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## Patient reactions to cancelled or postponed heart operations

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### Patient reactions to cancelled or postponed heart operations

**Objectives** The aim was to survey the rate and cause of cancellations of planned cardiac operations at a Swedish clinic during 1999, and to study how the patients were affected.

**Design** Questionnaires were distributed to 74 patients who had their operations cancelled. Their mood after discharge was measured with The Hospital Anxiety and Depression scale. Ninety-three patients, who were operated on without postponement, served as controls.

**Results** Sixty-one percent of the patients in the cancellation group reacted negatively, especially if the reason for cancellation was organizational ( $P=0.03$ ). The women in the cancellation group had a significantly higher degree of depression than men ( $P=0.01$ ) and both women ( $P=0.02$ ) and men ( $P=0.003$ ) in the control group. Most of the patients, however, were satisfied with the nursing staff's reception and information.

**Conclusions** The patients reacted negatively to the cancellation, especially if it had organizational reasons. Women subjected to cancellation had a significantly higher degree of depression than other patients. To be avoided, organizational and medical problems must be identified in time. One way to do this is to introduce a preadmission nurse clinic.

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### Introduction

Annually more than 9300 open heart surgery procedures are performed in Sweden (National Board of Health and Welfare 1998). Most patients waiting for cardiac surgery experience worry and uncertainty (Jonsdottir & Baldursdottir 1998, Perski *et al.* 1998); in fact one study showed that more than one-half of the patients experienced these as more distressing than the chest pains

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(Bengtson *et al.* 1996). Even preoperatively, surgery can give rise to mental and physical reactions. The patients are worried and may feel powerless, because they have minimal chances to make any decisions about their own welfare (Lazarus & Averill 1972, Burchiel 1995). Research has shown that waiting for transportation to the operating theatre is one of the most frightening experiences for patients in connection with surgery. Patients worry that their operation may be delayed (McCleane & Cooper 1990, Cobley *et al.* 1991), and if the waiting period is complicated by a sudden cancellation or a postponement, this will most often be experienced as negative

(Kennedy 1969, Davenport 1991, Bresser *et al.* 1993). This finding has consequences for construction of the realistic nursing goals, strategy and planning.

Several studies have identified the prevalence and causes of cancelled elective surgery. In different studies, cancellation rates for elective, in-patient operations varied from 9.7% to 30%. Reasons for cancellation of the elective surgery include disruption of the operation program due to emergency operations, defective planning of the operation program, sudden lack of beds at the intensive care unit, staff shortage, incomplete preoperative investigation or acute medical reasons (Davenport 1991, Lacqua & Evans 1994, Pollard & Olson 1999). Studies that have examined patient's perspective to cancellation are old and few studies have been published on this subject (Kennedy 1969, Davenport 1991, Bresser *et al.* 1993).

The aim was to survey the rate and cause of cancellations of elective cardiac operations and how these affected the patients. Factors that were studied were age, gender, reason for cancellation, when the cancellation occurred, who informed the patient about the cancellation, patient reaction to the cancellation and emotional state after discharge from the Hospital.

## Methods

### Patient sampling

The patient population consisted of all adult elective patients admitted for bypass and/or valve surgery with extracorporeal circulation at a department for Cardiothoracic Surgery, in Sweden during 1999 and whose operation was cancelled. The study sample consisted of patients in the above group whose surgery was cancelled or postponed during this time.

One thousand two hundred and twelve (1212) heart operations were performed during 1999, of which 104 were cancelled. Procedures were cancelled once or more for 94 patients. Of these 94 patients, 74 participated (14 women, 60 men) in the study. Four patients died, six were excluded for medical reasons and 10 refrained from participation. The study also included a control group of 102 consecutive patients during a 5-week period, who underwent elective cardiac surgery without any postponement, of which 93 patients, 30 women and 63 men, participated. Three patients died, one was excluded for medical reasons and five refrained from participating.

The study was approved by the Committee of Ethics in Medical Investigation of Lund University, Sweden. Study patients received a questionnaire which they were asked to complete if they chose to participate in the study. Patients received written information about

the questionnaire and the aim of the study. All data was treated as confidential.

