



Using patient-reported experience measures to evaluate a community-based chiropractic outreach programme in Rarotonga, Cook Islands

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ABSTRACT

Objective: Community-based outreach placements provide authentic clinical learning environments yet are rarely evaluated using community-derived feedback. This study assessed an intern-led chiropractic outreach placement in Rarotonga using patient-reported experience measures (PREMs) and routinely collected case-mix data as complementary evaluative indicators. PREMs capture patients' experience of the process of care and differ from patient-reported outcome measures (PROMs), which assess clinical or symptomatic outcomes.

Methods: Attending adults were invited to complete a post-visit PREM survey (n = 252). Survey responses were compared with intern-recorded case-mix data (n = 640; 2453 encounters). Descriptive statistics and exploratory ordinal logistic regression examined patterns in patient experience, demographic predictors, and similarity between patient- and intern-reported information.

Results: Patient experience ratings were consistently high, particularly for relational domains (communication and personal manner). Tāne/male gender and symptom chronicity were associated with lower reported comfort and satisfaction. Patient- and intern-reported data showed closely similar patterns overall, suggesting good alignment in documentation practices.

Conclusion: PREMs data provided meaningful insight into relational aspects of care and, when combined with routine case-mix records, supported pragmatic evaluation of a community-based outreach placement. Findings highlight areas for targeted refinement in communication, expectations management, and documentation practices.

1. Introduction

Community-based outreach programmes serve dual functions as healthcare services and as experiential learning environments in which students develop clinical, relational, and cultural competencies [1–3]. Despite their prominence in health professions education, these programmes are often evaluated through student or faculty perspectives, with limited systematic feedback from the communities receiving care. Patient experiences offer an important but underutilised lens for assessing how well student clinicians perform core competencies, such as interpersonal communication or clinical decision-making within

authentic settings [3–5]. This study reports an evaluation of a long-standing intern-led chiropractic outreach placement in Rarotonga, Cook Islands, using patient-reported experience measures (PREMs) and routinely collected records as evaluative indicators of patient-experiences within a community outreach setting. PREMs ask patients to describe their own experience of receiving care, for example, how clearly things were explained, how respectfully they were treated, and how convenient the service was, as distinct from measures of clinical or symptomatic outcomes. Specifically, we (i) describe who uses the outreach service and for what presenting needs; (ii) examine whether patient experience varies as a pragmatic signal of where student

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communication and expectation-setting may require targeted support; and (iii) assess how closely patient-reported and intern-recorded information align, as a quality-assurance indicator of documentation practices. This work extends the application of PREMs because it uses them not simply to rate a single clinical encounter (a “service-level” use) but to help evaluate an entire training programme (a “programme-level” use) within a clinical education setting where students learn by delivering supervised patient care (“experiential clinical education”).

Healthcare in community settings requires service models that are relational, accessible, and culturally responsive. Within this space, allied health professionals and community-based providers can play a central role in promoting health and wellbeing [6–8]. For students learning in these environments, the quality of their interactions with patients is a key indicator of developing competence. As the field has shifted from simple satisfaction ratings toward the broader construct of patient experience [5,9–11], these measures increasingly capture domains relevant to professional training, such as communication clarity, relational safety, and responsiveness to patient needs. Patient experience encompasses both functional aspects of care and the relational dimensions of provider–patient interaction, making it particularly useful for evaluating how well student clinicians enact patient-centred principles [9,10].

Although PREMs have been widely applied across mainstream healthcare [12–15], their use in allied health and community-based contexts remains less common [16–19] particularly for Pacific people [20,21]. This is a notable gap, as Pacific models of health, such as Fonofale [22], Fonua Ola, and Pito’enu [23,24], emphasise relationality, holistic wellbeing, and the interconnection of physical, spiritual, and community domains [25–27], making patient experience particularly salient for evaluating student–patient interactions in Pacific outreach settings. Chiropractic education and practice are grounded in a whole-person philosophy that emphasises the interrelationship between spinal function, nervous system processes, and overall health [28,29]. In Pacific contexts, where health is similarly understood as encompassing physical, relational, spiritual, and community dimensions, this alignment may influence both how care is delivered and how student interactions are experienced.

The [REDACTED] has operated an annual senior intern-led chiropractic outreach centre in Rarotonga for almost 20 years, providing services in a country with limited allied healthcare support [30]. Geographic isolation, limited specialist services, and reliance on visiting health providers shape the healthcare landscape, making Rarotonga a distinctive context for understanding community engagement with outreach care [1].

Taken together, these contextual, cultural, and disciplinary considerations underscore the need for systematic evaluation of how experiential training programmes operate in an authentic, cross-cultural learning environment. PREMs offer a valuable indicator of educational quality, capturing dimensions of communication, cultural safety, and professionalism that are central to competency-based health professions training. By identifying patterns in patient experience and by comparing distributions between patient- and intern-reported data, this evaluation aims to inform targeted curriculum and supervision refinements (e.g., communication approaches for chronic presentations and gender-responsive interaction), while offering a transferable approach to evaluating community-based placements where conventional educational outcome measures are difficult to implement.

