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Analysis of psychological characteristics of obese children

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Abstract. – OBJECTIVE: We conducted this study to analyze the psychological characteristics of obese children.

PATIENTS AND METHODS: We selected 60 cases of obese children as obesity group and according to 1:1 matching principle, we selected 60 normal weight children as the control group. We investigated and analyzed children's family behavior, mental health, temperament, self-consciousness and social adaptability.

RESULTS: The proportion of children with adverse behavior in the obesity group was significantly higher than that in the control group ($p < 0.05$). In the psychological health assessment, we compared the emotional disorder, social adjustment disorder, bad habits and behavior disorder score of both groups, and the differences were statistically significant ($p < 0.05$). We compared the temperament dimension score of both groups in avoidance, emotional nature, distractibility and threshold of reaction; the differences were statistically significant ($p < 0.05$). The proportion of negative temperament types in the obesity group were significantly higher than that in the control group ($p < 0.05$). We compared the self-awareness levels of both groups with regards to body appearance and properties such as gregariousness, happiness, satisfaction and total scores of self-concept aspects; the differences were statistically significant ($p < 0.05$). The level of social adaptive ability of the obesity group was significantly lower than that of the control group ($p < 0.05$).

CONCLUSIONS: Children that demonstrate bad family behavior and that have a temperament which makes them difficult to raise are important factors related to obesity. Obese children often have mental and behavioral disorders, aversion, high emotional nature, low distractibility and threshold of reaction, damaged self-awareness, low self-evaluation, are not gregarious, demonstrate unhappiness and satisfaction and have poor social adaptation ability. Obesity is a cause for social concern. We need to strengthen the mental health education of obesity and promote the healthy development of children both physically and mentally.

Key Words:
Obesity, Psychological characteristics, Investigation, Analysis.

Introduction

In past few decades, the incidence of childhood obesity has been increasing year by year, which has an important impact on the physical and mental health of children and adults[1]. Research shows[2] that the psychological and behavioral characteristics of obese children and normal weight children are vastly different. Some scholars[3] believe that obesity can affect children's psychological, behavioral, mental, emotional characteristics in varying degrees. This study analyzes the psychological characteristics of obese children from the factors of family behavior, children's psychological health, temperament, self-consciousness and social life aspects, in order to more comprehensively understand the psychological characteristics of obese children and guide clinical symptomatic intervention.

Patients and Methods

Patients

We recruited 60 patients of 7 to 12-year-old students that were designated as obese according to the height and weight standard value of the WHO as well as the Chinese Obesity Working Group. The latter group recommends that Chinese children's overweight and obesity classification standard use the "Chinese students' overweight and obese BMI screening criteria" promulgated by the Chinese Obese Group of International Life Sciences Institute in 2003. Therefore, inclusion criteria included BMI ≥ 30 kg/m^2 as obesity and exclusion criteria included

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secondary obesity, heart, liver, kidney and other chronic diseases caused by the standard endocrine, metabolism and central nervous system diseases.

The 60 obese children were designated as the obese group, which consisted of 37 boys and 23 girls aged 7-12 years old with an average of 9.8 ± 3.5 years old; students were of Han nationality. Subjects were in the same school, the same grade, their height difference was not more than 3 cm, and their age difference was not more than 3 months. According to the matching principle of 1:1 ratio, we selected 60 normal weight children as a control group. This study was approved by the Ethics Committee of Jining Municipal Psychiatric Hospital. Signed written informed consents were obtained.

Methods

Survey of Family Behavior Factors

Children's family behavior factors were investigated and analyzed, including the attitude of children's parents to obesity, whether parents give snacks as a means of reward, eating habits, as well as time spent watching TV every day.

Mental Health Rating Scale

Mental Health Rate for Pupil (MHRSP) was used for investigation. The MHRSP table is composed of eight parts, including learning disorder, mood disorder, character flaws, social adjustment disorder, moral defects, bad habits, behavior disorders and special kind of barrier. The test consisted of a total of 80 questions with each question scoring between 0-2; higher scores indicate more mental health problems.

Temperament Questionnaire

8-12 years old children's temperament questionnaire was used for children's temperament analysis. The scale was filled by the parents of the children and included nine dimensions such as activity level, aversion, rhythm, intensity of reaction, adaptability, adherence, emotional nature, distractibility, and response threshold. According to the score of each dimension, they were divided into five types of temperament: (1) easy to raise type, (2) center easy nurturing type, (3) center difficult to raise type, (4) difficult to raise type, (5) slow startup type.

Self-Consciousness Scale

Piers-Harris children's self-concept scale was used. After being explained by doctors, children filled it in on their own. The table was composed of six components: behavior, physical appearance and properties, intelligence and school, alienation, anxiety, happiness and satisfaction. The higher subscale scores, the higher child's self-consciousness level.

