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Self-management of chronic pain in Malaysian patients: effectiveness trial with 1-year follow-up

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ABSTRACT

Self-management of chronic illnesses has been widely recognised as an important goal on quality of life, health service utilisation and cost grounds. This study describes the first published account on the application of this approach to people suffering from chronic pain conditions in a Southeast Asian country, Malaysia. A heterogeneous sample of chronic pain patients in Malaysia attended a 2-week cognitive–behavioural pain management programme (PMP) aimed at improving daily functional activities and general psychological well-being. Complete datasets from 70 patients out of 102 patients who attended 11 programmes conducted from 2002 to 2007, as well as the 1-month and 1-year follow-up sessions at the hospital clinic, are reported. The pre- to post-treatment results on self-report measures indicate that significant gains were achieved on the dimensions of pain, disability and psychological well-being. These gains were maintained at both 1-month and 1-year follow-ups. The results mirror those reported from similar interventions in Europe and North America and indicate the concept of self-management of a chronic illness is acceptable and meaningful to Asian patients. Importantly, the achieved outcomes were independent of gender and ethnic group status.

KEYWORDS

Self-management, Chronic pain, Cognitive–behavioural treatment, Asia

Implications

Practice: A multidisciplinary CBT intervention can be effective for pain management despite patients' non-Western cultural background.

Policy: Patients with complex chronic pain conditions should be able to access a multidisciplinary pain management team that can offer coordinated, evidence-based care.

Research: Further research on the effectiveness of applying the principles of psychologically based pain management at different health care levels is urgently needed, particularly in developing countries where resources are limited and cultural norms around pain vary from the Western model.

INTRODUCTION

The population prevalence of chronic persistent pain in Malaysia is about 7%, with higher proportions in older age groups [9]. Although this figure is lower than that reported elsewhere [2, 7, 11, 14], it means that almost a million Malaysians live with persistent pain, the vast majority (82%) of whom indicated that the pain interfered with their activities. While most Malaysians with chronic pain are likely to seek help through hospitals and clinics that provide the usual range of pharmacotherapy and interventional treatments aimed at pain relief, some will also turn to traditional, culture-based methods. However, these are of unknown efficacy and just as dependent upon the health care provider as those in the standard medical model.

As has been found elsewhere, most Malaysians with chronic non-cancer pain face the prospect of finding their own ways of living with their pain. Encouragingly, recent epidemiological evidence has indicated that complete relief of chronic pain may be unnecessary for maintaining a normal lifestyle, particularly if the pain sufferers adopt an active approach to managing their pain [3, 4]. Minimising unhelpful beliefs (e.g., lack of acceptance of the persistent nature of this pain, expecting the worst, fearing further damage to the body) has also been found to help in achieving reasonable functional outcomes [21, 29, 32]. One response to chronic illnesses by the healthcare authorities in many countries has been to embrace a self-management model [5, 33]. This entails providing the patient with sufficient information, skills and support to manage their illness as independently as possible from more formal health care services. While much of the research on self-management of chronic illnesses has been conducted in industrialised, Western societies, there have been many calls for exploring this approach in less developed countries like many Asian countries [30]. This paper represents the first formal evaluation of an application of this model with chronic pain patients in Malaysia.

Systematic reviews of randomised controlled trials have provided evidence of the efficacy of pain self-management based on cognitive-behavioural principles [13, 17]. To date, the vast majority of this research has been conducted in Western countries, especially in Europe and North America. Two uncontrolled studies have reported promising results with similar approaches in Asian countries. Kitahara et al. [18] reported that an interdisciplinary approach (including some cognitive and behavioural methods) with individual patients in Japan was helpful in improving levels of pain and activity as well as reducing use of unhelpful medication. In Hong Kong, a group-based cognitive–behavioural pain management programme [20] reported substantial improvements in functional measures, but less marked changes in psychological dimensions. This distinction between functional and psychological outcomes is surprising and not consistent with outcomes reported elsewhere. It is unclear if this reflects less acceptance of the psychologically oriented self-management philosophy of these programmes by the patients in the Hong Kong study. Overall, outcome data are still lacking on the application and acceptability of a cognitive–behavioural self-management approach to chronic pain in Asian countries. This paper describes an attempt to evaluate the effectiveness of this treatment approach in an Asian country with a diverse ethnic and linguistic group of chronic pain patients.

