

# Cost-Effective Interventions for Cardiovascular Disease in Vietnam

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*WRITER'S COMMENT: For the past year, I have had the privilege of working as a clinical researcher in the UC Davis Medical Center Heart Failure clinic. I have seen firsthand the significant impacts of cardiovascular diseases on patients' quality of life, and subsequently developed an interest in understanding the most prominent risk factors that lead to such conditions. Thus, when Professor Danica Taylor assigned us a paper proposing a new, cost-effective policy addressing a public health topic of our choice, I knew I wanted to write about cardiovascular disease. Another requirement of the assignment was that we address our chosen public health topic in the context of a low- or middle-income country. I decided to investigate cardiovascular disease in Vietnam, since many of my close friends are Vietnamese and have been affected by family members with cardiovascular disease. Through this paper, I hope to bring awareness to the different metabolic and behavioral risk factors that contribute to cardiovascular disease, and the need for continued research on cost-effective interventions.*

*INSTRUCTOR'S COMMENT: When Emily mentioned she wanted to submit her policy paper to the Prized Writing journal was ecstatic. Not only was it an opportunity for Emily to showcase her excellent writing skills, but it was also a chance to spread awareness about an ongoing global health crisis, cardiovascular disease in Vietnam. Upon reading Emily's policy paper, I was particularly impressed by her opening statement, where she fully embraced the purpose of the assignment and took on the role of the health minister of Vietnam. Additionally, I found her solution of*

*using a multifaceted approach that included prevention inspired and a core competency of this course. Emily is truly an innovative thinker. I know her creativity and ability to apply knowledge to practice will serve her well in her future career. Her fantastic policy paper reflects her commitment to global health and provides feasible solutions to managing cardiovascular disease in Vietnam.*

—Danica Taylor, University Writing Program

## **Abstract**

Vietnam is currently in a decades-long epidemiological transition, wherein patterns of morbidity and mortality are shifting away from communicable diseases towards noncommunicable diseases (Nhung, 2014). Stroke and ischemic heart disease are now the leading causes of death in Vietnam (IHME, 2019), resulting in about 170,000 deaths each year (WHO, 2016). Cardiovascular disease primarily affects adults over the age of 25, especially older women living in urban conditions (Nguyen, 2012). Individuals with this disease experience a much lower health-related quality of life as compared to Vietnam's general population, with pain/discomfort, anxiety/depression, and death being common outcomes (Tran, 2018). Cardiovascular disease is the leading cause of burden for adults in Vietnam, resulting in 27% of total years of life lost (YLL) due to all diseases (Nhung, 2014). Therefore, a cost-effective mass media program targeting the predominant risk factors for cardiovascular disease—salt intake, cholesterol, and tobacco—must be implemented throughout Vietnam to prevent the rise of cardiovascular disease (Ha, 2011).

## **Nature and Magnitude**

Cardiovascular disease encompasses all disorders of coronary and blood vessels, including stroke, ischemic heart disease, and hypertension (WHO, 2016). It is the leading cause of morbidity and mortality globally, especially in low- and middle-income

countries like Vietnam (Nguyen, 2012). In Vietnam, 31% of all deaths result from cardiovascular disease (WHO, 2016), while 37% of deaths from noncommunicable diseases can be attributed to cardiovascular disease (Vietnam Ministry of Health, 2014). Cardiovascular disease accounts for 145,000 more deaths than the next leading cause of death in Vietnam, road injury (Nguyen, 2012). In addition, one study extrapolated data for adults aged 30 to 74 years in Vietnam and found that the risk of these individuals experiencing a cardiovascular event in 10 years is about 9%, or 3.4 million events (Nguyen, 2012).

## **Demographics Affected**

In Vietnam, the incidence of both stroke and ischemic heart disease is higher in women over the age of 30 (Ha, 2011). Clustering of metabolic risk factors for cardiovascular disease was found to be more common for women living in urban environments, with urban women having an odds ratio 2.6 times that of rural women and an odds ratio 0.7 higher than that of urban men (Nguyen, 2012). This is of particular concern, since the urban population of Vietnam has increased by 7% over the last decade, with the urban population making up 37% of the total population in 2020 (The World Bank, 2018). As for behavioral factors, women with higher education and men with manual jobs have higher odds ratios for clusters of these cardiovascular risk factors (Nguyen, 2012). Research on age and gender differences in cardiovascular health-related quality of life has revealed that elderly female patients are more likely to suffer from a lower health-related quality of life (Tran, 2018). In fact, elderly female patients had a higher number of reports related to mental health, anxiety/depression, and pain (Tran, 2018).

