Can an illness perception intervention reduce illness anxiety in spouses of myocardial infarction patients? A randomized controlled trial

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Abstract

Objective: To investigate whether a brief in-hospital illness perception intervention for myocardial infarction (MI) patients and their spouses could change spouses’ illness perceptions and reduce spouses’ anxiety about the illness. Methods: Fifty-seven spouses participated in a randomized controlled trial of an illness perception intervention for MI patients. Spouses of patients randomized to the intervention attended one half-hour patient-and-spouse session with a psychologist in addition to standard care. Spouses completed measures of illness perceptions, expectations, and illness anxiety at admission and at 1 week following discharge, and spouses’ illness worry was rated by the patients at 3 months. The main outcome for spouses was differences in anxiety between intervention and control groups. Results: One week following discharge, spouses in the intervention group had higher illness understanding, lower concern, stronger causal attributions to hereditary factors, and fewer questions about their partner’s heart condition compared to the control group. Intervention group spouses reported more positive expectations about the ability of the patient’s heart to recover, and lower perceived likelihood of another MI. They had lower anxiety about the patient doing physical activity and about the patient’s medications, and lower distress about the patient’s symptoms. Spouses in the intervention group were rated as less worried about the illness at 3 months. Conclusion: Spouses of patients represent a new target for illness perception interventions and these results demonstrate that a brief illness perception intervention can change illness perceptions and reduce anxiety about the illness in spouses of MI patients.

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Keywords: Illness perceptions; Intervention; Myocardial infarction; Spouses; Randomized controlled trial

Introduction

Depression following myocardial infarction (MI) is well documented in patient groups (for example, Ref. [1]), but less attention has been paid to the consequences of the MI on the patient’s spouse. It is becoming increasingly recognized that MI can have negative psychological effects on spouses.

Abbreviations: MI, myocardial infarction; IPQ, Illness Perception Questionnaire.

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Indeed, spouses can suffer greater depression and anxiety than patients [2]. Spouses often report lower perceptions of control over the patients’ heart condition than do patients, have poor understanding of information given, and report a negative influence of the heart attack on their own quality of life [2,3]. Spouses can feel left out when rehabilitation information is directed solely to the patient. Reducing spouses’ anxiety is important not only for the spouse but it may also help to improve patient outcomes [2]. One previous study investigated whether in-hospital counseling of wives of MI patients could reduce their anxiety and found positive results [4].

It is important that interventions developed to help patients and their families cope with health threats are based on a strong theoretical rationale. The Common-Sense Model of Illness is a self-regulatory model that proposes that people form cognitive and emotional representations of
health threats, which inform their coping responses [5]. Appraisals of the outcomes of the coping behaviors then modify the representations through a feedback loop. Key components of the cognitive representation are illness perceptions about the identity of the illness (its label and symptoms), how long it will last, the causes, the consequences, how much the person can do to control it, how much medical treatment can control it, as well as overall coherence of the illness. Cognitive and emotional responses to the health threat are processed in parallel. Early modification of illness perceptions presents a pathway to the adoption of adaptive coping responses and a reduction in the perceived threat of the illness, anxiety, and distress.

A number of studies have documented the importance of illness perceptions in predicting recovery in MI patients [6–15]. Recent studies have also shown that spouses’ perceptions of the patients’ illness are important contributors to patient recovery. Spouses’ causal attributions for the patient’s MI predicted changes in diet and exercise behaviors [13]. Similar and positive illness perceptions in both patients and spouses have been linked to better recovery [16]. The spouse therefore presents a potentially important target for illness perception interventions to improve both patient and spouse outcomes.

A brief intervention based on the Common-Sense Model of Illness and designed to change illness perceptions in acute MI patients was shown to change perceptions and result in quicker return to work and lower levels of chest pain [17]. The intervention had three half-hour sessions delivered while the patient was recovering in hospital. A replication of this intervention trial, extended to an updated definition of MI the patient was recovering in hospital. A replication of this intervention was further developed from the previous trial to include the patient’s spouse. A session was added specifically for the spouse to attend with the patient. In the study, we investigated whether the intervention could change spouses’ illness perceptions and reduce their anxiety about the patients’ MI.