METHODS

Patients–Patients who had been attending the Selayang Hospital Pain Clinic with pain that had persisted for more than 3 months were selected to participate in the programme by a multidisciplinary team, which consisted of an anaesthesiologist/pain specialist (MC), a physiotherapist (KAA, NMD), a clinical psychologist (ZJO), a psychiatrist (RMA) and a pain nurse. In part, selection for the programme was based on the team's assessment that despite prior treatment with medication, physiotherapy and/or some form of surgery, the patients remained troubled by high levels of disability and distress, and no further medical/surgical treatments were considered appropriate. Their cases were discussed in the regular pain management multidisciplinary team meetings where collective decisions were made regarding their suitability for the programme. All patients participated voluntarily in the programme after having its demands and purposes fully explained to them by the first author (MC), the senior physician in the pain clinic.

Program development and content–In order to test the viability of this potentially effective approach to mitigating the problems facing chronic pain patients in Malaysia, a series of pilot programmes were conducted at the Selayang Hospital in Kuala Lumpur in a collaborative project involving a multidisciplinary team of Malaysian pain clinic staff and experienced Australian pain clinic staff (MN, LT).

The MENANG[1] programme was based on the ADAPT programme at the Pain Management & Research Centre (PMRC) at the Royal North Shore Hospital in Sydney and described in the patients' manual [28], which was also employed as the patients' manual for the MENANG programme. The Sydney programme, in turn, was based on the INPUT programme at St Thomas' Hospital, London, which had demonstrated the efficacy of this approach in a randomised controlled trial conducted by a team that included two of the authors in this study (AW, MN) [35]. MC had previously spent a year at the PMRC training in pain medicine and later took a team of staff from Malaysia to the PMRC to observe an entire 3-week programme as part of the preparation for the first MENANG programme. As in the Sydney programme, the MENANG programme emphasised re-conceptualisation of the pain (as chronic but not harmful), education about pain, goal setting, applied relaxation and desensitisation training, training in identifying and challenging unhelpful cognitions (beliefs, thought processes), practising effective problem-solving and pain management strategies (e.g. activity pacing, daily planning), programmed exercise and systematic encouragement of activities to limit avoidance behaviours and to regain confidence in functioning despite pain. Medication withdrawal was also encouraged. Unlike the Sydney programme, the MENANG programme ran for 10 days over 2 weeks (vs 15 days over 3 weeks in the Sydney programme), and the participants mostly stayed at the hospital as ambulant patients. Family members were encouraged to attend at least 1 day of the programme to enlist their support for the self-management approach post- programme.

Before the first programme, a 2-day refresher course in cognitive–behavioural methods was conducted by two authors (MKN, MC) at Selayang Hospital. All programme staff participated, and it was emphasised that all should use these methods in their respective roles on the programme. Supervision and guidance for the physiotherapy sessions were provided by LT in the first programme. Programmes 1–4 were conducted jointly by the Malaysian staff and an experienced clinical psychologist from the PMRC (initially MN), and the fifth programme was attended by one (AW) from the original version of the programme at St Thomas' Hospital [35]. Subsequent programmes were conducted by the Malaysian team only, comprising a clinical psychologist (ZJO), the medical pain specialist (MC) and a physiotherapist (KAA, then NMD). When a foreign clinical psychologist was present (programmes 1–5), most psychology sessions were conducted in English

[1] "MENANG" in Bahasa Malaysia (the Malaysian national language) means "win" and the name comes from "Program MENANGani Kesakitan" which is translated into "Pain Management Program".

interwoven with translation by local staff into Bahasa Malaysia (BM, the national language of Malaysia, which is understood by the majority of Malaysians). Subsequent programmes were mostly conducted in BM. Most discussions were in a mixture of BM and English, but other languages (Chinese and Tamil) were used when needed, with the help of participating staff fluent in these languages.

