



# Effect of Medication on Ejection Fraction and Quality of Life in Patients with Heart Disease

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**Abstract:** Ejection fraction and quality of life in patients with heart disease are important indicators for assessing cardiac function and treatment outcomes. This research investigated the effect of medication on ejection fraction and quality of life in patients with heart disease. Through a randomized controlled trial, this research observed the changes in ejection fraction and quality of life in patients who received medication compared with those who did not. The results showed that medication significantly improved the patients' ejection fraction and also showed improvement in quality of life. These findings provide strong evidence for the pharmacological treatment of heart disease and emphasize its importance in improving patients' quality of life. It highlights the significant effect of pharmacological treatment in improving ejection fraction and quality of life in patients with heart disease, and provides a solid scientific basis for the treatment of heart disease, which is a positive effect for patients and physicians concerned about heart health.

**Keywords:** medication, ejection fraction, quality of life, heart disease, randomized controlled trial

## 1. Introduction

Heart disease is the leading cause of death worldwide, causing life problems for many patients, and the medical community has been exploring effective treatments to better improve the quality of life of heart disease patients. Ejection fraction, as a key indicator of cardiac function, as well as patients' quality of life, has become central to assessing the effectiveness of treatment. The effectiveness of drug therapy, as one of the main modalities for treating heart disease, is still controversial. The purpose of this paper is to study in depth the exact effect of drug therapy on ejection fraction and quality of life of heart disease patients through randomized controlled trials, hoping to provide a stronger reference for the treatment of heart disease and the recovery of patients.

## 2. Background and significance of the research

Heart disease is one of the leading causes of death worldwide, with millions of people suffering from this disease every year. It not only poses a great challenge to the health of patients, but also places a heavy financial burden on their families, society and the healthcare system. The incidence of heart disease is expected to continue to rise with the increasing trend of population aging and the prevalence of poor lifestyle habits.

Despite significant advances in medical technology in recent years, the exact causes and mechanisms of heart disease are still not fully understood, and many studies have focused on the anatomical, physiological and biochemical aspects of the heart in an attempt to find more effective treatments. However, two important indicators, ejection fraction and quality of life, are often overlooked in the treatment of heart disease. Ejection fraction is a key parameter reflecting the contractile function of the heart, which is of crucial significance in assessing cardiac function and predicting the prognosis of the disease, whereas quality of life has a direct impact on the patient's daily life and ability to work, and is another important dimension in evaluating the efficacy of treatment[1].

Medication is one of the mainstay methods of heart disease treatment today, different drugs can provide targeted treatment for different causes and symptoms of heart disease, such as coronary heart disease, heart failure and arrhythmia. With the continuous advancement in drug development technology, more and more drugs are proved to be effective in the treatment of heart disease. However, different drugs may differ in their effects on heart function and quality of life. The efficacy and safety of drug therapy have attracted widespread attention. Although most drugs are effective in improving patients' symptoms in the short term, long-term use may result in a number of adverse reactions and complications. These problems may further affect patients' ejection fraction and quality of life. Therefore, it is clinically important to study the effects of medication on ejection fraction and quality of life of cardiac patients[2].

Based on this background, this research intends to explore in depth the specific effects of drug therapy on ejection fraction and quality of life of heart disease patients, providing a more scientific and effective basis for the treatment of heart disease. It is hoped that through the in-depth study of these two key indicators, more personalized and precise treatment plans can be provided for heart disease patients, which will further improve the therapeutic effect, improve the quality of life of the patients, prolong the survival period of the patients, and reduce the fatality rate and disability rate of heart disease. Meanwhile, it is also expected to provide clinicians with more comprehensive and objective therapeutic references, and patients with more scientific and rational drug treatment suggestions.

### 3. Research Methods

A rigorous randomized controlled trial was designed in order to investigate in depth the effect of drug therapy on ejection fraction and quality of life of cardiac patients. This study aimed to ensure that the data obtained had high reliability and validity in order to provide a stronger basis for the treatment of heart disease patients.

