

## Original Article



## Nutrition in Chinese-Korean Children and Adolescents\*

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## Abstract

**Objective** To study the nutrition habits among Chinese-Korean children and adolescents in Yanbian Autonomous Prefecture, Jilin, China.

**Methods** Data were obtained from the Chinese National Survey on Students' Constitution and Health in 1995, 2000, 2005, and 2010 for Chinese-Korean children and adolescents aged 7-18 years. The number of the subjects included was 4789, 4704, 5875, and 5315, respectively.

**Results** The rate of the occurrence of stunting showed a declining trend from 1995 to 2010 (for boys: urban, 6.3%; rural, 12.7% in 1995 and 3.5% for both in 2010. For girls: urban, 7.8%; rural, 13.4% in 1995 and 4.2% and 5.5%, respectively, in 2010). Although the ratio of wasting did not show significant differences between the urban and rural children and adolescents in 1995, 2000, 2005, and 2010 respectively, the ratio of occurrence of overweight or obesity increased (for boys: urban, 7.3% and 1.3% in 1995, 17.6% and 12.9% in 2010; rural, 7.0% and 1.3% in 1995, 14.6% and 12.8% in 2010, respectively. For girls: urban, 8.1% and 1.0% in 1995, 17.3% and 8.6% in 2010; rural 5.7% and 0.7% in 1995, 16.4% and 7.4% in 2010, respectively).

**Conclusion** The ratio of malnutrition in children and adolescents in Chinese-Korean areas declined from 1995 to 2010, and the distinction in malnutrition between the urban and rural areas was negligible in 2010. Further, the ratio of overweight and obesity increased over this period.

**Key words:** Chinese-Korean children and adolescents; Nutrition; Stunting/Wasting; Overweight/Obesity

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## INTRODUCTION

Childhood is a critical period of physical development, during which nutrition plays a very important role in the growth and development of children and adolescents, as nutrition constitutes the most important foundation of physical growth<sup>[1]</sup>. People of Chinese-Korean ethnicity live mainly in the Northeastern provinces, such as Heilongjiang, Liaoning, and Jilin, among which the population in Yanbian Korean Autonomous Prefecture is the largest, accounting for

97.1% of all people of Chinese-Korean ethnicity in China. The Chinese-Korean ethnicity originates from the Korean Peninsula, including the Democratic People's Republic of Korea (DPRK) and the Republic of Korea. From the mid-19th century to the early 20th century, many Koreans immigrated to China in order to escape from the chaos caused by the war (Figure 1)<sup>[2]</sup>. Although people of Korean ethnicity can speak the same language and have a similar ancestry as the Chinese people<sup>[3]</sup>, they live in different countries and have different lifestyles. Therefore, we believe that the physical characteristics of people of

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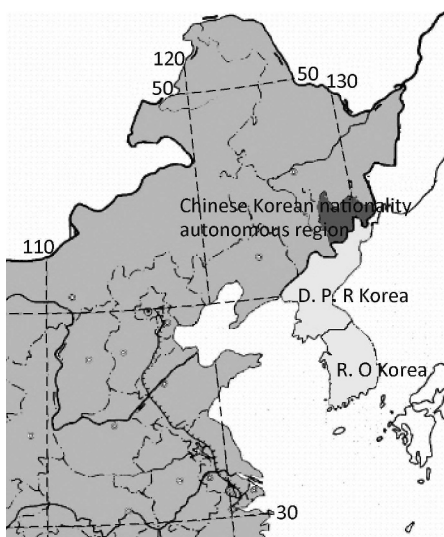
Chinese-Korean ethnicity differ from those of people from the DPRK and the Republic of Korea. The Chinese-Korean ethnicity is distinguished from Han ethnicity in terms of the lifestyle involved unique customs, and social and economic conditions. Therefore, to improve the nutrition of children and adolescents, promote the physical health, and improve the quality of life of the population, it is important to understand the nutritional conditions of these populations and identify their present nutritional problems.

Although several studies have reported the nutritional status of children and adolescents in Korea, they mainly focused on people of the Republic of Korea and the Chinese-Korean minority. In addition, a few studies aimed at exploring children's malnutrition in the DPRK<sup>[4-6]</sup>. Studies on the nutritional status of children and adolescents in the Republic of Korea chiefly focused on cross-sectional studies, many of which were on overweight and obesity rates<sup>[7-8]</sup>. Many studies reported that the number of overweight and obese children and adolescents had dramatically increased in the Republic of Korea. The prevalence of childhood obesity doubled from 5.4% in 1998 to 10.8% in 2008 in the Republic of Korea, although this figure was still lower than that in Western countries<sup>[7-8]</sup>. Some studies showed that overweight and obesity in Korean children and adolescents were related to the consumption of high-energy food<sup>[9]</sup> and poor physical activity<sup>[10]</sup>. Other studies argued that overweight or obesity in children were associated

with other socio-economic factors<sup>[11-12]</sup>. Lee G et al.<sup>[11]</sup> reported that obesity in girls was associated with their mothers' long working hours, because long working hours can influence the health of the workers' families. Moreover, Kang HT et al.<sup>[12]</sup> indicated that low socio-economic status such as low parental education is a risk factor for childhood obesity.

A few studies have previously reported on malnutrition in children and adolescents in DPRK. Katona-Apte J et al.<sup>[4]</sup> noted that the overall prevalence of stunting and wasting was 38.2% and 16.5%, respectively, and that boys had a higher prevalence of both than girls among children and adolescents in the DPRK. Hoffman DJ et al.<sup>[5]</sup> showed that the prevalence of stunting and wasting was 39.4% and 8.2%, respectively. Although the prevalence of wasting decreased from 16.5% (1997) to 8.2% (2002), the prevalence of stunting did not show a significant change in those years (38.2 vs. 39.4%). Therefore, we concluded that acute undernutrition was decreasing in the DPRK, but chronic undernutrition that resulted in stunting was still highly prevalent. The latest 2012 report on the nutrition status in the DPRK<sup>[6]</sup> showed that malnutrition and mortality rates among children in the DPRK had improved. However, the prevalence of stunting was still at a moderate-severe level and the regional deviation had increased.

The previous studies that aimed to determine the nutritional status of Chinese-Korean children and adolescents were mainly cross-sectional studies. Many studies indicated that Chinese-Korean children and adolescents had a higher prevalence of overweight and obesity and were shorter and heavier than the Han children in other areas of China. In a sample of 1697 school-aged students, Fang JN et al.<sup>[13]</sup> reported that in all age groups, regardless of sex, Chinese-Korean children and adolescents were shorter than Han children, but the prevalence of overweight and obesity among Chinese-Korean girls aged 7-18 years was higher than that of Han girls of the same age group. In a study of 1682 (boys, 503; girls, 1179) Korean college students and 2239 (boys, 906; girls, 1333) Han college students aged 20 years, Jin YJ et al.<sup>[14]</sup> found that students of Korean ethnicity were shorter and heavier than those of Han ethnicity. Xiong NN et al.<sup>[15]</sup> showed that both Chinese-Korean children and adolescents, including boys and girls aged 7-18 years, had a higher prevalence of overweight and obesity than those of Han children. Some longitudinal studies compared



**Figure 1.** Yanbian Korean nationality autonomous region (the Part of Red), Jilin, China.

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