Self-management behaviour and knowledge of patients with musculoskeletal complaints attending an Australian osteopathy clinic: A consecutive sampling design

HIGHLIGHTS

- Musculoskeletal complaints have a significant burden and are one of the most common chronic diseases

- Self-management is a key strategy in the management of musculoskeletal complaints

- Limited self-management behaviours in other chronic conditions

- Self-management behaviours do not appear to be related to the acute or chronic nature of a musculoskeletal complaint

- Younger populations demonstrate a higher disposition towards health self-management behaviours

Self-management behaviour and knowledge of patients with musculoskeletal complaints attending an Australian osteopathy clinic: a consecutive sampling design

Running head: Musculoskeletal self-management behaviours

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ABSTRACT

Background

Musculoskeletal complaints present a substantial disease burden worldwide and account for nearly 8% of the total disease burden in Australia. Like other chronic diseases, self-management plays a significant role in the overall management plan for musculoskeletal complaints.

Objective

Evaluate the self-management behaviours of patients seeking care for a primary musculoskeletal complaint in an Australian osteopathy clinic.

Design

Consecutive sampling design.

Setting

Victoria University Osteopathy Clinic (Melbourne, Australia).

Methods

Patients were invited to complete a health information and demographic questionnaire in addition to the Partners in Health (PiH) scale prior to their initial consultation. The PiH subscales and total score were evaluated to ascertain their relationship with gender, age, and other health demographic variables.

Participants

Consecutive patients attending the Victoria University Osteopathy Clinic.

Results

Data from 331 patients was available for analysis. The PiH total score mean was 70.9 ($\pm$ 14.3). Reliability estimations for the PiH subscales were acceptable (McDonald's *omega* > 0.75). PiH total and subscale scores were not associated with age, and not significantly different for gender and chronicity of complaint. Significant differences for other health behaviours (smoking, blood pressure assessment) were identified.

Conclusions

The current study provides support for the use of the PiH in a patient population seeking osteopathy care for primary acute or chronic musculoskeletal complaint, and also in younger populations seeking care. The results of the study suggest that osteopathy patients seeking care for a primary musculoskeletal complaint demonstrated a relatively high disposition towards the self-management of their health complaints.

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INTRODUCTION

Chronic diseases are long-term conditions with potential persistent, negative health effects that have a high burden both on the individual and the healthcare system [1]. Chronic disease is omnipresent with 50% of the Australian population reporting the presence of one chronic disease, and 23% having two or more [2]. These chronic diseases in the Australian population include arthritis, asthma, back pain, cancer, cardiovascular disease, chronic obstructive pulmonary disease, diabetes and mental health conditions [3]. Over 7 in 10 deaths in 2013 were due to one of these eight preventable chronic diseases and these conditions represented 61% of the total burden of disease in Australia [3]. Importantly, 31 per cent of the total burden of chronic disease is attributable to lifestyle factors such as smoking, overweight and obesity, alcohol, physical inactivity and high blood pressure [4]. As a result, it is imperative to manage the surmounting economic and personal burden by understanding and implementing self-management measures for patients with biomedical and behavioural risk factors to help prevent development of, and management of, chronic disease [3].

The primary health care system in Australia has been reported to be providing only half the recommended care for many chronic conditions [5]. Where appropriate care of chronic diseases is provided, improved health outcomes have been reported [5]. Chronic disease management requires collaboration between health care providers and patients, but also enhancing the patients' self-efficacy (self-reported confidence to successfully perform specific tasks or behaviours) with respect to their own health care. Self-management is broadly defined as an individual working with their health professional/s to consider the symptoms of a condition and potential treatment options, to formulate a care plan, engage in health enhancing activities, monitor their own condition/s and manage the impacts of the condition(s) on their physical function, emotions and relationships [6]. In the musculoskeletal care context, guided self-management has been shown to positively influence pain, physical function, levels of distress and self-efficacy [e.g. 7, 8, 9], with manual and physical therapists playing a key role in supporting patients to engage in self-care [10].