### Procedure

Cancelled procedures were registered among cardiac surgical inpatients. Cancellations were classified as patient-related, medical or organizational (Dagmar 1992). Senior nurses were enrolled in the study as informants, who registered data about all cancellations. All nurses received oral and written instruction on how to register cancellation data.

Patients were asked to complete a questionnaire about their experiences in connection with the cancellation. They were also asked about their emotional state after discharge from the Hospital. Patients for whom heart surgery was found unsuitable received these questions, together with an invitation to participate in the study, by mail. Patients with postponed operations received the questionnaire after surgery. The time ranged from 1–12 weeks after the cancellation (median 4 weeks). Patients who did not answer were reminded by mail once. The control group, who were operated on as scheduled, received the same questionnaire on emotional state after returning home from Hospital.

### Instrument

A questionnaire was designed on the basis of a literature review. The patients were asked questions of a socio-demographic nature, such as age and gender, as well as specific questions about the cancellation. In addition, four questions were included, each of which the patients answered on a numerical scale from zero to 10. Zero indicated the most positive response and 10 the most negative one. A pilot study was conducted to test the validity of the questions, and showed them to be satisfactory.

Furthermore, patient mood after Hospital discharge was measured with the help of the questionnaire 'The Hospital Anxiety and Depression scale' (HAD) (Zigmond & Snait 1983). A pilot study was conducted with the same questionnaire.

The HAD consists of 14 questions divided into two categories, seven relating to anxiety (HAD-A) and seven relating to depression (HAD-D). Each multiple-choice question has four response alternatives with a possible score of 0–3. Responses reflect the patient's emotional state during the past week. A total score of 7 or less of the maximum of 21 in each category indicates noncases; 8–10, doubtful cases; and 11 or above, clinically significant cases of anxiety or depression (Zigmond & Snait 1983).

## Statistical analysis

A multidimensional analysis of the causal structure around HAD and other variables was the platform for a regression analysis. Comparisons between different defined groups were made with *t*-tests and Mann–Whitney *U*-tests. The analysis was made with the help of SAS statistical software (version 8.0, SAS Inc., Cary, NC, USA).  $P < 0.05$  was considered statistically significant. Results are given as mean  $\pm$  standard deviation.

## Results

The patients in the cancellation group were between the ages of 34 and 86 years, with an average age of  $66 \pm 11$  years. The average age among the women, 74 years, was higher than for the men, 64 years ( $P = 0.004$ ). The control group had an average age of  $68 \pm 10$  years. The average age for women, 73 years, was higher than for men, 66 years ( $P = 0.002$ ). Of the 74 patients who were included in the study, two (2.7%) cancelled their own operations, 22 (29.7%) had their operation cancelled for medical reasons and 50 (67.6%) had their operation cancelled for organizational reasons. The patients were told that their operation was cancelled or postponed 1–24 h before the planned operation time, with an average time of  $5.71 \pm 7.23$  h. Fifty-four out of 72 (75%) answering patients were satisfied with the information they received about the cancellation. Forty-three out of 71 (61%) patients reacted negatively to the fact that their operation was cancelled and 45 of 71 (63%) felt negatively influenced after the cancellation. Almost everyone, 67 out of 70 (96%) who answered, was satisfied with the reception of the nursing staff after notification of the cancellation (Table 1).

Figure 1 shows that the cancellation group had a higher grade of anxiety and depression than the control group, even if the difference did not reach significance. The women in the cancellation group were significantly more depressed than the men in the cancellation group

( $P = 0.01$ ) and than both the women ( $P = 0.02$ ) and the men ( $P = 0.003$ ) in the control group (Figure 1, Table 2).

There was a tendency towards a correlation between how the patients felt after being informed about the cancellation and HAD, regarding both anxiety ( $P = 0.10$ ) and depression ( $P = 0.11$ ).

Of the patients whose operation was cancelled and who later were operated on, it was found that the less negative feelings they had after the cancellation and the more positively they reacted to the nursing staff's reception, the less anxiety they showed ( $P = 0.05$ ).

In 55.4% of cases, it was the operating surgeon that informed the patients that their operation had been cancelled or postponed. Other doctors informed 17.6%, a nurse 20.2% and a doctor and nurse together 6.8% of the patients. There was a tendency for elderly patients to be more negatively affected if the operating surgeon did not inform them himself ( $P = 0.08$ ). If the older patients were informed by someone other than the surgeon, and if the operation was cancelled for organizational reasons, the negative trend was even stronger ( $P = 0.06$ ).

