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Analysis of Adverse Dietary Behavior and Its Influencing Factors among Early Adolescents in a City of Guangxi

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Abstract: Objective: To explore the situation of poor eating behavior in adolescents in early adolescence, analyze its influencing factors, and provide a theoretical basis for adolescents to formulate effective dietary intervention methods and nutrition improvement strategies. Methods: In April~November 2019, 1200 students were randomly selected according to the principle of stratified cluster random sampling in a city in Guangxi, and 1089 valid questionnaires were collected. General data use descriptive statistics, univariate analysis usesχ^2 tests and t/t' tests, and logistic multivariate regression analysis is used to determine relevant factors. Results: (1) 806 adolescents (74.01%) were detected with bad eating behavior in early adolescence in a city in Guangxi, and the adolescents with bad eating behavior were older (P<0.001). (2) Univariate analysis found that the effects of mental toughness, personal strength and support, peer pressure, and parent-child relationship on poor eating behavior were statistically significant (both P<0.001). (3) The results of logistic multivariate regression analysis showed that psychological toughness, strong personal strength and close parent-child relationship were the protective factors of adolescents' bad eating behavior (personal strength: OR=0.960; parent-child relationship: OR=0.949High age and increased peer pressure were risk factors for poor eating behaviors in adolescents (age: OR=25.439; peer pressure: OR=1.052). Conclusion: In a city in Guangxi, adolescents with strong psychological toughness, strong personal strength and close parent-child relationship reduce the risk of adolescents' bad eating behaviors, and high age and peer pressure increase the risk of adolescents' bad eating behaviors.

Keywords: Adolescence; Early Adolescence; Poor Eating Behavior.

1. Introduction

Whether the eating behavior of adolescents is healthy not only affects their normal physical, psychological and intellectual development, but also affects the improvement of the overall quality of the Chinese nation. 11~13 years old, that is, early adolescence is in a critical period of physical and mental development [1], adolescent eating habits and choices are easily affected by themselves, friends, and family [2]. A large number of studies have shown that bad eating behaviors of adolescents at home and abroad have always been common, and the detection rate of bad eating behaviors among adolescents in both urban and rural areas in China has been increasing [3]. However, there are few relevant studies in a city in Guangxi, so this study deeply explores the bad eating behavior and its influencing factors in early adolescence, and provides a theoretical basis for the formulation of effective dietary intervention methods and nutrition improvement strategies in a targeted manner, so as to improve the bad eating behavior of adolescents and gradually develop healthy eating behavior.

2. Research Objects and Methods

2.1. Subjects of Study

In April~November 2019, a total of 7 primary schools were randomly selected in a city in Guangxi, including 3 in Baise City, 2 in Hechi City, and 2 in Chongzuo City, with 4~6 grade students in each primary school as research objects. According to the principle of stratified cluster random sampling, 2 classes were randomly selected for each grade and 1200 students were selected for questionnaire survey. Among them, the age is 8~14 years old, the average age is 11.09±0.96 years old, 587 boys (53.90%), 502 girls (46.10%);

2.2. Measurement Tools

2.2.1. Eating Behavior Questionnaire

Refer to the article on eating behavior in the Comprehensive Report on Health-related/Risky Behavior Survey of Chinese Adolescents 2005 [4]. The survey content includes: (1) general demographic characteristics: gender, age, ethnicity, parents' education level and family type. (2) Bad eating behavior: drinking soft drinks (refers to drinks with ethanol content less than 5 % (m/v) [5]), eating desserts, eating Western-style fast food, drinking milk frequency and eating breakfast behavior.

Determination of bad eating behavior: Those who have any of the following are determined to be unhealthy eating behaviors: the number of soft drinks has averaged ≥ 3 times per day in the past 30 days; the number of desserts has averaged ≥ 1 times per day in the past 7 days; the number of times ≥ eating Western fast food in the past 7 days; the number of times I have never drunk milk/yogurt/soy milk/soy milk in the past 7 days; and I have never eaten breakfast in the past 7 days. The internal consistency confidence coefficient of the questionnaire α=0.734.

