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\*Page 11: In (Cyhlarova et al., 2014), the year of publication was amended and a post-it notes that the journal would need to substitute 'XX-XX' with the page number of this article. This is a twin article on the same project that has been accepted for publication.

\*Page 12: a reference (Gov.uk, 2013) has been deleted in the 'Further reading' reference list and added in the main 'References' list.

\*Page 12: a reference (Sussex police, 2009) has been deleted as not relevant.

\*Page 13: a word has been amended in the last paragraph

# Peer-led self-management for people with severe mental disorders: an economic evaluation

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## Abstract

**Purpose** – The purpose of this paper is to evaluate the effectiveness and cost-effectiveness of a peer-led self-management intervention for people with severe mental disorders.

**Design/methodology/approach** – This is a one-arm longitudinal study without control group. In all, 262 adults with (self-reported) severe mental disorders, who have used secondary mental health services and were living in the community were evaluated at three time points (baseline, six and 12 months). Socio-demographic data were collected at baseline. Wellbeing (Warwick-Edinburgh Mental Wellbeing Scale), functional living skills (Health Promoting Lifestyle Profile II) and service use (Client Service Receipt Inventory) data were assessed over time.

**Findings** – Self-management for people with severe mental disorders improved wellbeing and health-promoting lifestyles. After an increase in the short term, costs appeared to decrease in the longer term, although this change was not statistically significant. Due to the lack of a control group, the authors are unable to attribute those changes to the intervention only. Nevertheless, the self-management intervention appears to warrant further attention on both wellbeing and economic grounds.

**Originality/value** – Self-management may facilitate recovery, helping to support people with severe mental disorders at no additional cost. Given recent emphasis on recovery, peer workers and self-management, this peer-led self-management approach for people with severe mental disorders appears to have potential.

**Keywords** United Kingdom, Peer support, Self-management, Mental health services, Recovery, Severe mental illness

**Paper type** Research paper

## Introduction

People with severe mental disorders can experience partial or full recovery, interpreted not only (or even necessarily) as symptom remission but with improvement in personal or social outcomes, such as participation in employment or education, independent living, reduced dependency on welfare support and peer relationships (Lieberman *et al.*, 2002; Slade, 2009). In Sweden, recovery of people with schizophrenia has been shown to be associated with improvement in health and social care outcomes (Helldin *et al.*, 2007) and a reduction in annual health and social care costs (Hjortsberg *et al.*, 2011).

Self-management programmes aim to facilitate recovery, improving an “individual’s ability to manage symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent with living with a chronic condition. Efficacious self-management encompasses the ability to monitor one’s condition and to affect the cognitive, behavioural and emotional responses necessary to maintain a satisfactory quality of life” (Barlow *et al.*, 2002). Self-management programmes for people with mental disorders in recovery may include elements such as management of medications, symptom management,

psychoeducation, relapse prevention, setting individual recovery goals and development of life skills (National Collaborating Centre for Mental Health, 2014). A recent review of 25 randomised-controlled trials of self-management for people with schizophrenia suggested a positive impact on symptoms, quality of life and functioning in people with schizophrenia, but inconclusive evidence on the impact on hospitalisation and service use (National Collaborating Centre for Mental Health, 2014). A meta-analysis of self-management interventions for people with schizophrenia found 13 studies showing significant improvement in symptoms and adherence to medication, with a reduction in relapse of 46 per cent and in readmissions of 45 per cent (Zou *et al.*, 2013). An earlier review highlighted the clinical benefit of self-management for people with bipolar disorders (Jones *et al.*, 2011).

