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# Patient Partnership in Care: A new instrument for measuring patient–professional partnership in the treatment of long-term conditions

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## Abstract

The Patient Partnership in Care (PPiC) questionnaire was designed to measure the ability of health professionals to work in partnership with patients with long-term conditions (LTCs) to support and motivate self-management. It is a generic, 16-item questionnaire, contained on two sides of A4, incorporating space for two written comments. In a baseline survey, 97 clinicians gathered responses from 1,660 patients with LTCs in eight centres across the UK. The questionnaire was found to have face validity, construct validity, good internal consistency and sensitivity to change. It consists of two, unidimensional subscales covering patient–clinician partnership and the patient's confidence to manage their LTC (Cronbach's alpha 0.977 and 0.877 respectively). Health professionals who participated in three four-hour training sessions focusing on skills that support patients with self-management showed a significantly improved score in both subscales (with moderate effect sizes: –0.56 for both subscales). These health professionals administered the PPiC to their patients before and after the training. Regression analysis showed that patient confidence was strongly predicted by their partnership score. This suggests that the intervention of relevant training and reflection on the initial results of the PPiC can promote clinician skill development and increase the confidence of patients regarding self-management of LTCs.

## Introduction

There is a large and growing group of people with long-term health needs. In January 2006, The UK Department of Health White Paper *Our Health, Our Care, Our Say*[1] identified the need to provide more support to people with long-term conditions (LTCs) to enable them to manage their condition themselves. In February 2006, a further Department of Health document reiterated that 'services still do not focus sufficiently on supporting people to understand and take control' and that 'people with

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LTC have better lives when they are supported to take care of their conditions themselves'.[2]

While several questionnaires have been developed in the field of LTCs, only a few measure the degree and quality of partnership with clinicians, such as the Partners in Health Scale developed at Flinders University, Australia, by Battersby *et al.*[3,4] Unfortunately, these questionnaires do not attempt to measure the confidence of patients in managing their LTC in relation to their partnership with their clinician. The Patient Partnership in Care (PPiC) instrument was developed to help promote a positive and effective partnership between health professionals and people with LTCs that would support confidence to self-manage. This paper aims to describe the development of the PPiC instrument, its validity and reliability and the correlation between patients' perceived partnership with clinicians and their confidence to self-care. The paper also describes the instrument's first use in a before-and-after study of the effect of workshops designed to improve the partnership skills of clinicians to better support patients to self-manage.

## Materials and methods

A letter from the Devon and Torbay Research Ethics Committee (UK) indicated that ethical approval was not required for the development of the PPiC instrument under NHS research governance arrangements, as the project was considered service evaluation and not research.

### Development of the instrument

A literature search for any existing instruments concerning partnership and self-care was carried out on the following databases: the Cochrane Library, Medline, EMBASE, PsychInfo, CINAHL and BNI. The search strategy used keywords related to chronic illness, partnership, self-management and questionnaire separately and in combination, as shown in Table 1.

The search yielded 80 references concerning different types of partnership with a wide range of clinicians and a large variety of health conditions.

Several versions of the questionnaire were considered before a definitive edition was produced. An initial pool of test items was generated using a variety of resources, including literature reviews, measures from other instruments, and by seeking relevant professional and user feedback. In November 2006, the PPiC was revised to increase clarity based on feedback from the Plain English Campaign. Three focus groups were run between May and September 2007 to determine face validity and ease of use of the PPiC. Participants either had an LTC or were carers of people with an LTC. Participants were recruited by approaching patients and carers who had participated in the expert patient programme (EPP) at one GP surgery, and who would be expected to be conversant in language and issues around service improvement. Forty patients were invited to attend either of the first two focus groups; six people declined the invitation to attend, and there were non-responses

**Table 1:**  Literature search strategy

| | |
|---|---|
| 1. | 'long-term condition*1'.af |
| 2. | CHRONIC DISEASE/ |
| 3. | 'CHRONIC DISEASE*1'.ti,ab |
| 4. | 'LONG-TERM CARE'.af |
| 5. | 'CHRONIC ILLNESS'.ti,ab |
| 6. | 'CHRONIC ILLNESS'.af |
| 7. | 'CHRONIC ILL-HEALTH'.ti,ab |
| 8. | 'CHRONIC CONDITION*1'.ti,ab |
| 9. | 'LONG-TERM CARE'.ti,ab |
| 10. | LONG TERM CARE/ |
| 11. | 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 |
| 12. | partnership.af |
| 13. | collaborat*5.af |
| 14. | 'joint*2 working'.af |
| 15. | 'working together'.af |
| 16. | 'cooperative behaviour'.af |
| 17. | 'cooperative behavior'.af |
| 18. | TEAMWORK/ |
| 19. | 'JOINT ACTION'.af |
| 20. | teamwork.af |
| 21. | COOPERATIVE BEHAVIOR/ |
| 22. | 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 |
| 23. | questionnaire*1.af |
| 24. | survey*1.af |
| 25. | tool.af |
| 26. | 23 OR 24 OR 25 |
| 27. | 'care support program*3'.af |
| 28. | 'self-management'.af |
| 29. | 'supportive care'.af |
| 30. | 'health program'.af |
| 31. | HEALTH PROGRAM/ |
| 32. | 'self medication'.af |
| 33. | 'self care'.af |
| 34. | 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33; 11 AND 22 AND 26 AND 34 |

from 19 people. Eight of the people who had participated in one of the first two groups were invited to attend a third focus group, and six of the eight turned up for this group. Nine people attended the group on 31st May 2007, six people attended on 10th July 2007 and six people attended on 11th September 2007. The combined focus group attendees were made up of ten females and five males, with ages ranging from 41 to 80 years and a range of LTCs (Table 2).