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The absence of a questionnaire to evaluate patient self-management behaviours, and knowledge of a disease, led to the development of the Partners in Health (PiH) scale [6]. Despite evidence supporting the effectiveness of chronic condition self-management, no generic self-report measurement tool existed prior to the PIH scale [11]. This scale provides health professionals with an easy checklist of areas of self-management that could assist with the development and implementation of interventions targeted to the individual [11]. The 11-item scale consisted of 3 factors (core self-management, condition knowledge and response) with an internal consistency[1] (Cronbach's α) of 0.88 and acceptable construct validity[2] with respect to the self-management literature [11]. Additional work to include an item related to physical activity, emotion and social life resulted in a 12-item version of the PiH [12].

Work by various authors suggests the PiH scale demonstrates acceptable construct validity and internal consistency and can be used as both a self-report tool and outcome measure for patients with chronic diseases [12-15]. Petkov, Harvey [12] initially demonstrated a four-factor structure: knowledge of illness, coping with illness, symptom management and adherence to treatment, with acceptable measurement properties. Baxter, Morello [16] also investigated the reliability and validity of the PiH scale but on a specific population – patients with end stage renal disease. This study demonstrated a high α coefficient (0.85) and a low to moderate retest correlation with a 2-4-week timeframe between administrations.

A revised PiH scale where focus groups proposed a four-factor structure was evaluated in a study by Smith, Harvey [13]. The factors included knowledge of illness and treatment; patient-health professional partnership; recognition and management of symptoms; and coping with chronic illness. The PiH was completed by 904 participants reporting a chronic illness, and the revised scale was found to be a relevant and structurally valid instrument for measuring self-management of chronic condition in the Australian community [13]. Peñarrieta-de Córdova, Barrios [15] suggest that the PiH scale is useful as a generic self-rated clinical tool for assessing self-management in a range of chronic conditions including

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[1] Correlations between the items that comprise the measure. Higher correlations suggest the items are measuring the same construct.
[2] Degree to which the measure actually measures the construct it is designed to measure.

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hypertension, diabetes and cancer. Acceptable internal consistency ($\alpha = 0.80$) and construct validity of the instrument were demonstrated in this Mexican study [15].

Together, the results of these studies suggest the PiH demonstrates acceptable measurement properties and is suitable for use as a tool to evaluate self-management behaviours in chronic disease populations, potentially including back pain and other musculoskeletal complaints. Osteopathy care is sought by Australians for the management of a range of musculoskeletal complaints [17-20]. Given that back pain and other musculoskeletal disorders account for nearly 8% of the total disease burden in the Australian population [4], osteopaths may have a role in reducing this burden through their primary patient contact role, or through government initiatives such as the Chronic Disease Management plan [21]. The aim of the present study was to utilise the PiH to profile the self-management behaviours of acute and chronic musculoskeletal pain patients, including back pain, presenting to an Australian osteopathy student-led teaching clinic.

METHODS

The study was approved by the Victoria University (VU, Australia) Human Research Ethics Committee (HRE15-005).

Participants

The cohort study was conducted from February to August 2017. Data was collected once from patients attending their initial appointment at the VU Osteopathy Clinic, a student-led teaching clinic located at both the St Albans and the Melbourne CBD campuses of the university. All new patients attending the clinics were required to complete a demographic form prior to their consultation in order to provide details to establish the patient clinical history as required by law. Patients were invited to complete a health information form and the Partners in Health Scale (PiH) prior to their appointment. Patients were free to decline to participate in the study and non-completion of the health information form or PiH did not preclude the patient from receiving care at the clinic. Consent to participate was implied by completion of the questionnaire.

