

Physiotherapy in Cardiovascular Disease Risks Prevention

Fisioterapia na Prevenção de Riscos de Doenças Cardiovasculares

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Abstract

Cardiovascular diseases are the main causes of death in Brazil and in the world. The cardiovascular system, or circulatory system as it is known, has as its main function the oxygen and nutrients distribution to the whole body, also participating in homeostasis, with temperature regulation. This study had as a general objective to understand the importance of physiotherapy in the prevention of risk factors for cardiovascular diseases. The physiotherapist can act as an educator, guiding the population on how to prevent the risks of cardiovascular diseases, such as sedentary lifestyle, smoking, hypertension, dyslipidemia, atherosclerosis, stress, and Diabetes Mellitus. Bibliographic review, books and scientific articles published from 2011 to 2021 were consulted, being possible to understand through different studies the physiotherapeutic performance in the orientation and prevention of cardiovascular diseases. Physiotherapists have generalist formation, and can act in all levels of care, acting as educators, teachers, home care for guidance on quality of life, for disease prevention, group care in UBS. But they are still seen by some health managers only as rehabilitative professionals in secondary and tertiary care levels, preventing their inclusion in Primary Care.

Keywords: Hypertension. Myocardial Infarction. Tobacco Use.

Resumo

As doenças cardiovasculares são as principais causas de morte no Brasil e no mundo. O sistema cardiovascular, ou sistema circulatório como é conhecido, tem como função principal a distribuição de oxigênio e nutrientes a todo o organismo, participando também na homeostase, com regulação da temperatura. Este estudo teve como objetivo geral entender a importância da fisioterapia na prevenção dos fatores de risco de doenças cardiovasculares. O fisioterapeuta pode atuar como um educador, orientando a população sobre como prevenir os riscos de doenças cardiovasculares, tais como o sedentarismo, o tabagismo, a hipertensão, a dislipidemia, a aterosclerose, o stress, e a Diabetes Mellitus. Para a revisão bibliográfica, foram consultados livros e artigos científicos publicados no período de 2011 a 2021, sendo possível compreender através de diferentes estudos o desempenho fisioterapêutico, na orientação e prevenção de doenças cardiovasculares. O Fisioterapeuta tem uma formação generalista, e pode atuar em todos os níveis de cuidados, atuar como educadores, professores, cuidados domiciliares para orientação sobre qualidade de vida, para prevenção de doenças, cuidados de grupo na UBS. Mas ainda são vistos por alguns gestores de saúde, somente como profissionais reabilitadores nos níveis da atenção secundárias e terciárias, impedindo a sua inclusão nos Cuidados Primários.

Palavras-chave: Hipertensão. Infarto do Miocárdio. Uso de Tabaco.

1 Introduction

Cardiovascular diseases are the leading causes of death in Brazil and in the world. The cardiovascular system, or circulatory system as it is known, has as its main function the oxygen and nutrients distribution to the entire organism, also participating in homeostasis, with temperature regulation.

Physiotherapy in the prevention of cardiovascular disease risks is an area of physiotherapy that works in primary care, guiding the population on ways to prevent and promote health, developing aerobic or strengthening physical activities, providing physical and mental well-being. The physiotherapist can act as an educator, guiding the population on how to prevent the risks of cardiovascular diseases, such as sedentary lifestyle, smoking, hypertension, dyslipidemia, atherosclerosis, stress, and Diabetes Mellitus.

This work had as a general objective to understand the importance of physiotherapy in preventing the risk factors for cardiovascular diseases.

2 Development

2.1 Methodology

This study had a bibliographic review as a method, books and scientific articles published in the period from 2011 to 2021 were consulted, being able to understand through different studies the physiotherapeutic performance to the population, in the guidance and prevention of cardiovascular diseases. It had as inclusion criteria, literature related to the performance of physiotherapy in primary care, care to patients at risk of cardiovascular disease, patients with diabetes mellitus and hypertension, smokers, overweight people, the importance

of preventing atherosclerosis, the risks of dyslipidemia and incentives for physical exercise.

The databases used were: PubMed base 1, Lilacs base 2, ScieLo base 3.

2.2 Main Cardiovascular diseases

According to the Ministry of Health, about 300 thousand individuals per year suffer Acute Myocardial Infarction (AMI), with death occurring in 30% of these cases. It is estimated that by 2040 there will be an increase of up to 250% of these events in the country. This table presents some of the major cardiovascular diseases.

Quadro 1 – Main Cardiovascular diseases

Cardiovascular Diseases	Characteristics
Acute Myocardial Infarction (AMI) or Ischemic heart disease	Reduction or interruption of blood flow in one or more of the arteries of the heart (coronary arteries). The interruption may be obstruction by a blood clot, or by atheroma plaque or narrowing of the artery due to atherosclerosis.
Cardiac insufficiency (HF)	Decreased flow of blood pumped from the heart to the rest of the body, the volume is insufficient to meet all the body's needs of oxygen and nutrients, there are limitations in performing routine activities.
Coronary heart disease	A disease of the blood vessels supplying the heart muscle.
Cerebrovascular disease ¹	A disease of the blood vessels supplying the brain, which can cause stroke.
Deep vein thrombosis and pulmonary embolism	Blood clots in the leg veins, which can dislodge and move to the heart and lungs.
Rheumatic heart disease ¹	Damage to the heart muscle and heart valves due to rheumatic fever, caused by streptococcal bacteria.