PPiC questionnaires were sent out to participants in advance of the first two focus groups. They were invited to familiarise themselves with the questionnaire and to complete it prior to attending the group. After the first two groups, preliminary findings were fed back to the survey design team at Client Focused Evaluations Programme (CFEP) and an amended questionnaire was tested at the third group. The amended version was also sent to attendees in advance of the third group and they were asked to complete the questionnaire. All participants were asked to complete a study consent form at the start of the focus group stating that they understood the nature of the work and that they could withdraw at any time without giving a reason.

Feedback from the second focus group, and consultation with health professionals provided a final version of the PPiC in July 2007. In the third focus group, the amended questionnaire was seen as a significant

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**Table 2:** Focus group participant details

*Age range:*
[0] 40 years or under
[5] 41–50 years
[6] 51–60 years
[1] 61–70 years
[3] 71–80 years
[0] over 80 years

*What long-term condition do you have?*
[7] Other
[4] Diabetes
[3] COPD
[1] Coronary heart disease
[1] Mental health problems
[1] Stroke
Two people were carers

*How long have you had this condition/these conditions?*
[5] 1–5 years
[4] 5–10 years
[4] Over 10 years
[3] I'm a carer and don't have a long-term condition
[2] I'm a carer and do have a long-term condition

*How long have you been a patient at this surgery?*
[3] 0–5 years
[3] 5–10 years
[6] Over 10 years
[3] I'm not registered at this surgery

improvement and final adjustments were made (see Table 3). The first 11 questions were answered using a five-point 'poor' to 'excellent' ordinal scale. The last five questions were on a rating scale of 0 to 10. There was space for two comments, some demographic questions and whether they had taken part in an expert patients programme.

In September 2007, pilot studies were set up for clinicians in primary and secondary care. There were 673 responses among 37 health professionals. Validation studies were carried out in December 2007. Further studies compared data between the first and second occasions on which health professionals carried out the survey.

**Table 3:** Questions included in the final version of the Patient Partnership in Care questionnaire

*As a result of your visit to the doctor/health professional today, how would you rate the following (poor, fair, good, very good or excellent):*
  1 The ability of your doctor/health professional to ask you what you wanted to talk about
  2 The ability of your doctor/health professional to give you the information you wanted to know
  3 The opportunity to talk about your concerns and fears
  4 The ability of your doctor/health professional to really listen to you
  5 Your understanding of your health condition
  6 Your doctor/health professional/s understanding of your personal situation when discussing your care
  7 Your understanding of how your health care will be managed as a result of today's visit

*Continued*

8   Your doctor/health professional's support in helping you feel you can manage your care
9   The information given to you by your doctor/health professional about how to get answers to future questions
10  Your doctor/health professional's follow up on your health care from your last visit
11  Your partnership with your doctor/health professional in your care

Using the visual scales provided, please rate Questions 12–16 from 0 (not confident) to 10 (very confident)

*After seeing your doctor/health professional today:*

12  How confident are you that you can carry out what you and your doctor/health professional planned today?
13  How important is it for you to maintain and improve your health?
14  How confident are you that you can cope with your health condition in a day-to-day situation?
15  How confident are you that the doctor/health professional will follow up on the plans you made today?
16  How confident are you that you can do things to care for yourself?

Do you have any comments on things you and your doctor/health professional could do to help you to further manage your condition?
What extra support would be useful to you (eg information, training, equipment or support groups)?

The following questions give us general information about the range of people who filled in this survey. This information will not be used to identify you and will remain confidential.
How old are you?
Are you female/male?
How often have you seen this doctor/health professional? (First visit/More than once)
Have you completed an 'expert patient programme' self-management course? (Yes/No)

## Assessments

Survey materials (55 copies of the PPiC questionnaire and return envelopes) were sent to each clinician with respect to four LTCs (chronic obstructive pulmonary disease, musculoskeletal pain, depression and diabetes). These clinicians were participants in the Co-creating Health initiative funded by The Health Foundation[5] and were based in eight sites throughout the UK (see Table 4). There were approximately 15 clinicians per site. The Co-creating Health initiative required the clinicians to attend a series of three four-hour training workshops on partnership and interpersonal skills. Delegates were asked to arrange for the PPiC questionnaires to be handed out to their patients with an LTC as an exit survey in their clinics before the first and after the third workshops that they attended (they were required to attend at least two workshops). Patients were encouraged to provide honest feedback about their care in the introductory instructions of the questionnaire where it stated that 'all information will be kept anonymous' and that 'the clinician will not see your answers'. In addition, self-seal envelopes were provided in which completed questionnaires could be returned to the data processing unit at CFEP. During the workshops, the need for the two surveys was made clear to delegates, both on a workshop registration form and by reminder from the trainers. By the end of 2008, over 400 packs of survey material had been sent out.

