The experience of people awaiting coronary artery bypass graft surgery: the Icelandic experience

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INTRODUCTION
Coronary artery bypass surgery (CABG) is performed in Iceland at only one hospital, the National University Hospital (Landspitalinn) in Reykjavík and individuals are referred from all over Iceland. Prior to the initiation of heart surgery at the Landspitalinn in 1986, patients were sent to Great Britain. People in Iceland often have to wait months for elective CABG surgery and it has been maintained that the current waiting time is too long. However, the exact length of this period has not been reported. The waiting time is unlikely to shorten in the foreseeable future mainly due to cost containment measures affecting the national health care system. In Iceland, when one is placed on the waiting list for the surgery, a definite date for the surgery is not given. Literature related to length of wait for surgery from coun-
tries with nationalized health care (e.g. New Zealand, Great Britain and Canada) reveal a mean waiting time from 17 days to 6-4 months (Piper et al. 1985, Mulgan & Logan 1990, Underwood et al. 1993, Naylor et al. 1995). It has been documented that prolonged waiting time and postponement of surgery for patients awaiting CABG in Great Britain may be associated with an increased risk of sudden death. Additionally, prolonged waiting is expensive because of the use of extended leave, additional testing, monitoring and medications (Marber et al. 1991, Suttorp et al. 1992). Individuals awaiting CABG surgery have reported financial difficulties, impaired functional capacity, negative effects on their sex lives, stress and anger (Langeluddecke et al. 1989, Mulgan & Logan 1990, Piper et al. 1985, Underwood et al. 1993). Similarly, depression and anxiety have been reported to occur during the preoperative wait (Underwood et al. 1993, Klonoff et al. 1989, Lindal 1990).

Postponement of surgery has been shown to affect people psychologically (Davenport 1991, Bresser et al. 1993). Stress and anger in patients with ischaemic health disease can affect coronary blood flow to such an extent that chest pain and ischaemic changes on an electrocardiogram are observed (Verrier et al. 1987, Bairey et al. 1990, Rocco 1990, Stone 1990, Tofler et al. 1990). Patients who have moderate or severe depression and anxiety preoperatively are shown to have a high risk of psychological disturbance up to 2 years postoperatively (Strauss et al. 1992). Negative effects on the spouses of individuals having CABG surgery have been demonstrated and Artinian and Hayes (1992) reported that the quality of life of wives of coronary artery bypass surgery patients was lower than that of a healthy comparison group.

The purpose of this study was to assess the difficulties experienced by individuals awaiting CABG surgery in Iceland and to determine supportive measures which might be initiated during this time to make the preoperative waiting period less difficult. An additional purpose was to determine the informational needs concerning living with coronary artery disease during the pre-operative waiting period.

METHOD

Sample

This descriptive prospective study used a sample of people awaiting CABG surgery at the National University Hospital, Landspitalinn, in Reykjavik. Questionnaires were distributed on two occasions 10 months apart, and no subject was surveyed twice. Individuals who reported a history of alcoholism, drug abuse or a diagnosis of a psychiatric illness were excluded from the study as were individuals on the emergency surgery waiting list. Otherwise, the sample consisted of Icelandic citizens residing throughout the nation who had been diagnosed with coronary artery disease of a severity to necessitate CABG surgery and who had been placed on the waiting list for CABG surgery at the Landspitalinn. A total of 88 people on the waiting list, which was obtained from the hospital, met the inclusion criteria. Of these, 72 (81.8%) participated in the study. Waiting time is defined as the period from the date when the person is told that he or she needs surgery until the day of answering the questionnaire.

Research questions

1. What are the physical, psychological, and social difficulties reported by individuals awaiting CABG surgery?
2. Are there supportive measures which could make this pre-operative waiting period less difficult?
3. What are the informational needs concerning living with coronary artery disease during the pre-operative waiting period for CABG surgery?