The reaction, as well as the feeling was significantly more negative if the cancellation occurred for organizational reasons ( $P = 0.03$ ,  $P = 0.04$ ). The older the patients were, the more negative was the reaction if the cancellation had organizational reasons ( $P = 0.05$ ).

The less remaining time before the planned operation, the more negative the nursing staff's reception of the patients was considered. Men were most negatively affected ( $P = 0.05$ ).

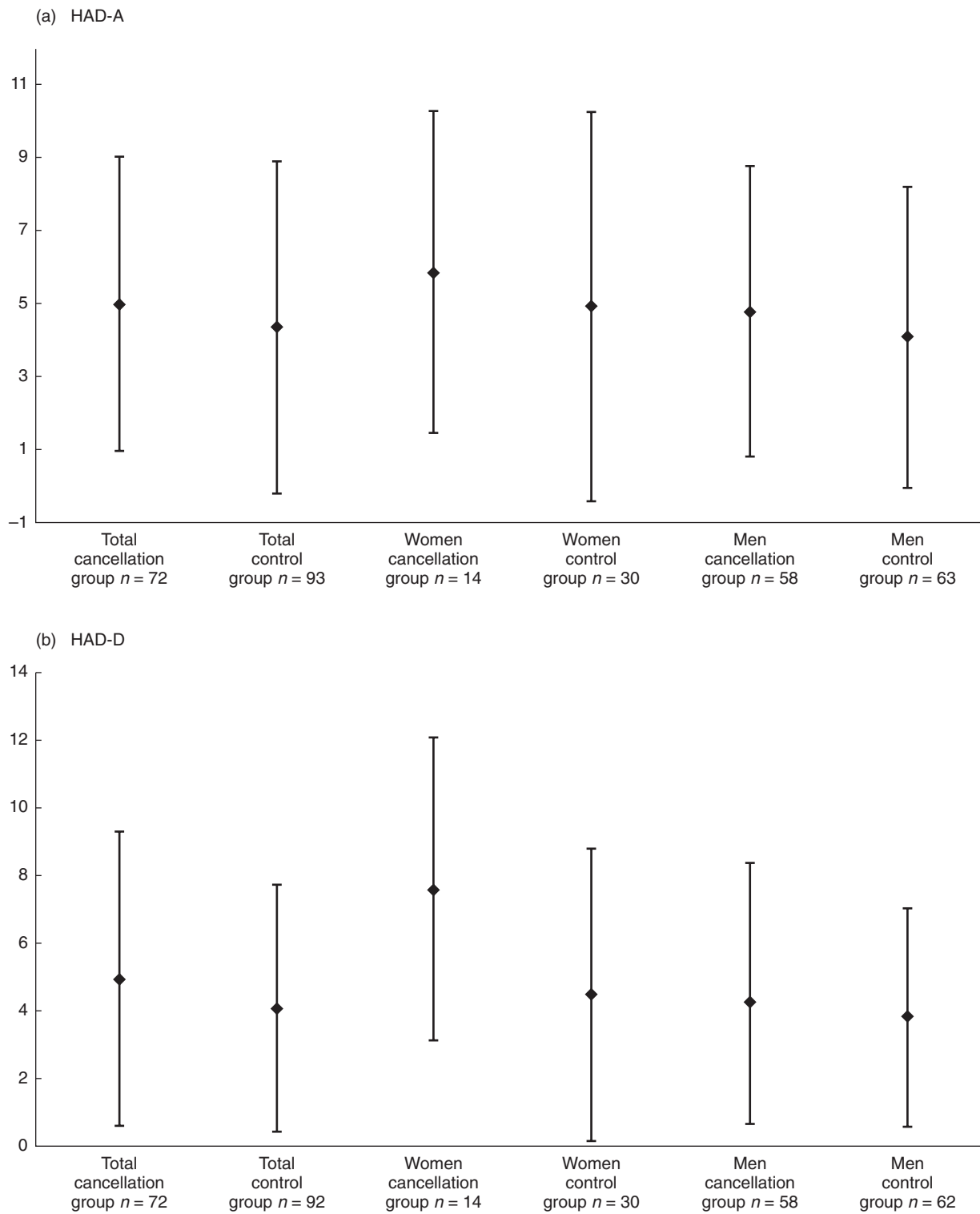
The longer the time interval from the cancellation to the expected operation, and if the patient received a new operation date at the same time as the information, the more satisfied the patient was with the nursing staff's reception ( $P = 0.057$ ) in contrast to those who received the information close to the operation date and did not receive a new date.

