

***The Risk Factors of Urinary Stone Disease in Armenia:
A Case-Control Study***

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LIST OF ABBREVIATIONS

ADHS	Armenian Demographic Health Survey
AUA	American University of Armenia
BEVQ-15	Beverage Intake Questionnaire -15
BMI	Body-Mass Index
CHSR	Center of Health Services Research and Development
EAU	European Association of Urology
KAP	Knowledge, Attitude and Practice
MoH	Ministry of Health
NHANES	National Health and Nutrition Examination Survey
QOL	Quality of Life
SLS	Significance Level of Stay
USD	Urinary Stone Disease
WHO	World Health Organization

ABSTRACT

Background. Urinary stone disease (USD) is a condition characterised by the presence of stones within the urinary tract. It is the third most common urological disease with the reported increasing prevalence rates worldwide and the reported increased prevalence rate during the last two decades in Armenia.

Study aim. This study aims to investigate the relationship between diet and other risk factors, and USD in the Armenian population.

Methods. The case-control study design was used to identify the risk factors associated with the development of USD among adult population (≥ 18 years), who underwent ultrasound examination in Izmirlyan Medical Center. Patients, who were diagnosed (cases)/ not diagnosed (controls) with USD during the period of August 1, 2015 to February 29, 2016, were recruited for the study. Overall, 453 patients (232 cases and 221 controls) participated in the study. The data collection was done using the structured interviewer-administered questionnaire, which was developed by using 5 different validated sources and contained questions on socio-demographic characteristics, dietary factors and lifestyle habits.

Results. The mean age of study participants was 44.6 (SD = 14.2) and 47.2 (SD= 16.0) in cases and controls, respectively. The majority of cases were males (63.4%), while there were fewer males in controls (43.9%). More cases reported positive family history compared controls (25.0% and 6.3%, respectively). We found that socio-demographic characteristics, such as age, gender, BMI and family history of USD, were associated with development of USD. The consumption of some fluids, such as water, beer and wine, as well as consumption of banana and chicken or turkey without skin were found to have preventive effect for developing USD. The consumption of several food items, such as cabbage, cauliflower or broccoli, corn, nuts, and chicken or turkey without skin, were found to have harmful effect for developing of USD. We did not find any differences in the strength of associations between risk factors and USD between men and women.

Conclusion. Our research was the first study that identified risk factors of USD among the Armenian population. Our results will be useful for urologists, public health specialists and patients in order to prevent both incident as well as recurrent cases of USD in the future.

INTRODUCTION

Background

“Urinary stone disease (USD) – (also known as *urolithiasis*, *nephrolithiasis*, *kidney stone disease*, and *nephrocalcinosis*) is a generic term that indicates the presence of stones and calcification within the urinary tract.”¹ The stone formation is a multistage process which includes nucleation of stone constituent crystals, its’ growth until it will form into a stone, which will be commensurable with some intrarenal structure and will be interacting with it.² The evidence shows that stones form as a result of *Helicobacter pylori* infection, which produce phosphate shells – a core for the stone.^{3,4} These formations hold within the kidney or renal collecting system with following aggregation and further secondary nucleation. This process leads to clinical stoneformation.² Although USD could be asymptomatic, there are some symptoms typical for this disease such as pain in back, vomiting and fever.⁵ Urinary stone disease can be classified according to stone size, location, X-ray characteristics, etiology, stone composition (components) and risks for recurrence.⁶

Several studies were conducted to assess quality of life (QOL) for patients with urinary stones suggesting importance of prevention of stone recurrence by dietary modification and/or medical therapy.^{7,8} The studies by Bensalah and Pennison showed lower QOL for the patients with urinary stones depending on general and physical health problems, bodily pain, number of surgical procedures, as well as improved QOL associated with several types of treatment.^{7,8} Furthermore, the comparisons within the gender groups in both of these studies showed lower QOL in women stone formers as compared to men stone formers in terms of general health, physical functioning, vitality and mental health as well.^{7,8}

Epidemiology

According to the study by Rafiei H. et al., USD is the third most common urological disease after urinary tract infections and prostate diseases worldwide.⁹ A review conducted in 2010 by Romero reported increased prevalence and incidence rates for USD worldwide during recent decades.¹⁰ A population-based study by Safarinejad MR conducted in 2007 showed that the prevalence of USD was 5.7% among Iranian population aged 14 years and above,¹¹ while the study by Muslumanoglu A. Et al. conducted in 2008 among population living in Turkey reported that the incidence rate of USD was 1.7%.¹²

The study by Hesse A. et al., which compared prevalence and incidence rates of USD in Germany reported that the prevalence of USD was 4.0% and 4.7% among population aged 14 and above in 1979 and in 2000, respectively.¹³ This study also showed that the prevalence rate of USD among older adults aged 65 and above also increased from 6.8% to 9.5% during the same period of time.¹³ According to the U.S. National Health and Nutrition Examination Survey (NHANES) data from 2007 to 2010 show that among the adult population aged 18 years and above the prevalence of USD was 10.6% among men and 7.1% among women in US, and overall prevalence was 8.8%, which was higher compared to 5.5% from the previous NHANES (1988-1994).¹⁴

Risk Factors

There are several studies which have examined the risk factors of USD.¹⁵⁻²² The main risk factors identified in different studies are age, gender, family history of having renal stones, consumption of specific foods, high BMI, hypertension and smoking habit. A retrospective study by Baker et al. conducted among Australian adult population found that men are at increased risk of USD.¹⁵ The study conducted among Chinese adult population aged 18 and

above showed that the prevalence of urinary stones was the highest among patients aged 40-49 both in men and women.¹⁶ Another study conducted in Hong Kong among patients above 18 years old showed that the highest prevalence of USD was found in men aged 30-50 and women aged 40-60.¹⁷ This study also found an association between positive family history for USD and urinary stone formation.¹⁷ The study by Hamano et al. showed that non-communicable diseases such as hypertension, obesity and hypercholesterolemia (i.e., elevated serum cholesterol level) are significantly associated with urinary stone formation among Japanese patients aged 40-65 years.¹⁸ This study showed that cigarette smoking had a stronger association as a risk factor for urinary stone formation than hypertension, obesity and hypercholesterolemia,¹⁸ while the study by Dai et al. showed no significant associations between smoking status (current and passive smokers) and having urinary stone disease among patients aged 18 years and above.¹⁶ The results of the study by Dai et al. conducted in China showed that consumption of specific food can increase the risk for the development of urinary stones among patients aged 18 years and above.¹⁶ This study also indicated that the consumption of more grains and beans increased the risk for USD among women, while insufficient consumption of fluids was identified as a risk factor for urinary stone formation in men.¹⁶ Moreover, the consumption of leafy vegetables more than 3 times per day was shown to be associated with USD both in men and women.¹⁶ The study conducted in 1993 by Sakhaee et al. showed the potential risk for urinary stones induced by high consumption of salt (more than 4-5 g/day).¹⁹ Several studies conducted in USA, Saudi Arabia and Hong Kong showed that people with increased body mass index (BMI) have increased risk for having USD,^{17,20,21} while the study by Dai et al. conducted in China did not find significant association between BMI and urinary stones.¹⁶ Some studies also explored the

association between alcohol usage as a frequent habit and urinary stone disease, but did not find a significant association.^{16,18}

Disease Prevention

The main dietary changes to prevent and to reduce urinary stone formation are increased fluid intake, consumption of adequate calcium, limit dietary oxalates, limit sodium (salt) intake and limit animal protein intake, as well as maintaining body mass index within normal ranges.²¹ Increased fluid intake includes high consumption of water, as well as other beverages such as tea, coffee, fruit juice, etc. According to the European Association of Urology (EAU) guidelines the normal fluid intake amount is 2.5-3.0 L per day.^{6,21} The recommended diet for adequate calcium intake (1-1.2 g/day)⁶ is limiting use of low-fat dairy products, use of green leafy vegetables and fruits and almonds.²¹ Oxalates are found in nuts, beans, spinach, black tea and other products, excessive consumption of which should be limited.²¹ The normal amount of sodium (salt) should not exceed 4-5 g/day and animal protein intake should not exceed 0.8g per 1 kg of body mass per day as recommended by EAU.⁶

Situation in Armenia

According to the annual report of Ministry of Health (MoH) in 2015, 12651 patients were diagnosed with USD in 2014 in Armenia, with the prevalence rate of 519.6 out of 100.000 people aged 18 and above.²³ Out of 12651 patients with USD, 4778 persons (or 196.2 out of 100.000) were diagnosed with USD the first time.²³ This report stated that the prevalence rate of USD was increased during the last two decades. The lowest rate of USD was reported in 1995 (181.5 out of 100.000) and the highest rate was reported in 2014 (519.6 out of 100.000).²³

According to Armenia Demographic and Health Survey (ADHS) 2010, 63% of men and 2% of women are smokers. The prevalence of smokers among Armenian men is higher than the

prevalence rates of other post-soviet countries such as 51% in Moldova and 52% in Ukraine, while the prevalence of smoking in Armenian women is lower compared to 7% and 15% in Moldova and Ukraine, respectively.²⁴

The prevalence of hypertension was about 28% in 2014 among Armenian population aged 18 years and above according to World Health Organization (WHO), which is comparably lower than in other countries in region as in Georgia (33%), in Russia (33%), in Moldova (34%), but higher than in Kazakhstan (27%), Sweden (26%) or Switzerland (23%).²⁵

According to WHO the prevalence of adult population (≥ 18 years) with high BMI was about 56%, which is lower than in Iran (61%), Belarus (61%), Georgia (58%), but higher than in Moldova (48%).²⁶

Alcohol consumption was recorded to be 3.8 (litres of pure alcohol) per capita in 2011 among Armenian population aged 15 years and above, while it was 5.3 in Georgia in 2010, about 15 in Belarus in 2012, but was 1.5 in Turkey in 2012.²⁷

There is no data available on dietary habits in Armenia.

STUDY AIM AND RESEARCH QUESTIONS

The study purpose is to investigate the relationship between diet and other risk factors and USD in the Armenian population.

The study proposes to answer the following research questions:

1. What is the association between dietary factors and urinary stone formation?
2. Are family history, BMI and lifestyle habits such as smoking and alcohol consumption associated with USD?
3. How do associations between risk factors and USD differ in men and women?

METHODS

Study Design

The case-control study design was used to address research questions of this study. The case-control design allows researchers to characterize multiple risk factors of rare diseases within a relatively short period of time with a minimal risk for study participants.²⁸

Study Population

The target population for this study was adult patients (aged over 18), who attended to the Izmirlyan medical center during the period of time from August 1, 2015 to February 29 in 2016. The medical center is equipped with the latest lithotripters: the devices, which use high-energy shock waves to break down the stones into smaller particles. This fact ensures having comparatively big number of patients, which allows study investigators to have enough eligible patients for selecting study participants.

Definition of Cases

Cases are defined as patients who are aged 18 and over, who were admitted to the Department of Urology in Izmirlyan medical center and underwent ultrasound examination. The patients diagnosed with USD the first time during the selected period of time were recruited for the study.

Definition of Controls

Controls are defined as patients who are aged 18 and over, who attended the same medical center and underwent ultrasound examination during the same period of time and were not diagnosed with USD.

Exclusion Criteria

Patients with reported history of urinary stones prior to the diagnosis within the selected time frame, or prior history of gallbladder stone disease, and other urinary system diseases, except those diseases which might occur as result of USD, such as uretherohydronephrosis and hydronephrosis, were excluded from the study. Inability to speak Armenian and absence of contact information also were exclusion criteria.

Sampling Strategy

After receiving permission from the medical center, the student investigator started a process of obtaining a relevant data in order to prepare a list of all eligible cases and controls for the selected time frame. The period of time from August 2015 to February 2016 was selected, since it was a minimal time frame, which included relevant number of cases and controls.

Sample Size Calculation

For sample size calculation the formula for the difference in proportions was used. The prevalence rates and odds ratios for all possible and available risk factors for urinary stone formation have been obtained from existing literature in order to guide the calculation of sample size. (Appendix1) The range of prevalence rates is from 8 to 66 and the odds ratios of risk factors with significant associations with urinary stones are between 0.995 and 4.41.

The significance level was chosen to be 0.05 with the study power of 0.8 and the ratio of cases to controls is selected to be 1:1.

For the sample size calculation we used a prevalence rate of 23.0% and odds ratio of 1.855. These are the values from existing literature corresponding to eating “nuts” 2-3 times per month. Those were selected as conservative values, which allowed us to calculate an appropriate sample

size to meet feasibility issues and have the power to detect associations for most variables of interest.

The following formula was used to determine the sample size for the study:

$$n = \frac{r + 1}{r} * \frac{(\bar{P}) * (1 - \bar{P}) * \left(Z_{\beta} + \frac{Z_{\alpha}}{2}\right)^2}{(P_1 - P_2)^2}$$

$r=1$ (ratio of cases to controls is 1:1)

$Z_{\beta} = 0.84$ (power of 80 %)

$Z_{\frac{\alpha}{2}} = 1.96$ ($\alpha=0.05$)

\bar{P} – average proportion of exposed

P_1 – proportion of cases exposed

P_2 – proportion of controls exposed (0.23)

Calculation of proportion of exposed cases was done by using the following formula:

$$P_{case.exp} = \frac{OR * P_{cont.exp}}{P_{cont.exp} * (OR - 1) + 1} = \frac{1.855 * 0.23}{0.23 * (1.855 - 1) + 1} = 0.36$$

$P_{cont.exp} = 0.23$

$OR = 1.855$

Calculation of average proportion of exposed in cases and controls is as following:

$$\bar{P} = \frac{P_{case.exp} + P_{cont.exp}}{2} = \frac{0.36 + 0.23}{2} = 0.295$$

The sample size calculation for the study is presented below:

$$n = \frac{1+1}{1} * \frac{(0.295)*(1-0.295)*(0.84+1.96)^2}{(0.36-0.23)^2} \approx 192.96 = 193 \text{ (in each group)}$$

The sample size is calculated to be 193 for each group. Considering the average response rate of 80% from similar studies conducted previously in Armenia, the final sample size was calculated to be 242 for each group with the total sample size of 484.