2.2.2. Adolescent Resilience Scale

The Resilience Scale for Chinese Adolescent (RSCA) [6] compiled by Hu Yueqin et al. was used for assessment. This scale indicates the effectiveness of adolescents' cognition, emotions, behaviors and environment in situations of adversity in helping them resist adversity and adapt well. The scale includes 2 dimensions: personal strength and support. Among them, personal strength contains 3 sub-dimensions: goal focus, emotional control, and positive cognition, and support contains 2 sub-dimensions: family support and

interpersonal support. All are scored with 5 points, "completely non-compliant with =1", "somewhat compliant with =2", "sometimes compliant with =3", "Often meets =4", "fully meets =5", calculates the total score, the higher the score, the higher the level of personal strength and support in this dimension. In this study, the reliability of the questionnaire internal consistency in the five subdimensions of goal focus, emotional control, positive cognition, family support and interpersonal support was 0.727 and 0.α, respectively683, 0.608, 0.781 and 0.656.

2.2.3. Peer Attachment Questionnaire

The Inventory of Parent and Peer Attachment (IPPA) [7] was developed by Armsden and Greenberg. Three subscales were included: father, mother, and companion, and only the peer attachment subscale was used in this study. The questionnaire is scored on a 5-point basis, "completely non-conforming=1", "somewhat conforming =2", "sometimes conforming =3", and "sometimes conforming=3"" Often meets =4", "fully meets =5", calculates the total score, the higher the score, the higher the degree of peer attachmentA total of 25 questions. The internal consistency confidence coefficient of the questionnaire α=0.826.

2.2.4. Peer Pressure Questionnaire

Peer Pressure Items (PPI) compiled by Santor, Messervey and Kusumakar [8-9], Participants were asked to report the level of stress they felt when they were asked to do something by their peers. The questionnaire has a total of 11 items, using 5 points, "completely non-compliant =1", "somewhat conformant=2", "sometimes conformant=3", "Often meets =4", "fully meets =5", calculates the total score, the higher the score, the greater the peer pressure. The internal consistency confidence coefficient for this questionnaire α = 0 .817.

2.2.5. Family Life Questionnaire

Referring to the family entry on family in the Adolescent Health and development questionnaire [10] compiled by Rdhard Jessor, the family life questionnaire used in this study was formed. The questionnaire contains four dimensions: family intimacy, parent-child activities, family rules, and parental support and monitoring. Family intimacy consists of 3 items, using 4 points, "strongly disagree=1", "disagree=2", "agree=3", "Strongly agree = 4", the higher the overall score of the calculation, the higher the family intimacy; Parent-child activities evaluate the frequency of activities that adolescents have engaged in with their parents in the past 6 months, using 4 points, "almost no = 1", "once a month = 2", "Once every two weeks = 3", "At least once a week = 4", the higher the overall score score, the richer the family parent-child activities; family rules are mainly for the time/number of games played, the time and number of TV watches, the time and place of going out, homework, the time, place and object of appointments/parties, The management and restriction of 7 aspects of the time to go home at night and the time to sleep at night are scored by 5 points, "very loose = 1", "not strict = 2", "Unclear=3", "Strict=4", "Very Strict=5", calculate the total score, A higher score indicates stricter family rules; Parental support contains 5 items, Parental Controls contains 4 entries, and Parental Controls and Support are scored on a 5-point basis, "Never=1", "Little=2", "Sometimes=3", "often=4", "always=5", the higher the overall score for calculation, the stronger the parental controls/support. The internal consistency reliability coefficients of the questionnaire α 0.774, 0.826, 0.768 and 0.861, respectively.

2.3. Survey Methods and Quality Control

Before the investigation, do a good job of pre-investigation, timely discover problems and improve investigation methods. Make a more targeted survey questionnaire or add corresponding instructions for the respondent's ability to understand and feedback the questionnaire at that age. During the investigation, ensure that the school staff are not at the investigation site to ensure the authenticity of the questionnaire. Try to seek the support and cooperation of the research subjects, and control the influence of confounding factors. Unified training is carried out for investigators before the survey, and the investigators will use centralized testing methods to fill out the questionnaire site, unified guidance, do not give hints, prompts and irrelevant explanations, and use anonymous self-filled questionnaires for students as a class. Respondents completed the questionnaire independently on the spot.

