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## INTERVENTION PROGRAMME FOR THE EARLY PREVENTION OF CARDIOVASCULAR DISEASES IN CHILDHOOD

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### ABSTRACT

In our region, cardiovascular diseases (CVD) take the first place in the structure of the general mortality (60%) and the second one (19%) in the general morbidity, with a high frequency of risk factors in children and adult population, such as unbalanced family, social nutrition and incorrect life style. Therefore, the early detection of CVD and the undertaking of prompt preventive measures in early childhood are necessary, in order to reduce the risk factors, morbidity and mortality caused by CVD.

The purpose of this preventive programme 'My heart, healthy heart' has been to change current diet, evaluate nutrient adequacy of social nutrition and identify children with some risk factors or with positive family history. The programme includes training of food service personnel, modified menu recipes and food preparation methods, constant nutrition education, physical activity and growth monitoring of children, identification of children with obesity hypertension and positive family history for selective screening of lipid parameters. The amount of nutrients meals prepared for booth traditional (T) and fat modified diet (LF) was evaluated by a computer meal planning programme calculated from the food used to prepare meals. The energy and protein intakes were similar in T and LF diets. The total amount of fat was higher in T (37%E) than in LF (28%E), carbohydrates were 49% E and 57%E, SFA 13% E and 9% E, ratio P/S 0,5 and 0,8, cholesterol/1000 kcal was 119 mg and 61 mg, dietary fibre 6,7 gr. and 13,4 gr. respectively. Comparing booth diets showed that the satisfied % of RDA for most vitamins and minerals was higher in LF diet than in T. These results show that LF diet satisfies the needs for most of the nutrients and can support normal growth of children over the age of 2 and therefore it can be implemented in early CVD prevention. This primary prevention programme with 'high risk strategy' and 'population strategy' in childhood can be more efficient in prevention of CVD risk factors at this age.

## INTRODUCTION

Cardiovascular diseases (CVD) in our region take the first place in the structure of the general mortality with about 60%, and with 19% the second place in general morbidity. Therefore CVD are an important medical, social and economic problem. Unbalanced families, social nutrition and irregular life styles can be associated with high incidence of obesity (50- 55% in adult population with BMI over 25), hypertension (18% adults with artery tension over 18,7/12,3 pa), hypercholesterolaemie (TC over 5,20 mmol/L in 71,1-83,2% population over 21 age in the last 3 years), hypertriglyceridemia (TG over 1,70 mmol/L in 41,7 - 51,7% population over 21 age), diabetes (7% of population now, and 2,3% 10 years ago) smoking (58,6% in male and 46,62% in female) and other risk factors. (Pavlović, et al., 1995).

Epidemiological studies show a positive correlation between morbidity and mortality of CVD in adult population with early atherosclerotic lesions and risk factors level in children, adolescents and adults (Blakburn, 1991). Analysing the risk factors obesity was found in 14,4% girls and 15,3% boys, elevated cholesterol (TC) level in 11,6-12,8% boys and girls, high LDL-C in 20,5% schoolchildren, low HDL-C in 18,3-21,6% girls and boys, elevated triglycerides (TG) in 22,1-25,6% boys and girls, and low motor ability (LMA) was established in 36,1 - 40,1% of the schoolchildren.

The frequency distribution of some risk factors shows, that there are 31,6-31,9% boys and girls with one, 18,9-20,0% girls and boys with two, 11,6% children with three and 5,8-7,2% boys and girls with four and more risk factors, 28,3-31,0% girls and boys have no risk factors. (Pavlović, 1994.)

The results of an analytical questionnaire of our family nutrition shows that about 62% of the families consume more than 30% fat, 45% over 10% refined sugars, and 52% over 10% of saturated fatty acids considering their daily energy diet. Daily intake of salt over 6 g has been determined in 15,8% of families, cholesterol over 300 mg in 53% of them, and ratio of polyunsaturated to saturated fatty acids (P/S) less then 0,45 in 54% of them. At the same time the lack of dietary fibres (less than 20 gr./day in 89,7%), most minerals and vitamins have been established. (Pavlović, 1994.)

