DIFFERENCES IN THE QUALITY OF NUTRITION AND EATING HABITS BETWEEN 11 TO 13 YEAR OLD CHILDREN WHO PRACTICE MARTIAL ARTS AND NON-ATHLETE CHILDREN

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Original scientific paper

Abstract
The survey was conducted on a sample of 351 respondents, 11 to 13 year old male students from urban areas of the Zenica-Doboj Canton, 276 non-athletes, and 75 athletes who practice martial arts. The research problem was to determine the differences in nutritional habits and nutritional quality as well as body composition in 11 to 13 year old boys, who are practicing martial arts and boys who are not involved in sports. A sample of variables for assessing the quality of nutrition and eating habits was based on a questionnaire on the nutritional habits of the Cantonal Public Health Institute in Zenica-Doboj Canton. This questionnaire contains 31 questions, of which 29 questions relate to the quality of nutrition and eating habits, and 2 questions relate to the personal opinion on healthy nutrition and the frequency of physical activity. Analysis of the Mann Whitney test results, lead to a conclusion that a statistically significant difference in the nutritional quality and nutritional habits between these two groups of subjects exists.

Key words: *eating habits, nutritional quality, athletes, non-athletes.*

INTRODUCTION

The reason for this research is the frequent and inadequate diet among children and youth, which has become a growing problem of modern society. This, together with inadequate physical activity leads to an increase in weight and obesity in pre-school and early school age children. Therefore, the level of nutrition and physical activity has recently become the sphere of interest and the research subject of many scientists in the world. The health consequences of eating disorders are particularly fatal for children and adolescents, because not only do they contribute to a range of diseases they also contribute to mental illness. (Zametkin Aj, Zoon CK, Klein HW & Munson S., 2004, Sibley B. A., Etnier J. L., 2003).

The main objective of this research was to determine differences in nutrition and eating habits between two groups of respondents. One is a group of children who practice martial arts, and the other group consists of non-athlete children.

METHODS OF WORK

The sample consists of 351 respondents, 11 to 13 year old male students from urban areas of the Zenica-Doboj Canton, who attend physical education classes regularly, out of which 276 are non-athletes, and 75 are athletes who train martial arts.

A sample of variables for assessing the quality of nutrition and eating habits is included in the questionnaire of the Cantonal Public Health Institute in Zenica-Doboj Canton. It contains 31 questions (Likert scale from 1 to 5), of which 29 questions are related to eating habits and nutritional quality, and 2 questions are related on a personal opinion about healthy diet and the frequency of physical activity.

Do you think you are eating healthy?	DMHZDR
How many meals do you have per day? How many times per week do you eat breakfast?	KOIDNE KPSDOR
How many times per week do you eat a meal before noon? How many times per week do you eat lunch?	KPSUPP KPSRUČ
How many times per week do you eat meal after noon? How many times per week do you eat dinner?	KPSUIP KPSVEČ
How many times per week do you eat fast food between meals (sandwich, hot-dog, kebab)? How many times per week do you eat sweets and snacks between meals?	KPSMBH KPSMSL
How many times per week do you eat fruits between meals? How many times per day do you drink water?	KPSMVO KPDPVO
How many times per week do you drink fruit (pulpy) nectars? How many times per week do you drink natural (homemade) juices?	KPSGSO KPSPPS
How many times per week do you drink soft drinks? How many times per week do you drink energy drinks?	KPSGAZ KPSENP
How many times per week do you eat soups and stews?	KPSSUČ
How many times per week do you eat pasta and baked goods? (macaroni, pies, pizza, puffed pastry etc.)	KPSTPP
How many times per week do you eat cooked meals? How many times per week do you eat fish?	KPSKUJ KPSRIB
How many times per week do you eat barbecue, breaded and roast meat? How many times per week do you eat cured or smoked meats?	KPSPPM KPSSUM
How many times per week do you eat canned food? (pate, spam etc.) How many times per week do you eat milk products and drink milk? How many times per week do you eat fresh fruits?	KPSKOH KPSMPM KPSVOĆ
How many times per week do you eat fresh vegetables? How many times per week do you eat grains? (oats or wheat, corn flakes etc.)	KPSPOV KPSŽIT
How many times per week do you eat cakes? How many times per week do you eat chips and other snacks? (puffs, salted sticks, pretzels, crackers etc.) How many times per week do you eat fast food? (hot-dog, hamburger, chicken etc.) How many times per week do you eat honey and homemade natural jams and marmalades?	KPSTOR KPSČGR KPSBRH KPSMĐP
How often do you spend at least 30 minutes of your free time doing physical activity that make you sweaty or winded?	KČFAZN

Descriptive indicators were calculated and a difference was found between the Mann Whitney test scores in children practicing martial arts and non-athlete children.

