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## The study of life styles, dietary habits and nutrient intakes of elementary school students related to the bone mineral density and obesity index

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Childhood obesity, one of the most frequently occurring nutrition problems during the childhood years in modern times, is readily extended into adulthood. Recent reports have showed that obesity is partly related to osteoporosis. These facts encouraged us to conduct a research on the relation between infant obesity and bone health with an examinee group of growing children in the peak bone mass. In this research we asked 257 male and female elementary school students to fill out a questionnaire which includes such questions as dietary habits and life styles, etc. and conducted nutrition research and measured SOS of calcaneus by using microwave equipment. We divided the whole subjects into 4 categories in the order of low bone density(group1: the lowest bone density, group 4: the highest bone density). And we defined group 1 or 2 with an obesity rate of 30% or over as "low-bone-density-and-overweight group(LBO)"(n=62)(24% of all), group 1 or 2 with an obesity rate of -10-20% as "low-bone-density-and-normal-weight group(LBN)"(n=55)(21.4%), and group 3 or 4 with an obesity rate of -10-20% as "normal control group(NC)"(n=67)(26.1%). Based on this categorization, we conducted comparative analysis on dietary habits, life styles, and nutrient intakes between the groups. The average age of each group is 11.0(LBO group), 10.7(LBN group), 10.7(NC group), which shows the age of LBO group significantly higher than the other two groups(p<0.01). LBO group also showed significantly difference from the other two in weight(p<0.001) and obesity rates(p<0.001). The SOS of calcaneus was 1642.8 m/s(LBO group), 1650.5 m/s(LON group), and 1888.1 m/s(NC group)(p<0.001). Children in NC group have experienced less bone fractures(p<0.01), and LBO group showed a higher figure than LBN group in terms of the number of regular exercise(p<0.05). NC group(1.9 times/day) registered a significantly higher figure than LBO group in terms of the number of snacks intaken between meals(p<0.05). Although there was no significantly difference between the groups in the aspect of average energy intakes, the results showed that crude fiber intakes of LBN group(5.5 g) and NC group(5.3 g) was significantly higher than LBO group(4.5 g)(p<0.05). And LBO group recorded a significantly higher than NC group in terms of intakes of vitamin C and potassium. The groups showed no significantly difference in average total food intakes, but LBO group showed a significantly higher than NC group in terms of cereal(p<0.05) and meat(p<0.05) intakes, while LBO group registered a significantly lower in terms of nuts and mushrooms intakes. To sum up, low-bone-density-and-overweight group have showed different dietary habits from normal control group such as the highest bone fracture rates, higher meat intakes, but lower intakes of nuts, mushrooms and crude fiber. We hope this result will be used as basic materials for obesity management and bone health management.