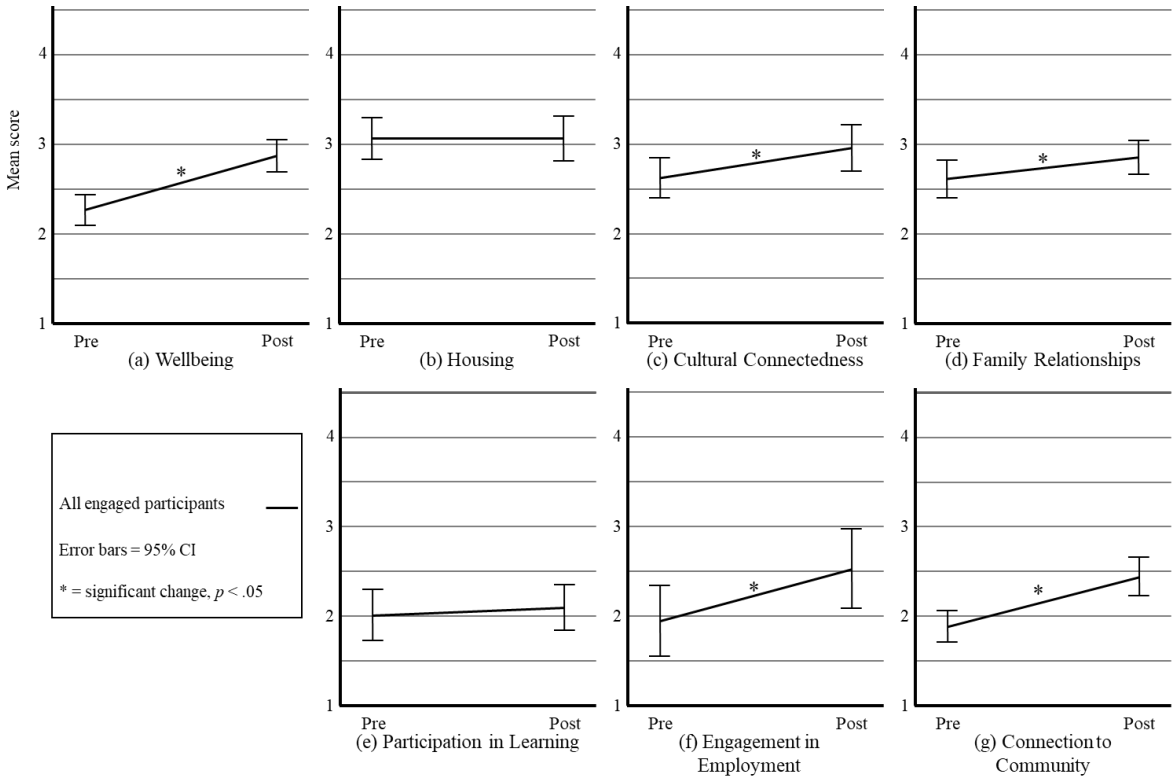

Figure 1: Comparison of pre- and post-participation scores

Figure 1 shows that participants had low scores in wellbeing and other domains at the beginning of the program. The mean initial wellbeing score was 2.29 (SD=0.90) out of a maximum possible score of 5. Figure 1 also shows that program participation led to improvement in all domains except housing. The improvement reached statistical significance for wellbeing, cultural connectedness, family relationships, engagement in employment, and connection to community.