Study Variables

The outcome (dependent) variable of the study is presence /absence of USD.

The independent variables are age, gender, family history of USD, SES, occupation, education, consumption of specific foods (fluids and other beverages, dairy products, fruits and vegetables, and animal products), BMI, salt consumption and smoking status.

Data Collection

Data was collected through medical card reviews and phone interviews from February to March, 2016. Medical cards were reviewed in order to obtain information about patients' age and gender (also confirmed during the phone interview through screening questions (Appendix 2), having been diagnosed with USD, as well as to determine the presence of other urological diseases. Then, the relevant information about selected participants was transferred to prepared journal forms for cases and controls for further call interviews. (Appendix 3) In order to collect information about patients' socio-demographic characteristics, dietary and lifestyle habits telephone-based interviews were conducted by the student investigator using a structured questionnaire (Appendix 4).

Study Instrument

The structured questionnaire used during interviews consists of three main domains:

1. Socio-demographic characteristics – age, gender, education, occupation, socio-economic status (SES), height, weight and family history of USD;
2. Dietary factors – consumption of specific foods (dairy products: yogurt, cottage cheese, cheese, butter: fruits and vegetables: apples and pears, oranges and other citrus fruits, bananas, peaches, apricots or plums; and animal products: eggs, chicken or turkey with or without skin, beef, pork, processed meat or fish), fluid intake, salt usage;

3. Lifestyle habits – smoking status and alcohol consumption.

The study instrument was developed based on different questionnaires.²⁹⁻³⁴ The questions about socio-demographic characteristics and smoking habits were adapted from the Household Health Survey instrument conducted in Armenia.²⁹ The questions about the frequencies and types of consumed fluids were adopted from the validated Beverage Intake Questionnaire (BEVQ-15).³⁰ The Harvard Food Frequency Questionnaire was used to measure food and alcoholic drinks' consumption.^{31,32} The original 9-item scale was shortened to 5-item scale in order to make it more appropriate for telephone interview. Selection of specific food groups and items was based on the instrument of KAP survey on nutrition and healthy lifestyle in Armenia, which was developed by the Center of Health Services Research and Development (CHSR) of AUA.³³ Three additional questions about salt consumption were adopted from the validated Lean's Eating Habit Questionnaire.³⁴

Prior to data collection the study instruments have been pre-tested among 6 patients (3 cases and 3 controls) through telephone interviews.

Statistical Analysis

The student investigator entered data using SPSS 22 statistical software package. Ten percents of questionnaires were double-entered and cross-validated to ensure that the levels of data entry error were acceptable. Data entry error was calculated to be 0.02. After completing data entry and data cleaning procedures, the data were transferred into STATA 13 statistical software package for statistical analysis.

Descriptive data analysis was conducted to describe main characteristics of both cases and controls. The differences in proportions were tested by using t-test and chi-square test. The study used univariate and multivariate logistic regression analysis to show the associations

between outcome and independent variables. Stepwise regression technique was used to build a final multivariate logistic regression model. The significance level of stay (SLS) in the model was selected to be 0.25.³⁵ Hosmer-Lemeshow goodness-of-fit test was performed in order to show the degree to which the model fit the data.

Ethical Considerations

This study was reviewed and approved by Institutional Review Board (IRB) of American University of Armenia (AUA). Oral informed consent was obtained from each of the participants (Appendix 5). They were informed about their opportunity to withdraw from the study at any time despite their agreement to participate in the study at the beginning. Furthermore, the participants were informed about the risks and benefits they will have participating in the current study and that the participation is anonymous.

RESULTS

Overall, 842 medical cards were reviewed, of which 501 patients were eligible for the study (255 cases and 246 controls). A total of 25 patients (17 cases and 8 controls) were excluded from the study as they were identified having a history of USD through the screening questions. A total of 453 patients participated in the interview (232 cases and 221 controls). From those who were selected, and who did not complete the interview, 14 patients (4 cases and 10 controls) refused to participate, 4 patients (1 case and 3 controls) were out of Armenia and 5 patients (1 case and 4 controls) did not answer the phone. The response rate was 95.2% (453/476).

Socio-Demographic Characteristics of Study Participants

Table 1 shows descriptive statistics on socio-demographic characteristics of study participants by cases and controls. The mean age of study participants was 44.6 (SD = 14.2) and 47.2 (SD= 16.0) in cases and controls, respectively (p=0.06). The majority of cases were males (63.4%), while the majority of controls were females(56.1%) (p=0.00). The mean BMI was 27.80 (SD = 5.73) and 26.76 (SD = 5.54) in cases and controls, respectively (p=0.05). A total of 25.0% of cases and 6.3% of controls reported positive family history of USD (p=0.00). There were fewer patients with monthly expenditure of more than 300,000 drams in cases than in controls (25.0% vs. 38.9%, p = 0.00).

A majority of patients reported educational level of higher than 13 years both in cases and controls, 64.7% and 69.2%, respectively (p=0.30). A total of 61.6% of cases and 54.8% of controls were employed, while 32.3% of cases and 33.5% of controls were unemployed and the other 6.0% and 11.8% were retired in cases and controls, respectively (p=0.07). The majority of

cases (79.7%) and controls (76.0%) were married, while 16.4% of cases and 15.8% of controls were single (p=0.29).

In summary, cases and controls were statistically significantly different by gender, family history of USD, BMI and SES. There was no significant difference in level of education, occupation and marital status between cases and controls.

Risk Factors of USD: Results of Unadjusted and Adjusted Logistic Regression

Analysis

Dietary and Lifestyle Risk Factors

The results of unadjusted and adjusted logistic regression analysis for dietary and lifestyle risk factors of USD are reported in Table 2. Simple logistic regression analysis was performed to show the unadjusted association between USD and independent risk factors. Multivariate logistic regression models were built for each of the risk factors to show association between USD and each independent risk factor (separately) adjusted by socio-demographic characteristics (age, gender, BMI, SES and family history of USD).

Positive statistically significant associations were found in unadjusted analysis between USD and different frequencies of consumption of several items from fluids and beverages (milk, vodka), dairy products (yogurt, cottage cheese, cheese and butter), fruits and vegetables (cabbage, cauliflower or broccoli, corn, beans, spinach and nuts) and animal products (eggs, chicken or turkey with skin, beef, pork, processed meat and fish) and smoking status.

Protective effects for the development of USD were found for the consumption of some fluids and beverages (wine, water and fruit juice), fruits and vegetables (fresh apples and pears, citrus fruits and bananas), chicken or turkey without skin, and salt consumption habits.

The observed harmful and protective effects of the risk factors for the developing of USD remained in adjusted analysis. The protective effect for consumption of beer was found, and smoking status was not significantly associated with developing of USD after adjustment.

Fluids and Beverages

From the selected fluids and beverages statistically significant harmful effect was observed for consumption of a cup of milk per day. The unadjusted odds of developing USD was 3.44 times higher among those who consumed a cup of milk one time per day or more compared to those who never consumed milk or consumed milk less than one time per week (OR=3.44; 95% CI: 2.14-5.52).

The unadjusted odds of developing USD was 8.36 times higher for those patients who consumed vodka one time per day and more compared to patients who never consumed vodka or consumed vodka less than one time per week (OR=8.36; 95% CI: 2.46-28.34).

Consumption of wine had protective effect for developing of USD. The unadjusted odds of developing of USD among those who consumed one glass of wine per week or more was lower by 76% compared to those who never consumed wine or consumed less than one time per week (OR= 0.24; 95% CI: 0.16-0.36).

A protective effect was observed for consumption of water. The unadjusted odds of developing of USD among those who consumed one cup of water per day was lower by 70% compared to those who consumed water less than one time per day (OR=0.30; 95% CI: 0.19-0.48).

Consumption of fruit juice had protective effect for developing of USD. The unadjusted odds of developing of USD among patients with consumption of fruit juice more than one time

per week decreased by 87% compared to patients who never consumed fruit juice or consumed less than one time per week (OR=0.13; 95% CI: 0.05-0.34).

There were no significant associations observed between developing of USD and consumption of tea, coffee and beer in unadjusted logistic regression analysis.

Dairy Products

Consumption of yogurt was positively significantly associated with developing of USD. The unadjusted odds of developing of USD was 10.78 times higher among those who consumed yogurt more than one time per week compared to patients who consumed yogurt less than one time per week (OR=10.78; 95% CI: 6.94-16.75).

Harmful effect for developing of USD was observed for consumption of cottage cheese (կաթնաշոռ). The unadjusted odds of developing of USD among those who consumed cottage cheese one time per week and more than one time per week was 4.83 and 38.79 times higher compared to patients who never consumed cottage cheese or consumed cottage cheese less than one time per week (OR=4.83; 95% CI: 2.95-7.92 and OR=38.79; 95% CI: 17.8-84.28, respectively).

Consumption of cheese was positively significantly associated with USD and had 12.35 times higher odds of developing USD for those who consumed cheese more than one time per day compared to those who never consumed cheese or consumed cheese less than one time per week (OR=12.35; 95% CI: 4.42-34.51).

Harmful effect for developing of USD was observed for consumption of butter. The unadjusted odds of developing USD was 3.19 and 7.96 times higher among those who consumed butter one time per week and more than one time per week compared to those who never

consumed butter or consumed butter less than one time per week (OR=3.19; 95% CI: 1.42-7.17 and OR=7.96; 95% CI: 4.05-15.61).

Fruits and Vegetables

Fruits. From the list of fruits a protective effect was observed for the consumption of fresh apple or pear. The unadjusted odds of developing of USD among those patients who consumed fresh apple or pear more than once per day decreased by 95% compared to those who never consumed fresh apple or pear or consumed fresh apple or pear less than once a week (OR=0.05; 95% CI: 0.01-0.50).

Protective effect was also observed for consumption of orange or other citrus fruit. The unadjusted odds of developing USD for those who consumed orange or other citrus fruit “more than once per week” and “once per day and more” was lower by 84% and 94%, respectively, compared to those who “never consumed orange or other citrus fruit” or consumed “less than one time per week” (OR=0.16; 95% CI: 0.07-0.37 and OR=0.06; 95% CI: 0.03-0.16).

Consumption of banana was significantly associated and had protective effect for developing USD. The unadjusted odds of developing USD for those who consumed banana more than time per week was lower by 73% compared to those who consumed banana less than one time per week (OR=0.27; 95% CI: 0.18-0.40).

There was no significant association observed between developing of USD and consumption of peach, apricot or plum in unadjusted and adjusted analysis.

Vegetables. Among the vegetables the increased risk of developing of USD was observed for the consumption of cabbage, cauliflower or broccoli. The unadjusted odds of developing of USD for those who consumed cabbage, cauliflower or broccoli more than one time per week was

8.17 times higher compared to those who consumed cabbage, cauliflower or broccoli less than one time per week (OR=8.17; 95% CI: 5.20-12.83).

Consumption of corn was positively significantly associated with USD. The unadjusted odds of developing of USD was 3.15 times higher among those who consumed corn one time per week and more compared to those who never consumed corn or consumed less than one time per week (OR=3.15; 95% CI: 2.01-4.93).

For consumption of beans a harmful effect was observed. The unadjusted odds of developing USD among those who consumed beans one time per week and more was 2.47 times higher compared to those who never consumed beans or consumed less than one time per week (OR=2.47; 95% CI: 1.60-3.81).

Consumption of spinach was positively significantly associated with developing of USD. Unadjusted odds of developing of USD among those patients who consumed spinach one time per week and more was 3.69times higher compared to those who never consumed spinach or consumed less than one time per week (OR=3.69; 95% CI: 2.50-5.45).

A harmful effect was observed for the consumption of nuts. The unadjusted odds of developing of USD among those who consumed nuts one time per week and more was 6.71 times higher compared to those who never consumed nuts or consumed less than one time per week (OR=6.71; 95% CI: 4.44-10.13).

Animal Products

Among animal products the increased risk of developing USD was observed for consumption of egg. In unadjusted analysis the odds of developing of USD was 5.46, 4.65 and 13.04 times higher for those patients who consumed egg one time per week, more than one time per week and one time per day and more, compared to those who never consumed egg or

consumed less than one time per week (OR=5.46; 95% CI: 2.96-10.08, OR=4.65; 95% CI: 2.56-8.45 and OR=13.04; 95% CI: 7.38-23.04, respectively).

Positive significant association with development of USD was found for consumption of chicken or turkey with skin. The unadjusted odds of developing of USD was 4.34 and 12.71 times higher for those patients who consumed chicken or turkey with skin one time per week and more than once a week compared to those who never consumed chicken or turkey with skin or consumed less than one time per week (OR=4.34; 95% CI: 2.61-7.23 and OR=12.71; 95% CI: 7.58-21.34).

The consumption of beef was positively significantly associated with development of USD. The unadjusted odds of developing of USD was 4.10 times higher among those who consumed more than once a week compared to those who never consumed beef or consumed less than one time per week (OR=4.10; 95% CI: 1.83-9.18).

The positive risk of developing of USD was observed also for the consumption of pork. The unadjusted odds of developing of USD was 3.38 and 17.85 times higher among those who consumed pork one time per week and more than one time per week, respectively, compared to those who never consumed pork or consumed less than one time per week (OR=3.38; 95% CI: 2.21-5.16 and OR=17.85; 95% CI: 8.09-39.36).

Consumption of processed meat was positively significantly associated with developing of USD and had 5.28 times higher odds of developing of USD among those who consumed processed meat one time per day compared to those who never consumed processed meat or consumed less than one time per week (OR=5.28; 95% CI: 3.26-8.56).

Consumption of fish was positively significantly associated with developing of USD. The unadjusted odds of developing of USD was 8.20 times higher among those who consumed fish

more than once per week compared to those who never consumed fish or consumed less than one time per week (OR=8.20; 95% CI: 2.35-28.55).

