



Health-related behaviors in children of ethnic minorities and Han nationality in China

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Abstract

Objective: The purpose of this study was to understand the health-related behaviors in children of ethnic minorities and Han nationality so as to provide a basis for formulating a health promotion plan, reasonably allocating health resources, and improving health conditions of the entire population of children.

Methods: The selection and processing of study subjects, as well as health-related behaviors, were based on the 2009 Chinese Health and Nutrition Survey (CHNS) data. A total of 867 children were involved in this study, including 762 Han children and 105 minority children. Comparative analysis was conducted on the reported ratio of health-related behaviors, including society and family variation, as well as dietary habit variation, and health condition scores.

Results: A comparison on health-related behaviors between ethnic minority and Han children indicated the following: with respect to society and family variation, statistical significance ($P<0.05$) existed between the two groups in health-related behaviors influenced by parents who did or did not stay at home, level of education, and medical insurance status; and with respect to dietary habit variation, statistical significance ($P<0.05$) existed in the differences of dietary habits between the two groups. Moreover, differences in the weight-for-age Z score (WAZ), weight-for-height Z score (WHZ), and body mass index-for-age Z score (BAZ) between the two groups were statistically significant ($P<0.05$).

Conclusion: Health-related behavioral norms and health conditions of ethnic minority children should be further improved. Increased health awareness of families with children and health care system development should be stressed to elevate the health level of the entire population of children in China.

Keywords: Children, health-related behavior, Ethnic minority, Han nationality, Society and family, Dietary habit, Health indicator

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Introduction

Lifestyle and behavior have become the primary factors influencing the health of people along with the development of economy and advancement of the society. Children as one of the special groups in China, their health are attracting more attention of their families and the society.

However, previous studies on children's health tend to concentrate on urbanization but ignore the health behaviors of ethnic minority children. As for the long-range planning of the national children's health development, understanding the distributive structure of health-related behaviors among ethnic minority children and



the Han children will benefit to build up children's health promotion plan, allocate health resources rationally, reduce harmful behaviors of children in aspects of families and the society, thus improve the health condition of the whole children's population.

Data and methods

Data sources

The data used in this study was obtained from an international cooperative project (Chinese Health and Nutrition Survey [CHNS] jointly conducted by the University of North Carolina in the US and the Chinese Center for Disease Control and Prevention). This project contained relatively detailed data on resident demographic characters and on economic and social activities. Stratified random sampling was conducted in nine provinces (Liaoning, Heilongjiang, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi, and Guizhou). This study mainly used CHNS data in 2009. Because this study concentrated on a discussion of health-related behaviors between ethnic minority and Han children, all the study samples were based on 903 subjects between 0 and 19 years of age; because of incomplete data, 867 persons were analysed.

Selection and studying health-related behaviors

Health-related behaviors were selected for data statistics in two ways based on society and family variations and dietary habit variations, according to the children's questionnaire of CHNS data in 2009. Variations in family and society included parents who did or did not stay at home, parents' level of education, tap water availability, water closet availability, and medical insurance availability. Dietary habit variations included smoking cigarettes, drinking alcohol, children's fondness of beverages, vegetables, fruits, TV programs, and games, and availability for physical exercises.

Health-related behaviors were processed before the statistical analysis. Parents' level of education was determined by whether or not they accepted a 9-year compulsory education. The children's questionnaire set up six classes for variations on vegetables, fruits, soft drinks, computer games, and TV programs, as follows: 1) dislike very much; 2) dislike; 3) just so-so; 4) like better; 5) like very much; and 6) not applicable. In this study, the researcher believed that the children under investigation should have a better understanding on some good

habits and try to avoid those bad habits, so as to form behaviors good for their health. Therefore, this study put "like better" and "like very much" as one category, while "dislike very much," "dislike," and "just so-so" were put into the other category [1].