The questionnaire takes about 60 minutes to fill out. A total of 1200 questionnaires were distributed and 1089 valid questionnaires were returned, with an effective rate of 90.75%. After the questionnaire is completed, the investigator will collect it on the spot. When the questionnaire is collected, the investigator checks whether the questionnaire is completed completely, and requires the respondents to complete the completed questionnaire. The collected questionnaires were screened and the low-quality questionnaires were directly discarded. EpiData *3.0 is used to establish a database double entry, and proofread after data entry to ensure data reliability.*

2.4. Methods of Statistical Analysis

EpiData 3.0 is used to establish the database and enter, SPSS 25.0 software is used to statistically analyze the data, the general data is described by statistical description, the measurement data is described by ±s, the counting data is described by percentage or composition ratio, and the comparison $\bar{x}$ of the mean between the two groups in univariate analysis is using t/t' test, the comparison of percentages or composition ratio between groups uses χa 2 test, and the logistic regression analysis method is used for multivariate analysis. where the inspection level α=0.05.

3. Results

3.1. Demographic Characteristics of Poor Eating Behavior in Adolescents

A total of 806 adolescents (74.01%) were detected in a city in Guangxi, including 427 (52.98%) male adolescents and 379 (47.02%) female adolescents with bad eating behaviors. (*P<0.001*). There were no significant effects of gender, ethnicity, parental education level and family type on adolescents' poor eating behavior (all P>0.05). Show table 1.

3.2. Univariate Analysis of Mental Resilience, Peers and Family on Adolescents' Poor Eating Behavior

Univariate analysis found that adolescents with poor diet had lower scores of resilience and support in both dimensions (both*<0.001)* Peer pressure increases poor eating behaviors (*P<0.001)* Good parent-child relationship reduces poor eating behavior in adolescents (*P<0.001*). Show Table 2.

Table 1. Demographic characteristics of poor eating behavior in adolescents [n (%)]						
variable		total	Poor eating behavior		$\chi^2/Z/t'$	*P*
			Yes (n=806)	No (n=283)		
age			11.48±0.68	9.93±0.63	34.437	<0.001
gender	man	587	427(72.74)	160(27.28)	1.068	0.301
	woman	502	379(75.50)	123(24.50)		
ethnic group	Zhuang people	955	700(73.30)	255(26.70)	2.498	0.287
	Han Chinese	114	91(79.80)	23(20.20)		
	Other nationalities	19	15(78.90)	4(21.10)		
Father's education	Primary school and below	131	101(77.10)	30(22.90)	1.293	0.196
	Junior high school and high school secondary school	612	462(75.49)	150(24.51)		
	College degree or above	274	197(71.89)	77(28.10)		
Mother's education level	Primary school and below	179	131(73.18)	48(26.81)	0.651	0.515
	Junior high school and high school secondary school	603	462(76.61)	141(23.38)		
	College degree or above	237	169(71.30)	68(28.69)		
Family type	Two-parent families	808	595(73.63)	213(26.36)	0.228	0.633
	Non-two-parent families	281	211(75.08)	70(24.91)		

Note: The t' test is used when the t-test for variance.

Table 2. Univariate analysis of poor eating behavior in adolescents

variable		Poor eating behavior		*t/t'*	*P*
		YES (n=806)	NO(n=283)		
Mental toughness	Personal strength	49.51±7.46	51.71± 8.49	3.795	<0.001
	Support	40.53±8.91	43.23± 9.00	4.281	<0.001
companion	Peer pressure	16.69±6.95	14.64± 5.25	5.144	<0.001
	Peer attachment	86.00±14.88	83.83± 17.92	1.791	0.074
Family	Family intimacy	10.25±2.03	10.51±2.11	1.825	0.068
	Paternity	14.27±5.13	15.84± 5.30	4.277	<0.001
	Family rules	27.30±5.15	26.70± 6.04	1.466	0.143
	Parental support/monitoring	30.07±7.52	30.29±7.78	0.415	0.679

3.3. Multivariate Analysis of Adolescents' Poor Eating Behavior

Table 3. There are many factors influencing the poor eating behavior of adolescent's Logistic regression analysis

argument		*B*	*S. E*	*Forest*χ^2	*P*	*OR (95%CI)*
age		3.246	0.224	209.592	<0.001	25.439 (16.414~39.426)
Mental toughness	Personal strength	-0.041	0.017	6.036	0.014	0.960 (0.930~0 .992)
	Support	0.002	0.015	0.018	0.892	1.002 (0.972~1.033)
companion	Peer pressure	0.050	0.020	6.659	0.010	1.052 (1.012~1.093)
Family	Paternity	-0.052	0.023	4.901	0.027	0.949 (0.907~0.994)

