

Research Article

Research on the Attention Degree in the Pre-packaged Food Ingredients: An Empirical Analysis from College Students in Physical Education

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Abstract: In this study, we research on the degree of pre packaged food ingredients concern based on college students majoring in Physical Education. We find out that reasonable diet and prevent chronic diseases and improve athletic performance has important practical significance. Through questionnaire survey of 158 college students majoring in physical education, the relevant data were obtained and we also make the reliability and validity test. The result shows that college students mainly concern about the food ingredients as energy, protein, fat, carbohydrate, sugar, dietary fiber and sodium. At the same time, we found that gender, household registration, grade and training time are the factors that affect the college students' attention to the pre packaged food ingredients. Results show that female's attention on food ingredients degree was significantly higher than male, non rural household was significantly higher than rural household, grade 3-4 students in university was significantly higher than that in grade 1-2 and the students whose training period is more than 6 years was significantly higher than others.

Keywords: Comprehensive ability, network questionnaire, physical education teacher, pre-packaged food

INTRODUCTION

According to the food safety law of the people's Republic of China and China's first food nutrition labels national standards-pre packaged food nutrition labeling in general (GB280502011), pre-packing food definition is to advance quantitative packaging or making in packaging materials and containers of food (Brian *et al.*, 2014), including quantitative pre packaging and quantitative pre production in the packaging materials and containers and in a certain amount limit in the scope of the uniform mass or volume label food (Chen, 2012; Liu and Lin, 2011; Guo and Pan, 2012). Pre food packaging in energy, protein, fat, carbohydrate, sugar, dietary fiber and sodium seven core nutrition prime ingredient content value and accounted for Nutrient Reference Value (NRV) percentage of annotation, in order to enter the market sales (Wu, 2012; Zhou, 2011). Recently, pre packaged food development is very rapid, universities and colleges, from single grocery stores and development for the supermarket (Oddvin and Martin, 2013; Mister and Hathcock, 2012), for sports professional students to buy pre packaged food provides a convenient and buy the number of pre packaged food will continue to improve. From the sports professional students of sports and health point of view, pre packaged food to people like the taste, there are high content of sugar, sodium and fat, fat excessive fattening, excessive sugar and sodium, easily lead to diabetes and heart disease, chronic disease, not

easy movement (Dalton *et al.*, 2014). Therefore, the analysis of the composition of the ordinary colleges and universities of our country college students majoring in physical education of pre packaged food, the degree of concern, to guide them to a reasonable diet, chronic disease prevention and improve athletic performance has important significance.

RESEARCH OBJECT AND METHODS

Research period and object: we take questionnaire from September 1, 2013 to December 31, 2013, total 122 days; the object of study is in Jinggangshan University, Jiangxi Normal University, Yichun University and Jiujiang University, 158 students majoring in physical education as the object of study.

Questionnaire survey: Questionnaire contains basic information investigation, questionnaire with five level evaluation, the degree of concern very big very little five points, the degree of concern large 4 points, the degree of concern is generally 3 points, the degree of concern less 2 points, the degree of concern, concern the scores are also higher. Methods 200 questionnaires were collected, 168 were valid, 158 were valid, the recovery rate was 84% and the effective rate was 94.05%. To test the questionnaire reliability: The "retest" apart after two weeks on the part of the investigation was again questionnaire to test for stability coefficient. The correlation coefficient r was

Table 1: Statistical analysis of physical education major students (n = 158)

Index		Number	Percent	Index		Number	Percent
Gender	Male	86	54.43	Household register	Rural	96	60.76
	Female	72	45.57		Non-rural	62	39.24
Grade	Grade 1-2	84	53.16	Training period	Less than 6 years	89	56.33
	Grade 3-4	74	46.84		More than 6 years	69	43.67

Table 2: Professional sports college students' concern for prepackaged food composition

Indicators	N	Mean (points)	S.D.	Ranking	T value	p-value
Energy	158	3.75	1.02	1	46.247	0.000
Protein	158	3.15	1.27	4	30.985	0.000
Fat	158	3.16	1.33	3	29.885	0.000
Carbohydrate	158	3.07	1.28	5	30.085	0.000
Sugar	158	3.54	1.07	2	41.702	0.000
Dietary fiber	158	2.85	1.32	6	27.177	0.000
Sodium	158	2.70	1.29	7	26.365	0.000

Table 3: Comparison of attention degree of college students in pre packaged food composition based on gender differences

