

**Antibiotic use: a cross-sectional survey of knowledge, attitude and
practice among Yerevan adult population**

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List of Abbreviations

CDC- Centers for Disease Control and Prevention

KAP-Knowledge, Attitude and Practice

WHO-World Health Organization

MRSA- Methicillin-resistant staphylococcus aureus

MSSA- Methicillin-Sensitive Staphylococcus aureus

EU-European Union

MOH-Ministry of Health

SRS-Stratified Random Sampling

RDD-Random Digit Dialing

SD-Standard Deviation

IRB-Institutional Review Board

CI-Confidence Interval

OR-Odds Ratio

SES-Socioeconomic Status

US-United States

CHRS-Center for Health Services Research and Development

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Abstract

Background

Antibiotic resistance is a rapidly growing problem worldwide. According to the United States' Centers for Disease Control and Prevention (CDC) antibiotic-resistant bacteria cause at least 23,000 deaths and two million illnesses annually in the United States. Antibiotic resistance can occur naturally; however, misuse of antibiotics in humans and animals accelerates the process. To date no studies have explored the Armenian population's knowledge of and attitude towards the use of antibiotics, situations where antibiotics are used, their knowledge on antibiotic resistance, and their expectations of and trust in providers' decisions on antibiotic prescription.

Aim

The aim of the study was to explore the knowledge, attitude and practice (KAP) of antibiotic use among Yerevan adult population.

Methodology

A telephone survey among 458 Yerevan adults was conducted. Stratified random sampling proportionate to size and random digit dialing techniques were used to approach and enroll study participants. The study instrument included questions on socio-demographic characteristics of the respondents, their attitude towards the use of antibiotics, antibiotic misuse, knowledge of antibiotic use and resistance, and attitude towards doctors and their antibiotic prescription practices.

Results

The proportion of people who ever misused antibiotics was 57%. Majority of the participants were female (81,36%.) and the mean age of the participants was 46. The mean percent knowledge score was 49%, the mean percent attitude score was 39%, and the mean trust in doctor's prescription practices score was 61%. In adjusted analysis, positive attitude towards antibiotic misuse was associated with the antibiotic misuse with the OR of 1.16 (CI 1.03-1.29). The respondents with higher educational level had 0.46 times lower odds of misuse compared to those with lower educational level (CI 0.24-0.85). After adjusting for confounders the significant association between doctor's trust and antibiotic misuse was maintained, with the odds of misuse increasing with increasing trust score. Higher monthly expenditures were significantly associated with the higher odds of misuse in adjusted analysis.

Conclusion

This was the first study which assessed KAP of antibiotic use in Yerevan adult population. The results showed the poor knowledge of participants about conditions where antibiotics can be used. The positive attitude towards antibiotic misuse and high trust in doctors' prescription practices were associated with higher odds of misuse. These findings suggest a need for educational programs to increase knowledge of Yerevan adult population regarding appropriate antibiotic use and changing their attitude towards antibiotics. Further studies should be conducted to better understand the knowledge about antibiotics and current prescription practices among health care professionals in Armenia.

Background

Antibiotic resistance is a rapidly growing problem worldwide.^{1,2,3} Antibiotics are medications used for prevention and treatment of bacterial infections. According to World Health Organization (WHO) "Antibiotic resistance is the ability of bacteria or other microbes to resist the effects of an antibiotic".⁴ The "resistant" bacteria continue to multiply in the presence of therapeutic levels of an antibiotic.⁵ Resistance is a result of mutations in microbial organisms, gene transfer and selection pressure from use of antimicrobial medicine that gives the mutated strains a competitive advantage.⁶ Antibiotic resistance can occur naturally; however, misuse of antibiotics in humans and animals accelerates the process.^{7,8} Inadequate infection prevention and control programs, poor-quality medicines, insufficient laboratory capacity, inappropriate food handling, poor surveillance and lack of regulations to ensure appropriate use of anti-microbial drugs contribute to the development of the resistance.^{4,7}

