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Turning Pain into Gain: Evaluation of a Multidisciplinary Chronic Pain Management Program in Primary Care

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Abstract

Objective. To measure the impact of the multidisciplinary Turning Pain Into Gain program in people experiencing chronic pain of any etiology. **Methods**. A mixed-methods observational study of 252 participants was used to explore the impact of Turning Pain Into Gain on medication use; quality of life and functioning, as measured by the Pain Self-Efficacy Questionnaire; and self-reported hospitalizations between 2015 and 2016. **Results**. Responses from 178 participants showed an increased alignment with Australian pain medication guidelines (e.g., a 7.3% reduction in paracetamol duplication was reported with a concurrent 5.1% rise in the administration of sustained-release paracetamol formulations); improved Pain Self-Efficacy Questionnaire scores from 23.1 (out of a possible score of 60) preprogram to 35.3 postprogram; and a reduction in self-reported hospitalizations from 50 cases in the 12 months preprogram to 11 cases in the 12 months postprogram. **Conclusions**. Positive medication, Pain Self-Efficacy Questionnaire, and hospitalization changes provide evidence for the broader implementation of similar patient-centered programs to promote more holistic management of diverse types of chronic pain in primary care. Reduced hospitalization reflects potential for this intervention to be cost-effective, which could be investigated further.

Key Words: Chronic Pain; Health Services; Medication Therapy Management; Pain Clinics; Primary Health Care; Self Care

Introduction

Chronic pain is a global issue that impacts individual lives and the economy. The condition is the fourth most common in Australia [1] and affects almost one in five Australians, with an increased prevalence projected as the population ages [2]. This compares to 37.3% of the population in developed countries and 41.1% in developing countries [3].

Chronic pain is defined as pain experienced every day for at least three months in the previous six [1,4]; it significantly impacts quality of life [5–7] and mental health, with reported associations with depression, anxiety spectrum disorders, and suicidal tendencies [3,8]. Despite the existence of a wide variety of treatments [9], the condition remains one of the most understudied and complex areas of health care systems worldwide [2,10], with a limited number of randomized controlled trials assessing the impact of health professional involvement, education, and singular or combination treatments for all types of chronic pain [1,11–14]. In Australia, waitlists for specialist services are long [1,9,15,16], and access to community services is limited [1,9].

The condition imposes significant economic burden and health care costs [6] from a societal perspective.

In recent years, expenditure on chronic pain ranged from €5 billion to €164.7 billion in Europe and USD$560 billion to USD$635 billion in the United States [5], whereas the cost to the Australian economy was determined to be more than AUD$55 billion [17]. The health expenditure on pain is comparable to or sometimes exceeds the annual costs of cardiovascular diseases, musculoskeletal conditions, diabetes, and cancer [1,18]. Although it is not cited by the World Health Organization as one of the four leading contributors to the global burden of disease [19], chronic pain is significantly associated with all of these [10]. An appreciable proportion of the cost around chronic pain is borne by the individuals, who report loss of productivity and unemployment, as well as social disadvantage [1,4,5], as sequelae to the condition. Interestingly, such individuals do not need expensive, biomedically oriented specialty care, with self-management and medication review strategies recommended instead [1,2,9].

In 2010, Australia became the first nation in the world to develop a national framework for pain management, the National Pain Strategy (NPS) [9]. Six goals were established: 1) making individuals with pain a national priority; 2) ensuring delivery of knowledge and support to, as well empowerment of, individuals with pain; 3) ensuring that health professionals are skilled and provide evidence-based care; 4) ascertaining access to multidisciplinary care; 5) engaging in quality improvement and evaluation; and 6) research [9]. Since its development, the NPS has successfully altered the way pain—in particular, chronic pain—is viewed and managed in Australia, with significant focus placed on the development and provision of community-based services across the country [9].