Indicators	Gender	Mean (points)	Standard deviation	D-value	F value	p-value
Energy	Male (86)	3.50	0.98	-0.56	12.473	0.001
	Female (72)	4.06	0.99			
Protein	Male (86)	2.83	1.22	-0.70	12.756	0.000
	Female (72)	3.53	1.24			
Fat	Male (86)	2.81	1.28	-0.76	13.702	0.000
	Female (72)	3.57	1.27			
Carbohydrate	Male (86)	2.73	1.23	-0.74	14.125	0.000
	Female (72)	3.47	1.21			
Sugar	Male (86)	3.26	1.06	-0.61	13.700	0.000
	Female (72)	3.87	0.98			
Dietary fiber	Male (86)	2.50	1.26	-0.77	14.797	0.000
	Female (72)	3.27	1.25			
Sodium	Male (86)	2.44	1.29	-0.56	7.704	0.006
	Female (72)	3.00	1.20			

0.91, p-value was less than two and the correlation coefficient was 14. There is a high correlation between the two questionnaires, which meets the requirements of the investigation.

Comparison method: the comparison is the human understanding, the difference and the determination of the difference and the relationship between the things and then reveals the essence of things the most common way of thinking. By comparing the basic information of different sports professional students of the pre packaged food ingredients of the different levels of concern.

Statistical processing: Using statistical SPSS19.0 software analysis, processing data. If $p < 0.05$, there are significant differences, $p < 0.01$, there is a very significant difference, all of which have different degrees of statistical significance.

RESULTS AND DISCUSSION

Basic information of college students majoring in physical education: from Table 1, the results show that 158 sports professional students, in terms of gender, male 86 people accounted for 54.43%, 72 women accounted for 45.57%; in the aspect of the household registration, 96 people in the countryside 60.76%, non-agricultural 62 people accounted for 39.24%; grade and grade 1-2 84 people accounted for 53.16%, grade 3-4

74 people for 46.84%; in the training years. <6 years 89 (56.33%, is equal to or more than 6 years 69 people accounted for 43.67%.

The general situation of pre packaged food ingredients of college students in Physical education: from Table 2, the results show that the food composition of the 158 sports professional college students to pay attention to the extent of the survey, in terms of energy, $3.75 + 1.02$ and $T = 46.247$, $P = 0.000 < 0.01$; in terms of protein, $3.15 + 1.27$ and $T = 30.985$, $P = 0.000 < 0.01$; in fat, $3.16 + 1.33$ and $T = 29.885$, $P = 0.000 < 0.01$; in terms of carbohydrate, $3.07 + 1.28$ and $T = 30.085$, $P = 0.000 < 0.01$; in sugar, $3.54 + 1.07$ and $T = 41.702$, $P = 0.000 < 0.01$; in terms of dietary fiber, $2.85 + 1.32$ and $T = 27.177$, $P = 0.000 < 0.01$; in sodium, $2.70 + 1.29$ and $T = 26.365$, $P = 0.000 < 0.01$. The degree of attention from high to low ranking is: energy, sugar, fat, protein, carbohydrates, dietary fiber and sodium.

Comparison and analysis of the basic information and pre packaged food ingredients: From the comparative analysis of pre-packaged food ingredients attention, Table 3 shows that in gender and energy content of the attention, in the comparison of the male ($3.50 + 0.98$) less than 0.56 ($4.06 + 0.99$) for women and $F = 12.473$, $P = 0.00 < 0.01$. Interest in gender and protein composition, in the comparison of the male ($2.83 + 1.22$) less than 0.70 ($3.53 + 1.24$) for women

Table 4: Comparison of attention degree of college students in pre packaged food composition based on household register differences

Indicators	Gender	Mean (points)	Standard deviation	D-value	F value	p-value
Energy	Rural household (96)	3.57	0.94	-0.46	7.978	0.005
	Non-rural household (62)	4.03	1.07			
Protein	Rural household (96)	2.82	1.12	-0.83	17.261	0.000
	Non-rural household (62)	3.65	1.34			
Fat	Rural household (96)	2.83	1.19	-0.83	16.036	0.000
	Non-rural household (62)	3.66	1.38			
Carbohydrate	Rural household (96)	2.74	1.14	-0.74	17.950	0.000
	Non-rural household (62)	3.58	1.33			
Sugar	Rural household (96)	3.36	0.95	-0.78	7.197	0.008
	Non-rural household (62)	3.82	1.18			
Dietary fiber	Rural household (96)	2.56	1.23	-0.75	12.866	0.000
	Non-rural household (62)	3.31	1.34			
Sodium	Rural household (96)	2.44	1.20	-0.66	10.509	0.001
	Non-rural household (62)	3.10	1.31			