Procedure

The study was approved by the Data Protection Commission of the Government of Iceland, and the Nursing Research Committee and the Ethics Committee of the National University Hospital, Landspitalinn, in Reykjavik.

A questionnaire designed by the researchers for the purpose of this study was sent to all 88 subjects on the mailing list who met the criteria for the study. Within a few days of mailing, each person receiving the questionnaire was contacted by telephone in order to further explain the purpose of the study and to answer any questions the prospective subject might have.

Measurements

Information obtained from unstructured interviews with 200 hospitalized CABG patients on informational and psychological support needed during the peri-operative period at the Landspitalinn during 1987 to 1989 obtained by one of the researchers contributed to the content of the questionnaire (Baldursdottir 1990). The questionnaire consisted of four parts with part one consisting of demographic information and part two containing questions about the length of wait for the surgery, the current use of medications, and smoking and alcohol use. Part three was concerned with the physical and psychological symptoms the individual was experiencing during the waiting period and questions about the type of information needed by the patient to facilitate the waiting and the type and sources of information received. Part four invited subjects to write down thoughts and feelings about illness and the wait for surgery.
The questionnaire was tested for content validity by nurses and physicians who were experts in treatment of coronary heart patients. It was pilot tested on six individuals from the waiting list to determine the readability of the questions.

**FINDINGS**

The majority of the subjects (73.6%) were male and ranged in age from 40 to 79 years. The overall mean age was 62 years, with the male subjects having a mean age of 64.7 years and the women 61.5 years, 26.4% were at retirement age, i.e. 68 years old and older; 76.4% were married or lived with a partner; 11.1% were widowed and 12.5% were single; 54.2% lived in the capital city of Reykjavik or its suburbs. The others lived in smaller towns and villages throughout the nation of Iceland and 4.2% had previously had heart surgery.

At the time of the study, subjects had been on the waiting list from 1 week to 12 months (Figure 1). The mean length of time on the list at the time of the study was 5 to 6 months, with 23.9% already waiting longer than 6 months and 12.7% not knowing for how long they had been on the waiting list. Eleven subjects had already had their surgery postponed at least once, usually due to a shortage of beds at the National University Hospital.

When questioned about their health-related habits, 12.5% of the subjects reported that they still smoked and 73.6% had a history of cigarette smoking; 42.2% reported being overweight and 82.6% did not exercise regularly; 55.4% of the subjects stated that they did not use alcohol, but 18.5% had reduced their alcohol consumption since being diagnosed with coronary artery disease whereas 24.6% maintained their same level of alcohol consumption during the preoperative wait.

**Physical, psychological and social difficulties during the waiting period**

Living with coronary artery disease during the preoperative waiting period had had negative effects on the daily lives and jobs of 94.4% of subjects. A trend, although not statistically significant, could be identified where the subject’s condition became worse as the waiting time for surgery increased. For instance, the relationship with family and friends became worse, dissatisfaction about work and sexual life increased, and shortness of breath and fatigue increased. Time waiting for surgery and shortness of breath and fatigue were related (chi-square $P \leq 0.05$). A trend could also be identified where those who had waited 3–4 months (subjects were divided into three groups: 1–2 months waiting, $n = 14$; 3–4 months waiting, $n = 23$; more than 4 months waiting, $n = 13$) were worse off than both those who had waited a shorter and longer time. They found the waiting the most difficult and were dissatisfied with life, their health, emotional condition, work, finances and social relations.

The discomfort is further described in the following quotation from one of the participants:

> To have to wait for many months is very difficult, not only for me but for my whole family. This is particularly because I frequently feel bad. I can only work very little, my mood becomes strained, e.g. vulnerability and anger, to name a few. The worst thing is though, that when the waiting should be over and the surgery is in front of me, it is postponed. What is even worse than that is that no one can tell how much longer I will have to wait. This has very bad influence both emotionally and physically.