Selection of health indicators

In consideration that health is a multi-dimensional concept and according to health standards on children growth by the WHO, this paper adopted four health indicators to demonstrate children's health and nutrition conditions, as follows: height-for-age Z score (**HAZ**); weight-for-age Z score (**WAZ**); weight-for-height Z score (**WHZ**; the preceding three indicators are suitable for children 0~6 years of age); and body mass index-for-age Z score (**BAZ**; this indicator is suitable for children 7~19 years of age). Calculation on children's health indicators based on height, weight, and age demonstrated the objective status for a child's growth. The difference in nutrition status and healthy growth for children groups were objectively demonstrated by comparing the health indicator of Z scoring between Han and ethnic minority children [2-3].

Statistical methods

Excel was used for data organization, and SPSS 19.0 was used for statistical analysis. A X^2 test or Fisher's exact probability test was used for comparing ratios. Average comparison analysis was based on an independent sample *t*-test at an $\alpha=0.05$ level of significance.

Results

Basic information on demographics

This investigation included 867 subjects, including 762 Han children and 105 ethnic minority children. There were 75 children between 0 and 6 years of age (8.7%), which included 12 ethnic minority children (16.0%), and 63 Han children (84.0%). There were 792 children between 7 and 19 years of age (91.3%), including 93 ethnic minority children (11.7%) and 699 Han children (88.3%).

Comparison of health-related behaviors between ethnic minority children and Han children

For society and family variations, behaviors of using tap water and a water closet had no statistical significance between



ethnic minority and Han children ($P>0.05$), but all other health behaviors had statistical significance between the two groups ($P<0.05$, Table 1).

With respect to the dietary habit preference, statistical significance existed regarding the difference between dietary habits of ethnic minority and Han children ($P<0.05$, Table 1).

Z scoring comparison between ethnic minority and Han children

By comparing HAZ, WAZ, WHZ, and BAZ for the two groups, it was shown that HAZ scoring for children between 0 and 6 years of age had no statistical significance ($P>0.05$), but other health indicators of Z scoring between these two groups of children were statistically significant ($P<0.05$, Table 2).

Table 1. Comparison of health-related behaviors between ethnic minority children and Han children [% (n/N)]

Health-related behaviors	Ethnic minority	Han nationality	X ² value	P-value
Society and Family Variations				
Using tap water	55.2 (58/105)	71.8 (547/762)	3.621	0.057
Using water closet	23.8 (25/105)	35.0 (267/762)	3.454	0.063
Mother at home	58.8 (57/97)	41.5 (257/619)	5.478	0.019
Father at home	54.6 (53/97)	34.8 (215/618)	8.811	0.003
Mother's level of education	32.5 (27/83)	52.2 (298/571)	5.638	0.018
Father's level of education	39.4 (37/94)	61.1 (367/601)	6.586	0.010
Medical insurance	28.6 (30/105)	49.1 (374/762)	8.333	0.004
Dietary habit preference				
Smoking	83.3 (10/12)	39.5 (32/81)	4.467	0.035
Drinking alcohol	75.0 (9/12)	34.6 (28/81)	4.306	0.038
Soft Drink	34.5 (29/84)	52.3 (184/352)	4.375	0.036
Vegetables	47.0 (39/83)	66.5 (167/251)	3.863	0.049
Fruits	28.6 (24/84)	63.2 (201/318)	14.237	0.000
TV programs	36.6 (30/82)	63.4 (225/355)	8.197	0.004
Playing games	26.9 (21/78)	62.8 (123/196)	13.628	0.000
Surfing on Internet	37.3 (28/75)	49.8 (119/239)	12.252	0.000
Sports	32.5 (26/80)	66.3 (212/320)	12.252	0.000

Note: Due to incomplete data, the total number in the brackets for each item referred to the total number under investigation for this item.

Table 2. Z scoring comparison regarding health indicators between ethnic minority children and Han children

Health indicators	Health indicators		Average age years old	Scoring point		T value	P-value
	Han	Minority		Han	Minority		
HAZ	63	12	5.92	-0.244	-0.174	-0.206	0.837
WAZ	63	12	5.92	0.113	-0.548	2.234	0.029
WHZ	63	12	5.92	-0.117	-0.787	2.245	0.028
BAZ	699	93	9.60	-0.011	-0.221	2.377	0.019

Notes: HAZ=height-to-age Z scoring, WAZ=weight-to-age Z scoring, WHZ=weight-to-height Z scoring, BAZ=body mass-to-age Z scoring; The three indicators (HAZ, WAZ, and WHZ) were used for children between 0 and 6 years of age; the BAZ indicator was used for children between 7 and 19 years of age; Z scoring was calculated based on the scoring standards and the following items with extreme values were deleted: items with a HAZ>3 and a HAZ<-5, items with a WAZ>5 and a WAZ<-5, items with a WHZ>5 and a WHZ<-4, and items with a BAZ>5 and a BAZ<-4 [4]. The total number of children calculated by Z scoring was 867.