**Method**

**Participants**

A total of 108 consecutive patients who had been admitted for acute MI at Auckland City Hospital, aged less than 70, who spoke English, and who had no serious psychiatric or additional medical conditions were approached and informed about the study. Both first-time and repeat MI patients were included. Informed consent was gained from patients to participate. We also gained patients’ consent to include their spouse/partner in the trial, and informed consent was then obtained from their spouse/partner. A total of 103 patients consented (95% participation rate). Seventy-two of these patients had a spouse or partner, of whom 57 (79%) agreed to the researchers contacting their spouse. All spouses approached agreed to take part in the study (100%).

**Procedure**

Approval was gained from the Auckland Ethics Committees (AKY/02/00/092). The study was performed between June 2002 and December 2003.

Patients meeting the eligibility criteria were approached in the ward and the study explained (EB). After informed consent was obtained from patients and their spouses, patients (together with their spouses) were randomly allocated to either a standard care control group (51 patients; 29 spouse/patient dyads) or the intervention group (52 patients; 28 spouse/patient dyads). The randomization sequence was generated using a computerized random number generator and allocation was kept in sealed consecutively numbered envelopes (KP). The control group received standard hospital care. Hospital protocol is for all MI patients to be visited by a cardiac rehabilitation nurse who gives patients a booklet on cardiac rehabilitation, talks to the patients about community cardiac rehabilitation classes, and invites them to attend an 8-week outpatient community rehabilitation program. Spouses in the control group received standard hospital procedures, including being able to visit the patient and be present in interactions with ward staff, and were also welcome to attend the community rehabilitation classes.

**Spouse measures**

**Baseline**

After informed consent was obtained from both the patient and their spouse, the spouse was given a questionnaire to complete that included questions about age, gender, and ethnicity. Illness perceptions were assessed using the Brief Illness Perception Questionnaire [19] and the causal scale from the Illness Perception Questionnaire—Revised [20]; these questionnaires were reworded to assess the spouse’s perceptions of the patient’s illness.

To assess expectations for recovery, spouses were asked how much they thought their spouse’s heart could recover on a scale from 0 (not at all) to 10 (completely), and how likely they thought their spouse was to have another MI in the next year on a scale from 0 (not at all likely) to 10 (completely certain).

The spouse’s anxiety about the patient’s MI was assessed using five items, rated on scales from 0 (not at all) to 5 (extremely): ‘How anxious are you about your spouse resuming work?’, ‘How anxious are you about your spouse doing physical activity?’, ‘How anxious are you about the effects of the MI on your family?’, ‘How worried are you about your spouse having another MI?’, and ‘How distressed are you about your spouse’s symptoms?’

**One week after discharge**

This questionnaire was posted to spouses 1 week following patient discharge from hospital with a stamped self-addressed return envelope. It included the same questions as at baseline plus questions about how anxious they were about their
spouses medications and how satisfied they were with the information given in hospital on a scale from 0 (not at all) to 10 (extremely). Nine spouses were lost to follow-up [intervention group (n=4), one patient died, three spouses did not reply; control group (n=5), five spouses did not reply]. Data analysis was performed for 24 spouses in each group.

Spouse worry about the patient at follow-up

Patients were sent follow-up questionnaires at 3 and 6 months following the MI, in which they were asked two questions about their spouses each rated on scales from 0 (not at all) to 10 (extremely): ‘How distressed is your spouse on an average day by your heart condition?’ and ‘How overprotective is your spouse?’ These two items were summed to form an illness worry scale with Cronbach’s alpha of .74.

Intervention

The intervention consisted of four half-hour in-hospital individual patient sessions with a health psychologist. The baseline illness perception questionnaires from both the patient and their spouse were used as guides for tailoring the intervention. The three patient sessions are fully described elsewhere [18] and involved exploration of the identity and cause of the MI, development of a recovery action plan, and covered concerns about going home, medications, and resumed activities. The one joint patient-and-spouse session was delivered as the third in the sequence and only to patients with participating spouses; those patients without a participating spouse had only the three patient sessions. The patient–spouse session involved an explanation of the MI and its associated symptoms. The spouse’s causal perceptions were explored and widened to include other causal factors where necessary, and the link between the likely causes and the patient’s recovery plan was discussed. For example, a spouse who attributed the heart attack primarily to stress at baseline might be informed that the patient’s high cholesterol level was also a risk factor for heart disease and the plan described to take daily medication, reduce dietary fat, and perform regular moderate exercise in order to reduce this level; ways to reduce stress would also be discussed and incorporated into a week-by-week schedule. The session also covered appropriate timelines to normal functioning and concerns about the patient’s treatment and medication. The role of the spouse in helping the patient to recover, for example by altering diet and encouraging exercise, was discussed, and concerns about going home were also explored and normalized.