Burden of Antibiotic Resistance

According to the United States' Centers for Disease Control and Prevention (CDC) antibiotic-resistant bacteria cause at least 23,000 deaths and two million illnesses annually in the United States.⁸ In the European Union around 25,000 deaths per year are caused by antibiotic-resistant infections.⁹ Antibiotic resistance leads to increased mortality, morbidity and healthcare costs.^{10,11} The mortality risk is about twice higher for the patients with infections caused by resistant bacteria compared to the risk among those with infection caused by the same but non-resistant bacteria.³ It is estimated for example that patients affected by the Methicillin-resistant staphylococcus aureus (MRSA) (a common source of severe infections in hospitals and in the community) are 64% more likely to die in comparison with people with a non-resistant form of the infection.⁴ A US study

found that the mean cost of treatment for a patient hospitalized for MRSA infection is \$51,252 – 84,436 compared to \$30,158 – 59,245 for Methicillin-Sensitive Staphylococcus aureus (MSSA) infection.⁹ In the EU in 2007 approximately 2.5 million extra hospital days were reported due to resistant infections which have led to the overall societal costs of about 1.5 billion € per year.¹²

Misuse of antibiotics by healthcare providers and patients

It has been demonstrated that in the primary care setting around 50% of antibiotic prescriptions are potentially inappropriate.¹³ Common diseases (i.e., high respiratory tract infections) were shown to be responsible for 75% of the total antibiotic prescriptions, therefore these prescriptions have a higher risk of inappropriateness.^{14,15,16}

Typical examples of antibiotic misuse by providers include prescribing antibiotics unnecessarily, delaying the treatment with antibiotics in critically ill patients, having too narrow or too broad spectrum of antibiotic therapy, assigning a dose which is below or above the level indicated for the patient, choosing too short or too long duration of antibiotic therapy, and failing to make adjustments to the therapy when the data on microbiological culture become available.¹⁷

Factors contributing to inappropriate prescribing practices of antibiotics by healthcare providers have been illustrated in a number of studies.^{18,19} According to some studies behavior of the physicians regarding prescriptions might be affected by the patients' demand, their expectations and physicians' perceptions of those expectations.^{20,21, 22} From the patient's perspective, the prescribing of an antibiotic confirms that the patient is ill, that a diagnosis has been made and that the treatment is available for the illness.²³ However, although physicians often feel obligated to prescribe an antibiotic to meet patient demands, some studies indicate that patients do not acknowledge pressing their physicians for the prescription.²³

Diagnostic uncertainty and limited opportunities for following up with the patients have also been listed among the contributing factors.²⁴

Many studies have shown that there is a lack of knowledge among the general population about when, how and in what situations antibiotics should be used.^{25, 26,27} Common examples of misuse of antibiotics in patients includee keeping leftover antibiotics or sharing antibiotics with other people, use for another purpose than the one it has been prescribed for, not taking full course of antibiotics, or not following the doctor's prescription.^{25,28}

Self-medication with antimicrobial drugs is a very common practice in less developed countries for reasons of convenience, accessibility, and perceived savings.^{29,30} Irrespectively of existing regulations most pharmacies in less developed countries will provide an antibiotic on demand after briefly listening to the client.³⁰ Poor adherence is a common consequence of self-medication.³⁰ Antibiotics are not effective against viruses and taking them for the viral infections can lead to the antibiotic resistance.²⁹ Use of antibiotics for the conditions that cannot be treated by antibiotics (flu, common cold, or other viral infections) is useless and decreases its effectiveness against bacterial infections.^{31,32}

According to WHO, about 80% of population is using antibiotics and 20-50% of the use is inappropriate.²⁸ WHO advises the public to use antibiotics only when and as it is prescribed by a physician.^{3,33} The major resistance-control strategies include education for the public, patients, children and healthcare professionals concerning relevant antibiotic prescription, unique characteristics of antibiotics, bacterial infections and personal hygiene.^{34,35,36}