The patients with more than one cancellation did not differ significantly from the other patients regarding any of the studied variables.

**Table 1**  
The patient's experiences of cancellation of heart surgery

Questions	<i>n</i>	Mean	SD	Range
How satisfied/dissatisfied were you with the information regarding the cancellation?	72	5	3	2–8
How did you react to your operation being cancelled?	71	6	3	3–9
How did you feel when your operation had been cancelled?	71	7	3	4–10
How satisfied/dissatisfied were you with the staff's reception when your operation had been cancelled?	70	2	2	0–4

Ratings on a scale of 1–10, with 0 the most positive and 10 the most negative.



**Figure 1** Variations in mean level ( $\pm$ SD) of depression for women and men in a group with cancelled heart surgery and a control group with surgery performed on schedule. (a) HAD-A, anxiety scale of the Hospital and Anxiety and Depression scale. (b) HAD-D, depression scale of the Hospital and Anxiety and Depression scale.

**Table 2**

Scores of the Depression scale of the Hospital and Anxiety and Depression scale. (HAD-D) in patients with cancelled heart surgery and in controls with surgery performed on schedule

	Total cancellation group	Total control group	Women cancellation group	Women control group	Men cancellation group	Men control group
Non case*	52 (72%)	79 (86%)	7 (50%)	25 (83%)	45 (77%)	54 (87%)
Doubtful†	12 (17%)	6 (6%)	4 (29%)	1 (3%)	8 (14%)	5 (8%)
Clinical‡	8 (11%)	7 (8%)	3 (21%)	4 (13%)	5 (9%)	3 (5%)
Total	72	92	14	30	58	62

\*Score range 0–7; †range 8–10; ‡range 11–21.

## Discussion

To collect information, a questionnaire was sent to patients. Another way to collect information would have been to interview the patients in the Hospital directly after the cancellation. This was not practically possible, because many patients left the Hospital immediately on leave, or after being discharged. In these cases, the nurse in charge at the time would have had to carry out the interview, because the cancellations took place at many different times of the day and some patients wanted to go home as quickly as possible. To perform the interviews in the patients' homes would take too much time, because of the number of patients and the wide geographical distribution.

The HAD instrument was used in the present study and its validity and reliability have been described by Bowling (1997). The Swedish version of the HAD instrument has been useful as a clinical indicator of anxiety and depression (Lisspers *et al.* 1997) and it has been used in a number of Swedish clinical studies, including those with surgery patients (Lilja *et al.* 1998). To familiarize ourselves with the questionnaire and test its validity and reliability, a pilot study was performed before the present study was started, and the questionnaire was deemed to be acceptable.

In this study, organizational reasons were the most common cause for cancellations. The patients' reactions were also significantly more negative if there were organizational reasons for the cancellation. Other studies show that it is possible to reduce cancellations for organizational reasons by changing waiting-list systems and operation-booking systems (Morgan & Vaughan 1997) or by introducing a coordinator for beds and operations (Fletcher & Hodges 1999). There can be several organizational problems that can differ between Hospitals. To exactly identify where these problems are, a survey is needed of the whole process, from the point where the patient is put on the waiting list and for operation until he/she leaves the Hospital postoperatively. Much

suffering will be avoided if the organizational reasons for cancellations are reduced to a minimum.

There were also medical reasons for cancellations in this study. Various studies show that other clinics have minimized the cancellation frequency occasioned by medical reasons by using preadmission clinics, and have thereby also reduced the patients' anxiety and uncertainty before an operation (Leino-Kilpi & Vuorenheimo 1993, Nelson 1995, Lindsay *et al.* 1998). An earlier study showed that anxiety is common before cardiac surgery (Duits *et al.* 1998). In one study, the patients' preoperative anxiety could be reduced from 74% to 27% by using a preadmission clinic (Lindsay *et al.* 1998). If the patients visit a preadmission clinic staffed with experienced nurses when it is clear that heart surgery is needed, it will hopefully be possible to identify and measure both medicinal and psychosocial problems in time to prevent these reasons for late cancellations. In case of uncertainty, it is important that the nurse consults an experienced heart surgeon.