As expected most (87.9%) of the subjects were dissatisfied with their current health status with 39.1% describing their health as bad or very bad during the preceding month; 39.7% reported experiencing intermittent chest pain and 5.2% reported continuous chest pain in the preceding 24 hours. Most of this chest pain was associated with exertion (67.1%) or emotional stress (42.9%); 11.4% experienced chest pain at rest.

Changes in employment were reported by the subjects. Only 12.5% were not employed at the time of their diagnosis but this had increased to 44.4% during the waiting period. Of those not employed, 12.5% were retired. Fifty-five per cent continued to work full-time or part-time while awaiting CABG surgery. Although more than half were at least partially employed, 76.1% reported that they were worried about their financial status, with 22.4% reporting that they were severely worried. Most (73.9%) of the subjects were optimistic about their future after the surgery and 24.6% stated that they did not think about the future.

The most prominent physical and emotional problems occurring during the month preceding their completion of the questionnaire were reported by the subjects. The most common were, in descending order, fatigue (72.2%),

![Figure 1](image.jpg)
shortness of breath (45.8%), and chest pain (37.5%). Other problems reported, in descending order, were changes in mood, palpitations, sleep disturbances, pain, fluid retention, and difficulty in concentration (Figure 2). Only 6-9% reported no discomfort in the preceding month.

The following are quotes from the participants which explain their emotional and physical discomfort in more depth:

I am afraid of losing my job. I also know about men who have collapsed while waiting [for the surgery].

Symptoms gets worse when I am stressed. I have not got any information about how to control my stress. I have heard that people die while waiting.

I am very restless and my ability to concentrate gets worse. I overeat and smoke. I am very anxious and the waiting is very difficult. I get chest pain if I become upset.

My illness controls my life. It is hard for me to wait, and many questions come to my mind.

I have found that having to wait is both psychological and physical humiliation.

I feel very badly. I am both anxious and stressed.

Having coronary artery disease had negative effects on the emotional state of 58.7% of subjects, with 12.7% indicating that the disease had had some positive effects emotionally. Most subjects (86.6%) reported that they were stressed, with 28.4% reporting that they were experiencing severe stress during this pre-operative wait. However, 21.1% had difficulty sleeping. Twelve per cent used sleeping medications. When asked about their emotional state in the preceding month, 60.9% reported an increase in anxiety. Additionally, the following were reported by the subjects as occurring during the 1-month period preceding the completion of the questionnaire: increased impatience (40.4%), irritability (39.2%), hopelessness (29.8%) and depression (21.7%). Very few experienced a decrease in these symptoms (2.0–4.3%) except for anxiety where no one experienced a decrease. Difference in gender was not significant. When participants were divided into two age groups (40–62, n=28; 63–79, n=37) those who were younger experienced significantly more anxiety, depression, vulnerability, impatience and irritability than those who were older (chi-square $P \leq 0.05$).

Subjects experienced considerable functional impairment (Table 1); 60.6% experienced at least a little difficulty in walking a short distance and 62.7% reported that it was very difficult or impossible for them to run or lift heavy objects.

Subjects were asked about the effects of the coronary artery disease and the pre-operative waiting on their sexual life; 53.7% reported that they were experiencing negative effects during this pre-operative waiting period, 33.3% reported that their sexual lives remained unchanged during this period of time, and seven subjects (13.0%) reported positive effects.

Negative effects on the relationship with the spouse were reported by 18.0% of the subjects, no influences were reported by 44.4% and 38.0% reported positive influences of the illness and the waiting. As seen in Table 2, most of these effects were emotional. Similarly, there are reported to be negative effects on relationships with friends. Longer waiting time had negative effects on the subjects’ relationship with both family and friends, although it was not statistically significant.

Potential supportive measures during the waiting period

Forty per cent of the subjects did believe that nurses or physicians could do something to make the pre-operative wait less difficult. Seventeen per cent said that they did not believe there was anything these health care professionals could do to make the wait easier and 42.2% were unsure. When asked to identify actions that might be provided, most of these supportive measures were related to provision of information (Table 3).

