DIETARY CHANGES OF FIRST-YEAR FOREIGN STUDENTS STUDYING AT YEREVAN STATE MEDICAL UNIVERSITY

Master of Public Health Integrating Project Utilizing Professional Publication Framework

Marine G. Hovhannisyan, MD, MPH Candidate

College of Health Sciences
American University of Armenia

Primary Advisor: ***Margaret Pierce***, PHD
Secondary Advisor: ***Yelena Amirkhanyan***, MD, MPH

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Abstract

Objectives: In a foreign country student diets often quickly deteriorate leading to unhealthy habits that may have adverse effects on their health. The dietary patterns of foreign students in Armenia whose number increased since late 90s have never been evaluated. Of a greater importance is the need to assess the dietary changes of foreign medical students, since healthy practices adopted early in life may not only improve their health, but also enhance their psychological readiness to participate in creation of healthy behavior among their peers. This study, aimed to evaluate the patterns and extent to which the first year foreign students studying at Yerevan State Medical University change their dietary practices.

Methods: Study utilized one-group pre-test post-test design. Sample included 144 newly arrived foreign medical students who had not been diagnosed with any health conditions. The nutritional intake was obtained through the analysis of an average daily set of food items, derived from a self-administered questionnaire. The post-test was conducted three months after the pre-test. McNemar's and ***t*** tests were performed for data analysis.

Results: Data analysis revealed statistically significant decrease in consumption of meat, milk, vegetable, fruit and bread groups at posttest. Consumption of fat and sweets group was significantly increased. At post-measure the mean reported intakes of meat, vegetable, fruit and bread groups were significantly lower compared to Food Guide Pyramid requirements. Frequencies of having breakfast and lunch also decreased at post-test. Body Mass Index statistically significantly decreased from pre- to post-measure.

Conclusion: This study demonstrates that dietary habits of foreign medical students significantly deteriorate during their first year of study, which, in turn, may have substantial impact on student health as well as academic performance. The revealed dietary alterations suggest need for further analysis that will determine the extent of their dietary changes over time, as well as the influence of other behavioral and environmental factors.

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List of Acronyms

YSMU – Yerevan State Medical University

RDA – Recommended Dietary Allowances

FGP – Food Guide Pyramid

FFQ – Food Frequency Questionnaire

1. Introduction

Student lifestyle can change significantly in a foreign country. In a new setting students undergo exposure to climate changes as well as dietary and social environment changes. Research has suggested that dietary patterns change dramatically following arrival of students in a foreign country and students are at risk for development of unhealthy eating habits during their first year of residence (1). When students start their education in a foreign country their diets often quickly deteriorate, the quality of their diets declines and they often gain weight (2). As a result, the level of physical and psychological health among first-year students declines (3).

It has been reported that foreign students change their food intake and energy balance when they migrate from a country with certain food intake pattern to a country with completely different food intake pattern. As a result, students often are not able to maintain a stable energy and nutrient balance, which affects not only their current health but also poses risk for development of health problems in the future (1). It has been reported that harmful eating habits developed early in college years increase the future risk of development of diseases, including diabetes, hypertension, coronary artery disease, and other functional disabilities (4, 5).

The number of foreign students studying in Armenia has increased dramatically since late 90s. Currently, approximately 4,000 foreign students study in Armenia (6). However, nutritional issues of foreign students studying at higher educational institutions in Armenia have never been investigated.

Of a greater importance is the need to assess the dietary changes of foreign medical students, since healthy practices adopted early in their life may not only improve their health, but also enhance their psychological readiness to participate in creation of environment of healthy behavior among their peers (8).

Currently, approximately 1,600 foreign students from India, Iran, Syria, Lebanon, the United States and the Russian Federation are enrolled at Yerevan State Medical University (YSMU) (7). Their early years of study at the medical university are the most important in sense of establishment of healthy lifestyle, since attitudes towards healthy eating patterns get established during young adulthood (8). This study, therefore, aimed to evaluate the patterns and extent to which the first year foreign students studying at Yerevan State Medical University change their dietary practices.

1.1. Common Dietary Patterns of Foreign Students

Research has identified significant changes in dietary patterns of immigrant students (1). Consumption of carbohydrates (particularly sugar) and fats, which are calorie-providing nutrients, often exceed recommended levels in diets of foreign students. Significant decrease in protein consumption in foreign students' diets has been reported in a study by Reeves et al (1). Another research suggests that consumption of meat, meat alternatives, dairy products, fruits and vegetables significantly decreased after students arrive in the United States (9).

Low intake of fruits and vegetables, dietary fiber and low intake of minerals associated with a low vitamin C status are all problematic (2). Additionally, research has shown that students tend to consume saltier snack items. Moreover, students typically have little variety in their diet and are often prone to consumption of significant amounts of high-fat snacks, which are easily available (10). Furthermore, students usually underestimate meal sizes and eat more than they think they are eating (2).

1.2. Factors Contributing to Adoption of Poor Dietary Practices

Several influential factors contribute to adoption of poor dietary practices after moving away from one's native country and entering university. The roots of these changes

appear to be related to stress, sedentary lifestyle, lack of availability of familiar food, peer pressure and limited finances (2). Additional factors such as skipping breakfast due to irregular class schedules, and class overload disrupt normal eating patterns and lead to development of unhealthy habits that may further have adverse effects on student health (2).

Research has indicated that cultural values and attitudes of foreign students might also play an important role in the development of their diet behaviors and eating disorders. In a study conducted among Asian college student-women studying in the United States intake of milk and cheese group foods was inadequate, compared with the recommended intake due to food preferences based on cultural and religious beliefs (11).

1.3. Knowledge as a Predictor of Dietary Changes

It has been reported that early exposure to nutritional messages, designed to promote food habits that are preventive of chronic illness later in life, are expected to lead young adults to adopt healthful food patterns (5). This, in turn, can help prevent diseases and improve overall quality of life for many years to come (12, 13).

There have been no studies conducted in Armenia regarding eating habits and nutritional status of foreign medical students. Foreign medical students spend in Armenia 7 years. In case of continuing into residency study they spend in Armenia approximately nine years of their life. Research has demonstrated that attitudes towards healthy eating patterns develop particularly during the early period of their student years (8).

Therefore, the assessment of dietary patterns of foreign students is of great importance if these health risks are to be avoided. Understanding of the pattern of the changes in the diet of foreign students can lead to development of nutritional intervention educational program to affect their behavior during the first year of their study.

2. Methods and Materials

2.1. Research Question

The main aim of this study is to address the following question:

In what ways and to what extent do the first year foreign students at Yerevan State Medical University change their dietary habits after three months following their arrival in Armenia?

2.2. Study Setting and Study Population

Yerevan State Medical University is the oldest medical university in Armenia. YSMU has three offices for foreign students: the Department of Foreign Students #1, the Department of Foreign Students #2 and the Department of Premedical Education.