## Statistical methods

Data were analysed primarily using SPSS version 15.[6] Non-parametric tests were used in the analysis where data were found to be non-normally

**Table 4:** Numbers of clinicians participating in the Co-creating Health initiative by site and health condition

| | | COPD | Depression | Diabetes mellitus | Musculo-skeletal pain |
|---|---|---|---|---|---|
| Ayrshire & Arran | Doctor (GP) | 2 | | | |
| | Nurse | 6 | | | |
| | District nurse | 3 | | | |
| | Physician | 1 | | | |
| | Physiotherapist | 1 | | | |
| | Dietician | 1 | | | |
| Bristol | Doctor (GP) | | | | 7 |
| | Nurse | | | | 1 |
| | Physiotherapist | | | | 4 |
| Calderdale & Huddersfield | Doctor (GP) | | | | 3 |
| | Nurse | | | | 3 |
| | Physiotherapist | | | | 3 |
| Cambridge | Doctor (GP) | 4 | | | |
| | Nurse | 9 | | | |
| | Nurse practitioner | 2 | | | |
| | Physiotherapist | 1 | | | |
| Devon & Torbay | Doctor (GP) | | 6 | | |
| | Health professional | | 1 | | |
| | Occupational therapist | | 1 | | |
| | Care worker | | 3 | | |
| Guy's & St Thomas NHS Foundation Trust | Doctor (GP) | | | 4 | |
| | Nurse | | | 6 | |
| | Health care assistant | | | 1 | |
| S W London & St George's Mental Health NHS Trust | Doctor (GP) | | 1 | | |
| | Nurse | | 1 | | |
| | Health care assistant | | 1 | | |
| | Clinical Psychologist | | 3 | | |
| | Community psychiatric nurse | | 2 | | |
| | Manager | | 1 | | |
| Whittington | Doctor (GP) | | | 5 | |
| | Nurse | | | 7 | |
| | Consultant | | | 1 | |
| | Dietician | | | 2 | |

distributed. Data were presented using mean with standard deviation (SD), median with interquartile range (IQR) or $n(\%)$ as appropriate. The relationship between clinician skills and patient confidence was explored using correlation and linear regression analysis on all aggregated clinician data.

## Item exclusion
To assess unidimensionality of the PPiC and whether any items should be excluded from it, Rasch analysis was conducted using Winsteps version 3.68.1 software.[7] Among other things, the software calculates 'INFIT' and 'OUTFIT' statistics to help determine whether any items fit poorly into a subscale. INFIT is a standardised weighted mean square, which is more sensitive to unexpected behaviour affecting responses to

items near the person's measure level. OUTFIT is also a standardised weighted mean square fit statistic, but more sensitive to unexpected behaviour by persons on items far from the person's measure level. The mean square statistic has an expectation of 1. Values $>1$ indicate noise. Values $<1$ indicate dependency. If $>2$, off-variable noise is greater than useful information and degrades measurement.

### Factor structure
Principal components analysis was carried out on the data obtained at the clinician level when weighted by the number of patient responses. Components were separated when an Eigenvalue $>1$ was derived. Varimax rotation was used to visualise any factors identified. Items were considered for revision or exclusion if they cross-loaded on more than one factor.

### Construct validity
Patients were asked if they had seen their clinician once or more than once. It was hypothesised that PPiC subscale scores would be greater for the latter group. It was also hypothesised that age, gender and participation in the expert patient programme would not influence subscale scores.

### Internal consistency
Cronbach's alpha coefficients were calculated to access the internal consistency of the PPiC subscales. Values of alpha in the range 0.80 to 0.90 were considered optimal,[8] with a minimum alpha of 0.70 being necessary to claim internal consistency.[9, 10]

### Responsiveness
Responsiveness was assessed by comparing mean pre and post-training workshop scores aggregated at the clinician level, using ANOVA with weighted data. Change scores were calculated as the pre-workshop score minus the post-workshop score. Effect sizes were calculated by dividing the change score by the standard deviation pre-workshop. This is a standardised method that allows comparison between instruments.[11] An effect size of 1 is equivalent to a change of one SD in the sample. Effect sizes of 0.2, 0.5 and 0.8 are recognised to represent small, medium and large degrees of change respectively. Mean pre and post-training workshop scores were compared, weighted by number of patient responses. They were also compared as unmatched groups of clinicians or as matched data relating to the same clinicians.

## Results
### Qualitative analysis of focus groups
Overall comments received from focus groups 1 and 2 can be grouped into three categories: (a) lack of clarity around language; (b) issues relating to format and layout; (c) issues related to scoring; and (d) accessibility. At the third focus group, participants viewed the amended

survey as an improvement, in particular the visual analogue scale for questions 12–16 and the simplified wording of some of the questions and the introduction. Changes made following this focus group included an example of how to use the rating scales in response to questions and correct mistakes for the second set of questions on the questionnaire, and the words 'clinician' and 'care plan' were replaced by 'doctor/health professional' and 'health care' respectively.

### Survey sample and characteristics

The baseline pre-workshop survey sample consisted of 1,660 patients having one of four LTCs. Almost half (48.7 per cent) were aged 60 and over. Only 3.1 per cent were aged less than 25 years. Some 55.4 per cent were female and 81 per cent had visited the doctor or health professional more than once. The distribution was slightly different in the post-workshop survey. Here, there was a greater number of older women: 59 per cent were female, 58.1 per cent were 60 years or more and 83.6 per cent had visited more than once. As Table 5 shows, in survey 1, 26 per cent were women aged 60 or more versus 35.2 per cent in survey 2 ($\chi^2 = 8.59$, $p = 0.0035$).

There were 95 clinicians with 1,660 patients involved in survey 1. The median number of patients per clinician completing a PPiC questionnaire was 16 (IQR 20), range 1 to 46. Only two doctors recruited a single patient to use the PPiC; ten clinicians recruited no more than eight patients to use it. There were no missing values in the entire data set of 124 aggregated clinician ratings.