The risk factors are numerous and have a cumulative effect, and the presence of one or more risk factors at the same time increases the possibility of development of the more serious form of atherosclerosis in ever younger age. Many reports review the evidence that the precursors of atherosclerosis begin in childhood. The majority of risk factors are connected with eating habits and life style patterns already adopted in childhood and youth. The correlation between risk factors level found in early youth and their later values ('tracking phenomena') is the most important fact for primary prevention of atherosclerosis in childhood (WHO,

1990; Berenson *et al.*, 1991; Mahoney *et al.*, 1991). Therefore, the early discovery of CVD and the undertaking of prompt preventive measures in childhood is necessary in order to reduce the risk factors, morbidity and mortality caused by CVD.(Berenson *et al.*, 1994.)

Taking into consideration our typical family nutrition and other CVD risk factors, social nutrition has to correct inadequate nutrition in family. Based on previous results, our traditional social nutrition of pre-schoolers in day care centres needs changes. Therefore we intervened with a preventive programme 'My heart, healthy heart' in the whole population of pre-schoolers (age 3-7 ) in Subotica. This primary prevention programme involves two complementary approaches, 'high risk strategy' and 'population - health promotion strategy' (NCEP, 1992.).

The purpose of this preventive programme has been to change the current diet, evaluate nutrient adequacy of social nutrition, promote healthy nutrition and life style, and identify children with some risk factors or with positive family history.

## METHODOLOGY

The intervention preventive programme 'My heart, healthy heart' started this year in the whole population of pre-schoolers (age 3-7) in Pre-school Child Care Centre in Subotica (Poster : 'My heart, healthy heart'). The computer software has been designed to be used in primary prevention (High risk strategy) of CVD risk factors in childhood.(Pavlović, Kadvan, 1995; Pavlović *et al.*, 1994) This programme includes the following modules for children: personal data, with code system, anthropometric parameters (body height, weight, triceps and subcapular skinfolds, mid-arm, waist, hip circumference) physiological parameters (systolic and diastolic blood pressure, heart rate) laboratory analyses (blood glucose, total cholesterol, triglycerides, LDL-cholesterol, HDL-cholesterol), clinical examination, physical ability and activity, (by the battery of tests of explosive strength, belly muscles repetitive strength, flexibility, whole body co-ordination, sprint speed, endurance) (WHO, 1988; Kostić *et al.*, 1993; WHO, 1983; STF, 1987).

For each child and its parents, beside mentioned data in children, the programme collects and evaluates data about family history (booth parents and grandparents), smoking, alcohol consumption, physical activity, etc.(Bray, 1992; WHO, 1988; WHO, 1983; ITF, 1993). This programme automatically evaluates for children and parents all the parameters according to age, sex and international standards. Using this programme we can list the children with some risk factors (obesity, hypertension...), with positive family history, and with cumulative risk factors for selective screening lipid parameters and undertaking some individual preventive measures.

The programme automatically supplies statistical reports for a group for all variables and their distribution according to standards. The other part of this programme is population 'Health promotion strategy' with dietary intervention which involves:

- Constant meal planning (Low fat diet) for every two weeks (Pavlović et al. 1994., Edelstein 1992).
- Training food services personnel, modified menu (more cereals, grains, fruit, vegetables, less fat and fat meat and milk products) with an additional afternoon snack.
- Modification of recipes and food preparation.
- Nutrition education for children and their parents.
- Constant analysing and controlling the quality of prepared meal by chemical bromathological analysis, with finally recommendations for changing to improve nutrition.
- Nutrient values in traditional (T) and low fat diet (LFD) evaluated by computer meal planning programme ('MENU') calculated from the food used in recipes to prepare meals (Pavlović et al. 1994).
- Average results of nutrient intakes with 2-3 meals for two weeks were compared for T and LFD.
- Nutrient adequacy was determined by comparing the selected nutrients with RDA and calculating the % supply of some nutrients (RDA, 1994).

In some of centres children had physical activity everyday in order to promote healthy life style.

## RESULTS

- Analysing pre-schoolers (1669) children in Subotica with some risk factors we found with obesity 14,23-14,62 % girls and boys (body weight over P97), significant hypertension 4,40% (systolic blood pressure P 95-99) and severe hypertension 4,30% boys and 3,16% girls (systolic blood pressure over P99) (table 1,2) .
- With positive family history we determined 44,58% of pre-schoolers (father or mother with obesity, hypertension or some diseases) (table 3).
- Analysing children with different numbers of total risk points we found only 1,74% of children without risk points, 68,96% with 1-5 points, 22,71% with 6-10 points, 5,51% with 11-15 points, 0,9% with 16-20 points and 0,12% with 21-25 points (table 4).
- Comparing traditional (T) and low fat diet (LFD) the percentage of total calories from cereals (41,25%), milk (15,14%), vegetables (9,18%) and fruit (7,52%) were higher in LFD than in T (37,44%; 9,32%; 8,92%; 0,0%) while the meat (21,01%) and meat products with fat (15,66%) were higher in T diet (table 5, figure 1).
- The energy and protein intakes were similar in T and LF diet (table 6).