2. Methods

The intern-led outreach centre was staffed by 43 interns (mean age: 25.1 ± 4.2 years, 70% female) and 9 mentors (mean age: 49.2 ± 9.7 years, 33% female). At least one person from both the intern and mentor pool identified as gender diverse. Interns were in the final semester of a 5-year Bachelor of Chiropractic degree and the final semester for a 2-year internship in which they provide chiropractic care in New

Zealand under the supervision of registered chiropractors (mentors).

The outreach centre was open over 10 days to any resident of the Cook Islands. A person seeking chiropractic care at the outreach centre would be asked to provide a written health history and consent for examination (or parental/guardian consent for children). Gender was self-reported using culturally relevant categories (Tāne/Male, Va’ine/Female, Akava’ine/Gender-diverse). Because these categories reflect sociocultural identities rather than biological attributes, we interpret differences as gender-based rather than sex-based. Interns conducted supervised assessments and delivered care under mentor oversight following standard clinical protocols. Once the intern–patient interaction was completed, a research assistant invited patients to complete a voluntary, one-time, post-visit survey and consent was obtained for this survey.

2.1. Participants

All people who received care in the 10-day [REDACTED] outreach centre during July 2025 were eligible to take part in this study. Over the 10 working days, interns recorded 2453 individual care encounters. These visits represented 640 unique adult patients (≥ 18 years) and 153 children. Of the adult patients, 252 completed the post-care PREM survey. Children received clinical care and are described in the case-mix data only; the post-visit PREM survey was restricted to adults aged 18 years and over, and no child- or caregiver-reported experience measure was collected.

2.2. Ethical approval

The [REDACTED] Research Committee approved this project, and ethical approval was given from the Cook Islands Research Committee on the 19th of June 2025 (Reference: 12/25). As the project was part of a course review, it was considered out of scope for ethical review by the Health and Disabilities Ethics Committee of New Zealand. All procedures performed in this study were carried out in compliance with the Helsinki Declaration.

The research was undertaken in recognition of the cultural values, health worldviews, and relational practices of Cook Islands Māori communities. The research team acknowledges its position as manuhiri (visitors) and findings are presented with the intention of supporting culturally safe service delivery, strengthening community-led health promotion, and ensuring the work contributes to the wellbeing of Cook Islands people. All findings will be shared back locally in the form of a summary report alongside any published research.

2.3. Outcome measures

2.3.1. Case mix

Student interns collected demographic information on every individual, in addition to their clinical notes. Case-mix data consisted of age, gender, ethnicity, chief complaint, and onwards referral (such as X-ray, general practitioner, or medical specialist). As part of a clinical education quality assurance process, case mix data recorded by interns were compared with patient survey responses.

2.3.2. Survey

All adults, aged 18 years and over, were invited to complete the survey presented on an Android tablet. Participation in the survey was voluntary and took approximately 5 min to complete. Demographic data from patients such as age, gender, and Cook Islands specific ethnicity [31] were collected, alongside clinical data such as chief complaint and patient reported experiences.

A modified version of the Visit-Specific Satisfaction Instrument (VSQ-9, RAND, California, United States) was used to assess patient satisfaction with their care [32]. The VSQ-9 is a 9-question survey, scored on a 5-point Likert scale ranging from “Poor” to “Excellent”. Each

item is scored from 1 (Poor) to 5 (Excellent), with higher scores indicating greater satisfaction. The modified questions and demographics questions are shown in Appendix A in the [supplementary materials](#). Because the instrument was adapted, results should be interpreted as properties of the modified scale, not the original VSQ-9. Eight additional questions were included in the survey to capture chiropractic care specific data from participants.

The surveys were anonymous and administered in English. Participants received no incentives, and they were clearly informed that choosing not to complete the survey would have no impact on their current or future chiropractic care.

2.3.3. Survey question validation

Face and content validity [33] were established via expert review [34]; full item wording is in [Supplementary Appendix A](#). No additional psychometric validation was undertaken.

2.4. Statistical analysis

Statistical analysis was performed using R software (version 4.0.3) in RStudio [35]. Descriptive statistics, using the stats package, such as unadjusted means, standard deviations, and counts were used to describe the baseline characteristics of the data, and Chi-squared tests compared proportions between the case mix and survey groups to assess the similarity of their distributions. Because the patient survey was anonymous and not linked at the individual level to intern-recorded records, these comparisons assess distributional similarity between two independently sampled groups rather than individual-level concordance between a given patient's report and their own intern's record. Statistical significance for all tests was set at $p < 0.05$ and adjusted using Holm multiplicity correction as appropriate [36]. All calculations were performed with unrounded data.

2.4.1. Exploratory analytic approach

The exploratory analysis examined both overall satisfaction ratings and specific outcome perceptions following care, with a focus on potential differences by demographic factors (age and gender) and the inter-relationships among outcome items. The purpose of this exploratory phase was not to confirm hypotheses, but rather to map patterns within the data and identify areas for future, more targeted investigation.

