Review Article

Cardiovascular Health Implications of Worsening Economic Indices in Nigeria: A Narrative Review

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Abstract

Poor economic indices are implicated in adverse health outcomes. Cardiovascular diseases are the leading cause of death globally with more impact in low- and middle-income countries. Despite some documented associations between worsening economic indices and cardiovascular health, there is however knowledge gap on this topic in this environment. We conducted a narrative review to provide an overview of the impact of dwindling economy and cardiovascular health in Nigeria. A comprehensive search of electronic databases including PubMed, Scopus, and Google Scholar was conducted. The search terms were cardiovascular health, economic indices, and Nigeria. Inclusion criteria were studies published in English language between 2010 and 2021. There is limited knowledge on the association between worsening economic indices and cardiovascular health in Nigeria. The Nigerian government's spending on health care was less than the recommended 15% of the budget. There was a decline in gross domestic product from 5.31% in 2011 to 3.65% in 2021 and a rise in the inflation rate and unemployment rate from 10.84% and 3.77% to 16.95% and 9.79%, respectively, over this period. The prevalence of hypertension, diabetes mellitus, and dyslipidemia, which are the leading causes of cardiovascular morbidity, increased in the period of study. The exchange rate of naira to other global currencies worsened with attendant rise in the cost of health-care and cardiovascular medications. There is a huge knowledge gap on the impact of worsening economic indices and cardiovascular health. However, the existing evidence showed that the Nigerian government's spending on health is low and poor economic indices may be related to the worsening cardiovascular health in Nigeria. There is a need for more research to assess the impact of these indices on cardiovascular health.

Keywords: Cardiovascular disease, economic indices, hypertension, narrative review, Nigeria, noncommunicable disease

Introduction

According to the Global Burden of Disease study, published by the Institute for Health Metrics and Evaluation and the "Disease Burden Unit" of the World Health Organisation, more than 60% of the burden of disease results from noncommunicable diseases (NCDs) which are predominantly cardiovascular in origin.[1] Cardiovascular diseases (CVDs) are the leading cause of death globally and are responsible for about 31% of all deaths worldwide.[1] Globally, the total disease burden of CVD, measured in disability-adjusted life years, rose from 279.84 million in 1990 to 393.11 million in 2019 with a similar rise in Nigeria from 16.75% to 26.75% over the same study period.[1]

The worldwide prevalence of CVD as well as its risk factors (both modifiable and nonmodifiable) is on a rapid rise, and it is already assuming an epidemic proportion, especially in developing countries.[2-5] While these cardiovascular risk factors include hypertension, diabetes mellitus (DM), obesity, dyslipidemia, microalbuminuria, cigarette smoking, and sedentary lifestyle among others, hypertension is still the strongest risk factor for fatal and nonfatal CVD and responsible for most cases of stroke, renal disease, coronary

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heart disease (CHD), hypertensive heart disease, congestive heart failure, and peripheral vascular disease.[1]

In Nigeria, CVDs account for about 11% of all deaths and are projected to increase due to the rapid rise in the prevalence of CVDs and the risk factors.[1] This rapid rise in cardiovascular risk factors has also been documented.[1,4,6] In a 1997 survey of NCDs in Nigeria, a prevalence of 8%–12% was reported for hypertension and about 2.8% for DM.[6,7] However, another nationwide survey published in 2017 reported an estimated prevalence of 52.8% of hypertension in the southeast region of Nigeria.[8] Sadly, this astronomical rise may overwhelm the existing Nigerian health-care infrastructure in the presence of economic dysfunction and financial unpreparedness.[2]

Nigeria, like many other developing countries, has experienced a significant decline in economic indices over the years with attendant negative impact on many sectors in the country.[9] According to the statistics of World Development Bank, the inflation rate (consumer price index) and unemployment rate in Nigeria increased from 10.84% and 3.77% in 2011 to 16.95% and 9.79%, respectively, in 2021, while the interest rate and gross domestic product (GDP) shrunk from 5.67% and 5.31% in 2011 to 1.23% and 3.65%, respectively, in 2021.[1,9-13] This decline has been attributed to various factors such as corruption, poor governance, insecurity as well as COVID-19 pandemic.[1,9-13] The worsening economic indices have also resulted in job cuts with attendant high rate of unemployment.[1,9-13]

