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Original Article

Breakfast Consumption Amongst School Children in Northern Iran

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Abstract

Introduction: Eating breakfast has an important role for growing and educational support in students. The aims of this study were to evaluate whether skipping breakfast had any effect among primary school children in the north of Iran. **Materials and Methods:** This is a descriptive study performed on 7426 students (3786=male and 3640=female) from 112 schools in urban and rural areas. The schools and students were chosen by cluster and stratify sampling. Data were collected by questioner for all samples through interview. **Results:** Skipping breakfast were significant among 9.3% of students (female= 9.9% and male=6.7%) and in Turkman ethnic group (6.0%) were significantly less (p=0.001) than other ethnic groups such as Fars (9.6%) and Sistani (9.4%). There were statistically significant differences between gender and type of school, separately (p=0.001). The most important reasons for missing breakfast were low appetite (70.1%), non-flavored foods (11.8%), inattention of mothers (5.2%) and others factors (13%). **Conclusion:** Our findings indicated that one child out of 11 children goes to school without taking breakfast. On the basis of children's statements, lack of appetite, and uninteresting food materials, were among the most important factors for skipping breakfast, respectively. Also, the higher educational level of parents, good economic condition and the father being unemployed were among the most important risk factors for skipping breakfast by school children, in this region.

Key words: Breakfast, Students, Ethnicity, Iran.

Introduction

Nutrition plays an important role in health and successful education of school children. Malnutrition is accompanied with Carelessness and reducing thoughts and educational progress among school children[1]. In addition to that the social-economic development in the society is indirectly related with nutritional status of the community. The specific nutritional programs within the school and work place have an important value on human well being and resistance to infections. The nutritional status should be considered as an important subject in any society, thus the concept of nutrition should be implemented in all national development programs[2].

Breakfast is among the principle food which in early morning satisfies the nutritional needs and increases mental work load ability. Improper nutrition especially in early life causes the reduction of mental capacity. A good nutritional regiment will show its results within mental function of school children specially within the classrooms[3,4].

Breakfast is considered to be an important daily food meal because after overnight fasting and the hunger due to that, the body requires nutritional elements, so omitting breakfast can cause deficiency of nutrient substances which is required by the brain, with subsequent reduction, in mental function[5,6]. Various studies indicated that the omitting breakfast is common and increasing among children[7,8].

Other studies indicated that the snack within the main meals, at schools, can play an important positive role on the nutritional status of school children and the scale of educational progress[9]. Although there is no assessment on the number of school children going to school or being hungry on short period is common, it can disrupt various aspects of educational efforts in reaching its goal.

Golestan province which located in northern Iran with population of 1,600,000 is located within the hill side of Alborze mountains[10]. There are 159442 school children at the primary level in 2149 schools. In this province various people reside from different ethnic groups predominantly Fars (native), Turkman, Sistani and Bluch.

Up till now there are no studies on the status of breakfast consumption by primary school children in Golestan province. Therefore this study was carried with the aim of investigating breakfast consumption among the primary school children this province. Some related factors such as ethnicity, parent's educational level, parent's job, the place of residence, economic status and gender were taken into consideration. The findings of this study may assist the responsible authorities in resolving the nutritional problems, in this area and pave the way for up-grading the progress of educational activities.

Materials and Methods

This is a descriptive study carried out on 7426 primary school children (3786 boys and 3640 girls) from 112 school of urban and villages in the north of Iran. The schools and students were chosen by cluster and random sampling. The estimated sample size at the national level was based on the stratification of respondents by urban/rural, gender and ethnicity after they were recruited from 14 district areas. For all children a questionnaire was filled which contained questions on the breakfast consumption and social-economical condition of school children. The other factors studied in this investigation were: gender, ethnicity, economical condition of the family, parent's education and parent's job.

The ethnic groups in this study were divided into four groups:

1. Fars (native): The natural inhabitant of this province, who were recognized with same name in the society.
2. Turkman: The inter marriage of this ethnic group with other ethnic group were rare therefore this ethnic group is recognized as pure race.
3. Sistani and Bluch ethnic group: This ethnic group immigrated from Sistan and Bluchestan province from the east of Iran.

The schools: All the schools in this study were under the supervision of Iranian Ministry of Education, and followed the educational activities under the guide-lines and rules of the ministry.

Skipping Breakfast: The students, who did not take any kind of food before going to school.

Economic status: The economic ranking of the families in this study, were assessed on the base of 12 items and principles. On the bases of those 12 items the families were divided as; good, intermediate and weak.

Parent's educational level: The educational levels of children were 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.

Father's job: It was divided into two groups:

1. Unemployed: Those that did not have a defined occupation.
2. Employed: People earning money on the basis of occupation and living on that income.

Mother's job: They were divided into two groups:

1. Housewife: Mothers who did indoor work of the family household.
2. Non-housewife: mothers having jobs outside the family house.