Among the 11 questions with a five-point ordinal scale, the question attracting the most responses was Q2 'ability of the doctor/health professional to give you the information you wanted to know' (one missing) and the question answered the least was Q10 'your doctor/health professional's follow-up on your health care from your last visit' (62 missing). The poor response to this question may have been because it was not applicable to some patients.

All of these questions received high ratings. Patient-level data were therefore negatively skewed but, when aggregated at the clinician level,

**Table 5:**   Characteristics of patients responding to the Patient Partnership in Care questionnaire in Survey 1 and 2 (pre and post-workshops)

| | | | | | | 1 | | 2 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Count | Col % | Count | Col % |
| Q19 Age | Under 25 yrs | Q21 Gender | Female | Q22 Visit | First visit | 5 | 0.3% | 3 | 0.6% |
| | | | | | More than once | 24 | 1.5% | 6 | 1.2% |
| | | | Male | Q22 Visit | First visit | 7 | 0.4% | 3 | 0.6% |
| | | | | | More than once | 13 | 0.8% | 7 | 1.4% |
| | 25 to 59 yrs | Q21 Gender | Female | Q22 Visit | First visit | 90 | 5.7% | 32 | 6.2% |
| | | | | | More than once | 344 | 21.7% | 84 | 16.3% |
| | | | Male | Q22 Visit | First visit | 76 | 4.8% | 21 | 4.1% |
| | | | | | More than once | 250 | 15.8% | 60 | 11.6% |
| | 60 + yrs | Q21 Gender | Female | Q22 Visit | First visit | 70 | 4.4% | 12 | 2.3% |
| | | | | | More than once | 342 | 21.6% | 170 | 32.9% |
| | | | Male | Q22 Visit | First visit | 52 | 3.3% | 13 | 2.5% |
| | | | | | More than once | 313 | 19.7% | 105 | 20.3% |
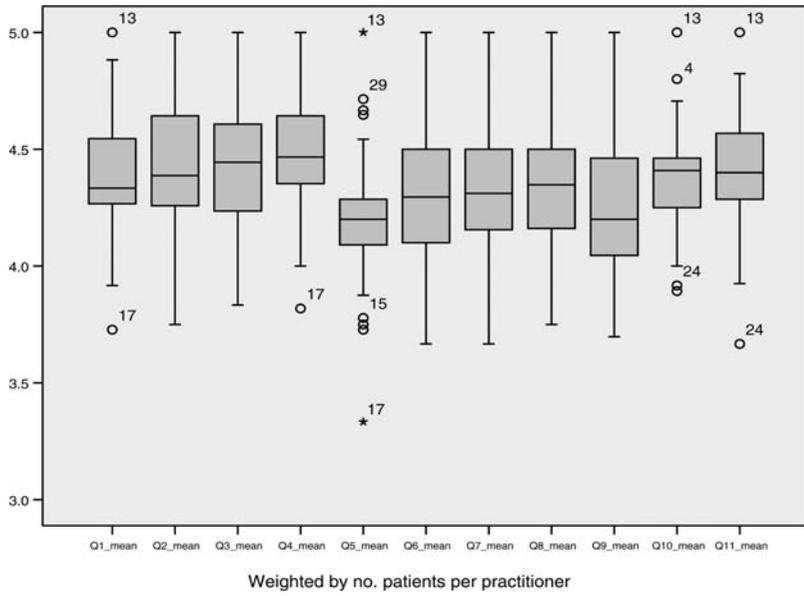
**Figure 1:**    The first 11 questions of Patient Partnership in Care instrument, making up the 'partnership' subscale

data were mostly normally distributed (see Figures 1 and 2). The valid proportion rated 'excellent' for any of these questions was never less than 43.7 per cent. The proportion reporting 'very good' or 'excellent' was never less than 79 per cent. The lowest rated ordinal scale question (with 79 per cent 'very good' or 'excellent') was Q5 'your understanding of your health condition'. The highest rated question was Q4 'ability of the doctor/health professional to really listen to me' with 89.5 per cent 'very good' or 'excellent' responses (see Table 6 for mean scores).
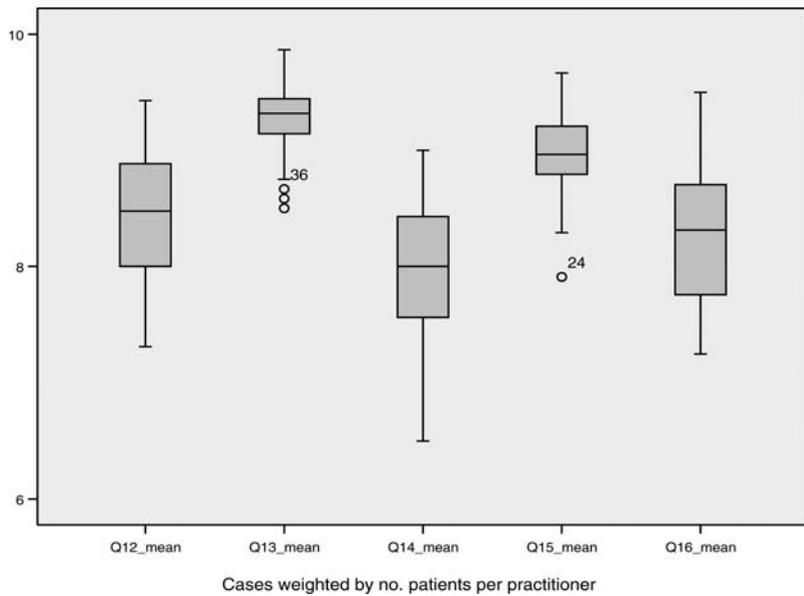


