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The Partners in Health scale: The development and psychometric properties of a generic assessment scale for chronic condition self-management

Malcolm W. Battersby, Alex Ask, Marion M. Reece,
Mignon J. Markwick and James P. Collins

Flinders Human Behaviour & Health Research Unit, Flinders University

Despite the vast amount of evidence supporting the effectiveness of chronic condition self-management, no generic instrument exists to assess self-management. In light of this, the Partners in Health (PIH) scale was developed and then piloted for acceptability. Forty-six patients completed the PIH pilot scale, with positive feedback from the patients, GPs, and other health professionals in the pilot program. The PIH scale has demonstrated potential to be a reliable and valid measure of chronic condition self-management. A future study is proposed, however, to confirm the findings presented here. The PIH scale may help health professionals to introduce the concept of self-management to their patients/clients, and provides a rapid checklist of areas of self-management that may lead to interventions targeted to the individual. Out of the many terms used in the literature, self-management is the term decided on here to refer to the active involvement of the patient in the management of their chronic medical condition.

Key words: Chronic Disease Self-management, Generic Assessment Scale

This article outlines the development and preliminary psychometric analysis of a generic assessment scale for patients managing their chronic medical conditions, that is relevant to the primary health care setting. Self-management is a core component of collaborative management of chronic illness (Von Korff, Gruman, Schaefer, Curry, & Wagner, 1997). The development of a generic self-management scale was driven by the absence of an existing instrument, despite a plethora of evidence supporting the benefits of self-management interventions for a range of health conditions. Lorig et al. (1999), for example, evaluated a generic community-based education course for people with a range of chronic conditions (the Chronic Disease Self-Management Program). They found that the intervention group demonstrated significant improvements in health behaviours (e.g., minutes of exercise, practice of cognitive symptom management) and health status (self-rated health, disability, limitation), and required fewer hospitalisations in comparison with a control group.

Gibson et al. (2000) reviewed 26 randomised controlled trials that evaluated the effectiveness of asthma interventions such as regular medical review, self-monitoring and action plans. Optimal self-management (i.e., involving all three interventions) led to a significant reduction in hospitalisation for asthma, whereas less intensive interventions did not. Gibson et al. concluded that:

> *self-management education about asthma which involves self-monitoring by either PEF (Peak Expiratory Flow) or symptoms, regular medical review, and a written action plan, improves health outcomes for adults with asthma. There are major reductions in resource use and improvements in morbidity (p. 2) [and] less intensive interventions, particularly those without a written action plan are less efficacious (p. 12).*

Self-management is supported by a number of reviews (Mullins, Laville, Biddle, & Lorig, 1987; Padgett, Mumford, Hynes, & Carter, 1988; Superio-Cabuslay, Ward, & Lorig, 1996). On the whole, self-management interventions or programs have led to: (a) improvements in health and other (e.g., work) behaviours; (b) improvements in health status, including physical functioning and psychological wellbeing; and (c) reductions in unplanned health service utilisation.

Although there are a number of self-management assessment tools for specific conditions (Riegel, Carlson, & Glaser, 2000; van der Bijil, van Poelgeest-Eeltink, & Shortridge-Baggett, 1999; Leveille et al., 1998; van der Palen, Klein, Zielhuis, van Herwaarden & Seydel, 2001; Liu, 2001; Baker & Stern, 1993; Deaton, 2000; Anderson, Dowds, Pelletz, Edwards, & Peeters-Asdourian, 1995), general practitioners and other

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primary care clinicians are required to manage a large number of chronic conditions that are often co-morbid, within individuals. The authors were not able to find other generic measures of self-management based on a definition of the concept. While there is some evidence that people with a range of chronic conditions experience common problems and benefit from generic skill training (Lorig et al., 1999), the core attributes of self-management and a scale measuring these attributes has not been developed or psychometrically evaluated.

