Relation between milk consumption and ethnicity, economic status and parent's education level among primary school children in the north of Iran

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Abstract

Objective: The main aim of this study was to evaluate milk consumption status and interest in milk among northern Iranian primary school children in 2010.

Method: This was a descriptive cross-sectional study performed in 7430 students (3935 male) from 112 schools in urban and rural areas. The schools and students were chosen by cluster and stratified sampling. Data was collected for all samples through interview.

Results: Milk consumption was present in 62.7% of students (female 60.7%, male 64.5%) and in Turkman ethnic groups (66.0%) was significantly more than in other ethnic groups such as Fars-native (61.4%) and Sisstanish ethnic group (58.2%) (P=0.001). The odds ratio estimate for milk consumption was 1.85 [95% CI: 1.59, 2.16] for good economic group compared to poor economic group; 1.17 [95% CI:1.05-1.31] for students whose mothers had 1-12 years schooling compare to students whose mother were illiterate; 1.31 [95% CI:1.09-1.08] for students whose father were college educated compared to students whose fathers were illiterate. The odds ratio estimate for interest in milk was 0.84 [95% CI: 0.73, 0.99] for good economic group compared to poor economic group; 0.88 [95% CI: 0.79-0.99] for students whose mothers had 1-12 years schooling compared to students whose mothers were illiterate.

Conclusions: Milk consumption was shown among 63% of students and was significantly more in boys than in girls, in urban than in rural areas and in Turkman ethnic groups (66%) than in other ethnic groups. High interest in milk was shown among 66% of students.

(Key word: Milk; school; children; race; Iran)

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Introduction

Milk is the best source of nine essential nutrients that children need for good health, including calcium, protein, potassium, phosphorous, vitamins A, D and B12, riboflavin and niacin[1]. At around 12 years of age children whose mothers received calcium supplementation during pregnancy had a significant reduction in dental caries[2]. Garry[3] reported that only 10% of girls aged 9-17 year ingest calcium according to recommended daily allowances.

Milk consumption decreased in students when they are exposed to sweet beverages and other low health foods[4]. Maternal knowledge and training of them about milk benefits can be lead to more consumption by the students[5]. Some milk consumption related factors are age, parents' education, race, income, gender, personality and environment[5-9].

Of 1,600,000 populations in the Golestan province (north of Iran), 43.9% and 56.1% are living in urban and rural areas respectively. Agriculture is the main job in rural areas and different ethnic groups such as Fars-native, Turkman and Sisstani are living in this region[10].

The main aim of this study was to evaluate milk consumption status and interest in milk among northern Iranian primary school children in 2010.

Method

This was a descriptive and cross-sectional study which was carried out on 7,430 primary school children (3,935 boys, 3495 girls) from 112 schools of urban and rural areas in northern Iran. The schools and students were chosen by cluster and stratified sampling. For all children a questionnaire was filled which contained questions on the milk consumption rate, interest rate in milk and socio-economic condition of school children. The different items studied in this investigation were: gender, ethnicity and parents' education.

The ethnic groups in this study were divided into four: 1) Fars-native: The natural inhabitants of this province, which they are recognized with same name

in the society 2) Turkman: The inter marriage of this ethnic group with other ethnic groups was rare; therefore this ethnic group can be recognized as a pure race. 3) Sisstanish ethnic group: This ethnic group immigrated from Sisstan and Bluchestan province from the east of Iran far earlier. 4) Others.

Economic status: The economic ranking of the families in this study was assessed on the basis of 12 items and principles. On the basis of those 12 items the children's family was divided as 1) good, 2) intermediate and 3) poor.

Parents' educational level: The educational level was divided into 3 groups: 1) Illiterate: People who could neither read nor write. 2) People having 1-12 year education at schools 3) People with university education.

Milk consumption: Milk or its exchanges that is consumed at breakfast by student.

SPSS 16.0 software was used for statistical data analysis. Chi-2 test and logistic regression were used for analysis and P. value under 0.05 was considered significant.

This protocol was approved by the ethics panel of Golestan University of Medical Sciences and consent document has been kept by subject. Unwilling subjects were excluded from this study

Results

Milk consumption and the interest of school children in it are presented in table 1.

Table 1: *Comparison of interest in milk and milk consumption based on gender, location area and ethnicity in primary school children.*

Characters		N	Interest in milk			P.value *	Milk consumption		P.value
			Low	Moderate	High		No	Yes	
Gender	Male	3935	474 (12.0)	819 (20.8)	2642 (67.1)	0.004	1397 (35.5)	2538 (64.5)	0.001
	Female	3495	557 (15.9)	701 (20.1)	2237 (64.0)		1373 (39.3)	2123 (60.7)	
Location area	Urban	3656	469 (12.8)	814 (22.3)	2373 (64.9)	0.174	1276 (34.9)	2380 (65.1)	0.001
	Rural	3774	562 (14.9)	706 (18.7)	2506 (66.4)		1493 (39.6)	2281 (60.4)	
Ethnicity **, ***	Fars-native	2895	397 (13.7)	658 (22.7)	1840 (63.6)	0.001	1118 (38.6)	1777 (61.4)	0.001
	Turkman	2845	362 (12.7)	538 (18.9)	1945 (68.4)		967 (34.0)	1878 (66.0)	
	Sisstani	1333	225 (16.9)	252 (18.9)	856 (64.2)		557 (41.8)	776 (58.2)	
	Others	357	47 (13.2)	72 (20.2)	238 (66.6)		127 (35.6)	230 (64.4)	
Total		7430	1031 (13.8)	1520 (20.5)	4879 (65.7)		2769 (37.3)	4661 (62.7)	

