

Evaluation of skipping breakfast and school meal in relation to headache among Secondary school students in Tikrit City

Nisreen M. Ibraheem^{*1}, Muna M. Ibraheem^{*2}, Mayada K. Mohammed^{*3}, Ammar L. ^{*4}; Nihad N. Helal^{*5}, Usama J. Abdulqader^{*6}, Duaa Salim^{*7}, Ola Hakeem^{*8}

^{*1,3,4,5,6,7,8} Tikrit University College of medicine

^{*2} Tikrit University College of Agriculture/Biochemistry department

Abstract

Background: Breakfast is considered to be the most important meal of the day. It provides the essential nutrients needed for the day's activities. Many pupils and students hear their parents say that breakfast is the most important meal. Many factors lead to skipping breakfast as sleeping in late or busy lessons and homework schedule. Lack of breakfast in the body has a profound effect on body systems function and it can lead to food headache and other symptoms. Skipping breakfast or school meals lead to hypoglycemia therefore brain does not regularly receive enough glucose. Hypoglycemia can trigger headaches and migraines.

Aim: Evaluate the relation between skipping breakfast and school meal in relation to headache among Secondary school students in Tikrit City

Subject and methods: The study is a cross-sectional study that had conducted from 1st of November 2019 to 10th of April 2020 on 400 students in Tikrit secondary school using a questionnaire. All data management and analysis done by manual statistical methods.

Results: There were 50% skipped breakfast and school meal, and 30% of them complain from headache. The study found major cause to left breakfast was loss of appetite.

Conclusion: There was a relationship between headache and leave breakfast and school meal.

Keywords: skipping breakfast; school meal; headache among Secondary school; Tikrit City.

INTRODUCTION

All health references and studies assured that the most beneficial meal is breakfast. Body system activities can't play their role perfectly when a man skipped his breakfast. Children and adolescents have rapid growth therefore they shouldn't skip breakfast which is fuels the body for a long day's work or school⁽¹⁾. Skipping breakfast may be due to sleeping in late or due to a busy schedule and many of them say that they are simply not hungry in the morning because they've eaten a big meals at night or

simply snacked late at night the body still to digest food when they are going to bed, the digestive rate slow at night, so the food still in the stomach in the morning. These habits can also have broader effects on your overall health⁽¹⁾. Lack of breakfast in the body has a profound effect on how its systems function and it can lead to food headache and other symptoms. If the brain does not regularly receive enough glucose, as a result of hypoglycemia. This is a condition of low blood sugar or hypoglycemia presented clinically as headaches, dizziness,

Evaluation of skipping breakfast and school meal in relation to headache among Secondary school students in Tikrit City

nausea, sweating, and even loss of consciousness. Skipping breakfast can also trigger migraines, which is why it's a good idea for people who are prone to migraines to keep healthy snacks on-hand at all time. So, One of the most common symptoms of skipping meals is a diet headache, hypoglycemia alone can trigger headaches and migraines, also fasting or skipping meals may also release stress hormones which can trigger headaches this proved by Dietitians Association⁽²⁾ Food headache may be happened either to delayed or irregular or skipped meals due to people's blood-glucose levels falling too low or after fasting they eating high-sugar foods make people more likely to have a headache or migraine. Headaches produced from going without food are often quite sever and accompanied by mild nausea. There is also a similarity between some of the symptoms of missing a meal and the early warning signs (premonitory) of a migraine attack, such as: yawning, pallor, sweating, headache, a craving for sweet things, and mood change.⁽²⁾ In general, the best diet to calm the migraine storm is simply a healthy diet, frequent meals particularly school meal regardless to other factors like foods that trigger migraines in some individuals⁽³⁾.

Aim of study

To evaluate the relation between skipping breakfast and school meal with headache among Secondary school students in Tikrit City.

Objective

- 1-Identify the frequency of secondary school students who skipped breakfast and school meal.
- 2-Clarify the relation between skipping breakfast and school meal with headache among secondary school students.
- 3-Determine the factors aggravated skipping breakfast and school meal among secondary school students
- 4-Identify the knowledge of student about risk and possible problems that result from skipping of breakfast and school meal.