Department of Premedical Education includes foreign students who receive their education in Russian language. These are mostly students from Iran. Before starting specialized medical education foreign students spend one year at this department where they intensively learn the language. After a year in the Department of Premedical Education these students are transferred to the Department of Foreign Students #1 where foreign students receive specialized medical education in Russian.

Department of Foreign Students #2 includes students who receive their education in English language. These are mostly Indian students. They do not spend one year at the Department of Premedical Education since they do not have language problems and they immediately start their medical education.

The main subjects that are taught to foreign students during the first year of education at YSMU are physics, chemistry, biology, history and foreign languages. No special nutritional course is taught during the first year of study at YSMU.

Upon arrival in Armenia, foreign students undergo medical examination conducted by the students' policlinic. The medical examination assesses the health status of each foreign student. That assessment constitutes the personal medical file of all foreign students. Each student has his/her own personal medical record.

2.3. Study Design

This study evaluates the patterns and extent to which the first year foreign students studying at YSMU change their dietary practices according to the Recommended Dietary Allowances (RDAs) after 3 months stay in Armenia.

Given the objectives of the study, and time, human and financial resources limitation, the study utilized a one-group pretest-posttest design (14).

Figure 2.1. Study Design

Pre-Test	Event	Post-Test
O1	X	O2
Dietary patterns of foreign students in their native country	Education in Armenia (at YSMU)	Dietary patterns of the same students by the end of the third month of study at YSMU

In this study evaluation of dietary habits of first year foreign students studying at YSMU was conducted twice. Dietary patterns of foreign students in their native countries were examined upon their arrival after winter holidays in February, 2007. The post-test, which evaluated dietary habits of the same students developed during their study at YSMU was conducted at the end of May, 2007.

Reeves et al (2000) suggest that three months provides sufficient time to observe and measure changes in dietary patterns of foreign students (1).

2.4. Sample Size and Sampling

First year foreign students studying at YSMU can serve as quite an accurate source of information for such an evaluation, as their dietary patterns in their native countries can be measured upon their arrival and compared to their dietary habits developed during their study at the YSMU.

Inclusion Criteria:

- Newly arrived first-year foreign students
- Foreign students taking preparatory courses

Exclusion Criteria:

- Foreign students with diagnosed health conditions

The list of the first-year foreign students was obtained from the Department of Foreign Students #2 and the Department of Premedical Education. Data regarding students' health status were obtained from the students' policlinic.

First year students from the Department of Foreign Students # 1 were not included in this study, since they have already spent one year on preparatory courses at the Department of Premedical Education and only after completion of these courses they were transferred to the Department of Foreign Students #1 to join other newly arrived first year students. It is their second year of education at YSMU and these students may have changed their dietary habits more significantly than newly arrived students. Moreover, the responses of students who have been in Armenia more than one year can introduce recall problems.

Additionally, students who had any diagnosed pathological conditions were not included in the study since they might have changed their dietary patterns due to health problems.

Foreign students currently taking the preparatory courses and newly arrived first-year foreign students from the Department of Foreign Students #2 were included in the study since it is their first year of education in Armenia. There were about 109 foreign students taking

preparatory courses and 103 newly arrived first-year foreign students at the Department of Foreign Students #2. Among them 39 students taking preparatory courses and 29 newly arrived first-year students had some health conditions.

Overall 144 eligible foreign students were included in this study: 70 newly arrived first-year students and 74 students from preparatory courses.

This sample size provides 80% power that was calculated using formula for sample size for one group:

$$\mathbf{n = (Z\alpha_{/2} + Z_{\beta})^{2}\sigma^{2}/ d^{2} = 144}$$

Where $\mathbf{Z_{\alpha/2}} = 1.96$ (is a cut-off for two sided test with 95 % CI), $\boldsymbol{\alpha} = 0.05$

$\boldsymbol{\sigma} = 2.7$ (estimates of population variances for total bread group servings),

$\mathbf{d} = 0.63$ (estimated detectable difference of 0.63 bread group serving in average outcome).

From this formula $\mathbf{Z_{\beta}} = 0.84$ corresponding to 80% power.

The value of $\boldsymbol{\sigma}$ was taken from published literature (5, 15) and baseline unpublished data. The baseline data suggested that total bread group servings in diets of foreign medical students do not meet the Food Guide Pyramid (FGP) Recommendations of six servings per day (16). Therefore, it was hypothesized to detect a difference of 0.63 bread group serving between pre- and post-measures.

2.5. Instrument

The self-administered questionnaire was used to conduct pre and post measures (appendices 7.2. and app. 7.4.). The semi-quantitative food frequency questionnaire (FFQ) was adapted from Nurses' Health Study Dietary Questionnaire (17) and Blocks FFQ (18). These questionnaires have proved validity and reliability (17, 18).

The adapted FFQ has two main components: (a) a list of foods and (b) a set of frequency-of-use response categories. Some food items specific to India and Iran where most

of the foreign students come from have been added to the FFQ. The questionnaire focused on groups of foods. Groups of foods included several food items: dairy foods- 10 items, fruits- 14 items, vegetables- 12 items, meat group- 12 items, sweets- 6 items, baked goods and cereals- 7 items, miscellaneous- 9 items. Overall FFQ utilized in this survey included 70 food items.

Food groups and serving sizes were presented according to Food Guide Pyramid definitions for each food category (16). Moreover, in order to quickly estimate usual serving sizes visual comparisons were included in the questionnaire (19).

It is reported that FFQ poses low respondent burden and provides high response rate. Moreover, the instrument is relatively inexpensive and it is not time consuming in assessment of food intake (18).

In addition to information about usual food consumption patterns the study questionnaire included items on demographics such as age of participant, gender, and residency status, as well as self-reported body weight and height.

Questions on anthropometrical measures, gender status and residence measure the intervening variables of the study. Questions on dietary habits (including servings of 70 food items and questions #7-#9) represented the dependent variables in the study. The independent variable of this study is the education over three months at YSMU.

It took approximately 40 minutes of class time to complete the questionnaire.

The questionnaire was forward translated into Armenian and revised by an independent translator. Pilot testing of the questionnaire was conducted in the beginning of February 2007. Revisions were made to the layout and content, until the final version was developed (App. 7.5.)

2.6. Data Entry and Editing

Statistical Package for the Social Sciences (SPSS, version 11.0, Chicago) was used for data entry. The categorical data were coded before the entry: numerical codes were assigned to each of the answer categories. To verify that only valid ranges of numbers are used in coding data editing was performed by the procedure of range checking (20).

All study participants were asked to recheck the self-administered questionnaires. There were no incomplete or missing items on both pre- and post-measures.