Informational needs during the waiting period

A small proportion of subjects had received information on various issues related to the pre-operative wait, as Figure 3 shows, and a surprisingly high percentage, 80.0%, stated that they did not need any additional information. Figure 3 also shows topics on which subjects felt they needed further information. However, as seen in Table 3, approximately one-third (34.9%) identified provision of written material as the highest ranked supportive measure that might be provided to make the wait for the surgery less difficult. Information about diet (58.6%) and medications (58.6%) was the most frequently received

**Figure 2** Discomfort during the previous month ($n=72$). More than one item could be reported.
Table 1 Functional impairment

<table>
<thead>
<tr>
<th>Items</th>
<th>Not difficult (%)</th>
<th>A little difficult (%)</th>
<th>Very difficult or unable to (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit family and friends (n = 69)</td>
<td>87.0</td>
<td>10.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Drive a car, take a bus (n = 68)</td>
<td>89.7</td>
<td>4.4</td>
<td>5.9</td>
</tr>
<tr>
<td>Social activities (n = 66)</td>
<td>50.0</td>
<td>33.3</td>
<td>16.7</td>
</tr>
<tr>
<td>Walk a short distance (n = 71)</td>
<td>39.4</td>
<td>46.5</td>
<td>14.1</td>
</tr>
<tr>
<td>Domestic work (n = 70)</td>
<td>38.6</td>
<td>38.6</td>
<td>22.9</td>
</tr>
<tr>
<td>Recreational activities (n = 48)</td>
<td>37.5</td>
<td>22.9</td>
<td>39.6</td>
</tr>
<tr>
<td>Take a few stairs (n = 71)</td>
<td>26.8</td>
<td>56.3</td>
<td>16.9</td>
</tr>
<tr>
<td>Run, lift heavy things (n = 67)</td>
<td>4.5</td>
<td>32.8</td>
<td>62.7</td>
</tr>
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</table>

Table 3 Potential support from nurses and physicians

<table>
<thead>
<tr>
<th>Items</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written material (n = 63)</td>
<td>34.9</td>
</tr>
<tr>
<td>Guidelines for reducing stress (n = 63)</td>
<td>23.8</td>
</tr>
<tr>
<td>Phonecall to a physician (n = 64)</td>
<td>20.3</td>
</tr>
<tr>
<td>Guidelines on mobilization and exercise (n = 63)</td>
<td>19.0</td>
</tr>
<tr>
<td>Phonecall to discuss experience (n = 63)</td>
<td>15.9</td>
</tr>
<tr>
<td>Phonecall to a nurse (n = 63)</td>
<td>11.1</td>
</tr>
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</table>

Table 4 Provision of information

<table>
<thead>
<tr>
<th>Sources</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians other than family physician (n = 67)</td>
<td>68.7</td>
</tr>
<tr>
<td>Patients (n = 67)</td>
<td>40.3</td>
</tr>
<tr>
<td>Books and booklets (n = 67)</td>
<td>38.8</td>
</tr>
<tr>
<td>Family physician (n = 67)</td>
<td>35.8</td>
</tr>
<tr>
<td>Nurses (n = 67)</td>
<td>16.4</td>
</tr>
<tr>
<td>Media (n = 67)</td>
<td>14.9</td>
</tr>
</tbody>
</table>

DISCUSSION

The results indicate that Icelandic people awaiting CABG surgery experience a wide range of physical and psychological difficulties that disrupt their lives. The majority of participants consider their disease and waiting time to have negative influences on work and daily life and they were dissatisfied with their health status. About one-third considered their health rather or very bad during the month previous to the study. A little less than half of the participants had chest pain once in a while or continu-
sively over 24 hours. Participants were considerably hindered in functional activities as was demonstrated where 39.6% considered it very difficult to participate in recreational activities or were unable to do so and 62.7% said it was very difficult to run or lift heavy things or that they were unable to do so.