SUBJECTS AND METHODS

Ethical and approval consideration

Permission was taken from students to fill the information after obtaining agreement of education directory in Salahulddin and managers of included schools

Type of study

The study is a cross-sectional study that had conducted from 1st of November 2019 until 10 of April 2020.

Study population

The study was performed among students in Tikrit city where three secondary schools for girls and two for boys include Al-Mutamyzat, Al-Khansa, Al-Marjan secondary school for girls, and Al-Mugheera, Al-Mutamyzeeen secondary schools for boys

Sample

Sample was chosen by clustered sampling then stratified then simple random sampling and the sample include 400 students from Tikrit city schools.

Questionnaire and interview

Data collected by a well designed questionnaire that filled by students (self-administered - administered by the students themselves.), which was designed in Arabic language. It includes demographic characteristics of students, followed by close ended and open questions related to subject.

Data presentation and analysis

Data presentation and analysis done by manual statistical methods and ANOVA. Data was represented by suitable tables and figures which was designated by computer programs.

Investigation

- Blood glucose level investigated for all 400 students in the study group by Accu-Chek Active Blood Glucose Meter, Steps of investigation as follow:
1. Insert test strip into the meter.
 2. do pin prick on tip of figure then apply it on yellow edge of stip.
 3. Wait for 30-60 seconds then compare the color with control and record the result.

RESULT

The current study about the relation between skipping breakfast and headache. 400 students included in the study, 200 (50%) of them skipped their breakfast particularly (13-15) years old about 132(66%). Regarding gender female slightly higher than male in skipping breakfast about 105(52.5%) for female and 95(47.5%) for male. Table 1,2.

Table 1. Secondary school students age in relation to skipping breakfast and school meal.

Age	Numbers (%)	Skipping	Sometimes	Not skipping
13-15	270(67.5%)	132(66%)	102(68.9%)	36(69.2%)
16-19	130(32.5%)	68(34%)	46(31.1%)	16(30.7%)
Total	400(100%)	200(50%)	148(37%)	52(13%)
Chi square=0.4 d.f.=2 correlation=0.03 p-value less than 0.05 Not significant relation				

Table 2. Secondary school students gender in relation to skipping breakfast and school meal.

Gender	Numbers (%)	Skipping	Sometimes	Not skipping
Female	210(52.5%)	105(52.5%)	70(47.3%)	35(67.3%)
Male	190(47.5%)	95(47.5%)	78(52.7%)	17(32.7%)
Total	400(100%)	200(50%)	148(37%)	52(13%)

Evaluation of skipping breakfast and school meal in relation to headache among Secondary school students in Tikrit City

Chi square=6.1
d.f.=2
correlation=0.12
p-value less than 0.05
Significant relation

Figure (1) presented that 50% of students were skipping breakfast and school meal while only 13% of them were eating breakfast.

The study revealed that there were 25% have breakfast three times per week from those eat breakfast and school meal as seen in Figure (2)

The more frequent reason made the students skipping breakfast and school meal were 62% loss of appetite Figure (3)

The skipping breakfast and school meal have side effects on class activities, 80% of students had positive symptoms appeared when left breakfast and school meal, Figure (4)

The result found that 70% of students who skip breakfast and school meal have normal body mass index (BMI) and 30% below normal BMI Figure (5)

The study proved that headache and poor memory in 75% (for each), 35% of complain is feeling tired. Table (3) The relation between skipping breakfast and meal school with headache were the majority of them have headaches while 25 % do not complain from headache when left breakfast and school meal as can be seen in Figure (6)

Figure (7) present knowledge of the students about relation between the skipping breakfast and school meal with headache were 44% of them don't agree that there is relation between them while 23% agree the relation between headache and leave breakfast and school meal and 32% of them said that may be there is a relation between.

Current study revealed that, random blood glucose result among students who skipped breakfast was below 80mg/dl 68(34%) out of 200 students.