- The total fat was higher in T (37,00% E) than in LF (27,94%E), carbohydrates were 49,00%E and 60,88%E, SFA 13,6%E and 9,13%, ratio P/S 0,5 and 0,8, cholesterol/1000 kcal was 126 mg and 119 mg, respectively (table 6, figure 2).
- The satisfied % of RDA in T and LFD for energy (57,46%; 58,52%) and protein (83,27%; 90,09%) were similar. (figure 3) The percentage of satisfied RDA was higher in LFD than those in T diet for calcium (62,12%; 37,25%), phosphorus (114,02% ; 65,55%), iron (115,20%; 51,70%), magnesium (90,10%; 40,01%), zinc (48,90%; 17,40%), vitamin A (139,53%; 73,17%), vitamin B1 (93,33%; 67,78%), niacin (112,73%, 63,91%), vitamin C (109,76%; 50,07%), vitamin B6 (74,62%; 37,69%), vitamin D (109,30%; 56,50%). The satisfied percentage of RDA was higher in T diet than in LFD only in B2 vitamin (140,00%; 98,00%) and B12 vitamin (92,80%; 69,60%) (figure 4).

## CONCLUSIONS

- A relatively high number of children, in our environment, even at this age, has one or more risk factors with familiar aggregation.
- The essence of the reduction and elimination of the risk factors for atherosclerosis and CVD is early detection and undertaking preventive measures to balance nutrition and having more physical activity.
- New LF diet in comparison with T diet has less cholesterol, total and saturated fat, and more carbohydrates and dietary fibres which is desirable for the prevention of CVD in the general population.(Williams 1995).
- These results show that LF diet satisfies the needs for majority of nutrients (except B2 and B12 vitamin) in higher percentage than T diet.
- LF diet can support normal growth and development of children over the age of 2 and therefore it can be implemented in the early CVD prevention, with constant growth monitoring and prevention of other risk factors (Nicklas *et al.*, 1992.).
- This primary prevention programme with 'high risk strategy' and 'population strategy' in childhood can be more efficient in prevention of CVD risk factors at this age. (Vartianinen *et al.*, 1995; Lapinleimu *et al.*, 1994; Strong 1991; Berenson *et al.*, 1991; Resnicow *et al.*, 1991; Van Horn *et al.*, 1995).

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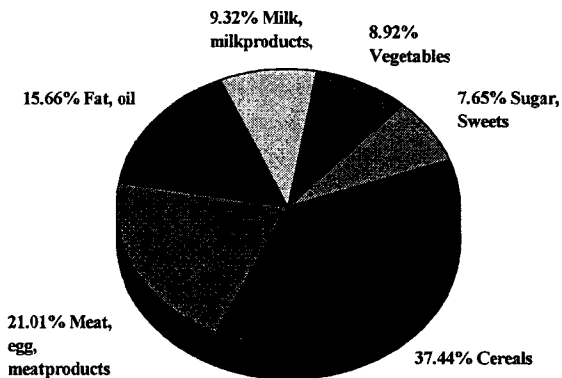
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**Traditional diet**