Table 5: Comparison of attention degree of college students in pre packaged food composition based on grade level differences

Indicators	Gender	Mean (points)	Standard deviation	D-value	F value	p-value
Energy	Grade 1-2 (84)	3.56	1.00	-0.41	6.697	0.011
	Grade 3-4 (74)	3.97	1.01			
Protein	Grade 1-2 (84)	2.86	1.16	-0.61	9.669	0.002
	Grade 3-4 (74)	3.47	1.33			
Fat	Grade 1-2 (84)	2.87	1.22	-0.62	8.929	0.03
	Grade 3-4 (74)	3.49	1.38			
Carbohydrate	Grade 1-2 (84)	2.75	1.16	-0.68	11.914	0.001
	Grade 3-4 (74)	3.43	1.32			
Sugar	Grade 1-2 (84)	3.37	1.03	-0.37	4.948	0.028
	Grade 3-4 (74)	3.74	1.09			
Dietary fiber	Grade 1-2 (84)	2.56	1.23	-0.63	9.429	0.003
	Grade 3-4 (74)	3.19	1.35			
Sodium	Grade 1-2 (84)	2.46	1.26	-0.50	6.025	0.015
	Grade 3-4 (74)	2.96	1.28			

and $F = 12.756$, $P = 0.000 < 0.01$. In gender and fat ingredient attention, in the comparison of the male ($2.81 + 1.28$) less than 0.76 ($3.57 + 1.27$) for women and $F = 13.702$, $P = 0.000 < 0.01$. In gender and carbohydrate composition of attention, in the comparison of the male ($2.73 + 1.23$) less than 0.74 ($3.47 + 1.21$) for women and $F = 14.125$, $P = 0.000 < 0.01$. Interest in sex and sugar, in the comparison of the male ($3.26 + 1.06$) less than 0.61 ($3.87 + 0.98$) for women and $F = 13.700$, $P = 0.000 < 0.01$. In gender and dietary fiber composition attention, in the comparison of the male ($2.50 + 1.26$) less than 0.77 ($3.27 + 1.25$) for women and $F = 14.797$, $P = 0.000 < 0.01$. In gender and composition of sodium attention, in the comparison of the male ($2.44 + 1.29$) less than 0.56 ($3.00 + 1.20$) for women and $F = 7.704$, $P = 0.006 < 0.01$.

Then we make comparative analysis of professional sports college students' registration and pre-packaged food composition attention, the result shows as Table 4. From Table 4, we can get that in the household registration and the energy content of the attention, in the comparison of the rural ($3.57 + 0.94$) less than 0.46 non-farm ($4.03 + 1.07$) and $F = 7.978$, $P = 0.00 < 0.015$. In the household registration and protein components of attention, in the comparison of the rural ($2.82 + 1.12$) less than 0.83 non-farm ($3.65 + 1.34$) and $F = 17.261$, $P = 0.000 < 0.01$. Adipose composition in the household registration and attention, in the

comparison of the rural ($2.83 + 1.19$) less than 0.83 non-farm ($3.66 + 1.38$) and $F = 16.036$, $P = 0.000 < 0.01$. In the household registration and carbohydrate composition attention, in the comparison of the rural ($2.74 + 1.14$) less than 0.74 non-farm ($3.58 + 1.33$) and $F = 17.950$, $P = 0.000 < 0.01$. In the household registration and sugar attention, in the comparison of the rural ($3.36 + 0.95$) less than 0.78 non-farm ($3.82 + 1.18$) and $F = 7.197$, $P = 0.008 < 0.01$. In the household registration and dietary fiber composition attention, in the comparison of the rural ($2.56 + 1.23$) less than 0.75 non-farm ($3.31 + 1.34$) and $F = 12.866$, $P = 0.00 < 0.010$. In the household registration and composition of sodium attention, in the comparison of the rural ($2.44 + 1.20$) less than 0.66 non-farm ($3.10 + 1.31$) and $F = 10.509$, $P = 0.001 < 0.01$.