Source: Resource data.

This reality can be explained¹ both by the change in the population structure, as well as the increased prevalence of exposure to risk factors, known to be associated with circulatory system diseases, such as sedentary lifestyle, increased consumption of meat and fats, reduced consumption of fruits and vegetables, excessive alcoholic beverages, smoking, and increased prevalence of obesity, in addition to socioeconomic inequalities and access to health services.

Heart attacks and¹ strokes are usually acute events caused primarily by a blockage that prevents blood from flowing to the heart or brain. The most common reason for this is the buildup of fatty deposits, on the inner walls of the blood vessels that supply the heart or brain - atherosclerosis.

Strokes can also² be caused by bleeding in blood vessels in the brain or from blood clots. The cause of heart attacks and strokes, are usually a combination of risk factors such as tobacco use, poor diets and obesity, sedentary lifestyle and the harmful use of alcohol, hypertension, diabetes and Hyperlipidemia.

Anginal pain is pain in the chest region³, with the feeling that something is squeezing this region, and some patients report a feeling of tightness in the throat. In stable angina, the pain has a short duration that can vary from two to three minutes and is associated with physical effort. This happens because the pain is related to myocardial hypoxia and not to necrosis, and may cause a feeling of distress discomfort and not necessarily pain.

In unstable angina, the pain is more prolonged and intense, lasting up to 20 minutes or several hours, appearing even at rest caused by necrotic alterations suggesting AMI. Although it is one of the clinical signs of the disease, the duration of pain is not enough to diagnose an infarction. The precordial pain can also irradiate to the jaw exclusively to the left upper limb in the epigastric region and less frequently in the dorsal region. Besides pain, other symptoms occur such as nausea, malaise, sweating, dyspnea, tachycardia, and even mental confusion. It is important to obtain fast and efficient pre-hospital care reducing the time between the onset of the ischemic event and necrosis until treatment³.

There are several factors³ that predispose to Cardiovascular Diseases: diabetes mellitus, hypertension, dyslipidemia, obesity, stress, smoking, these factors are divided into behavioral factors that depend heavily on lifestyle, diets overloaded with fats, sugars, alcohol, smoking, sedentary lifestyle and hereditary factors related to gender, family history and age.

Cardiac Failure⁴ is an alteration in heart function, resulting in low cardiac output or pulmonary or systemic congestion, the symptoms can occur at rest or on exertion. In patients who present symptoms related to heart failure, a detailed physical examination is performed in search of signs or symptoms, whereas in chronic patients the clinical signs of congestion may be absent, due to adaptive processes and by adaptation of the lymphatic system in dealing with the congestion, a characteristic clinical sign is the sound of the third heart sound and symptom such as orthopnea are more specific to diagnose heart failure.

The inadequate⁴ control of some diseases such as hypertension, diabetes and other neglected diseases such as the Chagas Disease and Rheumatic Disease, still present today a rate of 21% of HF carriers, and these diseases generate serious clinical signals .

Body mass index (BMI)⁵ and waist circumference (WC) are associated with higher blood pressure, fasting insulinemia and dyslipidemias in children and adolescents. These factors act synergistically to increase cardiovascular risk factors. It is understood that monitoring the development of children in childhood and adolescence in relation to healthy eating and physical exercise is an important factor in preventing the onset of dyslipidemia and other diseases associated with overweight and sedentary lifestyles.

At least 68 % of diabetic individuals⁶ aged 65 years and older die from heart disease, most of which is from CAD, followed by congestive HF. DM is considered an independent

CV risk factor in both men and women, raising the likelihood of manifesting CAD by about two to four times compared to those individuals without DM.

Some important modifications⁷ of dietary intake and physical activity patterns cause economic, social, demographic and health transformations. Obesity and overweight are complex and chronic conditions a major public health challenge, whose prevalence has grown greatly in recent decades.

One of the most preventable⁸ and controllable risk factors in health is smoking, therefore, all health professionals are increasingly focused to act in prevention. Tobacco is a high-profit product for its large production and the high number of consumers, control policies and therapeutic resources for smoking have advanced greatly in recent years and have shown highly satisfactory results, particularly in Brazil.

The continuous use of tobacco⁹ for long periods, leads to the appearance of chronic diseases, which will manifest themselves around 30 years after the beginning of its regular consumption, thus, its prevention becomes the primary factor. The nicotine effect on the arteries' and blood vessels' walls, are devastating. The population does not understand exactly the risk that smoking is, and it becomes an addiction which in its great majority the addicts cannot quit. Smoking, besides being associated with non-transmissible chronic diseases, also contributes to the development of other diseases, such as AMI, tuberculosis, respiratory infections, gastrointestinal ulcer, sexual impotence, infertility in women and men, osteoporosis, cataract, among others.