Situation in Armenia

There are many countries where antibiotics can be purchased without doctor's prescription, and Armenia is one of them.^{37,38} Giving an importance to the issue of antibiotic resistance Armenia

approved the strategy of WHO on “Antimicrobial drug resistance surveillance and prevention”. In 2005 for the first time Armenia joined the campaign “World Antibiotic Awareness Week” conducted by WHO to increase awareness on global antibiotic resistance and encourage best practices among the general public, policy makers and health workers to avoid future spread and emergence of antibiotic resistance.^{39,40} The knowledge about antibiotic use and resistance can influence patient demand for antibiotic prescriptions. Yet to be most effective such educational interventions should be based on the needs of the audience in each country.²⁷ The data about the patterns of antibiotic use in adult population of Armenia is scarce. The only study that explored self-medication with antibiotics was conducted in 2005 among Yerevan adult population to determine the prevalence of self-medication with antibiotics and to identify the influence of age, gender, education, and income on self-medication with antibiotics.⁴¹ The results showed that the actual prevalence of self-medication and intended self-medication were 12.5% and 53.1%, respectively. It was also found that the main sources of obtaining antibiotics were direct purchases from pharmacies. The study suggested a high risk of self-medication with antibiotics and, therefore, developing antibiotic resistance among Yerevan adult population. Although the study provided important information on self-medication with antibiotics among general population it did not explore the population’s knowledge of and attitude towards the use of antibiotics, situations where antibiotics are used, their knowledge on antibiotic resistance, and their expectations of and trust in providers’ decisions on antibiotic prescription.

Study aim and research questions

The aim of this study is to explore the knowledge, attitude and practice of antibiotic use among Yerevan adult population. The study will answer the following research questions:

- *What is the level of knowledge, attitude and practice of antibiotic use among Yerevan adult population?*
- *Is there a difference between knowledge of and attitude towards antibiotic use and the actual antibiotic misuse in Yerevan adult population?*
- *Is there an association between socio-demographic characteristics of respondents (age, gender, education, parenthood status) and antibiotic misuse?*
- *Is there an association between the expectations of and trust in providers' decisions on antibiotic prescriptions and antibiotic misuse?*

Materials and methods

Study design

To answer the research questions a cross-sectional, telephone survey was conducted in Yerevan. This survey technique was used because it is a relatively quick and inexpensive technique in comparison with other survey techniques, and has a lower social desirability bias.^{42,43}

Study population

The target population of the survey is the general population of Yerevan. Based on the inclusion and exclusion criteria student investigator will select the study participants.

The inclusion criteria were the following:

- ✓ people aged 18 and above
- ✓ residents of Yerevan
- ✓ willingness to participate in the study

The exclusion criterion was inability to speak Armenian.

Study instrument and data collection

The questionnaires which were formerly used in the surveys of public knowledge and awareness related to antibiotic use and resistance internationally were used to develop the survey tool.^{27,44} The study questionnaire consisted of several domains, including 1) Socio-demographic information, 2) Knowledge of antibiotic use and resistance, 3) Attitude towards the use of antibiotics, 4) Attitude towards doctors and their antibiotic prescription practices, and 5) Antibiotic use and misuse.

The student investigator translated, pretested and adapted the questionnaire for the use in Armenian population.

