

Modifying the PACIC to assess provision of chronic illness care: An exploratory study with primary health care nurses

Jenny Carryer RN, PhD, FCNA (NZ), MNZM;¹ Claire Budge PhD;² Chiquita Hansen RN, MPhil (Nursing);² Katherine Gibbs RN, MMS²

¹ Massey University,
Palmerston North,
New Zealand

² MidCentral DHB,
Palmerston North,
New Zealand

ABSTRACT

INTRODUCTION: In line with Wagner's Chronic Care Model, the Patient Assessment of Chronic Illness Care (PACIC) has been developed to evaluate chronic illness care delivery from the patient's perspective. Modification of the instrument to assess the same aspects of care delivery from the health practitioner's perspective would enable individual practitioners to evaluate their own provision of self-management support, and would also enable a more direct comparison between care provided and care received within the chronic illness context.

AIM: To explore the potential of a modified PACIC instrument to assess individual health practitioners' delivery of care to chronic illness patients with a sample of primary health care nurses.

METHODS: Seventy-seven primary care nurses completed the modified PACIC, reworded to ask about care provision rather than receipt of care. An additional seven cultural sensitivity items were included, as were questions about the suitability of the types of chronic illness care and who should be providing the care.

RESULTS: The modified PACIC items appear to be appropriate for use with health practitioners. Agreement that the types of care described in the PACIC should be provided was almost unanimous, and the predominant view was that self-management support should be provided by both nurses and doctors. Mean scale scores were higher than those generally reported from studies using the PACIC.

DISCUSSION: The results of this first evaluation of a modified PACIC suggest that the original items plus the cultural sensitivity items can be used to assess self-management support by individual health practitioners.

KEYWORDS: Chronic illness; self-management; primary health care, nurses

J PRIMARY HEALTH CARE
2010;2(2):118–123.

CORRESPONDENCE TO: Jenny Carryer

Professor of Nursing,
School of Health
and Social Services,
Massey University,
PB 11222 Palmerston
North, New Zealand
J.B.Carryer@massey.ac.nz

Introduction

The Chronic Care Model (CCM) developed by Wagner and colleagues at the MacColl Institute^{1,2} has received considerable attention in recent years as a suitable framework for delivery of primary care to people living with chronic illness, and has been promoted in a range of countries such as Australia,³ England,⁴ Scotland⁵ and New Zealand.⁶ The model consists of six components (community resources, health organisation, self-management support, delivery

system design, decision support, and clinical information systems) which together encompass the health care provider, patient and community interactions necessary for planned chronic illness care. Two instruments have been developed to measure the application of the Chronic Care Model in practice: the Assessment of Chronic Illness Care (ACIC)⁷ designed to be used with teams of care providers, and the Patient Assessment of Chronic Illness Care (PACIC)⁸ developed for patients.

Project outline

As part of a larger scale study of chronic illness care provision and experience, we wanted to evaluate chronic care provision from the perspective of health care providers in one District Health Board (DHB) region of New Zealand. Recent changes in the health care system have seen the establishment of chronic care teams consisting of general practitioners (GPs), practice nurses, specialist nurses and allied health practitioners such as dietitians, podiatrists, physiotherapists etc. working within Primary Health Organisations (PHOs). Our longitudinal study aims to evaluate the development of these teams. However, as the teams are only just being established, we also wanted to explore care provision from the perspective of individual practitioners and needed a suitable evaluation tool. While the ACIC is generally considered appropriate for assessing provision of care, we decided to use a modified version of the PACIC instead. There were two rationales for this decision. Firstly, the ACIC was not considered to be the best tool for *individual* practitioners to use as it is designed to be completed as a result of discussion amongst a chronic care team—thus representing a team opinion. Secondly, we were interested in the possibility of obtaining responses that could be directly compared to those generated by the PACIC, thus contrasting practitioners' and patients' views on the same dimensions of care. Consequently we obtained permission from the MacColl Institute to modify the PACIC to suit our purposes.