Data analysis

Thompson and Meddis [4] provide an estimate for the variability of general anxiety visual analogue scale (VAS) scores in a control group of the spouses of MI patients. Over 5–30 days the mean VAS in the control arm was approximately 55 (S.D. 27). The effect of intervention was to reduce the VAS by 30%. Effects of this magnitude are likely to be clinically relevant and for this reason we chose to power this study on these assumptions. Including an additional three subjects per group to account for withdrawal or loss to follow-up, two groups comprising 56 spouses in total will have at least 80% power at the 5% significance level to detect a difference in the mean change between baseline and 1 week post-discharge between groups of 30% [21].

Data were analyzed using SPSS and SAS. The groups were compared using independent t tests for age and two questions asked at discharge only, and chi-square tests for gender. Analyses of covariance were used to assess differences between groups in changes in outcome variables over time controlling for baselines values. A 5% significance level was maintained (two tailed). Mann–Whitney U tests were conducted to assess differences between groups for nonparametric data.

Results

The accompanying paper reports the results for the patients, along with their demographic characteristics [18]. The mean age of the spouses was 50.2 (S.D. 9.1) in the control group and 50.9 (S.D. 10.3) in the intervention group. There were 4 males and 25 females in the control group; 3 males and 25 females in the intervention group. There were no significant differences between the groups on age or gender.

To analyze differences between groups on spouse outcomes, analyses of covariance were performed with the value of the variable at admission as a covariate and change in the variable over time as the dependent variable. Table 1 shows the results of the analyses. There were no statistically significant differences between groups at baseline. After the intervention, intervention group spouses’ perceptions changed to think that their spouse’s heart could recover more; they were less distressed about their spouse’s symptoms; they had lower concern, higher coherence, lower perceived risk of another MI, lower worry about another MI; and were less anxious about their spouse doing physical activity. To control for missing data at follow-up, the analysis was repeated using an intention-to-treat analysis with last data values carried forward. A number of differences were statistically significant, as reported in the table.

Independent t tests were used on two questions that were asked following discharge only and not at admission. Results showed that intervention group spouses were less anxious about their spouse’s medications [1.52 (S.D. 0.79) vs. 2.46 (S.D. 1.44), t (45)=−2.77, P<0.01] and reported having fewer questions about their spouse’s condition [2.12 (S.D. 2.11) vs. 5.75 (S.D. 3.04), t (46)=−4.80, P<0.001].

To analyze differences in changes in causal attributions between groups, change scores from admission to 1 week following discharge for the five causal attributions that
spouses endorsed the most highly were computed, and between groups ANCOVAs were conducted controlling for admission scores. Mann–Whitney U tests showed statistically significant differences between the groups in admission scores in attributions to high cholesterol ($Z=-3.26$, $P<0.05$) and high blood pressure ($Z=-2.51$, $P<0.05$). The results of the ANCOVAs are shown in Table 2. After the intervention, spouses’ attributions to hereditary factors had strengthened in the intervention group compared to the control group. This difference remained significant in an intention-to-treat analysis. There were no significant differences in changes to other attributions between groups.

Mann–Whitney U tests were performed to assess differences between groups in patients' reports of spouse worry about the patient at follow-up. At 3 months, spouses in the intervention group were perceived by the patient as significantly less worried (mean 7.31, S.D. 6.03) than spouses in the control group (mean 10.31, S.D. 5.92, $U=444$, $P<0.05$). Although by 6 months this difference was no longer significant (intervention mean 7.43, S.D. 6.03; control 9.74, S.D. 5.14).

