

## Self-management and peer support among people with arthritis on a hospital joint replacement waiting list: a randomised controlled trial<sup>1</sup>

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### Summary

**Introduction:** To evaluate the efficacy of a self-management support program including a 6 week self-management course, individualised phone support and goal setting in osteoarthritis patients on a waiting list for arthroplasty surgery.

**Method:** Randomised controlled trial of 152 public hospital outpatients awaiting hip or knee replacement surgery who were not classified as requiring urgent surgery. Participants were randomised to a self-management program or to usual care. The primary outcome was change in the Health Education Intervention Questionnaire (HeiQ) from randomisation to 6 month follow-up. Quality of life and depressive symptoms were also measured. Changes in pain and function were assessed using the Western Ontario and McMaster Universities (WOMAC) Arthritis Index.

**Results:** At 6 month follow-up, health-directed behaviour was significantly greater in the intervention [mean 4.29, 95% confidence interval (CI) 3.99–4.58] than the control (mean 3.81, 95% CI 3.52–4.09;  $P = 0.017$ ). There was also a significant effect on skill and technique acquisition for the intervention (mean 4.37, 95% CI 4.19–4.55) in comparison to control (mean 4.11, 95% CI 3.93–4.29;  $P = 0.036$ ). There was no significant effect of the intervention on the remaining HeiQ subscales, WOMAC pain or disability, quality of life or depressive symptoms.

**Discussion:** The arthritis self-management program improved health-directed behaviours, skill acquisition and stiffness in patients on a joint replacement waiting list, although the observed effects were of modest size (Cohen's  $d$  between 0.36 and 0.42). There was no significant effect on pain, function or quality of life in the short term. Self-management programs can assist in maintaining health behaviours (particularly walking) in this patient group. Further research is needed to assess their impact on quality of life and over longer periods.

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**Key words:** Randomized controlled trial, Disabled persons, Self care/methods, Osteoarthritis, Hip/therapy\*, Knee/therapy\*, Health education.

### Introduction

Long waiting lists for joint replacement surgery are a common feature of public health services but they are a form of rationing associated with suffering for people with arthritis<sup>1</sup>. A fundamental aspect of waiting lists for joint replacement surgery relates to an individual's quality of life while they wait for surgery<sup>2,3</sup>. There is evidence that the quality of life of individuals on the joint replacement waiting lists is poor and declines over time<sup>4,5</sup>. Once on the waiting list for surgery, patients are frustrated with the length of the time between initial assessment and surgery and many experience worsening of symptoms such as an increase in pain, decrease in mobility, dexterity, exercise tolerance, vitality and outlook<sup>6</sup>.

Being engaged with your own care is linked to better health outcomes in diabetes and hypertension<sup>7</sup>. Nevertheless, chronic disease self-management programs are now integrated into arthritis clinical practice guidelines and many government policies<sup>8</sup>. They aim to empower people, improve

quality of life while living with chronic disease, increase healthy activities, and improve self-monitoring. This is not only supported by consumers but by governments who are using the approach as a vehicle for healthcare reform. However, the evidence for osteoarthritis self-management programs is weaker than for many chronic diseases<sup>9</sup> prompting calls for more research<sup>10</sup>. Limited evidence exists for the use of self-management with patients on arthroplasty waiting lists and a trial is warranted to assess the impact of promoting such an approach in a group awaiting surgery.

We aimed to evaluate the efficacy of a program which combined the Flinders University model of self-management care planning ('Partners in Health' model), a 6 week group self-management course and individualised phone support on self-management skills and health related quality of life in osteoarthritis patients on the waiting list for elective hip and knee arthroplasty surgery over a 6 month period.

### Methods

#### SETTING AND PARTICIPANTS

Our study took place in the public hospitals in southern Adelaide, Australia, with a population of approximately 350,000. Between 28 September 2005 and 12 July 2006 (41 weeks), patients who had an initial consultation with an orthopaedic surgeon concerning a potential hip or knee replacement and who were then added to the waiting list for joint replacement surgery were invited to take part in the study.

<sup>1</sup> Trial registration: ISRCTN45043887; ACTRN012605000338662.

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Eligibility for inclusion was assessed on the day of the orthopaedic outpatient consultation by the project officer. Participants were eligible for inclusion if they: had a mini-mental score  $\geq 24$ <sup>11</sup>, were able to read and speak English, lived in the southern region of Adelaide, were not classified as requiring urgent surgery, and did not have significant frailty or illness that precluded completion of the protocol.

