

Manaaki Mamao—to care from a distance: evaluating a telehealth service for Māori and Pacific peoples with hypertension

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Life expectancy is 6.6 and 6.1 years shorter for Māori and Pacific peoples, respectively, compared to the non-Māori/non-Pacific population of Aotearoa New Zealand (Aotearoa). Cardiovascular disease (CVD) is the largest avoidable contributor to this health gap.¹

Hypertension (raised blood pressure [BP]) is a major CVD risk factor, with higher BP exponentially increasing risk for coronary heart disease and stroke.² Conversely, effective BP management reduces this risk dramatically.³ In Aotearoa, hypertension is managed in primary care, but over a quarter of New Zealanders have unmet primary healthcare needs due to long waits or cost.⁴ Māori and Pacific peoples are more likely to have a hypertension diagnosis and also face greater barriers to primary healthcare access.⁴ Accessible CVD risk-management programmes for these groups are therefore essential, with research showing that respectful, reciprocal communication and relationships are critical to culturally safe cardiac care.⁵

Telemonitoring services utilise clinician-led education and interactive digital interventions to enhance hypertension management through improved monitoring and health literacy.⁶ Manaaki Mamao is a 6-month telehealth-based programme delivered by Hato Hone St John that aims to reduce health inequities for Māori and Pacific peoples by taking a culturally safe, people led and technology enabled approach to hypertension management. It supports home-based hypertension monitoring and management with flexibility to meet individuals' needs. The aim of this study was to evaluate patient outcomes and engagement with Manaaki Mamao over the first 2 years of the programme.

Methods

Manaaki Mamao

Manaaki Mamao was developed in consultation

with Māori and Pacific peoples, who highlighted the importance of feeling heard and validated.

Patients are referred to Manaaki Mamao by hauora Māori providers and GPs. Enrolled patients receive a pre-provisioned electronic tablet, a paired BP monitor (Andesfit ADF-B180 or ADF-B19) and face-to-face training in their use. Patients are encouraged to take daily BP measurements. The tablet supports scheduled video consultations, health literacy content, medication reminders, messaging, and check-in calls from Hato Hone St John clinicians, who are available for questions or concerns throughout the programme. Health education content includes regularly updated resources on healthy diets, lifestyle choices and other topics relevant to hypertension management. This content is reinforced with personalised advice from the Manaaki Mamao clinical advisor by video or audio call.

Each participant receives a personalised care plan tailored to their specific health needs. BP medication is managed by the patient's GP, who remains the primary healthcare provider throughout the programme. Clinical advisors do not advise on medication changes, but may initiate medication revisions through referrals to the GP, including a detailed summary of patient BP data to support clinical decision making. If urgent concerns arise, a clinician will contact the GP directly.

Engagement with Manaaki Mamao clinicians and referrals to other services are based on BP readings and patient preferences, established at programme entry and revised as needed. More information about Manaaki Mamao can be found on the website.⁷

Participants

All patients referred to Manaaki Mamao between 13 December 2021 and 15 December 2023 were included in this retrospective evaluation. Referral was open to Māori or Pacific peoples

aged 18 years or older with uncontrolled hypertension and on hypertensive medication. Patients with BP consistently higher than 180/110mmHg, resistant hypertension (uncontrolled hypertension despite three or more antihypertensive medications), chronic kidney disease (CKD) stage 4–5 or unmanaged by GP (likely too medically unstable for community BP management), terminal illness, pregnant or breast feeding, postural hypotension, atrial fibrillation, or an acute cardiovascular event in the previous 3 months were not eligible for referral. Patients' other relevant medical diagnoses and current medications were included in the referral.

Data and analysis

Patient referrals to the programme, and from the programme to other services, were recorded. Patient demographics included gender, age and ethnicity. Systolic and diastolic BP was recorded as a weekly mean from patient readings across the 26 weeks of the programme. Participants were grouped by whether they had mean blood pressure readings for at least 13 of the 26 weeks (strong engagement), or for fewer than 13 weeks (light engagement). Descriptive statistics were calculated for patient characteristics. Paired Samples *t*-Tests were used to compare patients' first and last recorded mean systolic and diastolic BP for all participants and for strong and light engagement groups. Mean change in systolic and diastolic BP

from first to last recorded reading was compared between engagement groups using Independent Samples *t*-Tests. All statistical analysis used SPSS v29 (IBM), with significance at $p < .05$ (two-sided).