2.7. Analytic Methods

All the frequency-of-use categories for the food items were converted to a daily basis with 6 and more times daily= 6; 4-6 times daily = 5; 2-3 times daily = 2.5; once in a day = 1; 5-6 times weekly = 0.8; 2-4 times weekly = 0.4; once a week 0.1; 1-3 times in a month = 0.07 and almost never = 0. To obtain total number of servings in each food group these daily frequencies were multiplied by the FGP serving sizes (17). Categorical variables regarding breakfast and lunch consumption were collapsed to 2 categories: everyday and 4-6 times per week categories were merged under 4-6 times per week category and 1-3 per week and almost never categories were merged under 1-3 per week category.

At pre-measure, statistical significance of difference in consumption of food groups servings between first year students and students from preparatory courses was assessed by independent sample ***t*** test for continuous variables (21). Servings of daily consumption of food items were used to derive total servings for groups of foods (milk, yogurt and cheese group; vegetable group; meat, poultry, fish, dry beans, eggs and nuts group; fruit group; bread, cereal, rice and pasta group; fats, oil and sweets group) according to FGP definitions (19). The serving sizes treated in a continuous scale as well as frequencies of consumption of meals (questions #7-9) became the dependant variables for each study participant. One

sample ***t*** test was performed at post-measure to compare reported serving sizes of food items consumed by students in Armenia with the FGP requirements. For pre- and post-measure difference, statistical significance was determined by paired samples ***t*** test for continuous variables. For categorical variables statistical significance of difference between pre- and post-measure was determined by performing McNemar's test (21). To avoid bias introduced by foreign students with Armenian nationality analysis was performed twice with and without inclusion of these students into the sample.

Analysis was based on the data collected from144 participants at pre and post-measures.

2.8. Human Subjects Protection

The objectives of the study and the voluntary nature of participation were explained to each participant. An oral informed consent was obtained from each study participant. To create a motivated subject the scientific importance of the information was stated (22) and clear instructions with relevant examples were provided. The questionnaire posed some respondent burden, requiring on average 40 minutes to complete it. The questionnaire did not include questions on sensitive aspects of students' behavior (smoking, alcohol drinking, drug abuse, etc). Moreover, the consent form (App. 7.3. and app. 7.4.) was attached to the questionnaire when distributed to participants and was further detached and kept at the discretion of the participant.

Although the name of participant was required to further provide the follow-up questionnaire and individual counseling, confidentiality of the provided information was assured. The cover page of the questionnaire which contains ID number and information regarding the name of participant was detached from the questionnaire and kept apart from the data so that only the researcher can have access to that information.

Furthermore, it was planned to provide individual feedback and counseling to foreign medical students based on the observed dietary habits compared against FGP recommendations. The individual feedback was given on the request of a participant as a benefit for their participation. Fifteen such students were provided individual feedback and counseling.

The departmental Institutional Review Board committee within the College of Health Sciences of the American University of Armenia approved this study in March 2007.

3. Results

3.1. Response Rate

From 196 first year foreign students only 144 were eligible to participate in the study. All 144 eligible students were included in the study. Several attempts were made to contact absente students. As a result there was no student who had not been contacted at pre-measure and lost to follow up at post-measure. No single student who was involved at pre-measure refused to participate at post-measure.

3.2. Socio-demographic and Anthropometrical Characteristics of Sample

Independent sample ***t*** test for continuous variables did not reveal statistically significant difference between first year students and students from preparatory courses on mean servings of milk, cheese and yogurt group at pre- measure (Table 6.3.). Furthermore, mean servings of vegetable group and meat group (meat, poultry, fish, dry beans, eggs and nuts group) did not vary significantly in both groups at pre-measure. Mean servings for fruit group, bread (bread, cereal and pasta group) and fats and sweets group (fats, oils and sweets group) did not also differ significantly between first year students and students from preparatory courses at pre-measure. Therefore, first year students and students from

preparatory courses were combined and analyzed as one sample. Independent sample ***t*** test also revealed that difference between first year students and students from preparatory courses on mean servings of all food groups at post-test was statistically not significant.

The demographic characteristics and indirect measures of socio-economic characteristics are presented in Tables 6.1. and 6.2. The mean age of participants was about 21. About 60.4 % of the participants were male and 39.6% female. The largest percentage of participants (59%) were from Iran, 26.4% from India, 3.5% from Georgia and 11.1% from other countries such as Syria, Lebanon and Greece. Mean body weight of the participants upon arrival was about 67.5 kg at pre-measure and 65.0 kg at post-measure. The analysis revealed that decrease in mean weight of participants was statistically significant. Self-reported height and weight were used to calculate the body mass index (BMI = kg/m^2). Data analysis revealed statistically significantly decrease in BMI of participants from pre- to post-measure.

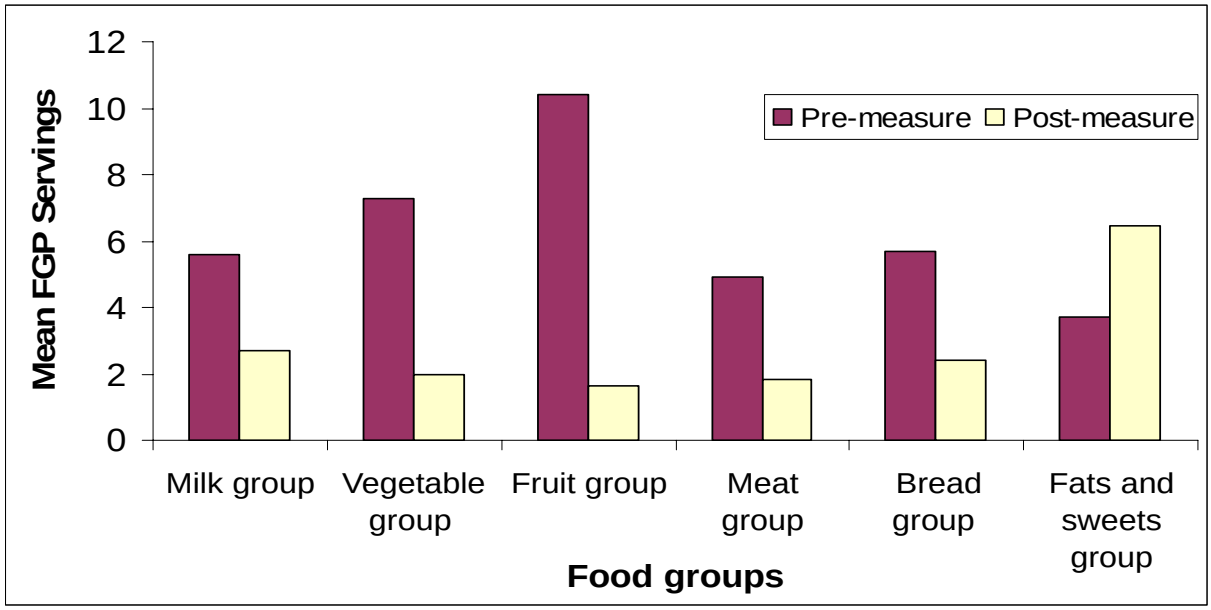
The largest percentage of participants reported leaving in a rented home (61.1%), 31.9% in a dormitory and 6.9% in a home.