These worsening economic indices negatively affected both the government spending and the citizens' purchasing ability.[9-13] The funding of the existing dilapidating health-care structure also suffered some setbacks because government focused more on physical infrastructure development, agriculture revolution, and industrialisation as a way to shore up these worsening indices.[9] On the populace, unemployment, pay cuts, and loss of earnings reduced the purchasing power of the citizens and their dependents, therefore many patients who spend money out-of-pocket to access health care are negatively impaired in their ability to access hospitals, purchase health insurance, purchase medications, and complete investigations which will in turn worsen drug compliance and promote complications of CVDs.[9-16]

These sets of patients may thus have feelings of hopelessness and become depressed.[17-19] Depression has also been documented to negatively impact cardiovascular health.[17-19] Depression may also make these patients to engage in some poor social habits such as cigarette smoking, binge alcohol drinking, and use of illicit drugs which will further worsen the already poor cardiovascular health.[18,20] Unfortunately, there will be worsening of this vicious circle as these patients' economic woes worsen as a result of loss of income from disability and inability to afford the increased cost of health care.[18,20]

Economic burden of CVD is huge.[5,16,21] A systematic review on the assessment of average cost of care for cardiovascular risk factors and CVDs in low- and middle-income countries estimated that the average monthly costs for managing hypertension ranged between $500 and $1500 while that for CHD and stroke was estimated to be in excess of $5000 per episode.[15] In America, the spending on adult CVDs increased by more than $100 billion between 1996 and 2016.[22] It is thus projected that the worsening exchange rate and enumerated poor economic indices could also have negatively impaired the cardiovascular economic burden in Nigeria.[23]

While the impact of worsening economic indices on the nation's wealth and economic well-being is well documented, the impact on cardiovascular health has not been fully explored in our locality. Therefore, this narrative review attempts to provide a comprehensive overview on the cardiovascular health implications of worsening economic indices in Nigeria.

Materials and Methods

To conduct this narrative review, a comprehensive search of electronic databases including PubMed, Scopus, and Google Scholar was conducted. The search terms used included "cardiovascular health," "economic indices," "Nigeria," and related keywords. Inclusion criteria were studies published in English language between 2011 and 2021 that examined the relationship between economic indices and cardiovascular health in Nigeria. For an extended search, we introduced further economic terms like words such as "gross domestic product," "unemployment rate," and "inflation rate."

Two reviewers independently screened the titles and abstracts of identified articles for relevance. Full-text articles were then retrieved and assessed for eligibility based on inclusion criteria. Any discrepancies were resolved through discussion with a third reviewer.

Data extraction was performed using a standardised form that included study design, sample size, population characteristics, economic indicators measured, cardiovascular outcomes assessed, the study statistical methods, and key findings. Quality assessment was conducted using the Cochrane risk of bias tool for randomised controlled trials and the Newcastle–Ottawa Scale for observational studies.

Review

General overview

Worldwide, researches have indicated that worsening economic indices have significant implications for health and thus cardiovascular health.[4,5,15,16,18,22,24-26] Studies have shown a strong association between economic hardship and an increased risk of CVD, including hypertension, stroke, and heart failure.[15,16,21,22,24,27] This is likely due to a combination of factors, including reduced access to health care, poor nutrition, and increased stress levels.[15,16,21,27] Socioeconomic status (SES) indicators including education, income, and

occupation are associated with CHD risk factors, morbidity, and mortality.[22] In most industrialised nations, individuals with less education, lower income, and blue-collar occupations have the highest CHD rates.[22]

Additionally, it has been shown that policies that increase access to quality and affordable health-care and healthy food options can help mitigate the negative effects of economic hardship on cardiovascular health.[9,24] Conversely, policies that prioritise industrial and infrastructural growth over public health may exacerbate existing epidemic growth in CVD burden.[9,24] Therefore, there should be a balance of prioritizing policies that promote equitable access to health care and address the social determinants of health such as poverty and food insecurity while not neglecting industrial and infrastructural growth, thus reduction of the burden of CVD will be achievable.[9,22,24] This is very important in a developing country like Nigeria, where nearly 133 million (63%) Nigerians are multidimensionally poor and more than 70% of health-care spending is out-of-pocket.[9-14]

In summary, there is a huge knowledge gap on the association between worsening economic indices and cardiovascular health in this environment despite demonstrable evidence of nexus between them in other climes.

