Milk and dairy products in hospital daily diet

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Summary

The aim of this work was to determine the milk and dairy products share in hospital diets of children and pregnant women due to special importance for this population.

Hospital meals for this population were therefore analysed. Meals were prepared exclusively for hospitalised children and pregnant women without metabolic deseases.

Results showed that milk and dairy products portions as very important sources of energy, proteins, calcium and phosphorus in hospital diets for children and pregnant women, should be increased in whole-day meals structure.

The most consummated dairy products in hospital nutrition for pregnant women are milk and yogurt, and for children are milk, pudding and ice-cream.

Key words: milk, dairy products, hospital diets, children, pregnant women

Introduction

The aim of this work was to determine the milk and dairy products share in hospital nutrition of children and pregnant women, because of theirs role on well-balanced nutrition for this population.

Milk contains a great number of essential nutritives such as essential amino acids, fat acids, vitamins and minerals (Whitney, 1990; Živković, 1994).

Very positive influence on human health have also fermented dairy products as yogurt and kefir. Both of them are probiotics (Walker, 1998) - alive microorganisms with very positive health influence: decreasing the large intestines cancer, providing better digestion and kidney activity, beneficial influence in allergy treatments (Perdigon et al. 1994; Matreau et al. 1990).

Milk and dairy products are also very important source of so called active peptides which have great beneficial influence in digestive system, body's defences and cardiovascular system (Fox et al. 1992; Defilippi et al. 1995; Tirelli et al. 1997; Jolies et al. 1986).

RDA recommend daily intake of calcium of 800 mg per day for children aged 7 - 10, and for pregnant women 1200 mg per day (RDA, 1989) which makes approximately 500 g of milk per day.

Materials and Methods

In order to determine milk and dairy product share the data on monitoring dietary intakes were collect for hospitalised children and pregnant women without metabolic diseases (Macdonald, 1991). For this purpose 7 and 15 whole-day meals, for children and pregnant women respectively, were analysed. All data were statistically analysed.

Nutritive and energetic value of meals were established by means of Tables with chemical composition of fresh and thermally treated food stuffs (Brodarec, 1971; Nutritive value of foods, USDA, 1977).

Results and discusion

This investigation was especially designed to give results on milk and diary products consumption in hospital diets for children and pregnant women without metabolic diseases. The specific nutrient needs for these groups of population are defined in the Recommended Dietary Allowances (RDAs). The RDAs are designed for the maintenance of good nutrition for healthy people and are expressed as average daily intakes over time providing individual variations among people. RDAs are also accepted in Croatia as official recommendations for dietary intakes (Pravilnik, 1994).

Our results showed that the energy intake in both categories is lower than RDA (85% and 98,9% RDA for children and pregnant women, respectively). Meals for children were balanced quite good, except for low protein value that should be higher (approximately 20%). Meals for pregnant women should be balanced, because of too high fats (41.9%) and too low carbohydrates (37.8%) content. Protein level is also higher than is necessary. Enery portion of proteins, fats and carbohydrates should be 15%, 30% and 55% respectively.

Table 2. shows the frequency of serving different dairy products in hospital diets for children and pregnant women. It is very interesting that yogurt is served even more than milk in diets designed for pregnant women. Also, the therm "serving" need to be explained. "Serving" is for example a cup of milk, cup of yogurt ect. and contains aproximateley 200-250 g of different dairy product which supplly a human organism with 150-450 mg Ca depending on dairy source. Yogurt, for example, provides 450 mg Ca per cup, Ice-cream and puding 150 mg Ca per cup and milk 300 mg Ca per cup (AI).

It is obvious from Tables 3. and 4. that milk and dairy products are not preferably the main source of energy intake but are definitly the main source of calcium, and very good source of proteins and phosphorus. Recent research shows that milk fat contains a number of potential anticarcinogenic components including conjugated linoleic acid, sphingomyelin, butyric acid and other lipids (Parodi, 1997), thus making milk as very diserable source of high quality animal's fats.

Table 1: Energy intake and energy value of proteins, fats and carbohydrates in whole day hospital meals for children and pregnant women without metabolic diseases

Tablica 1: Unos energije i energetski udjel proteina, masti i ugljikohidrata u cjelodnevnim bolničkim obrocima namijenjenim trudnicama i djeci bez metaboličkih smetnji.