First, initiated in the USA during the 1970s for people with physical chronic conditions (Lorig *et al.*, 1985), self-management programmes have been shown to be associated with better patient outcomes and potential reduction in costs, as in the Chronic Disease Self-Management Course in the USA (Lorig *et al.*, 1993) and the Expert Patient Programme in the UK (Kennedy *et al.*, 2007; Richardson *et al.*, 2008). Over the last two decades, self-management interventions for people with mental disorders have been developed in many countries. In the USA, Wellness Recovery Action Planning, a peer-led self-management programme for people with severe mental disorders, has demonstrated significant improvement in self-management attitudes, skills and behaviours (Cook *et al.*, 2010). The Life Goals Programme, group psychoeducation to improve self-management skills in Veterans with bipolar disorders, was found to significantly reduce affective episodes and increase social functioning and mental health quality of life over three years, and was cost-neutral, with an increase of outpatient costs offset by a decrease in inpatient costs (Bauer *et al.*, 2006). In Australia, the Flinders model, a peer-led self-management programme for people with severe mental disorders, significantly improved self-management knowledge and skills, mental health and social participation over six months with a significant reduction in readmission over 12 months (Lawn *et al.*, 2007). In Spain, the Barcelona Bipolar Disorders Programme, a group psychoeducation programme to improve self-management in people with bipolar disorders, led to a significant reduction in relapses, readmissions and length of hospitalisation over both two and five years (Colom *et al.*, 2003, 2009). In the UK, Bipolar UK (2014) provides a self-management programme for people with bipolar disorders.

The Mental Health Foundation (MHF) developed a peer-led self-management intervention for people using secondary mental health services in 2009, which was followed by a pilot evaluation in Wales between 2010 and 2012 (Crepaz-Keay and Cyhlarova, 2012). The aim of the study reported here was to evaluate the effectiveness and cost-effectiveness of the MHF intervention.

## Methods

We conducted an economic evaluation of a one-arm longitudinal study, with data collected at three time points (baseline, six and 12 months) between November 2010 and January 2012. More details are provided elsewhere (Crepaz-Keay and Cyhlarova, 2012; Cyhlarova *et al.*, 2014). This is a cost-effectiveness analysis without control.

### *Participants*

Participants were 262 adults with (self-reported) severe mental disorders who had used secondary mental health services and were living in the community. They were recruited through posters displayed in local community and public settings, and postcards and leaflets distributed through voluntary sector networks. While the diagnosis of severe mental disorder was self-reported only, the referral to specialist mental health services implies that mental health professionals would have judged participants' mental illness sufficiently severe for requiring specialist support.

### *Intervention*

The self-management intervention consists of a two-day workshop, followed by six half-day follow-up workshops over three months, and six on-going peer-group meetings over six

months. The intervention aimed to teach goal-setting and problem-solving techniques, to empower people and to facilitate meeting with others and sharing of experiences. It was delivered in community locations within the community to groups of up to 15 participants (mean of 11 participants).

Topics covered by the intervention could vary: relaxation, complementary therapies, communication skills, getting the best from appointments with professionals, lifestyle and health, support networks, medication and alternatives, becoming a self-supporting peer group, getting back into employment/voluntary work/education, evaluating information and approaches. Groups were led by two peer-support workers, trained and supervised, who had themselves used secondary mental health services and who had previously been course participants. If requested, travel and replacement childcare expenses were reimbursed.

The intervention was developed by the MHF in 2009 and has been described in more detail elsewhere (Crepaz-Keay and Cyhlarova, 2012). The intervention was delivered by the MHF and Bipolar UK (2014).

### ***Outcomes***

At the baseline, demographic data were collected using a questionnaire designed by the MHF. Wellbeing and functional living skills were assessed three times (baseline, six and 12 months) using questionnaires completed by participants alone or with the help of family, carers, or people from the MHF.

Wellbeing was assessed using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) (Tennant *et al.*, 2007). This is a 14-item scale answered using a five-point Likert scale. The minimum score is 14 and the maximum is 70, with higher scores corresponding to higher mental wellbeing.

Functional living skills were assessed using the Health Promoting Lifestyle Profile II (HPLP II), a self-completed measure of health-promoting behaviours (Walker *et al.*, 1987; Walker and Hill-Polerecky, 1996). An adapted version was employed, with some items reworded for the UK context, combined or omitted. The adapted version is a 42-item scale answered using a four-point Likert scale, composed of six sub-scales (general health, exercise, food, social life, dealing with health professionals and finding meaning). The minimum score is 1 and the maximum is 4, with higher scores corresponding to higher health-promoting behaviours.