The protective effect was observed for the consumption of chicken or turkey without skin. The unadjusted odds of developing of USD was lower by 79% for those who consumed chicken or turkey without skin more than one time per week compared to those who never consumed chicken or turkey without skin or consumed less than one time per week (OR=0.21; 95% CI: 0.14-0.38).

Salt Consumption and Smoking Status

The risk of developing of USD was reported to be significantly associated with salt consumption habit. Consumption of less salt at table had protective effect for developing of USD. The unadjusted odds of developing of USD was decreased by 76% and 97% among patients with occasional and rare or never consumption of salt, respectively, compared to those patients who generally add salt to food without tasting first (OR=0.14; 95% CI: 0.03-0.60) and OR=0.03; 95% CI: 0.01-0.014).

Harmful effect of current smoking status was observed in unadjusted logistic regression analysis. The odds of developing of USD among those patients who currently smoke was 1.59 times higher compared to never smokers (OR=1.59; 95% CI: 1.06-2.38).

The Results of Logistic Regression Analysis: Adjusted by Socio-Demographic Characteristics

After adjusting for demographic characteristics (age, gender, SES, family history of USD and BMI) the significance in associations was changed for consumption of beer (see Table 2). Among patients who consumed beer one time per week and more than one time per week protective effect was observed with decreased odds of developing of USD by 52% and 81%,

respectively, compared to patients who never consumed beer or consumed beer less than one time per week (OR=0.48; 95% CI: 0.28-0.85 and OR=0.19; 95% CI: 0.09-0.42).

After adjusting by demographic characteristics current smoking status was not significantly associated with developing of USD (OR=1.10; 95% CI: 0.64-1.91).

The Results of Multiple Logistic Regression Analysis

The results of the multivariate logistic regression analysis are shown in Table 3. We built a multivariate logistic regression model in order to examine the effect of independent risk factors in developing of USD while controlling for the other risk factors. This model was built by using stepwise selection technique. Under this technique, first, we put all socio-demographic characteristics (age, gender, BMI, family history of USD and SES), which were significantly associated with developing of a disease, into the model. Then we added the risk factors one by one, with keeping those which have $p < 0.25$ and dropping those with $p \geq 0.25$.³⁵ After adding the last risk factor into multiple logistic regression model, the risk factors with p-value more than 0.05 and less than 0.25 were dropped out. As a result only those risk factors statistically significantly associated with developing of USD ($p < 0.05$) were included in the final multivariate logistic regression model. The final model included age, gender, BMI, family history of USD, consumption of water, wine, yogurt, banana, cabbage, cauliflower or broccoli, corn and nuts. All of these variables were found to have an independent effect on the development of USD, adjusting for the effects of all other significant variables. The p-value of the Hosmer-Lemeshow goodness-of-fit test was 0.64, which means that our model fit the data and we cannot reject the model. The risk factors included in the multivariate logistic regression model were checked for collinearity and no collinear variables were detected. The lowest variance inflation factor (VIF) was 1.05 (for gender), the highest VIF was 1.74 (for age) and the mean VIF=1.26.

Having older age was significantly associated with lower risk of developing of USD. The OR of association between one year increase in age and developing of USD was 0.92 (95% CI: 0.89-0.95).

Higher risk of developing of USD was observed for males compared with females. The odds of developing USD was 2.90 times higher for males compared to females (OR=2.90; 95% CI: 1.41-5.93).

Higher BMI was significantly associated with developing of USD. The OR of association between one unit increase in BMI and developing of USD was 1.08 (95% CI: 1.02-1.15).

Having a positive family history of USD was positively significantly associated with developing of USD. The odds of developing of USD among those who had a positive family history of USD was 6.69 times higher compared to those without a negative family history (OR=6.69; 95% CI: 2.10-21.25).

Protective effect was observed for consumption of water. The odds of developing of USD among those who consumed of one cup of water per day was lower by 93% compared to those who consumed water less than one time per day (OR=0.07; 95% CI: 0.02-0.19).

The odds of developing of USD among those who consumed one glass of wine per week or more was lower by 76% compared to those who never consumed wine or consumed less than one time per week (OR= 0.24; 95% CI: 0.11-0.53).

Less frequent consumption of yogurt had protective effect for developing of USD. The odds of developing of USD among those who consumed yogurt more than one time per week was 8.58 times higher compared to patients who consumed yogurt less than one time per week (OR=8.58; 95% CI: 4.06-18.14).

Protective effect was observed for consumption of bananas. The odds of developing of USD for those who consumed banana one time per week, more than once per week and once per day and more were lower by 80% compared to those who consumed less than one time per week (OR=0.20; 95% CI: 0.09-0.44).

Increased risk of developing of USD was observed for the consumption of cabbage, cauliflower or broccoli. The odds of developing of USD for those patients who consumed cabbage, cauliflower or broccoli one time per week and more was 16.29 times higher compared to those who consumed cabbage, cauliflower or broccoli less than one time per week (OR=16.29; 95% CI: 7.25-36.64).

Consumption of corn was positively significantly associated with USD and had 8.51 times higher odds of developing of USD among those who consumed one time per week and more compared to those who never consumed corn or consumed less than one time per week (OR=8.51; 95% CI: 3.68-19.70).

The risk of developing of USD was observed for consumption of nuts. The odds of developing of USD among those who consumed nuts one time per week and more was 9.29 times higher compared to those who never consumed nuts or consumed less than one time per week (OR=9.29; 95% CI: 4.22-20.43).

The Results of Testing for Interaction between Risk Factors and Gender

In order to detect the differences in associations between risk factors and developing of USD in men and women, the interactions were tested between risk factors that were significant in the multivariate model and gender. For each of the risk factors included in the final multivariate model, we modelled gender and the risk factor on case status, including an interaction term for gender and the risk factor, in order to test for these differences. The

significance levels of the interaction terms were observed in order to find out is there a significant difference in association between risk factor and USD between men and women. These results are shown in table 4.

None of the factors (consumption of water, wine, yogurt, orange or other citrus fruit, cabbage, cauliflower or broccoli, corn and nuts) showed a significant interaction with gender when modelled on case status.

DISCUSSION

Urinary stone disease is a condition which is characterized by the presence of a stone within the urinary tract. USD is mainly diagnosed by ultrasound examination and computed tomography. According to EAU guidelines several ways of treatment are recommended, such as conservative (observation), pharmacological, extracorporeal shock wave lithotripsy (SWL) and endourology techniques for renal stone removal. These types of treatment and open surgery technique, in addition, are used and accepted in Armenia.

USD is the third most common urological disease worldwide with the prevalence rate varying from 1% to 20%. Increasing prevalence and incidence rates are reported in many countries, such US, Germany, Iran, Spain, etc. According to statistical yearbook of the MoH of Armenia the prevalence and incidence rates of USD increased in the last two decades. No studies were conducted in Armenia aiming to identify the risk factors of USD among Armenian population. Low QOL for patients with USD is associated with reduced general health, reduced physical activity, bodily pain and type of treatment. Consequently, it is important to know the factors associated with USD in Armenia, whether those factors are different in Armenia compared to other countries or not, in order to improve management of the disease of patients

diagnosed with USD, to improve dietary and lifestyle habits of those who are at risk of developing USD and reduce prevalence rate of USD in Armenia.

The risk factors of USD have been explored and identified in several previous studies. We conducted the current study in order to identify the most common risk factors of USD among Armenian population, with a particular focus on local dietary and lifestyle habits.

Different statistical approaches were used in order to analyse our data. The unadjusted logistic regression analysis was performed for all dietary and lifestyle habits. Each these factors were adjusted by socio-demographic characteristics. And finally, the final multivariate logistic regression model was built by using stepwise regression technique.

Keeping our goal in focus, we explored socio-demographic characteristics of study participants in order to show which characteristics are significantly associated (either positively or negatively) with development of USD among Armenians and identified several characteristics, specifically age, gender, BMI and family history of USD, that are statistically significantly associated with developing USD. These factors were included in the final multivariate logistic regression model.

Our results show that older age is associated with lower risk of developing USD in our study population, which means that urinary stones are more likely to occur at the first time in younger age. Several studies have identified age as a risk factor for developing urinary stones.^{9,36,37} According to the study by Anatol T, et al conducted in 2003 in Trinidad the mean age of cases was lower compared to the mean age of controls ($p=0.004$).³⁶ Our finding contradicts studies that did not exclude recurrent cases of USD. The study conducted by Rafiei H, et al in 2014 in Iran showed that the highest risk of developing urinary stones was found in older patients.⁹

Our study found that being male is associated with increased risk of development of USD. This finding is consistent with the results from several studies.^{15,17,36,37} The article by Hughes P, in 2007 has shown increased risk of developing USD in males.³⁷

We found increased risk of developing USD in patients with higher BMI. Our results are consistent with the existing literature.^{21,38,39} The study by Leonetty F, et al showed harmful effect of higher BMI in developing urinary stones,³⁸ while the research by Shirazi F, et al did not find any association between BMI and developing USD.¹⁷

The positive family history of USD was found to be a risk factor for developing USD in our study, which is consistent with the literature.^{17,31,37} The study by Curhan G, et al. reported that the risk of developing urinary stones was approximately 3 times higher for those who had positive family history of USD compared to those who did not have.³¹

We examined dietary and lifestyle habits, such as salt consumption and smoking, aiming to find out the factors which are statistically significantly associated with USD in either dimension: have protective or harmful effects. So, we found out that several fluids, such as water and wine, and food items, such as yogurt, banana, cabbage, cauliflower or broccoli, corn and nuts, are significantly associated (either positively or negatively) with the development of USD. These factors were included in the final multivariate logistic regression model. Interestingly, we found significant protective association between consumption of beer and developing USD. Besides this, we observed protective effect of eating chicken or turkey without skin, in contrast to which consumption of chicken or turkey with skin had harmful effect. The associations between beer, chicken or turkey with/without skin were significant in the logistic regression analysis adjusted by socio-demographic characteristics but were not included in the final multivariate logistic regression model.

Our research found the protective effect of frequent consumption of water. According to several studies high water intake was significantly associated with developing USD.^{16,39,40} The study by Sorensen M, et al have shown that increased water intake is statistically significantly associated with decreased risk of incident urinary stone formation.⁴⁰ The protective effect of high fluid intake was found also in the study conducted by Dai M, et al.¹⁶

Our results show that consumption of one glass of wine per week has protective effect for developing urinary stones. This finding is consistent with the literature.^{41,42} The study by Ferraro P, et al showed decreased risk of developing USD by 31% and 33% among those who consumed red and white wine, respectively.⁴¹ The decreased risk of developing USD in regards to consumption of wine was shown in the review article by Lorimier A.⁴²

We found significant protective effect of consumption of beer for developing USD after adjusting by socio-demographic characteristics. Our finding is consistent with the results existing in the literature.^{41,42} The review article by Lorimier, et al found reduced risk of 20% of developing USD,⁴² while the research study by Ferraro, et al found 41% risk reduction for development of urinary stones.⁴¹

We found that consumption of yogurt with high frequency was found to have harmful effect for stone formation.^{16,43} Several studies suggest reducing consumption of dairy products in order to decrease daily calcium intake and consequently decrease the risk of development of stones.^{22,38,43} The review article by Borghi L, et al show that very limited consumption of dairy products decreases the risk developing calcium-oxalate stones,⁴³ while the study by Dai M, et al did not find statistically significant associations between consumption of dairy products and developing USD.¹⁶

Our study found protective effect of eating banana. These results are consistent with the results shown in the studies existing in the literature.^{23,43} The protective effect of bananas could be explained by the fact that fresh fruits are rich in potassium, which was shown to have a protective effect on the development of USD.^{23,44}

The harmful effect of cabbage, cauliflower or broccoli, corn and nuts was found in our study. These findings are consistent with the literature.^{16,43} The results of the study by Dai M, et al, conducted in China showed harmful effect of these factors.¹⁶ The harmful effect of these products was explained by high concentrations of calcium and oxalates.⁴³

In our study we found protective and harmful effects of eating chicken or turkey without and with skin. These associations were not explored separately in similar studies, so it is not possible to compare our finding with the existing literature. In our study we examined these two options taking into consideration the fact that some people tend to keep healthy diet and remove skin before eating chicken or turkey meat. The harmful effect of consumption of chicken or turkey with skin on developing USD could be found in regards to high concentration of fat in the skin. At the same time reduced fat intake is recommended as a preventive measure by the American Urological Association (AUA) and EAU.^{6,44}

Finally, we explored the differences in associations between risk factors and developing USD in males and females. This was done considering the findings from the study conducted in China by Dai, et al., where dietary factors were explored separately for men and women, and the protective effect of fluid intake was found only for men and harmful effect of corn and beans was found only among women.¹⁶ In our study, we did not find differences in associations between examined risk factors and USD in regards to gender, which implies that the strengths of

associations between dietary habits and development of USD are not significantly differ between men and women.

In our study we found out the risk factors which are significantly associated with USD in Armenia. Our findings show that dietary and lifestyle habits play an important role in developing USD, which implies that timely management of these factors can reduce the risk of development of urinary stones in people, who are at risk in regards to the socio-demographic characteristics, especially those with family history of USD.

RECOMMENDATIONS

Taking into consideration the results of the current study we recommend promotion of our findings among specialists, who have an important role in management of patient's disease and could recommend patients to keep diet. Besides this, it is important to increase awareness about the risk factors among patients diagnosed with USD. In behalf of our findings these two actions are important in order to improve diet of people who did not have USD, but who have close family member diagnosed with USD.

In addition, we recommend to conduct further studies in order to find show the associations between patients' mineral intake (calcium, oxalate, fiber, animal protein and sodium) and stone mineral composition, which is an important information for the further management of USD.⁶ Furthermore, as we identified the risk factors of USD exclusively among incident cases, we recommend to conduct a study, which will show the differences in associations between incident and recurrent cases.