Community-based service, involving multidisciplinary pain programs for various types of chronic pain, is generally designed to ensure 1) collaborative management of individuals with chronic pain by a team of health professionals, such as general practitioners (GPs), nurses, physiotherapists, pharmacists, behavioral therapists, and nutritionists; and 2) provision of services such as administration of medications and medication reviews, allied health services (such as dietetics, exercise physiology, occupational therapy, osteopathy, physiotherapy, psychology, and rehabilitation counseling) [20], patient education and self-help programs (or a combination of these) in low-cost group and/or nonclinical settings [1,9,21–24]. Some international programs have previously determined positive influences of multidisciplinary interventions on quality of life [25–28] and medication changes [26,29] in individuals with chronic pain, as well as significantly decreased waiting times for specialist services, emergency department visits, and hospitalizations [9].

Australian therapeutic guidelines for chronic pain recommend: 1) avoidance of paracetamol duplication, with care not to exceed the recommended 4 g of paracetamol over 24 hours [30]; 2) preference for sustained-release paracetamol formulations, with care not to exceed the 3,990-mg daily recommended maximum dose [30]; 3) maximum of 300-mg morphine equivalent daily dose (MMEDD) of opioids, such as codeine, buprenorphine, oxycodone, and fentanyl, within 24 hours [30]; 4) administration of morphine, tramadol, and tapentadol in preference to other opioids [30]; 5) avoidance and/or reduced doses of sleep medications, such benzodiazepines, zolpidem, and zopiclone [30]; 6) recommended use of adjuvants, such as muscle relaxants, gabapentin, pregabalin, serotonin, and noradrenaline inhibitors, and tricyclic antidepressants [30]; 7) recommended use of topical nonsteroidal anti-inflammatory drugs over oral formulations [30]; and 8) prescriber and patient education [9].

Following all the aforementioned recommendations, the Gold Coast Primary Health Network (GCPHN), an independent organization funded by the Australian government that collaborates with local hospital networks to improve the efficiency and effectiveness of medical services for patients, especially those at risk of poor health outcomes [31], introduced a multidisciplinary chronic pain management program in 2013. The program, called Turning Pain Into Gain (TPIG), is different than others [1,11–14] as it is not restricted to one type of pain, involves multiple health professionals, and adopts as close to a "holistic" approach to patient-centered care as possible via combination of one-on-one clinical service assessments, allied health services, and evidence-based education sessions. Such strategies are all aimed at increasing self-management in participants reporting chronic pain of any etiology and advising their GPs and family members on pain management. The GCPHN delivered the entire program free of charge to participants, based on funding available under Medicare Australia with the additional provision of four fully subsidized allied health services. Medicare Australia subsidizes medical and hospital care and prescription medicines for all Australians [32], mental health [33] and chronic disease management services [34], and domiciliary medication reviews [35] to those eligible.

The TPIG program and evaluation tools have continually been refined, and this publication reports the evaluation of the 2015/2016 model.

Aim

To report on the impact of the TPIG, a multidisciplinary chronic pain management program comprising group education sessions and one-on-one clinical service assessments to support and guide the participants and their GPs and family members in terms of medication management, quality of life and self-efficacy (as measured by the PSEQ), self-reported hospital admissions, and access to allied health service providers [36].

Methods

A mixed-methods [37] approach, combining individual interviews and questionnaires, was used for program refinement and evaluation. Ethics approval (GU 2016/525) was granted, and informed consent was obtained from participants.

Setting

The GCPHN in South East Queensland, Australia, conducted the third iteration of the TPIG since piloting in 2013/2014 [21] between July 1, 2015, and June 30, 2016.