**Figure 1. % Supply of some food groups in total energy in traditional and low fat diet**

### LOW FAT DIET

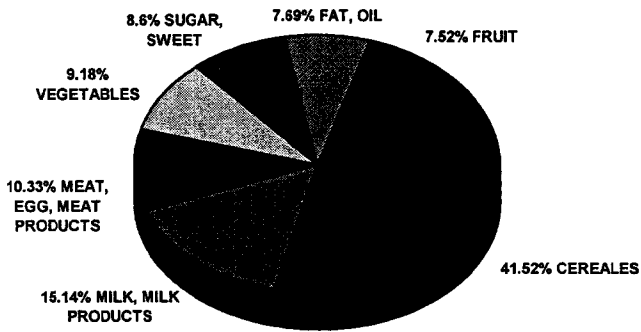


Figure 2. % Supply of some nutrients in total energy in traditional and low fat

### % SATISFIED RDA (CHILDREN AGE 5-7) OF ENERGY AND SOME NUTRIENTS IN TRADITIONAL AND LOW FAT DIET

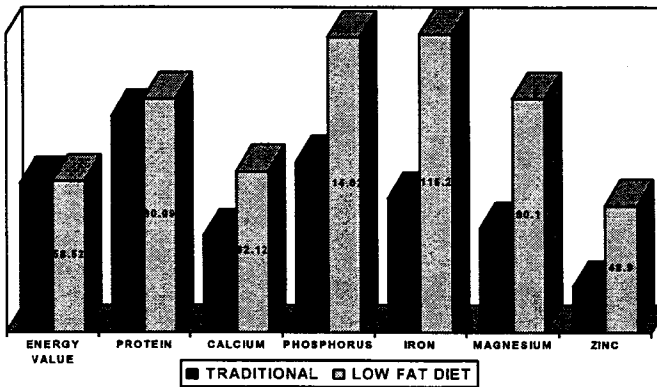


Figure 3. % satisfied RDA (children age 5-7) of energy and some nutrients in traditional and low fat diet

**% SATISFIED RDA (CHILDREN AGE 5-7) OF VITAMINS IN TRADITIONAL AND LOW FAT DIET**

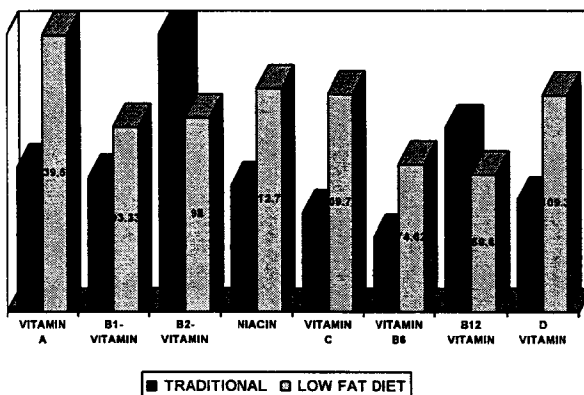


Figure 4. % Satisfied RDA (children age 5-7) of vitamins in traditional and low fat diet

Table 1. Distribution of body weight in preschool children in Subotica according to age and sex (WHO Geneva 1993, measuring change in nutritional status)

**BOYS**

Age	<P3		P3-P5		P5-P10		P10-P20		P20-P30	
	n	%	n	%	n	%	n	%	n	%
3	0	0.00	0	0.00	0	0.00	1	1067	1	1.67
4	3	2.4	0	0.00	1	0.80	8	6.40	8	6.40
5	8	4.21	1	0.53	4	2011	8	4.21	11	5.79
6	10	4.00	4	1.60	4	1060	14	5.60	13	5.20
7	8	5.16	0	0.00	11	7.10	13	8.39	15	9.68
Total	29	3.72	5	0.64	20	2.56	44	5.64	48	6.15

Age	P30-P40		P40-P50		P50-P60		P60-P70		P70-P80	
	n	%	n	%	n	%	n	%	n	%
3	5	8.33	3	5.00	7	11.67	4	6.76	6	10.0
4	9	7.20	6	4.80	8	6.40	12	9.60	13	10.4
5	7	3.68	11	5.79	16	8.42	17	8.95	16	8.42
6	17	6.80	11	4.40	22	8.88	30	12.0	28	11.2
7	7	4.52	14	9.03	13	8.39	15	9.68	23	11.84
Total	45	5.77	45	5.77	66	8.46	78	10.0	86	14.84

Continued table 1.

Age	P80-P90		P90-P95		P95-P97		>P97		Total
Year	n	%	n	%	n	%	n	%	
3	11	18.33	8	13.33	2	3.33	12	20.0	60
4	15	12.00	9	7.20	10	8.00	23	18.40	125
5	30	15.79	16	8.42	9	4.74	36	18.95	190
6	27	10.80	27	10.80	9	3.60	34	13.60	250
7	14	9.03	7	4.52	6	3.86	9	5.81	155
<b>Total</b>	97	12.44	67	8.59	36	4.62	114	14.62	780