It is important to indicate if medical self-management is a generic construct identifiable from a simple questionnaire. The advantage of such an instrument would be to provide a simple tool for patients and clinicians to assess self-management at a given point in time, to target interventions to the individual's needs and to provide an outcome measure over time. Techniques and strategies to improve self-management could be identified and transferred across conditions. If self-management could be shown to be a reliable and valid concept, change in self-management scores may correlate with change in health outcomes and service utilisation.

Context: Coordinated Care Trial

The Partners in Health (PIH) scale was developed as part of the Partners in Health program, which was a wind-down project of the SA HealthPlus first round Coordinated Care Trial (Commonwealth Department of Health and Aged Care, 1999). The Coordinated Care trials were established by the Council of Australian Governments (COAG) to develop models of care for people with chronic and complex illness with the aim of improving health outcomes "within existing resources". From the SA HealthPlus mid-trial forum of service coordinators and managers, it became evident that some trial participants were already effectively managing their condition and thus were not suitable as participants in a coordinated care program that offered coordination over and above their usual medical care (Battersby et al., 2002). Moreover, there was often little association between disease complexity and level of coordination required by trial participants. Some patients with severe and complex illness were in fact effective self-managers and required little extra support; on the other hand, some patients with mild disease

severity showed limited self-management behaviours and benefited from assessment and targeting of self-management interventions. Finally, many participants in the trial were thought to have a latent potential to improve self-management of their condition. The Partners in Health program thus focussed primarily on developing processes and tools to assist health professionals (general practitioners, nurses and allied health professionals) working in partnership with people with chronic illness to maximise their self-management capacity. The PIH scale is a self-assessment tool developed as part of this process.

Aims

The aim of this article is to present the development and psychometric testing of a self-management questionnaire called the Partners in Health (PIH) scale. Data from the PIH scale are presented from two projects that aimed to trial the PIH program in people with a range of chronic illnesses.

Methodology and Development of the Partners in Health Scale

Literature review and definition

The authors consulted existing literature for a sound definition of self-management to underpin a self-administered assessment scale. There was no clear consensus in the literature on what constituted self-management. Terms such as "self-management", "self-treatment", "self-care" and "self-help" were used interchangeably. Similarly, sociological views of illness may see self-management pertaining only to the patient, and reject use of the term if it involves a dyad with a doctor (or other health professional) because of the implied uneven power structure in the health professional's favour that undermines self-management.

We took a pragmatic approach to base our definition of self-management on what consumer and health professional focus groups, literature review and expert informants understood constituted the essential components of self-management. This led to a definition that focussed on knowledge, attitudes, and behaviours of the patient that impact on the daily management of their condition.

Based on a comprehensive literature review of over 400 articles, Gruman and Von Kroff (1996) proposed that self-management:

involves [the person with the chronic disease] engaging in activities that protect and promote health, monitoring and managing of symptoms and signs of illness, managing the impacts of illness on functioning, emotions and interpersonal relationships and adhering to treatment regimes. (p. 1)

This definition shows self-management as a relatively broad concept, pertaining to the behaviours of the patient, rather than models for health care systems or workers within them. We required further elaboration.

Lorig (1993) states that self-management is also about enabling "participants to make informed choices, to adapt new perspectives and generic skills that can be applied to new problems as they arise, to practice new health behaviours, and to maintain or regain emotional stability" (p. 11).

Moreover, Lorig emphasises that self-management is not an alternative to medical care. Rather, self-management is:

aimed at helping the participant become an active, not adversarial, partner with health care providers. Chronic disease is best treated by a balance of traditional medical care and the day-to-day practice of self-management skills. (p. 11)

In summary, the self-management of chronic conditions is based on a broad definition that:

- takes into consideration the individual with the chronic condition, carers, family, and the health professional;

- is a holistic approach that acknowledges the medical and psycho-social components of a condition; and

- is aimed at empowering the individual through proactive and adaptive strategies.