Evaluation–This was based on self-report questionnaires covering pain, mood, beliefs and disability. These were assessed before and at the end of the programme, 1-month and 1-year post-programme. All measures used were previously translated into BM by the clinical psychologist (ZJO) who employed a standard back-translation method (where other staff translated the BM versions back into English) to confirm consistency with the original versions. To confirm that each scale retained its principal psychometric properties, internal consistency (Cronbach alpha) of the BM version was calculated in each case and reported below. When a patient had literacy difficulties, a pain clinic staff member read the questions to patients in their own language and recorded their responses.
The measures included:

Numerical pain rating for usual pain rating in last week, (a 0–10 scale, where 0=no pain at all and 10=worst pain imaginable).

Roland and Morris disability questionnaire – modified (RMDQ) [1]. This has 24 items covering a range of activities perceived by the patients to be limited by their pain, regardless of its site such as 'I walk more slowly than usual because of my pain'. The total scores can range from 0 (no disability) to 24 (severe disability). The Cronbach alpha calculated in the present study was 0.88.

Depression Anxiety and stress scale (DASS) [19]. This consists of 42 items assessing symptoms of depression, anxiety and stress, but only the depression scale is reported here. Patients are asked to rate the extent to which they experienced each symptom over the previous week on a 4-point frequency/severity scale and the scores for each scale are determined by summing the scores for the relevant 14 items (possible range, 0–42). This instrument has been validated in a chronic pain population [31]. In this study, Cronbach alpha was 0.93.

Pain self-efficacy questionnaire (PSEQ) [25]. In this 10-item scale, patients are asked to rate how confident they are that they can do a range of activities or functions at present, despite their pain, by selecting a number on a 7-point scale, where 0='not at all confident' and 6='completely confident'. Examples of items include the following: 'I can do most of household chores (e.g., tidying-up, washing dishes, etc.), despite the pain'. Scores on the PSEQ range from 0 to 60, with higher scores indicating stronger self-efficacy beliefs. The test–retest reliability and internal consistency of the PSEQ in two different studies with chronic pain patients were reported as 0.79 and 0.92, respectively [26]. In this study, Cronbach alpha was 0.95.

Pain-related self statements (PRSS) [15]. This 18-item measure has two sub-scales (active coping and catastrophising). In this study, only the nine-item catastrophising subscale was used. Items include statements such as 'I cannot stand this pain any longer'. Using a 0–5 scale, where 0=almost never and 5=almost always, patients rate how often they have the specified thoughts when their pain is more severe. The subscale score is the mean of the items scored, yielding a possible score out of 5. This instrument has been demonstrated to be valid and reliable in assessing cognitive patterns relevant to persons suffering from chronic pain [15]. In this study, the Cronbach alpha was 0.88.

Data analysis–Analyses of standardised residual data indicated relatively normal distribution of all the variables examined, and thus repeated measures analyses were conducted to assess changes from pre-treatment to 1-year follow-up. A standard significance level of $p \leq 0.05$ was employed for all tests, but in order to minimise the chances of a type-I error due to multiple tests, a Bonferroni correction was employed for each test (in which 0.05 is divided by the number of variables tested, or 5). This meant that in order to be considered statistically significant the p value had to be <0.01. The actual p values are reported for comparison with other studies. The possible influence on changes in outcome measures by ethnic group and gender was investigated using a series of one-way ANOVAs and t tests respectively. As one of the key aims of this study was to compare the outcomes achieved between the MENANG programme and those from similar programmes elsewhere, effect sizes on the main outcome variables were calculated between pre- and post-treatment and between pre- and both follow-ups (as recommended by Morley and Williams [22]). Effect sizes (Cohen's d) are computed as the difference between means, (e.g., $M_{\text{pretest}} - M_{\text{posttest}}$), divided by the pre-test standard deviations in each of the measures [12].