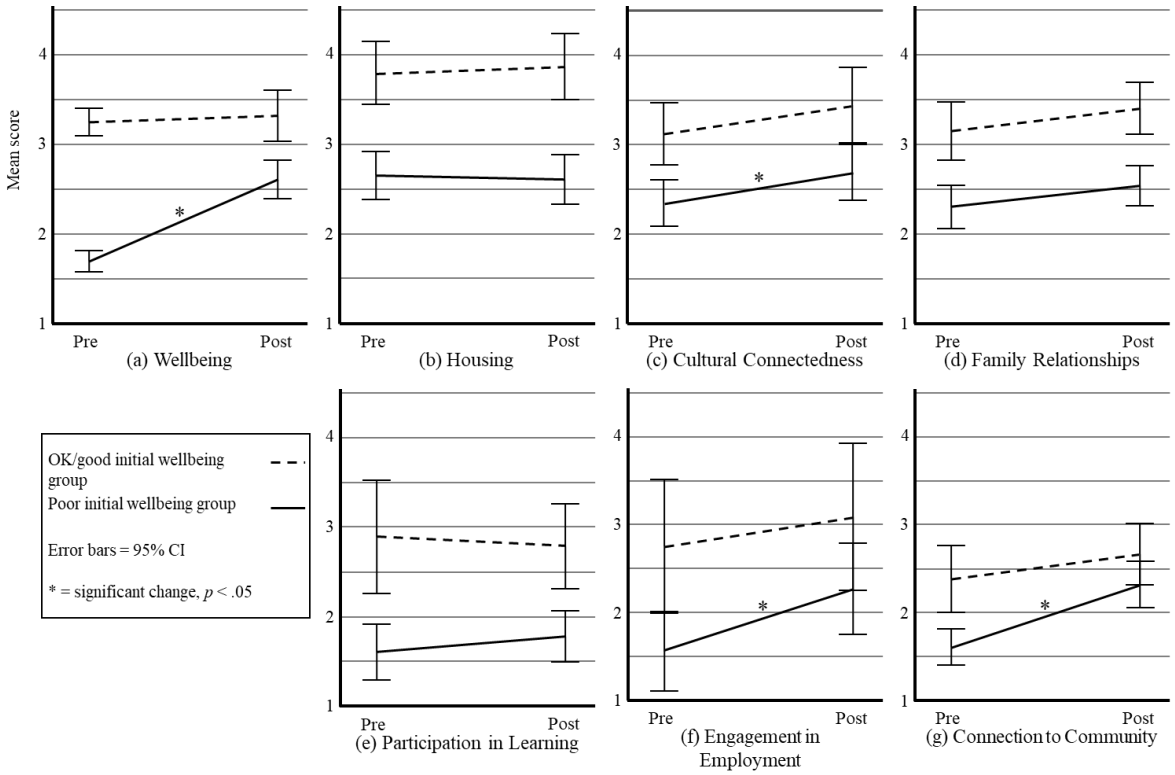

Figure 2: Comparison of pre- and post-participation scores: participants with poor initial wellbeing vs participants with OK/good initial wellbeing

Figure 2 shows for most domains the increases in mean scores for participants with poor initial wellbeing scores were similar to or greater than those for other participants. The improvements for the group with poor initial wellbeing reached statistical significance in wellbeing, cultural connectedness, engagement in employment, and connection to community. The largest improvement was for wellbeing, the mean score for people with poor initial wellbeing improved in that domain from 1.70 (SD=0.46) to 2.61 (SD=0.93).

For those with an initial wellbeing assessment of OK/good, there was an improvement in all domains except housing, which was steady. The improvement in family relationships did not reach statistical significance for either group, despite there being a statistically significant improvement in that domain for the cohort as a whole (see Figure 1). This reflects the lower numbers involved with the separated cohorts.

Table 2: Comparison of pre- and post-scores for engaged participants

	Outcome	Pre (%)	Post (%)	n	$\chi 2$	*p*
Wellbeing	OK/Good	41 (37.3)	71 (64.5)	110	20.024	<.001
	Poor	69 (62.7)	39 (35.5)			
Housing	OK/Good	71 (65.1)	73 (67.0)	109	0.025	.875
	Poor	38 (34.9)	36 (33.0)			
Cultural Connectedness	OK/Good	51 (56.0)	58 (63.7)	91	1.241	.265
	Poor	40 (44.0)	33 (36.3)			
Family Relationships	OK/Good	62 (56.4)	71 (64.5)	110	1.362	.243
	Poor	48 (43.6)	39 (35.5)			