Strengths of the Study

The response rate of the study was 95.2%, while it was predicted to be 80% with the power of 80% when we calculated the sample size for the study. So, the increased power of study

allowed detecting the significant associations and making conclusions regarding the risk factors of developing USD in Armenia. All data collection was performed by student investigator, so we increased reliability of collected data. All the participants were selected from the lists of patients, who recently attended the selected medical center and underwent ultrasound examination, in order to minimize potential recall bias.

Limitations of the Study

The participants of the research were selected from one medical center, which limited generalizability of our finding. This limitation might be partially addressed by the fact that the majority of patients were referred to Izmirlian Medical Center from the different regions of Armenia. The potential interviewer bias might occur, since the student investigator was aware about case/control status of participants. We collected information on dietary habits for different period of time for cases and controls (during one year prior to diagnosis for cases and during last one year prior to interview for controls), so the recall bias could be a problem. Our case-control study allowed only to find the associations between risk factors and USD but not causes of USD.

CONCLUSION

In conclusion, our research was the first case-control study conducted in Armenia, which identified the risk factors of USD among Armenian population. Our findings show that there are socio-demographic and dietary risk factors for USD, which are prevalent in Armenian population. Besides this, we found out that some of the dietary factors have preventive effect. This information will be useful for the urologists and patients in order to undertake preventive strategies for the recurrent cases.

REFERENCES

1. Kirkali Z, Rasooly R, Star R a, Rodgers GP. Urinary Stone Disease: Progress, Status, and Needs. *Urology*. 2015;86(4):651-653. doi:10.1016/j.urology.2015.07.006.
2. Ratkalkar VN, Kleinman JG. Mechanisms of Stone Formation. *Clinical reviews in bone and mineral metabolism*. 2011;9(3-4):187-197. doi:10.1007/s12018-011-9104-8.
3. Parmar MS. Urinary stones. *BMJ : British Medical Journal*. 2004;328(7453):1420-1424.,
4. Ciftcioglu N, Bjorklund M, Kuorikoski K, Bergstrom K, Kajander EO. Nanobacteria: An infectious cause for kidney stone formation. *Kidney Int*. 1999;56(5):1893-1898.
<http://dx.doi.org/10.1046/j.1523-1755.1999.00755.x>.
5. Türk C, Petřík A, Sarica K, et al. EAU Guidelines on Diagnosis and Conservative Management of Urolithiasis. *Eur Urol*. 2015:1-7. doi:10.1016/j.eururo.2015.07.040.
6. Türk C, Knoll T, Petrik A, et al. Guidelines on Urolithiasis. *European Association of Urology*. 2015.
7. Penniston KL, Nakada SY. Health related quality of life differs between male and female stone formers. *J Urol*. 2007;178(6):2435-2440. doi:10.1016/j.juro.2007.08.009.
8. Bensalah K, Tuncel A, Gupta A, Raman JD, Pearle MS, Lotan Y. Determinants of quality of life for patients with urinary stones. *J Urol*. 2008;179(6):2238-2243.
doi:10.1016/j.juro.2008.01.116.
9. Rafiei H, Malekpoor F, Amiri M, Madiseh MR. Kidney Stone Development among Older Adults in Iran. *J Indian Acad Geriatr*. 2014;10(1-2):10-13.
10. Romero V, Akpınar H, Assimos DG. Urinary stones: A Global Picture of Prevalence, Incidence, and Associated Risk Factors. *Reviews in Urology*. 2010;12(2-3):e86-e96.

11. Safarinejad MR. Adult urolithiasis in a population-based study in Iran: Prevalence, incidence, and associated risk factors. *Urol Res* 2007; 35: 73-82.
12. Muslumanoğlu AY, Binbay M, Yuruk E, Akman T, Tepeler A, Esen T, Tefekli AH. Updated epidemiologic study of urolithiasis in Turkey. I: Changing characteristics of urolithiasis. *Urol Res*. 2011;39(4):309-14.
13. Hesse A., Brändle E, Wilbert D, Köhrmann K-U, Alken P. Study on the Prevalence and Incidence of Urolithiasis in Germany Comparing the Years 1979 vs. 2000. *Eur Urol*. 2003;44(6):709-713. doi:10.1016/S0302-2838(03)00415-9.
14. Scales CD, Jr, Smith AC, Hanley JM, Saigal CS. Urologic diseases in America project. Prevalence of urinary stones in the United States. *Eur Urol*. 2012;62:160–165.
15. Baker P, Coyle P, Bais R, Rofe A. Influence of season, age, and sex on renal stone formation in South Australia. *The Medical Journal Of Australia* [serial online]. September 20, 1993;159(6):390-392. Available from: MEDLINE, Ipswich, MA.
16. Dai M, Zhao A, Liu A, You L, Wang P. Dietary factors and risk of kidney stone: a case-control study in southern China. *J Ren Nutr*. 2013;23(2):e21-e28. doi:10.1053/j.jrn.2012.04.003.
17. Shirazi F, Shahpourian F, Khachian A, et al. Personal Characteristics and Urinary Stones. *Hong Kong J Nephrol*. 2009;11(1):14-19. doi:10.1016/S1561-5413(09)60004-1.
18. Hamano S, Nakatsu H, Suzuki N, Tomioka S, Tanaka M, Murakami S. Kidney stone disease and risk factors for coronary heart disease. *Int J Urol*. 2005;12(10):859–63.11.
19. Sakhaee K, Harvey JA, Padalino PK, Whitson P, Pak CY. The potential role of salt abuse on the risk for kidney stone formation. *J Urol*. 1993;150(2 Pt 1):310–312.

20. Mosli HA, Mosli HH, Kamal WK. Kidney stone composition in overweight and obese patients: a preliminary report. *Research and Reports in Urology*. 2013;5:11-15.
doi:10.2147/RRU.S39581.
21. Taylor EN, Stampfer MJ, Curhan GC. Obesity, weight gain, and the risk of urinary stones. *JAMA*. 2005;293:455–62.
22. Krieg C. The Role of Diet in the Prevention of Common Urinary stones. *Urol Nurs*. 2005;25(6):451-456. www.medscape.com/viewarticle/521368_print.
23. Health and Health Care, Statistical Yearbook. *Health Information Analysis Center, Ministry of Health, Armenia*. 2015. Available on:
http://moh.am/uploadfiles/Health_Stat_Book_2015_PDF.pdf
24. National Statistical Service [Armenia], Ministry of Health [Armenia], and ICF International. 2012. *Armenia Demographic and Health Survey 2010*. Calverton, Maryland: National Statistical Service, Ministry of Health, and ICF International.
25. WHO | Global Health Observatory data repository, Raised blood pressure, data by country. 2014
26. WHO | Global Health Observatory data repository, Overweight (body mass index \geq 25)(crude estimate), data by country. 2014
27. WHO | Global Health Observatory data repository (European region), Recorded alcohol per capita consumption, from 2000. Last update: April 2015
28. Armenian H. *The case-control method: Design and applications*. New York: OxfordUniversity Press, Inc., 2009.
29. American University of Armenia, Center for Health Services Research and Development. Primary Health Care Project. Household Health Survey: Baseline Evaluation. 2006

30. Hedrick VE, Comber DL, Estabrooks PA, Savla J, Davy BM. The Beverage Intake Questionnaire: Initial Validity and Reliability. *Journal of the American Dietetic Association*. 2010;110(8):1227-1232. doi:10.1016/j.jada.2010.05.005.
31. Curhan GC, Willett WC, Rimm EB, Spiegelman D, Stampfer MJ. Prospective Study of Beverage Use and the Risk of Urinary stones. *Am J Epidemiol* . 1996;143(3):240-247. <http://aje.oxfordjournals.org/content/143/3/240.abstract>.
32. Willett WC. Comparison of Food Frequency Questionnaires. *Am J Epidemiol*. 1998;148(12):1157-1159. doi:10.1093/oxfordjournals.aje.a009600.
33. American University of Armenia, Center for health services research and development. Knowledge, Attitude and Practice Survey on Healthy Nutrition and Lifestyle. 2011.
34. Lean MEJ, Anderson AS, Morrison C, Currall J. Evaluation of a Dietary Targets Monitor. *Br J Pharmacol*. 2003;57(5):667-673. doi:10.1038/sj.ejcn.1601596.
35. Hosmer D W, Lemeshow A A, Sturdivant X R. 2013. Applied Logistic Regression. 3rd ed. Hoboken, NJ: Wiley
36. Anatol T, Pinto Pereira L, Simeon D, Sawh L. Risk factors for urinarytract calculi in Trinidad. *Trop Med Int Health*.2003;8:348–53.
37. Hughes P. Urinary stones epidemiology. *J Nephrology*. 2007;12:26-30. doi:10.1111/j.1440-1797.2006.00724.x
38. Leonetti F, Dussol B, Berthezene P, Thirion X, Berland Y. Dietary and urinary risk factors for stones in idiopathic calcium stone formers compared with healthy subjects. *Nephrol Dial Transplant*. 1998;13(3):617-622. doi:10.1093/ndt/13.3.617.
39. Meschi T, Schianchi T, Ridolo E, et al. Body weight, diet and water intake in preventing stone disease. *Urol Int*. 2004;72(SUPPL. 1):29-33. doi:10.1159/000076588.

40. Sorensen MD, Hsi RS, Chi T, et al. Dietary Intake of Fiber, Fruit and Vegetables Decreases the Risk of Incident Urinary stones in Women: A Women's Health Initiative Report. *J Urol.* 2014 Dec; 192(6):1694-9.
41. Ferraro PM, Taylor EN, Gambaro G, Curhan GC. Soda and other beverages and the risk of kidney stones. *Clin J Am Soc Nephrol.* 2013;8(8):1389-1395. doi:10.2215/CJN.11661112.
42. Lorimier A. Alcohol, wine, and health. *The American Journal of Surgery.* 2000 Nov; 180(2):357-361. doi:10.1016/S0002-9610(00)00486-4.
43. Borghi L, Meschi T, Maggiore U, Prati B. Dietary Therapy in Idiopathic Nephrolithiasis. *Nutrition Reviews [serial online].* July 2006;64(7):301-312.
44. Pearle MS, Goldfarb DS, Assimos DG, et al. Medical Management of Kidney Stones: AUA Guideline. *American Urological Association.* 2014.

Table1. Socio-Demographic characteristics of the study population by cases and controls.

Characteristics	Cases (232)	Controls (221)	p
Age			
<i>Mean (SD)</i>	44.6 (14.2)	47.2 (16.0)	0.06
<i>Min</i>	19	18	
<i>Max</i>	80	80	
Gender, % (N)			
<i>Male</i>	63.4 (147)	43.9 (97)	
<i>Female</i>	36.6 (85)	56.1 (124)	0.00
Education, % (N)			
<i>Up to 13 years</i>	35.3 (82)	30.8 (68)	
<i>Higher than 13 years</i>	64.7 (150)	69.2 (153)	0.30
Occupation, % (N)			
<i>Employed/ Self-employed</i>	61.6 (143)	54.8 (121)	
<i>Unemployed</i>	32.3 (75)	33.5 (74)	
<i>Retired</i>	6.0 (14)	11.8 (26)	0.07
Marital status, % (N)			
<i>Single</i>	16.4 (38)	15.8 (35)	
<i>Married</i>	79.7 (185)	76.0 (168)	
<i>Widowed</i>	3.4 (8)	7.2 (16)	
<i>Divorced/Separated</i>	0.4 (1)	0.9 (2)	0.29
Socio-economic status (SES), % (N)			
<i>Less than 100,000 drams</i>	9.5 (22)	1.4 (3)	
<i>From 100,001 - 300,000 drams</i>	40.5 (94)	42.5 (94)	
<i>Above 300,000 drams</i>	25.0 (58)	38.9 (86)	
<i>Don't know/ Refuse to answer</i>	25.0 (58)	17.2 (38)	0.00
BMI, kg/m²			
<i>Mean (SD)</i>	27.80 (5.73)	26.76 (5.54)	0.05
<i>Min</i>	15.43	16.61	
<i>Max</i>	44.70	48.70	
Family history, % (N)			
<i>Yes</i>	25.0 (58)	6.3 (14)	
<i>No</i>	49.6 (115)	71.1 (157)	
<i>Don't know</i>	25.4 (59)	22.6 (50)	0.00

Table 2. The results of unadjusted and adjusted logistic regression analysis for dietary and lifestyle risk factors

Risk Factors			Unadjusted			Adjusted*		
	Cases (n)	Controls(n)	OR	95% CI	P	OR	95% CI	P
Fluids and beverages								
Water								
<i>Less than 1 time per day</i>	82	31	1			1		
<i>More than 1 time per day</i>	150	190	0.30	(0.19 - 0.48)	0.00	0.18	(0.10 - 0.32)	0.00
Fruit juice								
<i>Never or less than 1 time per week</i>	23	6	1			1		
<i>1 time per week</i>	123	45	0.71	(0.27 - 1.86)	0.49	0.83	(0.30 - 2.29)	0.72
<i>More than 1 time per week</i>	86	170	0.13	(0.05 - 0.34)	0.00	0.10	(0.04 - 0.28)	0.00
Milk								
<i>Never or less than 1 time per week</i>	104	131	1			1		
<i>1 time per week</i>	17	40	0.54	(0.29 - 1.01)	0.05	0.44	(0.22 - 0.86)	0.02
<i>More than 1 time per week</i>	21	17	1.56	(0.78 - 3.10)	0.21	1.37	(0.65 - 2.86)	0.41
<i>1 time per day and more</i>	90	33	3.44	(2.14 - 5.52)	0.00	3.60	(2.17 - 5.96)	0.00
Tea								
<i>Never or less than 1 time per week</i>	30	26	1			1		
<i>1 time per week</i>	41	57	0.62	(0.32 - 1.21)	0.16	0.53	(0.26 - 1.07)	0.08
<i>More than 1 time per week</i>	161	138	1.01	(0.57 - 1.79)	0.97	0.93	(0.51 - 1.70)	0.81
Coffee								
<i>Never or less than 1 time per week</i>	57	53	1			1		
<i>1 time per week</i>	14	17	0.77	(0.34 - 1.70)	0.51	0.67	(0.28 - 1.59)	0.36
<i>More than 1 time per week</i>	4	5	0.74	(0.19 - 2.92)	0.67	0.70	(0.16 - 3.03)	0.64
<i>1 time per day</i>	15	11	1.27	(0.53 - 3.00)	0.59	1.22	(0.49 - 3.03)	0.67
<i>More than 1 time per day</i>	142	135	0.98	(0.63 - 1.52)	0.92	0.88	(0.55 - 1.40)	0.59
Beer								
<i>Never or less than 1 time per week</i>	158	147	1			1		
<i>1 time per week</i>	55	45	1.14	(0.72 - 1.79)	0.58	0.48	(0.28 - 0.85)	0.01
<i>More than 1 time per week</i>	19	29	0.61	(0.33 - 1.13)	0.12	0.19	(0.09 - 0.42)	0.00
Wine								
<i>Never or less than 1 time per week</i>	172	91	1			1		
<i>1 time per week and more</i>	60	130	0.24	(0.16 - 0.36)	0.00	0.14	(0.09 - 0.23)	0.00

*Adjusted by age, gender, BMI, family history of USD and SES.