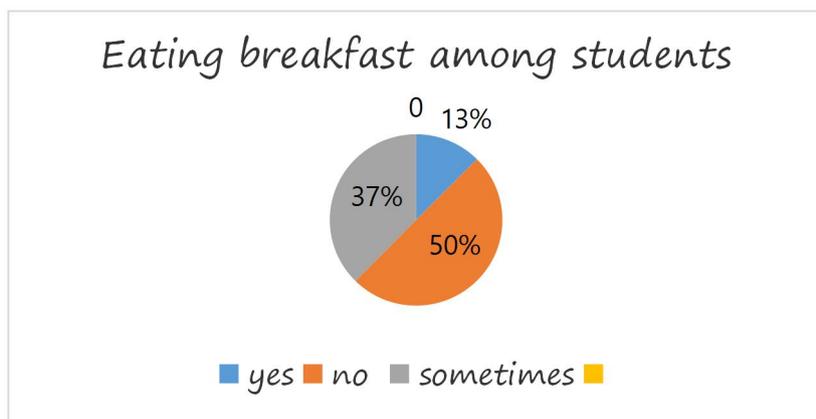


Figure 1. Percentages of students who have breakfast and school meal

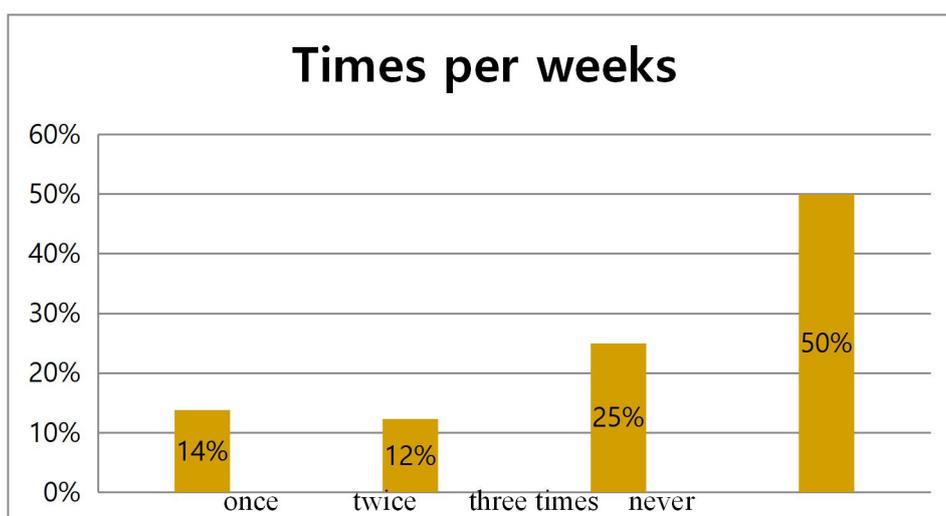


Figure 2. Numbers of times which Students have breakfast and school meal.

Evaluation of skipping breakfast and school meal in relation to headache among Secondary school students in Tikrit City

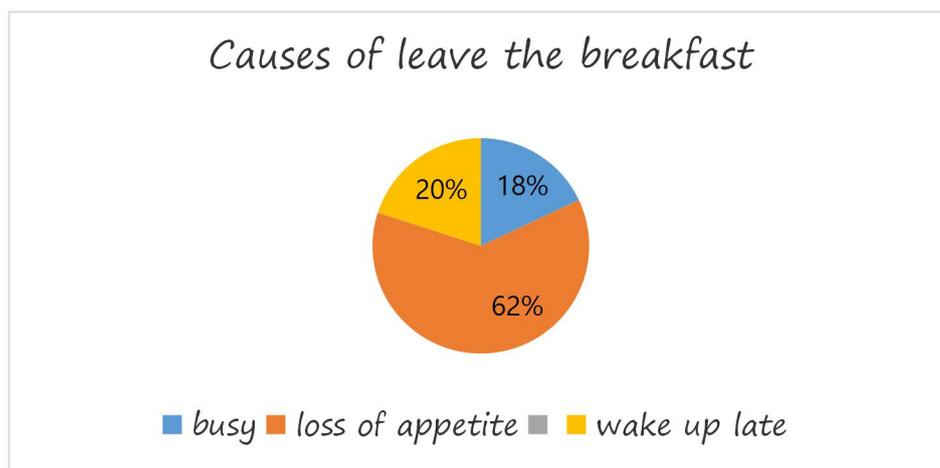


Figure 3. causes of leaving breakfast and school meal.