### ***Costs***

Information on resource use was collected using an adapted version of the Client Service Receipt Inventory (CSRI), in a self-complete format (Beecham and Knapp, 2001). The questionnaire collected information on health and social care services (inpatient, outpatient, day activity, community care), criminal justice services (contacts with the police, prison, criminal and civil court) and productivity-related indicators (working days, absenteeism) retrospectively over the previous three months.

Costs were measured at 2011/2012 prices. Unit costs for health and social care services were sourced from the Personal Social Services Research Unit (PSSRU) *Unit Costs of Health and Social Care 2012* (Curtis, 2012) and NHS reference costs (Department of Health (DH), 2011a, 2012a). Unit costs for criminal justice services were obtained from national (Ministry of Justice, 2012; Harries, 1999) and local (Metropolitan Police, 2012) publications. Values for productivity losses were taken from Perkins *et al.* (2009). Where needed unit costs were inflated using the Hospital and Community Health Services (HCHS) Pay and Prices Index (Curtis, 2012). Medication costs were excluded because the purpose of the intervention did not focus on treatment but rehabilitation. Table 1 details the unit costs.

The cost of the intervention was estimated at £894 per participant, calculated from externally audited budget data and cost information provided by the MHF. The cost of the intervention includes set-up costs, revenue costs, overheads and capital costs. Set-up costs were spread over the number of potential users of the intervention estimated after the number of participants

**Table I** Unit costs (£, 2011/2012)

|  | Unit cost (£, 2011-2012) | Source                             |
|--|--------------------------|------------------------------------|
| <i>Health and social care services</i>             |                          |                                    |
| Inpatient services                                 |                          |                                    |
| Special hospital                                   | 654/day                  | Curtis (2012)                      |
| Secure/semi-secure unit                            | 516/day                  | <a href="#">DH (2012a, b)</a>      |
| Specialist assessment and/or treatment facility    | 488/day                  | Curtis (2012)                      |
| Acute psychiatric ward                             | 330/day                  | Curtis (2012)                      |
| Rehabilitation ward/facility                       | 288/day                  | Curtis (2012)                      |
| Emergency/crisis centre                            | 122/day                  | <a href="#">DH (2011a, b)</a>      |
| General medical ward                               | 586/day                  | Curtis (2012)                      |
| Outpatient services                                |                          |                                    |
| Psychiatric outpatient visit                       | 146/visit                | Curtis (2012)                      |
| Special unit outpatient visit                      | 146/visit                | Curtis (2012)                      |
| Other hospital outpatient visit (incl. A&E)        | 139/visit                | Curtis (2012)                      |
| Day hospital (excl. regular day activity services) | 680/day                  | Curtis (2012)                      |
| Day activity services                              |                          |                                    |
| Community MH centre                                | 37/user session          | Curtis (2012)                      |
| NHS day activity facility                          | 37/user session          | Curtis (2012)                      |
| LASSD day activity facility                        | 37/user session          | Curtis (2012)                      |
| Vol. org. day activity facility                    | 37/user session          | Curtis (2012)                      |
| Social club  | 37/user session          | Curtis (2012)                      |
| Sheltered workshop                                 | 32/user session          | Curtis (2012)                      |
| Community care services                            |                          |                                    |
| CPA key worker                                     | 35/hour                  | Curtis (2012)                      |
| Case manager                                       | 81/hour                  | Curtis (2012)                      |
| Community MH team member                           | 38/hour                  | Curtis (2012)                      |
| Community learning difficulty team member          | 38/hour                  | Curtis (2012)                      |
| Older person community team member                 | 45/hour                  | Curtis (2012)                      |
| Psychiatry/learning difficulty: consultant         | 319/hour                 | Curtis (2012)                      |
| Psychiatry/learning difficulty: senior reg.        | 150/hour                 | Curtis (2012)                      |
| Psychologist                                       | 136/hour                 | Curtis (2012)                      |
| Community psychiatric nurse                        | 67/hour                  | Curtis (2012)                      |
| Community learning difficulty nurse                | 43/hour                  | Curtis (2012)                      |
| Other nursing services                             | 51/hour                  | Curtis (2012)                      |
| Social worker                                      | 156/hour                 | Curtis (2012)                      |
| Occupational therapist                             | 30/hour                  | Curtis (2012)                      |
| Physiotherapist                                    | 30/hour                  | Curtis (2012)                      |
| Speech therapist                                   | 30/hour                  | Curtis (2012)                      |
| Chiropodist  | 30/hour                  | Curtis (2012)                      |
| Individual counselling/therapy                     | 65/hour                  | Curtis (2012)                      |
| Group counselling/therapy                          | 7/hour per person        | Curtis (2012)                      |
| Home help/home care worker                         | 23/hour                  | Curtis (2012)                      |
| Outreach worker/family support                     | 49/hour                  | Curtis (2012)                      |
| General practitioner                               | 167/hour                 | Curtis (2012)                      |
| Dentist  | 96/unit                  | <a href="#">DH (2012a, b)</a>      |
| Optician   | 30/hour                  | Curtis (2012)                      |
| Criminal justice services                          |                          |                                    |
| Contacts (excl. overnight)                         | 139/contact              | Metropolitan Police (2012)         |
| Nights in a police cell/prison                     | 95/night                 | Ministry of Justice (2012)         |
| Psychiatric assessments whilst in custody          | 358/unit                 | Curtis (2012)                      |
| Criminal court appearances                         | 13,360/proceeding        | <a href="#">Home Office (1999)</a> |
| Civil court appearances                            | 854/proceeding           | <a href="#">Home Office (1999)</a> |
| Employment   |                          |                                    |
| Hours/week   | 6.19/hour                | <a href="#">DWP (2009)</a>         |
| Absenteeism owing to illness                       | 6.19/hour                | <a href="#">DWP (2009)</a>         |