Results

The breakfast consumption of school children and the effective social-economic factors are presented as in Table I. In this study 51.1% and 48.9% were boys and girls respectively and showed that more boys than girls ate breakfast (ratio of 2.2%). There were 48.3% from urban and 51.7% from village areas. On average, 91.7% of school children ate breakfast before going to school. Eating breakfast among children of Turkman ethnic group was significantly higher, compared to other ethnic groups and Fars ethnic group children had lower breakfast consumption. These difference among the ethnic group was statically significant (p=0.001). The rate of taking breakfast was lower among the school children from a family of good economic background, which meat 4.7% lower when compared with children of economically weak condition, this differences was also statistically significant (p=0.001). Parent's literacy level showed to have a reverse correlation with children taking breakfast, and mother's literacy played a more effective role in this regard. More children with illiterate mother taking breakfast compared to mothers having university education, the difference was 14% which was statistically significant (p=0.001). Family size was also a factor in this study, those children belonging to family having ≥ 6 persons per household, compared to the family with 3 persons per household showed to have taken more breakfast with ratio of 13.4%, this difference was also statistically was significant (p=0.001).

The rate of breakfast consumption among children of house wife mothers was higher compared to mothers who were not, and was statistically significant (p=0.001). Children with employed fathers showed to have taken breakfast (16.9%) compared with those having unemployed fathers. This differences also was statistically significant (p=0.001).

The reason of skipping breakfast by children is shown as in Table 2. The demographic variances effective on them have also been compared (Table 2). As whole the findings of this study indicated that, low appetite, uninteresting food in breakfast, the absence of favorite food were 70.1%, 11.7%, 5.2% and 13.0% respectively. These are the key elements effecting skipping breakfast by children.

There were no statistically significant differences among two genders in this regard, but the absence of appetite among girls was the main reason for not having breakfast. The absence of favorite food in breakfast meal and not having appetite were the factors causing to take less breakfast, for Sistani and Fars ethnic group respectively. The effective factors skipping breakfast among children of different class grade at schools, showed statistical difference (p=0.045). The mothers attention played a significant role for children taking breakfast. Children with weaker economic status (14.9%) more than children with good economic condition showed to have taken breakfast and they also declared that the reason they did not take their breakfast, was due to the absence of desired food substances on the breakfast meal. At the same time low appetite in the same group was 14.7% lower. The difference among these economic groups was statistically meaningful (p=0.001). The level of parent's literary status was one of the effective factors in skipping breakfast with a statistical meaningful correlation. School children with illiterate parents, the absence of desired food on the breakfast meal and among the children of parents with university education and low appetite of the children, were among the important factors considered for skipping breakfast.

The factors of literacy of parents with statistically direct correlation played a role in breakfast consumption by school children (p=0.006). Omitting the interested food on the breakfast meal showed as to why children do not take breakfast, but this difference was not statistically significant.

Children with unemployed father, with scale of 30.9% stated that the absence of desired food on the breakfast meal is the main reason why they do not take breakfast. At the same time, not having appetite in this group was less than the other group. The difference due to occupation was also significant (p=0.001). On the other hand, house wife mothers who do not let the children take food that they are interested, and the difference between housewife mother and non-house wife mother was statistically significant (p=0.037).

Multiple logistic regressions were used to identify variables that contribute to consumption of breakfast. The odds ratio estimate was 1.20 [95% CI: 1.33, 1.06] for males as compared to females; 2.20 [95% CI: 1.55, 3.13] for Turkman ethnic group compared to other ethnic groups; 1.55[95% CI: 1.24,1.93] for poor economic group compared to good economic group; 1.72[95% CI: 1.21, 2.44] for illiterate fathers compared to college educated fathers; 1.90[95% CI:1.37, 2.64] for illiterate mothers compared to college educated mothers; 2.19[95% CI:1.55,3.10] for employed fathers as compared to unemployed fathers. Mother's job was not significantly related to consumption of breakfast and is as shown in Table 3.

Table 1: Partial prevalence of breakfast consumption among primary school children in north Iran.

