RISK FACTORS FOR CHRONIC DISEASES IN ELDERLY POPULATIONS

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Abstract: This study aims to review the literature on risk factors associated with the development of chronic diseases in older populations. The research will address aspects such as lifestyle, socioeconomic conditions, comorbidities, and the influence of preventive interventions. Based on the analysis of recent studies, we hope to identify patterns and correlations that can contribute to improving the health conditions of this population. The relevance of this study lies in the urgent need for public health strategies aimed at the prevention and effective management of chronic diseases in the aging population.

Keywords: Risk Factors, Chronic Diseases, Elderly, Public Health, Prevention

INTRODUCTION

Chronic non-communicable diseases (NCDs) represent a growing challenge in elderly populations, with a significant impact on morbidity, mortality, and quality of life. Global epidemiology shows that systolic arterial hypertension, air pollution, and smoking are among the main risk factors associated with the burden of disease in the elderly aged 70 years or older. With population aging, an increase in metabolic conditions — such as obesity and high blood glucose — has also been observed

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as relevant determinants in countries with high development rates (Chen, 2025).

In low- and middle-income contexts, behavioral factors such as smoking, excessive alcohol consumption, sedentary lifestyle, inadequate diet, obesity, and hypertension are common and modifiable, constituting targets for preventive strategies. In addition, biological processes of aging, such as chronic low-grade inflammation — "inflammaging" — contribute to susceptibility to chronic diseases, especially cardiovascular and neurodegenerative diseases. In Brazil, studies in long-lived elderly people (≥ 80 years old) indicate that polypharmacy, overweight, and gender are determinants of the prevalence of hypertension and diabetes (Oduro, 2023).

Identifying the main risk factors for chronic diseases in the elderly is critical for a comprehensive understanding of the health of this population. In recent years, different studies have focused on the variables that most impact the health of the elderly, revealing a worrying panorama. Behavioral factors, such as inadequate diet, sedentary lifestyle, and consumption of harmful substances, have been widely investigated. (Borges et al. 2009).

Inadequate diet is one of the main risk factors, since it can contribute to obesity and its associated comorbidities. The relevance of this factor is corroborated by Borges et al. (2009), who state that "the highest mean score was recorded for knowledge about inadequate diet..." (p. 1512).

Another crucial factor is a sedentary lifestyle. The data presented by Borges et al. (2009) show that "about half of the subjects and two thirds of them, respectively, are aware of the association of sedentary lifestyle with diabetes mellitus and osteoporosis" (p. 1517). This association is especially alarming in an elderly population, where lack of physical activity not only contributes to obesity, but also leads to decreased muscle strength, loss of bone density, and, consequently, a high risk of falls and fractures. The studies indicate that "more than 80% of the interviewees were aware of the associations between sedentary lifestyle and acute myocardial infarction..." (Borges et al., 2009, p. 1517), evidencing the population's awareness of the potential harm of a sedentary lifestyle, but also signaling the urgency of educational interventions that can translate it into behavioral changes.

In addition, Cruz et al. (2017) corroborate that the presence of risk factors may be prevalent

in this population, stating that “more than 50% of the elderly had at least two concomitant risk factors” (p. 6). This finding is alarming, as the coexistence of risk conditions, such as diabetes, hypertension, and obesity, has a direct relationship with morbidity and mortality in the elderly. The interrelationship of these factors requires a multifaceted approach in public health policies. Cruz et al. (2017) point out that “interventions or preventive measures focused on more than one risk factor could be more efficient than those focused on only one” (p. 8). This suggests that integrated strategies that consider the multiple determinants of health are needed to effectively address the complexity of aging and chronic disease, helping to promote active and healthy aging.

Therefore, the identification and understanding of the main risk factors for chronic diseases in the elderly is more than an academic issue; It is a social imperative that demands urgent and coordinated action. Understanding this diversity of factors is a critical first step towards the development of effective intervention programs and the creation of public policies aimed at promoting healthy aging and reducing the burden of disease in this growing population.