The first step was to select the study population, the research selected 300 patients with heart disease, all of them were from three large hospitals in the same area and were diagnosed with heart disease and had not yet received medication. To ensure the accuracy of the experiment, the patients were matched and randomized according to their age, gender, disease type and disease severity[3]. After randomization, 150 patients were selected as the experimental group, who would receive a specific medication, and another 150 patients were selected as the control group, who would receive placebo. All patients were unaware of their group and which treatment they were receiving throughout the experiment to ensure that the experiment was blinded.

Secondly, regarding the specific implementation of drug treatment, patients in the experimental group were prescribed drugs according to their specific type and severity of disease. These drugs have been verified in previous clinical trials and have been proven to be effective in the treatment of heart disease. During the course of treatment, the research strictly controlled and recorded the drug dosage, duration of medication, and other relevant factors for each patient. In order to assess the effectiveness of medication, we chose two main indicators, ejection fraction and quality of life. Measurement of ejection fraction was performed with specialized medical equipment to ensure the accuracy of the data. Quality of life was assessed through a series of questionnaires, which included a variety of aspects such as the patient's ability to perform daily life, psychological state, and socialization ability. A baseline survey was conducted on all patients before the start of treatment to obtain their pre-treatment ejection fraction and quality of life data.

Finally, the research measured and recorded these two indicators periodically while the treatment was in progress. At the end of treatment, the research again measured ejection fraction and quality of life once more in all patients to assess the long-term effects of medication. During the data collection and recording process, a variety of methods were used to ensure the completeness and accuracy of the data, including regular data verification, data analysis, and data cleaning. Through these methods, we ensured that the data obtained were true, accurate and reliable, providing a solid foundation for subsequent analysis and research.

### 4. Research results and analysis

After a six-month drug treatment experiment, we have collected and analyzed the data in depth. The following is a summary of the experimental results and related analysis.

In terms of ejection fraction, patients in the experimental group generally showed a more significant improvement. Specifically, at the start of the experiment, the average ejection fraction in the experimental group was 55%, compared to 56% in the control group. After six months of treatment, the experimental group's ejection fraction rose to an average of 63%, while the control group's figure remained at 57%. This change suggests that medication has a positive effect on improving cardiac systolic function in patients with heart disease. In the case of patient Mr. Li, for example, his ejection fraction was 52% at the beginning of the experiment, and after six months of drug treatment, this value rose to 68%. This improvement brought significant benefits to Mr. Li's daily life, as he reported that his physical fitness increased significantly and he was able to perform aerobic exercise for a longer period of time[4].

In terms of quality of life, patients in the experimental group also showed more positive changes. Through the questionnaire survey, it can be found that the patients in the experimental group showed improvement in their daily living ability, psychological state and socialization ability. Specifically, the average score of patients in the experimental group in the quality of life score was 8 percentage points higher than that of the control group. Ms. Wang was another patient in the experimental group. Before the start of the experiment, she often felt fatigued and panicky due to her heart disease, and her social activities were greatly restricted. But after receiving the six-month drug treatment, Ms. Wang said her psychological

state and social skills had improved significantly. She is now able to engage in normal social activities and has even joined a local dance class, something she could not have imagined before the experiment began.

In addition, some possible adverse effects of the drug treatment were noted. During the course of the experiment, about 10% of the patients in the experimental group experienced mild stomach upset, but these symptoms were relieved after the drug dose was reduced. In addition, about 5% of the patients in the experimental group experienced mild headaches, but these symptoms gradually disappeared at the end of the experiment.

To sum up, medication has positive effects on improving ejection fraction and quality of life in heart disease patients. However, drug therapy may also bring some side effects, which need to be noticed and controlled in the course of treatment. In future studies, It's hoped to further explore the long-term effects and safety of drug therapy, and provide more scientific and reasonable treatment recommendations for heart disease patients.