Q1

Q2

Q3

of a similar self-management training course run by Bipolar UK since 1998 (Bipolar UK, 2014). The MHF training was carried out over two years and included about 600 participants. Assuming that the course would be unchanged over the next 15 years and that a similar number of beneficiaries per year would take part in the training, the total number of participants has

been estimated at 4,500. Additional transport costs for people attending were estimated at an average of £54 per participant.

### Analysis

Data were analysed using SPSS 18 and MS Excel 2010. For the economic analysis we considered two sub-samples, one including only participants who completed all questionnaires at baseline and six months and the other including all participants who completed all questionnaires at baseline and 12 months. In order to verify the comparability of those sub-samples, socio-demographic characteristics were described and compared statistically. Missing item data were replaced using simple mean imputation. Differences in outcomes (wellbeing and functional living skills) between baseline and six months (and between baseline and 12 months) were described and compared statistically.

The analysis of costs adopted two perspectives. The public services perspective included health and social care services and criminal justice. The societal perspective included these plus the cost of productivity loss, calculated by subtracting absences from worked hours. Differences in the use and cost of services over the previous three months between baseline and six months (and between baseline and 12 months) were described and compared statistically. Then, changes in cost and in benefits over time were compared between baseline and six months (and between baseline and 12 months). For this analysis, costs were calculated using multiples of the cost of services collected at baseline, six and 12 months.

