International Journal of Nursing & Clinical Practices

Expert Opinion **Open Access**

Global Trends of Cardiovascular Disease (CVD) and Risk factor(s) Management and Nursing Care

Ayako Okada

Faculty of Nursing, Tokyo University of Information Sciences, Chiba, 265-8501, Japan

Introduction

According to the World Heart Report (WHR) 2023 [1], cardiovascular diseases (CVD) have been the leading cause of death worldwide over the last few decades. In 2021, 20.5 million people died from cardiovascular conditions, which accounted for approximately one-third of all global deaths and was a significant increase from the 12.1 million CVD deaths in 1990 (World Heart Report 2023)[1]. The causes of CVD include a combination of socioeconomic, metabolic, behavioral, and environmental risk factors [2]. These include high blood pressure, unhealthy diet, high cholesterol, diabetes, air pollution, obesity, tobacco use, kidney disease, physical inactivity, harmful use of alcohol, and stress. Among these risk factors, there is no single pattern approach that "fits-all" to improving cardiovascular health. Every population is susceptible to different risk factors based on their location and lifestyle (World Heart Report 2023)[1].

The characteristics of each population may lead to disparities between countries and inequalities in cardiovascular outcomes. In addition, disparities arise according to sex, ethnicity, and socioeconomic status of the patients. To achieve an equitable distribution of prevention and nursing care, especially for patients' disease management of CVDs, it is important to look at each risk factor and how they contribute to CVDs by sex and ethnicity, which refer to socioeconomic, cultural, and lifestyle differences. This article will provide several discussions comparing and contrasting the selected risk factors among regions or countries, as well as discuss global and local cardiovascular prevention [3].

The World Heart Report 2023 highlights significant variations in the prevalence of CVD risk factors across regions and between sexes. (Table 1 and Table 2).

Table 1: Summary of regional variations of risk factors: (World Heart Report 2023).

Sub-Saharan Africa	highest prevalence of raised blood pressure
Southeast Asia, East Asia, Oceania	highest sodium consumption and prevalence of diabetes
South Asia	the highest levels of ambient air pollution
North Africa and Middle East	high levels of metabolic risk factors, especially diabetes and obesity.
High-Income countries	high levels of behavioral risk factors: high sodium and alcohol consumption, high levels of tobacco smoking, and low physical activity.
Central Europe, Eastern Europe, and Central Asia region	highest CVD mortality rates, high levels of tobacco smoking in women, high levels of raised blood pressure and non-HDL cholesterol

Table 2: Summary of variations of risk factors by Sexes: (World Heart Report 2023).

Males > Females	physical inactivity, alcohol consumption, tobacco smoking, raised blood pressure, and diabetes.
Females > Males Females in North Africa and Middle East Males in Southeast Asia, East Asia, and Oceania	Obesity
Males in the Southeast Asia, East Asia, and Oceania Females in the High-Income region	Tobacco smoking,
Males consumed more alcohol per day than females in 97% of countries	alcohol consumption

In addition, the age-standardized levels of physical activity among adults aged ≥ 25 years were higher among males than females in 75% of countries. These variations underscore the importance of tailored, context-specific approaches to address CVD risk factors in different regions and for different sexes.

Policy implementation across regions may also influence CVD mortality rates. For instance, the Sub-Saharan Africa region has the lowest implementation of key policies for improving CVD health in the world.

The following are several potential contributing factors that may account for the regional disparities observed in CVD risk factors in The World Heart Report 2023:

***Corresponding Author:** Prof. Ayako Okada, Faculty of Nursing, Tokyo University of Information Sciences, Chiba, 265-8501, Japan

1. Socioeconomic factors: The report indicates A correlation exists between health expenditure and CVD mortality. This suggests that economic disparities between regions may contribute to differences in the risk factors.

2. Healthcare system capacity: The WHF Policy Index shows variations in policy implementation across regions, particularly in areas such as the availability of CVD drugs and the existence of national plans. This could affect the management of risk factors.

3. Policy implementation: This report highlights variations in the implementation of key CVD-related policies across regions. This could lead to differences in the management of risk factors and prevalence.

4. Access to healthcare: The report mentions out-of-pocket expenditure as a factor correlated with CVD mortality. This suggests that differences in healthcare access may contribute to regional variations in risk factors.

5. Cultural and lifestyle differences: The report notes variations in behavioral risk factors, such as physical activity, alcohol consumption, and dietary habits (e.g., sodium intake), across regions. This likely reflects cultural and lifestyle differences.

6. Environmental factors: The report mentions ambient air pollution as a significant risk factor, particularly in South Asia. This indicates that environmental conditions contribute to regional differences.

7. Demographic factors: The report noted that an aging population contributes to increased CVD mortality. Differences in population age structure across regions could influence the prevalence of risk factors.

It is important to note that these are potential reasons inferred from the report's data and findings. The complex interplay among these factors likely contributes to the observed regional differences in CVD risk factors [4].

Socioeconomic factors can significantly contribute to differences in CVD risk across regions. The following are several insights into how socioeconomic factors might influence CVD risk factors [5]:

1. Health Expenditure: The report indicates a correlation between lower health expenditure as a percentage of GDP and higher CVD mortality. This suggests that regions with lower economic resources may struggle to invest in healthcare systems, prevention programs, and treatments that could help manage CVD risk factors in the future.