PARAMETERS Parametri	CHILDREN Djeca	PREGNANT WOMEN Trudnice
ENERGY INTAKE (kJ) UNOS ENERGIJE (kJ)		
x	7186.2	10386.7
sd	221.76	1134.38
min	6969.8	7865.0
max	7610.4	12016.0
% RDA % RDA		
x	85.6	98.9
sd	2.64	10.80
min	82.9	74.9
max	90.6	115.4
PROTEINS (% kJ) PROTEINI (% kJ)		
x	14.2	20.3
sd	1.54	3.69
min	11.9	14.4
max	15.8	26.7
FATS (% kJ) MASTI (% kJ)		
x	27.3	41.9
sd	6.82	4.63
min	18.9	36.5
max	38.2	51.2
CARBOHYDRATES (% kJ) UGLJIKOHIDRATI (% kJ)		
x	58.5	37.8
sd	7.75	4.23
min	46.0	29.1
max	67.8	43.7

In hospital diets children get the highest part of energy, protein, calcium and phosphorus intake from milk, yogurt, puding and ice-cream. Pregnant women had in their diets yogurt, milk and cheese (Trapist).

It is important to emphasise the role of calcium in these particular groups, because the growth and development take place in both categories. From results we can see (Tables 3. and 4.) that almost one half of total calcium intake is from milk and dairy products. We can also see that total calcium daily intake in both categories is too low (Table 5.). In general there is a low energy portion (Figure 1.) and only 65,9% of RDA in milk and dairy products in whole-day meal structure for hospitalised pregnant women.

Table 2: Frequency of serving different dairy products in hospital diets for children and pregnant women without metabolic diseases
Tablica 2: Učestalost upotrebe različitih mliječnih proizvoda u bolničkoj prehrani djece i trudnica bez metaboličkih smetnji

FREQUENCY (servings per week) UČESTALOST (serviranja tjedno)	Milk Mlijeko	Yogurt Jogurt	Fresh cheese Svježi sir	Semihard cheese Polutvrdi sir	Ice-cream Sladoled	Puding Puding
CHILDREN Djeca	8	2	1	-	3	3
PREGNANT WOMEN Trudnice	4.5	5.5	-	1.5	-	-

Figure 1: Energetic portion of foods in whole-day meal structure (% recommendation)
Slika 1: Energetski udjel namirnica u strukturi cjelodnevnog obroka (% preporuka)

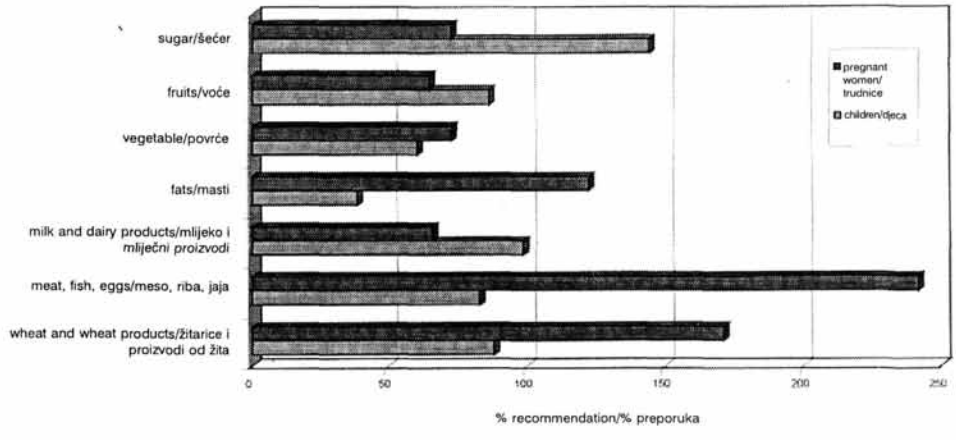

Table 3: Energy, protein, calcium and phosphorus daily intakes (%) from different dairy products in whole-day meals in hospital diets for children and pregnant women without metabolic diseases

Tablica 3: Prosječni dnevni unos (%) energije, proteina, kalcija i fosfora ostvaren iz različitih vrsta mliječnih proizvoda u bolničkoj prehrani djece i trudnica bez metaboličkih smetnji

PARAMETERS Parametar	CHILDREN Djeca	PREGNANT WOMEN Trudnice
MILK/Mlijeko		
Energy/Energija	8.6	3.9
Proteins/Proteini	13.2	4.2
Ca	43.4	20.7
P	26.8	16.2
YOGURT/Jogurt		
Energy/Energija	2.1	3.7
Proteins/Proteini	2.8	3.5
Ca	10.1	18.9
P	6.3	14.8
PUDING/Puding		
Energy/Energija	9.0	
Proteins/Proteini	2.1	-
Ca	1.4	
P	5.1	
ICE-CREAM/Sladoled		
Energy/Energija	5.2	
Proteins/Proteini	3.4	-
Ca	10.7	
P	6.7	
CHEESE (Trapist)/Sir		
Energy/Energija		1.4
Proteins/Proteini	-	2.7
Ca		11.0
P		6.0

Failure to meet calcium requirements in these categories can impede the achivement of maximal skeletal growth and bone mineralization, increasing the risk of developing osteoporosis later in life (Guidelines, 1996; Matkovic, 1993).

