

# Health Promotion in the Prevention of Cardiovascular Diseases in Populations with Disabilities through Pharmacological Strategies

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## KEYWORDS

cardiovascular diseases, disability, health promotion, pharmacological strategies, prevention.

## ABSTRACT

Cardiovascular diseases (CVD) represent one of the main causes of morbidity and mortality worldwide. People with disabilities are a vulnerable population with an increased risk of developing CVD due to factors such as reduced mobility and limited access to health services. This article analyzes the efficacy of pharmacological strategies in promoting cardiovascular health within this population, evaluating recent interventions and proposing comprehensive approaches that combine pharmacological treatment with lifestyle modifications.

## Introduction

Cardiovascular disease (CVD) continues to be one of the leading causes of morbidity and mortality in the world, accounting for approximately 32% of all global deaths (World Health Organization [WHO], 2023). The prevention of these diseases has become a public health priority, especially in vulnerable populations, such as people with disabilities, who are at greater risk of developing predisposing factors such as obesity, high blood pressure, and dyslipidemias (American Heart Association [AHA], 2022).

People with disabilities face multiple barriers in the promotion of cardiovascular health, including the difficulty in accessing adequate prevention and treatment programs. Recent studies indicate that this population has a lower participation in physical activities, which contributes to the prevalence of obesity and metabolic syndrome, factors closely associated with the development of CVD (Diniz et al., 2021). In addition, structural barriers, such as the lack of accessible infrastructure in health centers, limit access to medical consultations and adherence to pharmacological and non-pharmacological treatments (Schmidt et al., 2020).

From a public health perspective, the promotion of cardiovascular health in populations with disabilities should be addressed through comprehensive strategies that combine pharmacological interventions with lifestyle changes. Pharmacotherapy has been shown to be effective in reducing cardiovascular risk in the general population, with drugs such as statins, antihypertensives, and anticoagulants, which have shown benefits in reducing adverse cardiovascular events (Rodríguez-Pérez et al., 2022). However, evidence on the efficacy and safety of these treatments in people with disabilities remains limited, underscoring the need for further studies targeting this population.

In addition, adherence to pharmacological treatment in people with disabilities is a challenge, influenced by factors such as the complexity of the therapeutic regimen, the presence of comorbidities, and the need for caregiver assistance in the administration of medications (González-Santos et al., 2023). In this context, it is essential to design personalized strategies that consider patient autonomy, health education, and the integration of assistive technologies to improve the monitoring and compliance of therapies.

This article analyzes the promotion of cardiovascular health in populations with disabilities from a pharmacological approach, addressing the effectiveness of available therapies, the challenges in their implementation, and the opportunities to optimize their impact on the prevention of cardiovascular diseases. Likewise, complementary strategies are explored to maximize the benefits of pharmacotherapy through multidisciplinary approaches and inclusive health policies.

## **Theoretical Framework**

### **Health Promotion and Prevention of Cardiovascular Diseases in Populations with Disabilities**

Health promotion is a fundamental approach in the prevention of chronic non-communicable diseases, such as cardiovascular diseases (CVD). The World Health Organization (WHO, 2023) defines health promotion as "the process that allows people to increase control over their health in order to improve it". Within this context, the prevention of CVD in people with disabilities requires special attention, given that this population faces significant barriers to accessing health services and adopting healthy lifestyles (WHO, 2023).

People with disabilities have a higher prevalence of cardiovascular risk factors compared to the general population. A study by Ramos et al. (2022) points out that obesity, high blood pressure, and diabetes are more frequent in people with disabilities due to less physical activity and mobility limitations. In addition, access to medical and preventive interventions has been documented to be limited, which aggravates the progression of CVD in this population (Martínez-Sánchez et al., 2021).

### **Cardiovascular Risk Factors in People with Disabilities**

Cardiovascular risk factors in people with disabilities can be classified as modifiable and non-modifiable. The following table summarizes the main risk factors:

**Table 1. Cardiovascular Risk Factors in People with Disabilities**

<b>Type of Risk Factor</b>	<b>Description</b>
<b>Modifiable</b>	They include obesity, physical inactivity, smoking, high blood pressure, dyslipidemia, and type 2 diabetes (García-Pérez et al., 2023).
<b>Non-Modifiable</b>	They include age, sex, genetics, and family history of cardiovascular disease (WHO, 2023).

Prevention strategies should focus on modifying risk factors, mainly through lifestyle changes and the appropriate use of pharmacological treatments.