In 2015/2016, the program included ongoing one-on-one clinical service assessments with program staff to guide participants and their GPs in self-management with a choice of four fully subsidized allied health service providers, six different education sessions held monthly, and written and electronic self-management resources. The education sessions normally lasted 90 minutes, incorporated a five-minute mindfulness session, and covered the following topics: Pain awareness and goal setting; Understanding medical investigations; Understanding your medicines; Redesigning your lifestyle; Challenging ways of thinking about pain; Pain and the people around you; The role of foods in persistent pain; Exercise principles, preventing re-injury, and self-monitoring; Sustaining the changes; and Pulling it together—where to next. Topics were presented by a variety of educators, including consultant clinical pharmacists, general practitioners, registered nurses, pain specialists, physiotherapists, exercise physiologists, psychologists, and dieticians; and were aimed at supporting participants to manage their pain and reduce the impact of pain on their quality of life and functioning. Sessions were repeated at varied times and locations to promote engagement. All services provided were fully subsidized by the GCPHN.

Participants were eligible if they had experienced pain for longer than three months, were on hospital waitlists for specialist pain services and/or referred by their GPs, needed self-management strategies, could attend group sessions, and had sufficient English proficiency to provide informed consent.

Participants were excluded if they needed urgent surgical or other pain specialist medical intervention, were undergoing workers' compensation, or required palliative care.

Questionnaires

Program participants completed questionnaires pre- and postprogram to measure medication use, quality of life and functioning, and hospitalizations. The 2015/2016 evaluation questionnaire was a refined version of earlier iterations and included 32 items across the domains of demographics, medication management, people's experiences of pain and pain management, and the validated Pain Self-Efficacy Questionnaire (PSEQ) to gauge an individual's ability to manage and cope despite pain [38–45].

To limit participant burden and maximize response rate, the eight open-ended questions in the 2013/2014 and 2014/2015 questionnaires were converted to 12 closed-ended questions. Thematic analysis of data from these earlier open-ended questions was used to develop the closed-ended questions. The authors independently assigned themes to the data and discussed these in meetings until consensus was reached. Likert scales were adopted in the 12 closed questions, and participants had the option to provide additional comments. A question on hospitalization in the past 12 months was added to the questionnaire.

The questionnaire was reviewed for face and content validity [46] by four individuals with no experience of pain. The think-aloud protocol [47] was adopted to gauge the readability and ease of response, and following this, minor modifications were made.

A convenience sample of seven participants from the 2014/2015 (N = 4) and 2015/2016 (N = 3) samples piloted the questionnaire in face-to-face or telephone interviews. Interviews lasted 45 to 60 minutes (mean = 52.5 minutes). Minor amendments were made.

Data Collection

Preprogram questionnaires were mailed to and completed by all 252 participants before their first pain assessment appointment.

Postprogram questionnaires were distributed by GCPHN staff at the last education session and/or mailed with stamped addressed return envelopes. A mailed reminder was sent two weeks later, followed by a telephone call.

De-identified data were entered into Excel (Microsoft Corp, Redmond, WA, USA) by the GCPHN staff and provided to the authors. Changes relating to pain medication, quality of life and functioning, and hospitalization are the focus of this paper.

Data Analysis

Medications were compared pre- and postprogram according to instructions for use and alignment to Australian therapeutic guidelines [30]. Medication brand names were changed to the generic/active ingredient equivalent, and serotonergic effects, paracetamol duplication, and count of antidepressants, adjuvants, and sleep medications were measured (Table 2). The total medication dose over 24 hours was calculated for opioids with directions indicating regular, as opposed to "when required," use. Where directions indicated a dose range, the average of that range was used. Opioid doses over 24 hours were converted to MMEDDs [48], with one MMEDD defined as the amount of opioid that is equivalent to 1 mg of morphine. MMEDD was not calculated for methadone due to its complex and variable

pharmacokinetics [48], as well as its low use rate by program participants. All data analyses used Excel (Microsoft Corp, Redmond, WA, USA) and Access (Microsoft Corp, Redmond, WA, USA).

For the PSEQ, daily activities, and hospitalization data analysis, participants' responses were provisionally labeled with numeric codes. Statistical analyses were performed using SPSS, version 22, and a range of tests including frequencies, correlations, *t* tests, Mann-Whitney *U* tests, and McNemar's tests. $P < 0.05$ was considered statistically significant, and effect size values >0.8 were considered large [49,50].

