Why patients do not attend cardiac rehabilitation: role of intentions and illness beliefs

A Cooper, G Lloyd, J Weinman, G Jackson

Abstract

Objective—Many patients fail to attend cardiac rehabilitation. Attempts to identify sociodemographic or clinical predictors of non-attendance have not been very successful; therefore, this study aimed to determine whether the illness beliefs held during hospitalisation by patients who had suffered acute myocardial infarction or who had undergone coronary artery bypass graft surgery could predict cardiac rehabilitation attendance.

Subjects and methods—152 patients were prospectively studied of whom 41% had attended cardiac rehabilitation at six months.

Results—In addition to being older, less aware of their cholesterol values, and less likely to be employed, non-attenders were less likely to believe their condition was controllable and that their lifestyle may have contributed to their illness.

Conclusion—It should be determined whether interventions aimed at optimising certain perceptions could promote cardiac rehabilitation uptake among those patients who could benefit the most.

Keywords: rehabilitation; myocardial infarction; coronary artery bypass graft surgery; illness beliefs

Despite the established benefits of cardiac rehabilitation, many patients either decline to attend or adhere poorly to courses. Petrie et al found that only a third of eligible patients under 65 years old attended cardiac rehabilitation, and Ades et al showed uptake as low as 21% in eligible patients over 62 years.

The American Heart Association has emphasised the need to identify and focus on patients whose medical and social profiles predict non-compliance, since these patients may benefit most from specific interventions.

Not only are biological and socio-demographic characteristics inconsistently associated with non-attendance, the value of these as predictors is questionable given that they are not usually amenable to change. In contrast, individual's beliefs or perceptions about their illness appear to play a pivotal role in health behaviour including medication adherence, and functional status. Furthermore a recent study emphasised the role of illness perceptions in predicting rehabilitation attendance, return to work, and physical functioning following acute myocardial infarction.

The recently developed illness perception questionnaire (IPQ) is a validated measurement tool used by health psychologists to assess patients' beliefs about their illness. It has been established that beliefs are organised around straightforward and self explanatory central themes or components. These are referred to as “common sense illness representations” and are hypothesised to explain variations in the way patients respond to their illness (table 1).

We set out to determine whether the beliefs held during hospitalisation by patients who had suffered acute myocardial infarction or who had undergone coronary artery bypass graft surgery (CABG) could predict cardiac reha-

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Table 1 Explanation of core illness beliefs

<table>
<thead>
<tr>
<th>Illness representation</th>
<th>Beliefs regarding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity (label for the disease)</td>
<td>Symptoms associated with the illness</td>
</tr>
<tr>
<td>Cause</td>
<td>Factors that have led to the illness</td>
</tr>
<tr>
<td>Timeline</td>
<td>Expected length of illness, may be acute, chronic or cyclical</td>
</tr>
<tr>
<td>Consequences</td>
<td>Expected outcome and subsequent effects</td>
</tr>
<tr>
<td>Control/cure</td>
<td>How the individual may help to control or cure their illness</td>
</tr>
</tbody>
</table>

Table 2 Main variables recorded by questionnaire

<table>
<thead>
<tr>
<th>Patient baseline characteristics</th>
<th>Age, sex, ethnicity, marital status, employment status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk profile assessment</td>
<td>Body mass index, knowledge of blood pressure, total cholesterol concentration</td>
</tr>
<tr>
<td>Cardiac rehabilitation attendance</td>
<td>Intention, attendance at six months</td>
</tr>
<tr>
<td>Illness perceptions</td>
<td>Timeline, control/cure, consequences, causal attribution to: lifestyle, stress</td>
</tr>
<tr>
<td>History of heart disease</td>
<td>Evidence of angina/AMI-diagnosis of CHD 4 weeks or more before current hospital admission</td>
</tr>
</tbody>
</table>

AMI, acute myocardial infarction; CHD, coronary heart disease.