Questionnaires

The questionnaire consisted of two parts; a health information questionnaire and the PiH scale. The health information questionnaire was developed for our clinical environment to capture data on a range of health behaviours and social determinants of health consistent with Australian public health surveys [2, 22]. This health questionnaire included items such as physical activity level, serves of fruit and vegetables eaten per day, a life satisfaction screening question [23] and four single health literacy screening items [24, 25]. Patients were also asked to identify if they were currently suffering, and/or previously suffered, from one or more of the major chronic diseases affecting the Australian population [3]. The PiH consists of 12 questions across four domains (Table 2). Responses to each PiH question were on a Likert scale from 0-8, where 0 is 'very little', 'never' or 'not very well' and 8 is 'a lot', 'always' or 'very well.' These questions are rated according to the individual's own perception of their current self-management. As

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such, '0' indicates low self-management and '8' indicates high self-management. The total range is 0-96 with higher scores demonstrating higher self-management practices.

Statistical analysis

Data were extracted from the demographic, health information and PiH forms by the lead author (BV) and the data deidentified. Data were analysed using SPSS v20.0 (IBM Corp, USA). Descriptive statistics were generated for each health information and PiH question. Total PiH subscale scores were calculated based on the factor structure identified by Smith et al. [13], as this was the most contemporary version of the questionnaire at the time of the study. Parametric statistics were used to evaluate differences in PiH scores with respect to demographic and health information questions. Alpha was set at $p<0.05$ and effect sizes (Cohen's d) calculated where relevant. Reliability estimations calculated for the PiH subscales and total score were Cronbach's alpha and McDonald's omega [26, 27]. Both reliability estimates were calculated using the *userfriendlyscience* [28] package in R [29].

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RESULTS

Three-hundred and eighty-three (N=383) new patients attended the clinic during the data collection

period [30]. Data missing at random were imputed using a two-way imputation method. Data were

imputed for 52 patients with the two-way imputation using the *testdataimputation* package [31] in R [29].

Three hundred and thirty-one (n=331) data sets were available for analysis. Demographic and health

information data are presented in Table 1. The PiH total mean was 70.9 (± 14.3) and median was 72.

Descriptive statistics for the PiH are found at Table 2.

Table 1. Characteristics of patients who completed the Partners in Health scale.

	Categories	Response
Gender	Male	146 (44.1%)
	Female	184 (55.6%)
Age	18-25	38 (46.3%)
	26-34	27 (32.9%)
	35-44	8 (9.8%)
	45-54	5 (6.1%)
	55-64	2 (2.4%)
	65-74	2 (2.4%)
	Mean	33.16 +/- 13.59 years
English speaking at home	Yes	293 (88.5%)
	No	37 (11.2%)
Born in Australia	Yes	222 (67.1%)
	No	109 (32.9%)
Smoking status	Yes	44 (13.3%)
	No	247 (74.6%)
Student status	Student	85 (25.7%)
	Non-student	222 (67.1%)
Highest level of education attended	Primary school or less	2 (0.6%)
	High school (not completed)	11 (3.3%)
	High school (completed)	69 (20.8%)
	Technical & Further Education (TAFE)	61 (18.4%)
	University	187 (56.5%)
Vegetable consumption per day	Median	3 serves (range 0-7)
Fruit consumption per day	Median	2 serves (range 0-7)
Satisfaction with life	Median	4 (range 0-5)
Self-rated general health	Poor	6 (1.8%)
	Fair	40 (12.1%)
	Good	110 (33.2%)
	Very good	128 (38.7%)
	Excellent	45 (13.6%)
Stage of presenting complaint	Acute (less than 3 months duration)	174 (52.6%)

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Chronic (greater than 3 months duration)	156 (47.1%)	

Table 2. Descriptive statistics for the Partners in Health (PiH) items and subscales.