Sample size calculation

The student investigator used the formula for two-sample comparison of proportions for cross-sectional studies for the sample size calculation.⁴⁵

The hypothesis question which explores the association between knowledge of and attitude towards antibiotic use(first group) and the actual antibiotic misuse(second group) in Yerevan adult population and the 12.5% prevalence of self-medication with antibiotics found in an earlier study was considered in the calculation. The student investigator intended to detect 10% difference between the groups with the different levels of knowledge, with 95% confidence interval and 80% study power. The calculation resulted in the sample of 226 people in one group and 452 in both groups.

$$n = \frac{\left(Z_2^\alpha \sqrt{2pq} + Z\beta \sqrt{p_1q_1 + p_2q_2} \right)^2}{|p_1 - p_2|^2}$$

$$p = \frac{p_1 + p_2}{2}$$

$$n = \frac{\left(1.96\sqrt{2*0.175*0.825} + 0.84\sqrt{0.125*0.875 + 0.225*0.775} \right)^2}{0.1^2} = 225.2 = 226$$

A repeated dialing of telephone numbers was done until 458 interviews were completed.

Sampling strategy

To come up with a representative sample of the general population the student investigator used Stratified Random Sampling (SRS) proportionate to size. Random Digit Dialing (RDD) technique was used to enroll the survey respondents.⁴⁶ The sample included people from each of the 12 districts of Yerevan according to the population size living in the district.

Main codes of fixed phone numbers were used to approach the study participants (first two numbers). The remaining four numbers were generated using the “RANDBETWEEN” function of Excel software. The log file of the sampling process included information about the non-contact numbers, busy numbers, refusals, and incomplete interviews.

Statistical analysis

The main dependent variable was the misuse of antibiotics. The main independent variables included knowledge score, attitude score, trust in doctors' decision, age, sex, educational level, socioeconomic status and having children under 18 years old. For the statistical analysis the student investigator used SPSS 13.0 and STATA 13. The study population was described using descriptive statistics for all variables. Standard deviations and means described the continues variables,

frequencies and percentages were used for the categorical variables. The bivariate analysis included simple logistic regression. Multiple logistic regression analysis identified the contribution of independent variables to the misuse of antibiotics, adjusting for covariates. Results were considered statistically significant if they had P value less than 0.05.

Study variables

Dependent

Misuse (Binary)

Independent

Knowledge score (Continuous)

Attitude score (Continuous)

Trust in doctors' - Continuous

Age-Continuous

Sex-Nominal

Educational level-Ordinal

Having children-Binary

The student investigator summed up five questions measuring the misuse of antibiotics into one binary (yes/no) dependent variable. Those who answered positively to any of the questions indicating misuse were grouped into the misuse category.

To come up with the knowledge score the student investigator coded the right answers as 1, the wrong and 'don't know' answers as 0, and summed all 13 knowledge question answers to get a score for each participant.

To come up with the attitude score the student investigator coded the responses “strongly disagree” as 0, “disagree” as 1, “neither agree nor disagree” as 2, “agree” as 3 and “strongly agree” as 4. The higher score indicated more positive attitude towards the misuse. The variable that measured the attitude score was a sum of the attitude questions. To come up with the score of trust in doctors and their decisions on antibiotic prescription the student investigator coded all positive answers as 1, all negative and ‘don’t know’ answers as 0, and summed up all three questions in this domain.

Ethical Considerations

The Institutional Review Board (IRB) of the American University of Armenia approved the study protocol. Only student-investigator had access to the study database. Participants were informed about their right to refuse to participate in the study. The respondents’ consent was obtained before starting the interviews.

Results

Descriptive statistics

Administrative results

Overall, 3,192 phone calls were made, with the contact rate of 64.98% (n = 1,118). Out of 1,118 contacted respondents, 84.11% met the inclusion criteria (n = 940). The refusal rate was 51.61%, with the most common reasons for refusal including not having time (75.2%), being not interested (15.3%), being old/not knowledgeable (6.5%).

Socio-demographic information

Table 1 shows the socio-demographic characteristics of the respondents. Majority (81.54%) of the study participants were female. The mean age was 69 ranging from 18 to 87 years. About 56% of the respondents had graduate or postgraduate degree. Approximately 44% were employed or self-employed. Thirty-seven percent (n = 170) of the respondents had children less than 18 years old.