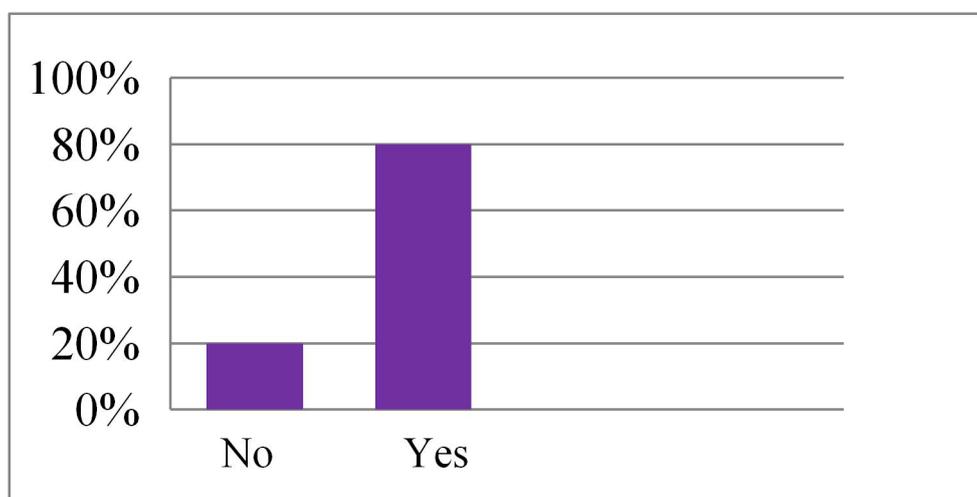


Figure 4. Presence of leaving breakfast and school meal side effect on activities of students

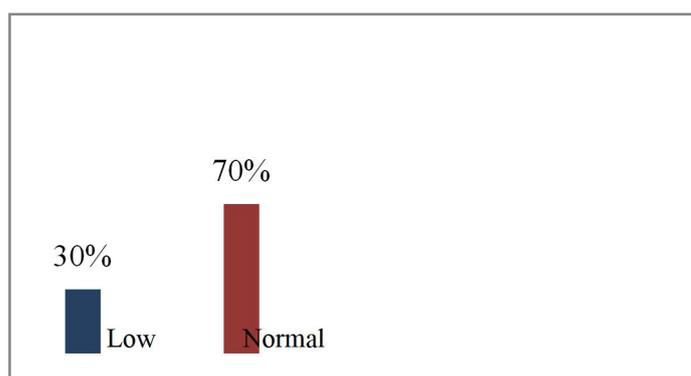


Figure 5. Body mass index among secondary school students related to skipping breakfast and school meal.

Table 3. symptoms related to skip breakfast and school meal among students.

Symptoms	Frequency total of cases (200 who always skip)	Percentage
Hungry	26	13
Headache	150	75
Poor memory	150	75
Dizziness	36	18
Loss of concentration	58	29
Stomach pain	20	10
Tired	70	35

Evaluation of skipping breakfast and school meal in relation to headache among Secondary school students in Tikrit City

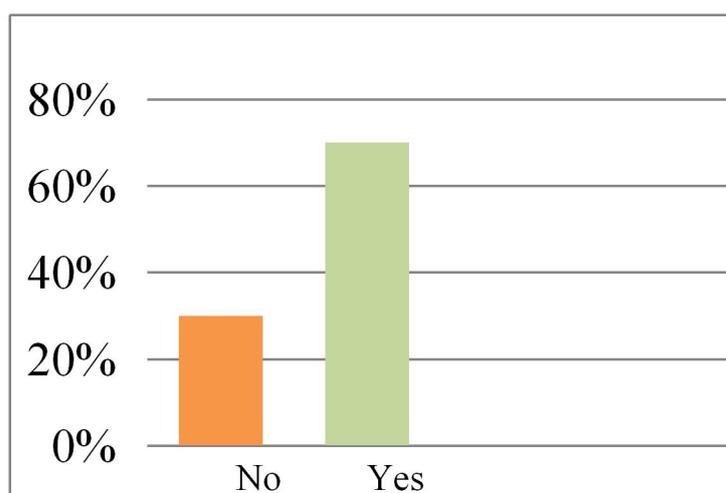


Figure 6. Relation between headache and skipping breakfast and school meal.