Therefore, a comprehensive definition of self-management is:

Self-management involves the individual working in partnership with their carer(s) and health professionals so that (s)he can:

1. Know their condition and various treatment options.

2. Negotiate a plan of care; (i.e., Care Plan).

3. Engage in activities that protect and promote health.

4. Monitor and manage the symptoms and signs of the condition(s).

5. Manage the impact of the condition on physical functioning, emotions and interpersonal relationships.

In addition to medical and psychosocial aspects of the patient's illness, these principles endorse the importance of the relationship between the patient and the health professional, acknowledging that a positive or negative relationship could influence self-management and ultimately, health outcomes. Self-management is therefore a partnership, thus the Partners in Health Scale.

Scale Development

The designers of the scale consisted of members of the Flinders University Coordinated Care Training Unit (CCTU), service coordinator team leaders from metropolitan and rural trial sites, and a general practitioner educator (CH). An advisory group was formed at the commencement of the pilot Partners in Health program (conducted in 1999) and consisted of delegates from SA HealthPlus (i.e., trial managers, service coordinators, a consumer representative, a general practitioner representative, team leaders, and project officers). Two other reference groups were also formed for the Partners in Health program (Consumer Working Party [n=8] and a General Practice Working Party [n=12]).

The CCTU designed an 11-item scale (see Appendix 1) that aimed to measure the definition of self-management. The scale was kept short and precise. The items were directly derived from each of the five attributes of self-management. Additional items were identified from the literature review and the experience of the consumers and health professionals involved in addressing self-management issues as one of the coordinated care trial aims. The wording of each item was modified in an iterative process over a three-month developmental period, with team members testing each item's meaning, literacy level and construct with participants in the trial. Three reference groups reviewed the scale, and made recommendations for refining the instrument.

A nine-point rating scale was used for each item to be rated according to the individual's perception of their level of self-management—0' indicated good self-management and '8' poor self-management. A nine-point rating was chosen to provide as close to a continuous variable as possible, and to start the development of the scale so as to allow a broad range of possible responses.

Thus, the total range of the PIH scale is 0-88 with lower scores representing better self-management practice.

Once designed, the PIH scale was administered to 63 consumers who were trial participants in SA HealthPlus at a forum meeting in Whyalla, in order to conduct a preliminary face validity check of the scale. Participants were requested to comment on the relevance, comprehension, readability and acceptability of the questions. The age range of participants was 35 years to 79 years, with a mean of 66 years. Chronic pain, diabetes, cardiac and respiratory conditions were all present in this sample set. Wording of some items was altered based on comments from the Whyalla Forum.

Piloting the Partners in Health program

The PIH scale has construct validity (i.e., based on a sound definition of self-management) and face validity (tested with consumers). However, the pilot Partners in Health program allowed a more comprehensive analysis of the scale in a trial of a self-management program. The Partners in Health program consisted of (a) assessment of self-management, (b) a self-management care plan, (c) a symptom action plan and symptom monitoring diary, (d) education, lifestyle behaviour change, and coping strategies, and (e) a patient handbook on self-management. Interventions that followed self-management assessment included referral of some patients to a generic chronic condition self-management course as developed by Lorig et al. (1999) and described above.

The items from the PIH scale can be seen in Table 1. In addition to the PIH scale, the Cue and Response form was designed as an assessment instrument for health professionals to test the inter-rater reliability and validity of the PIH. The Cue

