Relationship between nutritional habits and school performance among primary school students in Asser Region

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Abstract

**Background:** Healthy nutrition is a necessary for people mental health, because of that nutritional habits effect on school performance. So, a high sugar intake, fat, and fast food meals have a strong relationship with low academic performance and lot of diseases like metabolic disease in other researches of pediatric age group. **Aim:** To assess nutritional habits and its relation with school performance among primary school students in Asser region, Saudi Arabia. **Methods:** A cross-sectional study was conducted in targeting parents of primary school children in Asser region. Data were collected using pre-structured online questionnaire. Questionnaire was available online using social media programs to be answered by students’ mothers. Residence was initial question to confirm residency at Asser region. **Results:** A total sample of 357 respondents with their children ages ranged from 6- to 18-year-old and 62.7% of their children were females. Exact 81% of the students had 3 meals daily and 88% had their breakfast before going to school. About 75% of the sampled mothers reported excellent grade for their student school performance. Also, significant association of school performance with breakfast intake and fast food was recorded. **Conclusions:** In conclusion, the study revealed that the students had an averaged eating habits regarding meals number specially breakfast and contents. Fast food was recorded among two thirds of the students which is negative finding. Also, school performance was very good and significantly associated with eating habits specially breakfast intake and fast food frequency.

Keywords: Eating behavior, nutritional habits, primary school students, scholastic achievement, school performance
sugar intake, fat, and fast food meals have a strong relationship with low academic performance and lot of diseases like metabolic disease in other researches of pediatric age group.\cite{7,8} Skipping of one main meal is common nowadays such as breakfast. A breakfast meal is very important and necessary for people cognition, learning and acquiring skills because it supplies them by many important micronutrients like (vitamins, glucose, etc) which play an important role in brain health and the quality of its power and functions.\cite{9}

The World Health Organization has formerly suggested that health experts be reinforced in taking an energetic part in encouraging strong nutritional activities and given that nutrition care. General practitioners (GPs) provide corresponding full health care to persons and families in their societies. GPs are therefore located in contact with people, and patients expect their physicians to provide them with health information.\cite{10,11}

This research aimed to study the nutritional habits and an academic performance level, we care about number of meals per a day, its pattern like skipping breakfast, and a frequency of fast food eating in primary school age in Asser region.

**Methodology**

A cross-sectional study was conducted in targeting parents of primary school children in Asser region. The study was conducted during the period from 2012 to 2016 A total number of 357 respondents were included. Data were collected using pre-structured online questionnaire. The questionnaire was constructed by researchers with the help of experts and midline literature review. The questionnaire consisted of four sections. First section had children socio-demographic data, medical data, and family data. Second section covered nutritional habits including breakfast intake, meals number and contents, fast food habits. Third section covered data regarding school performance, concentration and problem-solving abilities. Last section concerned with respondents suggestions to improve their children eating habits. Questionnaire was available online using social media programs to be answered by students’ mothers. Residence was initial question to confirm residency at Asser region.

**Data analysis**

After data were collected it was revised, coded and fed to statistical software IBM SPSS version 20. The given graphs were constructed using Microsoft excel software. All statistical analysis was done using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 was considered to be statistically significant. Frequency and percent were used to describe the frequency distribution of each category for different demographic, nutritional, and school performance data. Chi square/Mont Carlo exact test and Fishers exact test were used to test for the association between students’ nutritional habits and their school performance. Exact testes were used if there are small frequencies where chi square is invalid.

**Results**

A total sample of 357 respondents with their children ages ranged from 6- to 18-years and 62.7% of their children were females. About 43% of the children were the last in order while 26.9% were the first child. Exact of 94.4% of the children families had sufficient monthly income. About 61% of the students’ fathers were university graduated and also were 51.5% of their mothers. As for parents’ work, 88.8% of students’ fathers were working and 54.9% of their mothers. Mothers were the main care giver among 95.8% of the students. Parents were separated among 4.5% of the sampled families. Exact 27.7% of the students had family history of obesity 24.4% were previously hospitalized [Table 1].