2.4.1.1. Satisfaction ratings. Likert-style satisfaction ratings (Q8–Q16) were converted to numeric scores (1 = poor, 5 = excellent), with reverse-coding applied to negatively worded items (Q21, Q22) for consistency. Grouped summaries by age [15,37] and gender [9,38] were generated, and Pearson's chi-squared tests assessed whether distributions of responses differed significantly across demographic categories. To account for multiple testing across comparisons, false discovery rate (FDR) correction was applied [36].

2.4.1.2. Predictors of experience indicators. To further explore demographic and clinical predictors of patient experience from survey data, ordinal logistic regression analyses, using the mass package, were conducted for three outcomes: overall satisfaction, comfort during adjustment, and post-adjustment feeling. Overall patient satisfaction was examined as a widely used patient-reported experience relevant to evaluating clinical learning environments [39]. Comfort during the adjustment and post-adjustment feeling were chosen after discussion with clinical teaching staff. Explanatory variables included age group [15,37], gender [15,37], and symptom duration [37,40], with models adjusted for sparse categories where possible. Ethnicity, reason for visit, and whether the patient had seen a chiropractor before were also included as explanatory variables in each model.

For ordinal regression modelling, outcome categories with very low

frequencies were combined to avoid empty or unstable cells. The lowest satisfaction category ('Poor') was dropped as it did not occur in the dataset; the two least frequent adjustment comfort categories were collapsed into a single 'Uncomfortable' group; and for post-adjustment feeling, the 'Awful' category was merged with 'A little bad' to create a single 'Negative' group. These compressions were applied to ensure model convergence and improve interpretability, while maintaining the ordinal structure of the responses. Results are reported as odds ratios (OR) with associated p -values. Several sparse predictor categories (including a gender category of $n = 2$, and several ethnicity and reason-for-visit categories with fewer than 10 respondents) produced unstable or degenerate maximum-likelihood estimates. To address this, ethnicity was regrouped into three categories (Cook Islands Māori, Other Pacific Peoples, Non-Pacific/Other) and reason for visit into three categories (Wellness/No complaint, Spinal pain, Other complaint) prior to modelling; the two gender-diverse/Akava'ine respondents were retained in all descriptive analyses (Tables 1 and 2) but excluded from the regression models, as no estimation method can produce a stable estimate from two observations [41]. Even with these changes, estimates for some smaller subgroups retain comparatively wide confidence intervals and should be interpreted as exploratory rather than confirmatory. Given remaining sparse cells even after collapsing categories, we fit bias-reduced (Firth-type) proportional-odds models [42] and verified proportional-odds assumptions. In these models, odds ratios above 1 indicate greater odds of a less favourable (lower) response category, and odds ratios below 1 indicate greater odds of a more favourable (higher) category.

3. Results

3.1. Population

Over 10 working days, interns recorded 2453 individual care encounters. These visits represented 640 unique adult patients (≥ 18 years, 50.1 ± 17.2 years, 58.6% Female/Va'ine) and 153 unique child patients (8.5 ± 5.0 years, 52.29% Female/Va'ine). Of the adult patients, 252 completed the post-care PREM survey (62.3% Female/Va'ine), yielding an estimated response rate of 39.4% of the eligible adult population. Because not all interns consistently invited patients and survey devices were limited ($n = 3$), true invitation and completion rates may have varied across days and interns. No incentives were offered for completing the survey. Plausible contributors to the response rate include that the survey was administered immediately after care, while the experience was fresh; that care itself was free of charge; and that the survey questions were specific and brief (approximately 5 min to complete). These are offered as plausible contributing factors rather than confirmed drivers, as responders' and non-responders' motivations were not directly assessed.

3.1.1. Comparison between case mix and survey data

Survey respondents were closely aligned with the overall adult case mix, see Table 2. Only two gender diverse/Akava'ine people were surveyed and no people who were gender diverse/Akava'ine were noted in the intern reported case mix data. Adult age groups were reasonably well matched ($p > .05$).

The majority of people assessed by interns identified as Cook Islands Māori (69.1%, survey: 77.8%, $\chi^2(1) = 6.32$, $p = .012$), with Pacific Peoples (11.7%, survey: 5.6%, $\chi^2(1) = 6.98$, $p = .008$) being the next largest ethnic group. Ethnicity proportions between the remaining survey and case mix showed no significant differences ($p > .05$, see Table 1).

The most common chief complaint was lumbopelvic pain (case: 42.8%, survey: 33.3, $\chi^2(1) = 6.37$, $p = .012$), then neck pain (case: 20.0%, survey: 27.0%, $\chi^2(1) = 4.74$, $p = .029$). But the third most common reason for seeking care for both the intern reported cases and survey was wellness/no complaint (case: 11.41%, survey: 18.3%, $\chi^2(1)$

Table 1

Demographic data and Chi-Squared comparison of the population sampled in the survey and from case mix data.

