

# Quality of Life after Open-heart Surgery in Patients over 75 Years Old

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## Summary

In a postal study we used the Nottingham Health Profile questionnaire to assess the quality of life of elderly survivors of open-heart surgery. From January 1984 to October 1993, 146 patients over 75 years of age underwent open-heart surgery in the Department of Cardiovascular Surgery at Besançon (France). Eleven patients (7.5%) died in the immediate post-operative course. Patients' mean follow-up was  $3.4 \pm 2.4$  years. Fourteen patients died during follow-up. One hundred and four completed Nottingham Health Profile questionnaires were returned. Five per cent of the patients lived in an old people's home. Six per cent of the patients were unable to walk at all. One patient out of five felt isolated. Fifteen per cent of the patients were in constant pain. Half of the patients took sleeping pills. Conversely, 87% of the patients felt an improvement after surgery. Sixty-two per cent continued to drive. Ninety-seven patients (92%) did at least one of the following three activities: watched television, listened to the radio, read books or magazines. Fifty-eight patients (56%) walked on a regular basis. The different types of pathology, of surgical procedures and whether or not a pacemaker was implanted during the post-operative course were not reflected in the quality of life (QOL) scores. After cardiac surgery, most of the patients were physically autonomous and related to their exterior world.

## Introduction

The efficacy of surgical procedures is usually assessed from objective and easily measurable criteria such as survival rates, recurrence of symptoms and complications. We felt it would be of interest to describe the quality of life (QOL) of patients over 75 years of age after cardiac surgery.

Cardiac surgery is now being performed on more and more elderly patients. Survival results for patients over 75 years of age and even 80, have been previously reported [1, 2], but there have been no evaluations of the QOL of these patients. We performed a postal survey of survivors of open-heart surgery using the Nottingham Health Profile (NHP) questionnaire.

## Patients and Methods

For this retrospective study, the questionnaire was sent to all surviving patients who had been over 75 years of age when open-heart surgery was performed. From January 1984 to October 1993, there had been 146 such patients in the Department of Thoracic and Cardiovascular Surgery of St Jacques Hospital, Besançon, France. Eleven patients (7.5%) had died in the post-operative course. A questionnaire was sent to the 135 patients who had been discharged alive from hospital. The pathologies represented were as follows: calcified aortic stenosis (CAS) (51%), coronary artery disease

(CAD) (23%), associated CAS-CAD (12%), aortic regurgitation (2%), mitral pathology (10%) and others (2%). The surgical procedures were as follows: isolated aortic valvular replacement (AVR) (53%), coronary artery bypass grafting (CABG) (23%), associated AVR-CABG (12%), mitral valve replacement (10%).

The NHP is a questionnaire written originally in English [3], which underwent rigorous translation into French, back translation and linguistic validation [4]. 'The NHP is a questionnaire designed to measure social and personal effects of illness, to capture self-reported morbidity. . . . It contains 38 subjective statements, drawn from a pool of over 2000 commonly-used expressions of health problems, gathered from members of the public. These statements form six sections relating to the following areas: sleep, energy, pain, physical mobility, social isolation and emotional reactions. The number of statements in each section varies, from three in the energy section to nine in the emotional reactions section. Within each section an aggregation of responses is made possible by the use of item weights determined on a general population sample using the Thurstone method of paired comparisons' [4]. We have not included it. We added nine questions (Table I).

Patient survival was assessed by an actuarial method. The comparison between survival curves according to groups was assessed using the Cox method in univariate analysis [5]. The scores of 93 patients aged from 65 to 74 years operated on in our institution were compared to those of our patients (who are over 75), using a *t* test.