Ethics

This study was approved by the Northern B Health and Disability Ethics Committee (2024 FULL 19004).

Results

There were 173 referrals to Manaaki Mamao in the 24 months, and 143 were successfully onboarded to the programme. At least one weekly BP reading was available for 139 patients.

Sixty-nine percent of patients remained in the programme for 6 months, with a median of 26 weeks in the programme (range 1–26). The median number of weeks with no BP recordings was 5 (range 0–26). Seventy-one referrals were made from the programme to other services.

Overall, participants' last recorded mean weekly systolic BP was an average of 7.78mmHg lower than the first (Table 3). On average, those with strong engagement had a systolic BP decrease of 9.9mmHg and diastolic BP decrease of 6.5 over the programme, while those with light engagement had no statistically significant change in mean BP across their time in the programme (Table 3).

Table 1: Manaaki Mamao patient characteristics.

Characteristic		Enrolled (n, % of total)	Remaining in programme for 26 weeks (n, % retained)
Gender	Female	100 (70%)	73 (73%)
	Male	43 (30%)	26 (60%)
Age (years)	31–40	5 (3%)	3 (60%)
	41–50	25 (17%)	15 (60%)
	51–60	41 (29%)	30 (73%)
	61–70	45 (31%)	36 (80%)
	71–80	18 (13%)	8 (44%)
	81–90	3 (2%)	3 (100%)
	Missing	6 (4%)	4 (67%)
Ethnicity	Māori	61 (43%)	44 (72%)
	Pacific peoples	45 (32%)	36 (80%)
	Other/missing	37 (26%)	19 (51%)
Total		143	99

Table 2: Mean systolic and diastolic blood pressure of Manaaki Mamao participants at programme entry and exit.

		First recorded BP		Last recorded BP	
		Systolic m(SD)	Diastolic m(SD)	Systolic m(SD)	Diastolic m(SD)
All participants		151.8 (17.6)	90.0 (13.6)	144.0 (18.3)	84.5 (13.3)
Gender	Female	151.0 (18.1)	88.3 (13.4)	143.9 (18.8)	82.7 (13.1)
	Male	153.6 (16.4)	93.7 (13.2)	144.2 (17.4)	88.4 (13.1)
Age (years)	31–40	160.6 (15.0)	105.0 (5.1)	149.2 (14.3)	93.8 (16.4)
	41–50	154.8 (17.8)	97.5 (12.9)	140.6 (16.8)	86.2 (11.1)
	51–60	149.5 (19.5)	91.4 (12.2)	141.8 (17.5)	87.9 (12.5)
	61–70	150.0 (17.3)	85.8 (12.6)	144.3 (17.9)	81.3 (13.2)
	71–80	151.1 (14.1)	81.0 (14.7)	147.4 (16.4)	78.1 (12.3)
Ethnicity	81–90	161.3 (9.0)	91.3 (12.6)	142.7 (15.0)	79.7 (20.3)
	Māori	151.4 (21.3)	89.7 (11.1)	144.5 (18.5)	84.8 (12.1)
	Pacific peoples	153.4 (16.7)	91.6 (15.2)	144.3 (19.2)	83.8 (13.7)
	Other/missing	150.4 (21.3)	88.4 (14.6)	142.7 (17.5)	84.8 (12.1)

Table 3: Mean systolic and diastolic blood pressure and change over time by programme engagement.