## **Risk Factors**

The risk factors for cardiovascular disease can be classified into two categories, metabolic and behavioral (Nguyen, 2012). Metabolic risk factors include hypertension, dyslipidemia,

diabetes, and obesity; behavioral risk factors encompass smoking, excessive alcohol intake, unhealthy diet, physical inactivity, and stress (Nguyen, 2012). Among both sexes, lipid abnormalities and unhealthy diet are the predominant risk factors for cardiovascular disease, extrapolating to 28.5 million people and 25.9 million, respectively (Nguyen, 2012). This can be attributed to the increasing prevalence of overweight and obese adults, as well as the elevated levels of sodium commonly used in traditional Vietnamese dishes (Ha, 2011). In men alone, tobacco use and excessive alcohol intake were shown to be prominent (Nguyen, 2012). 56% of Vietnamese males above the age of 16 are smokers (Ha, 2011), while 25.1% of Vietnamese males above the age of 15 are heavy drinkers (Nguyen, 2020).

Location, socioeconomic status, and occupation also play important roles in determining cardiovascular disease risk. For both sexes, having more than half of the metabolic risk factors or all major risk factors has an odds ratio 1.8 to 2.6 times higher in the urban population than the rural population (Nguyen, 2012). In regards to socioeconomic status, women with a high school level of education or higher are more likely to have a cluster of behavioral cardiovascular disease risk factors (Nguyen, 2012). Researchers hypothesize that this pattern is linked to the higher rate of excessive alcohol intake and physical inactivity in these women (Nguyen, 2012). Men working manual jobs also commonly have individually clustered behavioral risk factors for cardiovascular disease, due to higher proportions of smoking and self-reported unhealthy diets (Nguyen, 2012).

## **Social and Economic Effects**

Cardiovascular disease puts a significant burden on Vietnam's economy, as well as on the individuals who have it. According to a review written by Nguyen and Trevisan, cardiovascular disease was the second highest health expenditure among noncommunicable diseases in Vietnam (2020). Cardiovascular disease is also the leading

cause of disability in Vietnam, and individuals with cardiovascular disease amounted to 27% of total YLL from all diseases (Nhung, 2014; Nguyen, 2020). This disability is likely associated with the pain/discomfort and anxiety/depression reported by patients (Tran, 2018), which doubly harms Vietnam's economy as many individuals with cardiovascular disease are unable to perform manual labor and support their families.

## **Recommendations**

Current interventions to mitigate cardiovascular disease in Vietnam follows the WHO HEARTS technical package and improves cardiovascular health, prevention, treatment, and management at the primary healthcare level (Novartis Foundation, 2018). Improving primary care interventions allows for individualized treatment of those at high risk of a cardiovascular event (Ha, 2011). However, this approach ignores the many individuals who do not have access to primary care, which is of great concern since 63% of the population lives in rural conditions (The World Bank, 2018). Furthermore, these strategies leave many risk factors untreated. For example, of the 32.4% of hypertensives being treated, only 2.8% of hypertensives have controlled blood pressure (Nguyen, 2020). Even worse, only 26% of hypertensives are aware of their condition (Nguyen, 2020). Prevention and treatment of such risk factors could affect 90-94% of cardiovascular disease cases (Tran, 2018). These issues highlight the need for a national education program on cardiovascular disease risk factors.

To reduce the burden of cardiovascular disease on Vietnam's economy and citizens, several studies have suggested the implementation of a mass media education program that addresses prominent risk factors (Ha, 2011; Nguyen, 2012). Since unhealthy diet and lipid abnormalities are prominent risk factors in both sexes, and tobacco use is a prominent risk factor for men (Nguyen, 2012), the cost-effectiveness of health education programs targeting salt intake, cholesterol levels, and tobacco consumption was evaluated

(Ha, 2011). The programs involved the dissemination of health education messages on these three risk factors through television, radio channels, newspapers, wall posters, and fliers/leaflets (Ha, 2011). This method was the least costly at \$0.06 per capita per year, as compared to \$2.90 per capita per year for an individualized drug treatment for those with a significant risk of a cardiovascular event (Ha, 2011). In regards to effectiveness, mass media education programs averted 7,000 to 75,000 disability-adjusted life years (DALYs) per year, while individual interventions averted 50,000 to 400,000 DALYs per year (Ha, 2011). Since resources are scarce in Vietnam, implementation of programs to reduce salt intake, cholesterol levels, and tobacco consumption is the most cost-effective solution. In the future when more resources are available, individualized interventions offer a more effective, viable option which has been deemed cost-effective by the Commission on Macroeconomics and Health (Ha, 2011). By tackling prominent risk factors of cardiovascular disease throughout Vietnam, cases will decrease and the burden on their economy and citizens will be lifted.

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