Knowledge about antibiotics and antibiotic resistance

Table 2 shows the respondents' knowledge on antibiotics and antibiotic resistance. Forty six percent of participants agreed with the statement "When one gets a cold, antibiotics help to get better more quickly than not taking them". About 41% of the respondents thought that antibiotics are effective against bacteria, while 42.57% thought that antibiotics are effective against viruses.

Most of the respondents (64.84%) disagreed with the statement that leftover antibiotics can be used again without doctor's prescription. The majority of respondents (67%) knew that antibiotics can cause imbalance in the body's bacterial flora, and that inappropriate use of antibiotics reduces their efficacy (70.74%). Also, 62.5% agreed that bacteria can be resistant to antibiotics. About 44% of participants thought that resistant types of bacteria can spread from human to human.

Most of the participants (47.38%) agreed that using antibiotics when they are not necessary may cause antibiotic resistance. Roughly one-third of respondents (34.06%) knew that not completing the full course of antibiotic therapy can cause antibiotic resistance. A slightly higher percentage (44.32%) thought that using antibiotics without physician prescription may cause antibiotic resistance.

Only half of the respondents thought that antibiotic resistance is a problem in Armenia, while even a smaller proportion (44.5%) thought that it is a problem in the rest of the world today. The highest knowledge score recorded among participants was 13 out of 13, while the lowest one was 0. The mean knowledge score was 6.39 (SD = 3.12). Mean percent knowledge score was 49%.

Attitude towards antibiotic use

Most of the respondents either disagreed (32.97%) or strongly disagreed (58.95%) with the statement “It is good to be able to get antibiotics from relatives or friends without having to see a doctor” (Table 3). A small proportion of respondents (31%) believed that it is good to be able to buy antibiotics over the-counter at the pharmacy without seeing a doctor. Most of the respondents either disagreed (58.33%) or strongly disagreed (12.94%) with the statement “The use of antibiotics when you are sick in order to remain active when you have cold is appropriate”.

The highest score for this domain was 9 and the lowest was 0, with the mean of 3.51 (SD =2.03). Mean percent attitude score was 39%.

Antibiotic use/misuse

About 79% of the respondents have ever used antibiotics, out of which 27.82% have used one course of antibiotics during the last 12 months, while 15.42% have used two to five courses.

Approximately 2% of the respondents reported using antibiotics six and more times. Out of 170 participants having children less than 18 years old, 70.93 % mentioned that their child/children have ever used antibiotics; out of them, 53.3% have used antibiotics in the last 12 months.

About 26% of participants have ever started antibiotic therapy without consulting with the doctor; out of them 37.71% reported buying antibiotics from pharmacies always, usually, or occasionally.

Eleven percent of the respondents reported taking antibiotics for cold, 23.58% for sore throat, and 14.6% for fever. Almost 41% said that they usually stop taking antibiotics when they start feeling better. Out of 29.5% of participants who reported keeping leftover antibiotics at home 32.6% used leftover antibiotics without doctor's prescription. The overall proportion of respondents who misused antibiotics was 57%.

Expectations of and trust in doctors' decisions on antibiotic prescription

Sixty six percent of participants mentioned that they trust their doctor's decision when they are prescribing antibiotics and 84.7% mentioned that they trust the doctor's decision if s/he decides not to prescribe antibiotics. However, 36.24% of respondents agreed that doctors often prescribe antibiotics because the patient expects it. About 62% of respondents agreed that doctors often take time to inform the patient during the consultation on how antibiotics should be used. Approximately 28% of participants said that they will go from their doctor to another doctor if he/she doesn't prescribe antibiotics when they think that he/she should. The highest score for this variable was 6 and the lowest was 0 with the mean of 3.66 (SD=1.49). Mean percent trust score was 61%.