Among the negative psychological symptoms are depression, anxiety and stress. Considering different measurements, the stress and anxiety levels are high compared with levels observed in other studies (Langeluddecke et al. 1989, Klonoff et al. 1989, Underwood et al. 1993). One of the sources of the patients’ anxiety is a fear that their health may deteriorate to the extent that they will suffer a heart attack and die before the surgery. The mean waiting time was 5–6 months and 23.9% of patients had waited longer than 5 months. Participants also indicated that the uncertainty surrounding the actual date of the surgery was anxiety-provoking. Thirteen per cent did not know if or for how long they had been on the waiting list. It is likely that if patients were either offered a proposed date for the operation at the beginning of the waiting time or given a realistic estimate of the length of the waiting time, their anxiety would be allayed.

The surgery was postponed in 18.6% of cases. Long waiting time and postponement of surgery have been shown to increase cost and various risk factors, among them longer sick leaves, increase in untimely death, repeated laboratory measurements, and increased emotional stress (Davenport 1991, Marber et al. 1991, Suttorp et al. 1992, Bresser et al. 1993). Bohachick et al. (1992) postulated that the length of sick leaves of heart recipients can predict how early the patients are able to start working after the operation and results by Lundbom et al. (1992) supported that postulation in a study on factors influencing return to work after aortocoronary bypass surgery.

Emotional upset of patients with ischaemic heart disease caused by stress and anger can affect coronary blood flow to such an extent that chest pain and ischaemic changes on an electrocardiogram are observed (Verrier et al. 1987, Bairey et al. 1990, Rocco 1990, Stone 1990, Tofler et al. 1990). About one-fifth of the participants reported depression and 60.9% reported anxiety. The younger participants appeared more depressed and they reported more anxiety than did older participants in this study. Patients who have moderate or severe depression and anxiety preoperatively are shown to have a high risk of psychological disturbances up to 2 years postoperatively (Strauss et al. 1992). Results from the current study indicate that a group of patients should be considered at special risk and in need of extensive psychological support and teaching pre- and postoperatively. Pre-operative psychological assessment that focuses on level of stress and anxiety, as well as coping skills and social support intended to find those at risk, is an important nursing strategy in the care of cardiac surgery patients.

Vocational, social and domestic functioning of the participants were significantly impaired. Approximately 44% were not employed pre-operatively and 76% were worried about their financial status. About half of the participants reported negative influences on their social life and 95% reported negative effects of their illness on their spouse. Negative effects on the spouse have also been reported elsewhere where quality of life of wives of coronary artery bypass surgery patients was lower than that of a healthy comparison group (Artinian & Hayes 1992). A trend could be identified, although not statistically significant, where the relationship with family and friends became worse, dissatisfaction about work and sexual life increased, and physical symptoms such as shortness of breath and fatigue increased with increased waiting time.

This study reveals a lack of information and teaching about several important factors, among them physical activity and exertion. As discussed above it has been shown that the longer the disability before heart operation, the more difficult it is for the patients to return to work. Thus, since participants of this study did not know how much they could exercise and move around, their physical and functional status may have deteriorated further, and unnecessarily beyond what their illness was doing. This may even have influenced their ability to return to work after the operation. The observed lack of information about these and other aspects of daily life, such as stress, changes in mood states, sexual life and symptom management, mandates an improvement in informational and psychological support to patients awaiting cardiac surgery.

The conclusion is that coronary heart patients awaiting surgery have a difficult time both socially, psychologically and physically, and are neither able to prioritize their needs nor to request service and support from the health care system. Since it does not seem possible to shorten the waiting time for CABG in Iceland, the health care system should be made responsible for offering information, counselling and psychological support on a regular basis to these people and their families during the waiting time. By utilizing the waiting time in a positive way, i.e. by offering organized nursing service during the waiting, the likelihood of successful operation and recovery is increased, which will in the long run have multiple benefits to the patients and the larger society.

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