**GIRLS**

Age	<P3		P3-P5		P5-P10		P10-P20		P20-P30	
Year	n	%	n	%	n	%	n	%	n	%
2	2	2.50	1	1.25	0	0.00	6	7.50	6	7.50
3	2	1.46	0	0.00	3	2.19	5	3.65	3	2.19
4	7	4.00	1	0.57	5	2.86	2	1.14	11	6.29
5	8	3.39	1	0.42	2	0.85	8	3.39	10	4.24
6	6	3.05	1	0.76	10	7.63	12	9.16	8	6.11
<b>Total</b>	23	3.03	4	0.53	20	2.64	33	4.35	38	5.01

Age	P30-P40		P40-P50		P50-P60		P60-P70		P70-P80	
Year	n	%	n	%	n	%	n	%	n	%
2	6	7.50	3	3.75	12	15.00	12	15.00	6	7.50
3	12	8.76	10	7.30	6	4.38	17	12.41	15	10.95
4	10	5.71	11	6.29	9	5.14	19	10.86	20	11.43
5	14	5.93	18	7.63	17	7.20	21	8.90	23	9.75
6	11	8.40	9	6.87	8	6.11	19	14.50	13	9.92
<b>Total</b>	53	6.98	51	6.72	52	6.85	88	11.59	77	10.14

Age	P80-P90		P90-P95		P95-P97		>P97		Total
Year	n	%	n	%	n	%	n	%	
2	14	17.50	6	7.50	2	2.50	4	5.00	80
3	25	18.25	15	10.95	6	4.38	18	13.14	137
4	30	17.14	10	5.71	7	4.00	33	18.86	175
5	33	13.98	27	11.44	10	4.24	44	18.64	236
6	16	12.21	8	6.11	3	2.29	9	6.87	131
<b>Total</b>	118	15.55	66	8.70	28	3.69	108	14.23	759

**Table 2. Distribution of systolic blood pressure in pre-school, according to age and sex (second Task Force on Blood Pressure Control in Children 1987)**

Age (year)	<P95				P95-P99			
	boys		girls		boys		girls	
	n	%	n	%	n	%	n	%
3	99	95.19	113	94.17	2	1.92	4	3.33
4	130	92.20	136	92.52	7	4.96	9	6.12
5	213	85.20	196	90.32	19	7.60	13	5.99
6	200	95.69	189	93.56	4	1.91	5	2.48
7	59	93.65	38	92.68	1	1.59	1	2.44
	701	91.40	672	92.43	33	4.30	32	4.40

Age (year)	>P99			
	boys		girls	
	n	%	n	%
3	3	2.88	3	2.50
4	4	2.84	2	1.36
5	18	7.20	8	3.69
6	5	2.39	8	3.96
7	3	4.76	2	4.88
	33	4.30	23	3.16

Table 3. Children with different number of total risk points

Code and children name	Total numb. of risk	Children's risk point max-6			Father's risk point max-10			
		POINT max-62	Obesity	Hyper-tension	Hyper-lipoproteinemia	Obesity	Hyper-tension	Diseases
0040 Varga Tatjana	12		0	0	0	1	1	0
0059 Pletl Gabor	13		1	0	0	1	0	0
0074 Ba{i} Damjan	13		1	0	0	1	0	0
0153 Bojan Batini}	14		0	1	0	0	0	0
0295 Lili} Milan	13		0	0	0	1	1	0
302 Duli} Kristin	12		0	0	0	1	0	0
0313 Koso Emese	19		0	0	0	1	0	1
0325 Varga Daniel	13		1	0	0	1	1	0
0328 Arc Anet	12		0	0	0	0	0	0
0338 Koso Aron	18		0	0	0	1	0	0
0340 Lajko Robert	15		0	0	0	0	0	0
0353 Buljov-i}	13		1	1	0	0	0	0
Ljilja								

Continued table 3.

Code and children name	Mother's risk point max-10			Father parents risk point max-18		Mother parents risk point max-18	
	Obesity	Hypertension	Diseases	Grand mother	Grand - father	Grand-mother	Grand-father
0040 Varga Tatjana	0	0	0	1	0	3	6
0059 Pletl Gabor	1	0	0	2	2	0	6
0074 Ba{i} Damjan	0	0	0	0	4	4	3
0153 Bojan Batini}	0	0	0	4	5	4	0
0295 Lili} Milan	0	0	0	5	4	2	0
0302 Duli} Kristin	1	1	2	3	1	2	1
0313 Koso Emese	0	0	0	3	4	5	5
0325 Varga Daniel	0	0	0	1	0	3	6
0328 Arc Anet	1	0	0	1	4	3	3
0338 Koso Aron	0	0	0	3	4	5	5
0340 Lajko Robert	1	0	0	0	5	5	4
0353 Buljov~i}	1	0	1	3	1	0	5
Ljilja							

Total number of risk points	Number of children with risk points	% of children with risk points
0	29	1.74%
1-5	1151	68.96%
6-10	379	22.71%
11-15	92	5.51%
16-20	15	0.90%
21-25	2	0.12%
26-30	1	0.06%
31-62	0	0%

Table 4. Children with positive family history .