Table 1: Partners in Health Scale and questions from the Cue and Response form

Partners in Health Scale Questions	Questions from Cue and Response form
1. My knowledge of my condition is:	• Please describe your actual condition. • Describe the symptoms that you experience. • From your perspective, describe the cause of your condition. • From your understanding, outline what could happen to you with this condition. • How does this condition affect your daily activities?
2. Knowledge of the treatment of my condition is:	• What treatment do you currently receive? • Explain how and why you take medication that is prescribed. • If known, please describe any treatment options available to you • How does the cost of treatment affect you? • What adverse effects has your treatment had on your life? • Describe what could happen if you stop treatment for your condition.
3. My ability to share in decisions made about the management of my condition is:	• How do you discuss your condition and management of your condition with your Doctor?
4. My ability to arrange appointments as recommended by my doctor / health service provider is:	• Describe any difficulties that you experience in being able to make appointments (financial, no phone, unable to get appointment, not following care plan etc.).
5. My attendance at appointments is:	• Describe anything that prevents you from attending your appointments (transport, costs, physical disability).
6. My ability to take my medication as directed by my doctor is:	• What hinders you from taking medication as directed? (Consider confusion, frequency, adverse reactions, costs, 'the five rights' etc.)
7. My understanding of why I need to observe, measure and record my symptoms is:	• What symptoms or measures do you currently observe? • Why do you observe these symptoms or measures?
8. My ability to observe, measure and record my symptoms is:	• How do you record these symptoms or measures? • What prevents you from effectively observing, measuring or recording symptoms that you may experience?
9. My understanding of what to do when my symptoms get worse is	• What do you currently do if your symptoms or measures worsen?
10. Ability to take the right action when my symptoms get worse is	• Describe how the action you take effects the symptoms that you experience or measure you observe. • What hinders you from taking the right action for resolving your symptoms or improving measures?
11. My progress towards adopting habits that improve my health is	• What types of strategies have you adopted that have helped promote good health?

and Response form contains the 11 items from the PIH scale and the rating scale for each item. In addition, under each item are a number of cue questions that aim to elicit information from the patient about each item. Combining the information from these responses, the interviewer then makes a rating of the patient's self-management for each item using the 0-8 scale.

In addition to testing reliability and validity of the PIH scale, the Cue and Response form allows the health professional to establish rapport with the individual and to use their new awareness of gaps in self-management as a motivational lever to begin the process of change. For example, a general practitioner might find that a patient has rated their knowledge of diabetes as good; however, using the Cue and Response questions, areas of knowledge deficit may be revealed. Thirdly, the Cue and Response form enables exploration of interventions the individual would like to pursue, identifies areas the individual is not ready to change, and explores barriers that prevent more effective self-management (e.g., financial constraints, locality or transport). Cue and Response therefore allows for flexible and unique care for individuals, identifying for the health professional areas for possible improvement in the client's self-management program.

Twenty-four patients were enrolled for the pilot Partners in Health Program. Thirteen general practitioners and eight service coordinators were "partners" in managing their care. A range of chronic conditions was represented in the sample (i.e., cardiac, respiratory, diabetes). After self-management assessment and care planning, interventions (e.g., self-management course) were implemented and referrals made. Regular reviews were conducted by the clinical team. Patients completed the PIH scale at a three-month follow-up, and were re-assessed using the Cue and Response form by the same service coordinator. During the initial assessment, the service coordinator assessed the patient using the Cue and Response form before they examined the PIH scale, which was completed by the patient. This allowed for a reliability analysis of responses provided by each person. Service coordinators were encouraged to discuss discrepancies between their own ratings and those offered by the patient without changing the original scores. The same procedure was repeated at the three-month follow-up session.

Eyre Peninsula COAG Wind Down Project

The Eyre Peninsula Division of General Practice also implemented the Partners in Health program. Thirty-nine patients were enrolled in the program in late June 2000 and the trial ended in late December 2000. Two service coordinators participated in this program and assessed patients using the PIH Scale and Cue and Response form at enrolment and at a six-month follow-up session. Two general practitioners were also recruited as care coordinators of enrolled patients.

Data analysis

All inferential statistics were calculated using a data set that combined the findings from the pilot program and the Eyre Program. Reliability was assessed using Cronbach's alpha (internal consistency) and correlation coefficients (inter-rater reliability). A factor analysis was employed to evaluate the underlying factor structure of the scale. Descriptive statistics are presented from an evaluation questionnaire from the pilot program.