Results

Demographics

Program participants were defined by inclusion and exclusion criteria, and all experienced chronic pain. Demographics and baseline clinical information for respondents are reported in Table 1.

A 70.6% response rate was achieved out of the total 252 participants enrolled (Table 1). The ages of participants varied from early 20s to late 80s (Table 1). Gender distribution was skewed toward a greater proportion of females, 34 of the 178 respondents (19.1%) were in some form of paid employment before commencement, 132 of the 178 respondents (74.2%) experienced two or more types of pain with maximum duration of pain reported as 50 years, and 157 of the 178 respondents (86.4%) had regularly accessed two or more health professionals (Table 1).

Table 1. Respondents' demographics and use of health services before TPIG

	No.	%
Median age (range), y	54 (21–86)	
Gender		
Male	54	30.3
Female	124	69.7
Employed		
Part-time	22	12.4
Full time	12	6.7
Smoker		
No	152	85.4
Yes	26	14.6
Type of pain*		
Auto-inflammatory	10	5.6
Mechanical	149	83.7
Musculo-skeletal	88	49.4
Neuropathic	94	52.8
Osteo-arthritis	33	18.5
Two types of pain	77	43.3
Three or more types of pain	55	30.9
Median pain duration (range), y	7.5 (0.25–50)	
Attended a pain clinic or management program		
No	115	64.6
Yes	63	35.4
Health professionals regularly accessed*,†		
Alternative therapist	71	39.9
Doctor	174	97.8
Dietician	29	16.3
Exercise physiologist	36	20.2
Pharmacist–medication review	42	23.6
Physiotherapist	116	65.2
Psychologist	67	37.6
2 of the above	57	32.0
3 of the above	43	24.2
4 or more of the above	57	32.0

TPIG = Turning Pain Into Gain program.

*More than one option could be chosen by participants for this question.

†These indicate all health professionals accessed over the six-month period preceding the TPIG.

Changes to Medication Management

Use of opioids before the program was common (69.1%). The most commonly used opioids were codeine and codeine-containing formulations and oxycodone and oxycodone-containing products (Table 2).

The medication use of respondents altered as a result of the program (Table 2). The following list reports the percentage of total respondents ceasing or commencing medications and reflects the most notable changes: 1) 7.3% reduction in paracetamol duplication post-TPIG with a concurrent 5.1% rise in the administration of sustained-release paracetamol formulations (N = 178); 2) cessation of almost all codeine and codeine-containing formulations postprogram; 3) 11.8% rise in tramadol use, 28.1% increase in tapentadol use, and 6.7% increase in morphine administration; 4) 24.2% increase in gabapentin and pregabalin use and 36.0% rise in muscle relaxants; 5) reduction in long- and short-acting sleep medications, for example, 19.1% reduction in benzodiazepine and 1.1% reduction in zolpidem/zopiclone; 6) 6.2% reduction in selective serotonin reuptake inhibitor use with concurrent 19.7% increase in serotonin and noradrenaline reuptake inhibitor administration; and 7) 20.2% increase in topical nonsteroidal anti-inflammatories.

The amount of opioids per person measured using MMEDDs did not change significantly ($P = 0.33$). MMEDDs, calculated from 111 participants who reported regular use of opioids other than methadone before the program, ranged from 3.9 mg to 480.0 mg (median = 10.1 mg), with five participants reporting doses higher than 300 mg (ranging from 315.6 mg to 480 mg). Postprogram, 118 participants reported regular opioid use ranging from 7.5 mg to 300 mg (median = 20.0 mg) as MMEDDs. Eighteen participants ceased regular opioids, and 25 participants started regular opioids. Individuals with low opioid doses generally had an increase in dose postprogram, and high doses decreased. Of the five participants with MMEDDs higher than 300 mg preprogram, two reported doses of 100 mg or less, one 200 mg, and two 300 mg or less.