Then we make analysis of professional sports college students' grade compared with pre-packaged food composition attention, as show in Table 5. The result shows that compared with the energy content of the attention in the grade, grade 1 or 2 ($3.56 + 1.00$) than grade 3 to 4 ($3.97 + 1.01$) 0.41 points less and $F = 6.697$, $P = 0.011 < 0.05$. In grade and protein components of attention, in the comparison of the grade 1 and 2 ($2.86 + 1.16$) than in grade 3 to 4 ($3.47 + 1.33$) 0.61 points less and $F = 9.669$, $P = 0.002 < 0.01$. In grade compared with fat component of attention, grade 1 or 2 ($2.87 + 1.22$) than grade 3 to 4 ($3.49 + 1.38$) 0.62 points less and $F = 8.929$, $P = 0.003 < 0.01$. Compared with

Table 6: Comparison of attention degree of college students in pre packaged food composition based on training period differences

Indicators	Gender	Mean (points)	Standard deviation	D-value	F value	p-value
Energy	Less than 6 years (89)	3.57	1.05	-0.41	6.581	0.011
	More than 6 years (69)	3.98	0.93			
Protein	Less than 6 years (89)	2.87	1.24	-0.64	10.431	0.002
	More than 6 years (69)	3.51	1.23			
Fat	Less than 6 years (89)	2.87	1.31	-0.65	9.680	0.002
	More than 6 years (69)	3.52	1.26			
Carbohydrate	Less than 6 years (89)	2.78	1.24	-0.65	10.534	0.001
	More than 6 years (69)	3.43	1.25			
Sugar	Less than 6 years (89)	3.37	1.03	-0.40	5.531	0.020
	More than 6 years (69)	3.77	1.07			
Dietary fiber	Less than 6 years (89)	2.63	1.29	-0.51	6.124	0.014
	More than 6 years (69)	3.14	1.31			
Sodium	Less than 6 years (89)	2.52	1.25	-0.41	4.044	0.046
	More than 6 years (69)	2.93	1.30			

carbohydrate composition of attention in the grade, grade 1 or 2 (2.75 + 1.16) than grade 3 to 4 (3.43 + 1.32) 0.68 points less and $F = 11.914$, $P = 0.001 < 0.01$. In grade and sugar attention, in the comparison of the grade 1 and 2 (3.37 + 1.03) than grade 3 to 4 (3.74 + 1.09) 0.37 points less and $F = 4.948$, $P = 0.028 < 0.05$. Compared with dietary fiber composition of attention in the grade, grade 1 or 2 (2.56 + 1.23) than grade 3 to 4 (3.19 + 1.35) 0.63 points less and $F = 9.429$, $P = 0.00 < 0.013$. In grade compared with sodium composition of attention, grade 1 or 2 (2.46 + 1.26) than grade 3 to 4 (2.96 + 1.28) 0.50 points less and $F = 6.025$, $P = 0.015 < 0.05$.

Finally, we make the comparative analysis of the attention degree of college Students' training years and pre packaged food ingredients. The result was shown in Table 6, it indicates that in the training period compared with the energy content of the attention, < 6 years (3.57 + 1.05) less than 6 years (3.98 + 0.93) or 0.41 points and $F = 6.581$, $P = 0.011 < 0.05$. Fixed number of year with proteins in training attention, in the comparison of the <6 years (2.87 + 1.24) less than 6 years (3.51 + 1.23) or 0.64 points and $F = 10.431$, $P = 0.002 < 0.01$. Fixed number of year with fat component in training attention, in the comparison of the <6 years (2.87 + 1.31) less than 6 years (3.52 + 1.26) or 0.65 points and $F = 9.680$, $P = 0.002 < 0.01$. In training period, compared with carbohydrate composition of attention < 6 years (2.78 + 1.24) less than 6 years (3.43 + 1.25) or 0.65 points and $F = 10.534$, $P = 0.001 < 0.01$. In training period and sugar attention, in the comparison of the <6 years (3.37 + 1.03) less than 6 years (3.77 + 1.07) or 0.40 points and $F = 5.531$, $P = 0.020 < 0.05$. Fixed number of year with dietary fiber component in training attention, in the comparison of the <6 years (2.63 + 1.29) less than 6 years (3.14 + 1.31) or 0.51 points and $F = 6.124$, $P = 0.014 < 0.05$. In the training period compared with sodium composition of attention, <6 years (2.52 + 1.25) less than 6 years (2.93 + 1.30) or 0.41 points and $F = 4.044$, $P = 0.046 < 0.05$.

CONCLUSION

Sports professional students pre-packaged food ingredients and composition of the degree of attention from high to low ordinal ranking is: energy,

carbohydrate, fat, protein, carbohydrate, dietary fiber, sodium; sports professional students pre-packaged food ingredients concern degree in gender female very significantly high in the male, in the household registration in non rural household is very significantly higher than rural household registration, in university grade 3-4 grade significantly or very significantly higher than grade 1-2, in the training period is more than or equal to 6 years significant or very significant of higher than 6 years.

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