Social Life Ability Scale

"The infant-junior middle school students' social life ability table", was used and filled by the parents of the children. The scale consists of six dimensions, including independent living ability, operation ability, athletic ability, collective activities, communication ability and self-management ability. According to the age group and the score range detected and compared to the corresponding standard points, the children's social life ability was evaluated. According to the children's total score; they were divided into five levels of abnormal (8 points), the edge (9 points), normal (10 points), high normal (11 points) and good (12 points).

Statistical Analysis

Data were analyzed by SPSS 22.0 (SPSS Inc., Chicago, IL, USA) and measurement data was expressed by mean ± standard deviation. The comparison was tested by *t*-test and enumeration data were expressed as ratio. The comparison was tested by χ^2-test and ranked data comparison was tested by the rank sum. $p < 0.05$ indicated that the difference was statistically significant.

Results

Family Behavior Factor Analysis

The proportion of adverse behavior of children in obesity group was significantly higher than that of the control group ($p < 0.05$) (Table I).

Changes of MHRSP Scores in Two Groups of Children

In the psychological health assessment, there were statistically significant differences in the comparison of emotional disorders, social adjustment disorders, bad habits and behavior disorder score of the two groups of children ($p < 0.05$). There were no significant differences in learning disabilities, personality defects, moral defects, and special barriers ($p < 0.05$) (Table II).

Table I. Comparison of behavioral factors in two groups of children [cases (%)].

Family behavior	Obesity group (n = 60)	Control group (n = 60)	χ^2	p
Parents' understanding of obesity			10.308	0.006
Obesity is healthy	13 (21.67)	5 (8.33)		
Obesity doesn't matter	19 (31.67)	10 (16.67)		
Obesity is not good	28 (46.67)	45 (75.00)		
Parents' eating habits			4.043	0.044
Like fried or sweet	37 (61.67)	26 (43.33)		
Like light food	23 (38.33)	34 (56.67)		
Whether parents take snacks as a reward			4.848	0.028
Yes	33 (55.00)	21 (35.00)		
No	27 (45.00)	39 (65.00)		
Time of watching TV of children every day			14.976	0.001
< 1 hour	4 (6.67)	13 (21.67)		
1~3 hours	32 (53.33)	40 (66.67)		
> 3 hours	24 (40.00)	7 (11.67)		
Children's eating habits			5.275	0.022
Engorgement and eat too quick	27 (45.00)	15 (25.00)		
Control dietary rules	33 (55.00)	45 (70.00)		

Table II. Changes of MHRSP scores in two groups of children (points).

	Obesity group (n = 60)	Control group (n = 60)	t	p
Learning disorder	4.47 ± 1.42	4.39 ± 1.33	0.319	0.623
Emotional disorder	4.32 ± 1.08	3.57 ± 0.97	4.002	0.035
Character defect	3.07 ± 0.84	2.95 ± 0.81	0.797	0.235
Social adaptation disorder	4.33 ± 1.03	3.46 ± 1.12	4.429	0.031
Moral defect	4.28 ± 1.25	4.17 ± 1.17	0.498	0.625
Bad habits	4.21 ± 1.02	3.41 ± 0.89	4.578	0.027
Behavior disorder	4.17 ± 1.26	3.06 ± 0.78	5.202	0.022
Special obstacles	3.75 ± 1.01	3.58 ± 1.14	0.865	0.241

Comparison of Two Groups of Children's Temperament Types

We compared the temperament dimension scores of two groups of children regarding of avoidance, emotional nature, distractibility and threshold of reaction; the differences were statistically significant ($p < 0.05$), and there were no significant differences in other dimensions ($p > 0.05$). Easy to raise type and partial easy to raise type were taken as positive temperament type. Partial difficult to raise type, slow start type and difficult to raise type were taken as negative temperament type. The proportion of negative temperament types in the obese group was significantly higher than that in the control group ($p < 0.05$) (Tables III and IV).

Table III. Comparison of the scores of each dimension in the two groups of children (points).