Vodka								
<i>Never or less than 1 time per week</i>	167	182	1			1		
<i>1 time per week</i>	34	25	1.48	(0.85 - 2.59)	0.17	1.41	(0.72 - 2.78)	0.32
<i>More than 1 time per week</i>	8	11	0.79	(0.31 - 2.02)	0.63	0.90	(0.32 - 2.56)	0.85
<i>1 time per day and more</i>	23	3	8.36	(2.46 - 28.34)	0.00	15.72	(3.31 - 74.61)	0.00
Dairy Products								
Yogurt								
<i>Less than 1 time per week</i>	43	157	1			1		
<i>More than 1 time per week</i>	189	64	10.78	(6.94 - 16.75)	0.00	12.44	(7.65 - 20.22)	0.00
Cottage cheese								
<i>Never or less than 1 time per week</i>	60	174	1			1		
<i>1 time per week</i>	65	39	4.83	(2.95 - 7.92)	0.00	5.08	(2.99 - 8.63)	0.00
<i>More than 1 time per week</i>	107	8	38.79	(17.85 - 84.28)	0.00	38.98	(17.54 - 86.63)	0.00
Cheese								
<i>Never or less than 1 time per week</i>	10	11	1			1		
<i>1 time per week</i>	4	15	0.29	(0.07 - 1.19)	0.09	0.31	(0.07 - 1.32)	0.11
<i>More than 1 time per week</i>	8	127	0.07	(0.02 - 0.21)	0.00	0.05	(0.02 - 0.18)	0.00
<i>1 time per day</i>	64	55	1.28	(0.51 - 3.24)	0.60	1.12	(0.41 - 3.03)	0.83
<i>More than 1 time per day</i>	146	13	12.35	(4.42 - 34.51)	0.00	10.08	(3.39 - 29.95)	0.00
Butter								
<i>Never or less than 1 time per week</i>	147	201	1			1		
<i>1 time per week</i>	21	9	3.19	(1.42 - 7.17)	0.01	3.28	(1.39 - 7.73)	0.01
<i>More than 1 time per week</i>	64	11	7.96	(4.05 - 15.61)	0.00	10.37	(5.02 - 21.42)	0.00
Fruits and Vegetables								
Freshapple or pear								
<i>Never or less than 1 time per week</i>	4	1	1			1		
<i>1 time per week</i>	15	4	0.94	(0.08 - 10.90)	0.96	1.10	(0.07 - 17.72)	0.94
<i>More than 1 time per week</i>	79	35	0.56	(0.06 - 5.23)	0.62	0.63	(0.05 - 7.52)	0.72
<i>1 time per day</i>	112	77	0.36	(0.04 - 3.32)	0.37	0.35	(0.03 - 4.15)	0.41
<i>More than 1 time per day</i>	22	104	0.05	(0.01 - 0.50)	0.01	0.04	(0.00 - 0.51)	0.01
Orange or other citrus fruit								
<i>Never or less than 1 time per week</i>	30	9	1			1		
<i>1 time per week</i>	143	56	0.77	(0.34 - 1.72)	0.52	0.65	(0.28 - 1.52)	0.32
<i>More than 1 time per week</i>	43	80	0.16	(0.07 - 0.37)	0.00	0.12	(0.05 - 0.29)	0.00
<i>1 time per day and more</i>	16	76	0.06	(0.03 - 0.16)	0.00	0.04	(0.01 - 0.11)	0.00

Peach, apricot or plum								
<i>Never or less than 1 time per week</i>	3	1	1			1		
<i>1 time per week</i>	8	5	0.53	(0.04 - 6.65)	0.63	0.47	(0.03 - 7.45)	0.59
<i>More than 1 time per week</i>	71	21	1.13	(0.11 - 11.41)	0.92	1.02	(0.08 - 13.12)	0.99
<i>1 time per day</i>	115	74	0.52	(0.05 - 5.07)	0.57	0.44	(0.04 - 5.50)	0.53
<i>More than 1 time per day</i>	35	120	0.10	(0.01 - 0.96)	0.06	0.07	(0.01 - 0.86)	0.04
Banana								
<i>Less than 1 time per week</i>	173	98	1			1		
<i>More than 1 time per week</i>	59	123	0.27	(0.18 - 0.40)	0.00	0.25	(0.16 - 0.39)	0.00
Cabbage, cauliflower or broccoli								
<i>Less than 1 time per week</i>	34	129	1			1		
<i>More than 1 time per week</i>	198	92	8.17	(5.20 - 12.83)	0.00	7.78	(4.88 - 12.43)	0.00
Corn								
<i>Never or less than 1 time per week</i>	36	81	1			1		
<i>1 time per week and more</i>	196	140	3.15	(2.01 - 4.93)	0.00	3.45	(2.15 - 5.54)	0.00
Beans								
<i>Never or less than 1 time per week</i>	42	78	1			1		
<i>1 time per week and more</i>	190	143	2.47	(1.60 - 3.81)	0.00	2.73	(1.73 - 4.31)	0.00
Spinach								
<i>Never or less than 1 time per week</i>	71	138	1			1		
<i>1 time per week and more</i>	160	83	3.69	(2.50 - 5.45)	0.00	3.77	(2.51 - 5.68)	0.00
Nuts								
<i>Never or less than 1 time per week</i>	72	166	1			1		
<i>1 time per week and more</i>	160	55	6.71	(4.44 - 10.13)	0.00	7.85	(4.89 - 12.62)	0.00
Animal products								
Egg								
<i>Never or less than 1 time per week</i>	26	108	1			1		
<i>1 time per week</i>	46	35	5.46	(2.96 - 10.08)	0.00	6.81	(3.49 - 13.31)	0.00
<i>More than 1 time per week</i>	47	42	4.65	(2.56 - 8.45)	0.00	5.94	(3.11 - 11.36)	0.00
<i>1 time per day and more</i>	113	36	13.04	(7.38 - 23.04)	0.00	15.71	(8.39 - 29.40)	0.00
Chicken or turkey (with skin)								
<i>Never or less than 1 time per week</i>	52	153	1			1		
<i>1 time per week</i>	59	40	4.34	(2.61 - 7.23)	0.00	4.38	(2.54 - 7.53)	0.00
<i>More than 1 time per week</i>	121	28	12.71	(7.58 - 21.34)	0.00	12.52	(7.20 - 21.77)	0.00
Chicken or turkey (without skin)								
<i>Never or less than 1 time per week</i>	80	35	1			1		
<i>1 time per week</i>	89	65	0.60	(0.36 - 1.01)	0.05	0.64	(0.37 - 1.09)	0.10
<i>More than 1 time per week</i>	63	121	0.23	(0.14 - 0.38)	0.00	0.21	(0.13 - 0.37)	0.00

Beef								
<i>Never or less than 1 time per week</i>	12	16	1			1		
<i>1 time per week</i>	48	149	0.43	(0.19 - 0.97)	0.04	0.33	(0.14 - 0.78)	0.01
<i>More than 1 time per week</i>	172	56	4.10	(1.83 - 9.18)	0.00	3.07	(1.31 - 7.23)	0.01
Pork								
<i>Never or less than 1 time per week</i>	65	145	1			1		
<i>1 time per week</i>	103	68	3.38	(2.21 - 5.16)	0.00	3.20	(2.06 - 4.98)	0.00
<i>More than 1 time per week</i>	64	8	17.85	(8.09 - 39.36)	0.00	14.97	(6.68 - 33.52)	0.00
Processed meat								
<i>Never or less than 1 time per week</i>	66	110	1			1		
<i>1 time per week</i>	31	33	1.57	(0.88 - 2.79)	0.13	1.76	(0.95 - 3.26)	0.08
<i>More than 1 time per week</i>	21	42	0.83	(0.45 - 1.53)	0.56	0.84	(0.45 - 1.59)	0.60
<i>1 time per day and more</i>	114	36	5.28	(3.26 - 8.56)	0.00	5.46	(3.30 - 9.13)	0.00
Fish and sea products								
<i>Never or less than 1 time per week</i>	76	89	1			1		
<i>1 time per week</i>	135	129	1.23	(0.83 - 1.81)	0.31	1.07	(0.70 - 1.62)	0.77
<i>More than 1 time per week</i>	21	3	8.20	(2.35 - 28.55)	0.00	8.20	(2.26 - 29.72)	0.00
Salt consumption								
Salt consumption habit at table								
<i>Generally add salt to food without tasting first</i>	27	2	1			1		
<i>Taste food and then generally add salt</i>	53	5	0.79	(0.14 - 4.32)	0.78	0.82	(0.15 - 4.62)	0.82
<i>Taste food but only occasionally add salt</i>	75	41	0.14	(0.03 - 0.60)	0.01	0.14	(0.03 - 0.64)	0.01
<i>Rarely or never add salt at table</i>	77	172	0.03	(0.01 - 0.14)	0.00	0.04	(0.01 - 0.16)	0.00
Smoking habit								
<i>Never-smoker</i>	138	155	1			1		
<i>Ex-smoker</i>	9	6	1.68	(0.58 - 4.85)	0.33	1.54	(0.49 - 4.86)	0.46
<i>Current-smoker</i>	85	60	1.59	(1.06 - 2.38)	0.02	1.10	(0.64 - 1.91)	0.72

Table 3. The results of multivariate logistic regression analysis

Risk Factors	OR	95% CI	P
Age (years)	0.92	(0.89 - 0.95)	0.00
Gender			
<i>Female</i>	1		
<i>Male</i>	2.90	(1.41 - 5.93)	0.00
BMI (kg/m²)	1.08	(1.02 - 1.15)	0.02
Family history			
<i>No</i>	1		
<i>Yes</i>	6.69	(2.10 - 21.25)	0.00
Water			
<i>Less than 1 time per day</i>	1		
<i>More than 1 time per day</i>	0.07	(0.02 - 0.19)	0.00
Wine			
<i>Never or less than 1 time per week</i>	1		
<i>1 time per week and more</i>	0.24	(0.11 - 0.53)	0.00
Yogurt			
<i>Less than 1 time per week</i>	1		
<i>More than 1 time per week</i>	8.58	(4.06 - 18.14)	0.00
Banana			
<i>Less than 1 time per week</i>	1		
<i>More than 1 time per week</i>	0.20	(0.09 - 0.44)	0.00
Cabbage, cauliflower or broccoli			
<i>Less than 1 time per week</i>	1		
<i>More than 1 time per week</i>	16.29	(7.25 - 36.64)	0.00
Corn			
<i>Never or less than 1 time per week</i>	1		
<i>1 time per week and more</i>	8.51	(3.68 - 19.70)	0.00
Nuts			
<i>Never or less than 1 time per week</i>	1		
<i>1 time per week and more</i>	9.29	(4.22 - 20.43)	0.00

Table 4. The results logistic regression analysis: testing for interaction between risk factors and gender

Risk Factors	OR	95% CI	P
Age	0.99	(0.96 - 1.01)	0.30
Family history			
<i>No</i>	1		
<i>Yes</i>	0.53	(0.15 - 1.89)	0.33
BMI	1.02	(0.95 - 1.09)	0.60
Water			
<i>Less than 1 time per day</i>	1		
<i>More than 1 time per day</i>	1.53	(0.59 - 3.96)	0.38
Wine			
<i>Never or less than 1 time per week</i>	1		
<i>1 time per week and more</i>	1.28	(0.56 - 2.95)	0.56
Yogurt			
<i>Less than 1 time per week</i>	1		
<i>More than 1 time per week</i>	0.78	(0.31 - 1.96)	0.59
Banana			
<i>Less than 1 time per week</i>	1		
<i>More than 1 time per week</i>	0.53	(0.24 - 1.19)	0.13
Cabbage, cauliflower or broccoli			
<i>Less than 1 time per week</i>	1		
<i>More than 1 time per week</i>	0.83	(0.33 - 2.10)	0.69
Corn			
<i>Never or less than 1 time per week</i>	1		
<i>1 time per week and more</i>	0.81	(0.32 - 2.09)	0.67
Nuts			
<i>Never or less than 1 time per week</i>	1		
<i>1 time per week and more</i>	1.88	(0.78 - 4.54)	0.16

Appendix 1. Summary of odds ratios and prevalence rates of different risk factors for urinary stone development among control group from existing literature.