The research and ethics committees at Flinders Medical Centre and Repatriation General Hospital approved the study. The trial was performed in compliance with the Declaration of Helsinki.

RECRUITMENT AND RANDOMISATION

Eligible patients were invited to participate and written informed consent was obtained from those who agreed to take part in the study. Once baseline assessments were complete, participants were randomly allocated to either receive the intervention or usual care (control), and this occurred within 24 h of giving consent. Allocations to the two treatment arms were computer-generated and randomised in blocks of 12. The allocation ratio was 1:1 (intervention:control).

A statistician external to the study generated the randomisation sequence using the random number generator in Microsoft Excel and created sequentially numbered, opaque, sealed envelopes containing group allocation for participants. The trial nurse enrolled the participants, and the clinical trials pharmacist who managed the randomisation allocation assigned participants to the groups. Block size remained unknown by trial staff until the cessation of recruitment.

INTERVENTION

The intervention was multi-faceted, and individuals could choose between zero and three of: the patient education self-management (the Partners in Health interview), a traditional education component (included at the request of the partner organisation Arthritis Foundation of South Australia Inc (Arthritis SA)), and peer support telephone calls. Within 7 days of random allocation to the intervention group, participants had one face-to-face session of goal setting with a research nurse (a senior registered nurse) using a structured approach that led to the formulation of a care plan. The structured approach used the "Partners in Health" model of self-management assessment and care planning to discuss participants' goals and strategies for managing their arthritis<sup>12</sup>. For example, a participant with a goal to increase their walking capacity would make a detailed plan, that may address pain management and exercise along with community sources of relevant information. This protocol has been used in diabetes and respiratory patients previously<sup>12</sup>. Monthly telephone calls to monitor participants' health status and reinforce the strategies for managing participants' arthritis were made using a standardized protocol by volunteer peer support educators from the local arthritis support and advocacy group Arthritis SA. The peer educators all had osteoarthritis, and had previously undertaken

the disease specific modules, chronic disease modules and other peer education training offered by Arthritis SA. In addition those participants in the intervention group could access two disease specific modules (one peer led, one clinical staff) from Arthritis SA for 2.5 h over 2 weeks.

USUAL CARE (CONTROL)

Participants allocated to the control group received the usual standard of care for patients on orthopaedic waiting lists. Participants in the control group did not receive any additional educational material. Table 1 describes the components of the intervention and the usual care groups.

All individuals on an orthopaedic waiting list in South Australia have access to a generic chronic disease self-management course "Moving Towards Wellness" run by Arthritis SA. This course is based on Stanford University group based self-management programs<sup>13</sup> and runs for 2.5 h weekly for 6 weeks. To monitor contamination, we assessed uptake of this course in both the intervention and control groups.

BASELINE ASSESSMENT

The information collected from participants included socio-demographic variables (age, gender, residential status, ethnic origin), quality of life, medication beliefs, a measure of pain and disability associated with osteoarthritis, depressive symptoms, and the impact of the educational strategies.

The Health Education Impact Questionnaire (HeiQ<sup>14,15</sup>) version 1 was designed to measure the impact of the self-management courses and was used as the primary outcome measure of the combined intervention components. The HeiQ is a reliable and validated 42 item questionnaire with eight subscales that reflect: positive and active engagement in life, health-directed behaviour, skill and technique acquisition, constructive attitudes and approaches, self-monitoring and insight, health service navigation, social integration and support, and emotional well-being. Each HeiQ subscale is scored between 1 and 6 with higher scores indicative of a more positive response. Construct validity for each subscale of the HeiQ has been previously demonstrated to be high through stringent confirmatory factor analysis and Cronbach's alpha for each scale has been found to be between 0.70 and 0.89<sup>15</sup>. Quality of life was measured using the Assessment of Quality of Life (AQoL)<sup>16,17</sup>. In the AQoL, a utility score is derived from scores on five dimensions that measure illness, independent living, social relationships, physical senses, and psychological well-being. The overall AQoL is scored on a life-death scale, where the lowest possible value, -0.04, represents quality of life states that are valued worse than death, 0.00 represents death-equivalent quality of life states and the highest value, 1.00, represents the best possible quality of life state<sup>16</sup>. The Beliefs about Medicines questionnaire (BMQ<sup>18</sup>) is a patient-centred measure that captures individual's general beliefs about use of prescription and non-prescription medicines. The Western Ontario and McMaster Universities (WOMAC) Arthritis Index<sup>19</sup> was used to capture the pain (no pain 0; maximum