Table 3 Summary of patient baseline characteristics

<table>
<thead>
<tr>
<th>Total population</th>
<th>CABG</th>
<th>CABG + AMI</th>
<th>AMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>137</td>
<td>42</td>
<td>31</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>62.12</td>
<td>60.8</td>
<td>61.1</td>
</tr>
<tr>
<td>Confidence interval</td>
<td>60.47</td>
<td>58.06 to 63.61</td>
<td>58.16 to 64.03</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>105</td>
<td>(76.6%)</td>
<td>38</td>
</tr>
<tr>
<td>Female</td>
<td>32</td>
<td>(23.4%)</td>
<td>30</td>
</tr>
<tr>
<td>Ethnocity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>122</td>
<td>(89.1%)</td>
<td>39</td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>1</td>
<td>(0.7%)</td>
<td>–</td>
</tr>
<tr>
<td>South Asian</td>
<td>2</td>
<td>(1.5%)</td>
<td>1</td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>1</td>
<td>(0.7%)</td>
<td>–</td>
</tr>
<tr>
<td>Chinese/Far Eastern</td>
<td>1</td>
<td>(0.7%)</td>
<td>–</td>
</tr>
<tr>
<td>Not stated</td>
<td>10</td>
<td>(7.5%)</td>
<td>2</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>11</td>
<td>(8.0%)</td>
<td>3</td>
</tr>
<tr>
<td>Married</td>
<td>104</td>
<td>(75.9%)</td>
<td>32</td>
</tr>
<tr>
<td>Divorced</td>
<td>11</td>
<td>(8.0%)</td>
<td>3</td>
</tr>
<tr>
<td>Widowed</td>
<td>9</td>
<td>(6.6%)</td>
<td>2</td>
</tr>
<tr>
<td>Not stated</td>
<td>2</td>
<td>(1.5%)</td>
<td>-</td>
</tr>
<tr>
<td>Smoking history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>37</td>
<td>(27%)</td>
<td>13</td>
</tr>
<tr>
<td>Past</td>
<td>87</td>
<td>(63.5%)</td>
<td>28</td>
</tr>
<tr>
<td>Present</td>
<td>11</td>
<td>(8%)</td>
<td>2</td>
</tr>
<tr>
<td>Not stated</td>
<td>2</td>
<td>(1.5%)</td>
<td>–</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>51</td>
<td>(37.2%)</td>
<td>15</td>
</tr>
<tr>
<td>Not employed (retired)</td>
<td>88</td>
<td>(62.8%)</td>
<td>27</td>
</tr>
<tr>
<td>Not stated</td>
<td>1</td>
<td>(0.7%)</td>
<td>–</td>
</tr>
</tbody>
</table>

* p = 0.03.

CABG, coronary artery bypass graft surgery; AMI, acute myocardial infarction.
Bibliography attendance. The potential differences in illness beliefs between these two patient groups was also explored.

**Methods**

**DESIGN AND PATIENT POPULATION**

We conducted a prospective study involving 152 patients hospitalised for acute myocardial infarction or CABG. Consecutive patients were recruited to complete a questionnaire independently before discharge. Postal or telephone follow-up assessed cardiac rehabilitation attendance at six months. Patients who suffered acute myocardial infarction at two district general hospitals and

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Differences in illness perceptions and risk factors between diagnostic categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CABG (n = 42)</td>
</tr>
<tr>
<td>Intention to go to rehabilitation</td>
<td>32 (76.2%)</td>
</tr>
<tr>
<td>Illness perceptions</td>
<td></td>
</tr>
<tr>
<td>Control/cure</td>
<td>24.3 (23.2–25.4)</td>
</tr>
<tr>
<td>Consequences</td>
<td>13.6 (12.7–14.6)</td>
</tr>
<tr>
<td>Timeline</td>
<td>9.3 (8.5–10.1)</td>
</tr>
<tr>
<td>Causal attribution</td>
<td></td>
</tr>
<tr>
<td>Lifestyle</td>
<td>3.2 (2.8–3.6)</td>
</tr>
<tr>
<td>Stress</td>
<td>3.6 (3.4–4.0)</td>
</tr>
<tr>
<td>Knowledge of BP</td>
<td>36 (85.7%)</td>
</tr>
<tr>
<td>Knowledge of TC</td>
<td>33 (78.6%)</td>
</tr>
<tr>
<td>Previous history</td>
<td>34 (87.2%)</td>
</tr>
<tr>
<td>Previous exercise</td>
<td>21 (58%)</td>
</tr>
</tbody>
</table>

Where count data are shown actual numbers are written with percentages; for continuous data the mean score is shown with the confidence interval given in parentheses. †Kruskall-Wallis test; *p < 0.001.