Unadjusted analysis

In a simple logistic regression one unit increase in the attitude score towards the antibiotic misuse was associated with the actual antibiotic misuse with the OR of 1.27 (95% CI: 1.15 - 1.40). The higher educational level of the respondents was significantly associated with the lower odds of misuse of antibiotics (OR = 0.44; 95% CI: 0.26- 0.73). An association was found between higher trust in doctor's decision on antibiotic prescription and antibiotic misuse with the OR of 1.12 (95% CI: 0.99-1.27). The higher was socioeconomic status of respondents the higher were the odds of

misuse (OR=3.04; (95% CI: .94- 9.82). The rest of the variables were not associated with the use/misuse of antibiotics in bivariate analysis. (Table 6)

Multivariable analysis

The student investigator considered all variables which were associated with the outcome variable in the unadjusted analysis at the $p=0.1$ significance level for the inclusion in the multivariate model.

The analysis of confounders showed that the attitude score was significantly associated with the socioeconomic status, educational level, and the trust in doctors' decisions on antibiotic prescription.

All these variables were entered in the final model.

In adjusted analysis, positive attitude towards antibiotic misuse was associated with the antibiotic misuse with the OR of 1.16 (95% CI: 1.03-1.29).

The respondents with higher educational level had 0.46 times lower odds of misuse compared to those with lower educational level (OR= 0.46; 95% CI: 0.24-0.85).

After adjusting for confounders the significant association between doctor's trust and antibiotic misuse was maintained, with the odds of misuse increasing with increasing trust score (OR= 1.21; 95% CI: 1.04-1.42).

The significant association between antibiotic misuse and socioeconomic status with the OR of 3.97 (1.15-13.75) in the group with monthly expenditure higher than 301,000 AMD was maintained in the final model. (Table 7).

Discussion

Main findings/recommendations

This was the first study which explored the knowledge, attitude, and practice regarding antibiotic use in Yerevan population. The study demonstrated that 57% of people do not use antibiotics properly. This is higher compared to 46% inappropriate use found by the study done in Jordan⁴⁷ and twice as high as the rate found in Ethiopia (31%).²⁶ The knowledge among public regarding the conditions where antibiotics should be used is also poor, with 54.4% of people thinking that when one gets cold antibiotics help to get better more quickly than not taking them, and 43% thinking that antibiotics are effective against viruses. These findings are similar to what was found in the study in Sweden, where there was substantial confusion among population regarding the situations where antibiotics can be used.²⁷ More than half of the participants agreed that common colds are cured more quickly with antibiotics, while only one fifth of respondents agreed with that statement in the study conducted in Sweden.²⁷ About one third of the respondents in this study had positive attitude towards misuse, which is lower compared to the results of a similar study done in Kuwait (45 %).⁴⁸ .

Twenty six percent of the respondents in this study reported self-medication, which is substantially higher than the rate reported in the study conducted in Yerevan in 2005 (12.5%).⁴¹ In comparison to Portugal (19%) and Euro-Mediterranean region (19.1%) the self-medication rate is higher in Yerevan; however, compared to the rates found in Ethiopia (27.5%) or Egypt (23.3%) it is somewhat lower.²⁶

The overall positive attitude towards antibiotic misuse, and the high rates of self-medication and actual misuse could be explained by the existing laws in Armenia which allow obtaining antibiotics from the pharmacies without doctor's prescription. Several authors suggested that in countries where

the OTC sale of antibiotics is common it very often leads to a misuse of antibiotics such as wrong choice or wrong duration of treatment. ^{49,50}

Similarly to the findings of the study conducted in Sweden, which found high level of trust (87%) towards the doctors who do not prescribe antibiotics and a slightly lower level of trust (81%) towards those who prescribe antibiotics; almost 66% of participants in our study reported that they trust their doctors' decision when s/he prescribes antibiotic and 85% trust their doctor's decision if s/he does not prescribe antibiotics.²⁷ Yet a relatively high proportion of respondents (48%) did not think that doctors often take time to inform the patient during the consultation about how antibiotics should be used. It has been demonstrated that doctors' advice and information provided to the patients about correct treatment practices is vital for preventing the inappropriate use of antibiotics.¹⁴

The knowledge among Yerevan adult population regarding antibiotic use was not significantly associated with the misuse in this study. However, we found a significant association between positive attitude towards antibiotic misuse and actual antibiotic misuse, which is similar to the findings of the studies conducted in Sweden and Netherlands.²⁷ The found association suggests that interventions aiming at changing the attitude towards the antibiotic use in general population could decrease the practice of antibiotic misuse.