Changes to PSEQ and Daily Activities

Tallied PSEQ outcomes revealed a 12.3-point increase in total score postprogram, with the effect size of this

Table 2. Medication use pre- and post-TPIG

Medication	No. of Participants (%)	
	Pre	Post
Paracetamol (any form/combination)	92 (51.7)	88 (49.4)
Paracetamol sustained release dose >500 mg	32 (18.0)	41 (23.0)
Paracetamol >1 product	14 (7.9)	1 (0.6)
Nonsteroidal anti-inflammatory drug	62 (34.8)	77 (43.3)
Oral/suppository*	43 (24.2)	58 (32.6)
Topical	0 (0.0)	36 (20.2)
Ibuprofen + codeine combination	24 (13.5)	0 (0.0)
Opioids	123 (69.1)	134 (75.3)
Buprenorphine	9 (5.1)	38 (21.3)
Codeine and codeine-containing formulations	79 (44.4)	2 (1.1)
Fentanyl	4 (2.2)	0 (0.0)
Morphine	10 (5.6)	22 (12.4)
Oxycodone and oxycodone-containing formulations	48 (27.0)	7 (3.9)
Tramadol	8 (4.5)	29 (16.3)
Tapentadol	0 (0.0)	50 (28.1)
Other–dextropropoxyphene, hydromorphone, methadone	5 (2.8)	3 (1.7)
Benzodiazepines	49 (27.5)	15 (8.4)
Short acting (alprazolam, temazepam)	14 (7.9)	0 (0.0)
Long acting (clonazepam, diazepam, flunitrazepam)	38 (21.3)	15 (8.4)
Zolpidem/zopiclone	4 (2.2)	2 (1.1)
Adjuvants		
Muscle relaxants (only baclofen, orphenadrine, or orphenadrine combinations)	3 (1.7)	67 (37.6)
Gabapentin/pregabalin	32 (18.0)	75 (42.1)
Selective serotonin reuptake inhibitors	14 (7.9)	3 (1.7)
Serotonin and noradrenaline reuptake inhibitors	12 (6.7)	47 (26.4)
Tricyclic antidepressants	29 (16.3)	61 (34.3)
None	26 (14.6)	2 (1.1)

TPIG = Turning Pain Into Gain program.
*Excludes ibuprofen + codeine combinations.

change calculated as 1.1. This was due to statistically significant improvements ($P < 0.001$) in all 10 reported elements of the PSEQ (Table 3). The three most noticeable changes to self-efficacy were: 1) "I can cope with my pain without medication" (mean PSEQ score increased by 2.0, i.e., from 1.4 to 3.4); 2) "I can live a normal lifestyle, despite the pain" (mean PSEQ score increased by 1.4); and 3) "I can still accomplish most of my goals in life, despite the pain" (mean PSEQ score increased by 1.3).

Participants reported changes in their abilities to undertake various day-to-day activities postprogram (Table 4). Household chores, exercise routines, and leisure activities were the most likely to have changed postprogram. Paid employment demonstrated the least change.

Changes in Self-Reported Hospitalizations

Before enrollment in the TPIG program, 50 respondents reported being admitted to the hospital in the past year. Only 11 respondents reported being hospitalized during the year of participation in the program, indicating a 78% reduction ($P < 0.001$, McNemar's test).

Discussion

Key Findings

The TPIG program resulted in significant improvements in medication management, participant self-efficacy, and self-reported hospitalizations. These changes appeared to be facilitated by the multidisciplinary education sessions and regular follow-ups available to all 252 participants.

Medication use postprogram was more aligned with clinical pain medication guidelines [30]. Preference for serotonin and noradrenaline reuptake inhibitors and tricyclic antidepressants over selective serotonin re-uptake inhibitors, rise in morphine administration as a result of switching from other opioids, and increase in gabapentin, pregabalin, and muscle relaxants matched the Australian Medicines Handbook recommendations [30].