	Case mix, Child (n = 153)		Case mix, Adults (n = 640)		Survey, Adults (n = 252)		Comparison between adult case mix and survey samples
Age in years	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
0–4	36	23.5	-	-	-	-	-
5–Sept	49	32	-	-	-	-	-
Oct–17	68	44.4	-	-	-	-	-
18–24	-	-	55	8.6	24	9.5	$\chi^2(1) = 0.10, p = .757$
25–34	-	-	106	16.6	40	15.9	$\chi^2(1) = 0.02, p = .881$
35–44	-	-	115	18	48	19	$\chi^2(1) = 0.08, p = .780$
45–54	-	-	108	16.9	44	17.5	$\chi^2(1) = 0.01, p = .912$
55–64	-	-	112	17.5	49	19.4	$\chi^2(1) = 0.34, p = .560$
65 +	-	-	144	22.5	47	18.7	$\chi^2(1) = 1.37, p = .242$
Gender							
Male/Tāne	73	47.7	265	41.4	93	36.9	$\chi^2(1) = 1.34, p = .246$
Female/Va'ine	80	52.3	375	58.6	157	62.3	$\chi^2(1) = 0.88, p = .347$
Gender diverse/Akava'ine	0	0	0	0	2	0.8	$\chi^2(1) = 2.16, p = .142$
Ethnicity							
Cook Island Māori	104	68	442	69.1	196	77.8	$\chi^2(1) = 6.32, p = .012$
Fijian	8	5.2	17	2.7	12	4.8	$\chi^2(1) = 1.92, p = .166$
New Zealand Māori	9	5.9	29	4.5	7	2.8	$\chi^2(1) = 1.02, p = .313$
New Zealand European	3	2	28	4.4	9	3.6	$\chi^2(1) = 0.13, p = .722$
Filipino	0	0	16	2.5	4	1.6	$\chi^2(1) = 0.33, p = .563$
Other Pacific Peoples	20	13.1	75	11.7	14	5.6	$\chi^2(1) = 6.98, p = .008$
Other	7	4.6	31	4.8	10	4	$\chi^2(1) = 0.15, p = .701$
Unknown	2	1.3	2	0.3	0	0	$\chi^2(1) = 0.10, p = .919$
Chief Complaint							
Wellness/No Complaint	95	62.1	73	11.4	46	18.3	$\chi^2(1) = 6.75, p = .009$
Neck pain	8	5.2	128	20	68	27	$\chi^2(1) = 4.74, p = .029$
Midback pain	11	7.2	63	9.8	24	9.5	$\chi^2(1) = 0.00, p = .984$
Lower back pain	16	10.5	274	42.8	84	33.3	$\chi^2(1) = 6.37, p = .012$
Headaches	2	1.3	10	1.6	7	2.8	$\chi^2(1) = 0.85, p = .356$
Shoulder or arm pain	3	2	55	8.6	19	7.5	$\chi^2(1) = 0.14, p = .705$
Leg pain	5	3.3	22	3.4	4	1.6	$\chi^2(1) = 1.58, p = .208$
Visceral complaint	1	0.7	4	0.6	-	-	
Other	12	7.8	11	1.7	0	0	$\chi^2(1) = 3.09, p = .079$
Onwards referral							
None	0	0	556	86.9	235	93.3	$\chi^2(1) = 6.71, p = .010$
X-ray	0	0	62	9.7	14	5.6	$\chi^2(1) = 0.00, p = 1.000$
GP	0	0	20	3.1	2	0.8	$\chi^2(1) = 3.45, p = .063$
Medical specialist	0	0	2	0.3	1	0.4	$\chi^2(1) = 3.17, p = .075$

Table 2

Likert scores for questions 8–16.

Questions	Poor	Fair	Good	Very Good	Excellent	mean	SD
Q8 How satisfied you are with the [REDACTED] chiropractors coming to Rarotonga once a year.	2	3	18	50	179	4.6	0.7
Q9 Convenience of the location	2	14	49	57	129	4.1	1
Q10 How long you waited to see your intern	0	5	22	58	167	4.5	0.7
Q11 The time you spent with the [REDACTED] Chiropractic intern you saw	0	1	19	54	177	4.6	0.6
Q12 Technical skills of the [REDACTED] Chiropractic intern you saw	0	3	17	63	167	4.6	0.7
Q13 The personal manner of the [REDACTED] Chiropractic Intern you saw	0	1	10	44	196	4.7	0.6
Q14 The personal manner of the [REDACTED] Chiropractic mentor you saw	1	1	11	47	189	4.7	0.6
Q15 Explanation of what was done for you	1	2	19	49	179	4.6	0.7
Q16 The visit overall	0	2	13	36	199	4.7	0.6

= 6.75, $p = .009$). For children receiving care, most (62.1%) had no presenting complaint. Most surveyed complaints were chronic in nature, with 62.4% of survey respondents saying their complaint had been present for over 12 weeks, and 55.7% reporting their issue had been present for over a year.