RESULTS AND DISCUSSION

Ranks

	grupa	N	Mean Rank	Sum of Ranks
KOIDNE	1	74	142,70	10560,00
	2	276	184,29	50865,00
	Total	350		
KPSUPP	1	74	126,64	9371,00
	2	276	188,60	52054,00
	Total	350		
KPSUIP	1	74	134,41	9946,00
	2	276	186,52	51479,00
	Total	350		
KPSMBH	1	74	208,04	15395,00
	2	276	166,78	46030,00
	Total	350		
KPSMVO	1	74	213,47	15796,50
	2	276	165,32	45628,50
	Total	350		
KPSRIB	1	74	211,95	15684,00
	2	276	165,73	45741,00
	Total	350		
KPSPOV	1	74	205,45	15203,00
	2	276	167,47	46222,00
	Total	350		
KPSČGR	1	74	204,99	15169,50
	2	276	167,59	46255,50
	Total	350		
KPSMĐP	1	74	226,89	16790,00
	2	276	161,72	44635,00
	Total	350		
KČFAZN	1	74	200,72	14853,00
	2	276	068,74	46572,00
	Total	350		

Table 1. *Ranks between groups in nutrition and eating habits (athletes 1 – non-athletes 2)*

By analyzing the ranks in Table 1, more precisely, by comparing the values of arithmetic means in both groups, different results can be noted throughout. In particular, there are differences in values with the following variables: "How many meals do you have per day?" -KOIDNE, "How many times per week do you have a meal before noon" -KPSUPP, "How many times a week do you eat a meal after noon" -KPSUIP, "How many times per week do you eat fast food between meals?" - KPSMBH, "How many times per week do you eat fruits between meals?" - KPSMVO, "How many times per week do you drink soft drinks?" - KPSGAZ , "How many times per week do you eat fish?" - KPSRIB, "How many times per week do you eat fresh fruits?" - KPSVOĆ, "How many times per week do you eat chips and other snacks?" - KPSČGR, "How many times per week do you eat honey and homemade natural jams and marmalades?" - KPSMĐP, and the variable for motion activities estimation: "How often do you spend at least 30 minutes of your free time doing physical activity that make you sweaty or winded?" - KČFAZN.

Table 2. Mann Whitney test the difference in eating habits and the quality of nutrition between groups, athletes-non-athletes

	KOIDNE	KPSUPP	KPSUIP	KPSMBH	KPSMVO	KPSRIB	KPSPOV	KPSČGR	KPSMĐP	KČFAZN
Mann-Whitney U	7785,000	6596,000	7171,000	7804,000	7402,500	7515,000	7996,000	8029,500	6409,000	8346,000
Wilcoxon W	10560,000	9371,000	9946,000	46030,000	45628,500	45741,000	46222,000	46255,500	44635,000	46572,000
Z	-3,420	-4,813	-4,032	-3,241	-3,738	-3,897	-2,985	-2,959	-5,071	-2,513
Asymp. Sig. (2-tailed)	,001	,000	,000	,001	,000	,000	,003	,003	,000	,012

a. Grouping Variable: group

By analyzing the data from Table 2, there were statistically significant differences in certain variables between the two groups of respondents. They range in values of significance level from p = 0.001 to p = 0.005 and are present in the variables: "How many meals do you have per day?" - KOIDNE, "How many times per week do you eat a meal before noon?" - KPSUPP, "How many times per week do you eat a meal after noon?" - KPSUIP, "How many times per week do you eat fast food between meals?" - KPSMBH, "How many times per week do you eat fruits between meals?" - KPSMVO, "How many times per week do you eat fish?" - KPSRIB, "How many times per week do you eat fresh vegetables?" - KPSPOV, "How many times per week do you eat chips and other snacks?"- KPSČGR, "How many times per week do you eat honey and homemade natural jams and marmalades?"- KPSMĐP, "How often do you spend at least 30 minutes of your free time doing physical activity that make you sweaty or winded?" - KFFAZN.

The differences are reflected in the number of main meals as well as snacks between meals and the type of food they consume between meals. Followed by, what kind of foods are they eating and how often they do it during the week, (Mandal A. Nandi, Mandal G. Chandra, 2012, obtained similar results in their research). In addition, the differences are also reflected in the frequency of physical activity during the week. (similar results were obtained by Colić-Baric I., Šatalić Z. 2002.; Mota J. Fidalgo F. Silva R. Ribeiro JC. Santos R. Carvalho J. Santos MP 2008. and Axelsen M., Danielsson M., Norberg M., Sjberg A. 2012, in their research).

CONCLUSION

By analyzing the values of the results obtained in this study, it can be concluded that the results of both groups of respondents are quite different in the majority of variables. Possible reasons for greater differences in the arithmetic mean values in the area nutrition quality and eating habits are that a group of athletes compared to a group of non-athletes have fewer regular meals and fewer snacks between meals (athletes eat more fruits between meals), they eat less fast foods, soft drinks and snacks, but eat more fresh vegetables, fish, honey and homemade jams and marmalades. (similar results were also obtained by Cavadini C., Decarli B., Michaud P.A. 2000 and Džibrić Dž., Pojskić H., Huremović T., Ćatić A. 2013)

In addition, they are more physically active during their free time, and a possible reason is

regular training during the week. This quality of nutrition and eating habits with increased physical activity among the group of athletes probably plays a role in creating significant differences in the arithmetic mean values in analyzed variables compared to a group of non-athlete children.

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