This contributed to harm reduction in three ways: 1) decreased potential for pharmacodynamic interactions between medicines with known serotonergic properties, for example, using tapentadol instead of tramadol avoided interactions with serotonergic medications [30]; 2) avoidance of drug duplication, particularly multiple paracetamol-containing products [30]; and 3) reduction in doses of opioids greater than 300 mg through introduction of longer-acting medicines and adjuvants [51], coupled with regular counseling. It is probable that lower risks of side effects, such as liver damage, acute renal failure, gastrointestinal perforation, and daytime drowsiness, are linked to such changes [30].

Medication appropriateness, harm reduction, and subsequent enhancement in pain management are likely to improve ability to cope and manage despite pain. This was demonstrated by a 12.3 elevation in mean total PSEQ score post-TPIG, an effect size of 1.1. These values were higher than reported in earlier work [25,40]. Asghari and colleagues previously linked changes in the PSEQ to possible reductions in medication use, avoidance behaviors, and levels of disability [38,52], inferring an enhanced ability to self-manage pain and control flare-ups. Our findings support this.

An improved ability to engage in daily activities could potentially be attributed to improved health status. One of the program aims was to equip participants with the confidence to manage their pain in primary care, with assistance and support from health professionals and family. This appeared to result in better health and reduced medications, thereby decreasing the need to seek assistance from secondary care. Decreased hospitalizations may have ensued from participants independently managing their pain and flare-ups.

Table 3. PSEQ results before and after TPIG

Pain Self-Efficacy Questionnaire	0 Months Mean†	SD	8 Months* Mean†	SD	*P* Value
I can enjoy things, despite the pain.	2.9	(1.3)	3.8	(1.1)	<0.001
I can do most of the household chores, despite the pain.	2.8	(1.6)	3.7	(1.2)	<0.001
I can socialize with my friends or family members as often as I used to do, despite the pain.	2.5	(1.6)	3.7	(1.2)	<0.001
I can cope with my pain in most situations.	2.7	(1.4)	3.7	(1.2)	<0.001
I can do some form of work, despite the pain.	2.4	(1.5)	3.5	(1.3)	<0.001
I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite the pain.	2.1	(1.4)	3.4	(1.3)	<0.001
I can cope with my pain without medication.	1.4	(1.6)	3.4	(1.3)	<0.001
I can still accomplish most of my goals in life, despite the pain.	2.0	(1.4)	3.3	(1.1)	<0.001
I can live a normal lifestyle, despite the pain.	2.0	(1.5)	3.4	(1.3)	<0.001
I can gradually become more active, despite the pain.	2.3	(1.5)	3.4	(1.2)	<0.001
Total	23.1‡	(11.1)	35.3‡	(9.2)	<0.001

PSEQ = Pain Self-Efficacy Questionnaire; TPIG = Turning Pain Into Gain program.
*Refers to responses gathered immediately after the TPIG.
†A score of 1 represents the worst possible outcome, and 5 represents the best.
‡Maximum total score obtainable is 60.

Table 4. Reported changes in ability to undertake daily activities after the TPIG

Activity	Yes (Ability Changed), No. (%)	No (Ability Unchanged), No. (%)
Household chores	178 (100.0)	0 (0.0)
Volunteer work	103 (57.9)	75 (42.1)
Paid part-time work	26 (14.6)	152 (85.4)
Paid full-time work	18 (10.1)	160 (89.9)
Studies*	12 (6.7)	115 (64.6)
Leisure activities	172 (96.6)	6 (3.4)
Exercise	178 (100.0)	0 (0.0)

TPIG = Turning Pain Into Gain program.
*Not all 178 participants responded to this question as studies were not relevant to everyone in the cohort.