RESULTS

Patients–Data were collected from 70 patients out of 102 patients (i.e. 70%) who attended 11 MENANG PMPs conducted from 2002 to 2007 and attended the 1-year follow-up review at the hospital clinic. The baseline demographic characteristics of those who attended the1-year follow-up are presented in Table 1, together with the characteristics of those who completed the programme but did not attend the 1-year follow-up. No significant differences were

Table 1 | Socio-demographic details of MENANG participants according to their presence at 1-year follow-up

Variables	Present at 1-year follow-up, *n* (%)	Not present at 1-year follow-up, *n* (%)	χ^2 or *t* values
Age			0.55_{ns}
Mean (SD)	42.87 (9.87)	41.75 (9.45)	
Duration of pain (months)			0.13_{ns}
Mean (SD)	72.06 (70.07)	55.35 (52.88)	
Gender			1.15_{ns}
Male	25 (35.7)	15 (46.5)	
Female	45 (64.3)	17 (53.1)	
Ethnic group [*n* (%)]			2.15_{ns}
Malay	26 (37.1)	8 (25)	
Chinese	3 (12.9)	6 (21.9)	
Indian	35 (50)	17 (53.1)	
Relationship status [*n* (%)]			3.29_{ns}
In a relationship (married)	54 (77.1)	23 (71.9)	
Not in a relationship (single, separated, divorced)	16 (22.9)	9 (28.1)	
Educational level [*n* (%)]			5.66_{ns}
None and primary	9 (12.5)	10 (31.3)	
Secondary (O levels equivalent)	39 (55.7)	14 (43.8)	
Certificate/Diploma/STPM (A Levels)	15 (21.4)	4 (12.5)	
University Degree	7 (10)	4 (12.5)	
Pain sites [*n* (%)]			1.63_{ns}
Head, face, mouth	4 (5.7)	1 (3.1)	
Neck and upper limb	15 (21.4)	7 (21.9)	
Back/sacrum/buttock & lower limb	38 (54.3)	20 (62.5)	
Abdomen, pelvis, chest	11 (15.7)	4 (12.5)	
Two or more major pain sites	2 (2.9)	0	
Pain types [*n* (%)]			4.47_{ns}
Neuropathic	5 (20)	7 (15.9)	
Musculoskeletal	10 (40)	28 (63.6)	
Mixed, neuropathic and musculoskeletal	4 (16)	5 (11.4)	
Visceral, mixed visceral and musculoskeletal	6 (24)	4 (9.1)	
N (%)	70 (68.6)	32 (31.4)	

found between the two samples on baseline demographic characteristics. Comparison of the outcome measures at baseline and pre- to post-treatment changes on the same measures also revealed no significant differences between the two samples either at baseline or at post-treatment, and both improved significantly. This suggests that those who did not attend the 1-year follow-up were not different from those who attended the follow-up, at least on baseline demographics and initial treatment outcome.

A comparison of mean scores on the same outcome measures between the MENANG participants and those attending the tertiary-referral Pain Management & Research Centre in Sydney (Australia) for initial assessment [27], who had a mean pain duration of 80 months, indicates that the MENANG group were roughly comparable in terms of usual pain, disability, depression severity and catastrophising, but higher in pain self-efficacy (data not shown). In contrast, comparison of means between general pain clinic Selayang Hospital data (not shown) and MENANG participants' baseline data indicated that MENANG patients appeared worse than the general pain clinic patients in terms of average pain, disability, depression and catastrophising (reflecting selection criteria), but not pain self-efficacy. The mean pain self-efficacy scores in the MENANG sample were also higher than those attending the INPUT programme in London [35]. Overall, these findings indicate that the MENANG patients were roughly comparable to those attending the Sydney clinic. That is, they could be characterised as experiencing moderately severe pain and being moderately disabled due to pain, as well as experiencing mild to moderate levels of depressive symptoms.