Table 1  
Comparison – intervention:control

Intervention	Control
Placed on joint replacement waiting list following Orthopaedic Consultant review.	Placed on joint replacement waiting list following Orthopaedic Consultant review.
Flinders University Chronic Disease Self-Management Model (incorporating assessment of self-management knowledge, behaviours, attitudes, strengths and barriers). Specialist nurse conducts: <ul style="list-style-type: none"> <li>● Face-to-face (cue and response) interview using the 'Partners in Health' scale – which identifies strengths and barriers to self-management.</li> <li>● A problems and goal interview which elicits the patient's main life problem and medium term goal. Problem severity and goal achievement are rated.</li> <li>● Completion of a self-management action plan.</li> </ul>	Management by primary care physician – patient self initiates appointments.
Monthly telephone calls made by peer support volunteers. Health status checked, self-management strategies reinforced and progress with goal attainment monitored.	Patient receives correspondence from the Orthopaedic service at 6 monthly intervals to confirm waiting list status and enquire whether the surgery is still required.
Encouraged to take part in generic chronic disease (Stanford University) self-management 'Moving Towards Wellness' course, conducted by Arthritis SA (community Self Help group). Course runs for 2.5 h weekly for 6 weeks.	Patient has access to 'Moving Towards Wellness' course as advertised to the community.
Encouraged to attend two joint replacement specific education modules run by Arthritis SA (one peer led, one health professional led) for 2.5 h over 2 weeks. Modules scheduled to follow the 'Moving towards Wellness' course.	

pain 20), stiffness (no stiffness 0; maximum stiffness 8) and function (no disability 0; maximum disability 68) associated with osteoarthritis. Symptoms of depression were measured using the Centre for Epidemiologic Studies Depression Scale (CES-D), a 20-item scale with scores of  $\geq 16/60$  indicative of depressive symptomatology<sup>20</sup>.

#### FOLLOW-UP

Six months after randomisation all participants were mailed a set of the same questionnaires that they completed at baseline and asked to complete and return them in the included reply paid envelope. We extracted information on whether joint replacement surgery had occurred within 6 months of randomisation from the hospital information systems. We enumerated the number of phone calls initiated by the peer support educators and the frequency of phone contact with participants. During calls, peer support educators utilized self-management action plans to identify progress against physical, emotional and social interventions. Goals were measured through a rating scale that looked at the level of success in progress towards goal achievement.

#### STATISTICAL ANALYSIS AND SAMPLE SIZE

The primary outcome for this study was the change in the HeiQ health-directed behaviour subscale from randomisation to 6 month follow-up measured for each individual. A previous study with a group of older people with arthritis had shown the mean change in health-directed behaviour was 0.4, with a standard error of the difference equal to 1.2 units (Osborne, personal communication). Based on these data, a sample of 53 participants in each of the intervention and control groups were needed to detect this

change as statistically significant at  $\alpha = 0.05$ , assuming power = 80%. To allow for attrition over the course of the study, the sample size was increased by 40%.

Data were analysed by intention to treat according to the random allocation. The statistician remained unaware of participant allocation and performed analyses that compared 'group 1' vs 'group 2'. Exploratory data analysis showed that the assumption of normality was reasonable for the continuous variables. Means and 95% confidence intervals (CIs) were therefore calculated for all continuous outcome variables. The intervention and control groups at baseline were compared using independent samples *t* tests for continuous variables and chi-square tests of association for categorical variables. Analysis of covariance was used to compare the response of the intervention and control groups for each of the 6 month follow-up outcome variables<sup>21</sup>. Four covariates were included in the analysis of each outcome variable, and these reflected the absence or presence of depressive symptoms at baseline (using a cutpoint for the CES-D of 16), whether joint replacement was indicated for the hip or knee, the occurrence of surgery during the follow-up period, and the baseline value of the outcome variable under consideration.

All analyses were carried out using the statistical analysis software SPSS (Statistical Package for the Social Sciences) for Windows 12.0.