Participation in Learning	OK/Good	26 (27.7)	32 (34.0)	94	0.962	.327
	Poor	68 (72.3)	62 (66.0)			
Engagement in Employment	OK/Good	11 (28.9)	18 (47.4)	38	2.400	.118
	Poor	27 (71.1)	20 (52.6)			
Connection to Community	OK/Good	22 (20.2)	49 (45.0)	109	16.488	<.001
	Poor	87 (79.8)	60 (55.0)			

Table 2 shows that following participation in the program, there was an increase in the proportion of participants with scores of OK/good in all measures and a decrease in participants with poor scores. The changes in wellbeing and connection to community were significant ($p < 0.01$). The low number in engagement in employment may be because many young people would not be seeking employment, in which case that measure would be recorded as not applicable.

Discussion

The pre-participation levels across the domains shown in Figure 1 align with findings from other studies that young people who offend are a disadvantaged cohort. In particular, these results confirm that young people who offend have high levels of health needs. The primary goal of the Navigate Your Health program is to improve the wellbeing of participants. Our results suggest that Navigate Your Health has achieved that goal and improved overall wellbeing outcomes for young people who engaged with the program. These results are consistent with the findings of other nurse navigator programs that have shown increased wellbeing outcomes for participants, including those with disadvantaged backgrounds.

Improvements in wellbeing were accompanied by improvements in most of the other key predictors of reoffending measured in this study. This is an important result, because although these results were desired, it was not the core purpose of the nurse navigators to assist young people in these domains. Nurse navigators were able to work with the families to connect participants to health care, which may have contributed to assistance in the family relationships domain. In other domains, however, there was no assistance given. These results, therefore, indicate a potential cascading impact of improved health on known predictors of offending. This program has reduced the risk of reoffending in this cohort by reducing the number of participants experiencing problems in these domains.

The results show improvement in all domains except for housing. It may be that improvements would occur over a longer time frame than the period of participation in the program. Alternatively, it may be that this domain is not affected by improvements in the youth's health. This would be plausible, given that other socioeconomic factors not related to the youth's health can be assumed to determine housing status.

As shown in Figure 2, the greatest improvement was in participants with poor initial wellbeing scores. They experienced statistically significant improvement in wellbeing outcomes and three other domains, namely cultural connectedness, engagement in employment, and connection to community. The comparatively greater improvement in that group may partly reflect a greater capacity for improvement via natural ceiling effects, especially regarding wellbeing. Nevertheless, the greater improvement in additional domains amongst this group supports the proposition that health is associated with, and may even be causally related to, these other areas, namely cultural connectedness, engagement in employment, and connection to community. The strong improvement in those with poorer initial wellbeing is an encouraging outcome that warrants more sustained research.

Further study of participants in this program that incorporates reoffending data will be able to indicate the effect of this program on that ultimate measure. However, by successfully lowering the number of problems in known predictors of offending, this study lends support to Jackson and Vaughn's (2018) call for programs to reduce the risks of offending by intervening in the health of high-needs populations. In particular, it shows that assistance in health care may be an important part of measures that aim to reduce reoffending among young people who have been involved in the justice system.

Limitations

No control group was used in this study, so this study does not have the benefit of a comparison group. This study also did not control for confounding demographic factors such as family income, socioeconomic status, gender, age, or race. This study also has not been able to assess reoffending rates due to time limitations, however, further research using ongoing data may be able to report such findings.

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Table 3: Initial and final scores for engaged participants