The objective of this article is to describe the risk factors related to the development of chronic diseases in elderly populations, with particular emphasis on the interrelationships between these factors and their implications for public health.

The investigation aims to elucidate not only the individual determinants that contribute to the manifestation of chronic diseases, such as inadequate eating habits, sedentary lifestyle, smoking, and excessive alcohol consumption, but also to consider the impact of socioeconomic factors, such as access to health care, housing conditions, and social support.

The research will aim to identify gaps in current knowledge, critically exploring the available literature and synthesizing information from different geographical and sociocultural contexts. It is intended, therefore, to highlight how the simultaneity of risk factors, especially in urban contexts such as Pelotas, can intensify the development and progression of chronic non-communicable diseases.

In addition, the results of the research will seek to offer subsidies for the formulation of effective and targeted interventions that can be implemented to promote healthy and equitable aging.

Finally, the research hopes to contribute to the development of public policies and health programs that comprehensively address the complexity of the factors that affect the health of the elderly, emphasizing the importance of a multidisciplinary approach in facing the challenges imposed by population aging and chronic diseases.

MATERIAL AND METHOD

This is a literature review study that integrates epidemiological evidence and recent population studies, it is characterized according to its method as deductive, according to its approach it is qualitative, according to its nature it is a basic research and according to its objective and descriptive.

Data were collected from different sources such as PubMed, BMC Geriatrics, synthesis articles, official reports (2021–2025). The inclusion criteria were studies published between 2015–2025, with samples of elderly adults (≥ 60 years old), addressing risk factors for NCDs (hypertension, diabetes, obesity, dementia, cardiovascular diseases, chronic respiratory diseases), studies with pediatric populations, isolated clinical cases, or focused on experimental therapy unrelated to risk factors.

The categories of analysis were behavioral and environmental factors (smoking, alcohol, sedentary lifestyle, diet, air pollution, sleep). Biological and metabolic factors (hypertension, obesity, high blood glucose, chronic inflammation). Demographic and social factors (polypharmacy, gender, isolation, education). Specific clinical outcomes (diabetes, hypertension, dementia, osteoporosis, multimorbidity).

RESULTS AND DISCUSSION

The analysis of the selected studies showed that the main risk factors for chronic diseases in elderly populations are associated with behavioral, metabolic, environmental and social determinants.

The most recent data from the Global Burden of Disease Study (GBD 2021) point to systolic hypertension, air pollution, and smoking as the most relevant risk factors in older adults aged 70 years and older, accounting for a significant proportion of disability-adjusted life lost years (DALYs) worldwide (GBD, 2025).

A population-based study conducted by the Study on Global Ageing and Adult Health (SAGE) analyzed data from six low- and middle-income countries, including China, India, and South Africa, and revealed that the most prevalent risk factors were smoking, excessive alcohol consumption, physical inactivity, low fruit and vegetable intake, abdominal obesity, and high blood pressure. The variability of these factors across countries demonstrates the influence of sociocultural and economic context on the health of older adults (Wu et al., 2015).

Smoking, in particular, remains a preponderant risk factor among the elderly, even after decades of control campaigns. Studies indicate a dose-response relationship between the number of cigarettes smoked over a lifetime and the risk of developing chronic diseases such as stroke, chronic obstructive pulmonary disease (COPD), and lung cancer (Ma et al., 2023). Similarly, frequent alcohol consumption was associated with a 17% increase in the likelihood of at least one chronic non-communicable disease occurring among the older adults analyzed, suggesting that even moderate levels of drinking may pose a considerable health risk in this age group (Yang et al., 2023).

Obesity, as measured by body mass index (BMI), was another factor with a major impact. A study of Chinese older adults demonstrated that a BMI ≥ 28 was strongly associated with the presence of hypertension (odds ratio [OR] = 1.69), diabetes mellitus (OR = 1.80), COPD (OR = 2.76), and stroke (OR = 3.54), revealing a significant association between overweight and chronic disease in older adults (Wang et al., 2018). These findings reinforce the need for strategies to control body weight, even in old age.