#### Results

A total of 238 people were approached concerning participation in the study. Of these, 192 people met eligibility criteria and 152 provided consent and were subsequently randomised to the intervention ( $n = 75$ ) or control group ( $n = 77$ ). As shown in Fig. 1, there were a range of reasons

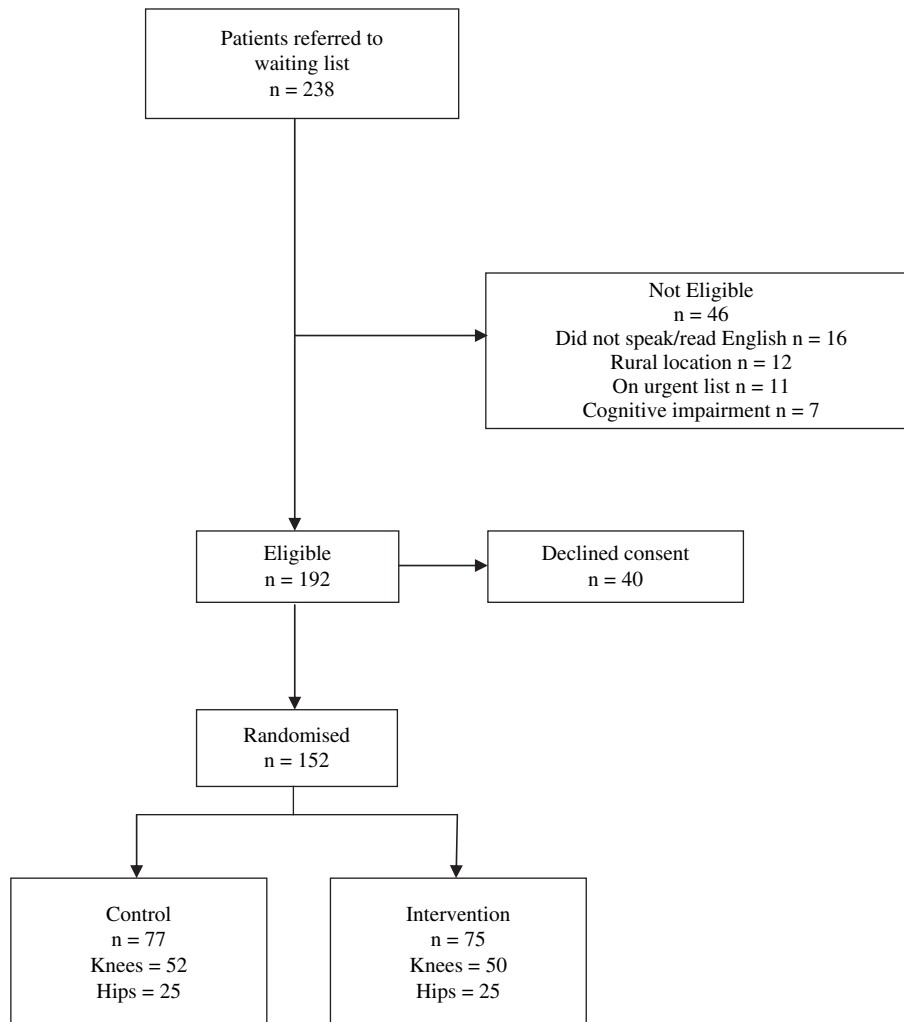


Fig. 1. Recruitment flow of participants.

for which 46 people were ineligible, including inability to read or speak English ( $n = 16$ ), rural location ( $n = 12$ ), requiring urgent surgery ( $n = 11$ ) or cognitive impairment ( $n = 7$ ).

At baseline, there were no significant differences between the participants who subsequently received the intervention compared with those who were in the control group (Table II). The average age of participants was 67.5 years (SD 10.5) and 60 participants (39.5%) were male. Nearly half of the participants had completed 8 years or less of education. The median number of medical conditions (including osteoarthritis) was two. The average CES-D score at baseline was 15.0 (SD 9.8), and 54 participants (35%) had a CES-D score of 16 or more, suggestive of depressive symptomatology<sup>20</sup>.

Sixty-six of the 75 participants (88%) allocated to the intervention completed a Partners in Health interview with a study nurse. A total of 39 members (52%) of the intervention group undertook the educational course at Arthritis SA, and of these 72% completed at least one additional module. Three members (4%) of the control group undertook an educational course, and none of these went on to complete an additional module. An average of 192.3 (SD 43.5) days elapsed between the date of randomisation and the date at which the follow-up questionnaires were returned.