<i>Risk factors</i>	<i>Prevalence Rates</i>	<i>OR</i>	<i>Ref's</i>
Age			18
18-29	21.3		
30-39	26.7		
40-49	31.0		
50-59	12.4		
≥60	8.6		
Gender			17
Male	66.5		
Family history	32.0	1.896	17
BMI	40.6	1.1	18
Hypertension	16.0	4.24	18
Smoking	25.1	4.41	18
Alcohol use	55.0	1.18	18
Diet			
Fluid intake			19
<500 mL/day	11.3	1	
501-1,000 mL/day	27.2	0.995	
1,001-2,000 mL/day	42.0	0.92	
≥2,000 mL/day	11.3	0.61	
Tea			
<3 times/month	21.0	1	
1-6 times/week	11.4	1.29	
1-2 times/day	40.7	0.945	
≥3 times/day	19.9	0.96	
Beer			
Never	85.9	1	
1-300 mL/day	10.5	1.245	
>300 mL/day	3.5	0.995	
Wine			
Never	87.1	1	
1-75 mL/day	6.4	1.18	
>75 mL/day	3.4	1.4	
Coffee			
<1 time/month	58.3	1	
2-3 time/month	15.7	0.845	
≥1times/week	19.6	0.885	

Fruit juice			
<1 time/month	39.0	1	
2-3 time/month	19.3	0.8	
≥1times/week	35.0	0.965	
Dairy products			19
<3 times/month	17.0	1	
1-6 times/week	10.2	1.125	
1-2 times/day	52.5	1.105	
≥3 times/day	13.0	1.155	
Leafy vegetables			
<3 times/month	18.9	1	
1-6 times/week	47.2	1.325	
1-2 times/day	24.1	1.335	
≥3 times/day	3.1	3.115	
Nuts (almond, walnut, peanut)			
<1 time/month	40.8	1	
2-3 time/month	23.0	1.855	
≥1times/week	29.4	0.965	
Bean products			19
<3 times/month	11.6	1	
1-6 times/week	15.6	1.335	
1-2 times/day	57.2	1.36	
≥3 times/day	8.0	2	
Meat and fish			19
<1 time/month	8.0	1	
1-3 times/month	8.2	1.02	
1-6 times/week	41.8	0.795	
≥1 time/day	35.6	0.91	
Fruits			19
<1 time/month	4.1	1	
1-3 times/month	5.8	0.88	
1-6 times/week	54.9	1.55	
≥1 time/day	28.6	1.015	

Appendix 2: Screening form (English version)

Participant screening form

After obtaining a consent from participant

May I ask a few questions to you to see whether you meet the criteria to become a participant of this study or not?

If **NO**,

Thank participant for the time and ask the reason for refusal.

If **YES**,

Thank and continue.

FOR CASES

1. Have you ever been diagnosed with USD?

If **NO**,

Thank participant for the time.

If **Yes**,

Continue the interview.

2. When? (In which **year/month**?)

If the answer **corresponds with the selected time frame**, when ask:

3. Have you been diagnosed with USD before that?

If **YES**,

Thank participant for the time.

If **NO**,

Continue the interview.

FOR CONTROLS

Have you ever been diagnosed with USD?

If **YES**,

Thank participant for the time.

If **NO**,

Continue the interview.

Screening form (Armenian version)

Մասնակցի ընտրության ձև

Մասնակցից քանակոր համաձայնություն ստանալուց հետո՝

Կարո՞ղ եմ ձեզ մի քանի հարց ուղղել հասկանալու համար արդյոք կարող եք դառնալ այս հետազոտության մասնակից:

Եթե **ՈՉ**,

Շնորհակալություն հայտնել մասնակցին և պարզել մերժման պատճառը:

Եթե **ԱՅՈ**,

Շնորհակալություն հայտնել և շարունակել:

ԴԵՊՔԵՐԻ ՀԱՄԱՐ

ՍՏՈՒԳԻՉՆԵՐԻ ՀԱՄԱՐ

1. Արդյո՞ք նախկինում երբևէ ախտորոշվել եք ՄՔՀ:

Արդյո՞ք նախկինում երբևէ ախտորոշվել եք ՄՔՀ:

Եթե **ՈՉ**,

Եթե **ԱՅՈ**,

Շնորհակալություն հայտնել մասնակցին և ավարտել հարցազրույցը:

Շնորհակալություն հայտնել մասնակցին և ավարտել հարցազրույցը:

Եթե **ԱՅՈ**,

Եթե **ՈՉ**,

Շնորհակալություն հայտնել և շարունակել:

Շնորհակալություն հայտնել և շարունակել:

2. Ե՞րբ: (Տարի/ամիս)

Եթե **պատասխանը համապատասխանում է ընտրված ժամանակահատվածին**, ապա հարցնել՝

3. Արդյո՞ք ախտորոշվել եք ՄՔՀ մինչ այդ:

Եթե **ԱՅՈ**,

Շնորհակալություն հայտնել մասնակցին և ավարտել հարցազրույցը:

Եթե **ՈՉ**,

Շնորհակալություն հայտնել և շարունակել:

Appendix 3: Journal form (For cases)

ID	Name/ Last name	Phone number	Attempt 1	Attempt 2	Attempt 3
1001					
1002					
1003					
1004					
1005					
...					
1242					

Call result options

1. Complete interview
2. Incomplete interview
3. Refusal
4. Temporary disconnect
5. No answer
6. Busy number
7. Not eligible
8. Call later
9. Other _____ (specify)

Journal form (For controls)

ID	Name/ Last name	Phone number	Attempt 1	Attempt 2	Attempt 3
2001					
2002					
2003					
2004					
2005					
...					
2242					

Call result options

1. Complete interview
2. Incomplete interview
3. Refusal
4. Temporary disconnect
5. No answer
6. Busy number
7. Not eligible
8. Call later
9. Other _____ (specify)

Appendix 3: Questionnaire (English version)

**The Risk Factors of Urinary Stone Disease in Armenia:
A Case-Control Study**

Interviewee ID: _____

Date: ____/____/____

Day/ Month/ Year

Start time: ____:____

End time: ____:____

- Participant:**
- i. Case
 - ii. Control

Domain I: Socio-demographic characteristics.

1. What is your age?	_____ years
2. Gender	<ul style="list-style-type: none"> i. <input type="checkbox"/> Male ii. <input type="checkbox"/> Female
3. What is the highest level of education that you have completed?	<ul style="list-style-type: none"> i. <input type="checkbox"/> School (8 years or less) ii. <input type="checkbox"/> School (10 years) iii. <input type="checkbox"/> Professional technical (10-13) iv. <input type="checkbox"/> Institute/ University v. <input type="checkbox"/> Post-graduate
4. What is your current employment status? <i>For interviewer: Please read the response options!</i>	<ul style="list-style-type: none"> i. <input type="checkbox"/> Employed/ Self-employed ii. <input type="checkbox"/> Unemployed iii. <input type="checkbox"/> Retired iv. <input type="checkbox"/> Other _____

<p>5. What is your current marital status?</p> <p><i>For interviewer: Please read the response options!</i></p>	<p>i. <input type="checkbox"/> Single</p> <p>ii. <input type="checkbox"/> Married</p> <p>iii. <input type="checkbox"/> Widowed</p> <p>iv. <input type="checkbox"/> Divorced/Separated</p>
<p>6. On average, how much money does your family spend monthly?</p>	<p>i. <input type="checkbox"/> Less than 50,000 drams</p> <p>ii. <input type="checkbox"/> From 50,000 - 100,000 drams</p> <p>iii. <input type="checkbox"/> From 100,001 - 200,000 drams</p> <p>iv. <input type="checkbox"/> From 200,001 - 300,000 drams</p> <p>v. <input type="checkbox"/> Above 300,000 drams</p> <p>88. <input type="checkbox"/> Don't know/ Refuse to answer</p>
<p>7. What is your weight in kg?</p>	<p>_____ kg</p> <p>88. <input type="checkbox"/> Don't know</p>
<p>8. What is your height in cm?</p>	<p>_____ cm</p> <p>88. <input type="checkbox"/> Don't know</p>
<p>9. Among your direct relatives (parents, sisters and brothers) did anyone ever have urinary stone disease?</p> <p>9.a. If YES, what was their relation to you?</p>	<p>i. <input type="checkbox"/> Yes</p> <p>ii. <input type="checkbox"/> No</p> <p>88. <input type="checkbox"/> Don't know</p> <p>_____</p>

Domain II: Dietary habits

1. Fluids and beverages

Interviewer, please read this part FOR CASES

I would like to ask you some questions about your dietary habits before you were diagnosed. You mentioned before that you have been diagnosed in _____ (month) in 2015, please answer the rest of the questions in the interview based on your dietary habits before your diagnosis, in case they have changed since then. Please indicate how often, on average, you consumed each of the beverages. For each question please choose one of the five response options: 1. Never or less than 1 time per week, 2. 1 time per week, 3. More than 1 time per week, 4. 1 time per day, 5. More than 1 time per day.

Interviewer, please read this part FOR CONTROLS

Now I am going to ask you questions about consumption of several types of beverages. Please indicate how often, on average, you consumed each of the beverages during the past year. For each question please choose one of the five response options: 1. Never or less than 1 time per week, 2. 1 time per week, 3. More than 1 time per week, 4. 1 time per day, 5. More than 1 time per day.

Instruction for interviewer: For the first question, read the question as written on the questionnaire, and then read each of the five responses. Based on the respondent's answer, tick the appropriate box. For the next question, read the question and then ask the respondent "should I repeat the responses?" Based on his/her answer, you may or may not read the responses. Continue in this way until the respondent is familiar with the response categories. If the respondent gives an answer that is not exactly one of the five possible response categories, make a tick for the response that best matches the respondent's answer.

For interviewer: Please put a tick “✓” in the corresponding box. There should only be one tick per row.

<i>Type of beverage</i>	<i>Frequency</i>				
	Never or less than 1 time per week	1 time per week	More than 1 time per week	1 time per day	More than 1 time per day
10. How frequently do you consume one cup of Water (1 cup = 200ml) 10.a If (5), please specify	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/> _____
11. How frequently do you consume one cup of 100% Fruit juice (1 cup = 200ml)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
12. How frequently do you consume one cup of Milk (1 cup = 200ml)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
13. How frequently do you consume one cup of Tea (1 cup = 200ml)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
14. How frequently do you consume one cup of Coffee 14.a If (5), please specify	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/> _____
15. How frequently do you consume one bottle of Beer 15.a If (5), please specify	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/> _____
16. How frequently do you consume one glass of Wine	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
17. How frequently do you consume one shot of Vodka 17.a If (5), please specify	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/> _____
18. How frequently do you consume other drinks (cocktails, liquors, etc.)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

2. Dairy foods

Interviewer, please read this part FOR CASES

Now I am going to ask you questions about consumption of dairy products. Please indicate how often, on average, you have eaten each of the specified food before your diagnosis. For each question please choose one of the five response options: 1. Never or less than 1 time per week, 2. 1 time per week, 3. More than 1 time per week, 4. 1 time per day, 5. More than 1 time per day.

Interviewer, please read this part FOR CONTROLS

Now I am going to ask you questions about consumption of dairy products. Please indicate how often, on average, you have eaten each of the specified food during the past year. For each question please choose one of the five response options: 1. Never or less than 1 time per week, 2. 1 time per week, 3. More than 1 time per week, 4. 1 time per day, 5. More than 1 time per day.

For interviewer: Please put a tick “✓” in the corresponding box. There should only be one tick per row.

Type of food	Frequency				
	Never or less than 1 time per week	1 time per week	More than 1 time per week	1 time per day	More than 1 time per day
19. How frequently do you consume one cup of Yogurt	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
20. How frequently do you consume one cup of Cottage cheese	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
21. How frequently do you eat one piece of Cheese (on average 50 gr)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
22. How frequently do you put Margarine on the food on your plate or on your bread? (I don't mean using it while cooking)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
23. How frequently do you put Butter on the food on your plate or on your bread? (I don't mean using it while cooking)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

3. Fruits and vegetables

Interviewer, please read this part FOR CASES

Now I am going to ask you questions about consumption of fruits and vegetables. Please indicate how often, on average, you have eaten each of the specified food before your diagnosis. For the seasonal fruits or vegetables please estimate your response.

For each question please choose one of the five response options: 1. Never or less than 1 time per week, 2. 1 time per week, 3. More than 1 time per week, 4. 1 time per day, 5. More than 1 time per day.

Interviewer, please read this part FOR CONTROLS

Now I am going to ask you questions about consumption of fruits and vegetables. Please indicate how often, on average, you have eaten each of the specified food during the past year. For the seasonal fruits or vegetables please estimate your response.

For each question please choose one of the five response options: 1. Never or less than 1 time per week, 2. 1 time per week, 3. More than 1 time per week, 4. 1 time per day, 5. More than 1 time per day.

For interviewer: Please put a tick “✓” in the corresponding box. There should only be one tick per row.

<i>Type of food</i>	<i>Frequency</i>				
	Never or less than 1 time per week	1 time per week	More than 1 time per week	1 time per day	More than 1 time per day
24. How frequently do you consume one Fresh apple or pear	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
25. How frequently do you consume one Orange or other citrus fruit	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
26. How frequently do you consume one Peach, apricot or plum	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

27. How frequently do you consume one Banana	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
28. How frequently do you consume other fruits , please specify _____	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
29. How frequently do you consume one serving of Cabbage, cauliflower or broccoli (1 serving = 200gr)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
30. How frequently do you consume one serving of Corn (1 serving = 200gr)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
31. How frequently do you consume one serving of Beans (1 serving = 200gr)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
32. How frequently do you consume one serving of Spinach (1 serving = 200gr)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
33. How frequently do you consume Nuts (almond, walnut, peanut)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
34. How frequently do you consume any other vegetable , please specify _____	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

4. Animal products

Interviewer, please read this part FOR CASES

In this section I am going to ask you questions about consumption of animal products.

Please indicate how often, on average, you have eaten each of the specified food before you have been diagnosed. For each question please choose one of the five response options: 1.

Never or less than 1 time per week, 2. 1 time per week, 3. More than 1 time per week, 4. 1 time per day, 5. More than 1 time per day.

Interviewer, please read this part FOR CONTROLS

In this section I am going to ask you questions about consumption of animal products.

Please indicate how often, on average, you have eaten each of the specified food during the past year. For each question please choose one of the five response options: 1. Never or less than 1 time per week, 2. 1 time per week, 3. More than 1 time per week, 4. 1 time per day, 5. More than 1 time per day.

