

**EDITORIAL****ARE WE READY FOR THE RISING SILENT EPIDEMIC OF METABOLIC SYNDROME AND CHRONIC NON-COMMUNICABLE DISEASE IN ETHIOPIA?**

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Since recently, the burden of metabolic syndrome (MetS) and chronic non-communicable diseases (CNCDS) is emerging alarmingly in low income countries. Metabolic syndrome is defined as the presence of three or more of the following components: central obesity, hypertension, hypertriglyceridemia, impaired fasting blood glucose level and low level of high-density lipoprotein (HDL). This has led to an increase in the global prevalence of chronic non-communicable diseases, with the majority of the growth occurring in developing countries (2). The most important risk factors include: smoking, severe stress related problems of poverty, increasing urbanization, westernization of lifestyle including unhealthy diet and physical inactivity (3). Due to these factors and the effect of globalization, over nutrition increasing on top of the already high prevalence of under nutrition leading to a double burden of diseases in sub-Saharan Africa(SSA) (4). In SSA, although infectious diseases cause the majority of mortality (69%); while CNCDS contribute around one fourth of deaths (5), this scenario is changing as the region is undergoing an epidemiological transition with a rapidly increasing burden of mortality and morbidity from CNCDS. It is projected that in 2030, CNCDS will surpass infectious diseases in SSA (2). The impact double burden of morbidities in SSA is likely to be far-reaching. As the prevalence of CNCDS is increasing, the interface between CNCDS and infectious diseases is becoming apparent demanding for intervention strategies that can address both problems. For instance, an increasing prevalence of diabetes may interfere with tuberculosis control program, increasing the number of susceptible individuals in populations where tuberculosis is endemic, making successful treatment challenging (4). On the other hand, the high prevalence of HIV infection in developing countries and concomitant anti-retroviral therapy is associated with an upsurge of metabolic syndrome (6).

Evidences show that Ethiopia the burden of metabolic syndrome and mortality from CNCDS that are linked to life styles changes is increasing. In Addis Ababa, the prevalence of MetS was 14.0%

in men and 24.0% in women (7). This situation is even worst among people leaving with HIV/AIDS with the prevalence of MetS being 25% in the ART groups compared to 22% in ART naïve group (8). Individual components of MetS are also prevalent among an apparently healthy working population in Ethiopia (9-10). The overall prevalence of diabetes was 6.5%, while it was 6.4% and 6.6% among men and women, respectively (10). Similarly, 31.5% of men and 28.9% of women in Ethiopia had high blood pressure which may imply a “silent epidemic” of CNCDS in this population (11).

A study in Addis Ababa also showed that that 51% of adult deaths were attributed to CNCDS (12). This high prevalence of hypertension, diabetes and mortality from CNCDS reported corroborates the evidence that Ethiopia is facing the pattern of disease burden observed in other Sub-Saharan African countries. This is an expected trend in countries that are under economic transition as we can learn from the history of other countries. These findings imply the need for evidence-based health promotion and disease prevention programs directed towards the screening, diagnosis and management of MetS and its components among Ethiopian adults (9).

However, what makes the Ethiopian case different is the fact that there has been high toll of childhood malnutrition (13) which can potentially amplify the emergence of more cases with metabolic syndrome and CNCDS. It has been evident that early childhood malnutrition is associated with CNCDS later in life (14). Therefore, Ethiopia has to prepare more in this regard to withstand the potential emergence of epidemics of CNCDS as the economy is progressing. One of the ways of preventing this problem is using a combination of high risk approach and general approaches. Implementation of the high risk approach requires development of sensitive and simple indicators for screening the risk of metabolic syndrome and chronic non communicable diseases. Anthropometric indicators are easy, simple and affordable tools that can be used for screening metabolic syndrome and the risk of chronic non-communicable diseases in this context (15). The

feasibility and face validity of using simple measures of central and overall adiposity in identifying CVD risk in resource-poor settings has been documented (16). However, it has been well understood that the international anthropometric cut-offs for detection of body fatness and risk of metabolic syndrome are not appropriate for Ethiopians and some Asian countries (17). Because of slender body frame, Ethiopians have higher body fat at a relatively low body Mass Index compared with a Caucasians or black person from another country (17). It has been suggested that the cut-off points for anthropometric measures of body fatness be developed for specific population. Development of public health interventions needs knowledge of an appropriate level of anthropometric indicators for educating the public.