	Mean (SD)	Median	Range
1. Knowledge	**10.98 (3.21)**	**12**	**0-16**
1. Overall, what I know about my health condition(s) is:	5.51 (1.60)	6	0-8
2. Overall, what I know about my treatment, including medications of my health condition(s) is:	5.47 (1.91)	6	0-8
2. Partnership in treatment	**24.66 (5.69)**	**26**	**0-32**
3. I take medications or carry out the treatments asked by my doctor or health worker:	5.56 (2.39)	6	0-8
4. I share in decisions made about my health condition(s) with my doctor or health worker:	5.89 (1.94)	6	0-8
5. I am able to deal with health professionals to get the services I need that fit with my culture, values and beliefs:	6.61 (1.46)	7	0-8
6. I attend appointments as asked by my doctor or health worker:	6.60 (1.73)	7	0-8
3. Recognition and management of symptoms	**11.57 (3.31)**	**12**	**0-16**
7. I keep track of my symptoms and early warning signs (e.g. blood sugar levels, peak flow, weight, shortness of breath, pain, sleep problems, mood):	5.76 (1.88)	6	0-8
8. I take action when my early warning signs and symptoms get worse:	5.81 (1.77)	6	0-8
4. Coping	**23.65 (5.66)**	**24**	**0-32**
9. I manage the effect of my health condition(s) on my physical activity (i.e. walking, household tasks):	6.03 (1.63)	6	0-8
10. I manage the effect of my health condition(s) on how I feel (i.e. my emotions and spiritual wellbeing):	5.85 (1.64)	6	0-8
11. I manage the effect of my health condition(s) on my social life (i.e. how I mix with other people):	5.78 (1.71)	6	0-8
12. Overall, I manage to live a healthy life (e.g. no smoking, moderate alcohol, healthy food, regular physical activity, manage stress):	5.98 (1.70)	6	0-8
PiH Total Score	**70.9 (14.30)**	**72**	**9-96**

Reliability estimations were acceptable for the total score ($\alpha = 0.88$, 95%CI [0.87-0.90]; $\omega t = 0.88$, 95%CI [0.86-0.90]) and for the four subscales identified by Smith et al. [13]: 1) knowledge of illness and treatment ($\alpha = 0.80$, 95%CI [0.75-0.84]; $\omega t = 0.80$, 95%CI [0.74-0.86]); 2) patient-health professional partnership ($\alpha = 0.79$, 95%CI [0.75-0.82]; $\omega t = 0.79$, 95%CI [0.74-0.84]); 3) recognition and management of symptoms ($\alpha = 0.78$, 95%CI [0.74-0.83]; $\omega t = 0.78$, 95%CI [0.70-0.85]); and, 4) coping ($\alpha = 0.87$, 95%CI [0.84-0.89]; $\omega t = 0.87$, 95%CI [0.84-0.89]). These results suggest the calculation of the PiH total and subscale scores is appropriate.

No significant difference was identified for the PiH total and subscale scores for gender, stage of complaint (acute/chronic), clinic attended, and student status. The *Partnership in treatment* subscale score was significantly lower for those who did not speak English at home (p=0.014; *d*=0.43, 95%CI[0.08-0.77]) however the other subscales and total PiH score were not significantly different. Likewise, those patients born overseas also demonstrated lower *Partnership in treatment* subscale scores (p=0.037; d=0.25, 95%CI[0.02-0.48]). Those patients who reported smoking demonstrated lower PiH total (p=0.002, *d*=0.52, 95%CI[0.19-0.84]) and *Coping* subscale (p<0.001, *d*=0.28, 95%CI[0.18-0.39]) scores.

A correlation was observed between self-rated general health and the PiH total score (r=0.26, *small*) and *Coping* subscale score (r=0.34, *moderate*) but not for any of the other subscales (r<0.19). A positive correlation was observed for the Coping subscale and life satisfaction (r=0.26, *small*) however other subscale correlations were r<0.12. Screening for health literacy was undertaken with 4 items [25] and the data is presented in Table 3.

Table 3. Health literacy screening items and their relationship to the Partners in Health (PiH) total and subscale scores.