## Results

### Baseline characteristics

Baseline characteristics of all participants ( $n = 262$ ) and the two sub-samples used for the analysis at six months ( $n = 87$ ) and 12 months ( $n = 61$ ) are presented in Table II. The dropout rates are 67 per cent over six months and 77 per cent over 12 months. The socio-demographic and clinical characteristics of the two sub-samples are similar to those of the entire population of

| <b>Table II</b> Socio-demographic and clinical characteristics at baseline |                                  |  |   |
|--|----------------------------------|--|---|
|  | <i>Baseline</i><br>( $n = 262$ ) | <i>Baseline-6 months</i><br>( $n = 87$ ) | <i>Baseline-12 months</i><br>( $n = 61$ ) |
| <i>Age (mean, SD)</i>  | 43.5 (12.4)                      | 45.3 (11.9)                              | 44.6 (11.6)                               |
| <i>Gender (no., %)</i>   |                                  |  |   |
| Female   | 127 (61)                         | 51 (59)                                  | 37 (61)                                   |
| Male   | 81 (39)                          | 36 (41)                                  | 24 (39)                                   |
| <i>Cultural background (no., %)</i>  |                                  |  |   |
| Welsh  | 118 (58)                         | 51 (59)                                  | 36 (60)                                   |
| English  | 56 (28)                          | 22 (26)                                  | 13 (22)                                   |
| British  | 11 (6)                           | 8 (9)                                    | 4 (7)                                     |
| Other  | 17 (8)                           | 5 (6)                                    | 7 (11)                                    |
| <i>Literacy (no., %)</i>   |                                  |  |   |
| Poor   | 144 (70)                         | 64 (74)                                  | 47 (77)                                   |
| Quite good   | 48 (23)                          | 17 (20)                                  | 10 (16)                                   |
| Good   | 14 (7)                           | 6 (6)                                    | 4 (7)                                     |
| <i>Employment (no., %)</i>   |                                  |  |   |
| No   | 158 (79)                         | 58 (68)**                                | 43 (70)                                   |
| Yes  | 43 (21)                          | 27 (32)                                  | 18 (30)                                   |
| <i>Diagnosis (no., %)</i>  |                                  |  |   |
| Bipolar disorders  | 123 (65)                         | 66 (83)***                               | 43 (75)**                                 |
| Depression   | 29 (15)                          | 9 (11)                                   | 7 (12)                                    |
| Schizophrenia and psychosis  | 18 (10)                          | 4 (5)                                    | 5 (9)                                     |
| Personality disorders  | 10 (5)                           | 1 (1)                                    | 2 (4)                                     |
| Others   | 8 (5)                            | 0 (0)                                    | 0 (0)                                     |
| <i>Medication (mean, SD)</i>   | 1.6 (1.8)                        | 2.1 (1.7)**                              | 1.9 (0.1)                                 |

Notes: \*\*,\*\*\*Significant at  $p \leq 0.01$  and  $p \leq 0.001$ , respectively

participants; the only significant difference was a higher number of people with a diagnosis of bipolar disorder at both six and 12 months, and a higher number of medications consumed and higher unemployment at six months. Participants had a mean age of 44 years, with 61 per cent being women and 58 per cent from a Welsh background. The majority had poor literacy skills (70 per cent) and were not employed (79 per cent). The most prevalent diagnosis was bipolar disorder (65 per cent), followed by depression (15 per cent), schizophrenia (10 per cent) and personality disorders (5 per cent). Participants were taking an average of 1.6 medications.

### Missing data

The analysis of missing data by variable showed that 5.6 per cent of values were missing from all questionnaires at all three points in time.

### Clinical and functional outcomes

The results for the two outcomes are presented in Table III. At six months both wellbeing (WEMWBS) and functional living skills (HPLP II) had improved. Improvement remained constant at 12 months. Differences in outcome between baseline and follow-ups were statistically significant only for functional living skills.

### Resource use

Table IV presents service use data. Day activity and community care services were the most frequently used at all three time points. At six months there was a decrease in health and social

**Table III** Outcomes at zero, six and 12 months: mean (SD) per participant

|               | Baseline<br>(n = 87) | 6 months<br>(n = 87) | Difference (baseline-6 m)<br>(n = 87) | Baseline<br>(n = 61) | 12 months<br>(n = 61) | Difference (baseline-12 m)<br>(n = 61) |
|---------------|----------------------|----------------------|---------------------------------------|----------------------|-----------------------|--|
| WEMWBS        |                      |                      |                                       |                      |                       |  |
| Total         | 43.09 (10.79)        | 45.13 (12.56)        | 2.03 (13.33)                          | 44.48 (9.71)         | 46.84 (12.22)         | 2.36 (11.60)                           |
| HPLP-II Total | 2.55 (0.46)          | 2.71 (0.46)          | 0.16 (0.42)***                        | 2.62 (0.44)          | 2.76 (0.47)           | 0.14 (0.42)**                          |