3.2. Patient reported experience measures

Responses to Questions 8–16, rated on a five-point Likert scale (1 = Poor to 5 = Excellent), showed consistently high satisfaction (Table 2). Across these questions, average scores ranged from 4.2 to 4.7, with the majority of ratings as “Very Good” or “Excellent”. Ninety-two percent of respondents rated the technical skills of their intern as “excellent” or “Very good”, and no respondents reported intern technical skills as “Poor”. Question 15 suggested that most people were happy with how

the interns communicated of what was done during their interaction, with 91.2% of people reporting an “Excellent” or “Very good” explanation of their care. The personal manner of interns was also rated highly, with 99.6% being rated “Excellent” or “Very good”. Overall, “Poor” and “Fair” responses were rare, with convenience of location given the lowest rating.

A total of 166 participants (65.9%) provided open-text responses about their health needs in Q17 which were manually recoded to report onwards recommendation (e.g., general medical practitioner (GP), X-rays, medical specialist). Results from Q17 revealed that 6.8% of people surveyed were referred onwards for further healthcare (case: 13.1%, $\chi^2(1) = 6.71, p = .010$). Of the people who were referred onwards for an identified healthcare need, responses to Q19 revealed that 53.8% were sure of how to access the care they needed and 35.4% thought they knew. Two people (3.1%) were unsure of how to access the care they

needed for their ongoing healthcare needs, and five (7.8%) did not know how to access further care.

Regarding the adjustment itself, responses to Q21 were overwhelmingly positive, with 89.3% of people rating their adjustment as “Very comfortable” or “Comfortable” and only 0.4% of people reporting an uncomfortable adjustment. In question 23, show 95.7% of people reported positive changes post adjustment, with over 34.7% people reporting they felt “More relaxed or calm” and 24.1% reported they were “more comfortable and moving more easily”.

3.2.1. Adverse events

All participants were encouraged to report any adverse event to their intern or a mentor no matter how insignificant they were felt to be. Over the course of the [REDACTED] chiropractic outreach, no serious or minor adverse events [43] were reported. However, a small number of transient post-care effects were identified via the survey data, such as

mild soreness (0.7%, $n = 3$), increased pain (0.5%, $n = 2$), or new pain (0.3%, $n = 1$).

3.3. Satisfaction ratings by demographics

Mean Likert scores for overall satisfaction ranged from 4.3 to 5.0 across age and gender groups but were not significantly different between groups ($p > .05$). For example, among Va'ine/Female respondents, the mean satisfaction score was 4.7 ± 0.7 , while Tāne/Male respondents averaged 4.4 ± 0.7 . Intern skills and mentor manner were similarly rated highly, with means above 4.5 in most subgroups.

3.4. Predictors of experience indicators

3.4.1. Satisfaction

Adult patients aged 35–44 years had significantly lower odds of

Table 3

Ordinal Model Outcomes. Models were fit as bias-reduced (Firth-type) adjacent-category logit models; odds ratios above 1 indicate greater odds of a less favourable (lower) response category, and odds ratios below 1 indicate greater odds of a more favourable (higher) category. Reference categories: age 18–24; gender Vaine/Female; ethnicity Cook Islands Māori; reason for visit Wellness/No complaint; symptom duration under 4 weeks; has not seen a chiropractor before. The two gender-diverse/Akava'ine respondents ($n = 2$) were excluded from these models as no method can produce a stable estimate from two observations; they remain in all descriptive tables (Tables 1 and 2).

