Illness perceptions as predictors of self-care behaviour in heart failure patients

K Morgan, H McGee & E Shelley
Outline

• Self-care behaviour in heart failure
• Illness perceptions & the Self Regulation Model of Illness
• Illness perceptions & self care behaviour in heart failure
Self-Care Behaviour in Heart Failure

• Associated with:
  \[ \downarrow \text{worsening symptoms} \quad (e.g. \text{van der Wal et al, 2005}) \]
  \[ \downarrow \text{decreased QoL} \]
  \[ \uparrow \text{mortality} \quad (e.g. \text{Granger et al, 2005}) \]
  \[ \uparrow \text{hospital admissions & increased length of stay} \quad (e.g. \text{De Geest et al., 2003}) \]
Self Care Behaviour in Heart Failure

- More than adhering to a complex medication regimen
- Lifestyle adjustments including:
  - modifying diet
  - modifying activities
  - monitoring and reporting symptoms
- Complicated by issues such as:
  - comorbidity
  - age-related changes e.g. loss of visual acuity, loss of hearing, changes in functional status
Self Care in Heart Failure

- Optimum self-management difficult to achieve
- Selective adherence common
- Highest levels reported in relation to medication adherence:
  - 10% - 99% (Monane et al 1994; van der Wal et al 2007)
  - Issues of measurement (Self-report vs. objective); definition and depth of assessment
Self Care in Heart Failure

- Lowest: lifestyle change and symptom monitoring and reporting
  - Fluid intake: 70% - 33% (Holst et al, 2007; Stromberg, et al, 2003).
  - Daily weighing: 25% - 40% (Holst et al 2007; Ni et al., 1999)
Self Care in Heart Failure

- Patient Factors
- Illness & treatment factors
- Physician factors
Self Care in Heart Failure

- Physician Factors
  - Symptoms
  - Severity (NYHA class)
  - Years diagnosed
  - Complexity
  - Impact on usual activities

- Patient Factors
  - Illness & Treatment factors
  - Years diagnosed
  - Complexity
  - Impact on usual activities
Self Care in Heart Failure

- Patient Factors
- Illness & Treatment factors
- Physician Factors

• Communication
Self Care in Heart Failure

- Knowledge
- Attitudes
- Beliefs

- Physician Factors
- Illness & Treatment factors
- Patient Factors
Illness Perceptions

Self-Regulation Model (SRM) (Leventhal et al., 1980):

- Looks at illness from the perspective of the patient
- Belief about an illness influences patient responses and coping behaviours, e.g. seeking help, adhering to treatment
- Important determinants on health related outcomes e.g. Psychological wellbeing, QoL,
Self-Regulation Model (SRM)

Cognitive Representations
- Identity
- Timeline
- Cause
- Control/Cure
- Consequences

Illness stimuli

Representation of emotional reaction (e.g. fear or distress)

Coping or self-regulatory behaviour

Health-related outcomes e.g. QoL+ adjustment appraisal
Illness Representations

- **Identity:** associated with symptoms experienced
- **Timeline:** My illness will last a long time
- **Cause:** My illness was caused by genetic factors
- **Cure/Control:** My illness can be treated effectively with medication
- **Consequences:** My illness create financial stress for me
- **Emotional representations:** My illness makes me feel afraid
Illness Perception Questionnaire (revised) (IPQ-R)

- Three main sections:
  - Identity (symptom endorsement)
  - Cause (assess list of factors and rank)
  - Timeline, consequences, cure/control emotional representations (Likert response scale)

- Well validated & widely used in studies of adaptation & chronic illness
SRM – Evidence

- Successful in predicting different aspects of adaptation (including adherence) and recovery in chronic illness
- Supported by meta-analysis of 45 studies (Hagger & Orbell, 2003)
Illness perceptions & self care

• Diabetes mellitus
  • Control beliefs accounted for 39% of the predicted variance in total adherence (self-reported) (Griva et al 2000)

• Asthma
  • Beliefs about consequences – 11% variance in prescription refilling behaviour (Horne & Weinman, 2002)

• Haemophilia
  • Identity and treatment necessity – 33% variance in frequency of prophylactic infusions (Llewellyn et al., 2003)
Illness perceptions & Self Care

Behaviour in Heart Failure

- Longitudinal study of adaption in HF
- Self care behaviour & illness perceptions assessed
## Study Participants

<table>
<thead>
<tr>
<th></th>
<th>T1 (n=161) Profile</th>
<th>T2 (n=90)* Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (yrs) (SD)</td>
<td>69 (9)</td>
<td>70 (10)</td>
</tr>
<tr>
<td>Male (%)</td>
<td>81</td>
<td>79</td>
</tr>
<tr>
<td>Married (%)</td>
<td>81</td>
<td>82</td>
</tr>
<tr>
<td>Living with others (%)</td>
<td>87</td>
<td>88</td>
</tr>
<tr>
<td>Some second level education (%)</td>
<td>94</td>
<td>95</td>
</tr>
<tr>
<td>Time diagnosed (years)</td>
<td>4.9</td>
<td>5.2</td>
</tr>
</tbody>
</table>

