EDITORIAL

The Epidemiological Transition and the Escalating CVD Burden in Bangladesh

AW CHOWDHURY[a], MAU CHOWDHURY[b]

Bangladesh is in the throes of a profound epidemiological transition. Over recent decades, the national health profile has dramatically shifted away from the historical burden of infectious, communicable diseases toward an overwhelming dominance of chronic non-communicable diseases (NCDs). NCDs are emerging as the dominant cause of death and disability. The population of Bangladesh is about 171.0 million.[1] WHO estimates that NCDs account for nearly 70% of all deaths in Bangladesh, with cardiovascular diseases alone responsible for 34%.[1] This trend is driven by rapid urbanization, sedentary lifestyles, tobacco use, poor diet, unplanned infrastructure development and environmental risks, which have combined to accelerate NCDs across all socioeconomic strata, threatening to decline hard-won gains in life expectancy and economic productivity.[1,2] This structural transformation is not just a demographic artifact; it represents a public health emergency for Bangladesh's healthcare infrastructure. Cardiovascular disease (CVD) has emerged as the main catalyst of this mortality surge, acting as the single leading cause of death and accounting for 17% of total national mortality.[1,2] This crisis is attenuated by a high prevalence of metabolic risk factors across the adult population. Among the risk factors- hypertension, diabetes, dyslipidemia, smoking, overweight and obesity, are important contributors of cardiometabolic dysfunction. Their overall prevalence varies in different epidemiological studies but one aspect is common- these are increasing over the last few decades.[5-9]

Compounding this crisis is the structural complexity of the "triple burden of malnutrition." In Bangladesh, persistent micronutrient deficits—manifesting as widespread iron deficiency anemia and iodine deficiency disorders—coexist alongside enduring childhood stunting and wasting due to undernutrition, while adult overnutrition and cardiometabolic diseases surge simultaneously. This triple burden creates a biological vulnerability wherein individuals exposed to early-life nutritional insufficiency experience heightened susceptibility to adult-onset metabolic disruption when exposed to modern unhealthy diets. Unraveling the specific dietary drivers that fuel this population-wide metabolic destabilization is an urgent epidemiological imperative.[3]

Diet constitutes the predominant modifiable determinant of cardiometabolic risk across both rural and urban Bangladeshi populations. The national food matrix—characterized by excessive sodium intake, industrially generated thermal lipid toxins, low dietary diversity with less consumption of protein, fruits and vegetables, with a heavy dependence on refined carbohydrates along with tobacco use—has instituted a daily biochemical injury to the cardiovascular system.[1-4]

Population-level sodium ingestion in Bangladesh is drastically higher than the physiological requirements and international disease-prevention thresholds. Empirical dietary assessments demonstrate that mean salt consumption ranges between 9.0 and 16.5 g/day per person while the World Health Organization (WHO) recommended ceiling of <5 g/day of total salt (corresponding to <2 g/day of elementary sodium). Consequently, excessive salt consumption remains the primary dietary contributor to elevated systolic blood pressure and cerebrovascular stroke mortality across South Asia.[10]

Industrially produced trans fatty acids (TFAs) represent a toxic chemical contaminant within Bangladesh's commercial food supply. Recent empirical laboratory investigations have shown conventional seed oils and their commercially refined counterparts may contain different levels of trans fatty acid due to refining and high heat treatment during deodorization. Highest TFA was found in refined rice bran oil, followed by refined soyabean oil. The public health implications of these

findings are staggering when evaluated alongside national market distribution metrics: 79% of all edible vegetable oils sold in Bangladesh are locally refined. Crucially, market breakdown data reveal that soybean oil accounts for 39% and rice bran oil accounts for 20% of total national edible oil consumption. Combined, these two high-heat refined oils constitute 59% of the entire national edible oil consumption matrix. When these dominant cooking oils are chemically altered during industrial refining, population-wide toxin exposure becomes inevitable.[11]

The Bangladeshi diet also has profound micronutrient deficits and caloric concentration in high-glycemic staple grains. National dietary surveillance indicates that most adults fail to consume adequate fruits and vegetables. Simultaneously, daily energy intake is heavily reliant on polished white rice, which accounts for approximately 58%

of total daily caloric consumption. This chronic reliance on refined carbohydrates blunts micronutrient density, triggers rapid postprandial glucose surges, causes compensatory hyperinsulinemia, and accelerates hepatic de novo lipogenesis. Over time, this dietary pattern accelerates visceral adiposity, metabolic syndrome, and early-onset type 2 diabetes, compounding the vascular damage inflicted by sodium and trans fats. These identified dietary patterns demonstrate that population-wide cardiometabolic deterioration is a direct consequence of an unsafe food environment, highlighting the urgent need for updated, evidence-based national nutrition standards.[2,3]

To counter the escalating burden of cardiometabolic disease, the updated *National Dietary Guidelines for Bangladesh* (2022) is formulated by Ministry of Health and Family Welfare (MoHFW), the Ministry of Food, the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM), the World Health Organization (WHO), the Food and Agriculture Organization (FAO) and National Nutrition Service (NNS) - Institute of Public Health Nutrition (IPHN), European Union and USAID. The core national recommendations are, to eat a well-balanced diet, minimize fats and oils in food preparation, limit salt intake to <5 g/day (<2 g sodium); mandate exclusive use of iodized salt, take less sugar, drink plenty of water, maintain desired body weight , regular physical activities, adopt appropriate preparation and cooking practices and follow healthy eating habits, add additional food and take extra care during pregnancy and lactation, practice exclusive breast feeding for the first six months of life and continue complementary foods with breast feeding up to 2 years.[3]