In contrast with other studies the significant association was found between higher trust in doctors and higher antibiotic misuse. There is a big evidence that doctors' have an important role regarding the use of antibiotics in general population.⁶ Our results imply that the doctors might be giving incorrect advice about the use of antibiotics or overprescribing antibiotics, while the patients trust the doctors and follow their advice. Thus, there is a need to explore the knowledge, attitude and

practice regarding antibiotics among health care providers to better understand the current situation in Armenia and design appropriate interventions to solve the problem.

In accordance with the literature, higher educational level was associated with the lower odds of misuse of antibiotics.^{47,51} This might be explained by the fact that people with higher educational level are more knowledgeable about the dangers of antibiotic misuse and therefore the rate of misuse is lower among them.

Higher socio-economic status was associated with higher odds of antibiotic misuse in our study. The literature contains controversial reports on the association between antibiotics misuse and socioeconomic status.^{22,47,52} A study conducted in the US among general population found that people from higher income families had high rates of antibiotic misuse in comparison with lower income families.^{22,52} The authors hypothesized that those with higher socio economic status have better access to health care than lower income people, thus if doctors tend to overprescribe antibiotics, this would particularly affect the rates of antibiotic misuse among those better off.

Strengths and limitations

One of the strengths of the study was the large sample size and strong sampling methodology used for the recruitment of the participants in the study, which helped to maximize the generalizability of the findings to adult population of Yerevan. However, a low response rate might have introduced a non-response bias in the study. Furthermore, only fixed codes of the telephone numbers were used to identify each district in Yerevan, while the other cell phone codes (060, 011) were not used to reach the study population which could have led to the exclusion of households without fixed code

numbers. Another limitation could have been introduced by relying on self-reported data on antibiotic use.

Conclusions and implications for practice and future research

The low level of awareness about appropriate use of antibiotics and a positive attitude towards antibiotic misuse found in this study suggests the need for educational programs to increase the knowledge level and change the attitude of population towards appropriate antibiotic use. Our study showed that the role of health care providers in Armenia in appropriate prescribing and counselling on the use of antibiotics should not be underestimated, because the population seem to trust providers' decisions in this sphere. Further studies should be conducted to explore the antibiotic knowledge, attitude and prescription practices among health care professionals in Armenia.

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Tables

Table 1. Socio-demographic characteristics of the respondents (n = 458)

Characteristics	
	Mean (SD)
Age (years)	46 (11)
Gender	% (n)
<i>Male</i>	18.64 (85)
<i>Female</i>	81.36 (371)
Education	% (n)
<i>School</i>	20.04 (90)
<i>Professional technical</i>	23.61 (106)
<i>Institute/University/Postgraduate</i>	56.35 (253)
Having medical education	% (n)
Having medical education	19.33 (87)
Having children under 18	37.22 (169)
	Mean (SD)
Number of family members	4 (1.82)
Employment status	% (n) 43.575 (193)
<i>Employed/Self-employment</i>	0.45% (2)
<i>Seasonal work/migrant</i>	38.37 (170)
<i>Unemployed</i>	4.97 (22)
<i>Student</i>	12.64 (56)
<i>Retired</i>	
Socio-economic status	% (n)
<i>Less than 50,000 AMD</i>	3.58 (16)
<i>From 51,000 to 150,000 AMD</i>	29.75 (133)
<i>From 151,000 to 300,000 AMD</i>	29.75 (133)