At 6 month follow-up, the intention to treat analyses demonstrated that there was a significant difference in the primary endpoint of health-directed behaviour on the HeiQ between the participants who were in the intervention group (mean 4.29, 95% CI 3.99–4.58) and those in the control group (mean 3.81, 95% CI 3.52–4.09;  $P = 0.017$ ). In terms of secondary endpoints, there was also a significant effect of the intervention on skill and technique acquisition (mean 4.37, 95% CI 4.19–4.55) in comparison to control participants (mean 4.11, 95% CI 3.93–4.29;  $P = 0.035$ ; see Table III). Stiffness, as measured by the WOMAC, was significantly less at follow-up among participants in the intervention group (mean 6.6, 95% CI 6.1–7.0) vs those in the control group

(mean 7.2, 95% CI 6.8–7.7;  $P = 0.042$ ). There was no significant effect of the intervention on the remaining HeiQ subscales, WOMAC pain or disability, AQoL, CES-D, or BMQ.

Twenty-two participants (11 in each group) had joint replacement surgery within the follow-up period, with an average of 88.4 days (SD 47.0) between randomisation and surgery for these participants. The follow-up questionnaires for these participants were completed an average of 106.3 days (SD 23.1) after surgery.

All 75 participants in the intervention group received at least one phone call but 25 people requested no further phone calls. Of those who received more than one call the average number of calls made to each participant was 5.2 (SD 3.3). During the study, 254 phone calls were initiated from the call centre, and 196 were successful.

## Discussion

This self-management program administered in a hospital setting to patients assigned to the waiting lists for joint replacement produced improvements in health-directed behaviour (exercise and activity) and skill acquisition but no shifts in emotional well-being, attitudes, self-monitoring activities, or health service navigation. The observed effects were of modest size (Cohen's  $d$  between 0.36 and 0.42 for the significant effects). There were significant improvements in stiffness but not in measures of quality of life, disability, pain, or depression.

Recent guidelines for the management of hip and knee OA reported strong consensus among the expert panel concerning the importance of self-management and patient-driven treatments<sup>22</sup>. However, meta-analysis has suggested that arthritic self-management programs have small effects on psychological well-being rather than on pain and disability<sup>23</sup>. Previous studies concerning self-management in osteoarthritis patients undertaken in primary care settings have also reported mixed results. Self-management facilitated by physiotherapists (six sessions in a group format) improved pain and self reported daily functioning with effects persisting over 21 months<sup>24</sup>. Less effect has been noted with a lay facilitator in the US raising questions about the use of the Arthritis Self-Management Program<sup>11</sup> in primary care settings. A study from the UK involving 812 patients found that the program reduced anxiety and improved self-efficacy to manage symptoms but had no effect on pain, function or health service utilisation<sup>25</sup>.

The timing of self-management interventions in the trajectory of illness may be important. Patients on a waiting list for joint replacement are at the most severe end of the arthritis spectrum. Their capacity to improve quality of life without an operation particularly in a 6 month time frame would be limited. The AQoL is a generic measure of quality of life and it may be that disease specific measures of quality of life are more appropriate when a disease specific patient group is being targeted<sup>26</sup>. The changes seen in exercise and activity are the primary self-management improvements that would be desired from the self-management interventions. Exercise is encouraged prior to operation and would be expected to be the best self-management approach to limit disability and improve stiffness. It is also possible that patients on a waiting list for surgery were not ready to make broader lifestyle changes following the meeting with the orthopaedic surgeon as their expectations that surgery was the appropriate treatment may have been set by the consultation. Prior work has suggested that Prochaska's stages of change model may be important in the uptake of self-management strategies<sup>24</sup>. As people move through different

Table II  
Participant characteristics

	Control ( $n = 77$ )	Intervention ( $n = 75$ )	Total ( $n = 152$ )
Age (years); mean (SD)	67.0 (11.0)	68.1 (10.6)	67.5 (10.8)
Height (cm)	166.4 (9.9)	168.0 (10.3)	167.2 (10.1)
Weight (kg)	82.6 (16.4)	89.0 (25.4)	85.7 (21.4)
Male $n$ (%)	30 (39.0)	30 (40.0)	60 (39.5)
Lives alone $n$ (%)	41 (53.9)	32 (42.7)	73 (48.3)
Education completed $n$ (%)			
None or some primary school	1 (1.4)	4 (5.5)	5 (3.3)
Primary school	12 (16.2)	10 (13.7)	22 (14.5)
High school to year 8	23 (31.1)	22 (30.1)	45 (29.6)
High school to year 12	23 (31.1)	17 (23.3)	40 (26.3)
TAFE/trade	10 (13.5)	16 (21.3)	26 (17.1)
University or above	5 (6.8)	4 (5.5)	9 (5.9)
Smoking status $n$ (%)			
Daily	7 (9.2)	5 (6.7)	12 (7.9)
Occasionally	3 (3.9)	3 (4.0)	6 (4.0)
Don't smoke	40 (52.6)	33 (44.0)	73 (48.3)
Never smoked	26 (34.2)	34 (45.3)	60 (39.7)
Employment status $n$ (%)			
Working full or part-time	8 (10.7)	10 (12.4)	18 (11.9)
Home duties	5 (6.7)	3 (4.0)	8 (5.3)
Retired/pensioner	62 (82.7)	62 (82.7)	124 (82.7)
Number of medical conditions median (Interquartile Range)	2 (1–3)	2 (1–3)	2 (1–3)
Waiting list for hip replacement $n$ (%)	25 (32.5)	25 (33.3)	50 (32.9)