**Table 1**

Results of ANCOVA analyses for spouse perceptions, expectations, and anxiety: differences between groups in change scores from baseline to 1-week following discharge, controlling for baseline scores

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline scores mean (S.D.)</th>
<th>Intervention group adjusted mean difference (CIs)</th>
<th>Control group adjusted mean difference (CIs)</th>
<th>$F$</th>
<th>Significance</th>
<th>ITT Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief IPQ</td>
<td>Control</td>
<td>Intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consequences</td>
<td>4.81 (2.97)</td>
<td>4.28 (2.41)</td>
<td>$-0.6 (-1.26 to .95)$</td>
<td>.89 ($-1.16 to 1.95$)</td>
<td>1.91</td>
<td>.17</td>
</tr>
<tr>
<td>Personal control</td>
<td>5.88 (3.21)</td>
<td>6.97 (2.45)</td>
<td>$.79 (-.34 to 1.92)</td>
<td>.02 ($-1.06 to 1.10$)</td>
<td>.97</td>
<td>.33</td>
</tr>
<tr>
<td>Treatment control</td>
<td>7.92 (2.41)</td>
<td>8.28 (1.65)</td>
<td>$.42 (-.37 to 1.22)</td>
<td>-.38 (-.17 to .41)</td>
<td>2.05</td>
<td>.16</td>
</tr>
<tr>
<td>Identity</td>
<td>3.70 (2.93)</td>
<td>4.67 (2.78)</td>
<td>$-1.1 (-1.41 to .86)$</td>
<td>$-1.09 (-1.26 to .15)$</td>
<td>0.82</td>
<td>.37</td>
</tr>
<tr>
<td>Concern</td>
<td>8.11 (1.50)</td>
<td>8.79 (1.66)</td>
<td>$-0.7 (-3.64 to -1.49)$</td>
<td>$-0.62 (-1.67 to .43)$</td>
<td>6.78</td>
<td>.01</td>
</tr>
<tr>
<td>Coherence</td>
<td>7.00 (2.90)</td>
<td>7.38 (2.50)</td>
<td>$2.04 (1.31 to 2.75)$</td>
<td>$.55 (-.15 to 1.25)</td>
<td>8.81</td>
<td>.005</td>
</tr>
<tr>
<td>Emotional representation</td>
<td>7.02 (2.36)</td>
<td>7.34 (2.91)</td>
<td>$1.13 (-2.19 to .07)$</td>
<td>$-0.11 (-1.12 to .90)$</td>
<td>2.00</td>
<td>.16</td>
</tr>
<tr>
<td>Timeline</td>
<td>7.65 (3.47)</td>
<td>7.48 (2.82)</td>
<td>$.40 (-1.38 to .59)</td>
<td>$.61 (-.33 to 1.56)</td>
<td>2.21</td>
<td>.14</td>
</tr>
<tr>
<td>Expectations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived likelihood of another MI</td>
<td>4.04 (3.30)</td>
<td>3.48 (2.72)</td>
<td>$-0.56 (-1.08 to .97)$</td>
<td>4.69</td>
<td>.04</td>
<td>.06</td>
</tr>
<tr>
<td>How much can your partner’s heart recover?</td>
<td>8.11 (2.07)</td>
<td>8.45 (1.38)</td>
<td>$.54 (-.06 to 1.13)</td>
<td>$.58 (-1.16 to .01)</td>
<td>7.20</td>
<td>.01</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worry about another MI</td>
<td>7.08 (3.16)</td>
<td>6.62 (3.17)</td>
<td>$-0.23 (-3.31 to -1.36)$</td>
<td>$-0.18 (-1.14 to .77)$</td>
<td>10.04</td>
<td>.003</td>
</tr>
<tr>
<td>Distress about symptoms</td>
<td>6.82 (2.46)</td>
<td>7.38 (2.96)</td>
<td>$-0.24 (-3.05 to -1.04)$</td>
<td>$-0.48 (-1.44 to .48)$</td>
<td>5.13</td>
<td>.03</td>
</tr>
<tr>
<td>Anxiety about spouse resuming work</td>
<td>3.08 (1.14)</td>
<td>2.70 (1.23)</td>
<td>$.45 (-.95 to .04)</td>
<td>$.19 (-.32 to .70)</td>
<td>3.34</td>
<td>.07</td>
</tr>
<tr>
<td>Anxiety about spouse doing physical activity</td>
<td>2.85 (0.93)</td>
<td>2.79 (1.08)</td>
<td>$-0.07 (-.99 to .14)$</td>
<td>$0.04 (-.37 to .46)$</td>
<td>4.27</td>
<td>.04</td>
</tr>
<tr>
<td>Anxiety about effects on the family</td>
<td>2.88 (1.45)</td>
<td>2.68 (1.31)</td>
<td>$-0.38 (-.81 to .05)$</td>
<td>$.16 (-.27 to .59)</td>
<td>3.17</td>
<td>.14</td>
</tr>
</tbody>
</table>

