

# Coronary Heart Disease

Subjects: **Cardiac & Cardiovascular Systems**

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Coronary heart disease is a public health problem and is one of the leading causes of loss of quality of life, disability, and death worldwide. A widely used therapeutic option for the treatment of coronary disease worldwide is coronary artery bypass grafting (CABG). A CABG seems to be very beneficial for patients, since in addition to the positive quality of life results, other studies indicate that it positively influences the occurrence of depression [30], can lead to the disappearance of symptoms for around 15 years, decreases death resulting from other causes, reduces hospital admission, and reduces death due to cardiovascular factors.

coronary heart disease

coronary artery bypass grafting

quality of life

## 1. Introduction

Coronary heart disease is a public health problem and is one of the leading causes of loss of quality of life, disability, and death worldwide. The main procedure these patients undergo is cardiac catheterisation, both for diagnostic and therapeutic purposes [1]. Cardiac catheterisation helps improve quality of life, symptoms of myocardial ischaemia, and ventricular function, thus helping increase the survival rate of sufferers. It can also, however, lead to physical consequences, including kidney failure, acute myocardial infarction, and stroke [2]. It also has psychological consequences, such as stress, anxiety, fear, and depression [3]. Another widely used therapeutic option for the treatment of coronary disease worldwide is coronary artery bypass grafting (CABG). The development of this technique in recent decades has led to an improvement in both postoperative and long-term outcomes [4].

People with coronary heart disease are more likely to suffer heart problems and other pathologies [5] as, in addition to being one of the main causes of death worldwide, it also favours the development of comorbidities. The treatments described above are designed to improve myocardial perfusion, to improve the symptoms of and reduce the incidence of heart attacks and death [5].

This improvement in cardiac activity is also reflected in the daily life of an individual with heart disease. In fact, improved quality of life is one of the most sought aspects. Evaluating quality of life allows us to ascertain a subjective assessment of an individual's health, as well as the impacts that the disease and its treatment have on that person's daily life [6].

Quality of life is a concept that encompasses the physical, emotional, and social dimensions, and it varies with time and the individual's perception [7][8]. There are currently a multitude of questionnaires available to measure patient quality of life. The generic validated Short Form 36 (SF36) questionnaire has been used on patients undergoing heart surgery. It consists of 35 items, distributed across eight domains and is divided into two main groups: physical and psychological components [9].

Another questionnaire reported in the literature for measuring quality of life in patients with chronic diseases and disabling symptoms is the two-part Nottingham Health Profile (NHP) [10]. The first part contains 38 items, divided into six dimensions: physical mobility, pain, sleep, energy, social isolation, and emotional reactions. Patients answer yes or no to the questions according to whether they have suffered the problems. The second part comprises seven aspects affected by the patients' health status: capacity to work, ability to do housework, social life, family relationships, sex life, hobbies, and holidays. The score for each section ranges from 10 to 100, the higher the score the greater the problem presented by the patient and the lower their quality of life.

## 2. Quality of Life Before and After a CABG

Studying cardiac, non-cardiac, preoperative, and early postoperative factors helps us know the health status of patients and predict their quality of life after surgery [11][12]. The quality of life of patients undergoing cardiac catheterisation improved dramatically between 6 weeks [13] and 3 months [14][12] or 6 months [15][16] after surgery, particularly with regard to the group of items encompassing physical problems [13]. Sexual health problems in men persisted throughout the follow-up period [14][17]. Physical problems improved according to the functional capacity of the patients prior to surgery [18]. Female sex [17][19], age, hypertension, obesity, renal failure, cerebrovascular disease, unstable angina [20], being a smoker, and having a psychiatric pathology [21] are all factors that have been shown to delay the recovery of post-surgery quality of life [22][23][24].

The studies that analysed quality of life using the SF questionnaire all showed quality improvements in both physical and mental aspects [18][15][21][11][13][24][25][12]. The least physical improvement was 2.2 points [18] and the most was 8.2 points [15][11]. For the mental aspect of quality of life, the improvement in the score ranged from a maximum of 3.6 points [11] to a minimum of 0.3 points [13]. Studies using the NHP questionnaire all showed improvements in quality of life scores with differences of up to 6 points after 10 years [22], 10 points after two years [14], and, in some cases, the differences in quality of life being greater for women than men [17].

It has been observed that after CABG, in most studies, people exhibit significant improvements in the different dimensions of quality of life as analysed in the SF and NHP questionnaires. This positive result was also confirmed by the meta-analytical estimates of the impact on quality of life, with a lower prevalence of impact in all the dimensions of quality of life analysed. Within the SF, the physical dimension seems to improve more than the mental aspect.

A CABG seems to be very beneficial for patients, since in addition to the positive quality of life results, other studies indicate that it positively influences the occurrence of depression [26], can lead to the disappearance of symptoms

for around 15 years [27], decreases death resulting from other causes, reduces hospital admission, and reduces death due to cardiovascular factors [28]. In addition, mortality in this type of surgery appears to be declining substantially [28]. Therefore, although surgery still involves risk and the possibility of future complications for individuals, it appears that the benefits are positive and appropriate in relation to the risk. These risks and complications seem to be reduced when the surgery is not performed urgently and when the patient presents no other pathologies [27].

The effects of CABG on more physiological aspects, such as the left ventricular ejection fraction, have also been analysed in other studies, which report improvements in those patients in whom the fraction was diminished before surgery, but a deterioration in those in whom the fraction was at normal levels [29]. Some authors also recommend performing a coronary angiography after the CABG to avoid the appearance of possible postoperative complications, as between 2% and 8% of heart attacks are reported in the perioperative period [30].

On the other hand, a significant difference between Percutaneous Coronary Intervention (PCI) and CABG regarding cardiovascular death has not been observed [31].

From a clinical perspective, this cardiac surgery, one of the most widely performed in the world, has a good scientific basis that supports the improvements it generates in quality of life and other aspects. For this reason, this type of surgery continues to be performed daily across the globe, and improvements are being researched with the use of existing technology in order to determine the optimal way to operate in the future, in the least invasive manner, and with the most lasting effects [4].

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