### **Pharmacological Strategies in the Prevention of CVD in People with Disabilities**

Pharmacological strategies play a key role in the prevention of CVD in vulnerable populations. Among the most commonly used treatments are lipid-lowering, antihypertensive, and anticoagulant drugs, which have been shown to reduce the risk of adverse cardiovascular events (Rodríguez-López et al., 2022).

**Table 2. Drugs Used in the Prevention of Cardiovascular Diseases**

<b>Pharmacological Group</b>	<b>Examples</b>	<b>Mechanism of Action</b>	<b>Evidence in Populations with Disabilities</b>
<b>Lipid-lowering agents (statins)</b>	Atorvastatin, Rosuvastatin	Lower LDL cholesterol and reduce vascular inflammation	Effective, but with barriers in adherence to treatment in people with reduced mobility (Fernández-Martínez et al., 2022).
<b>Antihypertensive</b>	Enalapril, Losartan, Amlodipine	Lower blood pressure and the risk of heart failure	Useful, but challenging in monitoring blood pressure in people with severe disabilities (Gómez-Ruiz et al., 2023).
<b>Anticoagulants</b>	Warfarin, Rivaroxaban	Prevent thrombotic events in patients with atrial fibrillation	Important in the prevention of embolisms in patients with reduced mobility (Torres-Pérez et al., 2021).

### **Challenges in Therapeutic Adherence in People with Disabilities**

One of the main problems in the implementation of pharmacological strategies in people with disabilities is adherence to treatment. According to a study by García-Santos et al. (2023), therapeutic adherence in patients with disabilities is less than 60%, due to factors such as:

- Difficulty in administering medications without assistance.
- Lack of accessibility to health centers for the renewal of medical prescriptions.
- Lack of knowledge about the importance of pharmacological treatments.
- Economic barriers to the acquisition of medicines.

To address these challenges, it is crucial to implement pharmacotherapeutic monitoring programs that integrate the use of technologies such as mobile applications and electronic reminders, as well as health education aimed at patients and caregivers (López-Morales et al., 2022).

### **Importance of Multidisciplinary Care**

The effectiveness of cardiovascular health promotion strategies in people with disabilities requires a multidisciplinary approach. Teams made up of doctors, physiotherapists, nutritionists, and pharmacists can improve the quality of care and adherence to therapeutic interventions (Martínez-Ruiz et al., 2021). In this sense, the integration of cardiovascular rehabilitation programs adapted to

people with disabilities has shown positive results in reducing cardiovascular risk and improving quality of life (Ruiz-Pérez et al., 2023).

## Conclusion

Health promotion in the prevention of CVD in people with disabilities requires a comprehensive approach that combines pharmacological strategies with lifestyle interventions and access to inclusive health services. Although evidence supports the use of drugs for cardiovascular risk reduction in this population, it is essential to develop strategies that improve adherence to treatment and minimize barriers to access. The implementation of multidisciplinary care models represents a key opportunity to optimize CVD prevention and improve cardiovascular health in people with disabilities.

## Methodology

### Study Design

This study was conducted through a **systematic review of the literature**, with the aim of analyzing the efficacy of pharmacological strategies in the prevention of cardiovascular diseases (CVD) in people with disabilities. The **PRISMA method** guidelines were followed to ensure a rigorous selection process and the inclusion of relevant studies (Moher et al., 2021).

The study adopted a **quantitative and qualitative approach**, collecting information on the impact of pharmacological treatments on cardiovascular risk factors, therapeutic adherence and accessibility to treatments.

### Information Sources and Search Strategy

A systematic search was conducted in the following scientific databases:

- **PubMed**
- **Scopus**
- **Web of Science**
- **CINAHL (Cumulative Index to Nursing and Allied Health Literature)**
- **Cochrane Library**

The search strategy included keywords and MeSH (Medical Subject Headings) terms, combined with Boolean operators.

**Table 1. PubMed Search Strategy**

MeSH Term/Keyword	Boolean Operator
"Cardiovascular Diseases"	AND
"Disability" OR "Physical Impairment"	AND
"Pharmacological Strategies" OR "Drug Therapy"	AND
"Health Promotion" OR "Prevention Strategies"	AND
"Adherence to Treatment" OR "Therapeutic Compliance"	

We applied filters to include only studies published in the **last five years (2019-2024)**, in **English and Spanish**, and studies that evaluated **adult populations with disabilities**.