The Patient Assessment of Chronic Illness Care (PACIC)

In developing the PACIC, Glasgow and colleagues tested 46 items, originally generated by chronic illness care experts, with 130 patients.⁸ Twenty items were retained because they demonstrated adequate variability, were easily understood by patients and best represented the underlying constructs of the Chronic Care Model. In a study of 283 people with one or more chronic illnesses, they provided a psychometric evaluation of the PACIC. The measure was presented as having an overall score, calculated by averaging across scores on all 20 items, with good internal consistency represented by a Cronbach's alpha of 0.93. Glasgow et al.⁸ also divided the

WHAT GAP THIS FILLS

What we already know: The PACIC instrument has been designed to assess how well elements of Wagner's Chronic Care Model are being met by practitioners providing chronic illness care. The instrument enables people living with chronic illness to rate the care they receive.

What this study adds: This exploratory study proposes a modification and extension of the PACIC so that it can be applied to the provision of care and can be completed by an individual health practitioner. The extra items allow for the assessment of the appropriateness of chronic illness care for people of different ethnicities.

items into groups of three to five, resulting in five a priori scales based on key components of the CCM named *Patient activation* (items 1–3), *Delivery system design/Decision support* (items 4–6), *Goal setting/Tailoring* (items 7–11), *Problem-solving/Contextual* (items 12–15) and *Follow-up/Coordination* (items 16–20). These represented five of the six CCM components. The sixth was not exemplified as the authors felt that patients would be unable to report on clinical information systems or health care organisation. They conducted a confirmatory factor analysis to evaluate the goodness of fit of the items to the scale structure and reported it to be moderate. Item 16 was described as having a relatively poor fit but, as contact following a visit was considered to be essential, it was left in the measure.

Since then, McIntosh⁹ examined the factor structure using the items from four of the PACIC subscales with a general population, aiming to measure their experiences with the health care system. He concluded that the data better fitted a two-factor model which he labelled *Whole Person Care* and *Coordination of Care*. He acknowledged that the lack of consistency between his and Glasgow's findings may have resulted from the sampling differences, but the other measures he tested retained their structure despite being applied to a general sample. Other authors¹¹ have also raised questions about the factor structure of the PACIC. While their principal components analysis suggested the existence of five factors, the items were distributed differently to how the original authors proposed.

Previous modifications of the PACIC have included an extension of the measure to develop

the PACIC 5As version,¹⁰ and translations into different languages. The 5As extension was based on the 5A model of behavioural change (assess, advise, agree, assist and arrange) and involved the addition of six items which, in combination with subsets of the original 20, enabled the assessment of practitioners' counselling aimed at improving patients' self-management. In addition there have been translations into Spanish,¹² Dutch¹¹ and German¹³ for use with different patient populations, but no previous attempts have been made to use the tool with health care providers.

The aim of this exploratory project was to evaluate a new version of the PACIC, the focus being on content validation of the modification to see whether it is appropriate to apply the same items from the perspective of health practitioners rather than patients, as was originally intended. This included collecting participants' views on the items included in the measure and finding out *who* they thought should be providing chronic illness care. For this project, the modification process involved rewording the PACIC items so that they could be used to evaluate care *provided to* chronic illness patients, rather than care *received by them* as the measure was originally intended. The new version is referred to as the modified PACIC (MPACIC).

Methods

Sample

Using a list of regional primary care nurses held by the DHB, a questionnaire, plus an information sheet and a reply paid envelope, was posted to 241 primary health nurses in the DHB region. A reminder letter was sent two weeks later. Seventy-seven (32%) questionnaires were returned. This study received ethical approval from the Central Ethics Committee.

Materials

The questionnaire consisted of a modified version of the PACIC. In modifying the original instrument, the content of the questions was left the same but the question stem was changed to read 'when caring for a person with a chronic illness, how often do you...' and each question

was altered to fit the care provision context. An example of the item modification is as follows:

Original wording:

During the last six months, when receiving care for my chronic illness I was asked for my ideas when we made a treatment plan.

Modified wording:

When caring for a person with a chronic illness, how often do you ask for their ideas when making a treatment plan?

The response options remained unchanged as 'almost always', 'most of the time', 'sometimes', 'generally not' and 'almost never', numerically scored as 5 to 1 respectively. The items are listed in the appendix in the web version of this paper.