For interviewer: Please put a tick “✓” in the corresponding box. There should only be one tick per row.

<i>Type of food</i>	<i>Frequency</i>				
	Never or less than 1 time per week	1 time per week	More than 1 time per week	1 time per day	More than 1 time per day
35. How frequently do you consume one Egg	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
36. How frequently do you consume one serving of Chicken or turkey, with skin (a medium serving)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
37. How frequently do you consume one serving of Chicken or turkey, without skin (a medium serving)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
38. How frequently do you consume one serving of Beef meat (a medium serving)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
39. How frequently do you consume one serving of Pork meat (a medium serving)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
40. How frequently do you consume one slice of Processed meat (sausage, salami, etc.)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
41. How frequently do you consume one serving of Fish (a medium serving)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

5. Salt usage

The following three questions are about your consumption of salt.

42. Do you add salt to your cooking?	i. <input type="checkbox"/> Yes ii. <input type="checkbox"/> No
43. Do you add salt at the table?	i. <input type="checkbox"/> Yes ii. <input type="checkbox"/> No → Go to Q. 45
44. Regarding your habits for eating salt, which of the following four options best describes your habit? At the table do you: <i>For interviewer: Please read carefully the response options!</i>	i. <input type="checkbox"/> generally add salt to food without tasting first ii. <input type="checkbox"/> taste food and then generally add salt iii. <input type="checkbox"/> taste food but only occasionally add salt iv. <input type="checkbox"/> rarely or never add salt at table

Domain III. Lifestyle habits.

The next few questions are about your smoking habits.

45. Have you ever smoked?	i. <input type="checkbox"/> Yes ii. <input type="checkbox"/> No → End of the interview
46. In total how many years have you smoked?	_____
47. Are you currently smoking?	i. <input type="checkbox"/> Yes ii. <input type="checkbox"/> No → Go to Q. 49
48. How many cigarettes do you smoke daily?	_____ → End of the interview
49. How many cigarettes did you used to smoke daily on average?	_____

End of the interview!

Thank you for Participation!

Questionnaire (Armenian version)

Միզաքարային հիվանդության ռիսկի գործոնների հետազոտություն

Հայաստանում

Դեպք-ստուգիչ հետազոտություն

Հարցվողի հերթական համար _____

Ամսաթիվ: ___/___/_____

Օր/ Ամիս/ Տարի

Հարցազրույցի սկիզբ ___:___

Հարցազրույցի ավարտ ___:___

Մասնակից՝ i. Դեպք

ii. Ստուգիչ

I: Ժողովրդագրական տվյալներ

1. Կասե՞ք Ձեր տարիքը:	_____ տարի
2. Սեռը՞:	iii. <input type="checkbox"/> Արական iv. <input type="checkbox"/> Իգական
3. Ո՞րն է Ձեր կրթության ամենաբարձր աստիճանը:	vi. <input type="checkbox"/> Դպրոց (8 տարի և քիչ) vii. <input type="checkbox"/> Դպրոց (10 տարի) viii. <input type="checkbox"/> Միջին մասնագիտական (10-13) ix. <input type="checkbox"/> Ինստիտուտ/Համալսարան x. <input type="checkbox"/> Հետդիպլոմային
4. Ո՞րն է Ձեր ներկայիս զբաղվածությունը: <i>Հարցազրուցավարի համար՝ կարդացե՛ք բոլոր տարբերակները:</i>	v. <input type="checkbox"/> Աշխատում եմ vi. <input type="checkbox"/> Չեմ աշխատում vii. <input type="checkbox"/> Թոշակառու viii. <input type="checkbox"/> Այլ _____

<p>5. Ինչպիսի՞նն է ձեր ամուսնական կարգավիճակը ներկայումս:</p> <p><i>Հարցազրուցավարի համար՝ կարդացե՛ք բոլոր տարբերակները:</i></p>	<p>v. <input type="checkbox"/> Չամուսնացած</p> <p>vi. <input type="checkbox"/> Ամուսնացած</p> <p>vii. <input type="checkbox"/> Այրի</p> <p>viii. <input type="checkbox"/> Ամուսնալուծված</p>
<p>6. Որքա՞ն է ձեր ընտանիքի միջին ամսական եկամուտը:</p>	<p>vi. <input type="checkbox"/> 50,000 դրամից պակաս</p> <p>vii. <input type="checkbox"/> 50,000 - 100,000 դրամ</p> <p>viii. <input type="checkbox"/> 101,000 - 200,000 դրամ</p> <p>ix. <input type="checkbox"/> 201,000 - 300,000 դրամ</p> <p>x. <input type="checkbox"/> Ավելի քան 300,000 դրամ</p> <p>88. <input type="checkbox"/> Չգիտեմ/ Հրաժարվում եմ պատասխանել</p>
<p>7. Որքա՞ն է ձեր քաշը /կգ:</p>	<p>_____ կգ</p> <p>88. <input type="checkbox"/> Չգիտեմ</p>
<p>8. Որքա՞ն է ձեր հասակը /սմ:</p>	<p>_____ սմ</p> <p>88. <input type="checkbox"/> Չգիտեմ</p>
<p>9. Ձեր ուղղակի հարազատներից (ծնողներ, քույր, եղբայր) որևէ մեկը երբևէ ունեցե՞լ է ԵԹՀ:</p> <p>9.ա. Եթե ԱՅՈ, նշել թե ով:</p>	<p>iii. <input type="checkbox"/> Այո</p> <p>iv. <input type="checkbox"/> Ոչ</p> <p>88. <input type="checkbox"/> Չգիտեմ</p> <p>_____</p>

II: Դիետիկ սովորություններ

1. Հեղուկներ և խմիչքներ

Հարցազրուցավար, կարդացեք այս մասը ԴԵՊՔԵՆԻ ՀԱՄԱՆ

Ես կցանկանայի մի քանի հարց ուղղել Ձեր դիետիկ սովորությունների վերաբերյալ մինչ երիկամաքարային հիվանդության ախտորոշումը: Դուք նշեցիք, որ ախտորոշվել էք 2015 թ.-ի _____ ամսին: Կխնդրեի հաջորդ հարցերին պատասխանել հաշվի առնելով Ձեր դիետիկ նախասիրությունները նախքան ախտորոշումը, եթե դրանք փոխվել են: Խնդրում ենք նշեք, թե միջինում ինչ հաճախականությամբ եք օգտագործել հետևյալ հեղուկները: Յուրաքանչյուր հարցի համար խնդրում եմ ընտրեք հետևյալ հինգ պատասխաններից մեկը՝ 1. Շաբաթը 1 անգամից քիչ կամ երբեք, 2. Շաբաթը 1 անգամ, 3. Շաբաթը 1 անգամից ավել, 4. Օրը 1 անգամ, 5. Օրը 1 անգամից ավել:

Հարցազրուցավար, կարդացեք այս մասը ՍՏՈՒԳԻՉՆԵՆԻ ՀԱՄԱՆ

Հիմա ես Ձեզ կուղղեմ հարցեր որոշակի հեղուկների օգտագործման մասին: Խնդրում ենք նշեք, թե միջինում ինչ հաճախականությամբ եք օգտագործել հետևյալ հեղուկները անցած մեկ տարվա ընթացքում: Յուրաքանչյուր հարցի համար խնդրում եմ ընտրեք հետևյալ հինգ պատասխաններից մեկը՝ 1. Շաբաթը 1 անգամից քիչ կամ երբեք, 2. Շաբաթը 1 անգամ, 3. Շաբաթը 1 անգամից ավել, 4. Օրը 1 անգամ, 5. Օրը 1 անգամից ավել:

Հարցազրուցավարի համար՝ առաջին հարցի համար կարդացեք այն ինչպես գրված է հարցաշարի մեջ, ապա կարդացեք պատասխանների բոլոր հինգ տարբերակները: Հարցվողի պատասխանի հիման վրա, նշե՛ք համապատասխան վանդակը: Հաջորդ հարցի համար, կարդացեք հարցը, այնուհետև հարցրեք պատասխանողին "Արդյո՞ք ես պետք է կրկնեմ պատասխանների տարբերակները": Ելնելով պատասխանից, դուք կարող եք որոշում կայացնել տարբերակները կարդալու կամ չկարդալու մասին: Շարունակե՛ք այս կերպ մինչև պատասխանողը ծանոթանա պատասխանների տարբերակների հետ: Եթե հարցվողը տալիս է պատասխան, որը ամբողջությամբ չի համապատասխանում հինգ հնարավոր պատասխաններից որևէ մեկին, ապա նշեք այն պատասխանը, որը լավագույնս համապատասխանում է հարցվողի պատասխանին:

*Հարցազրուցավարի համար՝ նշե՛ք համապատասխան վանդակը “✓” նշանով:
Յուրաքանչյուր տողում պետք է լինի միայն մեկ նշված վանդակ:*

<i>Խմիչքի տեսակ</i>	<i>Հաճախականություն</i>				
	Շաբաթը 1 անգամից քիչ կամ երբեք	Շաբաթը 1 անգամ	Շաբաթը 1 անգամից ավել	Օրը 1 անգամ	Օրը 1 անգամից ավել
10. Որքա՞ն հաճախ եք օգտագործում 1 գավաթ Չուր (1 գավաթ =200մլ) 10.a. Եթե (5), ապա մանրամասնել	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/> _____
11. Որքա՞ն հաճախ եք օգտագործում 1 գավաթ 100% Բնական հյութ (1 գավաթ =200մլ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
12. Որքա՞ն հաճախ եք օգտագործում 1 գավաթ Կաթ (1 գավաթ =200մլ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
13. Որքա՞ն հաճախ եք օգտագործում 1 գավաթ Թեյ (1 գավաթ =200մլ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
14. Որքա՞ն հաճախ եք օգտագործում 1 գավաթ Սուրճ 14.a. Եթե (5), ապա մանրամասնել	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/> _____
15. Որքա՞ն հաճախ եք օգտագործում 1 շիշ Գարեջուր (0.33լ) 15.a. Եթե (5), ապա մանրամասնել	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/> _____
16. Որքա՞ն հաճախ եք օգտագործում 1բաժակ Գինի	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
17. Որքա՞ն հաճախ եք օգտագործում 1 գավաթ Օղի 17.a. Եթե (5), ապա մանրամասնել	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/> _____
18. Որքա՞ն հաճախ եք օգտագործում այլ խմիչքներ (կոկտեյլ, լիկյոր, և այլն)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

2. Կաթնամթերք

Հարցազրուցավար, կարդացեք այս մասը ԴԵՊՔԵՆԻ ՀԱՄԱՐ

Հիմա ես Ձեզ կուղղեմ հարցեր որոշակի կաթնամթերքների օգտագործման մասին: Խնդրում ենք նշեք, թե միջինում ինչ հաճախականությամբ եք օգտագործել հետևյալ սննդատեսակները նախքան ախտորոշումը: Յուրաքանչյուր հարցի համար խնդրում եմ ընտրեք հետևյալ հինգ պատասխաններից մեկը՝ 1. Շաբաթը 1 անգամից քիչ կամ երբեք, 2. Շաբաթը 1 անգամ, 3. Շաբաթը 1 անգամից ավել, 4. Օրը 1 անգամ, 5. Օրը 1 անգամից ավել:

Հարցազրուցավար, կարդացեք այս մասը USՈՒԳԻՉՆԵՆԻ ՀԱՄԱՐ

Հիմա ես Ձեզ կուղղեմ հարցեր որոշակի կաթնամթերքների օգտագործման մասին: Խնդրում ենք նշեք, թե միջինում ինչ հաճախականությամբ եք օգտագործել հետևյալ սննդատեսակները անցած մեկ տարվա ընթացքում: Յուրաքանչյուր հարցի համար խնդրում եմ ընտրեք հետևյալ հինգ պատասխաններից մեկը՝ 1. Շաբաթը 1 անգամից քիչ կամ երբեք, 2. Շաբաթը 1 անգամ, 3. Շաբաթը 1 անգամից ավել, 4. Օրը 1 անգամ, 5. Օրը 1 անգամից ավել:

Հարցազրուցավարի համար՝ նշե՛ք համապատասխան վանդակը “✓” նշանով:

Յուրաքանչյուր տողում պետք է լինի միայն մեկ նշված վանդակ:

Մանրի տեսակ	Հաճախականություն				
	Շաբաթը 1 անգամից քիչ կամ երբեք	Շաբաթը 1 անգամ	Շաբաթը 1 անգամից ավել	Օրը 1 անգամ	Օրը 1 անգամից ավել
19. Որքա՞ն հաճախ եք օգտագործում 1 գավաթ Մածուն	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
20. Որքա՞ն հաճախ եք օգտագործում 1 գավաթ Կաթնաշոռ	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
21. Որքա՞ն հաճախ եք օգտագործում 1 կտոր Պանիր (միջինում 50գ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

22. Որքա՞ն հաճախ եք օգտագործում Մարգարին (սննդին կամ հացին ավելացված, բացառել խոհարարության մեջ գտագործածը)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
23. Որքա՞ն հաճախ եք օգտագործում Կարագ (սննդին կամ հացին ավելացված, բացառել խոհարարության մեջ գտագործածը)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

3. Մրգեր և բանջարեղեն

Հարցազրուցավար, կարդացեք այս մասը ԴԵՊՔԵԼԻ ՀԱՄԱՐ

Հիմա ես Ձեզ կուղղեմ հարցեր որոշակի մրգերի և բանջարեղենի օգտագործման մասին: Խնդրում ենք նշեք, թե միջինում ինչ հաճախականությամբ եք օգտագործել հետևյալ մրգերը և բանջարեղենը անցած նախքան ախտորոշումը: Սեզոնային մրգերի և բանջարեղենի համար խնդրում ենք նշել մոտավոր պատասխան:

Յուրաքանչյուր հարցի համար խնդրում եմ ընտրեք հետևյալ հինգ պատասխաններից մեկը՝ 1. Շաբաթը 1 անգամից քիչ կամ երբեք, 2. Շաբաթը 1 անգամ, 3. Շաբաթը 1 անգամից ավել, 4. Օրը 1 անգամ, 5. Օրը 1 անգամից ավել:

Հարցազրուցավար, կարդացեք այս մասը ՍՏՈՒԳԻՉՆԵՐԻ ՀԱՄԱՐ

Հիմա ես Ձեզ կուղղեմ հարցեր որոշակի մրգերի և բանջարեղենի օգտագործման մասին: Խնդրում ենք նշեք, թե միջինում ինչ հաճախականությամբ եք օգտագործել հետևյալ մրգերը և բանջարեղենը անցած մեկ տարվա ընթացքում: Սեզոնային մրգերի և բանջարեղենի համար խնդրում ենք նշել մոտավոր պատասխան:

Յուրաքանչյուր հարցի համար խնդրում եմ ընտրեք հետևյալ հինգ պատասխաններից մեկը՝ 1. Շաբաթը 1 անգամից քիչ կամ երբեք, 2. Շաբաթը 1 անգամ, 3. Շաբաթը 1 անգամից ավել, 4. Օրը 1 անգամ, 5. Օրը 1 անգամից ավել:

Հարցազրուցավարի համար՝ նշե՛ք համապատասխան վանդակը “✓” նշանով:

Յուրաքանչյուր տողում պետք է լինի միայն մեկ նշված վանդակ:

Մննդի տեսակ	Հաճախականություն				
	Շաբաթը 1 անգամից քիչ կամ երբեք	Շաբաթ ը 1 անգամ	Շաբաթ ը 1 անգամի ց ավել	Օրը 1 անգա մ	Օրը 1 անգամ ից ավել
24. Որքա՞ն հաճախ եք օգտագործում 1 հատ Թարմ խնձոր կամ տանձ	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
25. Որքա՞ն հաճախ եք օգտագործում 1 հատ Նարինջ կամ այլ ցիտրուսային մրգեր	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
26. Որքա՞ն հաճախ եք օգտագործում 1 հատ Դեղձ, ծիրան կամ սալոր	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
27. Որքա՞ն հաճախ եք օգտագործում 1 հատ Բանան	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
28. Որքա՞ն հաճախ եք օգտագործում այլ մրգեր. Կարո՞ղ եք նշել _____	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
29. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Կաղամբ, ծաղկակաղամբ կամ բրոկկոլի (1 չափաբաժին = 200 գ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
30. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Հացահատիկ (1 չափաբաժին = 200 գ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
31. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Լոբի (1 չափաբաժին = 200 գ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
32. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Սպանախ (1 չափաբաժին = 200 գ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

33. Որքա՞ն հաճախ եք օգտագործում Հնկուզեղեն (նուշ, ընկույզ, գետնանուշ)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
34. Որքա՞ն հաճախ եք օգտագործում որևէ այլ բանջարեղեն. Կարո՞ղ եք նշել _____	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

4. Կենդանական սնունդ

Հարցազրուցավա՛ր, կարդացեք այս մասը ԴԵՊՔԵԸԻ ՀԱՄԱԸ

Այս բաժնում ես Ձեզ կուղղեմ հարցեր որոշակի մասամբերքների օգտագործման մասին: Խնդրում ենք նշեք, թե միջինում ինչ հաճախականությամբ եք օգտագործել հետևյալ սննդատեսակները նախքան ախտորոշումը: Յուրաքանչյուր հարցի համար խնդրում եմ ընտրեք հետևյալ հինգ պատասխաններից մեկը՝ 1. Շաբաթը 1 անգամից քիչ կամ երբեք, 2. Շաբաթը 1 անգամ, 3. Շաբաթը 1 անգամից ավել, 4. Օրը 1 անգամ, 5. Օրը 1 անգամից ավել:

Հարցազրուցավա՛ր, կարդացեք այս մասը ՍՏՈՒԳԻՉՆԵԸԻ ՀԱՄԱԸ

Այս բաժնում ես Ձեզ կուղղեմ հարցեր որոշակի մասամբերքների օգտագործման մասին: Խնդրում ենք նշեք, թե միջինում ինչ հաճախականությամբ եք օգտագործել հետևյալ սննդատեսակները անցած մեկ տարվա ընթացքում: Յուրաքանչյուր հարցի համար խնդրում եմ ընտրեք հետևյալ հինգ պատասխաններից մեկը՝ 1. Շաբաթը 1 անգամից քիչ կամ երբեք, 2. Շաբաթը 1 անգամ, 3. Շաբաթը 1 անգամից ավել, 4. Օրը 1 անգամ, 5. Օրը 1 անգամից ավել:

Հարցազրուցավարի համար՝ նշե՛ք համապատասխան վանդակը “✓” նշանով:

Յուրաքանչյուր տողում պետք է լինի միայն մեկ նշված վանդակ:

Մենդի տեսակ	Հաճախականություն				
	Շաբաթը 1 անգամի ց քիչ կամ երբեք	Շաբաթ ը 1 անգամ	Շաբաթ ը 1 անգամ ից ավել	Օրը 1 անգամ	Օրը 1 անգամ ից ավել
35. Որքա՞ն հաճախ եք օգտագործում 1 հատ Հավի ձու	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
36. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Հավի կամ հնդկահավի միս, մաշկի հետ միասին (միջին չափաբաժին)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
37. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Հավի կամ հնդկահավի միս, առանց մաշկի (միջին չափաբաժին)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
38. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Տավարի միս (միջին չափաբաժին)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
39. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Խոզի միս (միջին չափաբաժին)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
40. Որքա՞ն հաճախ եք օգտագործում 1 կտոր Վերամշակված միս (երշիկ, սալյամի, եւ այլն)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
41. Որքա՞ն հաճախ եք օգտագործում 1 չափաբաժին Չուկ և ծովամթերք (միջին չափաբաժին)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

5. Աղի օգտագործում

Հաջորդ երեք հարցերը Ձեր կողմից աղի օգտագործման մասին են:

42. Արդյոք օգտագործում եք աղ սնունդ պատրաստելիս:	iii. <input type="checkbox"/> Այո iv. <input type="checkbox"/> Ոչ
43. Արդյոք օգտագործում եք աղ սեղանի շուրջ:	iii. <input type="checkbox"/> Այո iv. <input type="checkbox"/> Ոչ → Անցնել հարց 45-ին
44. Աղի օգտագործման Ձեր սովորությունների վերաբերյալ հետևյալ չորս տարբերակներից ո՞րն է լավագույնս նկարագրում Ձեզ: Սեղանի շուրջ դուք՝ <i>Հարցազրուցավարի համար՝ ուշադիր կարդացե՛ք բոլոր տարբերակները:</i>	v. <input type="checkbox"/> սովորաբար աղ եք ավելացնում սնունդին առանց փորձելու vi. <input type="checkbox"/> սովորաբար աղ եք ավելացնում սնունդը փորձելուց հետո vii. <input type="checkbox"/> երբեմն աղ եք ավելացնում սնունդը փորձելուց հետո viii. <input type="checkbox"/> հազվադեպ եք աղ ավելացնում կամ երբեք չեք ավելացնում սնունդին

III. Ապրելակերպի սովորություններ

Հաջորդ մի քանի հարցերը ձխախտի օգտագործման մասին են:

45. Երբևէ ձխախտո ծխե՞լ եք:	iii. <input type="checkbox"/> Այո iv. <input type="checkbox"/> Ոչ → Հարցազրույցի ավարտ
46. Ընդհանուր առմամբ քանի՞ տարի եք ծխել:	_____
47. Դուք ներկայումս ծխո՞ւմ եք:	iii. <input type="checkbox"/> Այո iv. <input type="checkbox"/> Ոչ → Անցնել հարց 49 -ին
48. Քանի՞ գլանակ եք ծխում մեկ օրում:	_____ → Հարցազրույցի ավարտ
49. Քանի՞ գլանակ էիք ծխում մեկ օրում:	_____

Հարցազրույցի ավարտ!

Շնորհակալություն մասնակցության համար!

Appendix 5. Oral consent form (English version)

American University of Armenia

Institutional Review Board #1/Committee on Human Research

Consent form

Hello. My name is Inesa. I am a graduate student of the Master of Public Health program at the American University of Armenia. We are conducting a study to investigate risk factors of Urinary Stone Disease among adult population in Armenia. The research is conducted among patients who received treatment in Izmirlyan medical center.

You have been randomly selected to participate in this study from the group of patients, who were treated in Izmirlyan medical center during the period of time from August 1, 2015 to February 29, 2016. Your contact information has been obtained from your medical record. I would like to ask you to participate in this study to share with us some details about your dietary and lifestyle habits.

Your participation in this case study is voluntary. You may skip any question you think is inappropriate and even stop the interview at any moment you want without any undesirable consequences for you. Also you can ask any questions you may have about this research study. Your participation will involve an interview with the duration of about 10-15 minutes.

Your participation in the study poses no risk for you. The information received from you and your medical records is important for the study. There is no monetary benefit from the participation in this study, but your participation will contribute to better understanding of the risk factors of developing urinary stones, which later could lead to improved management, as well as prevention of stone formation.

The information provided by you and the data obtained from the medical records are fully confidential and will be used only for the study. Your name, contact information and other identifiable information will not appear on the questionnaire and final report. Your contact information will be destroyed upon the completion of data collection.

If you have any questions about this study you can call to the co-investigator of the study Aida Giloyan, (37460) 61-25-91. If you feel you have not been treated fairly or think you have been hurt by joining the study you should contact Dr. Kristina Akopyan, the Human Subject Protection Administrator of the American University of Armenia (37460) 61 25 61.

If you agree to participate, we can start the interview.

Oral consent form (Armenian version)

Հայաստանի Ամերիկյան Համալսարան

Հանրային առողջապահության բաժին

Գիտահետազոտական էթիկայի թիվ 1 հանձնաժողով

Իրազեկ համաձայնության ձև

Բարև Ձեզ: Իմ անունը Ինեսա է: Ես Հայաստանի Ամերիկյան Համալսարանի Հանրային առողջապահության բաժնի ավարտական կուրսի ուսանող եմ: Մենք ներկայումս իրականացնում ենք հետազոտություն, որի նպատակն է Հայաստանի չափահաս բնակչության շրջանում միզաքարային հիվանդության զարգացման ռիսկի գործոնների բացահայտումը: Հետազոտությունն իրականացվում է Իզմիրյան բժշկական կենտրոնում բուժում ստացած հիվանդների շրջանում:

Դուք պատահականության սկզբունքով ընտրվել եք 2015 թ.-ի Օգոստոսի 1-ից մինչև 2016 թ.-ի Փետրվարի 29 ընկած ժամանակահատվածում բուժօգնություն ստացած հիվանդների խմբից: Ձեր հեռախոսահամարը վերցվել է Ձեր բժշկական քարտից: Ես կինդրեի ձեզ մասնակցել այս հետազոտությանը և կիսվել մեզ հետ ձեր դիետիկ և ապրելակերպի սովորությունների մասին:

Ձեր մասնակցությունն այս հետազոտությանը կամավոր է: Դուք իրավունք ունեք չպատասխանել այն հարցերին, որոնց հարմար չեք գտնում պատասխանել նույնիսկ ցանկացած պահի դադարեցնել հարցազրույց, ինչ երևի բացասական հետևանք չի ունենա Ձեզ համար: Ինչպես նաև Դուք կարող եք հարցեր տալ հետազոտության վերաբերյալ: Ձեր մասնակցությունը ներառում է 10-15 րոպե տևողությամբ հարցազրույց:

Ձեր մասնակցությունը այս հետազոտությանը որևէ վտանգ չի ներկայացնում Ձեզ համար: Ձեր կողմից տրամադրված տվյալները, ինչպես նաև բժշկական տվյալները կարևոր են հետազոտության համար: Այս հարցազրույցին Ձեր մասնակցությունը չի ենթադրում որևէ դրամական խրախուսանք Ձեր համար, բայց Ձեր մասնակցությունը կարող է օգնել ավելի լավ հասկանալու միզաքարային

հիվանդության զարգացման զարգացման ռիսկի գործոնները, որը հետագայում կարող է նպաստել հիվանդության կառավարման բարելավմանը և քարերի առաջացման կանխմանը:

Ձեր կողմից տրամադրված տվյալները, ինչպես նաև բժշկական տվյալները գաղտնի են պահվելու և օգտագործվելու են միայն հետազոտության նպատակով: Ձեր անունը, կոնտակտային տվյալները չեն երևալու հարցաթերթիկի, վերջնական գեկույցի մեջ և պահպանվելու է գաղտնիության սկզբունքը: Ձեր կոնտակտային տվյալները կոչնչացվեն տվյալների հավաքագրումից անմիջապես հետո:

Այս հետազոտության վերաբերյալ հարցեր ունենալու դեպքում կարող եք կապ հաստատել հետազոտության համահեղինակ Աիդա Գիլոյանի հետ հետևյալ հեռախոսահամարով՝ (37460) 61-25-91 : Եթե Դուք կարծում եք, որ այս հետազոտությանը մասնակցելու ընթացքում Ձեզ լավ չեն վերաբերվել կամ մասնակցությունը Ձեզ վնաս է պատճառել, կարող եք զանգահարել Հայաստանի ամերիկյան համալսարանի Էթիկայի հանձնաժողովի քարտուղար՝ Քրիստինա Հակոբյանի հետ՝ (37460) 61 25 61 հեռախոսահամարով:

Եթե դուք համաձայն եք մասնակցել, կարող ենք սկսել հարցազրույցը:

Appendix 6: Tentative timeframe

Tasks	November	December	January	February	March	April	May	June
Writing a thesis project proposal	↔							
Development and translation of the study questionnaire	↔							
Applying for IRB approval	↔							
Data collection	↔							
Data entry (double)/cleaning	↔							
Data analysis	↔							
Writing the thesis paper and submission	↔							