Screening item	Response category	Frequencies	PiH total score	PiH Knowledge subscale	PiH Partnership in treatment subscale	PiH Recognition and management of symptoms subscale	PiH Coping subscale
How often do you have someone help you read hospital materials?	Always	3 (0.9%)	0.06	0.03	0.07	0.02	0.06
	Most times	4 (1.2%)					
	Sometimes	16 (4.8%)					
	Rarely	31 (9.4.%)					
	Never	(72.8%)					
How often do you have problems learning about your medical condition because of difficulty understanding written information?	Most times	3 (0.9%)	0.08	0.08	0.08	0.04	0.05
	Sometimes	13 (3.9%)					
	Rarely	53 (16.0%)					
	Never	228 (89.7%)					
Are you confident completing medical forms?	Not at all confident	2 (0.6%)	0.24*	0.23*	0.23*	0.19*	0.17*
	A little confident	6 (1.8%)					
	Somewhat confident	13 (3.9%)					
	Quite confident	117 (35.3%)					
	Extremely confident	192 (58.0%)					
How often do you have a problem understanding what is told to you about your medical condition?	Always	2 (0.6%)	0.25*	0.21*	0.23*	0.20*	0.16*
	Most times	1 (0.3%)					
	Sometimes	27 (36.9%)					
	Rarely	122 (36.9%)					
	Never	145 (89.7%)					

* $p < 0.01$

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All other correlations were r<0.20 for age, education, sitting and exercise. Table 4 demonstrates

differences between the PiH total and subscale scores for having had a blood pressure measurement in the

6 months prior to presenting at the clinic, and each of the chronic conditions.

Table 4. Blood pressure measurement, self-reported history of chronic diseases and Partners in Health (PiH) total and subscale scores.

	PiH Total Score	PiH Knowledge subscale	PiH Partnership in treatment subscale	PiH Recognition and management of symptoms subscale	PiH Coping subscale
Blood pressure					
Measured in previous 6 months	p<0.001; d=0.48 95%CI[0.25-0.70]	p=0.002; d=0.36 95%CI[0.13-0.58]	P<0.001; d=0.44 95%CI[0.21-0.67]	p=0.001; d=0.21 95%CI[0.10-0.31]	p=0.017; d=0.28 95%CI[0.05-0.50]*
Chronic disease					
Hypertension	p=0.006; d=0.64 95%CI[0.18-1.10]*	p=0.006; d=0.52 95%CI[0.07-0.98]*	p=0.08	p=0.032; d=0.50 95%CI[0.04-0.95]*	p=0.022; d=0.53 95%CI[0.08-1.99]*
Arthritis	p=0.82	p=0.57	p=0.31	p=0.99	p=0.86
Heart Complaints	p=0.77	p=0.74	p=0.87	p=0.56	p=0.98
Hypercholesterolaemia	p=0.70	p=0.31	p=0.67	p=0.20	p=0.41
Asthma	p=0.21	p=0.46	p=0.56	p=0.20	p=0.002; d=0.48 95%CI[0.18-0.78]^
Cancer	p=0.33	p=0.18	p=0.45	p=0.44	p=0.66
Mental Health	p=0.05	p=0.58	p=0.98	p=0.11	p<0.01; d=0.52 95%CI[0.24-0.79]^
Diabetes	p=0.40	p=0.58	p=0.94	p=0.58	p=0.16
Kidney Disease	p=0.14	p=0.22	p=0.32	p=0.29	p=0.19

* scores were lower for those reporting this condition compared to those who did not

^ scores were higher for those reporting this condition compared to those who did not

DISCUSSION

The current study explored, through the PiH, the self-management behaviours of patients with a primary musculoskeletal complaint presenting to an osteopathy clinic. In this context, a primary musculoskeletal complaint is one that is the main reason for presenting to the clinic for care. Self-management often forms part of the management plan for a patient presenting to an Australian osteopath and includes education about their musculoskeletal condition, exercises, ergonomic advice, and nutritional advice [17, 18]. The success or otherwise of this self-management may be associated with the patients' self-management behaviours. The PiH provides an avenue to evaluate and monitor these behaviours, and potentially identify how likely a patient may be to comply with advice provided by an osteopath or other health professional.