As well as altering the focus from care receipt to care provision, a section containing seven new items was added to address cultural sensitivity in care provision. Maori have poorer health status than non-Maori, regardless of income, educational and socioeconomic level¹⁴ and the Ministry of Health is committed to addressing health disparities following three Treaty of Waitangi (Te Tiriti o Waitangi) principles: partnership, participation and protection.¹⁵ The seven cultural sensitivity items added to the MPACIC were developed by Maori nurses in discussion with the project advisory team. The items, following the stem, are presented below:

When caring for a person with chronic illness, how often do you...

- appropriately involve the whanau/family in the care and management of their condition?
- gather information or feedback from whanau/family members?
- educate the whanau/family on prevention of the chronic condition where appropriate?
- screen the whanau/family where appropriate—including risk factors?
- alter or modify your care due to their ethnicity?
- offer another culturally appropriate service if there is one available?
- ask them if there are cultural or ethnic issues that you need to be aware of?

Two extra questions were added to each of the MPACIC items enquiring about whether the type of care outlined in the item *should* be provided (yes or no) and, if so, *by whom* (GP, nurse or both). The first was done partly as a validation of the content of the PACIC since if the respondents did not see some type of care as being important they would presumably not be providing it. The second addition was included in order to explore the 'division of labour' notion of a team approach to chronic illness care. It was thought that views may differ on who was responsible for providing certain types of care, with a possible consequence being that some types were being neglected as different types of health practitioners thought somebody else was, or should be, taking responsibility.

Data analysis

Responses were entered into SPSS for Windows Version 15.0 and analyses included examination of item distributions, total scale means, and inter-item correlations.

Results

MPACIC (20 items)

Examination of the item frequencies showed that most items had either a normal or negatively skewed distribution, suggesting that most nurses rated their chronic illness care neutrally or positively. This picture was borne out by the mean item scores which ranged (out of a possible score of 5) from 3.42 for 'provide a written list of things they should do to improve their health' to 4.52 for 'consider their values and traditions when recommending treatments'. The mean total PACIC scores ranged from 2.3 to 4.9 out of a possible 5, with a mean score of 3.99. This equates to care being provided most of the time on average. There were very little missing data and what was missing resulted from a range of people not answering an item rather than one or two people not responding to several items.

Pearson's correlations between items ranged from 0.02 to 0.70 with the majority of correlations being in the low moderate range (mean $r=0.34$). Cronbach's alpha for the total scale was

0.91 and although this would not improve if any individual items were removed, examination of the corrected item-total and squared multiple correlations suggested that items 16 and 18 were contributing less to the total scale than the other items. Both of these items demonstrated limited variability and were more weakly correlated with the other items.

The seven new items received mean scores between 3.53 and 3.92, and correlations between items ranged from 0.15 to 0.73. The most strongly correlated items were the first two, both relating to involvement of family/whanau in chronic illness management. Despite the correlation being relatively strong, the distributions were different, and the pattern of correlations with other cultural sensitivity items, while being in the same strength range, were not identical. When these seven new items were combined with the other 20 MPACIC items, the range of scale scores was similar, ranging from 2.33 to 4.85 with a mean score of 3.94. Cronbach's alpha for the extended scale was 0.93. One of these new items (number 5) had a relatively low corrected item-total correlation when compared to the other items and again displayed slightly more limited variability.

As this was an exploratory project, space was provided for respondents to supplement their ratings with any comments or feedback they wanted to provide. The strongest message arising from the additional comments was that the care provided needed to be suited to the individual concerned, for example 'this is done when appropriate, it depends on where the person is on their health journey at that time'. Similarly, a number of comments related to things being done sometimes but not at every appointment, for example '(this) may not be done at every consultation but is an integral part of ongoing care'.

Appropriateness of care

As stated earlier, two additional questions were tagged onto the PACIC items; whether the care should be provided for people with a chronic illness and, if so, by whom. The agreement that the types of care itemised should be provided was almost unanimous, with 15 of the 20 original

items and four of the seven new items receiving 100% support. The lowest support was provided for the screening of whanau/family where appropriate, but only two respondents (2.2%) disagreed that this should be provided.

In terms of who should be providing chronic illness care 'both GPs and nurses' was the predominant response. All but one of the items (number 16) received this response from at least 50 (72.5%) of the nurses; 29 (32.6%) felt that it was the responsibility of both GPs and nurses to contact people after a visit to see how things were going, but 44 (49.4%) considered this to be for nurses rather than GPs to carry out. In general, support for the itemised types of care being specifically part of the nurse's role ranged from 1.4% to 60.3% (one to 53 respondents). Support for types of care being specifically part of the

whether the types of self-management care covered by its items are being provided by nurses for the people with chronic illness whom they see in primary practice.