Table III  
Outcome measures at baseline and 6 month follow-up (mean, 95% CI)

Variable	Baseline		Follow-up		Effect size <sup>‡</sup>	P*
	Control (n = 77)	Intervention (n = 75)	Control (n = 77)	Intervention (n = 75)		
AQoL	0.44 (0.39–0.49)	0.43 (0.37–0.49)	0.38 (0.32–0.43)	0.42 (0.37–0.48)	0.21	0.230
CES-D <sup>†</sup>	15.8 (13.4–18.2)	14.2 (12.2–16.3)	15.2 (13.2–17.1)	15.7 (13.7–17.8)	0.06	0.674
WOMAC						
Pain	16.9 (16.0–17.7)	15.5 (14.6–16.3)	16.3 (15.4–17.2)	15.9 (15.0–16.9)	0.09	0.579
Stiffness	7.1 (6.7–7.5)	6.6 (6.1–7.0)	7.2 (6.8–7.7)	6.6 (6.1–7.0)	0.36	0.044
Physical functioning	59.1 (56.2–62.0)	53.9 (50.9–57.0)	57.4 (54.0–60.8)	53.9 (50.5–57.3)	0.26	0.150
BMQ						
General overuse	2.88 (2.67–3.08)	2.93 (2.77–3.10)	2.98 (2.83–3.13)	3.09 (2.94–3.25)	0.18	0.286
General harm	2.67 (2.55–2.79)	2.85 (2.73–2.97)	2.80 (2.69–2.92)	2.74 (2.62–2.86)	0.13	0.451
Specific necessity	3.85 (3.66–4.04)	3.77 (3.56–3.98)	3.81 (3.66–3.96)	3.66 (3.50–3.81)	0.25	0.136
Specific concerns	2.64 (2.47–2.80)	2.87 (2.70–3.04)	2.96 (2.81–3.12)	2.95 (2.79–3.11)	0.00	0.885
Health education impact						
Positive and active engagement in life	4.35 (4.12–4.59)	4.57 (4.18–4.97)	4.10 (3.87–4.33)	4.18 (3.94–4.41)	0.09	0.619
Health-directed behaviour	4.11 (3.87–4.34)	4.11 (3.85–4.38)	3.81 (3.52–4.09)	4.29 (3.99–4.58)	0.42	0.017
Skill and technique acquisition	4.31 (4.10–4.52)	4.31 (4.12–4.50)	4.11 (3.93–4.29)	4.37 (4.19–4.55)	0.38	0.036
Constructive attitudes and approaches	4.48 (4.24–4.72)	4.58 (4.39–4.76)	4.30 (4.08–4.51)	4.41 (4.19–4.63)	0.14	0.428
Self-monitoring and insight	4.97 (4.85–5.09)	4.88 (4.75–5.00)	4.71 (4.58–4.85)	4.80 (4.66–4.95)	0.18	0.316
Health service navigation	4.84 (4.66–5.02)	4.82 (4.65–4.99)	4.69 (4.55–4.83)	4.80 (4.54–4.95)	0.20	0.265
Social integration and support	4.38 (4.14–4.63)	4.59 (4.39–4.80)	4.25 (4.03–4.46)	4.32 (4.10–4.54)	0.09	0.635
Emotional well-being	3.36 (3.09–3.64)	3.27 (3.00–3.54)	3.48 (3.23–3.73)	3.50 (3.24–3.76)	0.00	0.927

\*P-value based on analysis of covariance that adjusted for CES-D category at baseline, hip or knee replacement, occurrence of surgery in follow-up period, baseline observation for variable in comparison of intervention to control.