	Predictor	OR	CI lower	CI upper	p value	n	Stability Flag
Overall satisfaction (Q16)	Age 25–34	0.35	0.09	1.33	0.122	40	
	Age 35–44	0.14	0.03	0.67	0.013	48	
	Age 45–54	0.47	0.13	1.68	0.243	44	
	Age 55–64	0.31	0.09	1.13	0.076	49	
	Age 65 +	0.53	0.16	1.78	0.304	47	
	Gender: Tāne/Male	1.67	0.88	3.16	0.114	93	
	Ethnicity: Other Pacific Peoples	1.63	0.64	4.13	0.305	26	
	Ethnicity: Non-Pacific/Other	1.65	0.65	4.21	0.297	31	
	Reason: Spinal pain	0.71	0.22	2.33	0.572	175	
	Reason: Other complaint	0.46	0.09	2.42	0.359	30	
	Duration complaint: 4–12 weeks	1.95	0.65	5.83	0.232	33	
	Duration complaint: 12 + weeks	4.68	1.27	17.25	0.021	14	
	Duration complaint: 1 + year	1.87	0.74	4.73	0.186	117	
	Seen chiro before: No	1.3	0.68	2.47	0.423	73	
	Good Very Good	0.46	0.07	2.93	0.414		Threshold (cutpoint)
	Very Good Excellent	0.38	0.07	2.23	0.286		Threshold (cutpoint)
Adjustment comfort (Q21)	Age 25–34	0.96	0.3	3.07	0.949	40	
	Age 35–44	0.49	0.14	1.7	0.26	48	
	Age 45–54	1.65	0.55	4.94	0.375	44	
	Age 55–64	0.58	0.19	1.84	0.359	49	
	Age 65 +	0.94	0.31	2.83	0.91	47	
	Gender: Tāne/Male	1.89	1.1	3.24	0.022	93	
	Ethnicity: Other Pacific Peoples	2.23	1.05	4.74	0.037	26	
	Ethnicity: Non-Pacific/Other	1.6	0.74	3.44	0.23	31	
	Reason: Spinal pain	1.16	0.39	3.44	0.79	175	
	Reason: Other complaint	1.02	0.28	3.8	0.972	30	
	Duration complaint: 4–12 weeks	1.66	0.65	4.24	0.288	33	
	Duration complaint: 12 + weeks	3.67	1.2	11.21	0.022	14	
	Duration complaint: 1 + year	2.36	1.09	5.08	0.029	117	
	Seen chiro before: No	0.8	0.48	1.35	0.406	73	
	Uncomfortable:(Intercept)	0.05	0.01	0.44	0.007		Threshold (cutpoint)
Post-adjustment feeling (Q22)	Okay:(Intercept)	0.17	0.03	0.98	0.047		Threshold (cutpoint)
	Comfortable:(Intercept)	0.14	0.03	0.73	0.019		Threshold (cutpoint)
	Age 25–34	1.76	0.46	6.77	0.415	40	
	Age 35–44	1.54	0.39	6.02	0.538	48	
	Age 45–54	2.19	0.58	8.27	0.247	44	
	Age 55–64	1.9	0.51	7	0.337	49	
	Age 65 +	1.16	0.31	4.37	0.823	47	
	Gender: Tāne/Male	1.9	1.09	3.31	0.024	93	
	Ethnicity: Other Pacific Peoples	1.84	0.87	3.9	0.11	26	
	Ethnicity: Non-Pacific/Other	1.32	0.62	2.84	0.47	31	
	Reason: Spinal pain	1.16	0.43	3.17	0.771	175	
	Reason: Other complaint	1.12	0.33	3.8	0.858	30	
	Duration complaint: 4–12 weeks	0.88	0.35	2.22	0.793	33	
	Duration complaint: 12 + weeks	2	0.7	5.77	0.198	14	
	Duration complaint: 1 + year	1.4	0.7	2.79	0.344	117	
	Seen chiro before: No	0.65	0.38	1.11	0.114	73	
	Negative:(Intercept)	0.12	0.01	0.99	0.049		Threshold (cutpoint)
	Neutral:(Intercept)	0.06	0.01	0.37	0.002		Threshold (cutpoint)
	Good:(Intercept)	0.32	0.06	1.67	0.179		Threshold (cutpoint)

reporting a lower (less favourable) overall satisfaction category than patients aged 18–24 years, indicating higher satisfaction in this age group (OR = 0.14, 95% CI 0.03–0.67, $p = .013$). Patients reporting symptoms present for over 12 weeks had significantly greater odds of reporting a lower overall satisfaction category than those with symptoms present for under 4 weeks (OR = 4.68, 95% CI 1.27–17.25, $p = .021$), suggesting chronicity may negatively influence perceived satisfaction (see [Table 3 supplementary materials](#)).

3.4.2. Comfort

Tāne/Male patients had significantly greater odds of reporting a lower comfort category during adjustment than Vaine/Female patients (OR = 1.89, 95% CI 1.10–3.24, $p = .022$). Patients identifying with Other Pacific Peoples ethnicities also had significantly greater odds of reporting a lower comfort category than Cook Islands Māori patients (OR = 2.23, 95% CI 1.05–4.74, $p = .037$). Additionally, individuals with chronic complaints (e.g., over 12 weeks: OR = 3.67, $p = .022$, 95% CI 1.20–11.21; over a year: OR = 2.36, 95% CI 1.09–5.08, $p = .029$, [Table 3](#)) were less likely to report being comfortable.

3.4.3. Post adjustment feeling

Tāne/Male patients also had significantly greater odds of reporting a lower (less positive) post-adjustment feeling category (OR = 1.90, 95% CI 1.09–3.31, $p = .024$), suggesting a consistent gender-related difference across comfort and post-adjustment perceptions of care. No other predictor was significantly associated with post-adjustment feeling in this model, see [Table 3](#).

4. Discussion and conclusion

4.1. Discussion

This study provides the first systematic account of who engages with the [REDACTED] intern-led chiropractic outreach centre in Rarotonga and how the service is experienced by patients. Consistently high ratings across relational domains, such as communication, personal manner, suggest that the programme was perceived positively by the community that was served.