Table I. Nine questions added to NHP questionnaire

| Statements                                                                                                             | Yes % | No % |
|------------------------------------------------------------------------------------------------------------------------|-------|------|
| I feel better than before cardiac surgery<br><i>Je me sens mieux qu'avant l'intervention chirurgicale sur le coeur</i> | 87.5  | 12.5 |
| I drive my car<br><i>Je conduis ma voiture</i>                                                                         | 62.5  | 37.5 |
| I watch television<br><i>Je regarde la télévision</i>                                                                  | 85.6  | 14.4 |
| I listen to the radio<br><i>J'écoute la radio</i>                                                                      | 78.8  | 21.2 |
| I read books or magazines<br><i>Je lis des livres ou des revues</i>                                                    | 74.0  | 26.0 |
| I go out alone<br><i>Je sors seul de chez moi</i>                                                                      | 76.0  | 24.0 |
| I live in an old people's home<br><i>Je vis en maison de retraite</i>                                                  | 4.8   | 95.2 |
| I regularly go for a walk<br><i>Je fais de la marche régulièrement</i>                                                 | 55.8  | 44.2 |
| I filled in this questionnaire myself<br><i>J'ai rempli moi-même ce questionnaire</i>                                  | 81.7  | 18.3 |

## Results

There were 72 men and 63 women with a mean (SD) age of 78 (2.6) years. Thirty-two patients (24%) were over 80. Mean age when the questionnaire was mailed was 81 (3.5) years and at that time 85 patients (63%) were over 80. The patients' mean follow-up was 3.4 (2.4) years. Fourteen patients had died during follow-up. When surviving patients were compared with patients who had died during follow-up, there was no significant difference in their ages at the time of the operation [77.7 (2.6) years vs. 78.5 (2.8) years]. There was also no significant difference between the age of surviving patients when the questionnaire was mailed and the age deceased patients would have been [81 (3) years vs. 82 (4) years]. The sex ratio was however significantly different: 61 men and 60 women in the surviving patient group, 11 men and three women in the deceased patient group ( $p < 0.05$ ).

Excluding in-hospital mortality, survival rate was 98 (1)% at 2 years, 90 (4)% at 5 years and 75 (8)% at 7 years. Mean survival for men was 98 (2)%, 87 (5)% and 68 (10)% and mean survival for women was 98 (2)%, 93 (5)% and 84 (10)% at 2, 5 and 7 years respectively (Mantel-Cox,  $p > 0.10$ ). Survival rate did not differ significantly between patients aged over or under 80 years when surgery had been performed. The survival rate of patients aged over 80 was significantly lower than of patients under 80 when the questionnaire was sent out ( $p < 0.05$ ). Twelve patients (10%) did not reply to the questionnaire. In four cases they refused to do so, in three cases they were unable to reply because of advanced frailty or dementia. Four patients could not be traced but there was no record of death in the official records. One patient was lost to follow-up. Five patients answered the questionnaire incompletely. One hundred and four complete questionnaires were returned, from 53 men and 51 women; 22% had been over 80 when the operation was performed and 59% were over 80 when the questionnaire was mailed.

In the physical mobility section of the questionnaire, 6% of patients were unable to walk, and 17% only walked indoors. One patient out of two found it hard to stand for long and 40% had trouble getting up and down stairs or steps.

In the social isolation section, 15% of patients felt they were a burden to people and 20% felt lonely. In the emotional reaction section, 13% of patients felt that life was not worth living and 12% had forgotten what it was like to enjoy themselves. In the sleep section, one patient out of two took sleeping pills and 38% took a long time to get to sleep. In the energy section, 60% of patients soon ran out of energy and 27% were tired all the time.

In the pain section, 15% of patients had constant pain and 5% had unbearable pain. Eighty-seven per cent had felt an improvement after surgery (Table I). Of the 62% of patients who drove their car, 26% were over 80 years of age. Eight per cent of the patients did not watch television, listen to the radio or read books or magazines. Five per cent of the patients lived in an old people's home. Most of the patients (81%) filled in the questionnaire themselves (Table I). Mean scores for each section (Table II) showed that patients mainly