Physical inactivity¹⁰, i.e., sedentary lifestyle, is associated as one of the biggest public health problems, being related to mortality from cardiovascular diseases, whereas physical activity is related to gaining quality of life, more health and a healthier life expectancy.

In 1994, the Ministry¹¹ of Health created the Family Health Program (PSF), linked to the Unified Health System (SUS), with the expansion of the program and the proposal to reorganize Primary Care in Brazil, it was renamed Family Health Strategy (ESF) after a period of strengthening of the primary care network. The Family Health Support Center (NASF) was created after a period in order to strengthen the primary care network and improve the quality of care through the Ministerial Order a GM n° 154, of January 24th, 2008, and it is the program in which physiotherapy can be inserted to work in primary care, whose main objective is to support the ESF teams.

There was a new change and the new National Primary Health Care Policy (PNAB) was approved. There were no major structural changes in NASF, but there was a change in the nomenclature, which is now called the Extended Family Health and Primary Care Center (NASF-AB). NASF-AB is composed from three to five professionals for each FHS team, and it is the local manager's responsibility to determine which professionals will be on this team, according to the population

needs.

There are many¹¹ physiotherapy attributions in primary care, especially the identification of the presence of kinetic-functional disorders, postural guidelines, encouragement to community participation in health-related issues, continuing education, as well as guidelines for healthy environments and lifestyles. In general, physical therapy professionals who make up the NASF-AB team still experience some obstacles that hinder the work process because they are still seen as professionals who work only in rehabilitation and not in health promotion.

The physiotherapy approach¹² in primary care happens through health education in health groups, home visits, individualized care with the approach of cross-cutting issues such as health promotion and prevention of non-communicable chronic diseases.

There is a restricted understanding by health managers about the physiotherapist's role in PHC, especially by the majority that do not have this professional inserted in their family health teams. The physiotherapist's insertion in Primary Care is still limited, and it is necessary to expand the managers' view on the work possibilities of this professional, including as a health promoter^{6,9,13,17}. Registrations of physiotherapists in PHC were identified, the Southeast and South regions represented a proportion higher than the population representation of these regions, the North, Midwest and Northeast regions represented values lower than the population distribution¹⁴.

2.3 Discussion

Most deaths due to¹⁴ Acute Myocardial Infarction (AMI) occur within the first hours of the onset of the disease, from 40 to 65% in the first hour and approximately 80% in the first 24 hours. In recent decades there has been a significant reduction in in-hospital mortality of AMI, but little progress in knowledge about the epidemiology and treatment in the pre-hospital phase. The main objective of pre-hospital care is to reduce the time between the onset of the ischemic event/muscle necrosis until the effective treatment, recovering the myocardial perfusion.

According to the articles¹ of the Brazilian Society of Cardiology, science has shown a great advance in primary care research, showing the importance of exercise practice in the prevention and treatment of cardiovascular diseases, taking into account the aging population.

In general, the physical¹⁴ exercises that promote prevention and improvement of cardiovascular diseases are aerobic exercises. According to several scientific studies, these exercises involve large muscles, promoting a variety of adaptations to the cardiovascular system. such exercises need to be practice in with low and moderate intensity activity, performed 3 to 5 times a week for a longer period of time between 30 and 60 minutes. In comparison, active individuals present lower morbidity and mortality rates compared to

sedentary individuals.

Some important modifications⁷⁻¹⁴ in dietary intake and physical activity patterns, generated as a consequence of economic, social, demographic and health transformations, obesity and overweight are complex and chronic conditions a major public health challenge, whose prevalence has grown greatly in recent decades.

In addition to family history¹⁴, age, race, and insulin resistance, there are also the have environmental factors related to the development of AH and that may be modifiable, such as obesity, psychosocial aspects, diet, sodium intake, sedentary lifestyle, and alcohol consumption.

With the increase in the Brazilian's life expectancy¹⁵, the costs of hospital admissions tend to increase. According to recent IBGE data from, Brazil is changing its age structure very rapidly. Aging tends to increase the CVD incidence, with these changes the role of the physiotherapist in the prevention of diseases is essential.

3 Conclusion

At the end of this research work, it was possible to identify that cardiovascular diseases are among the leading causes of death in Brazil, occupying the first place position. Their causes are divided into modifiable (smoking, dyslipidemia, stress, obesity, sedentary lifestyle, poor diet), and non-modifiable causes (age, sex, race, heredity). This reality is frightening, since more and more people at a younger age are developing some type of CVD, and may die or be left with serious sequelae.

Facing this reality, it was possible to identify through some studies the physiotherapy role in the health prevention and promotion in Primary Care. The Physiotherapist has a generalist education, and can act in all levels of care as educators, lecturers, home care for guidance on quality of life, for disease prevention, group care in the UBS.

However, they are still seen by some health managers as rehabilitating professionals of the secondary and tertiary care levels, hindering their inclusion in Primary Care. There are few studies related to the theme. Given this problem, it is of utmost importance to include physical therapists in Primary Care, to work together with multiprofessional teams in the prevention of cardiovascular disease risks, which is a public health issue.

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