**STATISTICAL ANALYSIS**

SPSS for Windows 6.0 statistical software package was used throughout. Multiscore items of the IPQ were treated as continuous data and thus were analysed parametrically, using one way analysis of variance (ANOVA). Single item scores (causal attribution to lifestyle/stress) were treated non-parametrically and analysed using Mann-Whitney U test.

**Results**

A total of 152 patients were recruited, with 15 exclusions as a result of four deaths and 11 uncompleted questionnaires. Summary patient baseline characteristics on the remaining 137 patients are shown in table 3. Not unexpectedly, those patients who had suffered acute myocardial infarction only were less likely to have a previous history of coronary artery disease than either CABG patients or those with both acute myocardial infarction and then CABG. Patients in the CABG and CABG/acute myocardial infarction group were more likely to be male and to state an awareness of their total cholesterol concentrations.

Overall, 55 (40%) patients attended rehabilitation with 82 (60%) patients failing to attend by six months. There were no differences in illness perceptions or other sociodemographic variables between diagnostic groups (table 4) and all subjects were therefore combined to analyse potential differences between cardiac rehabilitation attenders and non-attenders. Table 5 shows the significant differences between the two groups; when these were entered into a logistic regression, age, perceptions of control, a causal attribution to lifestyle, and knowledge of total cholesterol concentration retained significance.

**Discussion**

Patients’ illness beliefs were not influenced according to whether they had undergone CABG or acute myocardial infarction. One reason may be that patients diagnosed with coronary heart disease may establish firm beliefs about their illness at an early stage, perhaps because of the dominant prevalence of coronary heart disease in our society. Patients may draw on beliefs based on knowledge of
gained through media coverage and the experience of friends or colleagues which remain fairly stable over the varying course of their illness.3

The rehabilitation attendance rate of 40% is comparable with that reported in other studies4,5 but falls short of the 72% of patients who expressed an intention to attend. The intention to attend rate in those actually attending cardiac rehabilitation was over 90% versus 58% for those not attending. This adds further weight to the evidence that intention alone is useful but not sufficient to predict future health behaviour.6

Reliable predictors of attendance behaviour during hospital admission are necessary in order to optimise uptake in those who could benefit the most. This study shows that patient illness perceptions measured during hospital admission are associated with future cardiac rehabilitation attendance and that those with a stronger belief that their condition is controllable will subsequently take appropriate action such as attendance at cardiac rehabilitation. Similarly, individuals who attributed their heart condition to their lifestyle showed a higher rate of cardiac rehabilitation attendance indicating that this particular causal belief is associated with a commitment to further behaviour change.7

It may seem incongruent that knowledge of one risk factor, cholesterol, is associated with attendance while another, blood pressure, is not. However, individuals may feel that a high cholesterol is more relevant to heart disease than high blood pressure, which is perhaps perceived as quite common within the general population. In addition, patients may consider themselves to have more control over their cholesterol via dietary changes.

Few studies have investigated predictors of cardiac rehabilitation attendance, especially in relation to illness perceptions. It is encouraging that these results confirm those of a study of first time acute myocardial infarction patients under 65 years old where patients with a perception that their condition was controllable or curable were more likely to attend rehabilitation.7 Patient age may influence cardiac rehabilitation attendance but the identification of predictive illness perceptions may permit their modification to improve overall attendance and optimise outcomes.

The 1996 UK cardiac rehabilitation guidelines and audit standards emphasise the importance of “addressing patients’ main concerns and correcting misconceptions” throughout the rehabilitation phase from inpatient stay through to long term follow up.10 The IPQ could provide an ideal platform to determine an individual’s illness perceptions as a routine part of recovery assessment. Illness perceptions have been shown to be amenable to change8,9 in other illnesses; by providing information regarding illness perceptions in cardiac patients, simple individually structured interventions to address possible misconceptions could be developed. This may improve attendance in cardiac rehabilitation and additionally have a positive effect on other important outcome measures such as time to return to work and physical functioning.

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