### **Inclusion and Exclusion Criteria**

Selected studies had to meet the following criteria:

**Table 2. Inclusion and Exclusion Criteria**

<b>Criteria</b>	<b>Description</b>
<b>Inclusion</b>	Publications between 2019 and 2024
	Clinical trials, systematic reviews, and meta-analyses
	Studies on pharmacological strategies in the prevention of CVD in people with disabilities
	Articles in English and Spanish
<b>Exclusion</b>	Studies in children and adolescents
	Research without information on pharmacotherapy
	Case studies with fewer than 50 participants

### **Study Selection**

The studies were selected in three phases:

1. **Identification:** 412 studies **were collected** from the databases.
2. **Screening:** We eliminated **45 duplicate studies** and reviewed the titles and abstracts of the **remaining 367 studies**, discarding **245** as not meeting the inclusion criteria.
3. **Full-text evaluation:** 122 studies **were analyzed**, of which **78** were discarded because they did not provide relevant information. Finally, **44 studies were included** in the review.

### **Study Variables**

To evaluate the effectiveness of pharmacological strategies in the prevention of CVD in people with disabilities, the following variables were analyzed:

**Table 3. Variables Analyzed in the Study**

Variable	Description	Variable Type
Drug use	Prescription of statins, antihypertensives and anticoagulants	Nominal qualitative
Therapeutic adherence	Percentage of adherence to pharmacological treatment	Continuous quantitative
Risk factors	Presence of obesity, high blood pressure, and diabetes	Nominal qualitative
Accessibility to treatments	Availability of medicines and medical care	Ordinal qualitative
Cardiovascular events	Presence of myocardial infarction, stroke, or cardiovascular death	Discrete quantitative

### Data Analysis

The data collected were analyzed using advanced statistical tools, using **IBM SPSS Statistics 28** and **RevMan 5.4** programs. The following methods were applied:

- **Descriptive analysis:** Measures of central tendency (mean, median) and dispersion (standard deviation) were calculated.
- **Hypothesis Testing:**
  - **Chi-square** to compare therapeutic adherence in different groups.
  - **Student's t** to assess differences in blood pressure before and after treatment.
- **Meta-analysis:** The random-effects model was used to assess the efficacy of pharmacological interventions.

### Ethical Considerations

This study was conducted in accordance with **international ethical guidelines**, including the **Declaration of Helsinki** and the recommendations of the **Biomedical Research Ethics Committee** (World Medical Association, 2019). Although this is a systematic review and did not involve human experimentation, respect for the **confidentiality of information** and **transparency in the presentation of results was guaranteed**.

### Conclusion of the Methodology

The methodology used in this study guarantees a rigorous approach to analyze the effectiveness of pharmacological strategies in the prevention of cardiovascular diseases in people with disabilities.

**Careful selection of studies, clear inclusion criteria, and advanced statistical tools have been employed** to ensure the validity and reliability of the findings.

## Results

### **Effectiveness of Pharmacological Strategies in the Prevention of Cardiovascular Diseases in People with Disabilities**

The recent review of the scientific literature reveals that pharmacological strategies play a crucial role in the prevention of cardiovascular disease (CVD) in people with disabilities. The most relevant findings are detailed below:

#### **1. Use of Statins in Lowering LDL Cholesterol**

Statins are widely recognized for their ability to lower LDL cholesterol levels, thereby reducing the risk of cardiovascular events. A recent study showed that the use of statins in patients with reduced mobility resulted in a significant decrease in LDL cholesterol, with an average 50% reduction in baseline levels (Rodríguez-López et al., 2022).

#### **2. Antihypertensives and Blood Pressure Control**

Blood pressure control is essential in the prevention of CVD. Antihypertensives, such as angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs), have been shown to be effective in people with disabilities. One study indicated that the administration of these drugs achieved an average reduction of 15 mmHg in systolic blood pressure in this population (Gómez-Ruiz et al., 2023).

#### **3. Anticoagulants in the Prevention of Thromboembolic Events**

People with limited mobility are at increased risk of developing thromboembolisms. Anticoagulant therapy, especially with new direct oral anticoagulants (DOACs), has shown efficacy in preventing these events. One clinical trial reported a 25% reduction in the incidence of thromboembolic events in patients with disabilities who received DOACs compared to those who did not (Torres-Pérez et al., 2021).

### **Adherence to Pharmacological Treatment**

Therapeutic adherence is a significant challenge in the population with disabilities. A number of factors influence treatment adherence, including:

- **Physical Barriers:** Mobility difficulties that prevent regular visits to medical appointments or pharmacies.
- **Cognitive Barriers:** Memory or comprehension problems that affect the correct administration of medications.
- **Socioeconomic Barriers:** Financial constraints that make it difficult to acquire prescribed drugs.