The range of regions for the presenting musculoskeletal complaint is consistent with previous work both in the same clinical environment [22, 24] and the Australian osteopathy profession more broadly [17, 32]. Although patients are primarily presenting to the clinic with a musculoskeletal complaint, a proportion of these patients also present with a history of one of the common chronic diseases reported in the Australian population [1, 22].

Partners in Health (PiH) outcomes

The PiH total score in the current cohort is lower than that reported by Baxter, Morello [16] in Australian end-stage renal disease patients (mean 81.4 ± 12.07), but higher than Veldman et al. [33] (mean 50) in older community-dwelling Dutch adults. The difference between these results and those of the present study, may be a reflection of the broader patient population, including both acute and chronic patients, and a population that may not have experienced a chronic disease. The result highlights that practitioners may not be able to assume that those who are relatively healthy, or not experienced a chronic disease, have the capacity or desire to participate in self-management of their condition.

Demographics and the Partners in Health scale

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The present study also provides further evidence for the validity of the PiH, across both acute and chronic musculoskeletal complaint cohorts. This is the first time that the PiH has been used in an osteopathy patient context to explore the self-management behaviours of those with a musculoskeletal complaint as the primary reason for presentation to a health professional.   It may be that the PiH is suitable for use across both acute and chronic patient populations, and in clinical environments where the primary complaint is a musculoskeletal one, including osteopathic practice. These assertions would require further testing, however.

There was no significant difference for PiH scores for gender, consistent with work by Veldman, Reijneveld [33]. However, Peñarrieta-de Córdova, Barrios [34] identified differences for gender in their work exploring chronic diseases (e.g. cardiovascular disease, diabetes) in a Mexican population. These authors found that females demonstrated higher PiH scores overall. These differences in study outcomes suggest that the influence of gender on health self-management should be explored further [34]. A weak relationship with age was identified in the current work and is again consistent with Veldman, Reijneveld [33]. The number of chronic conditions experienced by individuals typically increases with age and it has been reported that older patients may be more at risk of poor self-management of chronic conditions [35]. The low number of older patients in the current study may mean that it is difficult to detect any age-related differences in self-management behaviours and additional research in this area, particularly related to musculoskeletal complaints is warranted.

Life satisfaction was screened using a single item measure in the current study. The *Coping* subscale demonstrated a moderate positive relationship with life satisfaction, but trivial for the other subscales and total score. This is the first time that life satisfaction has been evaluated with the PiH, however it has been evaluated in osteopathy patient populations [36]. The items comprising the *Coping* subscale evaluate self-management of health across physical, psychological and social domains of health. Active coping strategies have been identified as a predictor of life satisfaction in chronic illness patients [37] and the current work suggests a similar outcome in a musculoskeletal pain patient cohort. For the clinician,

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encouraging patients to engage in active coping strategies may help with improving treatment outcomes and overall life satisfaction.

Smith, Lawn [38] explored the relationship between self-rated general health and the PiH total score in a chronic disease cohort in South Australia. These authors described that those with a low PiH score demonstrated a higher probability of self-rating their general health to be lower. In the present study self-rated general health was evaluated on the same 5-point Likert type scale as used in the Australian National Health Survey [2] and demonstrated a moderate positive relationship with the PiH *Coping* subscale and weak positive relationship with the PiH total score – a result somewhat consistent with Smith, Lawn [38]. Again, active coping strategies may be associated with self-reported general health, that is, individuals engaging in these strategies self-rate their general health higher than those not engaging in these strategies. As suggested above, fostering patient engagement with these active coping strategies could be beneficial for overall health.