In Brazil, a study with long-lived elderly people (≥ 80 years old) showed that polypharmacy, overweight and female gender were the main factors associated with the presence of hypertension and diabetes. The prevalence of hypertension was 75.7%, and the use of five or more daily medications

increased the risk of developing diabetes mellitus by 2.15 times in this population (Silva et al., 2023; Silva et al., 2024). These data point to the need for pharmacotherapeutic follow-up in the elderly, as a way to prevent complications and reduce drug interactions.

In addition, the accumulation of two or more chronic diseases — a condition known as multimorbidity — has been strongly associated with functional limitation in the elderly. A study conducted in India revealed that the presence of multimorbidity increased the risk of impairment in activities of daily living (ADL) by up to six times, which has a direct impact on the autonomy and quality of life of these individuals (Sharma et al., 2021). The fragility generated by this condition demands special attention from health services.

In Canada, a national survey showed that the most prevalent chronic diseases among older adults include hypertension (present in about two-thirds of the elderly population), osteoarthritis, diabetes (27%), osteoporosis (25%), COPD (20%), stroke (9.5%), and dementia (7%), highlighting the need for integrated preventive actions (PHAC, 2023). These diseases are often associated with physiological processes characteristic of aging.

One of these processes is chronic low-grade inflammation, known as "inflammaging", which contributes to the emergence of conditions such as cardiovascular disease, cancer, dementia and muscle weakness. Inflammaging results from the continuous activation of the immune system over the years, generating an environment conducive to the development of chronic diseases, even in the absence of active infections (Franceschi et al., 2007).

Finally, irregular sleep patterns were also associated with an increased risk for multiple chronic diseases in older adults. A recent study indicated that older adults with inconsistent sleep schedules had a higher incidence of diabetes, hypertension, heart disease, and cognitive disorders, as well as symptoms of frailty and depression (Li et al., 2025). This reinforces the importance of promoting regular sleep routines as a preventive measure in geriatric public health.

Thus, the results show that the risk factors for chronic diseases in the elderly are complex, multifactorial and, for the most part, modifiable. Coping with these risks requires integrated strategies

for health promotion, prevention, clinical follow-up and psychosocial support, with special attention to the diversity of cultural, social and economic contexts where the elderly live.

The impact of lifestyle and health behaviors on the development of chronic diseases in the elderly is a topic of vital importance in the context of health sciences, especially with the increase in the elderly population in many countries. Lifestyle encompasses a variety of behaviors, including eating habits, physical activity levels, tobacco and alcohol consumption, which play crucial roles in individuals' overall health. Studies show that the adoption of healthy behaviors can significantly reduce the prevalence of chronic diseases, while unhealthy lifestyles are associated with an increased risk of conditions such as diabetes, hypertension, and cardiovascular diseases (Borges et al. 2009).

Food is one of the essential pillars for maintaining health, especially in old age. For example, Borges et al. (2009) state that "the highest mean score was recorded for knowledge about inadequate diet..." (p. 1512), emphasizing that many older people may be aware of their diet but still do not apply this knowledge in their daily practices. This may be due to barriers such as limited access to healthy foods or a lack of proper nutrition education. The relationship between inadequate diet and chronic diseases is well established, since a diet rich in sugars and fats increases the risk of obesity and, consequently, associated diseases.

A sedentary lifestyle is another critical factor that affects the health of the elderly. The research by Borges et al. (2009) reveals that "about half of the subjects and two thirds of them, respectively, are aware of the association of sedentary lifestyle with diabetes mellitus and osteoporosis" (p. 1517). Here, awareness is an important step, but not enough. Often, seniors face physical or social limitations that make it difficult to engage in regular physical activity. More alarmingly, "more than 80% of the interviewees were aware of the associations between sedentary lifestyle and acute myocardial infarction..." (Borges et al., 2009, p. 1517), reinforcing the need for interventions that not only inform, but also empower the elderly to engage in physical activities that are safe and accessible.

