Research Article

A Study of nutritional status of dormitory and non-dormitory female students in Babol University of Medical Sciences

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ABSTRACT

Proper nutrition, especially the intake of essential nutrients and energy in young girls, is highly important due to their physiological conditions. Therefore, this study was conducted to determine the nutritional status of dormitory and non-dormitory female students. This cross-sectional study was conducted among 150 dormitory female students and 150 non-dormitory female students randomly. Students' information was recorded in demographic questionnaires, anthropometric questionnaires and 24-hour dietary recall (three non-consecutive days per week). The obtained data were analyzed statistically. The results of this study showed that the average daily energy consumption of dormitory and non-dormitory students was 2220 ± 1613 and 2311.8 ± 1455.3 kcal, respectively; the difference between the two groups was not significant. The protein in non-dormitory students was significantly more than dormitory students ($p<0.001$). The intake of calcium, iron, zinc, Vit B1 and Vit B2 in non-dormitory students was significantly higher than dormitory students ($p<0.001$). However, there was no significant difference in phosphorus, Vit A, Vit C, Vit B6 , Vit B12 and folic acid intake in the two groups ($p>0.05$). The results of our study indicated that nutritional status of non-dormitory students was more favorable than dormitory students, and thus, modifying and improving nutritional plans for students in dormitories is recommended for solving their nutritional problems.

Keywords: Nutritional status, university student, student dormitory.

INTRODUCTION

The student life period is a student's transition from a parent-dependent life to an independent life. The type of nutrition and the choice of taking different foods is one of the important decisions of this period, which is more important in female students compared to male students (1, 2).

The university students' dietary patterns have led to extensive nutritionist studies in most developed countries, due to their willingness to eliminate major meals, compliance with low-calorie diets and the lack of using certain types of high-value foods. At this age, lifestyle changes occur such as getting used to dormitory food, drinking a lot of tea and coffee to stay awake through the night to study, using instant and business meals, eating high-fat foods at school dining, going to parties where they take

high-fat and high-sodium foods, all of which make obesity prevalent among them(3-5).

Studies have shown that although the students' average intake of nutrients and energy is sufficient, the average calcium, phosphorus and iron intake, especially among female students, are lower than the recommended values (6, 7). Investigations regarding the intake of the recommended amounts showed that the average intake of fat was higher than recommended (8). Other studies among female students showed that the average energy intake in girls was lower than that of boys and the average intake of vitamins A, B6, B12, folate, vitamin C, calcium, magnesium and zinc by male and female students' was lower than the recommended amount (9-11).

Considering the importance of the topic and because of the limited number of studies on the nutritional status of female students in the north of Iran, the purpose of this study was to investigate the nutritional status of dormitory and non-dormitory female students in Babol University of Medical Sciences.

MATERILAS AND METHODS

This cross-sectional study was conducted among 150 dormitory female students and 150 non-dormitory female students in Babol University of Medical Sciences using random sampling method. Then, the information has been completed using three questionnaires of general information, 24-hour dietary recall (24hour) (three non-consecutive days per week) and anthropometric information questionnaire including height, weight, waist circumference, hip circumference, and wrist and arm circumference. After receiving informed consent from subjects, they were given the instruction on how to estimate food intake and the forms were completed by a trained person. The criterion for being a dormitory student was taking university food for at least one meal for 5 days.

Data were analyzed using SPSS16 software and t-test, Mann-Whitney, Chi-square and Fisher exact tests were used. $P < 0.05$ was considered significant and One Sample Kolmogorov-Smirnov test was used to determine the normal distribution of samples.

RESULTS

The average age of dormitory and non-dormitory female students was 21.5 ± 2.5 and 22 ± 0.1 years, respectively (p=0.056). The average household size of dormitory and non-dormitory female students was 5.2 ± 1.3 and 4.8 ± 1.1 (p=0.005). The average number of dormitory and non-dormitory students' semesters was 4 and 6, respectively (p=0.000).