Table II. Mean scores of the Nottingham Health Profile for selected groups

|                     | Our series | Patients aged from 65 to 74 | 'Fit' elderly | Patients with vascular disease | Patients with osteoarthritis | Chronically ill elderly subjects |
|---------------------|------------|-----------------------------|---------------|--------------------------------|------------------------------|----------------------------------|
| Energy              | 36.7       | 16.8                        | 4.1           | 30.3                           | 63.2                         | 38.0                             |
| Pain                | 15.3       | 9.7                         | 1.1           | 22.6                           | 70.8                         | 29.2                             |
| Emotional reactions | 15.5       | 11.9                        | 3.3           | 13.9                           | 21.3                         | 15.1                             |
| Sleep               | 34.9       | 31.0                        | 0.7           | 24.7                           | 48.7                         | 32.1                             |
| Social isolation    | 13.1       | 6.0                         | 1.3           | 9.2                            | 12.5                         | 12.8                             |
| Physical mobility   | 25.5       | 13.1                        | 1.9           | 22.0                           | 54.8                         | 29.2                             |

The last four columns are the scores determined by Hunt *et al.* [3].

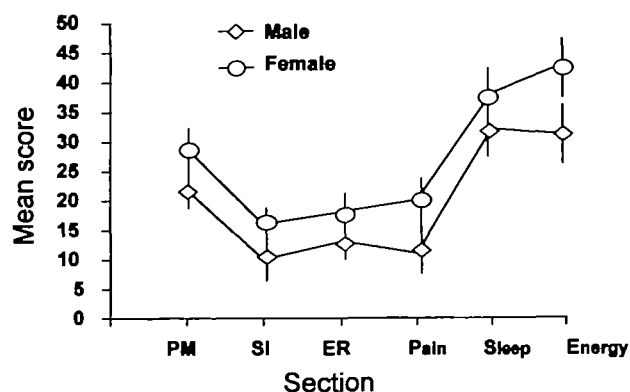


Figure 1. Mean scores for each section of the Nottingham Health Profile divided by sex. PM: physical mobility, SI: Social isolation, ER: Emotional reactions. Data are given as the mean value (standard error of the mean).

suffered from tiredness and sleeping difficulties. Their physical mobility was also altered.

The differences between score averages for each NHP section were evaluated according to the following criteria. Women complained more than men in all sections of the questionnaire, but this difference was not significant (Figure 1).

Patients aged over 80 when the questionnaire was mailed were physically less mobile and more depressed than patients aged under 80 (Figure 2). The time lapse of less or more than one year between the surgical operation and the mailing of the questionnaire did not have an effect on patients' QOL (data not shown).

The different types of pathology, of surgical procedures (Figure 3) and whether or not a pacemaker was implanted during the post-operative course were not reflected in the QOL scores. Six patients were severely

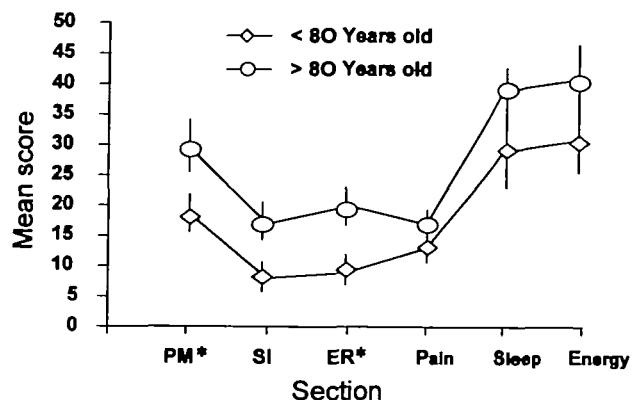


Figure 2. Mean scores for each section of the Nottingham Health Profile divided by age when the questionnaire was mailed. \*Statistically significant difference ( $p < 0.05$ ). PM: Physical mobility, SI: Social isolation, ER: Emotional reactions. Data are given as the mean value (standard error of the mean).