Notes: \*\*,\*\*\*Significant at  $p \leq 0.01$ ,  $p \leq 0.001$ , respectively

**Table IV** Service use at baseline, six and 12 months: mean (SD) per participant over the last three months

|                               | Baseline<br>(n = 87) | 6 months<br>(n = 87) | Difference<br>(baseline-6 m)<br>(n = 87) | Baseline<br>(n = 61) | 12 months<br>(n = 61) | Difference<br>(baseline-12 m)<br>(n = 61) |
|-------------------------------|----------------------|----------------------|--|----------------------|-----------------------|---|
| <i>Health and social care</i> |                      |                      |  |                      |                       |   |
| Inpatient days                | 1.6 (5.0)            | 1.4 (6.9)            | -0.2 (7.6)                               | 3.5 (9.1)            | 0.4 (2.2)             | -3.0 (9.4)**                              |
| Outpatient sessions           | 2.5 (3.6)            | 1.7 (3.6)            | -0.8 (4.3)                               | 2.6 (3.9)            | 1.3 (1.8)             | -1.3 (4.4)*                               |
| Day activity hours            | 23.2 (56.2)          | 22.2 (60.0)          | -1.8 (72.5)                              | 12.5 (28.3)          | 7.2 (25.2)            | -5.3 (32.1)                               |
| Community care hours          | 13.2 (37.1)          | 11.1 (25.4)          | -2.1 (44.9)                              | 10.1 (13.4)          | 8.7 (17.2)            | -1.4 (18.3)                               |
| <i>Criminal justice</i>       |                      |                      |  |                      |                       |   |
| Police contacts               | 0.04 (0.24)          | 0.08 (0.39)          | 0.05 (0.34)                              | 0.07 (0.36)          | 0.08 (0.38)           | 0.02 (0.53)                               |
| Prison: no. of nights         | 0.13 (0.53)          | 0.74 (2.95)          | 0.61 (2.93)                              | 0.13 (0.56)          | 0.15 (0.65)           | 0.02 (0.70)                               |
| Psychiatric assessments       | 0.01 (0.11)          | 0.04 (0.24)          | 0.02 (0.27)                              | 0.00 (0.00)          | 0.05 (0.28)           | 0.05 (0.28)                               |
| Criminal court appearances    | 0.01 (0.11)          | 0.05 (0.44)          | 0.04 (0.45)                              | 0.00 (0.00)          | 0.07 (0.51)           | 0.07 (0.51)                               |
| Civil court appearances       | 0.00 (0.00)          | 0.02 (0.22)          | 0.02 (0.22)                              | 0.00 (0.00)          | 0.03 (0.26)           | 0.03 (0.26)                               |
| <i>Employment</i>             |                      |                      |  |                      |                       |   |
| Working hours per week        | 10.13 (15.36)        | 10.04 (15.22)        | -0.08 (6.86)                             | 18.86 (16.92)        | 22.63 (14.95)         | 3.78 (8.99)                               |
| Days of absence over 3 months | 3.54 (11.57)         | 3.53 (12.64)         | -0.01 (14.69)                            | 27.33 (30.18)        | 2.89 (6.62)           | -24.44 (33.24)                            |

Notes: \*,\*\*Significant at  $p \leq 0.05$  and  $p \leq 0.01$ , respectively

care service use (inpatient, outpatient, day activity and community care) compared to baseline. At 12 months there was a bigger decrease in service use compared to baseline. However, statistical significance was reached only for inpatient and outpatient services between baseline and 12 months.