There was no significant difference between dormitory and non-dormitory female students in terms of body mass index, hip circumference, arm circumference and wrist circumference. However, waist circumference was significantly higher in non-dormitory female students compared to dormitory students (p<0.03) (Table 1). The level of protein intake in non-dormitory female students was significantly higher than that of dormitory students (p<0.001). In other cases, there was no significant difference between dormitory and non-dormitory female students. The amount of calcium, iron, and zinc intake in non-dormitory female students was significantly higher than dormitory female students (p <0.001). In other cases, there was no significant difference between dormitory and non-dormitory female students. The amount of receiving vitamins B1 and B2 in non-dormitory female students was significantly higher than dormitory female students (p<0.001 and p=0.03). There was no significant difference between dormitory and non-dormitory female students in other cases (Table 2).

Table 1. Mean and standard deviation of anthropometric variables in dormitory and non-dormitory female students of Babol University of Medical Sciences

Groups Anthropometry parameters	Dormitory Mean±SD	Non-dormitory Mean±SD	P-value
Body mass index (kg/m^2)	21.7±2.7	22.3±3	0.093
Hip circumference (cm)	95±5.8	96.2±8.6	0.174
Waist circumference (cm)	71±6.2	72.8±8.8	0.038
Arm circumference (cm)	25.5±2.4	25.9±2.2	0.131
Wrist circumference (cm)	15.1±0.9	15.1±0.8	0.98

Table 2. Mean and standard deviation of nutrients taken by dormitory and non-dormitory female students of Babol University of Medical Sciences.

Groups / Nutrition parameters	Dormitory Mean±SD	Non-dormitory Mean±SD	P-value
Energy	2220±1613	2311.8±1455.3	0.602
Carbohydrate	353.1±368.2	382±329	0.237
Protein	70.1±37.9	78.1±29.5	0.001
Lipid	68.3±23.3	68.3±23.3	0.574
Calcium	611.3±426.1	702.3±377.8	0.001
Phosphorus	1130.8±705.1	1164±610	0.164
Iron	25.4±35.8	79.2±54.8	0.001
Zinc	36.3±49.4	39.7±37.6	0.003
Vitamin A	590.3±511.6	631.9±634.3	0.255
Vitamin C	58.1±42	60.7±54.6	0.934
Vitamin B1	2.49±3.11	2.85±2.8	0.01
Vitamin B2	1.73±1.23	2.44±1.83	0.03
Vitamin B6	1.93±1.76	2.04±1.5	0.116
Vitamin B12	9.06±11.44	17.6±28.05	0.175
Folic acid	745.34±1910.83	927.55±1686.3	0.114

DISCUSSION

In this study, the average protein intake in dormitory students was significantly lower than that of non-dormitory students. In some studies, the average protein intake in non-dormitory students was significantly higher than that of dormitory students(12). The low protein consumption of dormitory students compared to non-dormitory students in this study is probably due to the low protein in their daily diet plat.

The lower average calcium intake among students is probably due to less dairy consumption in student dining and student's dietary patterns. Given that inadequate calcium intake has been reported in a large number of previous studies, inclusion of milk and dairy products in student dining plans seems necessary(13). In this study, the intake of iron in dormitory students was significantly lower than that of non-dormitory students, which was similar to other studies (14, 15). In the study of Tarighat et al., the average iron intake of the students was sufficient, which is consistent with the study of Khammarnia et al. probably the main reason for the adequacy of iron intake in the present study is the presence of beef in students' dining plans and its regular intake by the students(12, 16).

In this study, the zinc intake in dormitory students was significantly lower than that of non-dormitory students. In the some studies, although the average zinc intake in dormitory students was lower than non-dormitory students, this difference was not significant(17). Inadequate zinc intake by female students has also been reported in some of the previous studies(18). Despite the regular consumption of meat, zinc intake was lower than the recommended values in students. It could be attributed to high intake of unground cereals, which contains high amount of fiber and phytate and is effective in reducing zinc absorption.

The increased average calcium, iron, and protein intake in non-dormitory students compared to dormitory students indicates inadequate intake these nutrients (vegetables, fruits and dairy) by non-native students residing in student dormitories, and they are more dependent on university dining meals. In addition, B1 and B2 vitamins were significantly higher in non-dormitory students than dormitory students, which could also be due to inadequate nutrition in dormitory students.