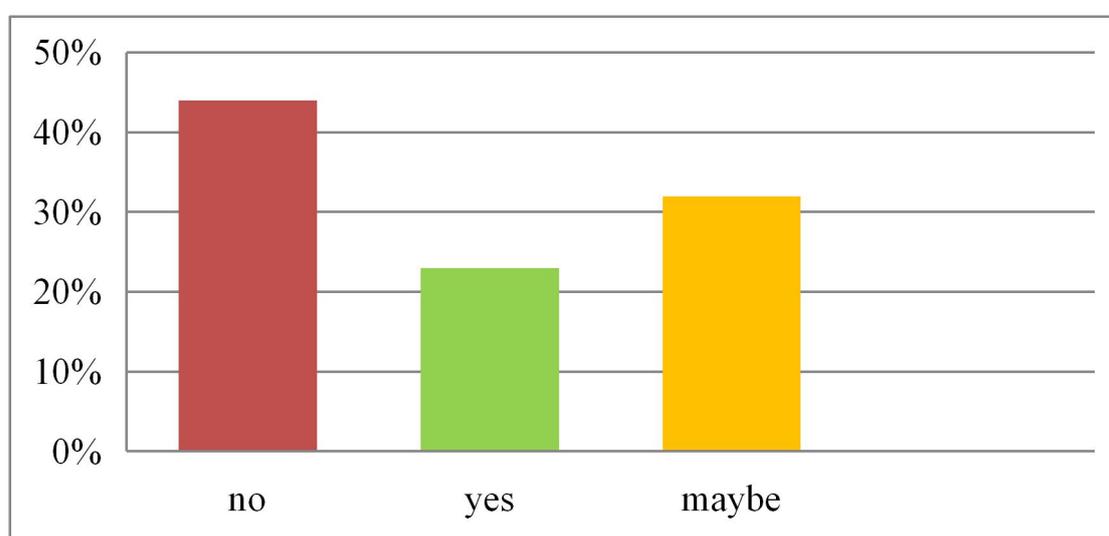


Figure 7. knowledge of the student about relation between headache and leave breakfast and school meal.

Table 4. Blood glucose level (mg/dl) among Secondary school students age in relation to skipping breakfast and school meal.

Blood glucose level (mg/dl)	Skipping	Sometimes	Not skipping
0--	0(0%)	0(0%)	0(0%)
30-	68(34%)	2(1.3%)	0(0%)
80-	132(66%)	144(97.3%)	52(100%)
160-300	0(0%)	2(1.4%)	0(0%)
Total	200(50%)	148(37%)	52(13%)

DISCUSSION

Regarding breakfast and school meal intake among students in Tikrit city the result show that 50% of them skipping breakfast, this agreed with other study in south Eastern Srilanka that showed 86% of them do not have breakfast but the percentage still lower in Tikrit students less than in Srilanka⁽³⁾⁽⁴⁾. This study proved that age group (13-15) years more frequently leave their breakfast in addition to gender affected nearly equal between male and female, this result assure other study in Brazil⁽¹⁴⁾. The current study found the number of times which students leave breakfast and school meal 50% of them never have breakfast at all weeks, and 25% of them they eat breakfast three times a week this results may be due to many factors as financial family conditions, or awareness of students and their parents regarding

importance of breakfast and school meal or due to other causes as proved by recent study which found that more frequent reason made the students skipping breakfast and school meal were 62% loss of appetite and 20% wake up late while only 18% of them were busy. In India the reasons for skipping breakfast in students show that 30% of them don't eat breakfast due to lack of time, 28% loss of appetite, 23.9% not variety of food and 17.4% of them leave breakfast due to not available. Meaning that the main cause of leaving breakfast in Tikrit students due to loss of appetite while in other sources and India was due to lack of time⁽⁵⁾⁽⁶⁾⁽⁷⁾.