The use of criminal justice services increased slightly over time, but differences were not statistically significant. In particular, the number of detentions overnight increased over six months and almost returned to the baseline level by the 12-month point. However, the small sample and high dispersion of data suggest caution in interpretation of these findings.

After decreasing at six months, productivity increased by 12 months. However, differences from baseline were not statistically significant.

### Total cost

Table V shows mean cost per participant. Health and social care costs decreased between baseline and six months and continued to decrease up to the 12-month point, when the difference was statistically significant. Criminal justice costs slightly increased over time, but again the difference was not statistically significant. Productivity improved over the 12-month period, although the change was not statistically significant.

From the public services perspective, when we exclude the intervention cost, the mean cost per participant fell by 9 per cent (–£202) between baseline and six months, and continued to decrease up to 48 per cent (–£1,276) at 12 months, when the difference was statistically significant. However, when we include the intervention costs there was an increase in mean cost of 4 per cent (£96) at six months and a decrease of 48 per cent (–£1,276) at 12 months, when the difference was statistically significant.

From the societal perspective, when we exclude the intervention cost, the mean cost per participant decreased at six months by 14 per cent (–£258) and by 64 per cent (–£1,355) at 12 months, when the difference was statistically significant. However, when we include the intervention costs there was an increase in mean cost of 2 per cent (£40) at six months and a decrease of 64 per cent (–£1,355) at 12 months, when the difference was statistically significant.

### Changes in cost and benefit over time

Table VI summarises the changes in cost and in benefits per participant over the six- and 12-month follow-up periods.

From the public services perspective, self-management was associated with an increase in cost of 9 per cent (£404) over six months but decreased by 30 per cent (–£2,958) over 12 months. From the societal perspective, at six months self-management was associated with an

**Table V** Service cost at zero, six and 12 months: mean (SD) cost per participant over the last three months (£, 2011/2012)

|   | Baseline<br>(n = 87) | 6 months<br>(n = 87) | Difference<br>(baseline-6 m)<br>(n = 87) | Baseline<br>(n = 61) | 12 months<br>(n = 61) | Difference<br>(baseline-12 m)<br>(n = 61) |
|---|----------------------|----------------------|--|----------------------|-----------------------|---|
| Intervention                                  | 0                    | 298                  | 298                                      | 0                    | 0                     | 0   |
| Health and social care                        | 2,174 (3,699)        | 1,902 (3,949)        | –273 (5,098)                             | 2,619 (4,010)        | 1,088 (1,461)         | –1,531 (4,124)**                          |
| Criminal justice                              | 184 (1,523)          | 255 (1,656)          | 70 (2,262)                               | 22 (71)              | 276 (1,995)           | 254 (1,999)                               |
| Productivity loss                             | –555 (1,043)         | –611 (1,076)         | –56 (586)                                | –531 (972)           | –609 (1,090)          | –79 (759)                                 |
| Total public services<br>(excl. intervention) | 2,359 (4,129)        | 2,156 (4,427)        | –202 (5,785)                             | 2,640 (4,026)        | 1,364 (2,477)         | –1,276 (4,667)*                           |
| Total public services<br>(incl. intervention) | 2,359 (4,129)        | 2,454 (4,427)        | 96 (5,785)                               | 2,640 (4,026)        | 1,364 (2,477)         | –1,276 (4,667)*                           |
| Total societal (excl. intervention)           | 1,804 (4,344)        | 1,545 (4,487)        | –258 (5,760)                             | 2,110 (4,245)        | 755 (2,921)           | –1,355 (4,760)*                           |
| Total societal (incl. intervention)           | 1,804 (4,344)        | 1,843 (4,487)        | 40 (5,760)                               | 2,110 (4,245)        | 755 (2,921)           | –1,355 (4,760)*                           |

Notes: N/A, not applicable; \*,\*\*Significant at  $p \leq 0.05$  and  $p \leq 0.01$ , respectively