<sup>†</sup>For CES-D analyses, continuous baseline CES-D and not categorised variable included as covariate.

<sup>‡</sup>Effect size is Cohen's *d* statistic; small effect sizes <0.5; medium effect sizes 0.5–0.79; large effect sizes >0.8.

stages of intention of change, their motivation to adopt self-management strategies alters. In our study the only areas where we were able to achieve change was around mobility, activity and skill acquisition. These behaviours were presented as likely to improve their surgical outcomes and the relevance of these interventions may have increased uptake. Similarly the context of the program within a hospital setting may not have been the optimal location. The self-management program was reinforced by regular peer telephone calls from the local arthritis association but it is possible that reinforcement by General Practitioners may have had more impact.

This is a small study which used several strategies including one on one goal setting, monthly telephone calls, and group classes. Limited qualitative measures were included in this study and there is some evidence suggesting that questionnaires do not adequately measure outcomes of individuals with chronic disease<sup>27</sup>. There is evidence that people with chronic conditions involved in self-assessment initially over rate their scores, having normalised their level of disability. As a result of taking part in these types of programs, which include a component of self reflection, individuals may re-evaluate their health status and whilst believing they have improved provide a more accurate rating which then shows little change from the baseline score. This response shift is poorly understood in chronic disease self-management programs but could confound AQoL<sup>28</sup>. Recent work by Osborne *et al.* demonstrated that the majority of participants in a chronic disease self-management course had response shift in at least one item, suggesting this is an important area for future work<sup>29</sup>. The participants in our intervention group received more attention than those in our control group, and so it is possible that our results are confounded by the different attention given to the two

groups. In our study, a total of 88% of those allocated to the intervention group had an initial goal setting meeting where self-management strategies were discussed and all had at least one follow-up phone call. However, it should be noted that only 52% of the intervention group took up the option of the arthritis self-management modules. This suggests that the self-management approach was more acceptable to these people. Despite this, changes in lifestyle, particularly walking, occurred.

Most governments are currently providing funds for public waiting list projects either aimed at increasing activity levels or reviewing approaches to prioritisation and queuing. Enhancing these practices by including a chronic disease self-management approach appears attractive, however, our project suggests that these approaches have little impact on quality of life or depression in the short term. Further research to assess the effect of the self-management at 12 and 24 months follow-up is needed. However, there remains uncertainty about these approaches for this patient group and at present, resources may be better directed at other evidence-based strategies or targeted to increasing surgery.

### Conflict of interest

All authors declare that there are no conflicts of interest.