About the effect of skipping breakfast on class activities and school performance among students the result showed that 80% of them feel that bad effect on school performance and activities when they are leaving

Evaluation of skipping breakfast and school meal in relation to headache among Secondary school students in Tikrit City

breakfast in comparison with Dubai around 58.7% of students their school performance affected negatively when they are skipping breakfast while 41.3% of them show that do not effect on school performance and activities⁽⁸⁾. Recent study found that there were 30% of skipped breakfast students had below normal BMI while in south Eastern Srilanka⁽⁹⁾. Body Mass Index among students when left breakfast was 52.2%, but 21.7% above normal and 26.1% of them below normal. So 70% of Tikrit students have normal Body Mass Index more than students in Srilanka City when skipped breakfast and school meal⁽¹⁰⁾⁽¹³⁾.

Regarding to the study about the symptoms that can appear when left breakfast the result found were 75% of them suffering from poor memory, 75% headache. Many studies in the past and present revealed that number of breakfast skippers felt a difference in their symptoms without having breakfast, than breakfast consumers. A highly statistical significance was seen between breakfast skipping and symptoms⁽¹¹⁾⁽¹²⁾. Generally these studies demonstrated that eating breakfast has a positive effect on children's cognitive performance, particularly in the domains of memory and attention. Short term changes in cognitive function during lessons (e.g., memory and attention) may therefore translate, with habitual breakfast consumption, to meaningful changes in school performance by an increased ability to remember information during lessons⁽¹⁴⁾.

The dietary micronutrient deficiencies associated with children's skipping breakfast may carry additional adverse consequences for cognitive function^(15,16). Regular habit of eating breakfast as opposed to irregular consumption or skipping breakfast altogether had beneficial influence on attention concentration, memory and school achievement^(17,18). Regarding to the relation between skipping breakfast and school meal with headache, majority of students have headaches (75%) while 25% do not complain from it, this result disagreed with other Brazilian study (2010) that found 12.3% of students affected with headache when they leave breakfast. Interpretation of this relation is skipped breakfast lead to hypoglycemia then decrease brain glucose therefore headache may be a symptom of hypoglycemia. The study also included knowledge of Tikrit students about relation between headache and the skipping breakfast and school meal the result show that 23% of them had knowledge about relation between headache and skipping breakfast and school meal therefore research group distributed posters that educate students about importance of breakfast and school meal, type of healthy food (quality) and daily requirement form different types of food (quantity). Current study revealed that, random blood glucose result among students who skipped breakfast was below 80mg/dl 68(34%) out of 200 students. Other study achieved by Fumi Kobayashi who found that Blood glucose was recorded with a continuous glucose monitoring system. Breakfast skipping did not affect 24 h energy expenditure, fat oxidation and thermic effect of food, but increased overall 24 h average of blood glucose (83 ± 3 vs 89 ± 2 mg/dl, $P < 0.05$). Unlike 24 h glucose level, 24 h energy expenditure was robust when challenged by breakfast skipping. These observations suggest that changes in glucose homeostasis precede that of energy balance, in the potential sequence caused by breakfast skipping, if this dietary habit has any effect on energy balance.

This subject is very important for our brothers, children and future youth, school nutrition committee formed in Tikrit medical college and write many suggestions and program for application of school meal project and all acceptance papers completed but application of this program stopped because of covid-19 circumstances in Iraq.

CONCLUSION

- 1- There were (50%) of students skipped their breakfast frequently female (52.5%), and (13-15) years age group (66%).
- 2- Main cause of skipping breakfast was loss of appetite (62%), and about 30% had below normal body mass index.
- 3- The study proved that the most common symptoms of skipping breakfast is headache and poor memory (75%) for each.

RECOMMENDATION

- 1- Students should be encouraged for having lunch and school meal.
- 2- Increase awareness of the students regarding the risk of skipping breakfast.

To ministry of health

- 1- school health in health directories should play a major role in education, assessment the nutritional state of students and follow up.
- 2- Educate students about health diet and life style.
- 3- Monitoring of school canteen regarding type of food and cleanliness.
- 4- Specification part of financial budget for school meal program.