Outcome measures–A summary of the mean (SD) scores on the outcome measures taken at baseline, post-treatment and the two follow-up occasions is presented in Table 2, but only for those who attended the 1-year follow-up (n=70). The effect sizes from pre- to post-treatment, pre-treatment to 1-month follow-up and pre-treatment to 1-year follow-up are also presented.

As can be seen from Table 2, significant improvements were found on all measures from pre- to post-treatment, from pre-treatment to 1-month follow-up as well as from pre-treatment to 1-year follow-up. Cohen [10] suggested effect sizes (d) of 0.2–0.5 could be categorised as small, 0.5–0.8 as medium and >0.8 as large. Effect sizes ranged from 0.6 to 1.5 (mean,

Table 2 | Mean (SD), *F* values and effect sizes of outcome measures at post- treatment, 1-year and 1-month follow-up

Measure (score range)	Pre-treatment	Post-treatment	1 month	1 year	*F* value	d_1	d_2	d_3
Pain (0–10)	6.71 (1.64)	5.59 (1.75)	5.20 (1.29)	5.22 (1.35)	17.63***	0.7	0.9	0.9
Disability (R&M)	14.48 (5.3)	8.43 (6.52)	6.26 (5.65)	7.26 (6.2)	55.42***	1.2	1.5	1.3
DASS (0–42) depression	14.96 (10.20)	8.68 (8.76)	5.90 (6.58)	6.06 (7.89)	21.39***	0.6	0.9	0.8
Self-efficacy (PSEQ) (0–60)	32.30 (14.13)	44.90 (12.41)	45.22 (10.45)	45.75 (11.18)	26.5***	0.8	0.9	0.9
Catastrophising (PRSS) (0–5)	2.75 (1.14)	1.86 (1.28)	1.50 (1.04)	1.61 (1.04)	22.43***	0.8	1.1	1.0

d_1 Effect size from pre-treatment to post-treatment; d_2 Effect size from pre-treatment to 1-month follow-up; d_3 Effect size from pre-treatment to 1-year follow-up

***$p<0.0005$

0.9), with all except two in the large range. Interestingly, improvements were generally maintained at the 1-year follow-up. The improvement in depressive symptoms indicates the mean for the sample reached almost normal mood levels (Australian community norms [31]), and the improvements in disability, from post-treatment onwards (6–8 point changes in mean scores), are comparable to published guidelines for clinically significant changes on the RMDQ for back pain [6].

DISCUSSION

This evaluation of an intensive pain self-management programme for a heterogeneous group of moderately disabled chronic pain patients conducted in Malaysia revealed that significant improvements were achieved on measures of pain, physical disability, mood, self-efficacy and unhelpful beliefs. These improvements during the programme were generally maintained or even increased in the 1-year follow-up period. Interestingly, the improvements appeared to be independent of gender and ethnic group status. Although not a specific goal, the significant reduction in usual pain scores from baseline to end of treatment and at both follow-ups (effect size of 0.9), despite reports of substantially reduced use of analgesic medication and increased activity levels, is noteworthy. The strength and consistency of these changes across different dimensions and time suggests a clinically significant outcome has been achieved.