CONCLUSION

The results of this study showed that students' residence status not only affects the type of food they choose to eat, but also the amount of nutrients they receive. These results indicate that there are major issues regarding the amount and

type of food consumed by female students, change the location lead to changes the nutritional habits of female students, especially students living in student dormitories.

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CONFLICTS OF INTERESTS

All of authors declare that there is no conflict of interests.

REFERENCES

1. Deliens T, Clarys P, De Bourdeaudhuij I, Deforche B,(2014) Determinants of eating behaviour in university students: a qualitative study using focus group discussions, BMC Public Health.14:53-53.
2. Ali HI, Jarrar AH, Abo-El-Enen M, Al Shamsi M, Al Ashqar H,(2015) Students' perspectives on promoting healthful food choices from campus vending machines: a qualitative interview study, BMC Public Health.15:512.
3. Tseng HC, et al.,(2014) Tea-drinking habit among new university students: Associated factors, The Kaohsiung journal of medical sciences.30(2):98-103.
4. Deshpande S, Basil MD, Basil DZ,(2009) Factors influencing healthy eating habits among college students: An application of the health belief model, Health marketing quarterly.26(2):145-164.
5. Nastaskin RS, Fiocco AJ,(2015) A survey of diet self-efficacy and food intake in students with high and low perceived stress, Nutrition Journal.14:42.
6. Rangan A, Aitkin I, Blight G, Binns C,(1997) Factors affecting iron status in 15-30 year old female students, Asia Pacific journal of clinical nutrition.6:291-295.
7. Abalkhail B, Shawky S,(2002) Prevalence of daily breakfast intake, iron deficiency anaemia and awareness of being anaemic among Saudi school students, Int J Food Sci Nutr.53(6):519-528.
8. Mammas I, Bertsias G, Linardakis M, Moschandreas J, Kafatos A,(2004) Nutrient intake and food consumption among medical students in Greece assessed during a Clinical Nutrition course, Int J Food Sci Nutr.55(1):17-26.
9. Khattak M, Khan A, Khattak MU,(2002) Energy and nutrients intakes of male and female university students, Pakistan J Nutr.1:174-178.
10. Fayet-Moore F, Petocz P, Samman S,(2014) Micronutrient Status in Female University Students: Iron, Zinc, Copper, Selenium, Vitamin B(12) and Folate, Nutrients.6(11):5103-5116.
11. Chang S-J, Hsiao L-J, Lee Y-C, Hsuen S-Y,(2007) Vitamin B 6 status assessment in relation to dietary intake in high school students aged 16–18 years, British journal of nutrition.97(4):764-769.
12. Tarighat A, Mahdavi R, Ghaemmaghami J, Saafaian A,(2003) Comparing Nutritional Status of College Female Students Living on and off Campus in Ardabil, 1999, Journal of Ardabil University of Medical Sciences.3(3):44-52.
13. Malara M, Tkaczyk J, Kęska A, Lutosławska G, Mazurek K,(2017) Calcium, magnesium and phosphorus dietary intake in active and sedentary Polish students, Biomedical Human Kinetics.9(1):140-145.
14. Mirzaeian S, et al.,(2013) Assessing the micronutrient and macronutrient intakes in female students and comparing them with the set standard values, Journal of Education and Health Promotion.2:1.
15. Shin N, Hyun W, Lee H, Ro M, Song K,(2012) A study on dietary habits, health related lifestyle, blood cadmium and lead levels of college students, Nutrition Research and Practice.6(4):340-348.
16. Khammarnia M, Amani Z, Hajmohammadi M, Ansari-Moghadam A, Eslahi M,(2016) A Survey of Iron Supplementation Consumption and its Related Factors in High School Students in Southeast Iran, 2015, The Malaysian Journal of Medical Sciences : MJMS.23(5):57-64.

17. Amani R, Saeidi S, Nazari Z, Nematpour S,(2010) Correlation between dietary zinc intakes and its serum levels with depression scales in young female students, Biol Trace Elem Res.137(2):150-158.

18. Aquilani R, et al.,(2011) School performance is associated with dietary iron and zinc intake in adolescent girls, Current Topics in Nutraceuticals Research.9(3):71.