Bangladesh continues its steadfast progress toward achieving the health-related Sustainable Development Goals (SDGs). The country's commitment to "Ensure healthy lives and promote well-being for all at all ages" is reflected in significant advancements, despite global challenges such as the COVID-19 pandemic, economic disruptions, and geopolitical tensions. Maternal Mortality Ratio (MMR) reduced from 181 (2015) to 136 per 100,000 live births in 2023. Under-5 Mortality decreased from 125 per 1,000 live births in 1995 to 33 in 2023, with a target of 25 by 2030. Neonatal Mortality has declined from 39 per 1,000 live births in 2000 to 20 in 2023, with a target of 12 by 2030. There are significant reductions in tuberculosis, malaria, and hepatitis B, with continued efforts to meet SDG targets by 2030. Meanwhile, mortality from NCDs has remained steady with a target to reduce premature mortality by one-third by 2030.[1]

Primary care physicians, cardiologists, endocrinologists, and clinical dietitians are required to actively embed nutritional counseling into clinical workflows. Food-based dietary guidelines should be integrated into standard diagnostic algorithms and patient management protocols for NCDs. Public health agencies must deploy culturally tailored campaigns to educate people regarding hidden sodium in traditional foods, the severe cardiovascular risks of re-using cooking oils, the hidden presence of trans fats in commercial foods, and practical methods for incorporating whole grains and pulses into daily meals.

Bangladesh stands at a critical public health juncture. The rising tide of cardiovascular mortality—exacerbated by excessive sodium intake, trans fatty acids in mass-market edible oils, and refined carbohydrate saturation—threatens the health and economic vitality of the nation. Voluntary measures and individual counseling alone cannot overcome and this unsafe food environment. Reversing this crisis requires multisectoral action: enforcing mandatory industrial trans-fat limits, instituting statutory salt reduction, and embedding

evidence-based dietary guidelines into every clinical consultation across Bangladesh. The scientific evidence is unambiguous; the time for policy action is now.

(J Bangladesh Coll Phys Surg 2026; 44: 214-216)
DOI: https://doi.org/10.3329/jbcps.v44i4.94526

a. Professor Abdul Wadud Chowdhury
Director & Professor of Cardiology
National Institute of Cardiovascular Diseases (NICVD)
Sher-e-Bangla Nagar, Dhaka, Bangladesh.
E-mail: drwadud65@gmail.com, drwadud@hotmail.com

b. Professor Md. Ashraf Uddin Chowdhury
Professor of Cardiology
National Institute of Cardiovascular Diseases (NICVD)
Sher-e-Bangla Nagar, Dhaka, Bangladesh.
E-mail: ashraf_k45@yahoo.com

References:

1. Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh. Health Bulletin 2024. Management Information System, Directorate General of Health Services.
2. Rahman, S.M.M., Hossain, S.M. and uz Jahan, M., 2019. Diet related NCDs: Time for action. *Bangladesh Medical Research Council Bulletin*, *45*(3), pp.131-132.
3. National Nutrition Services (NNS), Dhaka Bangladesh. National Dietary Guidelines for Bangladesh. 2025.
4. Riaz, B.K., Islam, M.Z., Islam, A.S., Zaman, M.M., Hossain, M.A., Rahman, M.M., Khanam, F., Amin, K.B. and Noor, I.N., 2020. Risk factors for non-communicable diseases in Bangladesh: findings of the population-based cross-sectional national survey 2018. *BMJ open*, *10*(11), p.e041334.
5. Iqbal, A., Rahman, M.M., Bashar, M.I., Ahmed, A., Khan, S., Ahmed, N., Hasan, M.M. and Haider, M.M., 2025. Hypertension in Bangladesh: women surpass men at younger ages than worldwide. *Journal of Global Health*, *15*, p.04138.
6. Chowdhury, M.Z.I., Rahman, M., Akter, T., Akhter, T., Ahmed, A., Shovon, M.A., Farhana, Z., Chowdhury, N. and Turin, T.C., 2020. Hypertension prevalence and its trend in Bangladesh: evidence from a systematic review and meta-analysis. *Clinical hypertension*, *26*(1), p.10.
7. Biswas, R.K., Chowdhury, S., Hossain, S. and Chowdhury, P.B., 2024. Hypertension, diabetes, and hypercholesterolemia in Bangladesh: evaluating role of physical activity from cross sectional STEPS 2018 survey. *Health Science Reports*, *7*(7), p.e2243.
8. Islam, A.M. and Majumder, A.A., 2012. Hypertension in Bangladesh: a review. *Indian heart journal*, *64*(3), pp.319-323.
9. Sathi, N.J., Islam, M.A., Ahmed, M.S. and Islam, S.M.S., 2022. Prevalence, trends and associated factors of hypertension and diabetes mellitus in Bangladesh: Evidence from BHDS 2011 and 2017–18. *PLoS One*, *17*(5), p.e0267243.
10. Monower, M.M., Abid, S.U.A., Abrar, A.K. and Choudhury, S.R., 2024. Salt intake across the hypertension care cascade in the Bangladeshi adult population: a nationally representative cross-sectional study. *BMJ Open*, *14*(4), p.e081913.
11. Kabir, M.A., Lisa, S.A., Alam, M.M., Hossain, M.K., Islam, S.N. and Shaheen, N., 2025. Comparison of trans fatty acid content in commonly consumed seed oils and commercially refined counterparts. *Bangladesh Journal of Scientific and Industrial Research*, *60*(1), pp.63-72.