**Figure 2:**    The last five questions of Patient Partnership in Care instrument which make up the 'confidence' subscale

**Table 6:**  Mean scores for Patient Partnership in Care items in the first survey

| Descriptive statistics | | | |
|---|---|---|---|
| | Mean | Std. deviation | Analysis N |
| Q1 Ask you what you wanted to talk about | 4.1347 | 0.34722 | 1,660 |
| Q2 Giving you the information you wanted | 4.1938 | 0.33816 | 1,660 |
| Q3 Talking about your concerns and fears | 4.1586 | 0.32009 | 1,660 |
| Q4 Ability to really listen to you | 4.2548 | 0.34809 | 1,660 |
| Q5 Your understanding of your condition | 3.9125 | 0.38564 | 1,660 |
| Q6 Understanding your personal situation | 4.0766 | 0.33316 | 1,660 |
| Q7 Patient understanding of healthcare mgmt | 4.0471 | 0.36935 | 1,660 |
| Q8 Support for managing your care | 4.0621 | 0.34118 | 1,660 |
| Q9 Getting answers to future questions | 3.9490 | 0.38485 | 1,660 |
| Q10 Following up on your health care | 4.0945 | 0.36757 | 1,660 |
| Q11 Your partnership with your care | 4.1675 | 0.34569 | 1,660 |
| Q12 Confidence to carry out your plan | 8.1434 | 0.72091 | 1,660 |
| Q13 Importance to maintain/improve health | 9.1440 | 0.48191 | 1,660 |
| Q14 Confidence to cope day to day | 7.6091 | 0.92550 | 1,660 |
| Q15 Confidence to follow up | 8.6944 | 0.59680 | 1,660 |
| Q16 Confidence to self-care | 7.8226 | 0.90665 | 1,660 |

Among the five questions answered with a visual analogue scale, the highest scoring one was Q13 'importance of improving and maintaining health'. Questions 14 and 16 showed the greatest variance. Both were about confidence — to cope from day to day or to self-care. No patients scored less than 30 out of a possible 105 across the 16 PPiC items (minimum 11). A total of 81 patients (4.9 per cent) scored the maximum of 105. The mean score was 84.8, SD 15.7. There were 481 missing data among the 16 PPiC items and 1,660 responses = 1.81 per cent.

**Rasch analysis**

Taking into account the patient's age, sex, number of visits to the clinician and whether they had taken part in the expert patients programme, the PPiC item correlating the most with these characteristics was Q8 'your doctor/health professional's support in helping you feel you can manage your care' ($r = 0.71$) and the least was Q13 'how important is it for you to maintain and improve your health' ($r = 0.41$). Q8 had 64.9 per cent of the observed data points within 0.5 points from the expected value. Conversely, in Q14 'how confident are you that you can cope with your health condition day to day', only 27.1 per cent of values were near the expected, indicating a greater variety of responses to this question. On the basis of the analysis, there was no need to drop any of the questionnaire items. INFIT mean squares for all PPiC items were 2 or less and varied from 0.65 for Q8 to 2.0 for Q16. OUTFIT mean squares varied from 0.63 for Q8 to 2.24 for Q16. In spite of the high mean square value of the latter, it was decided to keep Q16 'confidence that you can do things to care for yourself' in the PPiC as it was felt to be central to the instrument. The person raw score-to-measure correlation = 0.82 and the Cronbach's alpha person raw score reliability = 0.94. Item reliability = 0.98 (all values approximate due to 1.81 per cent missing data). Based on this level of reliability, a minimum number of completed questionnaires necessary for analysis was

calculated: 27 questionnaires should be distributed and 18 completed ones collected from respondents.

## PPiC factor analysis

Using data from the first survey, principal components analyses of data aggregated at the clinician level were weighted by number of patient ratings. Only two components had Eigenvalues $>1$. These accounted for 78.086 per cent of the variance. Each factor was scored as a separate subscale. The rotated solution (Table 7) identified two subscales, which have been termed 'partnership' and 'confidence'. Cronbach's alpha for the subscales were 'partnership' (11 items) 0.977 and 'confidence' 0.877 (five items).

## PPiC construct validity

Patients who had seen their clinician more than once gave significantly greater scores for partnership (Mann-Whitney U-test $= -6.42$, $p < 0.001$) and for confidence (Mann-Whitney U-test $= -3.062$, $p = 0.002$), than those who had only visited once. There was no significant difference in partnership or confidence scores for patients of different age groups (Kruskal-Wallis test $= 0.223$, $p = 0.895$ and 3.1, $p = 0.212$, respectively). For sexes, there was no difference in partnership score (Mann-Whitney U-test $= -0.351$, $p = 0.726$) but females gave significantly higher scores for confidence (Mann-Whitney U-test $= -2.702$, $p = 0.007$). There was no difference in partnership or confidence score if they had participated in the expert patient programme training (Mann-Whitney U $= -0.56$, $p = 0.576$ and –0.892, $p = 0.372$, respectively).