From the MPACIC total score it was clear that the nurses in this study perceived themselves as providing a better level of care than the patients in previous studies have indicated that they are receiving. The mean score was higher than those found with the PACIC in research with patients with various chronic conditions,⁸ with diabetes^{10,16,17} or with osteoarthritis.¹³

The importance of providing health care that is appropriate and sensitive to patients' ethnicity through the cultural competence of practitioners is widely documented as a way of decreasing inequalities in health care and reducing health

The Chronic Care Model promotes provision of chronic illness care that requires a transformation of the health care system in order to provide proactive care aimed at keeping people healthy rather than acute, reactive care provided once symptoms have taken hold and people are no longer managing

GP's role ranged from 0% to 4.5% (zero to four respondents) with the highest support indicated for the screening of family/whanau being part of the GP role, although another four (4.5%) felt it should be performed by nurses and 81 (91.0%) by both.

Discussion

The Chronic Care Model promotes provision of chronic illness care that requires a transformation of the health care system in order to provide proactive care aimed at keeping people healthy rather than acute, reactive care provided once symptoms have taken hold and people are no longer managing. The ACIC and PACIC instruments have been designed with patient self-management as a primary focus and this study has adapted the PACIC in order to assess

disparities.¹⁸⁻¹⁹ The additional seven items designed to address cultural sensitivity in chronic illness care appeared to work well and may add a useful dimension to measurement in this area where people of various ethnicities are part of the patient population.

This paper has considered the individual items of the MPACIC and has combined them as an overall scale. Subscale scores are reported in a separate paper.²⁰ Future work with a larger sample should be conducted to enable analysis of the potential factor structure of the items. Inclusion of other primary care practitioners such as general practitioners would also be advisable.

The results of this first application of a modified PACIC suggest that the items can be used to assess chronic illness care provision by individual

health practitioners, and that the content of the items was considered an appropriate part of both nurses' and general practitioners' roles. Due to the small number of respondents we were unable to examine any underlying structure of the items and further work with a larger sample is needed with respect to this. The modified instrument may add useful information to that gained from application of the PACIC and ACIC when evaluating care provision for people living with chronic illness and could enable a comparison between the care practitioners consider themselves to be providing and that which patients report they are receiving.

