News Release

Title

Profile of non-communicable disease risk factors among urban public employees in northern Ethiopia has been first reported.

Key Points

- This study revealed the high prevalence of cardiovascular risk factors and metabolic syndrome among workers in a regional city in the northern highland of Ethiopia, and gave scientific evidence of the urgent needs of noncommunicable disease (NCD) control in low-income countries.
- This was the first epidemiological study to assess glycated hemoglobin (HbA1c) levels among the apparently healthy population in Ethiopia, and showed that the prevalence of diabetes was higher than expected.
- This is the first study suggesting the possible health impact of the strict vegetarian-style fast observed by Ethiopian Orthodox Christians.

Summary

The research team including PhD candidate, Lemlem W Gebremariam, Ass. Professor, Chifa Chiang, and Professor and Chair, Atsuko Aoyama, Department of Public Health and Health Systems, reported that the prevalence of cardiovascular risk factors and metabolic syndrome was much higher than expected in a regional city in northern highland of Ethiopia. Noncommunicable disease (NCD) control is a global health issue, which is listed as one of the targets of the UN Sustainable Development Goals (SDGs). However, even the current situation of NCDs is not fully investigated in many low income countries in Africa.

The burden of NCDs is increasing in low- and middle-income countries, including Ethiopia, where lifestyle changes along with rapid urbanization are a noticeable trend. In collaboration with Ethiopian researchers, the team conducted an epidemiological study targeting adult workers in the city. Of the 1380 subjects, 68.7% had less than 1 serving of fruits and vegetables per day, 41.0% were physically inactive, and 57.3% observed religious fast. The prevalence of abdominal obesity was 29.3% in men and 58.5% in women, and that of metabolic syndrome was about 39% in both sexes. The prevalence of diabetes was underestimated if only fasting blood glucose (FBG) was used for the diagnosis compared with combination of FBG and glycated hemoglobin (HbA1c) (6.7% in men and 3.8% in women vs. 12.1% in men and 5.6% in women). More than a quarter (26.1%) of men and 8.7% of women had estimated 10-year risk of cardiovascular disease of 10% or more. The prevalence of diabetes, raised LDL cholesterol, and raised triglycerides were significantly higher in non-fast-observers than those in fast-observers among men. This study revealed the high prevalence of NCD metabolic risk factors among the workers in the highland of Ethiopia.

Research Background

NCDs are new priorities and additional burdens on public health in low- and middle-income countries, where urbanization and lifestyle changes are advancing rapidly. In addition, it has been reported that low birth weight and childhood malnutrition may increase the risks of cardiovascular diseases and diabetes in adulthood.

Ethiopia is a low-income country with a total population of 102.4 million. Although infectious diseases and undernutrition are still prevalent, the burden of NCDs is increasing. NCDs were estimated to account for 30% of total deaths in Ethiopia.

Population-based NCD risk factor surveys sponsored by WHO were conducted 3 times in the past in Ethiopia. However, FBG and lipids were not assessed until the most recent survey in 2015. Furthermore, HbA1c has never been assessed, although combined use of FBG and HbA1c were recommended to screen individuals with diabetes or prediabetes. In addition to the 3 surveys, several population-based surveys had been conducted in various regions in the country and in a few workplaces in Addis Ababa. The reported prevalence of each NCD risk factor varied: overweight/obesity, less than 3% to more than 25%; hypertension, less than 10% to around 28%; and diabetes, 2.1% to 6.5%. The previous studies indicated that the prevalence of NCD risk factors was higher in urban dwellers than rural residents, perhaps due to the urbanized lifestyle, such as high-energy diet, physical inactiveness, etc. Urban employed workers are likely to lead such lifestyles, because of their possible better-off status. A few studies investigated NCD risk factors of employed workers in Addis Ababa; however, such studies have not been done in major cities in other provinces.

Research Results

The research team conducted a cross-sectional epidemiological study on NCD risk factors in northern Ethiopia. The findings showed only 3.3% of men and 0.5% of women were current smokers. The prevalence of khat chewing was 2.6% in men and 0.2% in women. Alcohol drinking was not so prevalent either, as only 4.3% of men and none of women drunk 3 or more standard drinks per day. Very few (0.3%) individuals consumed more than 5 servings of fruits and vegetables per day, and majority (68.7%) had less than 1 serving per day. The prevalence of moderate or high levels of total physical activity was 66.0% in men and 48.7% in women, indicating that one third of men and over half of women led sedentary lifestyle.

Overweight/obesity was more prevalent in women (32.8%) than men (28.2%), but underweight was also more common in women (15.3%) than men (10.6%). The prevalence of increased waist circumference and increased waist-hip ratio were 31.1% and 50.9% in men and 59.8% and 48.8% in women, respectively, showing the high prevalence of abdominal obesity. The age-standardized prevalence of hypertension was 22.4% in men and 15.3% in women.

The prevalence of raised total cholesterol was 30.4% in men and 30.6% in women, that of low HDL cholesterol was 69.9% in men and 73.8% in women, and that of raised LDL cholesterol was 20.8% in men and 16.0% in women. The prevalence of high triglycerides was 31.7% in men and

46.1% in women. The prevalence of diabetes was 12.1% in men and 5.9% in women. The prevalence of diabetes defined only by the level of FBG was 6.7% in men and 3.8% in women. The prevalence of metabolic syndrome was as high as 39.0%, implying that this population was prone to develop cardiovascular diseases. The Framingham risk score indicated that 26.1% of men and 8.7% women are with the intermediate/high risk of developing cardiovascular diseases in 10 years.

The prevalence of diabetes, raised LDL cholesterol, and raised triglycerides were significantly lower in fast-observers than non-fast-observers in men, whereas such significant difference was not shown in women. The prevalence of overweight/obesity, increased waist circumference, increased waist-hip ratio, low HDL cholesterol, and raised triglycerides were not significantly different in both men and women.

Research Summary and Future Perspective

This study revealed a high prevalence of NCD risk factors among the urban workers in northern Ethiopia. Metabolic syndrome, abdominal obesity, low HDL cholesterol and elevated triglycerides were highly prevalent, indicating increased risk of cardiovascular diseases. NCD risk factors of most of the study participants had never been examined before, therefore, a regular health check-up mechanism needs to be introduced. Health education interventions to modify the urbanized lifestyle is also required. Based on the study findings, the team piloted a health education program.

Publication

Lemlem Weldegerima Gebremariam, Chifa Chiang, Hiroshi Yatsuya, Esayas Haregot Hilawe, Alemayehu Bayray Kahsay, Hagos Godefay, Loko Abraham, Yoshihisa Hirakawa, Hiroyasu Iso, and Atsuko Aoyama. Non-communicable disease risk factor profile among public employees in a regional city in northern Ethiopia. *Scientific Reports*, June 18, 2018.

Japanese ver.

https://www.med.nagoya-u.ac.jp/medical_J/research/pdf/Scientific_R_20180628.pdf