Discussion

Within the subjects adopted in this study, there existed differences in most behaviors between Han and ethnic minority children. With respect to health behavior analysis, smoking and drinking at a premature age had a negative influence on children's health, which are considered to be highly harmful behaviors and might result in reduction of health stock for the children. Health reported ratio on harmful behaviors showed that of children >12 years of age, more ethnic minority children smoked cigarettes and drank alcohol than Han children. Habit cognitive processing was used to defining preference variations in the initial stage of the study, by which the beneficial and harmful behaviors for the children were separated. The result indicates that ethnic minority children have worse cognition regarding harmful behaviors than Han children. The study showed that Han children had better cognition on behaviors, such as eating fruits and vegetables, as well as physical exercise than ethnic minority children, indicating that Han children have better cognition than ethnic minority children regarding healthy behaviors. However, the study showed that Han children had more preferences than ethnic minority children for soft drinks, watching TV, playing games, and surfing on the internet. This study regards this as possible outcomes caused by the living environment. Han children have more chances to attain these commodities than ethnic minority children who are restrained by the relatively less developed economy in the ethnic minority area. This economic situation influences children's selection regarding health behaviors.

Children's cognition and selection of health behaviors are guided primarily by their parents. The society and family variations showed that parents play important roles in children's health. Because children's cognition is still in its formative stage, the parents' level of education becomes the main cause for behavioral differences between these two groups. Parents with higher levels of education will provide guidance on the selection of health behaviors and help their children to establish healthy behaviors. The reported ratio of the two groups with medical insurance also proves the fact that the population in the ethnic minority area has comparatively less health care consciousness [5].

During the comparative analysis of health-related behaviors between ethnic minority and Han children, the health indicator

Z scoring directly showed the difference in scores of children's health between the two groups. Because do better in Z scoring. Although some harmful behaviors are possibly related to long-term customs of the ethnic minority, it is urgent to uphold the healthy behaviors to urge the ethnic minority children to establish good behavioral habits.

Generally, health behavioral norms and conditions of ethnic minority children should be improved with the support of society, families, and parents [6]. Thus, education on health consciousness for ethnic minority children should be strengthened. A lack of health consciousness might impact a child's health and result in abnormal health conditions. Education on health consciousness for parents should also be upgraded at the same time. Because of the relative backwardness of the ethnic minority area, some traditional customs are not consistent with modern health habits, thus the incidence of unhealthy behaviors is increased. Children's cognition on health behaviors in the primary stage is greatly influenced by their families, so parents of ethnic minority children should provide good behavior guidance via changing their unhealthy behaviors. Parents should teach their children with behaviors which are good for their health. Han children should avoid those harmful behaviors, such as being addicted to watching TV, playing games, and computers. These harmful behaviors may not directly affect children's body condition in a short period, but will bring about a negative influence on children's health in the future [7–9].

Children's health is important for the future development of the nation. Strengthening and improving children's health conditions through health behavior norm implementation is conducive to health of the population in the entire nation. More importantly, the ethnic minority children's health cannot be ignored, notwithstanding their geographic environment and ethnic differences. In the final analysis, improved health conditions of ethnic minority children require better health consciousness of their families. Society must pay more attention to strengthening the construction of the health care system in ethnic minority areas, and advocating healthy behaviors. Through guidance provided by society and families, children's health consciousness will be strengthened, which helps them learn health knowledge during their growth, actively seek positive



healthy-related behaviors, and avoid harmful behaviors at the same time.

Conflict of interest

The authors declare no conflict of interest.

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