References

- Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A. Improving chronic illness care: translating evidence into action. *Health Aff (Millwood)*. 2001;20(6):64–78.
- Bodenheimer T, Wagner EH, Grumbach. Improving primary care for patients with chronic illness. *JAMA*. 2002;288:1775–1779.
- Si D, Bailie R, Cunningham J, Robinson G, Dowden M, Stewart A, Connors C, Weeramanthri T. Describing and analysing primary health care system support for chronic illness care in Indigenous communities in Australia's Northern Territory—use of the Chronic Care Model. *BMC Health Services Research*. 2008;8:112.
- Lester H, Gask L. Delivering medical care for patients with serious mental illness or promoting a collaborative model of recovery? *Br Journal of Psychi*. 2006;188:401–402.
- Wales A. A national health knowledge network to support the patient journey. *Health Inform Libraries J*. 2008;25:99–102.
- Rea H, Kenealy T, Wellingham J, Moffitt A, Sinclair G, McAuley S, et al. Chronic care management evolves towards integrated care in Counties Manukau, New Zealand [Viewpoint]. *NZ Med J*. 2007;120(1252):2489.
- Bonomi AE, Glasgow RE, Wagner EH, Von Korff M. Assessment of chronic illness care (ACIC): a practical tool for quality improvement. *HSR*. 2001;37:791–820.
- Glasgow RE, Wagner E, Schaefer J, Mahoney L, Reid R, Greene S. Development and validation of the Patient Assessment of Chronic Illness Care (PACIC). *Med Care*. 2005;43:436–444.
- McIntosh CN. Examining the factorial validity of selected modules for the Canadian Survey of Experiences with Primary Health Care. Working Paper. Statistics Canada; 2008. [Cited 2009 July 22]. Available from: http://dsp-psd.pwgsc.gc.ca/collection_2008/statcan/82-622-X/82-622-XIE2008001.pdf
- Glasgow RE, Whitesides H, Nelson CC, King DK. Use of the Patient Assessment of Chronic Illness Care (PACIC) with diabetic patients: relationship to patient characteristics, receipt of care, and self-management. *Diab Care*. 2005;28(11):2655–2661.
- Wensing M, van Lieshout J, Jung HP, Hermesen J, Rosemann T. The Patient Assessment Chronic Illness Care (PACIC) questionnaire in The Netherlands: a validation study in rural general practice. *BMC Health Serv Research*. 2008;8:182.
- Aragones A, Schaefer EW, Stevens D, Gourevitch M N, Glasgow R E and Shaha NR. Validation of the Spanish translation of the Patient Assessment of Chronic Illness Care (PACIC) Survey. *Prev Chronic Dis*. 2008;5(4):A113.
- Rosemann T, Laux G, Droeemeyer S, Gensichen J, Szecsenyi J. Evaluation of a culturally adapted German version of the Patient Assessment of Chronic Illness Care (PACIC 5A) questionnaire in a sample of osteoarthritis patients. *J Eval Clin Pract*. 2007;13(5):806–13.
- Howden-Chapman P and Tobias M. Social inequalities in health: New Zealand 1999. Wellington: Ministry of Health; 2000.
- Ministry of Health. Improving Maori health: a guide for Primary Health Organisations. Wellington, NZ; 2004. [Cited 2009 July 30]. Available from: <http://www.moh.govt.nz>
- Glasgow RE, Whitesides H, Nelson CC, King D K. Use of the Patient Assessment of Chronic Illness Care (PACIC) with diabetic patients: relationship to patient characteristics, receipt of care, and self-management. *Diab Care*. 2005;28(11):2655–2661.
- Szecsenyi J, Rosemann T, Joos S, Peters-Klimm F, Miksch A. German diabetes disease management programs are appropriate for restructuring care according to the Chronic Care Model: an evaluation with the Patient Assessment of Chronic Illness Care instrument. *Diab Care*. 2008;31(6):1150–1154.
- Fisher TL, Burnet DL, Huang ES, Chin MH, Kagny KA. Cultural leverage: interventions using culture to narrow racial disparities in health care. *Med Care Res Rev*. 2007;64:243S–282S.
- Paez KA, Allen JK, Carson KA, Cooper LA. Provider and clinical cultural competence in a primary care setting. *Soc Sci Med*. 2008;66(5):1204–1216.
- Carrier J, Budge C, Hansen C, Gibbs K. Providing and receiving self-management support for chronic illness: Patients' and health practitioners' assessments. *JPHC*. 2010; 2(2):124–129.

ACKNOWLEDGEMENTS

We wish to thank the MacColl Institute for permission to modify the PACIC. We also thank Dr John Spicer for his advice during the writing of this paper.

FUNDING

We thank the MidCentral DHB for funding this project.

COMPETING INTERESTS

None declared.

Appendix A (for web version only)

Modified Patient Assessment of Chronic Illness Care (MPACIC) items

When caring for a person with chronic illness, how often do you:

1. ask for their ideas when making a treatment plan?
2. give them choices to think about regarding treatment?
3. ask them to talk about any problems with their medicines and their effects?
4. provide a written list of things they should do to improve their health?
5. feel satisfied that you are doing a good job in organising their care?
6. show them how what they do to take care of themselves influences their condition?
7. ask them to talk about their own goals in caring for themselves?
8. help them to set specific goals in caring for themselves?
9. give them a copy of their treatment plan?
10. encourage them to attend a specific group or class to help them cope with their illness?
11. ask questions, either directly or in a survey, about their health habits?
12. consider their values and their traditions when recommending treatments?
13. help them to make a treatment plan that they can carry out in their daily life?
14. help them to plan ahead so that they can take care of themselves even in hard times?
15. ask them how their chronic illness affects their life?
16. contact them after a visit to see how things are going?
17. encourage them to attend programmes in the community that could be helpful?
18. provide referrals to other health professionals?
19. tell them how visits with other health professionals help with their treatment?
20. ask about how appointments with other health professionals are going?