2. Out-of-Pocket Expenditure: Higher proportions of out-of-pocket health expenditures correlate with higher CVD mortality. In regions where people must pay more for healthcare out of their own pockets, individuals may be less likely to seek preventive care or manage chronic conditions that contribute to CVD risk.

3. Access to Healthcare: The availability of CVD drugs in public health facilities varies across regions. Socioeconomic factors can influence a region's ability to provide essential medications and treatments, affecting the management of risk factors such as hypertension and diabetes.

4. Policy Implementation: The report shows that the policy implementation for CVD prevention and control varies across regions. Economically disadvantaged regions may lack the resources to fully implement and enforce policies that could help reduce the risk factors for CVD.

5. Behavioral Risk Factors: Socioeconomic factors can influence lifestyle choices that affect the risk of CVD. For example, the prevalence of tobacco smoking varies across regions and between sexes. Economic stress, education levels, and cultural norms, all influenced by socioeconomic factors, can impact such behaviors.

6. Environmental Factors: Socioeconomic conditions can affect exposure to environmental risk factors, such as air pollution. Less economically developed regions may struggle to implement and enforce such environmental regulations.

7. Nutrition: The report mentions high sodium intake as a risk factor that varies across regions. Socioeconomic factors can influence dietary habits through food availability, affordability of healthy options, and nutritional education.

8. Physical activity: Physical Activity: Levels vary across regions. Socioeconomic factors can affect this through urban planning, the availability of recreational facilities, and work-life balance issues.

In conclusion, socioeconomic factors can create complex influences on CVD risk factors, affecting everything from individual behaviors to healthcare system capacity and policy implementation. Addressing these socioeconomic disparities may be key to reducing regional differences in CVD risk factors and outcomes [6].

To what extent can technological interventions contribute to reducing socioeconomic inequalities in CVD risk factors? The following are some potential applications [7].

Telemedicine and Remote Monitoring

Telemedicine can connect patients with healthcare providers for consultations, follow-ups, and management of chronic conditions, such as hypertension and diabetes, which are significant risk factors for CVDs.

Mobile Health (mHealth) Applications

Smartphone apps can be used to promote healthy behaviors, provide education about CVD risk factors, and help individuals track and manage their health metrics, such as blood pressure, physical activity, and diet.

Electronic Health Records (EHRs)

The implementation of EHRs can improve continuity of care, facilitate better management of CVD risk factors, and support the implementation of guidelines for CVD management.

Wearable Devices

Affordable wearable technology can help individuals monitor their physical activity, heart rate, and other health metrics, thereby promoting awareness and potentially encouraging healthier behaviors.

Artificial Intelligence and Machine Learning

These technologies can be used to analyze large datasets, identify high-risk individuals, and predict CVD outcomes, potentially providing more targeted and tailored interventions.

Digital Health Education

Online platforms and digital tools can be used to disseminate health information and educate populations about CVD risk factors and prevention strategies tailored to different socioeconomic contexts [8,9].

While technology offers significant potential in addressing socioeconomic disparities in CVD risk factors, it is important that implementation is done equitably to avoid exacerbating existing disparities. Efforts should be made to ensure that technological solutions are accessible and usable across different socioeconomic groups, particularly in low- and middle-income countries (LMICs), where data gaps exist (World Heart Report 2023). This can help in understanding why certain populations are at a higher risk of CVDs.

Conclusion

The WHR emphasizes the need for comprehensive strategies that address all major risk factors to effectively reduce CVD mortality rates worldwide. This article focuses on socioeconomic disparities by regional and sex variation, highlighting the ongoing global challenge of CVDs and the uneven progress in addressing them. The implementation of technology as part of concerted efforts by global and national governmental bodies holds potential as a strategic means of reducing the cardiovascular risk associated with socioeconomic disparities.

Conflicts of Interest

The author declare that she has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

1. World Heart Report 2023: Confronting the World's Leading Cause of Death. Geneva, Switzerland. World Heart Federation. 2023.

2. World Health Organization (WHO). World Health Report 2010. Available from: (last accessed 10 May 2023).

3. The World Heart Observatory can be accessed via the WHF website; www.worldheart.org.

4. Roth GA, Mensah GA, Johnson CO, Addolorato G, Ammirati E, et al. (2020) Burden of Cardiovascular Diseases and Risk Factors, 1990–2019: Update From the GBD 2019 Study Journal of the American College of Cardiology, 76: 2982–3021.

5. Institute for Health Metrics and Evaluation (IHME). GBD Compare Data Visualization. Seattle, WA: IHME, University of Washington; 2020. Available from http://vizhub.healthdata.org/gbd-compare. (March 18, 2023); World Health Organization Global Health Expenditure Database. Available from https://apps.who.int/nha/database/Select/Indicators/en.(13 April 2023)

6. World Health Organization (WHO). NCD Global Monitoring Framework. Available from: https://www.who.int/publications/i/item/ncd-surveillance-global-monitoringframework (last accessed 10 May 2023).

7. Zwack C.C., Haghani M., Hollings M, Zhang L, Gauci S, et al. (2023) The evolution of digital health technologies in cardiovascular disease research. npj Digit Med 6: 1.

8. Lindstrom M, DeCleene N, Dorsey H, Fuster V, Johnson CO, et al. (2022) Global Burden of Cardiovascular Diseases and Risks Collaboration, 1990-2021. J Am Coll Cardiol 80: 2372–2425.

9. Santo K., Redfern J (2020) Digital Health Innovations to Improve Cardiovascular Disease Care. Curr Atheroscler Rep 22: 71.