Table 2 illustrates the dietary habits of the sampled students with regard to their mothers’ aspect. Exact 81% of the students had 3 meals daily and 88% had their breakfast before going to school. Also 82.4% of the students have snacks in between meals. About 96% of the students receive meals containing vital nutrients and 66.7% receive fruits and vegetables with meals. Exact 63.9% of the mothers reported that their students prefer having fast food but actually 34.5% of them receive fast food once weekly while about 6% receive it daily.

| Table 1: Bio-demographic data of sampled school children, Saudi Arabia |
|-----------------|-----|-----|
| Child bio-demographic data | No | % |
| Age in years | | |
| 6-9 | 262 | 73.4% |
| 10-14 | 95 | 26.6% |
| Gender | | |
| Male | 133 | 37.3% |
| Female | 224 | 62.7% |
| Child order | | |
| Last | 155 | 43.4% |
| Middle | 106 | 29.7% |
| First | 96 | 26.9% |
| Family income | | |
| Insufficient | 20 | 5.6% |
| Just sufficient | 284 | 79.6% |
| Sufficient | 53 | 14.8% |
| Mother education | | |
| Primary | 17 | 4.8% |
| Intermediate | 18 | 5.0% |
| Secondary | 104 | 29.1% |
| University or more | 218 | 61.1% |
| Father education | | |
| Primary | 12 | 3.4% |
| Intermediate | 29 | 8.1% |
| Secondary | 132 | 37.0% |
| University or more | 184 | 51.5% |
| Mother work | | |
| Not working | 161 | 45.1% |
| Working | 196 | 54.9% |
| Father work | | |
| Not working | 40 | 11.2% |
| Working | 317 | 88.8% |
| Child care giver | | |
| Father | 7 | 2.0% |
| Mother | 342 | 95.8% |
| Others | 8 | 2.2% |
| Family data | | |
| Separated parents | 16 | 4.5% |
| Previous hospitalization | 87 | 24.4% |
| Family history of obesity | 99 | 27.7% |
| Family history of underweight | 52 | 14.6% |
| Chronic diseases | 12 | 3.4% |
With regard to school performance [Table 3], 75.1% of the sampled mothers reported excellent grade for their student school performance. Excellent concentration ability was reported by 97.8% of the students’ mothers and excellent understanding ability was recorded for 98.3% of the students. Only 28% of the mothers reported that there is study difficulties for their students and 10.9% of them were noticed regarding poor performance of their students from their schools. Exact 9.5% of the students recorded school absenteeism due to food problems.

With regard to relation between dietary habits and school performance [Table 4], 77.1% of students who had their breakfast regularly recorded excellent school performance compared to 60.5% of those who did not with recorded statistical significance (P = 0.048). Also 79.3% of students who don’t have fast food recorded excellent school performance compared to 50% of those who receive fast food daily (P = 0.015). Having fruits and vegetables was associated with excellent performance among 77.7% of the students compared to 69.7% of those who did not (P = 0.063).

Finally, on asking mothers about their suggestion to improve their children dietary habits [Figure 1], using incentives and gifts was the most recorded suggestion (26.3%) followed with giving the student different meals (variation in given meals) (17.9%), avoid having fast food (16.8%) while school role in educating students health dietary habits was suggested by 6.7% of the mothers and 10.1% failed to provide any suggestions.

**Table 2: Dietary habits of sampled school children, Saudi Arabia**

| Dietary habits                        | No  | %    |
|---------------------------------------|-----|------|
| Have 3 meals regularly                | No  | 68   | 19.0% |
|                                      | Yes | 289  | 81.0% |
| Child has breakfast daily             | No  | 43   | 12.0% |
|                                      | Yes | 314  | 88.0% |
| Snacks between meals                  | No  | 63   | 17.6% |
|                                      | Yes | 294  | 82.4% |
| Food contains vital elements          | Yes | 164  | 45.9% |
|                                      | Sometimes | 184 | 51.5% |
|                                      | No  | 9    | 2.5%  |
| Child eats fruits and vegetables      | No  | 119  | 33.3% |
|                                      | Yes | 238  | 66.7% |
| Child prefer fast food to homemade food | No | 129  | 36.1% |
|                                      | Yes | 228  | 63.9% |
| Frequency of fast food/week           | Never | 150  | 42.0% |
|                                      | Once/week | 123 | 34.5% |
|                                      | 2-3/week | 63   | 17.6% |
|                                      | 4-6/week | 15   | 4.2%  |
|                                      | Daily | 6    | 1.7%  |

**Table 3: School performance of sampled school students, Saudi Arabia**

| School performance          | No  | %    |
|-----------------------------|-----|------|
| School performance          | Good | 25   | 7.0%  |
|                             | Very good | 64  | 17.9% |
|                             | Excellent | 268 | 75.1% |
| Concentration ability       | Poor | 8    | 2.2%  |
|                             | Excellent | 349 | 97.8% |
| Understanding ability       | Poor | 6    | 1.7%  |
|                             | Excellent | 351 | 98.3% |
| Have study difficulty       | No  | 257  | 72.0% |
|                             | Yes  | 100  | 28.0% |
| Noticed for poor performance | No  | 318  | 89.1% |
|                             | Yes  | 39   | 10.9% |
| Absenteeism due to food habits | No  | 323  | 90.5% |
|                             | Yes  | 34   | 9.5%  |

**Discussion**

The objectives of the study is to assess nutritional habits and its relation with school performance among primary school students in Aseer region, Saudi Arabia.