**Table 7:** Principal components analysis, rotated solution

| Rotated component matrix* | | |
|---|---|---|
| | Component | |
| | 1 | 2 |
| Q1 Ask you what you wanted to talk about | 0.874 | 0.254 |
| Q2 Giving you the information you wanted | 0.879 | 0.321 |
| Q3 Talking about your concerns and fears | 0.898 | 0.231 |
| Q4 Ability to really listen to you | 0.889 | 0.255 |
| Q5 Your understanding of your condition | 0.792 | 0.304 |
| Q6 Understanding your personal situation | 0.865 | 0.275 |
| Q7 Patient understanding of healthcare mgmt | 0.839 | 0.325 |
| Q8 Support for managing your care | 0.879 | 0.342 |
| Q9 Getting answers to future questions | 0.824 | 0.336 |
| Q10 Following up on your health care | 0.791 | 0.374 |
| Q11 Your partnership with your care | 0.855 | 0.295 |
| Q12 Confidence to carry out your plan | 0.461 | 0.775 |
| Q13 Importance to maintain/improve health | 0.115 | 0.638 |
| Q14 Confidence to cope day to day | 0.230 | 0.831 |
| Q15 Confidence to follow up | 0.477 | 0.649 |
| Q16 Confidence to self-care | 0.300 | 0.839 |

Extraction method: Principal component analysis.
Rotation method: Varimax with Kaiser normalisation.
*Rotation converged in three iterations.

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### Responsiveness: Pre and post-training workshop comparisons

There were 95 clinicians with 1,660 patients involved in survey 1 and 27 clinicians with 545 patients in survey 2. All questions had negatively skewed responses. All scores increased in survey 2 and most noticeably for Q3 'talking about your concerns and fears' followed by Q4 'ability to listen to you' and Q16 'confidence to self-care'.

*Unmatched clinicians*

There were 95 clinicians involved in survey 1 and 28 in survey 2. Twenty-seven of the latter were also included in survey 1. All item scores increased in survey 2. At the clinician level, data were normally distributed (Shapiro-Wilk test $p > 0.05$ for most questionnaire items). Covariates in an ANOVA model included: Q19 proportion aged 26–59 years; proportion aged over 60; Q21 proportion of male gender and Q22 proportion visiting more than once. The proportion of patients aged over 60 was a significant confounder.

For the 'partnership' subscale, there was an increase in mean score from 45.05 (81.9 per cent) to 47.05 (85.5 per cent), which was significant ($F = 111.555$ with 1, 2,198 df, $p < 0.001$). For the confidence subscale, the score increased from 41.4 (82.8 per cent) to 43.05 (86.1 per cent), which was also significant ($F = 97.528$ with 1, 2,198 df, $p < 0.001$). These results yielded moderate effect sizes, as shown in Table 8.

*Matched clinicians*

Repeated measures ANOVA was performed with data weighted by number of patient responses. Covariates included in the model were: Q19 proportion of patients aged 26–59; proportion aged over 60; Q21 proportion of male gender and Q22 proportion visiting more than once. For the partnership subscale there was a significant increase in score from 44.85 (82.55 per cent) to 46.75 (85 per cent) ($F = 216.084$ with 1 and 483 df, $p < 0.001$). For the confidence scale, there was a significant increase from 41.34 (82.68 per cent) to 43.25 (86.5 per cent) ($F = 176.391$ with 1 and 483 df, $p < 0.001$). As Figure 3 shows, the 'confidence' item increasing the most was 'confidence to self-care'. Again, these results indicated a moderate effect size (see Table 9).

### Predictors of confidence

On an individual basis, each PPiC question is significantly correlated with every other question. It is no surprise therefore that there was a significant positive correlation between the scores of the two components ($r = 0.683$, $p < 0.001$), as Figure 4 shows. A regression model showed

**Table 8:** Instrument responsiveness: Mean pre and post-training workshop scores at the clinician level, weighted by number of responses — unmatched clinicians

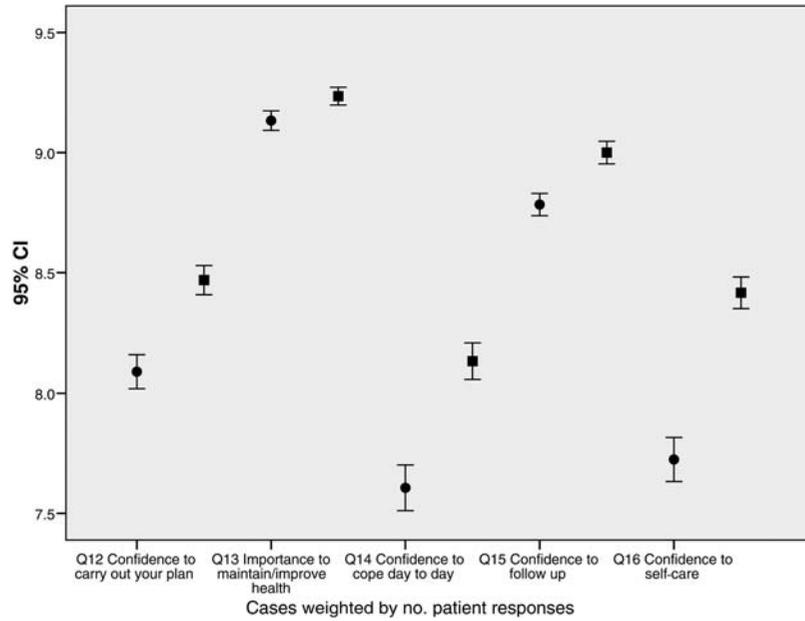| | Pre-workshop mean | SD | Post-workshop mean | SD | Change | SE | $p$ | Effect size |
|---|---|---|---|---|---|---|---|---|
| Partnership | 45.0512 | 3.50841 | 47.0530 | 2.72168 | −2.0018 | 0.14494 | <0.001 | −0.5706 |
| Confidence | 41.4136 | 3.02015 | 43.0496 | 2.73268 | −1.6360 | 0.13855 | <0.001 | −0.5417 |