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## References

- Hemingway H, Jacobson B. Queues for cure? *BMJ* 1995;310:818–9.
- Bachrach-Lindstrom M, Karlsson S, Pettersson LG, Johansson T. Patients on the waiting list for total hip replacement: a 1-year follow-up study. *Scand J Caring Sci* 2008;22:536–42.
- McHugh GA, Campbell M, Silman A, Kay PR, Luker KA. Patients waiting for a hip or knee joint replacement: is there any prioritization for surgery? *J Eval Clin Pract* 2008;14:361–7.
- Ackerman IN, Graves SE, Wicks IP, Bennell KL, Osborne RH. Severely compromised quality of life in women and those of lower socioeconomic status waiting for joint replacement surgery. *Arthritis Rheum* 2005;53:653–8.
- Fortin PR, Penrod JR, Clarke AE, St-Pierre Y, Joseph L, Belisle P, *et al.* Timing of total joint replacement affects clinical outcomes among patients with osteoarthritis of the hip or knee. *Arthritis Rheum* 2002;46:3327–30.
- Ostendorf M, Buskens E, van Stel H, Schrijvers A, Marting L, Dhert W, *et al.* Waiting for total hip arthroplasty: avoidable loss in quality time and preventable deterioration. *J Arthroplasty* 2004;19:302–9.
- Greenfield S, Rogers W, Mangotich M, Carney MF, Tarlov AR. Outcomes of patients with hypertension and non-insulin dependent diabetes mellitus treated by different systems and specialties. Results from the medical outcomes study. *JAMA* 1995;274:1436–44.
- National Arthritis and Musculoskeletal Conditions Advisory Group. Evidence to Support the National Action Plan for Osteoarthritis, Rheumatoid Arthritis and Osteoporosis: Opportunities to Improve Health-Related Quality of Life and Reduce the Burden of Disease and Disability. Canberra: Department of Health and Ageing; 2004.
- Chodosh J, Morton SC, Mojica W, Maglione M, Suttrop MJ, Hilton L, *et al.* Meta-analysis: chronic disease self-management programs for older adults. *Ann Intern Med* 2005;143:427–38.
- Osborne RH, Buchbinder R, Ackerman IN. Can a disease-specific education program augment self-management skills and improve Health-Related Quality of Life in people with hip or knee osteoarthritis? *BMC Musculoskelet Disord* 2006;7:90.
- Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975;12:189–98.
- Battersby MW, Ask A, Reece MM, Markwick MJ, Collins JP. The partners in health scale: the development and psychometric properties of a generic assessment scale for chronic condition self-management. *Aust J Prim Health* 2003;9:41–52.
- Lorig K, Lubeck D, Kraines RG, Seleznick M, Holman HR. Outcomes of self-help education for patients with arthritis. *Arthritis Rheum* 1985;28:680–5.
- Osborne RH, Spinks JM, Wicks IP. Patient education and self-management programs in arthritis. *Med J Aust* 2004;180:S23–6.
- Osborne RH, Elsworth GR, Whitfield K. The Health Education Impact Questionnaire (heiQ): an outcomes and evaluation measure for patient education and self-management interventions for people with chronic conditions. *Patient Educ Couns* 2007;66:192–201.
- Hawthorne G, Osborne R. Population norms and meaningful differences for the Assessment of Quality of Life (AQoL) measure. *Aust N Z J Public Health* 2005;29:136–42.
- Hawthorne G, Richardson J, Osborne R. The Assessment of Quality of Life (AQoL) instrument: a psychometric measure of health-related quality of life. *Qual Life Res* 1999;8:209–24.
- Horne R, Weinman J. Patients' beliefs about prescribed medicines and their role in adherence to treatment in chronic physical illness. *J Psychosom Res* 1999;47:555–67.
- Bellamy N, Buchanan WW, Goldsmith CH, Campbell J, Stitt LW. Validation study of WOMAC: a health status instrument for measuring clinically important patient relevant outcomes to antirheumatic drug therapy in patients with osteoarthritis of the hip or knee. *J Rheumatol* 1988;15:1833–40.
- Radloff LS. The CES-D scale: a self-report depression scale for research in the general population. *Appl Psychol Meas* 1977;1:385–401.
- Vickers AJ, Altman DJ. Analysing controlled trials with baseline and follow up measurements. *BMJ* 2001;323:1123–4.
- Zhang W, Moskowitz RW, Nuki G, Abramson S, Altman RD, Arden N, *et al.* OARSI recommendations for the management of hip and knee osteoarthritis, part II: OARSI evidence-based, expert consensus guidelines. *Osteoarthritis Cartilage* 2008;16:137–62.
- Warsi A, LaValley MP, Wang PS, Avorn J, Solomon DH. Arthritis self-management education programs: a meta-analysis of the effect on pain and disability. *Arthritis Rheum* 2003;48:2207–13.
- Heuts PH, de Bie R, Drieteelaar M, Aretz K, Hopman-Rock M, Bastiaenen CH, *et al.* Self-management in osteoarthritis of hip or knee: a randomized clinical trial in a primary healthcare setting. *J Rheumatol* 2005;32:543–9.
- Buszewicz M, Rait G, Griffin M, Nazareth I, Patel A, Atkinson A, *et al.* Self management of arthritis in primary care: randomised controlled trial. *BMJ* 2006;333:879.
- Boutron I, Rannou F, Jardinaud-lopez M, Meric G, Revel M, Poiraudou S. Disability and quality of life of patients with knee or hip osteoarthritis in the primary care setting and factors associated with general practitioners' indication for prosthetic replacement within 1 year. *Osteoarthritis Cartilage* 2008;16:1024–31.
- Rogers A, Kennedy A, Nelson E, Robinson A. Uncovering the limits of patient-centeredness: implementing a self-management trial for chronic illness. *Qual Health Res* 2005;15:224–39.
- Sprangers MA, Schwartz CE. Integrating response shift into health-related quality of life research: a theoretical model. *Soc Sci Med* 1999;48:1507–15.
- Osborne RH, Hawkins M, Sprangers MA. Change of perspective: a measurable and desired outcome of chronic disease self-management intervention programs that violates the premise of preintervention/postintervention assessment. *Arthritis Rheum* 2006;55:458–65.