Economic policies and indices

Despite the commitment made by the Nigerian government to commit at least 15% of the national budget to health care in 2001, according to data from the World Bank, Nigeria has consistently committed <8% of its total annual budget to health, with a commitment of 4.7% in 2021.[9-13,24] However, countries such as Rwanda and South Africa have met the commitment.[9,24] This poor funding of health is surely inimical to the overall health of Nigerians.[9,24] In the same vein, in 2022, while the Ministry of Health got 4.3% of the entire budget, the Ministry of Agriculture got 1.8%, but the Ministry of Defense got 6.96%.[9]

In the face of this seeming neglect in the health spending, the inflation rate (consumer price index) and unemployment rate in Nigeria also increased from 10.84% and 3.77% in 2011 to 16.95% and 9.79%, respectively, in 2021, while the interest rate and GDP shrunk from 5.67% and 5.31% in 2011 to 1.23% and 3.65%, respectively, in 2021.[9-13] These worsening indices, weakened purchasing power, and unpredictable exchange rate may also discourage investors from investing in private medical practice because of fear of recouping their investment.[9-13]

Furthermore, according to the 2014 National Health Act, the Nigerian government is mandated to allocate at least 1% of its Consolidated Revenue Fund (CRF) to the Basic Healthcare Provision Fund which is geared toward the financial sustainability of the primary health care in Nigeria.[28] However, the first time this was included in the appropriation bill was in 2018.[28] Thus, political will, intra- and inter-bureaucratic tuft politics have prevented proper appropriation, implementation, and utilisation of a legitimate law of the country.[28] All these will contribute to the poor health of the nation because of the large number of patients who pay out of pocket for health.[14,28]

Hypertension

Hypertension is a major risk factor for CVD with an epidemic rise in prevalence.[2,29] Adeloye *et al*., in a meta-analysis, reported that the absolute cases of hypertension increased by 540% among individuals aged ≥ 20 years in Nigeria, from approximately 4.3 million individuals in 1995 to 27.5 million individuals in 2020.[29] Furthermore, some studies have suggested that there are associations between economic indices and prevalence of hypertension.[5,16,21,29,30] Reasons adduced include poor access to health-care services, unhealthy lifestyle choices, and limited availability of healthy food options.[5,16,21,29,30]

Individuals with lower SES are more likely to have limited access to health-care services and may delay seeking medical attention for hypertension until it becomes severe.[23,31] Additionally, unhealthy lifestyle choices such as a diet high in salt and low in fruits and vegetables can contribute to the development of hypertension.[30,32] Economic hardship may limit access to healthy food options, leading individuals to consume cheaper but less nutritious foods.[31] The dietary approaches to stop hypertension diet have been recommended as a healthy eating plan to roll back hypertension.[30,32]

Furthermore, stress associated with financial difficulties can also contribute to the development of hypertension.[31] Stress activates the sympathetic nervous system which causes an increase in blood pressure.[33] As economic indices worsen in Nigeria, individuals may experience increased stress levels which can lead to the development or exacerbation of hypertension.[34]

Diabetes mellitus

DM is an independent cardiovascular risk factor of increasing burden in sub-Saharan Africa, especially Nigeria.[7] It is becoming more prevalent owing to the increasing rates of obesity, physical inactivity, and urbanisation.[7] Furthermore, economic factors such as poverty, unemployment, and low income have also been implicated in the risk factors for DM and its complications.[5,7,21,31]

Studies have shown that individuals living in poverty are more likely to consume unhealthy diets due to limited access to healthy foods.[15,31] This can lead to obesity and an increased risk of developing type 2 DM.[7] Malnutrition has also been implicated in the etiology of DM.[35,36] Unemployment also plays a role in the development of diabetes and its complications.[7] Individuals who are unemployed may experience high levels of stress, which can lead to insulin resistance and an increased risk of developing type 2 diabetes.[34] Furthermore, job loss can result in a loss of, or inability to afford, health insurance coverage, making it difficult for individuals to access necessary health-care services for diagnosis, investigation, and treatment of DM.[34]

Additionally, individuals with low incomes may not be able to afford regular medical checkups, glycemic checks, and the medications for managing their diabetes, leading to poor blood sugar control and complications.[7] Furthermore, dietary management is the key cornerstone modality to attain good glycemic control in DM, thus dietary management may therefore suffer significantly in the reality of poor household finances.[7] Finally, the cost of oral hypoglycemic agents and insulin may be too much for an average Nigerian who pays out of pocket and thus may result in complementary and alternative medicine which will consequently worsen his glycemic control and thus expose him to further risks of organ damage.[7]