	All participants	Strong engagement	Light engagement
N	139	106	33
Systolic BP mmHg m(SD)			
First	151.8 (17.6)	150.9 (16.8)	154.7 (19.7)
Last	144.0 (18.3)	141.0 (17.1)	153.7 (19.0)
Change	-7.8 (18.0) ^a	-9.9 (17.7) ^a	-1.0 (17.4) ^b
Diastolic BP mmHg m(SD)			
First	90.0 (13.6)	89.0 (12.9)	93.0 (15.4)
Last	84.5 (13.3)	82.5 (12.6)	90.8 (13.9)
Change	-5.4 (11.6) ^a	-6.5 (10.7) ^a	-2.3 (13.7) ^b

BP = blood pressure.

Strong engagement: those with at least 13 weekly BP readings.

Light engagement: those with fewer than 13 weekly BP readings.

^ap<.001 for comparison between first and last measurement using paired t-Test.

^bp<.05 for comparison of BP change between high and low engagers using Independent Samples t-Test.

Discussion

Over 80% of the 173 referrals to Manaaki Mamao were successfully onboarded, with 69% completing 6 months in the programme. Most participants were from target ethnicity groups, but referral forms did not always differentiate between Māori and Pacific ethnicity. BP reduced significantly over this period, with the strong engagement group experiencing a reduction in systolic and diastolic BP of 9.9mmHg and 6.5mmHg, respectively. This reduction aligns with studies demonstrating a 10mmHg drop in systolic and 5mmHg in diastolic BP is clinically significant, reducing coronary artery disease risk by more than 20%^{8,9} and cerebrovascular events by 20–40%.^{3,8}

Though we were unable to assess causality in this study, BP reductions were likely due to a combination of education, increased monitoring, improved medication adherence and regular medication review. We were unable to find literature about comparable interventions with a focus on Māori and/or Pacific peoples. However, a Turkish study demonstrated that individualised hypertension, lifestyle, and medication education sessions across a 9-month period resulted in greater medication adherence and significantly reduced BP compared to usual care.¹⁰ A recent integrative review emphasized the effectiveness of education as part of hypertension treatment, as well as the importance of information that is tailored to and delivered in the community. Meta-analysis demonstrated that this education, when combined with consistent personalised communication via messages or phone calls, had a moderate to large effect on sustained lifestyle change, blood pressure reduction, and overall improved cardiovascular health.¹¹ Home BP monitoring alone has also been shown to have additional modest positive effects on BP.¹²

CVD is estimated to cost the Aotearoa health system NZ\$3.3 billion annually, with high systolic BP contributing the largest health loss.¹³ In general, telehealth interventions can produce equal or better outcomes compared to in-clinic care.¹⁴

The present study demonstrates their potential in the setting of hypertension management in Aotearoa, addressing a health burden that falls disproportionately on Māori and Pacific peoples.

In 2023/2024, 25% of Māori and 38% of Pacific adults reported unmet health needs due to long wait times to see a GP, with both groups also more likely to face cost and transport barriers.⁴ Manaaki Mamao brings care into the home, eliminating these barriers and easing burden on primary care services while providing a clinical safety net for incidental findings. High engagement and retention rates indicate the programme was acceptable for the majority of patients referred.

Limitations and future directions

This evaluation used data that was routinely collected in the delivery of the programme, meaning patient satisfaction, improvements to health literacy, and medication adherence could not be examined. It was not possible to formally evaluate the reasons why the programme was not successful for participants with light engagement, but this group includes some patients who left the programme because they no longer met inclusion criteria (e.g., did not appear to have hypertension after being monitored at home). While Manaaki Mamao shows promise for scale throughout Aotearoa, additional data including qualitative assessment of the patient experience, impacts on health literacy, and durability of health improvements are recommended.

Conclusion

Manaaki Mamao successfully onboarded 143 patients in the first 24 months of delivery, providing an accessible and effective option to manage hypertension for patients not achieving this in primary care. Participants experienced reductions in BP at levels likely to significantly reduce cardiovascular risks, however outcomes were dependent on engagement with the programme. This telehealth model shows promise for reducing inequities in cardiovascular health outcomes if implemented on a wider scale.

COMPETING INTERESTS

All authors are employed by Hato Hone St John. TN is involved in clinical delivery of Manaaki Mamao. The authors have no further conflicts of interest to declare.

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