**Figure 3:** Repeated responses to the 'confidence' questions of the Patient Partnership in Care instrument (circles represent pre-workshop and squares post-workshop data)

**Table 9:** Instrument responsiveness: Mean pre and post-training workshop scores at the clinician level, weighted by number of responses — Matched clinicians

|  | Pre-workshop mean | SD | Post-workshop mean | SD | Change | SD | $p$ | Effect size |
|---|---|---|---|---|---|---|---|---|
| Partnership | 44.8459 | 3.41091 | 46.7491 | 2.98280 | −1.90317 | 3.20141 | <0.001 | −0.5580 |
| Confidence | 41.3378 | 3.45001 | 43.2539 | 2.66925 | −1.91613 | 3.24499 | <0.001 | −0.5553 |

that 'confidence' could be predicted by 'partnership' ($t = 39.597$, $p < 0.001$) with the covariates, proportion male, aged 60+ and making more than one visit to the practice (all of which were significant, with $p < 0.001$ in each case).

## Discussion

The study has shown that the PPiC tool has face validity, construct validity, good internal consistency and is sensitive to change, being able to detect a moderate effect size of professional development workshops. Other research by Greco and colleagues has shown similar results for assessing the impact of interpersonal skills training using patient surveys as the outcome measure.[12] The PPiC breaks down into two subscales: 'partnership' and 'confidence'. It was also possible to demonstrate that the confidence subscale is predicted by the partnership score with a positive correlation. It appears that the better the partnership the patient has with their health professional, the more confidence they have in caring for themselves.

Cases weighted by no. patients per practitioner
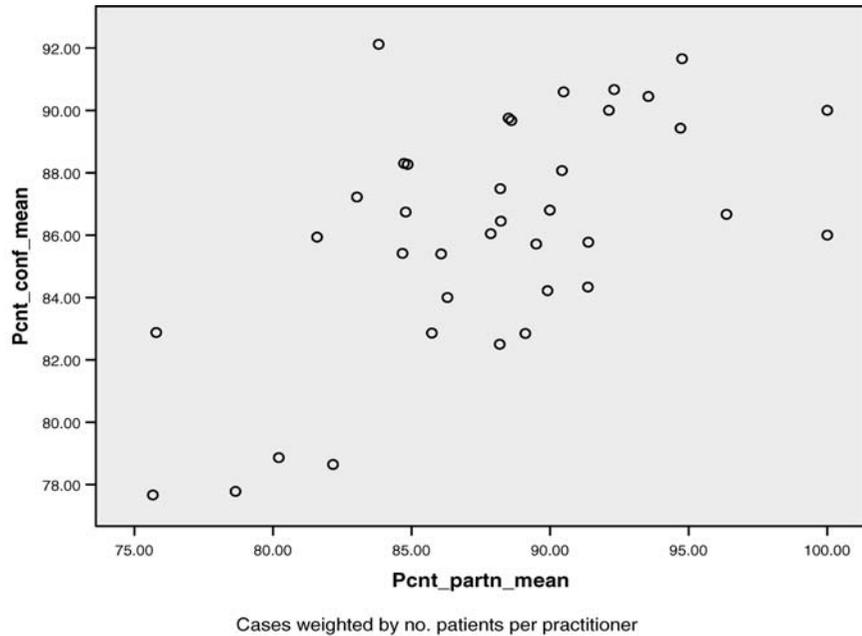
**Model summary**

| Model | R | R square | Adjusted R square | Std. error of the estimate |
|---|---|---|---|---|
| 1 | 0.683* | 0.466 | 0.465 | 2.51622 |

*Predictors: (Constant), Age 60+, Gender male, Sum of qus 1–11 (/55), Visit more than once

**Coefficients***

| Model | | Unstandardised coefficients | | Standardised coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. error | Beta | t | Sig. |
| 1 | (Constant) | 15.616 | 0.785 | | 19.883 | 0.000 |
| | Sum of qus 1–11 (/55) | 0.741 | 0.019 | 0.654 | 39.597 | 0.000 |
| | Gender male | −0.018 | 0.003 | −0.082 | −5.179 | 0.000 |
| | Visit more than once | −0.010 | 0.003 | −0.065 | −3.921 | 0.000 |
| | Age 60+ | 0.012 | 0.002 | 0.090 | 5.183 | 0.000 |

*Dependent variable: Sum of qus 12–16 (/50)

**Figure 4:**    Correlation of confidence with partnership

In the pre-workshop survey, the recommended number of completed questionnaires of 18 per clinician was not quite achieved, although a median of 16 was reached. Data from the second survey came from a much smaller sample and contained a larger proportion of patients aged over 60 years. The data also included a slightly higher proportion of females. However, these have been accounted for in the ANOVA models.