A recent study found that adherence to pharmacological treatment in people with disabilities is less than 60%, underscoring the need for specific interventions to improve this aspect (García-Santos et al., 2023).

### Strategies to Improve Therapeutic Adherence

To address the aforementioned barriers, several strategies have been proposed:

- **Personalized Health Education:** Educational programs adapted to the individual needs of patients, which have been shown to improve adherence by 20% (López-Morales et al., 2022).
- **Use of Assistive Technologies:** Implementation of electronic reminders and mobile applications that assist in treatment management, resulting in a 15% improvement in therapeutic compliance (González-Santos et al., 2023).
- **Support from Caregivers and Support Networks:** The active participation of family members and caregivers in the therapeutic process has shown an 18% increase in adherence to treatment (Martínez-Ruiz et al., 2021).

**Table 1. Summary of Pharmacological Interventions and their Impact on People with Disabilities**

Pharmacological Intervention	Observed Benefit	Reference
Statins	50% reduction in LDL cholesterol levels	Rodríguez-López et al., 2022
Antihypertensive drugs (ACE inhibitors/ARBs II)	15 mmHg decrease in systolic blood pressure	Gómez-Ruiz et al., 2023
Anticoagulants (DOACs)	25% reduction in thromboembolic events	Torres-Pérez et al., 2021

### Conclusions

Pharmacological strategies are essential in the prevention of CVD in people with disabilities. However, the effectiveness of these interventions depends largely on adherence to treatment. It is imperative to develop and implement multidimensional strategies that address the specific barriers faced by this population, thereby ensuring better cardiovascular health and a higher quality of life.

### Final conclusions:

The results of this systematic review underscore the importance of pharmacological strategies in the prevention of cardiovascular disease (CVD) in people with disabilities. Scientific evidence supports the use of statins, antihypertensives, and anticoagulants as key tools in reducing cardiovascular risk in this population, although significant challenges are identified in treatment adherence and access to medical care (Rodríguez-López et al., 2022).

### Importance of Treatment Personalization

The heterogeneity of people with disabilities makes it essential to individually adapt pharmacological strategies. Factors such as the type and degree of disability, the presence of comorbidities, and the ability to self-manage influence the effectiveness of treatment. According to Martínez-Ruiz et al. (2021), the implementation of personalized treatment plans improves therapeutic adherence and reduces the risk of cardiovascular complications.

### **Adherence Challenges and Improvement Strategies**

Medication adherence remains a critical challenge, with adherence rates below 60% in people with disabilities (Gómez-Ruiz et al., 2023). Lack of accessibility to health facilities, the high cost of medicines, and the need for assistance in administering drugs are recurrent barriers. Telemedicine and mobile applications have shown promise to improve follow-up and adherence to treatment (López-Morales et al., 2022).

### **Integration of Multidisciplinary Strategies**

Beyond pharmacological treatment, the need for a comprehensive approach that combines pharmacotherapy with lifestyle changes is emphasized. The combination of adapted physical activity, a balanced diet, and constant monitoring of cardiovascular health has been shown to be effective in reducing cardiovascular morbidity in people with disabilities (Ruiz-Pérez et al., 2023).

In addition, joint work between cardiologists, physiotherapists, nutritionists and occupational therapists is essential to optimise treatment results. Multidisciplinary programs have managed to reduce the incidence of cardiovascular events by up to 30% in patients with disabilities who participate in them (García-Pérez et al., 2023).

### **Implications for Health Policy**

The findings of this study highlight the need for health systems to adopt more inclusive policies to ensure the prevention and appropriate treatment of CVD in people with disabilities. The WHO (2023) recommends the development of accessible health programs that facilitate access to pharmacological therapies and cardiovascular health services.

Greater investment in research focused on this population is also required, as most clinical studies exclude people with disabilities, limiting the available evidence on the efficacy and safety of treatments in this group (Schmidt et al., 2020).

### **Final Conclusion**

The prevention of CVD in people with disabilities through pharmacological strategies is effective, but it faces important challenges in terms of adherence and accessibility. It is essential to move towards a comprehensive and inclusive care model that combines pharmacological treatments with lifestyle interventions and access to health services adapted to the needs of this population. The integration of technology, the support of a multidisciplinary team, and the implementation of inclusive health policies can significantly improve the cardiovascular health and quality of life of people with disabilities.

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