To ministry of education

- 1- Activate the program of school meal as in previous and like other countries as Egypt.

To ministry of higher education

- 1- Performance of survey and researches, cooperation with other ministries by opinion support and planning. To non-governmental organizations like (food organization and other organization supporting children):
- 1- Support pupils and students by introduction daily school meals.

REFERENCE

1. Soodeh R., Maryam A., Alipasha M., and Mansoureh T. The effect of body fat mass and fat free mass on migraine headache. *Iran J Neurol*. 2013;12(1):23.
2. Elisabeth M. S., and Nancy E. Nutrition in the Prevention and Treatment of Disease (Fourth Edition), Academic Press. 2017:30.
3. Kant A.K., Andon M.B., Angelopoulos T.J., Rippe J.M. Association of breakfast energy density with diet quality and body mass index in American adults: National Health and Nutrition Examination Surveys, 1999-2004. *Am J Clin Nutr* 2008; 88:1399-404.
4. Lee SH, Shim JS, Kim JY, Moon HA. The effect of breakfast regularity on eating habits, nutritional and health status in adults. *Korean J Nutr* 1996; 29:539-40.
5. Rogers PJ. How important is breakfast? *Br J Nutr* 1997; 78:197-8.
6. Ruxton CH, and Kirk TR. Breakfast: a review of associations with measures of dietary intake,

*Evaluation of skipping breakfast and school meal in relation to headache among
Secondary school students in Tikrit City*

- physiology and biochemistry. *Br J Nutr* 1997; 78:199-213.
7. Williams P. Breakfast and the diets of Australian adults: an analysis of data from the 1995 National Nutrition Survey. *Int J of food* 2005, 56(1): 66.
 8. Yang S. An Exploratory Study for Identifying Factors Related to Breakfast in Elementary, Middle and High School Students. *Korean Journal of Community Nutrition* 2006, 11(1)
 9. Ministry of Health and Welfare & Korea Centers for Disease Control and Prevention [KCDC]. 2008 National Health Statistics.
 10. Choi MK, Kim JM, and Kim JG. A study on the dietary habit and health of office workers in Seoul. *Korean J Food Cult* 2003; 18:45-55.
 11. Shin KH, Chae KY, Yoo YJ. A study on the breakfast habits of salaried people in Seoul. *Korean J Soc Food Cookery Sci* 2002; 18:119-28.
 12. Yun S, Jeong HR, Kim MH. A survey on the breakfast skipping rate of Korean adults relative to their lifestyle and breakfast skipping reasons and dietary behavior of breakfast skippers. *Korean J Community Nutr* 2010; 15:191-205.
 13. Cho S, Dietrich M, Brown CJ, Clark CA, Block G. The effect of breakfast type on total daily energy intake and body mass index: results from the Third National Health and Nutrition Examination Survey (NHANES III). *J Am Coll Nutr* 2003;22: 296-302.
 14. Rose M., Paulo R., Edilayane D., and Marcia G. Skipping breakfast and associated factors among Brazilian adolescents. *Nut J* 2017. Vol30(5):76.
 15. Siega-Riz AM, Popkin BM, Carson T. Differences in food patterns at breakfast by sociodemographic characteristics among a nationally representative sample of adults in the United States. *Prev Med* 2000; 30:415-24.
 16. Chung CE. Ready-to-eat cereal consumption enhances milk and calcium intake in Korean population from 2001 Korean National Health and Nutrition Survey. *Korean J Nutr* 2006; 39:786-94.
 17. Shim JE, Paik HY, Moon HK. Breakfast consumption pattern, diet quality and health outcomes in adults from 2001 National Health and Nutrition Survey. *Korean J Nutr* 2007; 40:451-62.
 18. Yeoh YJ, Yoon J, Shim JE. Relation of breakfast intake to diet quality in Korean school-aged child
 19. Fumi K., Hitomi O., Naomi O., Shoichiro N., Sachiko Y., Masanobu H., and Kumpei T. Effect of breakfast skipping on diurnal variation of energy metabolism and blood glucose. *Obes Res Clin Pract*, 2014.8(3):201.