Dimension	Obesity group (n = 60)	Control group (n = 60)	t	p
Activity level	2.58 ± 0.68	2.74 ± 0.81	0.623	0.347
Phobotaxis	3.37 ± 0.71	2.65 ± 0.66	5.353	0.024
Rhythmicity	2.76 ± 0.59	2.88 ± 0.70	0.782	0.225
Reaction intensity	3.16 ± 1.00	3.31 ± 1 .26	0.722	0.263
Adaptability	2.59 ± 0.85	2.70 ± 0.90	0.688	0.352
Adherence	2.73 ± 0.88	2.69 ± 0.79	0.262	0.652
Emotional essence	2.83 ± 0.72	2.51 ± 0.64	3.873	0.040
Distractibility	3.72 ± 1.21	4.21 ± 1.37	4.277	0.036
Threshold of reaction	3.59 ± 0.64	4.08 ± 0.70	4.622	0.023

Table IV. Comparison of temperament types of two groups of children [cases (%)]

Temperament type	Obesity group (n = 60)	Control group (n = 60)	χ^2	p
Positive temperament type	41 (68.33)	55 (91.67)	10.208	0.001
Negative temperament type	19 (31.67)	5 (8.33)		

Comparison of Scores of Children's Self-Consciousness Level in Two Groups

Compare self-awareness level of children of two groups, in body appearance and properties, gregarious, happiness, satisfaction and total scores of self-concept aspects; the differences were statistically significant ($p < 0.05$). There was no significant difference in behavior, intelligence and school situation and anxiety ($p > 0.05$). See Table V.

Comparison of Two Groups of Children's Social Adaptive Ability

The level of social adaptive ability of the obese group was significantly lower than that of the control group ($p < 0.05$) (Table VI).

Discussion

Simple obesity, as a type of nutritional disorder, has serious negative effects on children's physical and mental health. The occurrence and development of simple obesity have a close relationship with the psychological behavior of children. Some survey results[4] show that the parents of obese children have different understanding of obesity and a larger proportion of parents view of obesity as healthy performance. This concept is erroneous and is a major external factor that leads to obesity in children. Because children have a strong guidance and follow by example, the eating and drinking habits of the parents will directly affect their children's food intake[5]. Snacks play a considerable role in childhood obesity and often snacks not only affect the normal eating of children but also cause it more likely to lead to excessive intake of carbohydrates, causing fat accumulation[6]. Watching TV for children not only leads to a reduction in children's activity but also reduces the energy consumption of the body. Moreover, television advertising has greater impact on children's eating behavior as a lot of food advertising easily induces children to develop unreasonable eating habits and bad living behavior[7]. Poor family behavior is also an important factor in the occurrence of obesity in children.

In the aspect of mental health assessment, the emotional disorder, social adaptability, bad behavior, and behavior disorder of obese children were significantly different from those of normal weight children. In level of self-con-

Table V. Comparison of scores of children's self-consciousness level in two groups (points).

Dimension	Obesity group (n = 60)	Control group (n = 60)	t	p
Behavior	11.82 ± 2.64	12.96 ± 1.85	5.639	0.024
Physical appearance and attributes	7.96 ± 1.51	9.16 ± 1.33	5.919	0.019
Intelligence and school situation	9.26 ± 1.82	9.57 ± 2.48	0.481	0.637
Gregarious	8.19 ± 2.27	9.73 ± 1.89	5.238	0.035
Anxious	5.12 ± 0.89	4.83 ± 1.34	0.596	0.534
Happiness and satisfaction	7.58 ± 2.10	8.67 ± 2.25	5.743	0.022
The total score	50.28 ± 7.22	55.32 ± 6.06	5.642	0.024

Table VI. Comparison of two groups of children's social adaptive ability [cases (%)].

Level	Obesity group (n = 60)	Control group (n = 60)	Z	p
Mild and marginal	12 (20.0)	3 (5.00)	7.535	0.023
Normal	41 (68.33)	42 (70.00)		
Excellent	8 (13.33)	15 (25.00)		

sciousness, there were significant differences in the comparison of body appearance and properties, gregariousness, happiness, satisfaction and self-consciousness between total score of two groups. The social life ability scale analysis showed obese children were significantly less involved in social life than the control group.

Obese children have a wide range of mental health problems, and obesity can cause seriously impact a child's emotional, behavioral, social adaptability and self-awareness[8]. Obese children's self-consciousness is impaired. They are not gregarious with low self-esteem, happiness and contentment. Defects in the somatotype of childhood obesity ca make them feel unattractive, feel that their body out of shape, and in group activities, they often get the rejection and ridicule of other students; these can seriously influence the pride of obese children[9]. Obese children's social adaptation ability is poor, which may be related to inconvenience and body defect. Often obese children suffer being alone in group activities and are made the object of teasing by their peers. This results in obese children's psychological inferiority and lower self-esteem. To protect themselves, they reduce their participation in group activities, thereby preventing the participation of social activities and losing the opportunity to communicate with a lot of people[10,11]. Therefore, the performance of obese children in social adaptation ability is poor in the aspect of mental development.