The PPiC instrument was developed with a large amount of user and professional input. The questionnaires were well completed with only 1.88 per cent missing raw data at the patient level and none at the clinician level (ie there were no questions that had been skipped by all the patients of any given clinician). Optimal Cronbach's alpha values for subscales should be at least 0.8.[13] The values for 'partnership' and 'confidence' were 0.977 and 0.877 respectively. The fact that the

highest-rated question was concerned with 'the ability of the doctor/health professional to really listen to me' agrees with previous work of Greco and colleagues using the Doctors Interpersonal Skills Questionnaire[14] and the Improving Practice Questionnaire,[15,16] where it was among the top-rated questions. A total of 670 patients (30.39 per cent) provided comments in the open questions. While the analysis of these responses is beyond the scope of this paper, such questions elicit information about self-care that is not easily accessible by other means except by interviewing all patients, which would not be practicable.

For a long time it was believed that only health professionals should make decisions about disease management. By the early 1990s, however, people with chronic illnesses were invited to participate in the decision making about their treatment as equal partners. Much of the discussion around this new approach was based on a model of empowerment. The importance of the physician–patient relationship in the management of chronic illness was recognised by Clark *et al.*,[17] particularly the effects on outcomes and changes in the physician's behaviour after continuing medical education. It was thought that physicians can influence patients' behaviours significantly by addressing compliance-related beliefs. The desired outcomes of physician–patient interactions include improved communication, greater patient satisfaction and willingness to follow the therapeutic plan.

It has been recognised that clinicians can learn specific communication skills that foster effective partnership with patients. Joos *et al.*[18] demonstrated that, compared with a control group, clinicians receiving 4.5 hours of training in agenda setting elicited more complete lists of patient concerns to discuss in the consultation. In a systematic review, Fellowes *et al.*[19] found three trials of communication skills training in cancer health professionals that measured changes in behaviour and skills using objective and validated scales. They concluded that such training programmes are effective in improving some areas of professionals' communication skills.

Other research has shown that utilising patient feedback as part of training clinicians in communication skills has a significant positive impact on scores. For example, Greco and colleagues found that systematically feeding the results from patient surveys back to clinicians improved future performance on such outcome measures.[20]

There are existing instruments that deal with partnership or patient confidence to self-care but not both together. Those instruments that address confidence but not partnership include the Patient Enablement Instrument described by Howie *et al.*[21] In 1999, these authors made the first attempt to determine principal correlates associated with enablement as an outcome measure. Their brief questionnaire had some questions about confidence (Confident about your health? Able to help yourself?) but not partnership with the doctor. Similarly, in 2004 Hibbard *et al.*[22] at the University of Oregon published the Patient Activation Measure (PAM 13), which reflected a developmental mode of activation that appears in four stages and includes having the confidence and knowledge necessary

to take action. Unfortunately, this instrument did not address the partnership with clinicians.

Those instruments that address partnership skills but not patient confidence include the work undertaken by Battersby *et al.*[23,24] at the Flinders Human Behaviour and Health Research Unit in Australia. They developed the Partners in Health Scale to assess self-management behaviours and collaborative identification of problems. The tool did not however assess patients' confidence to self-care.

In 2002, Bonomi and colleagues [25] developed the Assessment of Chronic Illness Care quality-improvement tool to help teams within organisations evaluate the strengths and weaknesses of their delivery of care for chronic illness in six areas. A similar tool was reported in 2007 by Brownson *et al.*[26] in the USA: the 16-item Assessment of Primary Care Resources and Supports for Chronic Disease Self-Management tool to assess both organisational infrastructure and delivery of self-management support services. It was initially designed for primary care teams to use with diabetes in mind but could be used for other chronic illness conditions. Neither of these tools were patient-focused and neither had any measure of patient confidence in managing their chronic condition.

In 2007, Osborne *et al.*[27] published the psychometric properties of the Health Education Impact Questionnaire. This 42-item instrument enabled the evaluation of patient education programmes which could be applied in disease management across a broad range of chronic conditions. Once again, however, this instrument had no direct measures of partnership with the main clinician or confidence to self-care.

Some self-efficacy measures have been developed for specific chronic diseases. An example is the 15-item self-efficacy scale for children and adolescents with epilepsy (SSES-C) developed and validated by Caplin and colleagues in 2002.[28] While the scale measures the degree of self-efficacy experienced by children and adolescents related to the management of their seizure disorder, it unfortunately does not measure the degree of partnership with clinicians or the level of confidence in self-caring. Another example is the 17-item Resources and Support for Self-Management tool developed for patients with diabetes by McCormack *et al.* in 2008.[29] It has five subscales measuring individualised assessment, collaborative goal setting, enhancing skills, ongoing follow-up and support, and community resources. The authors suggest that the instrument may have broader application in chronic disease management, but while the 'ongoing follow-up and support' subscale might include elements of partnership, the tool has no measure of confidence to self-care.

In practice, routine use of the PPiC with patients with various LTCs will enable a wide range of clinicians to monitor the degree of patient-perceived partnership that they have with them. They will also have a measure of the level of confidence that patients have to care for themselves in a supportive environment. Having good validity and internal consistency would make the PPiC a useful patient reported outcome measure.

In further research, the PPiC will be able to provide information about the types of LTC in which patients are confident in caring for themselves and those in which they are less so. Qualitative analysis of the comments provided by 670 patients (30.39 per cent) in this study will provide greater insight into how patients in partnership with clinicians can manage their care more effectively.

## Conclusions

The PPiC is an easily completed generic tool for patients, which is valid, reliable and sensitive to change. It illustrates the positive correlation between the partnership of a clinician with LTC patients and their confidence to self-manage. It is a useful instrument in the current self-care climate and with the ever-aging population.

## Acknowledgments

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