Therefore, validation of the diagnostic utility of anthropometric indices and development of indicators based on locally driven cut-off values and calibration of their diagnostic performance is critical to enable them serve the aforementioned purposes (15).

## REFERENCES

1. Beilby J. Definition of Metabolic Syndrome: Report of the National Heart, Lung, and Blood Institute/American Heart Association Conference on Scientific Issues Related to Definition. *Clin. Biochem Rev*, Aug 2004; 25(3): 195–198.
2. BeLue R, Okoror TA, Iwelunmor J, *et al.* An Overview of Cardiovascular Risk Factor Burden in Sub-Saharan African Countries: A Socio-Cultural Perspective. *Global Health*, 2009; 5:10.
3. Motala AA, Mbanya J, Ramaiya KL. Metabolic Syndrome in Sub-Saharan Africa. *Ethnicity and Disease*, 2009; (Suppl 2):S2-8-S2.
4. Young F, Critchley JA, Johnstone LK, Unwin NC. A review of co-morbidity between infectious and chronic disease in Sub Saharan Africa: TB and Diabetes Mellitus, HIV and Metabolic Syndrome, and the impact of globalization. *Globalization and Health*, 2009; 5:9.
5. World Health Organization. Global status report on alcohol. WHO, Department of Mental Health and Substance Abuse; Geneva: 2004: 1-34.
6. Estrada V, Martínez-Larrad MT, González-Sánchez JL, *et al.* Lipodystrophy and metabolic syndrome in HIV-infected patients treated with antiretroviral therapy. *Metabolism*, 2006;55(7):940-5.
7. Tran A, Gelaye B, Girma B, *et al.* Prevalence of Metabolic Syndrome among Working Adults in Ethiopia. *International J. Hypertension*, 2011;193719.
8. Tesfaye DY, Kinde S, Medhin G, *et al.* Burden of metabolic syndrome among HIV-infected patients in Southern Ethiopia. *Clinical Research & Reviews*, 2014; (8) 102–107.
9. Tran A, Gelaye B, Girma B, *et al.* Prevalence of Metabolic Syndrome among Working Adults in Ethiopia. *Int J Hypertens*. 2011;2011:193719.
10. Nshisso LD, Reese A, Gelaye B, Lemma S, Berhane Y, Williams MA. Prevalence of hypertension and diabetes among Ethiopian adults. *Diabetes Metab Syndr*, 2012;6(1):36-41.
11. Tesfaye F, Byass P, Wall S. Population based prevalence of high blood pressure among adults in Addis Ababa: uncovering a silent epidemic. *BMC Cardiovasc Disord*, 2009; 9:39.
12. Misganaw A, Haile Mariam D, Araya T. The Double Mortality Burden among Adults in Addis Ababa, Ethiopia, 2006-2009. *CDC - Preventing Chronic Disease*: 2012; 9: 11\_0142.
13. Central Statistical Agency [Ethiopia]. Ethiopia Mini Demographic and Health Survey. Addis Ababa, Ethiopia, 2014.
14. DeBoer MD, Lima AA, Oría RB, *et al.* Early childhood growth failure and the developmental origins of adult disease: do enteric infections and malnutrition increase risk for the metabolic syndrome? *Nutr Rev*. 2012 Nov;70(11):642-53.
15. Ghazali SM, Sanusi RA. Waist circumference, waist to hip ratio, and body mass index in the diagnosis of metabolic syndrome in Nigerian subjects. *Niger J Physiol Sci*, 2010;25(2):187-95.
16. Wai WS, Dhami RS, Gelaye B, *et al.* Comparison of measures of adiposity in identifying cardiovascular. *Obesity (Silver Spring)*, 2012 Sep;20(9):1887-95.
17. Deurenberg P, Yap M, van Staveren WA. Body mass index and percent body fat: a meta-analysis among different ethnic groups. *Int J Obes Relat Metab Disord*. 1998; 22:1164–71.