3.3. Food Groups Intake

Paired samples ***t*** test was performed to reveal the differences in food consumption patterns (including FGP servings of food groups) at pre- and post measure (Table 6.4.). From pre- to post-test data analysis revealed statistically significant decrease in consumption of meat group (by 3.1servings). However, decrease in consumption of hotdogs and hamburgers were not statistically significant. Statistically significant decrease in consumption of milk group (by 2.9 servings) was also reported from pre- to post measure. Furthermore, statistically significant decrease was recorded in consumption of vegetable and fruit groups

(by 5.3 servings and 8.8 servings, respectfully). At post-measure consumption of bread group statistically significantly decreased by 3.3 servings.

Figure 3.1. Consumption of food groups at pre- and post-measure



Most important, statistically significant increase was recorded in consumption of fats and sweets group (by 2.8 servings) from pre- to post-measure. Paired samples ***t*** tests were further performed on food items in this category to reveal items that constituted increase in total fats and sweets group (Table 6.4.).

The results showed statistically significant increase in consumption of chocolates (by 0.7 servings), candy (by 0.3 servings), and butter (by 0.6 servings) from pre- to post-measure. Furthermore, statistical significant increase in consumption of sugar (by 0.5 servings) was also reported. An increase in consumption of cake was recorded (by 0.1 servings), with marginal significance.

McNemar test revealed that frequencies of having breakfast and lunch also decreased significantly at posttest (***p***<0.0001 and ***p***<0.017, respectfully). Moreover, the regimen of meal consumption (fixed and varying hours of having meal) was also significantly changed.

More students (91% vs. 54.8%) reported eating at variable hours at post-measure (Table 6.5.).

4. Discussion

To meet the daily minimum servings according to FGP recommendations it is necessary to consume a minimum of 2 servings each of fruits, milk and meat; 3 servings of vegetables; and 6 servings of bread group (16). At post-measure the mean reported intakes of meat (1.8 servings), vegetable (1.9 servings), fruit (1.6 servings) and bread (2.4 servings) groups were significantly lower compared to FGP requirements (16). Meanwhile, the mean reported intake of fat and sweets group was significantly higher compared to FGP requirements (6.5 servings vs. sparingly).

The results of this study demonstrate that the first-year foreign students change their dietary habits after arrival in Armenia. The consumption of meat, vegetable, fruit and bread groups decreased compared to FGP recommendations. However, study found significant increase in consumption of the fat and sweets group. It is likely that the general failure to meet the recommended servings of all food groups is due to the large percentage of students, who skip meals, decrease serving sizes and avoid certain nutritious foods (23). These patterns can be explained by irregular class schedules, class overload as well as by insufficient food preparing skills and lack of finance among foreign students who live far from their families (2, 24).

Decrease in meat consumption is consistent with other study findings (1, 10). This decrease is presumed to be due to the cost, rather than dietary preferences, since meat products such as hot dogs and hamburgers were still eaten regularly (Table 6.4.). Fish is much cheaper and easier to buy in native countries of foreign students (Iran, India) and this may explain why less fish is eaten in Armenia. Decrease in consumptions of both red and

white meat might also be explained by the lack of time and food preparing skills among foreign students (24). However, there are some studies that found increase in meat group consumption among foreign students, although the protein increase was very small (25, 26).

Fruits and vegetables are the key sources of vitamins A and C as well as important contributors to folate and vitamin B_6 intake (10). Reasons for the decrease in both fruit and vegetables consumption is likely to be due to the fact that fruit and vegetables are comparatively more expensive in Armenia and there is not as much variety as on Iranian or Indian markets (7). Research similarly found that there was a decrease in the vegetables consumed and the variety of vegetables eaten on arrival in foreign country but conversely found an increase in the consumption of fruit (3).

Indian and Persian cuisines are distinguished by the higher proportionate use of rice (27, 28) which is included in the bread group. However, the obtained data show that study participants consume less bread group servings than what the FGP recommendations are. Often skipping meals and insufficient food preparing skills might explain decrease in bread group consumption.

The present study has shown a significant increase in consumption of fat and sweets. Moreover, study determined that consumed serving sizes of fat and sweets are much higher than FGP recommendations. These findings are similar to earlier study findings suggesting that foreign students usually increase fat consumption in their diet since students consume more fast food and sweets (10, 29). University “food malls” is considered to provide a multitude of affordable and convenient fast-food variants to students. These fast foods are high in fat and offer high calorie choices contributing to an unbalanced diet (10).

However, the increase in consumption of the fat and sweets group was not as much to increase students’ weight. Study revealed decrease in mean weight and as a consequence decrease in BMI of foreign students indicating imbalance between energy intake and

expenditures (30). This would suggest that the students are not able to modulate their energy intakes and diet of foreign students does not provide sufficient energy to cover their energy expenditure (15). Therefore, foreign students are not able to remain in energy balance and weight stable. This might be explained by often skipping meals and failure to eat servings according to FGP recommendations. However, there are studies that found increase body weight after starting education at the universities in the US and the UK (2). This is explained by the fact that foreign students typically have little time for preparing food and often tend to consume large amounts of fast food, which offer a quick and convenient means of obtaining meals (29, 31). However, these data should be treated with caution since BMI calculations were based on self-reported data.

Insufficient intake of all food groups with the exception of increased consumption of fat and sweets group is associated with low intake of essential nutrients such as proteins, vitamins and minerals. Revealed unhealthy eating habits among foreign students might have substantial impact on their health as well as academic performance (Appendix 7.1.).

However, it is impossible to show in the present study that revealed changes in dietary habits of foreign medical students are due to education in a foreign country. These changes may be attributable to starting education at a university level. This suggests a need to conduct a study that will also explore dietary changes among local medical students during their first year at YSMU and further comparison of the results may demonstrate the extent to which foreign country affects dietary changes of foreign medical students.

4.1. Limitations of the Study

This study has several limitations. First of all, there is low generalizability of the results since only foreign students from medical university were included in the study, which might not be representative of the whole foreign student population in Armenia. However,

healthy practices adopted by foreign medical students are expected to enhance their psychological readiness to participate in creation of environment of healthy behavior among their peers from foreign countries (8).

Given time, financial and human resources limitations this study utilized the one-group pretest-posttest design, which has several threats to internal and external validity (14). Particularly, it is quite likely that students' susceptibility to persuasion and their dietary practices are changed by the pre-test (14). The pre-test might have sensitized the students to the problem and it might have increased their attention to nutritional issues.

Issues of validity and reliability of instruments are important concerns in any study. Foreign students who are ethnically Armenian responded to the adopted questionnaire translated into Armenian. These students represented only 5.6% of the whole sample. Since only forward translation into Armenian language was performed the equivalences to the original English may not have been met. To address this weakness analysis was performed twice: with and without inclusion of Armenian speaking students into the analysis. Results have shown that these students' responses did not have any impact on statistical significance of the study findings. Moreover, adding food items specific to the native countries of study participants also could have an impact on the instrument validity and reliability.