Regarding the types, the proportion of negative temperament types of the obese children was significantly higher than that of the control group. With regards to temperament, childhood obesity is mainly manifested in strong aversion, high emotional nature, low distractibility and low reaction threshold. Obesity children tend to avoid the new things, and like to retreat.

Eating without restraint is also one of the leading causes of obesity[12]. Obese children's behavior and emotions are more likely to be stimulated by the outside world, and other people's discrimination to obesity causes chronic stress in children with obesity. Obese children's distractibility is low, and attention often manifests in playing computer games, watching TV, reading and other sedentary behavior habits; these cause the body's energy consumption to decrease[13]. Therefore, there is a close link between childhood obesity and temperament. The behavior of children with obesity and their unique characteristics of temperament have a lot of negative adverse effects on psychological and physiological characteristics of children.

Conclusions

The family bad behavior and difficult to raise type temperament are important factors leading to obesity, obese children often have mental and behavioral disorders, aversion, high emotional nature, low distractibility and threshold of reaction, damaged self-awareness, low self-evaluation, not gregarious, poor happiness and satisfaction and poor social adaptation adaptability. It needs to cause social concern and strengthen the mental health education of obesity in order to promote the healthy development of children both physically and mentally.

Conflict of Interest

The Authors declare that they have no conflict of interests.

References

1) Liu W, Liu W, Lin R, Li B, Pallan M, Cheng KK, Adab P. Socioeconomic determinants of childhood obesity among primary school children in Guangzhou, China. BMC Public Health 2016; 16: 482.
2) Łopuszańska U, Skórzyńska-Dziduszko K, Prendecka M, Makara-Studzińska M. Overweight, obesity and cognitive functions disorders in group of people suffering frommental illness. Psychiatr Pol 2016; 50: 393-406.
3) Vo M, Lau J, Rubinstein M. Eating disorders in adolescent and young adult males: presenting characteristics. J Adolesc Health 2016: 59: 397-400.
4) Le H, Engler-Stringer R, Muhajarine N. Walkable home neighbourhood food environment and children's overweight and obesity: Proximity, density or price? Can J Public Health 2016; 107(Suppl 1): 5347.
5) Hughes SO, Power TG, Beck A, Betz D, Calodich S, Goodell LS, Hill LG, Hill R, Jaramillo JA, Johnson SL, Lanigan J, Lawrence A, Martinez AD, Nesbitt M, Overath I, Parker L, Ullrich-French S. Strategies for effective eating development-SEEDS: design of an obesity prevention program to promote healthy food preferences and eating self-regulation in children from low-income families. J Nutr Educ Behav 2016; 48: 405-418.e1.
6) Thullen M, Majee W, Davis AN. Co-parenting and feeding in early childhood: Reflections of parent

dyads on how they manage the developmental stages of feeding over the first three years. Appetite 2016; 105: 334-343.

7) Molyneaux E, Pasupathy D, Kenny LC, McCowan LM, North RA, Dekker GA, Walker JJ, Baker PN, Poston L, Howard LM; SCOPE consortium. Socio-economic status influences the relationship between obesity and antenatal depression: data from a prospective cohort study. J Affect Disord 2016; 202: 124-127.

8) Aparicio E, Canals J, Arija V, De Henauw S, Michels N. The role of emotion regulation in childhood obesity: implications for prevention and treatment. Nutr Res Rev 2016; 29: 1-13.

9) Small L, Aplasca A. Child obesity and mental health: a complex interaction. Child Adolesc Psychiatr Clin N Am 2016; 25: 269-282.

10) Martinson ML, Vasunilashorn SM. The long-arm of adolescent weight status on later life depressive symptoms. Age Ageing 2016; 45: 389-395.

11) Hadjiyannakis S, Buchholz A, Chanoine JP, Jetha MM, Gaboury L, Hamilton J, Birken C, Morrison KM, Legault L, Bridger T, Cook SR, Lyons J, Sharma AM, Ball GD. The Edmonton Obesity Staging System for Pediatrics: a proposed clinical staging system for paediatric obesity. Paediatr Child Health 2016; 21: 21-26.

12) Ahadi Z, Kelishadi R, Qorbani M, Zahedi H, Aram M, Motlagh ME, Ardalan G, Shafiee G, Arzaghi SM, Asayesh H, Heshmat R. Association of breakfast intake with psychiatric distress and violent behaviors in iranian children and adolescents: the CASPIAN-IV Study. Indian J Pediatr 2016; 83: 922-929.

13) Emerson JA, Hurley KM, Caulfield LE, Black MM. Maternal mental health symptoms are positively related to emotional and restrained eating attitudes in a statewide sample of mothers participating in a supplemental nutrition program for women, infants and young children. Matern Child Nutr 2017; 13. doi: 10.1111/mcn.