In our study we have observed that with regard to relation between dietary habits and school performance 77.1% of students who had their breakfast regularly recorded excellent school performance compared to 60.5% of those who did not with recorded statistical significance (P = 0.048). Our study also confirmed that the regular consumption of breakfast and frequent intake of fruits, vegetables, and milk contributed to high levels of school performance to varying degrees. Conversely any frequency of soft drink, instant noodle, fast food intake, and eating confections less than seven times a week negatively affected school performance. Numerous factors are known to affect the academic performance of students. Children with an increased number of damaging eating ways, they are on risk as their health and energy level are affected negatively. The results indicated that children who consumed a small breakfast (<150 Kcal) spent significantly more time on-task when a mid-morning snack was also eaten. This effect was not evident in children who consumed more energy at breakfast (151–230 Kcal and >230 Kcal). Correspondingly, children who consumed <150 Kcal at breakfast spent significantly more time off-task when no snack was eaten compared with children who consumed more energy at breakfast. This suggests a mid-morning snack is only beneficial for children who have skipped or eaten very little for breakfast and corrects the energy deficiency.

Online questionnaire as a method of data collection limits the statistical power as respondents are of special higher social class who are mostly educated which may affected the precision of results and conclusions. Thus, future research in a large variable of breakfast size with or without a mid-morning snack (Benton and Jarvis, 2007). The results indicated that children who consumed a small breakfast (<150 Kcal) spent significantly more time on-task when a mid-morning snack was also eaten. This effect was not evident in children who consumed more energy at breakfast (151–230 Kcal and >230 Kcal). Correspondingly, children who consumed <150 Kcal at breakfast spent significantly more time off-task when no snack was eaten compared with children who consumed more energy at breakfast. This suggests a mid-morning snack is only beneficial for children who have skipped or eaten very little for breakfast and corrects the energy deficiency.
Table 4: Relation between sampled students eating habits and their school performance

| Eating habits                        | School performance |  |   |   |   |
|-------------------------------------|--------------------|--|---|---|---|
|                                     | Good              | Very good | Excellent |
|                                     | No    | %    | No    | %    | No    | %    |
| Have 3 meals regularly              | No    | 7    | 10.3% | 12   | 17.6% | 49    | 72.1% | 0.495 |
|                                     | Yes   | 18   | 6.2%  | 52   | 18.0% | 219   | 75.8% |
| Child has breakfast daily           | No    | 5    | 11.6% | 12   | 27.9% | 26    | 60.5% | 0.048*|
|                                     | Yes   | 20   | 6.4%  | 52   | 16.6% | 242   | 77.1% |
| Snacks between meals                | No    | 3    | 4.8%  | 13   | 20.6% | 47    | 74.6% | 0.649 |
|                                     | Yes   | 22   | 7.5%  | 51   | 17.3% | 221   | 75.2% |
| Food contains vital elements        | Yes   | 11   | 6.7%  | 22   | 13.4% | 131   | 79.9% | 0.111 |
|                                     | Sometimes | 13 | 7.1%  | 42   | 22.8% | 129   | 70.1% |
| Child eats fruits and vegetables    | No    | 7    | 5.9%  | 29   | 24.4% | 83    | 69.7% | 0.063 |
|                                     | Yes   | 18   | 7.6%  | 35   | 14.7% | 185   | 77.7% |
| Child prefer fast food to homemade food | No   | 8    | 6.2%  | 16   | 12.4% | 105   | 81.4% | 0.095 |
|                                     | Yes   | 17   | 7.5%  | 48   | 21.1% | 163   | 71.5% |
| Frequency of fast food/week         | Never | 9    | 6.0%  | 22   | 14.7% | 119   | 79.3% | 0.015*|
|                                     | Once/week | 6  | 4.9%  | 21   | 17.1% | 96    | 78.0% |
|                                     | 2-3/week | 8   | 12.7% | 14   | 22.2% | 41    | 65.1% |
|                                     | 4-6/week | 0   | 0.0%  | 6    | 40.0% | 9     | 60.0% |
|                                     | Daily  | 2    | 33.3% | 1    | 16.7% | 3     | 50.0% |

*P<0.05 (significant)

Figure 1: Parents suggestions to improve their children eating habits

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Conflicts of interest
There are no conflicts of interest.

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