Todey's recommendations for calcium (800 mg per day for children, 1200 mg per day for pregnant women) are still low, and will be changed in higher values in future RDAs.

Table 4: The average requirements for the energy, protein, calcium and phosphorus intake from milk and dairy products in hospital diets for children and pregnant women without metabolic diseases (% RDA)

Tablica 4: Prosječno zadovoljenje potreba na energiji, proteinima, kalciju i fosforu iz skupine namirnica: mlijeko i mliječni proizvodi u bolničkoj prehrani djece i trudnica bez metaboličkih smetnji (% RDA)

PARAMETERS Parametar	CHILDREN Djeca	PREGNANT WOMEN Trudnice
Energy intake/Unos energije	16.9	13.0
Protein intake/Unos proteina	46.4	45.0
Ca intake/Unos Ca	51.3	35.3
P intake/Unos P	29.6	32.7

Table 5: Minerals and vitamins content in whole-day meals in hospital diets for children and pregnant women without metabolic diseases

Tablica 5: Udjel minerala i vitamina u cjelodnevnim obrocima u bolničkoj prehrani djece i trudnica bez metaboličkih smetnji

	MINERALS Minerali (mg)			VITAMINS Vitamini (mg)				
	Ca	P	Fe	A (ij)	B_1	B_2	Niacin	C
Children Djeca								
x	626.3	792.2	10.5	2550.0	0.9	1.5	10.3	60.6
min	348.4	575.8	6.6	260.0	0.4	1.0	4.9	15.2
max	1405.0	1272.7	18.9	10450.0	1.5	3.0	16.9	122.5
sd	354.22	255.10	4.20	3549.55	0.34	0.72	4.16	39.89
% RDA	78.3	99.0	104.6	329.0	75.0	104.3	64.6	134.7
Pregnant women Trudnice								
x	836.6	707.6	53.0	6141.1	2.0	2.2	35.7	124.9
min	401.3	294.8	13.4	2190.8	1.0	1.4	15.3	61.1
max	1279.6	1274.4	146.3	12311.3	8.9	3.4	74.2	221.4
sd	252.56	260.30	50.02	2865.96	1.94	0.56	18.82	50.33
% RDA	69.7	59.0	176.7	767.6	132.0	134.4	210.0	178.4

It is obvious that increasing the portion of milk and dairy products in hospital nutrition of children and pregnant women is necesary and very important. At this point it is important to shess that this investigation did not include an extra food that patients take by themselfs (and almost every patient do that) which can affect hospital nutrition.

Conclusion

Energy intake in diets designed for hospitalised children and pregnant women should be increased.

Energy values of proteins, fats and carbohydrates in meals for pregnant women should be balanced.

The most consummated dairy products in hospital nutrition for pregnant women are milk and yogurt, and for children are milk, pudding and ice-cream.

The portion of milk and dairy products, as very important sources of energy, proteins, calcium and phosphorus in hospital diets for children and pregnant women, should be increased in whole-day meals' structure.

MLIJEKO I MLIJEČNI PROIZVODI U BOLNIČKIM DIJETAMA NAMIJENJENIM DJECI I TRUDNICAMA BEZ METABOLIČKIH SMETNJI

Sažetak

Svrha rada je bila odrediti udjel mlijeka i mliječnih proizvoda u bolničkoj prehrani djece i trudnica zbog posebne važnosti koje ova skupina namirnica ima za ovu populaciju.

Iz tog razloga su analizirani bolnički obroci pripremani isključivo za djecu odnosno trudnice koji nisu bolovali od metaboličkih smetnji. Rezultati su obrađeni matematički i statistički, te uspoređeni s važećim preporukama.

Rezultati pokazuju da iako su mlijeko i mliječni proizvodi u bolničkoj prehrani djece i trudnica vrlo važan izvor energije, proteina, kalcija i fosfora, njihov je energetski udjel u strukturi cjelodnevnih obroka niži od preporučenog, pa bi taj udio trebao biti povećan.

U obrocima trudnica najprisutniji su mlijeko i jogurt, dok su kod djece uz mlijeko najzastupljeniji puding i sladoled.

Riječi natuknice: mlijeko, mliječni proizvodi, bolnička prehrana, djeca, trudnice.

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