Before examining the issues raised by this study, its limitations and strengths should be acknowledged. This was a case series study with no comparison condition, so the results cannot be seen as a demonstration of the efficacy of the treatment relative to the passage of time or another treatment. Instead, it can be described as an effectiveness trial [22], which is important as it can confirm the generalisability of findings of previous RCTs of the similar interventions [35] in other clinical settings. In this case, all patients had been treated at the same clinic for many months without significant change before the programme. Most patients had suffered chronic pain for many years, had received numerous treatments with no lasting improvement, and were still seeking help for their pain. The sample is relatively small, but the follow-up rate was reasonably good, especially considering the distances many had to travel (often taking several hours). Furthermore, as no obvious differences (at baseline or post-treatment) were found between those who returned for the 1-year follow-up and those who did not, there is reason to be confident that the long-term maintenance of treatment effects was reliable. The lack of independent data on healthcare utilisation and work status, combined with the reliance on self-reported outcome measures, is also a shortcoming. Importantly, the questionnaires, of demonstrated utility in published pain management studies, had been translated using back-translation procedures, and they had shown high internal reliability in this non-Western context. However, about 10% of patients who were illiterate in their own language did require a staff member to assist in their completion of the measures. This may introduce bias, but is a universal problem of self-completion measures in any culture.

The short- and long-term outcomes reported here are consistent with those reported from similar programmes assessed in RCTs with similarly disabled chronic pain patients in the UK, Northern Europe and North America [17, 23, 35]. Specifically, comparison of effect sizes achieved between the MENANG and the INPUT programme at St Thomas' Hospital in London [35] revealed that the MENANG results were either as strong or slightly stronger, both post-treatment and at follow-up. This indicates that the Malaysian programme can be considered as effective as other similar programmes elsewhere in achieving its stated aims. The reliability of this conclusion is strengthened by the involvement of two of the original authors (AW, MN) of the UK study at different stages of the MENANG programme.

It is useful to compare this with another application of the pain management programme in an Asian culture. In contrast to the outcomes achieved in a Hong Kong programme [20], the improvements found after the MENANG programme were more consistent across pain, disability and psychological measures. Why the psychological improvements

might be more marked in the MENANG programme compared to those achieved after the Hong Kong programme is not immediately obvious, but may relate to methodological and sample differences. For example, the MENANG team as a whole received considerably more expert training and supervision in using CBT pain management methods relative to the Hong Kong team. For example, in the MENANG programme the foreign experts actually participated in conducting many of the programme s alongside the local staff. This was not the case in Hong Kong. Baseline differences in psychological characteristics between the two samples could have contributed to the different outcomes as well. Specifically, the baseline mean pain self-efficacy was noticeably higher in the MENANG sample (32.3 versus 22.9 in the Hong Kong sample–almost one standard deviation for the MENANG sample). This might suggest the MENANG sample was more prepared to accept living actively despite their pain, rather than waiting for pain relief first, than the Hong Kong sample at the time they entered the programme. The difference in outcomes between the two studies might also lie in the different social expectations and health systems between the two countries [27].

The only other study that has included pain self-management in an Asian country was reported by Kitahara et al. [18] from Japan. This study found that an interdisciplinary approach (that included some cognitive and behavioural methods) with individual chronic pain patients was helpful in improving levels of pain and activity as well as reducing use of inappropriate medication. However, due to some of the traditions in healthcare delivery in Japan, the content of that intervention differed to most of those reported from Western countries, including the MENANG programme. For example, the interventions were conducted at an individual level, with no organised group or family involvement and the programme was primarily delivered by medical and nursing staff, with no psychologists or physiotherapists involved. How well a self-management philosophy had been integrated into the Kitahara et al. programme was difficult to determine.

The significance and strength of the study is that it represents, to the best of our knowledge, the first evaluation of pain self-management group treatment to be reported in a multicultural Asian chronic pain population. It used a method of training patients in pain self-management previously established as effective in RCTs in Western countries only, and it included a 1-year follow-up with good retention rates. It provides a rare example of an application of this methodology in a multi-lingual setting, and outcome was evaluated on multiple dimensions, including psychological well-being, usual pain levels and physical disability. The significant changes in pain-related cognitions (catastrophising and self-efficacy) are especially important as this is the first study to demonstrate this effect in an Asian population. Of course, similar findings have been reported elsewhere. Turner et al. [32], for example, showed these cognitions were mediators of change following a CBT intervention for persisting temporomandibular disorder pain in the USA. Our study indicates that language and cultural factors did not act as barriers to changes in these psychological factors in this multi-lingual Asian sample. The language issues were minimised by discussing patients' issues and difficulties (including patients' understanding of content and concepts of the programme) in a team meeting that was held every alternate day during the programme, thus ensuring treatment integrity to be maintained regardless of patients' language background.