Results

Sample characteristics

Twenty patients of the 24 who enrolled in the pilot program completed both assessments, representing an attrition rate of 17%. Data were analysed for those 20 patients only. The mean age of the sample was 66 (SD=11), with a range of 44-84. There were 12 males and eight females in the pilot. Thirteen patients were married, five were widowed, with one single and one divorced. No patient was Aboriginal or Torres Strait Islander. Ten patients had a respiratory condition, six a cardiac condition, two diabetes, one had chronic back pain, and one osteoarthritis. Thirteen patients had one health problem, five had two, and two patients had three health problems.

Twenty-six patients of the 39 who enrolled in the Eyre Program completed both assessments representing an attrition rate of 33%. Data were analysed for 26 patients only. The mean age of the sample was 64 (SD=14), with a range of 37-81. There were 11 males and 15 females in the pilot. Eighteen patients were married, six were widowed, one was single and one divorced. There were three Indigenous patients. Eleven patients stated diabetes as their principal condition, four a respiratory

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condition, four cardiac condition, and the remaining patients stated diverse chronic conditions (i.e., depression, chronic back pain, hypercholesterolemia, osteoarthritis, retinal pigmentosa, and skin cancer). All patients had at least two identified health problems with a mode of six and a range of two to nine.

Reliability Analysis: Internal consistency and Inter-rater reliability

Reliability of the PIH was assessed two ways; firstly, with an internal consistency analysis using Cronbach's alpha. Secondly, with an inter-rater reliability analysis whereby correlation coefficients were calculated for each item using patient and service coordinator ratings. The data from the pilot and Eyre Programs were combined for these analyses to provide a larger sample size (n=46).

A conventional reliability analysis was conducted. Cronbach's alpha was calculated using baseline scores from the scale. All eleven items produced a standardised alpha coefficient of .88. The alpha coefficient could not be improved by removing an item from the scale. The mean score for the sample on the scale was 23.6 (SD=12.9). The mean item score was 2.1 (SD=.68), with a range of one to three. The item correlations ranged from as low as .11 (Questions 2 & 6) to .86 (Questions 9 & 10).

Cronbach's alpha was also calculated using baseline scores from the Cue and Response form (i.e., health professional assessment). All 11 items produced a standardised alpha coefficient of .86. The alpha coefficient could not be improved by removing an item from the scale. The mean score for the sample on the form was 29.5 (SD=12.7). Service coordinators tended to rate significantly higher on the self-management rating scale than did the patients, t (44) = 2.6, p<.05, implying that patients rated their self-management higher than service coordinators. The mean-item score was 2.7 (SD=.95), with a range of one to four. The item correlations ranged from as low as .09 (Questions 2 & 5) to .85 (Questions 9 & 10).

Table 2 displays the correlation coefficients on each item for patient (PIH scale) and service coordinator (Cue and Response form) ratings at recruitment and at follow-up. Independent ratings by patients and service coordinators were highly associated and reached significance at the .001 level. Correlations increased from recruitment to

Table 2: Inter-rater reliability analysis: Correlations between patient and service coordinator ratings on each item at baseline and follow-up, and z test for differences between correlations on each item

Item	Baseline	Follow-up	Z
1 Knowledge of condition	.61	.80	1.86*
2 Knowledge of treatment	.74	.73	.05
3 Shared decision making	.75	.77	.10
4 Arrange appointments	.87	.89	.10
5 Attend appointments	.94	.94	0
6 Ability to take medications	.85	.82	.14
7 Why symptom record	.76	.81	.24
8 Ability to symptom record	.76	.88	.57
9 Why respond when symptoms get worse	.66	.65	.05
10 Take right action when symptoms worsen	.56	.68	.57
11 Progress towards healthy lifestyle	.74	.86	.57
Total score on scale	.79	.87	.38

*<.06 N.b.- all correlations are significant at the .001 level

follow-up on eight items (including the total scale score), suggesting that patient and service coordinator ratings were more likely to be correlated at follow-up than at recruitment. However, these increases were only significant on Item 1.