Furthermore, recall bias is one of the most frequent types of biases in these types of studies. However, recall bias was minimized in this study since on the pre-measure data regarding dietary habits in native countries of foreign students were collected upon their arrival in Armenia after the winter holydays.

Since BMI measurements were calculated based on self-reported data it might also introduce some information bias.

4.2. Recommendations

The following recommendations are based on the study findings:

1. It is recommended that the hygiene department of the medical university plan appropriate healthy food choices in student cafeterias based on the revealed problems.
2. It is recommended that the hygiene department of the medical university develops nutritional educational program for newly arrived foreign students to increase foreign students' knowledge and awareness regarding nutritional issues.
3. It is recommended to conduct more research in order to observe not only dietary but also other environmental factors that could affect the health status of foreign students, include foreign students from different universities.
4. It is recommended to conduct more research in order to observe dietary changes of foreign students that occur at later periods during their study at YSMU.
5. It is recommended to conduct more research to observe dietary changes of local students after starting education at higher educational institutions.

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6. Tables

Table 6.1. Socio-demographic characteristics of study participants at pre-measure

Variable	Pre-Measure N=144
Age, (mean ± SD)	20.6 ± 2.6
Gender:	
Male % (n)	60.4% (87)
Female % (n)	39.6% (57)
Country of permanent residence:	
Iran % (n)	59% (85)
India % (n)	26.4% (38)
Georgia % (n)	3.5% (5)
Other % (n)	11.1 % (16)

Table 6.2. Socio-demographic and anthropometrical characteristics of the study participants at pre- and post-measure

Variable	Pre-Measure N=144	Post-Measure N=144
Body weight (*kg ± SD)*	67.5 ± 17.9	65.1 ± 12.4
Body height (*cm ± SD)*	170.6 ± 8.7	171.6 ± 8.8
BMI ($kg/m^2 \pm SD$)†	23.0 ± 5.3	22.1 ± 3.1
Place of living:		
Dormitory % (n)	0.7% (1)	31.9% (46)
Home (rented) % (n)	2.1% (3)	61.1% (88)
Home % (n)	97.2% (140)	6.9% (10)

***P< 0.012 between pre- and post-measure**
† P< 0.01 between pre- and post-measure

Table 6.3. Consumption of food groups by first-year students and preparatory-course students at pre-measure

Food groups and food items	First-year Students FGP Servings Mean ± SD (N=70)	Prep. Course Students FGP Servings Mean ± SD (N=74)	*P* Value
Milk, yogurt and cheese group	4.98 ± 5.2	6.16 ± 3.8	0.12
Vegetable group	6.93 ± 6.1	7.61 ± 7.1	0.54
Fruit group	10.2 ± 9.9	10.7 ± 6.7	0.73
Meat, poultry, fish, dry beans, eggs and nuts group	4.36 ± 3.7	5.45 ± 3.3	0.068
Bread, cereal, rice and pasta group	6.27 ± 4.1	5.14 ± 4.3	0.11
Fats, oils and sweets group	3.56 ± 3.2	3.81 ± 3.1	0.63

Table 6.4. Consumption of food groups and food items at pre- and post-measure

Food groups and food items	Pre-Measure FGP Servings Mean ± SD (N=144)	Post-Measure FGP Servings Mean ± SD (N=144)	*P* Value
Milk, yogurt and cheese group	5.59 ± 4.5	2.7 ± 2.1	0.0001
Vegetable group	7.28 ± 6.6	1.97 ± 1.9	0.0001
Fruit group	10.4 ± 8.4	1.65 ± 1.5	0.0001
Meat, poultry, fish, dry beans, eggs and nuts group	4.92 ± 3.6	1.82 ± 1.1	0.0001
Hotdog	0.23 ± 0.5	0.19 ± 0.3	0.446
Hamburger	0.24 ± 0.4	0.17 ± 0.2	0.155
Fish	0.27 ± 0.5	0.07 ± 0.1	0.0001
Chicken	0.68 ± 0.9	0.26 ± 0.3	0.0001
Beans	0.47 ± 0.6	0.25 ± 0.4	0.0001
Nuts	0.72 ± 1.0	0.17 ± 0.3	0.0001
Bread, cereal, rice and pasta group	5.68 ± 4.3	2.43 ± 2.2	0.0001
Fats, oils and sweets group	3.7 ± 3.2	6.47 ± 5.0	0.0001
Butter	0.32 ± 0.4	0.88 ± 1.3	0.0001
Chocolate	0.6 ± 0.8	1.26 ± 1.7	0.0001
Candy	0.41 ± 0.6	0.67 ± 1.2	0.017
Cake	0.37 ± 0.7	0.48 ± 0.8	0.05
Sugar	1.08 ± 1.6	1.59 ± 1.7	0.017

Table 6.5. Dietary habits of study participants at pre- and post-measure

Variable	Pre-Measure (N=144) % (n)	Post-Measure (N=144) % (n)	*P* Value
Usually eating meals at:			
Fixed hours	45.1% (65)	9.1% (13)	0.0001
Variable hours	54.9% (79)	90.9% (131)	0.0001
Frequency of eating breakfast:			
4-6 times a week	69.4% (100)	58.3% (84)	0.017
1-3 times a week	30.6% (44)	41.7% (60)	0.017
Frequency of eating lunch:			
4-6 times a week	91.7% (132)	67.4% (97)	0.0001
1-3 times a week	8.3% (12)	32.6% (47)	0.0001

7. Appendices

Appendix 7.1. Some important vitamins and minerals and health disorders due to their deficiencies

Vitamins	Functions	Deficiency
Vitamin A	Essential for eyes, skin and the proper function of the immune system. Helps maintain hair, bones and teeth.	Night blindness; loss of appetite; dry, rough skin; lowered resistance to infection; dry eyes.
Vitamin D	Helps build and maintain teeth and bones. Enhances calcium absorption.	Bone softening in adults; osteoporosis.
Vitamin E	Antioxidant. Helps form red blood cells, muscles and other tissues. Preserves fatty acids.	Decreased sexual performance, apathy, irritability, muscle weakness.
B-group vitamins	Necessary for carbohydrate and protein metabolism and muscle coordination. Promotes proper nerve function. Stimulates brain action. Improves circulation and reduces the cholesterol level in the blood	Anxiety, depression, memory lapses, insomnia; muscle cramps; loss of appetite, cracks and sores around the mouth and nose; visual problems.
Vitamin C	Antioxidant. Helps bind cells together and strengthens blood vessel walls. Helps maintain healthy gums. Aids in the absorption of iron.	Muscle weakness, bleeding gums; frequent infections.
Minerals		
Calcium	Helps build strong bones and teeth. Promotes muscle and nerve function. Helps blood to clot. Helps activate enzymes needed to convert food to energy.	Osteomalacia (soft bones) and osteoporosis in adults.
Magnesium	Activates enzymes needed to release energy in body. Needed by cells for genetic material and bone growth.	Nausea, irritability, muscle weakness; twitching; cramps, cardiac arrhythmias.
Iron	Essential for making hemoglobin, the red substance in blood that carries oxygen to body cells.	Skin pallor; weakness; fatigue; headaches; shortness of breath (all signs of iron-deficiency anemia).
Potassium	Helps maintain regular fluid balance. Needed for nerve and muscle function.	Nausea, anorexia, muscle weakness, irritability.