*Chi-2 test between groups based on high interest in milk. **Chi-2 test based on high interest in milk obtained between Fars-native and Turkman (P=0.001), between Turkman and Sisstani (P=0.007) and between Fars-native and Sisstani (P=0.050). ***Chi-2 test based on milk consumption obtained between Fars-native and Turkman (P=0.004), between Turkman and Sisstani (P=0.001) and between Fars-native and Sisstani (P=0.047).*

The interest in milk rated as high, medium and low were 65.7%, 20.5% and 13.9%, respectively and it was significantly more in boys than girls (P=0.004). High interest in milk in Turkman ethnic group was significantly more than in Fars-native (P=0.007) and more than in Sisstanish ethnic group (P=0.001). As a whole, 62.7% of students consumed milk at breakfast and this was significantly more in boys more than girls (P=0.001) and significantly more in urban than

rural areas (P=0.001). Milk consumption rate was significantly more in Turkman ethnic group than in Fars-native (P=0.004) and significantly more than in Sisstanish ethnic group (P=0.001). Further, it was significantly more in Fars-native than in Sisstanish ethnic group (P=0.047).

Multiple logistic regression was used to identify variables that contribute to consumption of milk at

breakfast. The odds ratio estimate was 1.53 [95% CI: 1.34, 1.74] for moderate economic group compared to poor economic group; 1.85 [95% CI: 1.59, 2.16] for good economic group compared to poor economic group; 1.17 [95% CI:1.05-1.31] for students whose mother had 1-12 years schooling compared to students whose mother was illiterate; 1.31 [95% CI:1.09-1.08] for students whose father was college educated compared to students whose father was illiterate. Differences were not significant in students whose mothers were college educated and fathers with 1-12 years schooling compared to illiterate groups (Table2).

Table 2: *Odds ratio for milk consumption among primary school children in the north of Iran*

Risk factor	Level	OR (95% CI)	P. value
Economic status	Poor	(Ref)	
	Moderate	1.530(1.343-1.743)	0.001
	Good	1.850(1.587-2.156)	0.001
Maternal Educational level	Illiterate	(Ref)	0.0001
	1-12 years schooling	1.173(1.051-1.308)	0.004
	College	1.116(0.915-1.361)	0.279
Father Educational level	Illiterate	(Ref)	
	1-12 years schooling	1.141(0.981-1.318)	0.074
	College	1.313(1.089-1.584)	0.004

Multiple logistic regression was used to identify variables that contributed to interest in milk consumption. The odds ratio estimate was 1.25 [95% CI: 1.11, 1.40] for moderate economic group compared to poor economic group; 0.84 [95% CI: 0.73, 0.99] for good economic group compared to poor economic group; 0.88 [95% CI:0.79-0.99] for students whose mothers had 1-12 years schooling compared to students whose mother were illiterate; 0.80 [95% CI:0.66-0.98] for students whose mothers were college educated compared to students whose mothers were illiterate; 0.80[95% CI:0.66-0.94] for students whose fathers were college educated compared to students whose fathers were illiterate. Difference was not significant between 1-12 years schooling fathers and illiterate fathers (Table 3)

Table 3: *Odds ratio for interest in milk among primary school children in the north of Iran*

Risk factor	Level	OR (95% CI)	P. value
Economic status	Poor	(Ref)	
	Moderate	1.248(1.111-1.401)	0.0001
	Good	0.853(0.732-0.994)	0.041
Maternal Educational level	Illiterate	(Ref)	
	1-12 years schooling	0.882(0.787-0.987)	0.029
	College	0.804(0.658-0.983)	0.033
Father Educational level	Illiterate	(Ref)	
	1-12 years schooling	0.876(0.753-1.020)	0.88
	College	0.795(0.657-0.963)	0.019

Discussion

In Tehran (centre of Iran)[11] the rate of milk consumption at breakfast was 42%. In Sari (north of Iran)[12] and Birjand (Southeast of Iran)[7] the lack of milk consumption at breakfast was 5.5% and 8.2% of school children, respectively. In Syria[13] more than 35% of students consumed milk at least once a week and in Warshow[14] the proportion of milk in breakfast meal was very low. The consumption of milk in the north of Iran and in the other part of Iran is similar.

In the present study, milk consumption in students was associated with high economic families or with high educated parents whereas interest in milk in students with illiterate parents and in families with moderate economic status was more than in other groups.

Mother's education more than fathers' education has effects on children's nutritional status[12,15] and income has a positive relationship with milk consumption[16]. Association between family income and their children's nutritional status has been shown in a study in Bangladesh[5]. A barrier to milk consumption

that was more common was limited expectation within families for drinking milk[3]. As in other studies, we found the important role of family social level on the students' milk consumption.

Similar to the other studies[7,16] we found the milk consumption in boys more than girls. Beverage drinking is strongly related to gender[8] and psychological factors may reduce milk consumption in girls.

Veghari[17,18] in northern Iran has shown the difference in nutritional status among three ethnic groups with a better situation in Turkman ethnic group.

Evans[16] found low differences of milk consumption between African-American and American ethnic groups and Soh[19] believed that psycho-pathologic factors more than ethnicity related to interest in foods and Gordan[20] investigated the association between nutritional status and socio-economic factors in white and black people. Reaction to milk in Hispanic and white girls in USA was different[3].

In our study, increasing milk consumption in urban area is in line with other studies[16]. These studies reported that booming of economic status and urbanization resulted in improvement of nutritional status and quality of food intake. Lack of awareness and education about food behaviour are the barriers of extension of good habits in students[21].

Conclusions

- Milk consumption was present among 63% of students and was significantly more in boys than in girls, in urban than in rural areas and in Turkman ethnic groups than in other ethnic groups.

- High interest in milk was shown by 66% of students and was significantly more in boys than in girls and in Turkman ethnic groups (66%) than in other ethnic groups..

Acknowledgments

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