Poor eating behavior (yes=1, no=0) was taken as the dependent variable, age, personal strength, support, peer pressure, and parent-child relationship were used as independent variables, according to the inclusion criteria$\alpha=0.05$, exclusion criteria β=0.10 to construct a logistic regression model. The results showed that strong

personal strength and close parent-child relationship could effectively reduce the risk of poor eating behavior in adolescents (personal strength: *OR =0.960*Parent-child relationship: *OR =0.949*Higher age and peer pressure increase the risk of poor eating behaviors in adolescents (age: *OR =25.439*Peer pressure: *OR =1.052*). Show table 3.

4. Discussion

The results of this study showed that the reporting rate of bad eating habits among adolescents in early adolescence in a city in Guangxi was higher than that in other areas, and the incidence of bad eating habits was not optimistic, which was consistent with the results of Chen Xiaoan's research [11]. The widespread poor eating behavior in adolescents in early adolescence is mainly related to personal, peer and family factors [12]. The specific analysis is as follows:

In terms of personal factors, high wage increases the risk of poor eating behavior of adolescents in early adolescence, the economic situation of older adolescents is relatively comfortable, and the control of parents and teachers is reduced, so that they have more initiative in dietary choices [13]. The low score of mental resilience in the population indicated that the resilience of the population could effectively reduce the bad eating behavior of adolescents in early adolescence and played a protective role. Resilience itself can alleviate the adverse effects of adversity on themselves, and adolescents with high resilience have strong coping ability and low susceptibility to adversity, thereby reducing the occurrence of bad eating behaviors in adolescents [14].

In terms of peer factors, peer pressure increases the risk of poor eating behaviors in early adolescence. Peers are the most important objects of interpersonal communication among adolescents, and the improvement of peer communication skills is an important aspect of adolescent social development, and adolescents actively or passively bear the influence and even pressure from peers due to the needs of self-development and independent consciousness [15]. A large number of studies have found that adolescents' eating behavior is related to their peers [16-17]. Peers influence adolescent food choices because they influence each other's behaviors, attitudes, behaviors, and preferences [18]. Peer influence was positively correlated with negative bodily intentions and restrictive eating behavior [19]. And the younger the child's age, the greater the influence of their peers on their eating behavior [20]. Therefore, to develop reasonable eating habits, we must pay attention to the influence of peer factors.

In terms of family environment, the closer the parent-child relationship reduces the bad eating behavior of adolescents in early adolescence, and the results of relevant research in Beijing show that family intimacy can promote children's development of good eating behaviors [21], Feng Donglin's study shows that in parent-child relationships, the relationship between parents and children is negatively correlated with the formation of adolescent risky behaviors, and has a negative predictive effect on risky behaviors [22].. This shows that the parent-child relationship has a protective effect on adolescent eating behavior to a certain extent. The behavior of parents plays a large role in the formation of adolescent eating habits, and the family's neglect of dietary health will largely lead to irregular eating and bad eating habits of snacking often [23]. In summary, in terms of personal factors, population psychological resilience, personal strength and family factors, parent-child relationship has a protective effect on eating behavior; peer pressure in high age and peer factors increases the risk of adolescents' poor eating behavior. Adolescents are in a stage that is quite vulnerable, and poor eating behaviors have a serious negative impact on the growth and development of adolescents: for example, if you skip breakfast for a long time, concentrated cholesterol in bile will accumulate in the gallbladder to form gallstones, causing myocardial infarction, partial eating is also easy to lead to nutritional deficiency; often eat sweets, prone to obesity, obesity not only easy to reduce adolescents' resistance to diseases, but also cause low self-esteem, depression, isolation and other psychological problems, more importantly, will be for adult obesity, coronary heart disease, diabetes, The occurrence of chronic diseases such as fatty liver cirrhosis lays hidden dangers, which will cause irreparable damage to the physical development and healthy growth of adolescents. Economic growth and the development of science and technology have created more possibilities for the growth of adolescents, and close attention should be paid to the healthy behavior of adolescents in early adolescence, appropriate use of interventions, attention to personal, peer and family education, balanced dietary structure, strengthening the intervention of adolescents' eating behavior, strengthening adolescents' ability to cope with adverse effects, and preventing irreversible consequences.

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