The most common reasons for engaging with the centre were for lumbopelvic pain, neck pain, and for wellness/no complaint. Those who were more likely to report high satisfaction were people in early-middle adulthood and those with shorter duration complaints. Those that were less likely to report high comfort were men and those with chronic complaints. Tāne/Men were also less likely to report positive feelings post-adjustment. No adverse events were reported during the study period; however, some transient, post-care effects were reported. Lastly, the comparison of survey and case mix data suggested that intern documentation aligned well with the patient population, showing a similar overall distribution between patient-reported and intern-recorded information.

4.2. Comparison to PREM literature

When compared with previous PREM studies in chiropractic contexts, these results are consistent with trends showing strong satisfaction ratings in relational domains [16,18]. For example, prior evaluations of chiropractic care in community settings similarly highlight the centrality of provider communication, explanation, and interpersonal manner in shaping satisfaction [16], underscoring the importance of trust and rapport in patient experiences of care. The relevance of high patient satisfaction in this context extends beyond positive evaluations of care. Relational experiences may function as an entry point into broader health-promoting behaviours by strengthening trust and reducing barriers to care. Pacific health frameworks emphasise interconnectedness between individuals, families, spirituality, and community [2,26,27]; within these models, relational interactions during care may carry

meaning beyond the immediate clinical encounter. The consistently positive interpersonal experiences observed here may reflect perceived alignment between the outreach model and the relational and communal values embedded in Pacific worldviews. This interpretation should be understood as a contextual lens rather than a causal explanation of patient experience. Additionally, as this study recorded experience at a single point in time, more research is needed to investigate if satisfaction scores would remain high or reduce over time [19]. Attendance at the outreach centre was free and for a limited time, eliminating financial barriers and potentially creating a sense of novelty.

Studies of Pacific Peoples [21] and New Zealand Māori [20] have shown a relatively high uptake of chiropractic care (26–38%), compared to global utilisation (9.1% [44]), but no previous data on satisfaction currently exists. Pan-Pacific models of health or well-being, such as Fonofale and Fonua Ola, involve multiple interconnected physical, mental, and spiritual domains [25]. Domains that further interact with community or social well-being, family, and the environment [22,23,45]. A less known model, Pito'enua, describes a Cook Island model of one's life journey or wellbeing depicted as a vaka (canoe) [24]. Pito'enua emphasises balance, connection to land and community, and resilience to navigate challenges and maintain well-being [23,24]. The conceptual overlap between chiropractic's holistic emphasis [46,47] and Pacific health models may provide one lens for understanding the high satisfaction scores observed. However, this interpretation is speculative and future in-depth qualitative research is needed to examine this further.

4.2.1. Predictors of experience

Exploratory subgroup analyses indicated that overall perceptions of care were broadly positive and consistent across demographic groups. Those aged 35–44 years were more likely to report high levels of satisfaction, but those experiencing longer-standing complaints tended to report lower satisfaction and reduced comfort during care.

Although overall satisfaction was high, exploratory analyses suggest modest demographic variation in how care was experienced. Tāne/Male patients tended to report lower comfort and post-adjustment benefit, consistent with some previous studies [9] but not others [15,38,48,49]. Observed gender differences in comfort and post-adjustment perceptions likely reflect sociocultural factors rather than inherent differences, including cultural norms around touch, expectations of care, and gendered communication patterns. Anecdotally, some tāne/male patients expressed a preference for tāne/male interns. This could be because the tāne/male interns were perceived as stronger/more effective, or because of cultural norms between Pacific peoples [50]. Patients identifying with Pacific ethnicities other than Cook Islands Māori also reported lower comfort during adjustment relative to Cook Islands Māori patients. Given the modest subgroup size and comparatively wide confidence interval, this finding should be interpreted cautiously; it may reflect differences in cultural expectations around touch and physical examination across distinct Pacific communities, or unmeasured confounding by other visit characteristics, and warrants further investigation with larger, community-specific samples. Future research could investigate the effect of intern-gender on satisfaction and obtain further rationale from patients to understand their reasons for scoring high or low satisfaction. We note that the demographic and clinical patterns identified here are actionable primarily at the level of curriculum and supervision design, rather than at the level of individual clinicians: the outreach centre was staffed by a relatively small, rotating pool of interns, and individual clinician identifiers were not linked to survey responses in order to preserve anonymity in this small-cohort setting. Within that constraint, patterns such as lower comfort among tāne/male patients and among those with chronic complaints point toward specific, targeted curriculum content (e.g., gender-responsive communication training and expectation-setting for chronic presentations) rather than toward appraisal of individual student clinicians.

The association between longer symptom duration and reduced

satisfaction/comfort is consistent with previous literature. Chronic patients may approach care with higher expectations, comorbid conditions, or greater frustration and may be less likely to perceive immediate benefit from a single session [12–14]. Previous research highlights the importance of creating and communicating a comprehensive plan of care [14], something not realistically achievable within a two-week outreach intern-led centre. Future chiropractic outreach programs could consider fostering interdisciplinary relationships to assist with longer-term follow-up care in Rarotonga.