Chronic disease and the Partners in Health scale

<u>Hypertension</u>

The present study demonstrated that participants who currently have, or have previously suffered from, hypertension had significantly higher PiH total score and subscale scores (expect for *Partnership in treatment*), with medium to large effect sizes. The 2016 hypertension guidelines from the National Heart Foundation of Australia suggest that once a person is diagnosed with hypertension they should be reviewed every 4-6 weeks, or shorter if they have a significantly elevated baseline blood pressure [39]. This regular monitoring could suggest the reason why those patients who reported a history of hypertension demonstrated higher PiH scores compared to those with no history. Other studies also support the higher PiH score in this group. Hypertensive patients have a relatively good knowledge of the condition [40, 41], that may develop due to the long-term nature of the condition [42], and awareness of the importance of health education and that unmanaged hypertension is attributed to a history of chronic conditions such as diabetes [40]. The present study also identified significantly higher PiH total score

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and subscale scores for those who reported having their blood pressure measured in the 6 months prior to their consultation. This suggests that these hypertensive patients may exhibit more positive self-management health behaviours and/or have sought care from a health professional (i.e. for medication). Osteopaths may be able to play a role in blood pressure measurement [43] and reinforce awareness of the role of blood pressure in a number of chronic diseases.

Asthma

In 2014-15, 1 in 9 Australians reported experiencing asthma [44]. Of these only 1 in 5 reported having an asthma management plan, and 6 in 10 reported the presence of another chronic health complaint [44]. A study by Blakey, Woolnough [45] suggested that asthma guidelines focus on day-to-day control of the symptoms. This could support the higher *Coping* subscale score identified in the current study for those patients who identified they were asthmatic. These authors further propose that assessments of risk and control are needed, which could then help create appropriate long-term management. As such, a long-term management plan including outcome measures are needed for chronic asthmatics that incorporate aspects of daily symptoms control as well as risk and long-term control. Osteopaths could play a role in encouraging asthmatic patients to develop an asthma management plan and/or ensure that it is regularly reviewed by their general practitioner or respiratory physician.

Mental health

Those patients who reported a history of a mental health complaint reported significantly higher *Coping* subscale scores, compared to those who did not report a mental health complaint. It is posited that this subset of patients has sought care from a health professional and been provided with a management plan that has increased their self-reported coping ability.

Limitations and future research

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There are a number of limitations with respect to the present study. This includes drawing patients from one osteopathy clinic, the patients were presenting with a primary musculoskeletal complaint, and that the patients were educated, younger and largely health literate. Previous work has suggested that patients seeking osteopathy care may be more health literate than the general population [24], as accessing the service requires a knowledge of the role of an osteopath, and the service provided in the clinic in the current study does not attract any government or private health insurance rebate. Future research using the PiH could explore its relationship with treatment outcome, particularly the identification of patients who may be suitable for the inclusion of additional self-management strategies in their management plan. This work could also identify patients with limited self-management behaviours and assist them to develop positive health behaviours as part of their management. There is also a possibility of combining the PiH with a measure of self-efficacy such as the Patient Report Outcome Measurement Information System (PROMIS) self-efficacy measures to explore how patients manage a chronic complaint(s). It is suggested that studies in musculoskeletal health that explore the use of one or more self-management strategies in the research design utilise the PiH to evaluate changes self-management behaviour and its association with patient outcomes.

CONCLUSION

This study has demonstrated that patients who seek osteopathy care for a primary musculoskeletal complaint exhibit a relatively high disposition towards self-management of their health. The mean age in the present study was lower than previous studies utilising the PiH, thereby providing additional evidence to support its use in a broader population than was previously reported. Further, the use of the PiH with both acute and chronic musculoskeletal complaints is supported by the present study. Self-management involves people taking responsibility for their own health and wellbeing, as well as learning to manage any long-term illnesses, such as hypertension, asthma and mental health. This patient-practitioner alliance is crucial to manage chronic conditions, prevent illness and promote wellness. The PiH may also provide a method by which patient management strategies can be quantified and monitored over the course of treatment.

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STATEMENT OF COMPETING INTERESTS

Brett Vaughan is a member of the Editorial Board of the International Journal of

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