A reduction in hospitalizations by 78% was reported in this study. This is likely to have a positive economic impact. Provision of the TPIG free of charge to participants appears to reduce costs due to acute hospital admissions (cited per patient at $2,024 per day and $4,712 per separation in Queensland [53]) and assists with management of the long waitlists for specialist appointments in secondary care. Hospitalization data are seldom reported in the pain literature, and this finding demonstrates that although small scale, the program saved the government at least $78,936 in hospital admissions over 2015–2016. Pending further investigation, there is potential that savings accrued by the TPIG outweigh the costs of running the program on a wider scale. Additionally, this free program can be considered a progressive economic strategy, benefitting respondents with limited or no employment who can least afford health care.

Strengths

Unlike other studies [25,38,40], this iteration of the TPIG program was revised to address barriers to participant engagement through greater flexibility in time and location of education sessions and follow-up correspondence. Program focus on the broad spectrum of chronic pain, including neuropathic, mechanical, musculoskeletal, auto-inflammatory, and osteoarthritic pain, further contrasted with the existing literature, which emphasizes specific types of pain [25,26,52,54,55]. It would also appear that a wedding of generic education sessions and tailored individualized support, as achieved by the TPIG, is sufficient to improve management of different types of chronic pain in primary care without the need to stratify participants according to type of pain or severity of functional decline.

Participants are likely to be representative of individuals experiencing chronic pain in Australia as our study population is typical of populations depicted in Australian Institute of Health and Welfare reports, which have been deemed demographically sound and representative of the Australian population [1,4,56,57].

Additionally, this study remains one of the few [26,40,54,55,58,59] potentially linking medication management (Table 2) to improved self-efficacy and ability to manage and cope with pain (Tables 3 and 4), implying the importance of the role of pharmacists in similar multidisciplinary interventions, which is seldom reported. Individualized consultations with TPIG pharmacists extended beyond medication information delivered during the education sessions to include self-management goals. The purpose of individualized counseling was to contextualize medication use as only one aspect of pain management and raise awareness of, as well as minimize the risks associated with, psychopolypharmacy. This approach compares to the holistic approach described by Oliva and colleagues to improve opioid safety and prevent overdose [60].

Limitations

The TPIG was not a controlled study and was implemented by only one Primary Health Network in South

East Queensland, Australia. Although the study population was representative of the Australian chronic pain population [1,4,56,57] and adhered to Australian therapeutic guidelines [9,30], results from this study may not be generalized to all primary care populations in Australia or elsewhere. However, our findings align with other previous American studies that have reported increases in guideline-concordant pain care practices via a multidisciplinary approach [59,61]. The pilot TPIG evaluation reported 100% response rates and comparable effect sizes [21]. Given the preliminary evidence presented here and in the pilot [21], as well as findings from other research [59,61], a randomized controlled trial (RCT) appears justified [46].

Four assumptions were made: 1) changes in participants' daily activities were all deemed positive; 2) possible negative influences [46] of the TPIG may not have been detected, as impact of the program on nonrespondents was not assessed; 3) data reported from the PSEQ was assumed to be the best indicator of participants' self-reported progress post-TPIG; and 4) positive medication management was solely attributed to pharmacists, with no analysis carried out on how other educational elements, such as cognitive behavioral therapy, exercise, sleep, and nutrition, presented by other health professionals, could have contributed to participant outcomes.

The small improvement in employability post-TPIG needs to be explored further, potentially with a more sensitive and validated tool. Alternatively, focus on improved functionality in the context of employment within the program could require review. However, the limited change in employment may be attributable to the characteristics of the TPIG population as most participants were women either close to retirement or homemakers.

Conclusions

The improved medication use and self-efficacy and reduced hospitalizations reported in the TPIG program have important implications for the management of chronic pain in primary care. The improved ability to manage and cope with pain suggests that the program potentially alleviated economic and social burdens experienced by individuals with chronic pain. This evidence could inform future RCTs investigating the reproducibility and impact of similar multidisciplinary initiatives on health professionals, chronic pain patients, and the economy at large.

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