The patients in the cancellation group of the present study had a higher, although not significant, mean value for anxiety on the HAD scale compared to the control group and also compared to a Swedish normal population (Lisspers *et al.* 1997).

The women subjected to cancellation had a significantly higher degree of depression than women in the control group, and other patients studied. In general, women show a higher rate of depression than men (Duits *et al.* 1998), although this could not be seen in the control group. The men in the cancellation group did not show any increased degree of depression. One reason can be that women have symptoms of heart problems later in life and are often older when they are operated on (Miller *et al.* 1999, King 2000). The age differences are also apparent in this study; the women were significantly older than the men. Generally, older persons show more worry, stress and fear before an operation than younger persons do (Weaver Moore & Proffitt 1993).

The proportion of patients reacting negatively to having their operation cancelled (61%) is similar to that seen in a previous study (Kennedy 1969).

In this study, it is clearly shown that it is not always a doctor who is the one to inform the patients of a cancellation. This finding can also be seen in other studies (Kennedy 1969, Bresser *et al.* 1993). It is also shown that especially older patients feel more negative if the operating surgeon is not the one who gives them the information. In an earlier study, patients who showed long-lasting aggressiveness had been informed by someone other than a doctor (Kennedy 1969). Another study showed that most patients trusted their surgeon and found their preoperative information very important (Leino-Kilpi & Vuorenheimo 1993). This may explain why patients that had not been informed by their surgeon reacted more negatively. At one English heart clinic, the operating surgeon always informed patients about the cancellation, which meant that it could take a long time before the patient was informed (Davenport 1991). This is presumably an explanation for the fact that the operating surgeons were not the ones to give cancellation notice to more patients in this study. At the time of cancellation, the surgeon was often occupied with operating on emergency cases. In this situation, it is all the more important that the information given by other personnel is adequate, that they show empathy for the patients and that the information is given without delay. Presumably, a follow-up talk with the surgeon would have been of great value to reassure the patients and to increase their understanding of why the operation was cancelled.

Most patients were satisfied with their reception by the nursing staff, and many patients were satisfied with the information they received when the operation was cancelled. This is encouraging, because patients are now coming to the Hospital closer and closer to the operation. This short time frame gives patients and nursing staff less time to get to know each other, and this can be a disadvantage for the patients' confidence. The nurses have a very important task in upholding a holistic care concept and taking care of the relationship with the patient. One study showed that there is a significant connection between adequate information and patient satisfaction with healthcare (Larson *et al.* 1996). If information about a new operation date can be given at the same time as the cancellation, the patients will be more satisfied with the nursing staff's reception. This result is clearly shown in this study.

Studies have confirmed that cancellations near the expected operation time cause unnecessary stress both for patients and their families. Most patients and their

families became very upset when the operation was cancelled, because they had prepared themselves mentally (Kennedy 1969, Bresser *et al.* 1993). In this study, it is clearly shown that the closer the cancellation is to the scheduled operation, the more negatively nursing staff reception is rated.

## Conclusions

In this study, the patients reacted negatively to having their heart operations cancelled, especially if the cancellation had organizational reasons. The women in the cancellation group had a significantly higher degree of depression than the other studied patients. Most of the patients were satisfied with the nursing staff's information and reception after the cancellation. The results indicate that cancellations should be minimized. It is therefore important to identify the reasons for the cancellations and make suitable changes in the organization. A preadmission clinic with an experienced nurse, where all incomplete preoperative investigations and psychosocial problems can be detected, may be of great value. Special efforts should be made to inform patients with cancelled surgery adequately, if possible by the surgeon who was to operate on the patient, and to arrange for a new operation date as soon as possible.

Future research is needed in this patient category to see what kind of support patients and their relatives get both at home and in Hospital, before an operation. To achieve a deeper perspective, a qualitative study in the field can be valuable. Moreover, a health economics study on these patients would be of interest for the individual patients, their families and not least society.

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