Code and children name	Obesity								Hypertension							
	Father				Mother				Father				Mother			
	1	2	3	4	1	2	3	4	Syst	Diast	5	6	5	6	Syst	Diast
0003 B.Suzana	+															
0007 D.Damir		+						+						+	+	
0021 S. Igor					+									+	+	
0025 H Stela	+						+									
0026 P.Natali	+															
0030 H. Terezija	+						+							+		+

Continued table 4.

	Obesity								Hypertension							
	Father				Mother				Father				Mother			
									syst		diast		syst		diast	
	1	2	3	4	1	2	3	4	5	6	5	6	5	6	5	6
0039 T. Erika	+						+				+					
0040 V. Tatjana		+										+				
0043 B. Andrea	+															
0050 L. Branko		+					+									

Code and children name	Diseases												
	Father						Mother						
	7	8	9	10	11	12	13	7	8	9	10	11	12
0003 B. Suzana													
0007 D. Damir							+						
0021 S. Igor							+						
0025 H. Stela													+
0026 P. Natali											+		
0030 H. Terezija									+				
0039 T. Erika						+							
0040 V. Tatjana						+							+
0043 B. Andrea												+	
0050 L. Branko											+		

Number of examined children	1669
Number of children with positive family history	744
% children with positive family history	44.58%

1. Owerweight (Body mass index BMI 25,0-29,9 kg/m <sup>2</sup> )	8. Myocardial infarction
2. Obesity (Body mass index BMI 30,0-34,9 kg/m <sup>2</sup> )	9. Hypertension
3. Severe obesity (Body mass index BMI 35,0-39,9 kg/m <sup>2</sup> )	10. Stroke
4. Extreme obesity (Body mass index BMI over 40,0 kg/m <sup>2</sup> )	11. Perifer vasc. diseas.
5. Borderline hypertension (BP 18,7/12,0 kPa - 21,7 kPa)	12. Diabetes mellitus
6. Significant hypertension (BP over 21,3/12,7 kPa)	13. Hyperlipoprotheinemia
7. Heart Diseases	

**Table 5.Meal patterns in traditional and low fat diet in day care center for pre-school children in Subotica**

<b>TRADITIONAL DIET</b>	<b>LOW FAT DIET</b>
<b>I DAY</b> B) Tea, white bread, pork liver pate D) Vegetable broth, pork with cabbage, white bread	<b>I DAY</b> B) Milk, cereales (muesli) D) Vegetable broth with wheat flakes, fried hake with courgettes, whole grain bread, S) Pears
<b>II DAY</b> B) White bread, sardine in oil ,milk D)Beef soup, boiled beef with courgettes, white bread	<b>II DAY</b> B) Cacao, whole grain bread, cottage cheese D) Vegetable broth with wheat flakes, fried chicken brest, boiled brocoli, whole grain bread, S) Semolina with pudding
<b>III DAY</b> B) Milk, white bread, margarine, pork salami D) Beef goulash, cacao and raisine pie	<b>III DAY</b> B) Milk, whole grain bread, pork cooked ham, pickled peppers D) Beef soup, whole grain pasta with sour cream and cheese,colaslow S) Fruit salad with cooked millet
<b>IV DAY</b> B) Caramel , white bread, margarine, jam D) Couliflower broth,baked beans with smoked pork ribs	<b>IV DAY</b> B) Caramel, cooked millet in milk D) Tomato soup with protein bean flakes, beef meat balls with semolina, mashed potatoes, pepper salad, whole grain bread S) Apples
<b>V DAY</b> B) Tea, white bread, pork sausage D) Potato broth with pork frankfurtes, gouda cheese pasta	<b>V DAY</b> B) Tea, whole grain bread, sardines in oil,pickled gurkins D) Vegetable broth with wheat flakes, couliflour moussaka with beef and semolina, whole grain bread, S) Fruit juice, biscuits
<b>VI DAY</b> B) Tea, white bread, pork liver pate, D) Pork soup , pork sausage with pasta, pickled peppers, white bread	<b>VI DAY</b> B) Cacao, cereales in milk, D) Vegetable broth with wheat flakes, cooked beef with cabbage, whole grain bread, S) Apples
<b>VII DAY</b> B) Caramel, white bread, margarine, honey D) Chicken soup, pork with vegetables, white bread	<b>VII DAY</b> B) Caramel, whole grain bread, chicken frankfurtes, (mustard) D) Vegetable broth with wheat flakes, fried hake,mashed potatoes, whole grain bread, beetroot salad S) Pears
<b>VIII DAY</b> B) Milk, white bread, bacon , pickled peppers D)Beef soup, pumpkin pie	<b>VIII DAY</b> B) Milk, whole grain bread, margarine, pork ham cooked, cucumber salad D)Chicken soup, whole grain flour pumpkin pie S) Apple sauce with oat flakes
<b>IX DAY</b> B) Milk, white bread with fat spread, boiled egg D) Cauliflower broth,fried hake, boiled poatoes, white brea	<b>IX DAY</b> B)Cacao, whole grain bread, cottage cheese D) Tomato soup with protein bean flakes, beef balls with soya flakes, boiled carrots, whole grain bread, S) Apples
<b>X DAY</b> B) Milk, white bread , chopped pork D)aVegetable broth, pasta with ground pork	<b>X DAY</b> B) Caramel, cooked barley in milk D) Vegetable broth with wheat flakes, whole grain pasta with ground chicken meat, pickled pepper S) Pears, biscuits