Source: Medline Plus: Vitamins and Minerals Chart
Retrieved from http://www.nlm.nih.gov/medlineplus/vitamins.html August 2007

Appendix 7.2.

ID# _ _ _ _ _

American University of Armenia
AUA College of Health Sciences
Dietary Practices Questionnaire

This questionnaire was developed for use as part of a student's research project at the AUA. Its' purpose is to identify the usual foods consumed by several groups of students attending the university.

Please fill in the blanks.

Your Name _____

Surname _____

Middle Name _____

Today's date (day/month/year) _____

Your Group Number _____

Please fill in the blanks or check the answers, which best describe your usual practices. ***ID#*** _ _ _ _ _

1). Date of birth (day/month/year) _____

2). Body weight _____ *kg*, **3). Height _____ *cm*.,**

4). Gender-- ☐ /Male/, ☐ /Female/

5). What is the city of your permanent living-- ☐ /Yerevan/, ☐ /Other/, Specify_____

6). Do you live at-- ☐ /Dormitory/, ☐ /Home (rented)/, ☐ /Home/, ☐ /Other/, Specify_____

7). Do you usually eat your meals at – ☐ /Fixed hours/, ☐ /Variable hours/

8). Do you usually eat breakfast - ☐/every day/, ☐/4-6 times a week/, ☐/1-3 times a week/, ☐/almost never/

9). Do you usually eat lunch --- ☐/every day/, ☐/4-6 times a week/, ☐/1-3 times a week/, ☐/almost never/

Indication. ***For each food item listed, check the box indicating how often, on average, you have used the amount specified during the last month.***
To quickly estimate portion size, use these visual comparisons:

85 grams of ***meat, poultry, or fish*** are about the size of one deck of playing cards or the palm of woman's hand.
1/2cup of ***fruit, vegetables, pasta, or rice*** is about the size of small fist.
1cup of ***milk, yogurt, or chopped, fresh greens*** is about the size of a small hand holding a tennis ball.
28 grams of ***cheese*** is about the size of your thumb.
1tbsp (tablespoon) = 3tsp (teaspoon) 8tbsp =1/2 cup

	Average use during the last month								
FOOD AND AMOUNTS	***6 + per day***	***4-6 per day***	***2-3 per day***	***1 per day***	***5-6 per week***	***2-4 per week***	***1 per week***	***1-3 per month***	***Almost Never***
Dairy Foods									
Skim or low fat milk (1 cup)									
Whole milk (1 cup)									
Matsuni (1 cup)									
Sour Cream (1/2 cup)									
Yogurt (1cup)									
Ice Cream (1/2 cup)									
Cottage Cheese (1/2 cup)									
Hard cheese, plain or as part of a dish (28 gr.)									
Margarine (2tsp)									
Butter (2tsp)									
Fruits									
Apples (1), Pears (1)									
Pineapple (1/2)									
Oranges (1)									
Grapefruit (1/2)									
Orange or grapefruit juice (3/4 cup)									
Mango (1)									
Bananas (1)									

Watermelon (slice)									
	Average use during the last month								
FOOD AND AMOUNTS	***6 + per day***	***4-6 per day***	***2-3 per day***	***1 per day***	***5-6 per week***	***2-4 per week***	***1 per week***	***1-3 per month***	***Almost Never***
Strawberries (2/3 cup)									
Lemon (1/2)									
Tangerine (1)									
Red-pulp (1)									
Berries (1/2 cup)									
Other fruits (fresh, or 1/2 cup canned or 1/4 cup dried)									
Vegetables									
Cabbage, cauliflower (1/2 cup)									
Carrots (whole or cooked) (1/2 cup)									
Spinach or other greens (1/2 cup)									
Peas (1/2 cup)									
Squash (1/2 cup)									
Potatoes (1)									
Beans (1/2 cup)									
Gram (1/2 cup)									
Lentils (1/2 cup)									
Soya bean (1/2 cup)									
Tomatoes (1) or tomato juice (3/4cup)									
Beet (1/2 cup)									
Aubergine (1/2 cup)									
Pepper (1)									
Cucumber (1)									
Meats, Eggs and Fish									
Chicken (85 gr.)									
Hamburgers (85 gr.)									
Hot dogs (85gr.)									
Processed meats (sausage, salami, bologna, ham)(85gr.)									
Beef, pork or lamb as a sandwich or mixed dish (85gr.)									
Beef, pork or lamb as a main dish (85gr)									
Fish (85gr.)									
Eggs (1)									
Organ Meats (85gr.)									
Sweets, Baked Goods, Cereals									
Chocolate (28gr.)									
Candy without chocolate (28gr)									
Cake (slice)									
Indian sweets (85gr)									
Sugar in coffee or tea (1tsp)									
Honey (1tsp)									
Jam (1tsp)									
Cookies (1)									
White Bread (slice- 40gr)									
Dark or whole grain bread (slice- 40gr.)									
Chapati (1)									
Cooked rice or buckwheat (1/2 cup)									
Cooked pasta (1/2 cup)									

Miscellaneous									
Potato chips (small bag)									
Nuts (1/3 cup)									
Potatoes, mashed (1/2 cup)									
Pizza (2slices)									
Tea (1 cup)									
Coffee (1 cup)									
Coca Cola, Pepsi etc. (1 bottle)									
Beer (1 bottle)									
Milk in coffee or tea (1tbsp)									

Comments from student about nutrition_____

Thank You for your Participation.

Appendix 7.3.

American University of Armenia
College of Health Sciences
Master of Public Health Program

Dear Participant:

I am a Master of Public Health student at the AUA. As a part of my course requirement, I am studying the changes in dietary practices of the first year foreign medical students attending Yerevan State Medical University of Armenia. Your group numbers have been obtained from the Foreign Students' Department and Dean's Office of Premedical Education.

Information for the study will be collected through the use of the questionnaire, which should take approximately 40 minutes to complete. In addition to the completion of this questionnaire, you will be contacted in approximately three-months to take the same questionnaire. There are no other requirements other than completion of the two questionnaires.

Your participation is highly valuable for this project. It is possible that your answers may lead to nutrition educational programs, which could benefit other groups of people. In addition, there is an opportunity for private nutritional counseling by researcher for those students who request it after the end of the study.