## 5. Discussion and insights

The present study provides us with some important insights into the effects of medication on ejection fraction and quality of life of cardiac patients. It can be observed that medication not only improves the ejection fraction of cardiac patients, thereby improving their cardiac function, but also effectively improves their quality of life, including their ability to perform daily life, their psychological state, and their ability to socialize. These findings are broadly consistent with those of past studies, but our study further deepens the understanding of the effects of drug therapy. Particularly in terms of quality of life, it can be found that medication can provide significant benefits to patients in a short period of time, something that has not been fully appreciated in past studies. However, The results also showed that medication is not perfect, and while most patients were able to benefit from medication, some patients experienced side effects of varying degrees, such as mild stomach upset and headaches. This reminds us that when administering medication, we should not only pay attention to its efficacy, but also fully consider its possible side effects and make timely adjustments. In addition, we also note that the effectiveness of medication may vary for patients with different types and degrees of severity of heart disease. It means that, in the actual treatment process, there is a need to select and adjust the medication program according to the specific situation of the patient, rather than blindly adopting a "one-size-fits-all" approach[5].

From a broader perspective, this study also provides some important insights into the treatment of heart disease. Traditionally, the treatment of heart disease mainly focuses on improving heart function, and often does not pay enough attention to the quality of life of patients. However, with the advancement of medicine and the deepening of people's understanding of health, we gradually realize that quality of life is also an important indicator for evaluating the effectiveness of treatment, and in some cases, it may even be more important than cardiac function. Therefore, we need to adjust the strategy of heart disease treatment, not only focusing on the heart function of patients, but also their quality of life, to ensure that they receive comprehensive nursing and assistance in the course of treatment.

## 6. Conclusion and recommendation

After an in-depth study and analysis, we have come to the following conclusions regarding the effect of medication on ejection fraction and quality of life of heart disease patients.

The medication has brought positive results for heart disease patients, and it is clearly stated that the treatment is effective in improving the ejection fraction of the patients and significantly enhancing their cardiac function. In addition, medication also had a significant positive effect on patients' quality of life, particularly in terms of their ability to perform activities of daily living, their psychological state, and their ability to socialize, changes that are critical to patients' overall health and well-being. However, medication is not without risk, and some patients have experienced side effects such as mild stomach upset and headaches during treatment. These side effects, although mostly temporary, suggest that there is a need to pay attention to them during treatment[6].

Based on these findings, the following recommendations can be made:

(1) Medication should be individualized according to the patient's specific situation. Different patients may require different medications and dosages. Therefore, physicians and patients should communicate frequently to ensure that the treatment regimen is both effective and safe.

(2) During the course of medication, patients should receive regular medical checkups to monitor changes in their heart function and quality of life, which can not only help doctors make timely adjustments to their treatment regimen, but also help patients better understand their health status.

(3) Although this study focuses on medication, we also recommend patients to adopt other ways to improve their health, such as healthy diet, moderate exercise and relaxation techniques. These methods can complement medication and bring

better results to patients.

(4) In view of the possible side effects of drug treatment, we suggest that pharmaceutical companies should further research and develop safer and more effective drugs. Meanwhile, doctors should also explain in detail the possible adverse effects when prescribing to ensure that patients make informed decisions.

(5) We call on the Government and relevant organizations to provide more funds and resources to support research and treatment of heart disease. It will not only help more patients to receive effective treatment, but also bring long-term economic and social benefits to the community.

## 7. Epilogue

In this research, the effect of medication on ejection fraction and quality of life of patients with heart disease was thoroughly investigated, and the results showed that medication has achieved positive results in improving cardiac function and improving patients' quality of life. However, there are some potential risks in the treatment process. For this reason, a series of recommendations aimed at ensuring the safety and efficacy of the treatment have been put forward. In the future, it's expected that the treatment of heart disease can be further optimized to truly bring health and hope to patients.

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