

Impact of lifestyles of children and their parents on cardiovascular risk factors in elementary school children

Yoshinaga M. (1), Miyazaki A. (2), Aoki M. (3), Ito Y. (4), Kubo T. (5), Hamajima T. (6), Horigome H. (7), Takahashi H. (7), Iwamoto M. (8), Ogata H. (9), Tokuda M. (10), Tachikawa T. (11), Hara M. (12), Shinomiya M. (13), Nagashima M. (14).

National Hospital Organization Kagoshima Medical Center, Kagoshima, Japan (1); Japan Community Health Care Organization Takaoka-Fushiki Hospital, Takaoka, Japan (2); Aoki Clinic of Internal Medicine, Cardiovascular Medicine & Pediatrics, Fukuoka, Japan (3); Japanese Red Cross Hokkaido College of Nursing, Kitami, Japan (4); National Hospital Organization Okayama Medical Center, Okayama, Japan (5); Aichi Children's Health and Medical Center, Obu, Japan (6); University of Tsukuba, Tsukuba, Japan (7); Yokohama City University Hospital, Yokohama, Japan (8); National Institute of Public Health, Wako, Japan (9); Tokuda Children's Clinic, Amagasaki, Japan (10), Kagoshima Prefectural Dietetic Association (11), Tokyo Metropolitan Hiroo Hospital, Tokyo, Japan, (12); Nishifuna Naika, Funabashi, Japan (13); Aichi Saiseikai Rehabilitation Hospital, Nagoya, Japan (14).

Background and Objectives: Recently, the prevalence of obese children might be declining in Japan; however, longitudinal studies showed that the prevalence of obesity is still increasing during elementary school periods. Therefore, the present study aimed to evaluate the effect of lifestyles of children and their parents on the levels of cardiovascular (CV) risk factors in elementary school children.

Subjects: The study has been conducting since 2012 and announced through the local boards of education in seven areas in Japan. The study was included 976 healthy volunteers (478 boys, 498 girls) aged from 6 to 12 years with a medical examination and a questionnaire. The medical examination included the measurement of height, weight, waist circumference, and blood pressures, and blood sampling for CV risk factors. The questionnaire collected data on the lifestyles of the subjects and their parents. Screen time included time spent watching TV and playing games. The subjects were asked to walk with pedometer for 7 days. Obesity in the present study was defined using the age- and sex-specific International Obesity Task Force standard.

Results: Multivariate regression analyses showed that number of steps by pedometer measurement, screen time, sleeping time, and parental BMI were significantly and independently associated with the levels of one or more CV risk factors in elementary school children. Among these, screen time had a profound adverse effect on CV risk factor levels. Number of steps was positively associated with sleeping time and negatively associated with screen time. Screen time in children was strongly associated with parental screen time. The risk of obesity in boys was associated with paternal obesity, but not with maternal obesity. On the other hand, the risk of obesity in girls was associated with both paternal and maternal obesity.

Conclusions: Increase in number of steps and sleeping time and decrease in screen time may be the first-line approach for elementary school children to maintain favorable CV risk factor levels. An association between paternal or maternal obesity and obesity differs between genders in Japan; thus, approaches focusing on parents should take the gender of children into consideration.