**Table 6. Mean intake of energy and some nutrients in traditional and low fat diet and satisfied percentage of RDA of children age 5-7**

NUTRIENT		RDA	TRADITIONAL DIET (T)			LOW FAT DIET (LFD)		
			average values	% energ. v	% RDA	average values	% energ v	% RDA
Energy value	KJ	7744.10	4450.09	-	57.46	4531.80	-	58.52
Energy value	kcal	1850.0	1063.09	-	57.46	1082.61	-	58.52
Protein total	gr	45.12	37.57	14.49	83.27	40.65	15.68	90.09
Protein vegetable	gr		19.48	7.5		18.38	6.9	
Protein animal	gr		18.10	6.9		22.28	8.4	
Fat total	gr	59.67	42.29	37.00	70.87	31.94	27.94	53.53
Fat vegetable	gr		14.13	12.4		16.53	14.2	
Fat animal	gr		28.16	24.6		15.40	13.2	
Carbohydrates	gr	270.70	125.79	49.00	46.46	157.85	60.88	58.31
SFA	gr		15.5	13.6		10.44	9.13	
MUFA	gr		13.7	11.98		10.16	8.89	
PUFA	gr		7.65	6.69		7.77	6.80	
P/S	gr		0.49			0.74		
SFA:MUFA:P UFA			0.9 : 1 : 0.6			1 : 1 : 0.7		
Cholesterol	mg		135.00			119.00		
Cholesterol/ 1000 kcal	mg		126.00			111.00		
Soluble dietary fiber	gr		4.48			9.20		
Insoluble dietary fibre	gr		2.27			8.97		
Oleic acid	gr		4.04			4.44		
Linoleic acid	gr		5.77			4.71		
A vitamin	çgR. E	500.00	365.83		73.17	697.66		139.53
B1 vitamin	mg	0.90	0.61		67.78	0.84		93.33
B2 vitamin	mg	1.00	1.4		140.0 0	0.98		98.00
Niacin	mg	11.00	7.03		63.91	12.40		112.73
C vitamin	mg	45.00	22.53		50.07	49.39		109.76
B6 vitamin	mg	1.30	0.49		37.69	0.97		74.62
B12 vitamin	mg	2.50	2.32		92.80	1.74		69.60
D vitamin	mg	10.00	5.65		56.50	10.93		109.30
Calcium	mg	800.00	297.98		37.25	496.93		62.12
Phosphorus	mg	800.00	524.39		65.55	912.20		114.02
Iron	mg	10.00	5.17		51.70	11.52		115.20
Sodium	mg	1350.00	1878.13			2737.25		
Potassium	mg	2325.00	1034.02			1815.70		
Ratio sodium/ potassium			1.81			1.51		
Magnesium	mg	200.00	80.02		40.01	180.19		90.10
Zinc	mg	10.00	1.74		17.40	4.89		48.90