

Gender and age differences in obesity among Korean adults

Jun Goo Kang¹ and Cheol-Young Park²

¹Department of Endocrinology and Metabolism, Hallym University Sacred Heart Hospital, Anyang; ²Department of Endocrinology and Metabolism, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea

See Article on Page 29-34

Obesity is an undesirable outcome of environmental and lifestyle changes in recent decades and a preventable factor for many chronic diseases, including osteoarthritis, obstructive sleep apnea, fatty liver disease, hypertension, type 2 diabetes, coronary artery disease, and some cancers [1]. The severity of obesity as a public health problem is dramatic. The increasing prevalence of obesity is not confined merely to Western populations. In Southeast Asia, including Korea, a marked increase in the prevalence of overweight and obesity has been investigated over the last two decades. The prevalence of obesity is above 30% and the prevalence of severe obesity (body mass index [BMI], ≥ 30 kg/m²) has been steadily increasing in Korea [2]. This may be explained by lifestyle changes, including eating habits and lack of physical activity.

The prevalence of obesity in the United States has slowly increased since the beginning of the 20th century [3]. The recent trend of obesity in Korea has also grown slowly and is rather a decreasing tendency in women [2]. It is thought that structured learning programs for individuals that emphasize lifestyle modifications, including regular physical

activity and diet education can provide modest weight loss, because there is relatively little known about population-based management and prevention of obesity [4]. However, we have not identified which age-groups in females are showing decreases in obesity prevalence and the reasons for this decrease.

In the current article entitled "Gender disparity in the secular trends for obesity prevalence in Korea: analyses based on the KNHANES 1998-2009," the authors assessed the secular trends and prevalence of obesity over the past 12 years in Korean adults aged ≥ 19 years using the Korea National Health and Nutrition Examination Survey (KNHANES) I to IV, a nationally representative sample of the Korean population. They also investigated whether the changes in the prevalence of obesity differed by gender and 10-year age increments [5]. This study showed that the prevalence of obesity in Korean males progressively increased in all age groups. However, no significant trend was observed over the past 12 years for females. The prevalence of obesity in Korean females rather decreased significantly in the 30- to 39-year, 40- to 49-year, and 50- to 59-year subgroups, but increased in the 60- to 69-year and > 70-year female subgroups.

Although differences in study design

Received: November 21, 2012

Accepted: November 26, 2012

Correspondence to
Cheol-Young Park, M.D.

Department of Endocrinology and Metabolism, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, 29 Saemun-ro, Jongno-gu, Seoul 110-746, Korea
Tel: +82-2-2001-2440
Fax: +82-2-2001-1588
E-mail: cydoctor@chol.com

and sampling make direct comparisons of the prevalence of obesity between Korean and other countries difficult, the results of this study are very distinctive. Similar findings were only reported from Japan in the 4th Asia-Oceania Conference on Obesity [6]. Yoshiike [6] examined trend analyses of obesity from the dataset of the National Health and Nutrition Survey in Japan from 1976 to 2004 and revealed that the prevalence of obesity using BMI values consistently increased in all age groups for men. However, the trends in women were markedly different across all age groups, with decreasing trends for women in their 20s to 40s and increasing trends in those over 60s years [6]. These findings are confusing because it had been thought that the increase of obesity by aging was a common phenomenon in Korea and other countries [7]. The causes of these trends reported in Korea and Japan are unclear but the trends could be partly explained by changes of lifestyle and body distortion due to social and cultural pressure in young women.

Individual, social and environmental factors have played a role in obesity trends [7-9]. Rapid economic growth in Korea has provided improved socioeconomic status, together with an abundance of food and this environment in Korea has been characterized as obesogenic. However, unfortunately, there was no consideration for the changes in social and environmental values that might directly or indirectly affect obesity in the present study [5]. Modest increases in BMI and waist circumference (WC) are associated with increased risk of cardiovascular disease and an unprecedented increase in WC is of particular concern [9]. The prevalence of abdominal obesity in Korea shows similar trends for obesity by BMI in both genders [2]. This study also failed to confirm whether the changes of WC in women were similar across all age groups, with a decrease in obesity prevalence among young and middle-aged women. However, the results of this study are very promising for population-based multiple strategies for obesity.

The probable health benefits from a decrease in obesity are of considerable public health significance. Pharmacotherapy may be considered if lifestyle changes, such as diet and exercise intervention, are ineffective. However, most of the anti-obesity drugs that were approved and marketed have now been withdrawn due

to serious adverse effects and orlistat is the only drug to have been approved for long-term use [10], though lorcaserin and the combination of phentermine and topiramate have recently been approved by the Food and Drug Administration. Lifestyle modifications are essential for both prevention and management of obesity; however, as we know, it is really difficult to succeed with community-based health promotion programs that emphasize lifestyle changes by promoting healthy eating habits and physical activity, because public health workers will probably be unable to fully understand many reasons, including regional differences that may affect health behaviors [7]. It would be necessary in future studies to examine individual behavioral and social environmental factors, including presence of parental obesity, marriage age, international marriages, cigarette smoking, alcohol consumption, internet communications, education, occupation, socioeconomic status, urban-rural differences, eating behaviors including the compositions and patterns of food intake, and physical activity including transportation by motor car and use of labor-saving devices which might influence the trends of BMI and WC differentially with gender and age.

Conflict of interest

No potential conflict of interest relevant to this article is reported.

REFERENCES

1. Park HS, Park CY, Oh SW, Yoo HJ. Prevalence of obesity and metabolic syndrome in Korean adults. *Obes Rev* 2008;9:104-107.
2. Oh SW. Obesity and metabolic syndrome in Korea. *Diabetes Metab J* 2011;35:561-566.
3. Flegal KM, Carroll MD, Kit BK, Ogden CL. Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. *JAMA* 2012;307:491-497.
4. Jeffery RW. Public health strategies for obesity treatment and prevention. *Am J Health Behav* 2001;25:252-259.
5. Rhee SY, Park SW, Kim DJ, Woo J. Gender disparity

- in the secular trends for obesity prevalence in Korea: analyses based on the KNHANES 1998-2009. *Korean J Intern Med* 2013;28:29-34.
6. Yoshiike N. Situations and preventive strategies of obesity and metabolic syndrome in Japan. In: *The 4th Asia-Oceania Conference Obesity*; 2007 Feb 9-11; Seoul, Korea. Seoul, Korean Society for the Study of Obesity, 2007: 18.
 7. Wang Y, Beydoun MA. The obesity epidemic in the United States: gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review and meta-regression analysis. *Epidemiol Rev* 2007;29:6-28.
 8. Chung SJ, Han YS, Lee SI, Kang SH. Urban and rural differences in the prevalence of gender and age specific obesity and related health behaviors in Korea. *J Korean Med Sci* 2005;20:713-720.
 9. Lean ME, Katsarou C, McLoone P, Morrison DS. Changes in BMI and waist circumference in Scottish adults: use of repeated cross-sectional surveys to explore multiple age groups and birth-cohorts. *Int J Obes (Lond)* 2012 Sep 4 [Epub]. <http://dx.doi.org/10.1038/ijo.2012.122>.
 10. Kang JG, Park CY. Anti-obesity drugs: a review about their effects and safety. *Diabetes Metab J* 2012;36:13-25.