Construct Validity: Factor analysis

Despite the small sample size, a preliminary analysis to determine possible factors, indicating core self-management attributes, was performed to inform future development of the scale. A scree plot pointed to a three-factor solution. The authors used a non-orthogonal rotation (Direct Oblimin), as the initial analysis demonstrated moderate correlations between the three factors (.4 to .5), implying relationship.

It was reasonable to expect some correlation between factors based on item content. The loadings of each item across the three factors can be seen in Table 3. Items were included if they loaded on a factor in the order of .4 or greater. The solution is quite neat with items loading highly on one factor only, implying a unique or "pure" contribution to the solution for each item. Factor 1, which is labelled "core self-management", has seven items that load highly on it. These items include shared decision-making, arranging and attending appointments, taking medication,

understanding of and responding to worsening of symptoms, and adoption of health promotion. The total variance explained by this factor is 46%. Factor 2, which is labelled "condition knowledge", has two items that load highly on it, (viz., knowledge of one's condition and treatment options). The total variance explained by this factor is 13%. Factor 3,

Table 3: Factor loadings of each item from Partners in Health Scale for three factor solution using patient baseline ratings

Item	Factor 1	Factor 2	Factor 3
1 Knowledge of condition	.33	.54*	-.01
2 Knowledge of treatment	.00	.84*	.23
3 Shared decision-making	.48*	.17	.03
4 Arrange appointments	.71*	-.05	.04
5 Attend appointments	.68*	-.20	.21
6 Ability to take medications	.42*	-.16	.32
7 Why symptom record	-.03	.25	.93*
8 Ability to symptom record	.15	-.02	.62*
9 Why respond when symptoms get worse	.68*	.07	.26
10 Take right action when symptoms worsen	.86*	.11	-.10
11 Progress towards healthy lifestyle	.44*	.24	-.11

*Loadings included in factor

which is labelled "symptom monitoring", has two items that load highly on it (viz., understanding of why and recording symptoms). The total variance explained by this factor is 9%.

The reliability of the model was evaluated by viewing the residual correlation matrix as suggested by Tabachnick and Fidell (1989). None of the correlations exceeded .2, which indicates a close fit between observed and reproduced matrices. Moreover, Tabachnick and Fidell recommend that, as rule of thumb, there should be at least five cases for each variable used in a factor analysis, and that a sample size of 50 may be adequate for generating a reliable solution. The sample size (n=46) used in this study approaches these criteria.

Questionnaire evaluation

Patients, service coordinators and general practitioners completed an evaluation questionnaire at the completion of the pilot program in order to assess their perceptions of the PIH scale, the Cue and Response form and the clinical process. A high percentage of GPs, patients and service coordinators rated that the PIH scale and Cue and

Response form items were easy to understand (an average of 96% and 92.6% for each form respectively), while 63% of GPs, 25% of service coordinators, and 75% of patients believed "a lot" that the Cue and Response process motivated patients to take more control of their health. On average, 77.6% of patients, GPs and service coordinators believed that both the PIH and Cue and Response forms should be used. Most patients (80%) thought "a little" about changing their scores on the scale after undertaking a Cue and Response form assessment with their service coordinator, while the majority of general practitioners (75%) and service coordinators (75%) believed that patients did not think about changing their scores after undertaking an assessment.

Written comments showed that Service coordinators believed that the use of both tools at the start of SA HealthPlus would have allowed an assessment of the patient's psycho-social needs in addition to their medical needs. Moreover, using combined forms would have given service coordinators the opportunity to gauge their workload and assist planning. One service coordinator commented that:

The Cue and Response form was very useful in identifying any deficits/issues at the beginning and end of the project. The PIH scale was important in gauging the patient's perspective, as long as they understood the scale and questions.