**Table VI** Changes in cost and outcomes per participant over the six-month and 12-month follow-up periods (£, 2011/2012)

|   | <i>Changes between<br/>baseline-6 months (n = 87)</i> | <i>Changes between<br/>baseline-12 months (n = 61)</i> |
|---|---|--|
| Total public services costs<br>(excl. intervention) | -404  | -2,956   |
| Total public services costs<br>(incl. intervention) | 192   | -2,062   |
| Total societal costs<br>(excl. intervention)        | -516  | -3,226   |
| Total societal costs<br>(incl. intervention)        | 80  | -2,332   |
| WEMWBS total  | 2.03  | 2.36   |
| HPLP-II total                                       | 0.16***   | 0.14**   |

Notes: \*\*,\*\*\*Significant at  $p \leq 0.01$  and  $p \leq 0.001$ , respectively

increase in cost of 14 per cent (£518) over six months but a decrease of 41 per cent (-£3,228) over 12 months. However, differences are not statistically significant.

Those savings were associated with a significant improvement in functional living skills at six months and enduring at 12 months.

## Discussion

The main finding of this study is that self-management for people with severe mental disorders using secondary mental health services results in a significant improvement in functional living skills. From both the public services and the societal perspectives, our results suggest potential savings in the long term, with an increase in costs in the first six months followed by a decrease in the subsequent six months. Savings are more important from the societal perspective, given that we observe an increase in productivity.

Those results are consistent with the literature where self-management for people with severe mental disorders has been found to improve patient outcome and potentially reduce service utilisation (Bauer *et al.*, 2006; Lawn *et al.*, 2007; Colom *et al.*, 2003). However, to our knowledge, this is the only study also to explore a societal perspective. Employment being a potentially key part of the recovery process, the evaluation of productivity cost is essential in order to capture a more comprehensive assessment of the intervention.

The cost of the intervention (£894) is more expensive than similar interventions previously evaluated. For example, in the UK, the cost of the Expert Patient Programme was evaluated at £298 for a peer-led self-management programme for people with long-term conditions of a shorter length (six half-a-day weekly sessions). However, the difference in cost can be partly explained by the high estates cost and the high travel expenses due to the geography of Wales.

### *Strengths and limitations*

People in our sample have a higher wellbeing at the baseline than in Cyhlarova *et al.* (2014). The adoption of both public services and societal perspectives allowed us to highlight not only the decrease in cost associated with the use of services but also the savings associated with the increase in productivity. Moreover, the collection of data at two time points enabled us to evaluate both short-term and long-term impacts, with a steady improvement in clinical outcomes and an initial increase followed by a decrease in costs. However, while results showed a reduction in cost over the long-term, evidence from similar interventions suggests that the decrease is likely to plateau.

This study had many limitations: the lack of a control group, the small sample and the high variance around results. First, the lack of comparator does not allow us to attribute the change in outcomes, service use and costs to the intervention. In the absence of a control

group in the original study design, we looked for data on a potential comparison sample, both by searching the literature and contacting experts, but we did not find anything that was suitable. Second, the small sample, due to the high dropout rates, potentially limits the generalisability of our findings, and made it harder to test fully for significant change. Finally, the high variance around our estimates suggests caution in the interpretation of the findings.

### *Implications*

Recent evidence has shown that there might be an economic case for a number of different ways to support recovery (Knapp *et al.*, 2014) but little evidence on self-management. We have suggested that such an approach may facilitate recovery, helping to support people with severe mental disorders using secondary mental health services with the potential for cost advantages.

The principle of recovery has influenced recent mental health policy approaches in some countries. In Wales, while the 2005 National Service Framework for adult mental health had introduced “empowerment” amongst its four key principles (Welsh Assembly Government, 2005), the more recent ten-year mental health strategy highlighted self-management as one of the objectives (Welsh Government, 2012). In England, the important contribution of peer support was recognised in the 2011 mental health strategy (DH, 2011b), and recommended for implementation (DH, 2012b).

Peer-led self-management for people with severe mental disorders may potentially be an attractive intervention supporting recovery with potential cost advantages. However, more robust evidence is needed to inform practitioners, commissioners and policy-makers to inform their investment in interventions.

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