Characteristics		n=7426	Breakfast Consumption n (%)	Skipping Breakfast n (%)	p value
Sex	Male	3786	3532(93.3)	264(6.7)	0.001
	Female	3640	3280(90.1)	360(9.9)	
Ethnicity	Fars (native)	4047	2756(90.4)	294(9.6)	0.001
	Turkman	2804	2635(94.0)	169(6.0)	
	Sistani	1244	1139(91.6)	105(8.4)	
	Others	328	282(86.0)	46(4.0)	
Economic Status	Poor	2073	1915(92.4)	158(7.6)	0.001
	Moderates	3433	3216(93.7)	217(6.3)	
	Good	1891	1658(87.7)	233(6.3)	
Father's Education	Illiterates	834	789(96.4)	45(5.6)	0.008
	0-12 Schooling	5246	4807(91.6)	439(8.4)	
	College	1001	912(91.1)	89(8.9)	
Mother's Education	Illeterates	1734	1636(94.3)	98(5.7)	0.001
	0-12 Schooling	4979	4597(92.3)	382(7.7)	
	College	548	437(79.7)	111(20.3)	
Father's Job	Unemployment	274	207(75.5)	67(24.5)	0.001
	Employment	7152	6605(92.4)	547(7.6)	
Mother's Job	Housewife	6762	6228(92.1)	534(7.9)	0.001
	Non Housewife	664	584(88.0)	80(12.0)	
Total		**7426**	**6812()**	**614(8.3)**	

Table 2: The comparison of skipping breakfast among the primary school children in the north of Iran.

Characteristics		N	Reasons Skipping Breakfast (%)				p value
			No appetite	Absence of favorite food	No attention by mother	Others	
Sex	Male	254	69.2	11.4	5.8	13.6	0.530
	Female	360	71.2	12.3	4.5	12.0	
Ethnicity	Fars (native)	294	73.9	11.0	4.2	10.9	0.006
	Turkman	169	68.3	9.7	6.2	15.8	
	Sistani	105	61.8	18.0	6.9	13.3	
	Others	46	68.5	11.0	4.1	16.4	
Economic Status	Poor	158	60.3	19.5	8.3	11.8	0.001
	Moderates	217	73.1	11.1	3.2	12.6	
	Good	233	75.1	4.6	5.4	14.9	
Father's Education	Illiterates	45	63.7	19.2	8.2	8.9	0.001
	0-12 Schooling	439	70.1	12.2	4.6	13.1	
	College	89	76.7	5.6	7.3	14.0	
Mother's Education	Illiterates	98	65.4	14.4	7.2	12.9	0.006
	0-12 Schooling	382	71.8	11.9	4.4	11.9	
	College	111	71.6	3.4	5.2	19.8	
Father's Job	Unemployment	67	38.2	41.2	4.4	16.2	0.001
	Employment	547	71.7	10.3	5.2	12.8	
Mother's Job	Housewife	534	70.0	12.5	5.1	12.4	0.037
	Non Housewife	80	70.2	6.1	6.1	17.6	
Total		**614**	**70.1**	**11.7**	**5.2**	**13.0**	

Table 3: Odds ratio for breakfast consumption among primary school children in the north of Iran. Confidential Interval (95%)

Variable		p value	Exp (Lower – Upper)
Gender	Female	-	(1)
	Male	0.007	1.204(1.326-1.060)
Ethnic group	Others	-	(1)
	Fars (native)	0.065	1.377(0.980-1.934)
	Turkman	0.001	2.200(1.548-3.126)
	Sisstani	0.035	1.489(1.029-2.155)
Economic status	Good	-	(1)
	Moderate	0.480	1.093(0.853-1.401)
	Poor	0.001	1.547(1.240-1.930)
Father Education	College	-	(1)
	Illiterate	0.003	1.719(1.209-2.444)
	0-12 y Schooling	0.105	1.215(0.960-1.537)
Maternal Education	College	-	(1)
	Illiterate	0.001	1.901(1.367-2.642)
	0-12 y Schooling	0.049	1.336(1.001-1.783)
Father Job	Unemployment	-	(1)
	Employment	0.001	2.190(1.552-3.091)
Mother Job	Housewife	-	(1)
	Non Housewife	0.160	0.820(0.622-1.082)

Discussion

It is obvious, that having breakfast, is effective in helping bring up the education level of school children but the concept of breakfast consumption among school children is a complex subject and is related to many factors. Various social-economical factors effect the rate of breakfast consumption and its related factors in various societies.

The rate of breakfast consumption and its related factors can be a matter of discussion in the north of Iran due to different ethnicity and cultural variations. On the bases of findings of this study 8.3% of school children from the north of Iran, omit the breakfast from daily diet. Other studies by Elmi[11] and Soheili Azad[12] on school children of the capital city Tehran showed that, 6.4% and 6.9% of them, did not take breakfast before leaving for school. The study by Soheili Azad[13] in Langrood (a city in north of Iran) indicated that 8% of school children did not have breakfast. Study by Gross[14] shown that the 20% of school children from Maryland (USA) go to school without having breakfast. Other studies demonstrated that 2-17% of school children do not take breakfast [15,16]. In another study it was reported that 15-19% do not take breakfast[17]. The study by Affenito[18] on the girls of 9-19 years demonstrated that up to 50% of them did not consume breakfast. Siega-Riz[7] showed that the rate of having breakfast reduced from 84% to 75% and from 90% to 65% among girls and boys respectively.