**Table 2**

Results of ANCOVA analyses for spouse causal attributions: differences between groups in change scores from baseline to 1-week following discharge, controlling for baseline scores

<table>
<thead>
<tr>
<th>Causal attribution</th>
<th>Baseline scores mean (S.D.)</th>
<th>Intervention group adjusted mean difference (CIs)</th>
<th>Control group adjusted mean difference (CIs)</th>
<th>$F$</th>
<th>Significance</th>
<th>ITT Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>4.04 (.79)</td>
<td>4.11 (.97)</td>
<td>$-1.0 (-.43 to .24)$</td>
<td>$-1.0 (-.56 to .15)$</td>
<td>0.20</td>
<td>.66</td>
</tr>
<tr>
<td>Hereditary</td>
<td>3.62 (1.2)</td>
<td>3.90 (1.42)</td>
<td>$.23 (-.08 to .54)</td>
<td>$-1.0 (-.63 to .03)$</td>
<td>5.46</td>
<td>.02</td>
</tr>
<tr>
<td>Overwork</td>
<td>3.58 (1.10)</td>
<td>3.35 (1.23)</td>
<td>$.11 (-.51 to .29)</td>
<td>$-1.14 (-.44 to -.04)$</td>
<td>1.41</td>
<td>.24</td>
</tr>
<tr>
<td>High cholesterol</td>
<td>3.88 (.95)</td>
<td>2.84 (1.03)</td>
<td>$.13 (-.44 to .69)</td>
<td>$-1.12 (-.52 to .76)$</td>
<td>0.00</td>
<td>.99</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>3.82 (1.10)</td>
<td>2.92 (1.20)</td>
<td>$.05 (-.36 to .46)</td>
<td>$.26 (-.18 to .70)</td>
<td>0.42</td>
<td>.52</td>
</tr>
</tbody>
</table>

ITT=Intention-to-treat analysis using carry forward last value method.

**Discussion**

This paper reports the spouse results of a randomized controlled trial of an illness perception intervention for MI patients and their spouses. The intervention improved spouses’ perceived understanding about the MI. It also resulted in significantly more optimistic expectations about the patient’s condition in terms of a more positive perception of the heart’s ability to recover and a lower perceived risk of a future MI. The intervention significantly reduced spouses’ anxiety about their spouse’s illness and his/her resumption of activity. The effects of the intervention were still apparent at the 3-month follow-up; spouses in the intervention group were significantly less worried about their partners than those in the control group.
Spouses in the intervention group reported stronger causal attributions to hereditary factors after the intervention. This may reflect greater understanding of the cause of the patient’s condition, which could alleviate distress associated with not knowing what caused the event. Having a solid causal framework could also increase the match between illness perceptions and the need for treatment and lifestyle modification. While a positive family history cannot be changed, recognizing a high genetic risk may make the patient and spouse more motivated to reduce other risk factors that are modifiable, such as high cholesterol, through exercise, diet, and medication [13].

This is the first published study to demonstrate the utility of an illness perception intervention for spouses, based on the Common-Sense Model of Illness. Usually, patients’ spouses receive no specific attention or education and are often not present during doctor’s rounds or nurse education visits. They therefore receive much less information than the patients themselves. Given the importance of the spouse to the patient’s recovery, as well as their own increased anxiety following the MI, spouses need greater information and support. Previous research has found that counseling wives of heart attack patients can help reduce anxiety [4]. This intervention has the advantages that it is theoretically based, structured, has only one half-hour spouse session, and it is delivered in the hospital phase so it addresses anxiety early and does not require attendance at an additional appointment.

A limitation of the study was the number of spouses who were lost to follow-up, which decreased the power of the study to assess differences between groups. However, the findings largely remained significant when using intention-to-treat analyses. A further limitation was the short follow-up period of 1 week. Although we were able to measure spouse worry at 3 and 6 months, this was only through patient reports. Future research should extend the follow-up period to assess the longer-term outcomes of the intervention on the spouse and employ a larger sample size. It is acknowledged that there was no attention control in the control group, although the amount of therapist contact time was very short and it is unlikely to have affected the results.

In this study, the spouse intervention was very brief, but it had large effects. This demonstrates that a brief illness perception intervention for the spouse of the MI patient can improve their understanding of the MI and lessen their anxiety about the condition.

References