Discussion

The findings presented constitute a preliminary investigation of the psychometric properties of a generic self-management scale of chronic medical conditions that is completed by patients and utilised by health professionals to facilitate their care. The PIH scale has face validity among patients, general practitioners, and other health professionals (e.g., nurses), and is based on a sound definition of self-management (i.e., concept validity). Moreover, the reliability of the PIH scale was well demonstrated in both internal consistency and inter-rater reliability.

Most participants believed that the statements in the scale and form were easy to understand or interpret. The largest deviation from this observation is that most patients (80%) thought "a little" about changing their scores on the scale after undertaking a Cue and Response interview with

their service coordinator, while the majority of general practitioners (75%) and service coordinators (75%) believed that patients did not think about changing their scores after undertaking an assessment. This may indicate that health professionals are not aware of the potential for a semi-structured interview to raise awareness and challenge patients' self-perception.

A preliminary factor analysis showed that the PIH scale has a stable and meaningful underlying factor structure. There were three demonstrated factors underlying the scale including core self-management, condition knowledge, and symptom monitoring. This underlying factor structure is underscored by evidence that programs that aim to improve health by solely increasing a patient's knowledge of their condition have limited success. For example, Gibson, Coughlan, Wilson et al. (1997) systematically reviewed 11 controlled trials of information provision to asthma patients on hospitalisation rates, emergency room attendance, unplanned visits to the general practitioner, lung function, medication use, asthma symptoms, and work outcomes. Only one study found a reduction in hospitalisation rates and emergency room attendance, and no effect on the other measures. The authors conclude: "these results are consistent with the theoretical proposition that limited education interventions, as they have been practiced, have little influence on health related behaviours and skills" (p. 9). While the knowledge items (Items 1 & 2) in the PIH scale loaded highly on Factor 2, the explained variance was lower than Factor 1, which had seven items loading highly on it.

Gibson, Coughlan, Wilson et al. (2000) analysed 26 randomised controlled trials in a recent Cochrane Review, in which they advocated the use of self-monitoring procedures, symptom action plans, and regular medical review. Factor 1 combines knowledge, attitudes, and behaviours accounting for a far greater proportion of the variance than self-monitoring (Factor 3) alone. These results, however, are preliminary and require confirmation with a larger sample of individuals.

Future research

The sample size utilised for this validation study was quite small and thus the findings are preliminary. While the reliability of some statistical analyses (e.g., Cronbach's alpha) are uninfluenced

(relatively speaking) by sample size, other analyses are more robust when the sample size satisfies or exceeds a criterion level. In this case, the sample size of 46 is insufficient to reach conclusive statements about the underlying factor structure of the PIH scale, and a larger sample size (e.g., 30 patients per item, n=330) is required to replicate and refine the findings presented in this article. Moreover, there are some areas of reliability (i.e., test-retest) and validity (i.e., concurrent, predictive) that were not examined, and require investigation in future work. Concurrent validity is difficult to evaluate given that the PIH scale is the first of its kind. However, groups identified as "high" or "low" in self-management by their health care providers could be assessed using the scale scores. Predictive validity is eminently testable, using a randomised controlled trial comparing a non-intervention control group and a self-management intervention group. The PIH scale would possess predictive validity if changes in self-management practice (as measured by the scale) predicted change in health outcomes and health care costs.

Other issues to address are the utility of the Cue and Response form and whether it is sufficient to use the PIH scale alone to develop a plan of care for patients. Health professionals believed that the two tools together comprised an optimal assessment. These questions need answers (a) does the Cue and Response form significantly improve the quality of the assessment process (e.g., rapport, adherence)?, and b) does the Cue and Response form improve the accuracy of ratings provided by patients?

Another issue is the use of the PIH scale as an outcome measure for consumer self-management courses (e.g., the Chronic Disease Self-Management Program) at the commencement of the course, and as a follow-up measure to ascertain change in self-management as a consequence of course attendance. The PIH scale may require further refinement to incorporate other domains of self-management that are frequently taught in these courses (e.g., skills to improve emotional and interpersonal functioning).