There are no significant difference between the findings of this study with other studies in Iran, but in comparison to other countries the breakfast consumption of Iranian northern school children showed to be better. Socio-economic factors are effective in the rate of breakfast consumption in different societies. In spite of reports that indicated more boys take breakfast than girls[19,20], other studies contradicted the later reports[12,7]. In this study, our findings showed that more boys than girls had breakfast.

Although family factors such as parent's occupation, economical status, parents level of education, and as whole behavior of parents, was effective in children nutritional status, the effect of these factors are not equal among all children and ages. The study by Indrei in Romania[21] showed that there was a relation between nutritional habit of the family and economic condition to the scale of breakfast consumption. Other study in China by Shi[22] indicated that socio-economic factors had an effective role on breakfast consumption. The study by Theresa[23] on American school children indicated that fewer children had breakfast. Study by Siega[18] in USA showed that the reason for reduced breakfast consumption, during 1965-1991 was due to behavioral change. Various studies indicated that the family atmosphere and environment also play an effective role in children's nutritional habits[7,15,24,25,26]. Natalie in a

review article concluded that admiration of children by parents, play a positive role in improvement of children nutritional behavior[27]. Other studies found a role for mother for improper[28] and proper[29] nutritional habits. Study by Devaney indicated that children with employed mothers are less interested to have breakfast[30]. The effects of economic condition on breakfast consumption are varied among different societies. Study by Michael showed that, the poor economic condition and the reduction of breakfast consumption has a positive inter relation among teenagers, but there was no relation between the above variables and the rate of breakfast consumption among young subjects[19]. The study by Hanson demonstrated that the children with a poor family have an improper nutritional diet when compared to families with good economical conditions[31]. Study by West[32,33] on teenagers of 13-19 years about the breakfast consumption indicted that these children spend a shorter time with the family, and that the school environment and fellow class mates also play a more effective role compared to socio-economical state of the family. Therefore, in this latter study the negative relation between social-economical statuses with breakfast consumption has been demonstrated. Unemployment and parent's educational level did not have a relation with the rate of breakfast consumption by children. Franko[34] in a ten-year study showed that breakfast consumption in family is accompanied with some changes with the living style girls.

In this study there was a negative correlation between the rate of breakfast consumptions and parent's level of education and it was seen more for mothers than fathers. The breakfast consumption among school children with good economical condition was lower. The breakfast consumption was higher among populated households. Although mother's occupation did not play an effective role in breakfast consumption by children but the rate of having breakfast among children with unemployed fathers was significantly lower. Other studies did not find any relation between the parent's educational level and their occupation with the rate of breakfast consumption of children[32,33].

In comparison with other studies, the effective role of socio-demographic factors of Iranian households on the rate of breakfast consumption was varied. Although the level of education and income of family play an important role in proper nutritional status among school children but in the north of Iran it was not related with the improvement of consuming breakfast. Further studies in awareness and parents concern about the breakfast habits of children in northern Iran seemed to be necessary.

The comparison of breakfast consumption among ethnic groups in various part of the world showed statistically significant differences. The study on Afro-Amrican girls in USA indicated that the rate of breakfast consumption in this group are less than white girls, and with increased age, this difference became wider. Other studies[18,20,35] on teenagers in USA showed similar results. Some studies[30,36,38] indicated that the rate of breakfast consumption in whites were more than Blacks. The comparison of breakfast consumption, by school children among three defined ethnic groups in our study was statistically significant showing that Turkmans had the highest rate of breakfast consumption as compared to other groups. Although the background reasons for these findings require further studies in future but with regard to culture of Turkman population and the extra attention given to the nutrition of children lowered their nutritional problems[39,40]. The higher rate of breakfast consumption among children of this ethnic group was explainable.

The study carried out by Veghari[41,42] indicated that the poor families in this region, have a low nutritional status. In large families, the rate of taking breakfast is higher but the mothers do not give the children the food that they like. Even children from families with a good economic condition and the families with higher educational level do not consume breakfast because they have a low appetite. Therefore it can be concluded that the nutritional behaviors play an important role than the socio-economic condition of the family in skipping breakfast by school children. It can be stated that, families who are unaware about the importance of taking good nutrition in breakfast, not accompanying the children while taking breakfast and children consuming food material with a low nutrient levels can be some of the causative factors for not having breakfast by school children in this region.

Conclusion

In general our findings indicated that one child out of 11, in this region goes to school without taking breakfast. On the basis of statements by school children; lack appetite and food stuff that they are not interested in were among the most important factors for skipping breakfast. Also, the higher educational level of parents, good socio-economic condition and unemployed fathers were amongst the most important risk factors for skipping breakfast by school children in this region.

It is suggested that further studies on the quality of dietary intake by children are to be carried out, and the significance of the nutrient in the breakfast meal should be taught to parents of school children through the mass media communications.

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