

Body mass index, physical activity, dietary intake, serum lipids and blood pressure of middle-aged Japanese women living in a community in the Goto archipelago

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Mortality in the Goto archipelago region of the Nagasaki prefecture in Japan is higher than the Japanese average. We investigated dietary intake, habitual physical activities, systolic and diastolic blood pressure, and serum total cholesterol and high-density lipoprotein cholesterol of middle-aged women in the Narao community in the Goto archipelago. Subjects were 189 women between 40 and 69 years of age selected from the resident registration records of the Narao area. They comprised 55 women aged 40–49, 71 women aged 50–59, and 63 women aged 60–69 years. We compared these parameters with a Japanese sample and also compared between normal ($BMI < 25 \text{ kg/m}^2$)- and over-weight ($BMI = 25 \text{ kg/m}^2$ Narao women).

The mean BMI of Narao women was higher than that of the Japanese sample. The BMI of Narao women was related to age ($r = 0.248$, $p < 0.01$) and over-weight women were significantly older than normal-weight women. Over-weight women had higher systolic and diastolic blood pressures, higher total cholesterol and lower HDL cholesterol than normal-weight women. The higher serum total *cholesterol* and diastolic blood pressure of Narao women, relative to the Japanese sample, could be explained by the presence of over-weight women in the Narao community. Serum cholesterol and blood pressure of Narao women correlated with BMI. However, dietary intake and physical activities did not differ between normal- and over-weight Narao women. Age correlated significantly with systolic blood pressure. BMI correlated significantly with systolic blood pressure, diastolic blood pressure and total cholesterol, and negatively with HDL cholesterol. Neither leisure time physical activity nor Total daily physical activity correlated with systolic or diastolic blood pressure, total cholesterol or HDL cholesterol. However, dietary and behavioural factors associated with higher BMIs could not be clarified in this cross-sectional study.

Then, the relationships of blood pressure and serum cholesterol with dietary and nutritional intake were studied. Total cholesterol was positively related with the intake of milk and negatively with proportion of energy intake from carbohydrate. Both systolic blood pressure and diastolic blood pressure were related negatively with intake of sweets and positively with intake of fish. Longitudinal studies are necessary to understand the natural history and relations of changes of physical activities and diet with health parameters.

How much should elderly people walk each day? (A basic study for physical activity target setting in consideration of fitness and health levels.)

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To evaluate the target physical activity level for the elderly in terms of the number of steps of walking, a battery of fitness tests were performed, and steps were counted using a pedometer with an acceleration sensor, in 301 elderly people aged 60–93 years.

Age-associated changes were observed in the body build and fitness, and they became more notable in the late old age than in the early old age. Concerning the physical activity level, both the total energy consumption and energy consumption by exercise showed significant decreases with the advance of age in both males and females, and the number of steps in females decreased by about 2000 steps with every 10 years of aging. The physical activity level was significantly correlated with the body build and fitness. The body weight and BMI were retained at higher levels, and the leg muscle power and endurance capacity were better, as the activity level was higher. A high correlation ($y = 23699x - 26722$, $r = 0.800$) was observed between the activity index (total energy consumption/basal metabolism) and the number of steps.

Our study confirmed that the activity level of the elderly decreases with the advance of age and that the decrease in the activity level is associated with decreases in the fitness level and the muscle mass. Therefore, a target physical activity level for preventing such age-associated declines in physical functions may be set for each elderly person according to his/her state of fitness and health in terms of the number of steps of walking on the basis of its correlation with the activity index