The information on the questionnaire is neither sensitive nor personally embarrassing. Although your name is required on the questionnaire, it will be kept confidential. Only group or aggregate data will be used in any written or oral reports about the findings. Only I will have access to the questionnaire. The purpose of obtaining your name is to be able to provide you with the follow-up questionnaire and the feedback that might be appropriate. After data input, the questionnaires will be maintained in sealed boxes and stored in my locked cabinet at the Medical College for 3-years. After that time, they will be destroyed.

You have the right to decline participation anytime during the study. It is your right to decide whether or not to complete the questionnaire. If you decide not to participate, there will be no reprisal or negative effects. Your participation will not further affect your grading, academic performance, participation in the university activities and no administrative measures will be taken. Additionally, university authorities including your dean and instructors will not be reported about your participation in the study.

You may ask me any questions about this study. I can be contacted at the following telephone number (56 01 01). If you believe that your questions have not been satisfactorily addressed or you have not been treated fairly, you may contact Dr. Yelena Amirkhanyan at the AUA at (374 1) 51 25 68.

Appendix 7.4.

Հայաստանի Ամերիկյան Համալսարան
Բժշկական Գիտությունների Քոլեջ
Հասարակական Առողջապահության Մագիստրոսի Ծրագիր

Հարգելի Մասնակից

Ես ուսանում եմ ՀԱՀ-ի Հասարակական Առողջապահության Մագիստրոսի ծրագրում և որպես իմ կուրսային հանձնարարության մաս ուսումնասիրում եմ Երևանի Պետական Բժշկական Համալսարանի արտասահմանցի I կուրսի ուսանողների սննդային սովորույթները: Ձեր խմբերի համարները ձեռք են բերվել համալսարանի արտասահմանցի ուսանողների և նախապատրաստական ուսուցման դեկանատներից:

Հետազոտության համար անհրաժեշտ տեղեկությունները հավաքվելու են հարցաթերթի օգնությամբ, որի լրացման համար կպահանջվի մոտավորապես 45 րոպե: Ի հավելումն հարցաթերթի այսօրվա լրացմանը, երեք ամիս անց ձեզ նորից կբաժանվի նույն հարցաթերթը՝ լրացման խնդրանքով: Այս հետազոտությանը Ձեր մասնակցության միակ պահանջը երկու հարցաթերթերի լրացումն է:

Ձեր մասնակցությունը այս ծրագրում խիստ արժեքավոր է: Հնարավոր է, որ Ձեր պատասխանները նպաստեն ճիշտ սնուցման վերաբերյալ ուսուցողական ծրագրերի զարգացմանը, որոնք կարող են օգտակար լինել բնակչության այլ խմբերի համար: Բացի այդ, սննդի հարցերի վերաբերյալ անհատական խորհրդատվություն ցանկացող ուսանողներին կտրվի այդ հնարավորությունը հետազոտողի կողմից անմիջապես հետազոտության ավարտից հետո:

Նուրբ և շփոթմունք առաջացնող հարցերը ընդգրկված չեն հարցաթերթում: Չնայած պահանջվում է լրացնել Ձեր անունը, սակայն այն գաղտնի է պահվելու: Միայն ընդհանրացված տվյալներն են օգտագործվելու արդյունքներն ամփոփող բանավոր կամ գրավոր զեկույցներում: Հարցաթերթերը մատչելի են լինելու միայն իմ համար: Ձեր անունը անհրաժեշտ է Ձեզ հերթական հարցաթերթը բաժանելու և անհրաժեշտության դեպքում խորհրդատվական օգնություն ցուցաբերելու նպատակով: Տվյալների ներմուծումից հետո հարցաթերթերը կպահվեն անձեռնմխելի և կնքված տուփերում Բժշկական Համալսարանի փակ սենյակում 3 տարվա ընթացքում: Այդ ժամանակամիջոցից հետո նրանք կոչնչացվեն:

Դուք իրավունք ունեք մերժելու Ձեր մասնակցությունը հետազոտության ցանկացած պահին: Եթե դուք որոշեք չմասնակցել, դա ոչ մի բացասական հետևանք չի ունենա Ձեզ համար: Ձեր մասնակցությունը հետազոտությունում հետագայում չի անդրադառնա ձեր գնահատման, առաջադիմության, համալսարանական գործունեությունում մասնակցության վրա և ոչ մի վարչական միջոցառումներ չեն կիրառվի: Համալսարանի ղեկավարությունը՝ ներառյալ Ձեր դեկանը և դասախոսները չեն զեկուցվի հետազոտությունում Ձեր մասնակցության մասին:

Դուք կարող եք հետազոտության վերաբերյալ ցանկացած հարց ուղղել ինձ, նաև զանգահարելով ինձ հետևյալ հեռախոսահամարով **(56-01-01):** Եթե Դուք համարեք, որ Ձեր հարցերին բավարար պատասխան չի տրվել կամ Ձեր նկատմամբ անարդար վերաբերմունք է ցուցաբերվել, Դուք կարող եք զանգահարել Դ-ր. Ելենա Ամիրխանյանին ՀԱՀ-ի **(51-25-68)** հեռախոսահամարով:

Appendix 7.5.
ID# _ _ _ _ _

Հայաստանի Ամերիկյան Համալսարան
ՀԱՀ-ի Բժշկական Գիտությունների Քոլեջ
Սննդային Սովորույթների Հարցաթերթ

Այս հարցաթերթը ստեղծվել է ՀԱՀ-ում ուսանողի գիտական աշխատանքում օգտագործման նպատակով: Դրա նպատակն է պարզել Բժշկական Համալսարանի ուսանողների կողմից սովորաբար օգտագործվող սննդամթերքների հավաքածուն:

Խնդրում ենք լրացնել հետևյալը

Ձեր անունը _____

Ազգանունը _____

Հայրանունը _____

Այսօրվա ամսաթիվը (օր/ամիս/տարի) _____

Ձեր խմբային համարը _____

Խնդրում ենք լրացնել տողերը կամ նշել այն վանդակները, որոնք լավագույնս են բնութագրում են Ձեր սովորական վարքագիծը:

1).Ծննդյան ամսաթիվը (օր/ամիս/տարի)_____

2). Քաշը _____ կգ., **3). Հասակը _____ սմ.,**

4). Սեռը-- □ /Արական/, □ /Իգական/

5). Մշտական բնակության քաղաքը -- □ /Երևան/, □ /Այլ/, անվանումը _____

6). Դուք բնակվում եք ---□ /Հանրակացարանում/, □ /Տանը (Վարձով)/, □ /Տանը/, □ /Այլ/, անվանումը___