* n=45 patients died between T1 & T2 (28%)
### Study Participants

<table>
<thead>
<tr>
<th>NYHA class</th>
<th>T1 (n=161) %</th>
<th>T2 (n=90) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td>II</td>
<td>48</td>
<td>45</td>
</tr>
<tr>
<td>III</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>IV</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

- At each time point respondents reported a moderate level of functional impairment (Duke Activity Status Index)
## Results – Illness perceptions

<table>
<thead>
<tr>
<th></th>
<th>T1 (n=161)</th>
<th>T2 (n=90)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean (SD)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timeline acute/chronic</td>
<td>3.9 (0.7)</td>
<td>3.8 (0.7)</td>
</tr>
<tr>
<td>Timeline cyclical</td>
<td>2.8 (0.9)</td>
<td>3.1 (0.9)</td>
</tr>
<tr>
<td>Consequences</td>
<td>3.4 (0.6)</td>
<td>3.5 (0.8)</td>
</tr>
<tr>
<td>Personal control</td>
<td>3.4 (0.6)</td>
<td>3.0 (0.7)</td>
</tr>
<tr>
<td>Treatment control</td>
<td>3.3 (0.5)</td>
<td>3.5 (0.8)</td>
</tr>
<tr>
<td>Identity</td>
<td>5.0 (3.0)</td>
<td>6.0 (2.9)</td>
</tr>
<tr>
<td>Illness coherence</td>
<td>3.5 (0.7)</td>
<td>3.3 (1.0)</td>
</tr>
<tr>
<td>Emotional representations</td>
<td>3.0 (0.8)</td>
<td>2.8 (0.8)</td>
</tr>
</tbody>
</table>
Results – Self Care

Self-care behaviour (T1: n=161; T2: n=90)

- Daily weighing: T1 14%, T2 28%
- Regular exercise: T1 22%, T2 34%
- Limit fluids: T1 39%, T2 59%
- Gain weight - contact doctor: T1 29%, T2 39%
- Fatigue - contact doctor: T1 21%, T2 45%
- Low salt diet: T1 58%, T2 71%
- Swollen feet - contact doctor: T1 47%, T2 61%
- Short of breath - contact doctor: T1 51%, T2 62%
- Rest daily: T1 59%, T2 64%
- Flu injection: T1 71%, T2 71%
- Short of breath - take it easy: T1 77%, T2 75%
- Medication as prescribed: T1 92%, T2 93%
Results – Self Care

Self-care behaviour (T1 & T2), n=90

- Medication as prescribed: 92%
- Flu injection: 88%
- Short of breath - take it easy: 77%
- Short of breath - contact doctor: 73%
- Gain weight - contact doctor: 69%
- Swollen feet - contact doctor: 61%
- Low salt diet: 59%
- Limit fluids: 59%
- Fatigue - contact doctor: 57%
- Fatigue: 47%
- Daily weighing: 40%
- Rest daily: 39%
- Gain weight: 22%
- Short of breath: 21%
- Regular exercise: 16%
- Daily weighing: 12%
Analysis

- Multivariate analysis to assess illness representation – outcome relationships
- Mediation effects evaluated using bootstrap analysis (Shrout & Bolger, 2002)
- Complete & partial effects reported
Results I

- Illness perceptions stable over time
- Univariate analysis: timeline, consequences treatment, identity and emotional representations associated with self care scores
- Self-reported medication adherence levels high at T1 & T2
- Symptom monitoring (daily weighting) - lowest levels
- Mean scores stable over time
- Mean scores correlated with illness perceptions, NYHA class and years diagnosed
- No association with education, age or gender
Results II

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardised regression coefficients</th>
<th>R</th>
<th>R²</th>
<th>Adj R²</th>
<th>F change</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NYHA</td>
<td>.168*</td>
<td>.143*</td>
<td>.278</td>
<td>.078</td>
<td>.066</td>
<td>6.642**</td>
</tr>
<tr>
<td>Years</td>
<td>-.176*</td>
<td>.132</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii) Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timeline cyclical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consequences</td>
<td>.196**</td>
<td>.124</td>
<td>.637</td>
<td>.405</td>
<td>.378</td>
<td>16.878***</td>
</tr>
<tr>
<td>Treatment control</td>
<td></td>
<td>-.046</td>
<td></td>
<td></td>
<td></td>
<td>14.907***</td>
</tr>
<tr>
<td>Emotional reps</td>
<td></td>
<td>.459***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identity</td>
<td></td>
<td>.082</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p < 0.001
Results III

Cognitive Representations

- Identity
- Timeline
- Cause
- Control/Cure
- Consequences

Illness stimuli

Representation of emotional reaction (e.g. fear or distress)

Coping or self-regulatory behaviour

Self Care Behaviour
Implications

- Illness perceptions associated with self care behavior in heart failure - potential for targeted intervention
- Monitoring and reporting symptoms an area of concern

‘I don’t want to die in A&E ... I want to be at home’
Acknowledgements

- Healthy Ageing Research Programme (HARP)
- Grant Health Research Board, Ireland