In addition, Cruz et al. (2017) highlight that "the presence of two or more risk factors in more than half of the elderly population indicates the need for public policies aimed at promoting a healthy

lifestyle" (p. 9). The coexistence of multiple risk factors is a reality in the elderly population, where "more than 50% of the elderly had at least two concomitant risk factors" (Cruz et al., 2017, p. 6). This aspect draws attention to the urgency of developing approaches that integrate health promotion and disease prevention, aiming to reduce the harmful interactions of different risk factors.

The recognition that "interventions or preventive measures focused on more than one risk factor could be more efficient than those focused on only one" (Cruz et al., 2017, p. 8) is crucial to improve the quality of life of the elderly. Because of this, multidisciplinary programs that simultaneously address balanced diets, physical activities, and behavioral changes should be prioritized to positively impact the health of the senior population. This scenario calls for direct and coordinated actions that support the construction of a healthy lifestyle, allowing older adults to maintain greater autonomy and improve their quality of life as they age.

Intervention and prevention strategies aimed at the health of the elderly population are essential at a time when demographic aging is becoming increasingly prominent in several societies. Understanding the complexity of the risk factors that contribute to the development of chronic diseases in this age group is a crucial first step in designing effective initiatives. The literature highlights that the presence of two or more risk factors in more than half of the elderly population indicates the need for public policies aimed at promoting a healthy lifestyle (Cruz et al., 2017, p. 9). This suggests that interventions should not be one-dimensional, but rather integrate multiple aspects of health and well-being.

Preventive approaches should consider not only individual but also collective interventions that promote changes in social and physical environments. Health education, for example, is a powerful tool that can be used to raise awareness about the importance of healthy habits. In this context, it is vital that educational programs are adapted to the needs and realities of older people, taking advantage of opportunities for community interaction and social support. According to Borges et al. (2009), "the objective of this study was to evaluate the population's knowledge about the associations of four behavioral factors..." (p. 1511), emphasizing the need to disseminate relevant information. The

formation of support groups and workshops that address topics such as nutrition and physical activity can be extremely beneficial.

In addition, proper nutrition and the promotion of regular physical activity are essential components of any prevention strategy. The literature has indicated that "more than 50% of the elderly had at least two concomitant risk factors" (Cruz et al., 2017, p. 6), which highlights the interconnection between health conditions and habits. Interventions that encourage the practice of physical exercise, adjusted to the capacities and limitations of the elderly, have shown positive results in improving quality of life. Borges et al. (2009) state that "about half of the subjects and two thirds of them, respectively, are aware of the association of sedentary lifestyle with diabetes mellitus and osteoporosis" (p. 1517). This awareness, in itself, reveals a potential to transform behavior, as long as the right conditions are offered for this change to occur.

In addition, measures that intertwine several dimensions of risk are recommended. Cruz et al. (2017) argue that "interventions or preventive measures focused on more than one risk factor could be more efficient than those focused on only one" (p. 8). Therefore, strategies that simultaneously address nutrition, physical activity, and mental health can result in more effective health promotion. Integrated programs that offer nutritionists, physical educators, and psychologists working together can provide holistic care that meets the diverse needs of older adults.

These findings converge in the identification of mutable risk factors (such as lifestyle habits and medical control) and non-mutable risk factors (gender, age), which interact with social and biological determinants, generating a situation of high vulnerability. Health policies should prioritize integrated interventions: smoking cessation, promotion of physical activity, overweight control, medication review, sleep monitoring, and environmental measures such as pollution control.

CONCLUSION

Risk factors for chronic disease in older adults are multiple and interrelated, including

lifestyle, metabolic conditions, polypharmacy, chronic inflammation, and social adversities. Recent evidence reinforces the importance of interventions focused on behavior modification, clinical control of metabolic factors, improvement of sleep patterns, and reduction of environmental burden. Integrated approaches segmented by demographic profile and context are essential to promote healthy aging and reduce the impact of NCDs in geriatric populations.

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