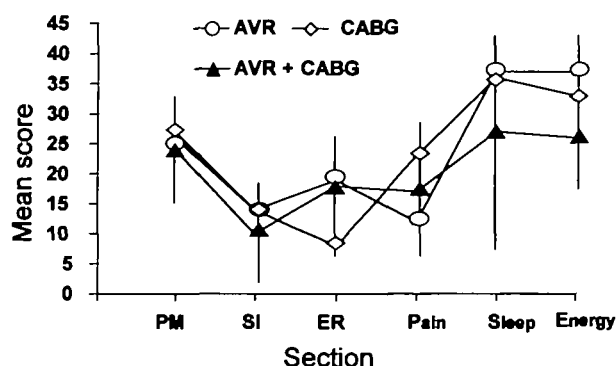


Figure 3. Mean scores for each section of the Nottingham Health Profile divided by surgical procedure. PM: Physical mobility, SI: Social isolation, ER: Emotional reactions. AVR: Aortic valve replacement, CABG: Coronary artery bypass grafting. Data are given as the mean value (standard error of the mean).

physically handicapped and three patients were unable to answer the questionnaire because of advanced senility.

Comparison between our series and the patients aged from 65 to 74 years operated on in our institution, revealed scores significantly better for the younger patients in the energy ( $p < 0.01$ ), pain ( $p < 0.05$ ), physical mobility ( $p < 0.01$ ) and social isolation ( $p < 0.01$ ) sections (Table II).

## Discussion

In our practice, there has been an increase in the number of patients over 75 years of age. Twenty per cent of the patients in question were operated on during the first 5 years of the study (from 1984 to 1989), whereas 50% of the patients underwent surgery during the last 2 years of the study. Until the end of the 1980s, it was rare to operate on patients over 75 years of age. By 1993, 15% of all our patients were over 75. The social and economic implications of cardiac surgery demand a careful and extended evaluation. Mortality, morbidity and recurrence of symptom rates should not be the sole criteria when assessing the results of cardiac surgery in elderly patients. If we are to have a more complete picture of the outcome of these patients, their QOL should also be evaluated.

Does the improvement in surgical techniques lengthen the life expectancy of patients who will be bedridden and demented, or does it mean patients who, despite their age and reduced activity, will have a social life with satisfactory autonomy?

A successful operation may worsen the QOL, especially in elderly patients, because their systems cannot cope with the operative shock. The decision to operate takes into account not only the usual objective criteria for a specific pathology, but also the patients' will to live. Besides this subjective criterion, our results showed that surgery was particularly beneficial for men under 80 years old who drove their own car and lived in their own home.

Studies using the Nottingham Health Profile questionnaire have been carried out on heart transplant patients [6], heart-lung transplant patients [7] and patients suffering from a cardiovascular stroke [8]. Comparing our results with previously reported data is rather difficult since there are very few similar series. Hunt *et al.* [3] have evaluated the QOL of patients suffering from arthritis, elderly patients suffering from a chronic disease, patients with peripheral vascular disease and of 'fit' elderly subjects (Table II). Our patients had a similar profile to that of patients suffering from a chronic disease (Table II). The comparison of our results with those of younger patients operated on in our institution revealed better scores in all sections of QOL. It was not surprising that energy, pain and physical mobility were significantly better in the younger patients. Alterations in emotional reactions and sleep were similar in both groups. Even in this younger population, the scores were worse than the scores of 'fit elderly' [3] (Table II).

While surgical procedures influence survival [9, 10], their individual influence is not perceptible on QOL (Figure 3). The combination of aortic valve replacement (AVR) and coronary artery bypass grafting (CABG) provides a QOL similar to that of an isolated AVR or CABG. The similarity in QOL between patients with a pacemaker and those without is probably due to age-related reduced physical activity.

Three patients were unable to answer the questionnaire because of advanced frailty or dementia. These patients had no autonomy and required permanent assistance. Six patients could not walk; only one of them lived in an old people's home. Twenty patients did not fill in the questionnaire themselves but were able to answer the questions. Fifty-eight patients (56%) regularly went for a walk and 65 (62%) still drove their car. Pain, tiredness and disturbances of sleep patterns were the most frequent complaints from our elderly patients. Eighty-seven per cent of patients (Table I) found their lives improved because of surgery.

Cardiac surgery in elderly patients improved their quality of life; most of them were physically autonomous and related to their exterior world. The QOL of these patients was closer to that of the chronically ill elderly subjects than to that of the 'fit' elderly subjects.

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