Boomers Gen X Millennials Gen Z

Chien Huey, Teh [1,3], Chee Cheong, Kee [2], Sanjay, Rampal [3],
Mohd Azahadi, Omar [2], Tahir, Aris [1]
[1] Institute for Medical Research, National Institutes of Health, Ministry of Health, 40170 Setia Alam, Selangor, Malaysia
[2] Biostatistics and Data Repository Sector, National Institutes of Health, Ministry of Health, 40170 Setia Alam, Selangor, Malaysia
[3] Centre for Epidemiology and Evidence-based Practice, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

KEMENTERIAN KESIHATAN MALAYSIA

Birth cohort effects on obesity among Malaysian adults: Generation X-ers and Y-ers are the high-risk subpopulations

INTRODUCTION & OBJECTIVES

Obesity is a complex health issue influenced by various factors such as diet, physical activity levels, socio-economic and environmental factors unique to individuals with similar historical, environmental and societal experience (cohort effect) (1). Besides, age-related physiological changes (age effect) and secular influences (period effect) (2) could also affect obesity trends in the population.

Age-period-cohort (APC) analysis is commonly used to estimate cohort effects on health conditions/indicators while simultaneously controlling for the effects of age and period (2). In recent decades, Malaysia has seen a transition from traditional to westernised lifestyle (3). Therefore, it is timely to estimate the cohort effect on obesity in order to provide an additional understanding of the driving factors behind the obesity epidemic in Malaysia.

This study aims to illuminate BMI and waist circumference trajectories of Malaysia adults across the 20th and early 21st century and its variations by gender and ethnicity.

RESULTS

Generally, BMI (Figure 1) and waist circumference (Figure 2) increased with cohort recency.

There were significant gender differences (p<0.001) in waist circumference across birth cohorts, with a more pronounced increase among women of more recent cohorts.

In terms of ethnic differences, the Chinese have a less profound BMI (p<0.001) and waist circumference (p<0.001) increase across birth cohorts.

Figure 1: Cohort trajectories of BMI and waist circumference, by gender

Figure 2: Cohort trajectories of BMI and waist circumference, by ethnicity

METHODOLOGY

The present study combined data from four population-based cross-sectional studies, the National Health and Morbidity Surveys (NHMS) 1996, 2006, 2011 and 2015 (n=94,537) and performed extended Hierarchical Age-Period-Cohort (HAPC) analysis to examine the BMI and waist circumference trajectories across birth cohorts as well as gender and ethnic variations in such trajectories while controlling for the confounding effects of age and period. Age and birth cohort were mean-centred at 40 and 1960, respectively, to reduce correlations between the linear and higher-order terms. These models were fitted using the mixed programme in STATA version 14 (StataCorp., College Station, TX, USA).

DISCUSSIONS

Consistent with those reported in previous studies (4-10), people born in the recent cohorts have higher BMI and waist circumferences than those born in the preceding cohorts. Exposures to the progressively more obesogenic environment, such as increased accessibility, availability and affordability of calorie-dense food, the advent of automated devices for household chores and urbanisation, could be the driving factors for the monotonic increase in BMI and waist circumference across birth cohorts.

There was a gender convergence in waist circumference. This trend could be attributable to a comparably lower mean total METs-minute/week among the females than males across birth cohorts (data not shown), which could be further compounded by greater likelihood of sedentary behaviours among the women as a result of increased women participation in white-collar jobs and advanced home technologies in these modern days (11).

On the other hand, ethnic gaps in BMI and waist circumference widened with cohort recency. The well-recognised ethnic variations in body fat composition at a given BMI (12), genetic predisposition (13) and differences in dietary habits among Malayians (12,14) are among the plausible factors for the observed ethnic heterogeneity.

CONCLUSION

The increasing BMI and waist circumference among those born in more recent cohorts, particularly the late Generation X-ers (born between 1970-1979) and Generation Y-ers (born between 1981-1996), is alarming. Future studies to identify risk factors that are associated with such high cohort-specific susceptibility to obesity among these sub-populations are necessitated to help in the planning of interventions and obesity-related policies in preventing excess weight gain among the future generations.

REFERENCES