7). Դուք սովորաբար սնվում եք – □ /որոշակի ժամերին/, □ /երբ պատահի/

8). Դուք սովորաբար առավոտյան նախաճաշում եք ---

□/ամեն օր/, □/4-6 անգամ շաբաթը/, □/1-3 անգամ շաբաթը /, □/համարյա երբեք/

9). Դուք սովորաբար կեսօրին նախաճաշում եք ---

□/ամեն օր/, □/4-6 անգամ շաբաթը/, □/1-3 անգամ շաբաթը /, □/համարյա երբեք/

<u>Ցուցում.</u> ***Նշված յուրաքանչյուր սննդամթերքի համար ընտրեք և նշեք այն վանդակը, որը ցույց է տալիս, թե <u>միջինում</u> ինչ հաճախականությամբ եք Դուք օգտագործել այդ սննդամթերքի տրված չափաբաժինը անցած ամսվա ընթացքում:***

<u>Գրված չափաբաժինը արագ մոտավոր գնահատելու համար օգտվեք հետևյալ համեմատություններից.</u>

Մսի,ընտանի թռչունների կամ ձկան 85գրամը (85գր) մոտավորապես խաղաթղթերի մեկ կապուկի չափի է

Մրգի, բանջարեղենի, մակարոնեղենի կամ բրնձի 1/2 բաժակը մոտավորապես փոքր բռունցքի չափի է:

Կաթի, յոգուրտի կամ կտրտված, թարմ կանաչեղենի 1բաժակը մոտավորապես մեծ թեյի բաժակի չափի է կամ թենիսի խաղագնդակ բռնած ձեռքի չափի է:

Պանրի 28 գրամը (28 գր.) **մոտավորապես Ձեր բթամատի չափի է:**

1 ճգ. (ճաշի գդալը) = 3թգ. (թեյի գդալ) ***8 թեյի գդալը = 1/2 բաժակի***

	Միջին օգտագործումը անցյալ ամսվա ընթացքում								
Սննդամթերքը և Չափերը	*օրը 6× և ավել*	*օրը 4-6 ×*	*օրը 2-3 ×*	*օրը 1 ×*	*շաբաթը 5-6×*	*շաբաթը 2-4×*	*շաբաթը 1×*	*ամիսը 1-3×*	*Համարյա երբեք*
Կաթնամթերքներ									
Քիչ յուղայինկաթ (1 բաժակ)									
Ամբողջական կաթ (1 բաժակ)									
Մածուն (1 բաժակ)									
Թթվասեր (1/2 բաժակ)									
Յոգուրտ (1 բաժակ)									
Պաղպաղակ (1/2 բաժակ)									
Կաթնաշոռ (1/2 բաժակ)									
Պանիր (28 գր.)									
Մարգարին (2 թգ.)									
Կարագ (2 թգ.)									

Մրգեր									
Խնձոր (1 հատ), Տանձ (1 հատ)									
Անանաս (1/2)									
Նարինջ (1 հատ)									
	Միջին օգտագործումը անցյալ ամսվա ընթացքում								
Սննդամթերքը և Չափերը	*օրը 6× և ավել*	*օրը 4-6 ×*	*օրը 2-3 ×*	*օրը 1 ×*	*շաբաթը 5-6×*	*շաբաթը 2-4×*	*շաբաթը 1×*	*ամիսը 1-3×*	*Համարյա երբեք*
Գրեյպ-ֆրուտ (1/2 հատ)									
Նարնջի կամ գրեյպ-ֆրուտի հյութ (3/4 բաժակ)									
Մանգո (1 հատ)									
Բանան (1 հատ)									
Ձմերուկ (1 կտոր)									
Ելակ (2/3 բաժակ)									
Կիտրոն (1/2 հատ)									
Մանդարին (1 հատ)									
Արքայանարինջ (ԽՏՐՏսպՍ) (1 հատ)									
Հատապտուղ (1/2 բաժակ)									
Այլ մրգեր (թարմ 1 բաժակ կամ 1/2 բաժակ պահածո կամ 1/4 բաժակ չորացրած)									
Բանջարեղեն									
Կաղամբ, ծաղկակաղամբ (1/2 բաժակ)									
Գազար (ամբողջական կամ եփված) (1/2 բաժակ)									
Սպանախ կամ այլ կանաչեղեն (1/2 բաժակ)									
Ոլոռ (1/2 բաժակ)									
Դդմազգիներ (1/2 բաժակ)									
Կարտոֆիլ (1 հատ)									
Լոբի (1/2 բաժակ)									
Գրամ (1/2 բաժակ)									
Ոսպ (1/2 բաժակ)									
Սոյա (1/2 բաժակ)									
Պոմիդոր(1հատ) կամ պոմիդորի հյութ (3/4 բաժակ)									
Բազուկ (1/2 բաժակ)									
Բադրիջան (1/2 բաժակ)									
Պղպեղ (1 հատ)									
Վարունգ (1 հատ)									
Միս, Ձու և Ձուկ									
Հավ (85 գր.)									
Համբուրգեր (85 գր.)									
Նրբերշիկ (հոթ դոգ) (85 գր.)									
Մշակված մսեր (սալամի, ապխտած երշիկ, վետչինա) (85 գր.)									
Տավարի,խոզի, ոչխարի մսով բուտերբրոդ (85 գր.)									
Տավարի, խոզի, կամ ոչխարի մսով ճաշ (85 գր.)									
Ձուկ (85 գր.)									
Ձու (1 հատ)									
Օրգանային մսեր (լյարդ, փայծաղ) (85 գր.)									
Քաղցրավենիքներ, խմորեղեն, հաց									
Շոկոլադե կոնֆետներ (28 գր.)									
Ոչ շոկոլադե կոնֆետներ (28 գր.)									
Թխվածք (1 կտոր)									
Հնդկական քաղցրավենիք (85 գր.)									
Շաքար թեյի կամ սուրճի մեջ (1 թգ.)									
Մեղր (1 թգ.)									
Մուրաբա, ջեմ (1 թգ.)									

Բուլկի (1 հատ)									
Սպիտակ հաց (1 կտոր- 40գ.)									
Գորշ հաց (1 կտոր- 40գ.)									
Չապատի (1 հատ)									
Եփված բրիձ կամ գրեչկա (1/2 բաժակ)									
Եփված մակարոնեղեն (1/2 բաժակ)									
Այլևայլ									
Կարտոֆիլի չիփսեր (1 փոքր տուփ)									
Ընկույզներ (1/3 բաժակ)									
Կարտոֆիլի պյուրե (1/2 բաժակ)									
Պիցցա (2 կտոր)									
Թեյ (1 բաժակ)									
Սուրճ (1 բաժակ)									
Կոկա-կոլա, Պեպսի և այլն (1 ապակե շիշ)									
Գարեջուր (1 ապակե շիշ)									
Կաթ սուրճի կամ թեյի մեջ (1 ճգ.)									

Սննդի վերաբերյալ ուսանողի մեկնաբանություններ_____

Շնորհակալություն Ձեզ մասնակցության համար

8. List of appropriate journals where this study might be published

American Journal of Public Health

International Journal of Food Sciences and Nutrition

Journal of the American Dietetic Association

Journal of the American College of Nutrition

Medical Science of Armenia

Journal of Published Papers of the Fourth Young Medics' International Conference