Score	Wellbeing		Housing		Cultural connectedness		Family relationships		Participation in learning		Engagement in employment		Connection to community	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	18.6% (21)	8.0% (9)	10.6% (12)	15.9% (18)	15.0% (17)	14.2% (16)	17.7% (20)	8.8% (10)	54.0% (61)	37.2% (42)	23.9% (27)	26.5% (30)	38.9% (44)	21.2% (24)
2	42.5% (48)	25.7% (29)	23.0% (26)	15.9% (18)	23.9% (27)	15.9% (18)	25.7% (29)	25.7% (29)	14.2% (16)	16.8% (19)	7.1% (8)	8.0% (9)	39.8% (45)	31.9% (36)
3	31.0% (35)	35.4% (40)	27.4% (31)	23.9% (27)	30.1% (34)	18.6% (21)	37.2% (42)	37.2% (42)	10.6% (12)	15.9% (18)	5.3% (6)	8.8% (10)	13.3% (15)	24.8% (28)
4	5.3% (6)	25.7% (29)	23.9% (27)	25.7% (29)	13.3% (15)	26.5% (30)	13.3% (15)	20.4% (23)	6.2% (7)	8.8% (10)	4.4% (5)	8.0% (9)	6.2% (7)	14.2% (16)
5	1.8% (2)	1.8% (2)	14.2% (16)	14.2% (16)	3.5% (4)	7.1% (8)	5.3% (6)	4.4% (5)	9.7% (11)	4.4% (5)	0.9% (1)	3.5% (4)	0.9% (1)	3.5% (4)
Missing/ NA	0.9% (1)	3.6% (4)	0.9% (1)	4.5% (5)	14.2% (16)	17.7% (20)	0.9% (1)	3.6% (4)	5.3% (6)	16.9% (19)	58.4% (66)	45.2% (51)	0.9% (1)	4.5% (5)

Table 3 presents the raw data of the participants' assessments before and after participating in the Navigate Your Health program.

Table 4: Changes in scores for engaged participants

Group	Outcome	Wellbeing (n)	Housing (n)	Cultural connectedness (n)	Family relationships (n)	Participation in learning (n)	Engagement in employment (n)	Connection to community (n)
All Engaged	**Improved**	54.0% (61)	32.7% (37)	34.5% (39)	41.6% (47)	23.9% (27)	16.8% (19)	49.6% (56)
	No change	31.9% (36)	30.1% (34)	29.2% (33)	31.9% (36)	38.1% (43)	12.4% (14)	29.2% (33)
	Declined	10.6% (12)	32.7% (37)	15.9% (18)	23.0% (26)	20.4% (23)	4.4% (5)	16.8% (19)
	Missing/NA	3.5% (4)	4.4% (5)	20.4% (23)	3.5% (4)	17.7% (20)	66.4% (75)	4.4% (5)
	Total	100.0% (113)	100.0% (113)	100.0% (113)	100.0% (113)	100.0% (113)	100.0% (113)	100.0% (113)
Poor Wellbeing	**Improved**	63.8% (44)	31.9% (22)	37.7% (26)	42.0% (29)	26.1% (18)	18.8% (13)	58.0% (40)
	No change	30.4% (21)	31.9% (22)	29.0% (20)	33.3% (23)	47.8% (33)	14.5% (10)	27.5% (19)
	Declined	5.8% (4)	36.2% (25)	17.4% (12)	24.6% (17)	18.8% (13)	4.3% (3)	14.5% (10)
	Missing/NA	0.0% (0)	0.0% (0)	15.9% (11)	0.0% (0)	7.2% (5)	62.3% (43)	0.0% (0)
	Total	100.0% (69)	100.0% (69)	100.0% (69)	100.0% (69)	100.0% (69)	100.0% (69)	100.0% (69)
Good Wellbeing	**Improved**	39.5% (17)	34.9% (15)	30.2% (13)	41.9% (18)	20.9% (9)	14.0% (6)	37.2% (16)
	No change	34.9% (15)	27.9% (12)	30.2% (13)	30.2% (13)	23.3% (10)	9.3% (4)	32.6% (14)
	Declined	18.6% (8)	27.9% (12)	14.0% (6)	20.9% (9)	23.3% (10)	4.7% (2)	20.9% (9)
	Missing/NA	7.0% (3)	9.3% (4)	25.6% (11)	7.0% (3)	32.6% (14)	72.1% (31)	9.3% (4)
	Total	100.0% (43)	100.0% (43)	100.0% (43)	100.0% (43)	100.0% (43)	100.0% (43)	100.0% (43)

Table 4 presents the data used to test for significant change in groups dichotomised by initial wellbeing status and the cohort as a whole.