The effectiveness of cognitive behavioural therapy in Malaysia has previously been demonstrated in a randomised controlled study in patients with major depressive disorders [24]. That study and the present one indicate that the treatments based on cognitive behavioural principles, which have been long practised in Western countries, can be effective with a multi-ethnic Asian population despite differences in cultural values and norms. The present study also demonstrates that the concept of self-management of chronic pain is acceptable in a heterogeneous Asian pain clinic sample, independent of ethnic group and gender. This has important implications for pain management services in this region where the mainstay of pain services has been medication and traditional culture-based therapies, most of which could be characterised as passive in nature (where treatments are done to the patient) and dependent upon repeated clinic attendance (with their associated expenses).

The successful outcome of this study suggests that moves towards training patients in the self-management of chronic conditions, now widely promoted in Western countries [32], can be experimentally applied in Asian countries. Whilst the role of culture in adaptation to pain was not examined in this study, local cultural beliefs were addressed in applying some of the psychological techniques and cognitive–behavioural principles. Religious practices such as zikr and meditation were incorporated in the deep breathing exercise, which is associated with varied religious beliefs in Malaysia. As religion is an important element in the lives of most patients, some religious values were also incorporated in the thought-challenging processes, while respecting religious beliefs. For example, the concept of 'total surrender to God' and fate or 'taqdir', which are found in many religions, can be overapplied producing resignation to pain; that undermines the concept of self-management concept. Nonetheless, religious teachings also propound 'self-responsibility' or 'self-effort', completely consistent with self-management and therefore useful in challenging resignation to pain as fate. In terms of content, sensitive and potentially provocative subjects such as sexual issues that were addressed openly in ADAPT and INPUT programme

s were not raised in sessions but explored in individual sessions. The crucial role in this adaptation was that local staff mastered the central concepts of pain management and developed them in relation to language, culture and patients' contexts.

Why there have not been more such studies from Asia is unclear, but it may reflect the limited pain clinic and rehabilitation resources in this region [18, 27]. Our experience in Malaysia is that injured workers are expected to return to work despite persistent pain, especially if the 'usual' healing period for that particular injury has passed and the only reason cited for not returning to work is pain. Although limited help (such as graded return to work schemes like those described by Friesen et al. [16]) is available, this may not be sufficient for those with chronic pain. Although accurate data on return to work are not available for this study, anecdotal accounts by patients attending follow-up indicate that many have returned to work. Where return to employment was not an option (often due to unsupportive work policies or uncooperative employers), a few patients established their own small businesses where they could work on their own terms and were able to maintain their strategies for dealing with their pain. We also found both clinic and hospital visits have been much reduced since the programme.

A number of challenges for the future application of a self-management approach for chronic pain conditions in this region are evident. These include training and education for healthcare professionals, government agencies and employers, and the community generally, on the role of self-management in chronic illnesses, including chronic pain. The concept that complete relief of pain is not always necessary for improvements in disability, mood and lifestyle would seem especially important for all to grasp [3, 4, 17, 19]. There are also implications for resource allocation. This treatment can reduce the need for ongoing attendance at hospital and multiple drug use, but it does require skilled staff and time, especially with the more disabled and distressed patients. Training in the treatment methods is also critical. It may be possible to reduce the overall burden of chronic pain in the community if primary care providers employed the same approach at an earlier stage and refer on to a more specialised service only those that were not responding [34]. A community education programme along the same lines could also assist in limiting the development of disability in people whose pain was persisting after injury [8].

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