Conclusion

The Partners in Health scale aims to provide a self-administered measure of generic self-management for chronic illness. The items of the scale are based

on a definition of self-management derived from the literature and refined by expert groups, including health professionals and consumers involved in a trial of coordinated care for chronic illness. A pilot program showed that the scale has internal reliability, inter-rater reliability and face validity. Preliminary factor analysis showed underlying factors consistent with the definition of self-management and evidence from the literature. Both patients and health professionals judged the scale as acceptable and easy to use, and the health professionals endorsed its clinical utility. The small sample size indicates that larger samples are required to confirm the psychometric properties of the scale, particularly the underlying factor structure.

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Malcolm Battersby

Flinders Human Behaviour & Health Research Unit

F6 The Flats

Flinders Medical Centre

Bedford Park, SA, 5042

AUSTRALIA

Email: malcolm.battersby@flinders.edu.au

Malcolm W. Battersby, Alex Ask, Marion M. Reece, Mignon J. Markwick and James P. Collins

Alex Ask
52 Western Parade
Brooklyn Park SA 5032
AUSTRALIA

Marion M. Reece
5 Gladstone Road
Blackwood SA 5051
AUSTRALIA

Mignon J. Markwick
Flinders Human Behaviour
& Health Research Unit
F6 The Flats
Flinders Medical Centre
Bedford Park SA 5042
AUSTRALIA

James P. Collins
The Eyre Peninsula Division of General Practice
PO Box 1
Pt Lincoln SA 5606
Australia

Correspondence to Malcolm Battersby

Appendix 1

Coordinated Care Training Unit
PARTNERS IN HEALTH SCALE
Guidelines for this self-management scale

What is self-management?
Self-management is about forming a relationship with your doctor and other health professionals so you can take a more active role in the management of your condition. Many studies show that patients who work in partnership with a health professional enjoy better health and are more satisfied with the services they receive.

What is the scale for?
This scale will help you and your service providers identify components of your care that you can be actively involved in. More active involvement in these areas can improve your quality of life.

Who should complete the scale?
People who would like to improve the management of their chronic condition.

How to complete this scale?
Please circle a number on each scale that most closely matches your answer. Circle all eleven questions on the attached sheet using the following scale:

0	1	2	3	4	5	6	7	8
Very Good				Satisfactory				Very Poor
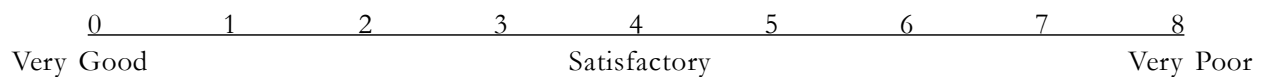
What to do with the completed scale?
Return to your Health Service Provider or GP, who will record the information in your health records.

Malcolm W. Battersby, Alex Ask, Marion M. Reece, Mignon J. Markwick and James P. Collins

PARTNERS IN HEALTH SCALE

Patient Name:... ID: n n n n n n

Assessment Date:.................. /............... /.................... Review Date: ..../............. / ....

Patient to complete this section * Please circle the number that most closely fits your answer*

1.   My knowledge of my condition is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

2   My knowledge of the treatment of my condition is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

3   My ability to share in decisions made about the management of my condition is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

4   My ability to arrange appointments as recommended by my Doctor or Health Service Provider is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

5   My attendance at appointments is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

6   My ability to take my medication as directed by my doctor is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

7   My understanding of why I need to observe, measure and record symptoms is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

8   My ability to observe, measure and record my symptoms is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

9   My understanding of what to do when my symptoms get worse is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

10   My ability to take the right action when my symptoms get worse is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor

11   My progress towards adopting habits that improve my health is:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Very Good   Satisfactory   Very Poor