Dyslipidemia

Dyslipidemia is a condition characterised by abnormal levels of lipids in the blood, including high levels of low-density lipoprotein cholesterol and low levels of high-density lipoprotein cholesterol.[25] It is a major risk factor for CVD, which is the leading cause of death worldwide. Several studies have shown worsening prevalence of dyslipidemia in Nigeria.[2,23,37] Adeloye *et al*. reported the pooled crude prevalence of hypercholesterolemia in Nigeria to be 38% and estimated over 8.2 million persons having hypercholesterolemia in 1995, and 21.9 million persons in 2015.[37]

A study conducted in Iran found that individuals with lower SES were more likely to have dyslipidemia than those with higher SES.[38] This may be due to factors such as limited access to healthy foods, dietary indiscretion on the few occasions of availability of food, and increased stress levels associated with financial insecurity.[38] Additionally, individuals living in areas with poor economic conditions may be more likely to engage in unhealthy behaviors such as smoking and excessive alcohol consumption, both of which can contribute to dyslipidemia.[17,20,25,26] Lack or inadequate finances, as well as poor education, has also been shown to contribute to poor drug adherence in dyslipidemia patients.[25]

Overall, it is clear that economic indices play a crucial role in the development and management of dyslipidemia.

Limitations

While this review has provided valuable insights into the potential cardiovascular health implications of worsening economic indices in Nigeria, it is important to acknowledge its limitations. One major limitation is the lack of primary data on the relationship between economic indices and cardiovascular health outcomes in Nigeria. Most studies reviewed were conducted in other countries with different socioeconomic and cultural contexts, which may limit the generalisability of findings to Nigeria.

Another limitation is the potential for publication bias, as only studies published in peer-reviewed journals were included in this review. This may have excluded relevant studies that were not published or were published in nonpeer-reviewed sources. Additionally, some studies had small sample sizes or used cross-sectional designs, which limit their ability to establish causality.

Despite these limitations, this review highlights the need for further research on the relationship between economic indices and cardiovascular health outcomes in Nigeria.

Recommendations

This review showed that there is a huge knowledge gap on the impact of worsening economic indices and cardiovascular health. However, the available evidence is suggestive that worsening economic indices in Nigeria may have implications on cardiovascular health. Therefore, there is a need for urgent action to be taken by policymakers and stakeholders to address the underlying causes of these economic challenges.

Furthermore, since availability of reliable data is the first step toward making appropriate health policies, this review therefore calls on health economists, cardiologists, primary care physicians, and relevant stakeholders to conduct high-quality researches which are needed to bridge this identified existing knowledge gap. Future studies should use longitudinal designs with large sample size that can establish causality in order to provide more robust evidence on this topic. We can therefore better understand the complex interplay between economic factors and cardiovascular health outcomes.

Another recommendation is for the government to prioritise investment and funding of health-care infrastructure and services. This includes improving access to affordable medications, medical equipment, and facilities. Furthermore, the constitutional provision of the 2014 National Health Act, where the Nigerian government is mandated to allocate at least 1% of its CRF to the Basic Healthcare Provision Fund, should be strictly adhered to. This will give financial sustainability to the primary health care in Nigeria. This fund could also be assessed to finance preventive cardiovascular medicine and other areas of primary health care.

Furthermore, efforts should be made to improve the social determinants of health and the overall economic situation in Nigeria through policies aimed at reducing poverty, improving education, and reducing unemployment rates. This can be achieved through job creation initiatives, increased investments in education and training programs, and targeted interventions aimed at supporting small businesses.

Additionally, public health campaigns should be launched to raise awareness about the importance of maintaining a healthy lifestyle and seeking medical attention when necessary. We need to expand the cardiovascular screening and prevention programs nationwide.

Overall, it is clear that addressing the economic challenges facing Nigeria is critical to improving overall health and thus cardiovascular health outcomes in the country. By taking proactive steps toward achieving this goal, we can ensure that Nigerians have access to quality health-care services, live healthier lives, and then achieve universal health coverage.

Conclusion

The reviewed literature suggests that worsening economic indices in Nigeria may have significant implications for cardiovascular health. The prevalence of risk factors such as hypertension, diabetes, and obesity is increasing due to poverty, unemployment, food insecurity, and lack of access to quality health care. Inadequate health-care infrastructure, limited access to essential medications, and lack of universal health coverage exacerbated the burden of CVD.

This evidence highlights the urgent need for policy interventions that address social determinants of health and improve access to affordable health care. By prioritising investments in education, job creation, and health-care infrastructure, policymakers can mitigate the adverse effects of economic hardship on cardiovascular health in Nigeria.

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Conflicts of interest

There are no conflicts of interest.

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