4.2.2. Strengths and limitations

In relation to the Rarotongan population, a strength of this study is the large survey sample embedded within a larger outreach centre population, providing robust insights into patient experiences. Although 39.4% of adult patients completed the survey, completion depended on interns inviting patients to complete the survey and on the availability of a limited number of devices. These issues, combined with possible social desirability effects [50], could suggest satisfaction scores may be inflated, particularly in a cross-cultural context where patients may have wished to affirm the presence of the outreach centre and express hospitality, reflecting Pacific values of respect and reciprocity. Finally, the survey was only presented in English which, although an official language in Rarotonga, is not the indigenous language and may have excluded some people from participating. Additionally, satisfaction ratings in this study showed a pronounced ceiling effect, consistent with many traditional PREM instruments; this limits the ability of the current instrument to discriminate between finer gradations of patient experience, and instruments designed specifically to reduce ceiling effects would be valuable for future research aiming to detect such variation. Patients and community members were also not involved in the design of this evaluation, and greater community co-design of future surveys, and of their interpretation, would strengthen alignment with the relational and communal values discussed above. Finally, no child- or caregiver-reported experience measure was collected in this evaluation; given that 153 children received care during the outreach period, developing an age-appropriate PREM for paediatric attendees is an important direction for future evaluation.

Despite these limitations, the findings offer several possibilities for strengthening experiential training and community-based educational programmes. High ratings across communication and interpersonal domains highlight these as core competencies that students must develop [26,27]. Integrating PREMs into routine programme evaluation could provide educators with a contextually relevant indicator of relational competencies within clinical learning environments. The observed differences signal opportunities to enhance teaching around gender-responsive practice [49], expectations management, and communication strategies for patients with chronic conditions [14]. These documentation similarity results further demonstrate how comparing patient- and intern-reported data can serve as a practical quality-assurance mechanism for record-keeping practices.

Beyond evaluating this outreach programme, this study demonstrates how patient-reported experience measures can be integrated with routinely collected clinical records to provide a pragmatic framework for programme evaluation in community-based educational placements. This approach may be particularly valuable for culturally diverse, geographically isolated, and resource-constrained settings where conventional evaluation methods are difficult to implement.

4.3. Conclusion

This study reports a programme evaluation of a long-standing, intern-led chiropractic outreach placement using PREMs and routine records as complementary evaluative indicators. Patient-reported experiences were consistently positive across relational domains, while exploratory analyses identified variation by gender, age, and symptom chronicity that may inform targeted curriculum refinements. Similarity

between patient- and intern-reported data further supports the use of routinely collected documentation as a pragmatic quality-assurance resource in community-based placements.

These findings illustrate how patient experiences can be integrated into the evaluation and ongoing refinement of experiential training programmes, particularly in settings where direct observation and longitudinal educational outcomes are constrained, and pragmatic evaluative approaches are required.

CRedit authorship contribution statement

Imran Niazi: Project administration, Resources, Supervision, Writing – review & editing. **Paul Marshall:** Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Writing – review & editing. **Alice Cade:** Conceptualization, Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing. **McCambridge Alana:** Conceptualization, Formal analysis, Methodology, Project administration, Supervision, Writing – review & editing. **Kirk Stevens:** Data curation, Investigation, Project administration, Resources, Writing – review & editing. **Lisa Baptista:** Data curation, Investigation, Project administration, Resources, Writing – review & editing. **Kelly Holt:** Investigation, Project administration, Resources, Supervision, Writing – review & editing.

Ethics approval

The [REDACTED] Research Committee approved this project, and ethical approval was given from the Cook Islands Research Committee on the 19th of June 2025 (Reference: 12/25). As the project was part of a course review, it was considered out of scope for ethical review by the Health and Disabilities Ethics Committee of New Zealand. All procedures performed in this study were carried out in compliance with the Helsinki Declaration, institutional, national, and international ethical standards.

Consent to participate

All participants provided written consent for their data to be used in research as part of the study procedures. All procedures performed in this study were carried out in compliance with the Helsinki Declaration.

Consent for publication

Not applicable. No individual data, images, or other identifying information are included in this manuscript.

Declaration of Generative AI and AI-assisted technologies in the writing process

The authors used ChatGPT (OpenAI) to assist with language editing. No generative AI was used for data analysis, interpretation, or the generation of results. The authors take full responsibility for the content.

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Declaration of Competing Interest

The authors are affiliated with the institution that operates the

outreach programme evaluated in this study. No financial interests, incentives, or external influences affected the design, analysis, or interpretation of the research.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Alice Cade reports administrative support from The University of Auckland and financial support and travel from the New Zealand College of Chiropractic. Alana McCambridge reports financial support from Auckland University of Technology. Kirk Stevens, Kelly Holt, and Lisa Baptista report financial support and travel from the New Zealand College of Chiropractic. Imran Niazi report financial support from the New Zealand College of Chiropractic. The authors declare no other competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.pecglo.2026.100018](https://doi.org/10.1016/j.pecglo.2026.100018).

Data availability

Data will be made available on request.

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