<i>Above 301,000 AMD</i>	10.74 (48)
<i>Don't know / refuse to answer</i>	26.17 (117)

Table 2. Knowledge about antibiotics and resistance

Variables	% (n) (right answers)
When one gets a cold, antibiotics help to get better more quickly than not taking them.	45.63% (209)
Antibiotics are effective against bacteria.	187(40.83%)
Antibiotics are effective against viruses.	33.19% (152)
Antibiotic leftovers can be used again without a doctor's instructions.	64.85% (297)
Antibiotics can cause imbalance in the body's bacterial flora.	67.47% (309)
Inappropriate use of antibiotics reduces their efficacy.	71.33% (326)
Bacteria can be resistant to antibiotics.	62.45% (286)
Resistant types of bacteria can spread from human to human.	44.42% (203)
Antibiotic resistance is due to:	47.38% (217)
<i>Using antibiotics when they are not necessary.</i>	34.06%(156)
<i>Not completing the full course of antibiotic therapy.</i>	44.54% (204)
<i>Using antibiotic without physician prescription.</i>	
Antibiotic resistance is a problem in Armenia today.	42.58% (195)
Antibiotic resistance is a problem in the rest of the world today.	40.17% (184)

Table 3. Attitude towards antibiotic use

Variables	%(n) (disagree/strongly disagree)
It is good to be able to get antibiotics from relatives or friends without having to see a doctor	92.7% (422)
It is good to be able to get antibiotics over the-counter at the pharmacy/chemist without having to see a doctor	69% (316)
The use of antibiotics when you are sick in order to remain active (work, family or study) is appropriate	71% (325)

Table 4. Mean Scores for knowledge, attitude and trust in doctor's decisions on antibiotic prescriptions.

Variables	Mean (SD)
<i>Knowledge Score (score range: 0 - 13)</i>	6.39 (3.12)
<i>Attitude Score (score range: 0 - 9)</i>	3.51(2.03)
<i>Trust in Doctor's Advice Score (score range: 0 -6)</i>	3.66(1.49)

Table 5. Antibiotic use and misuse

Variables	%(n)
Ever used antibiotics	79.26% (363)
Ever started antibiotic therapy without consulting with a doctor	25.54% (117)
Usually taking antibiotics when have cold	10.92% (50)
Usually taking antibiotics for sore throat	23.58% (108)
Usually taking antibiotics for fever	14.63% (67)
Usually stop taking antibiotics when start feeling better	40.83% (187)
Often get antibiotics from the doctor	21.4% (98)
Keep leftover antibiotics at home	11.35% (52)
Ever used leftover antibiotics without doctor's prescription	9.61% (44)

Table 6. Unadjusted associations between antibiotic misuse and independent variables

Variable	Unadjusted OR (95% CI)	Unadjusted p-value
Knowledge score	0.97 (.92 - 1.03)	0.373
<i>Attitude score</i>	1.27 (1.15-1.40)	0.000
<i>Trust in doctors score</i>	1.12(.99- 1.27)	<i>0.076</i>
Age	0.99 (0.98-1.00)	0.213
Gender	1.16 (0.72-1.86)	0.550
Educational level		
School (ref. group)		
Technical professional	0.65(0.36-1.19)	0.161
<i>University degree</i>	0.44(0.26-0.73)	0.002
Medical education	1.24 (0.77- 2.00)	0.373
Parenthood status	0.99 (0 .67-1.45)	0.936
Socio-economic status		
<50.000AMD(ref. group)		
51.000-300.000AMD	2.33(0.82-6.60)	0.112
>301.000AMD	3.04 (0.94-9.82)	0.063
<i>Parenthood status</i>	0.98(0.67-1.45)	0.936

Table 7. Multivariable analysis

Variable	Adjusted OR (95% CI)	Adjusted p-value
Attitude score	1.15 (1.03-1.29)	0.013
Trust in doctors	1.21 (1.04-1.42)	0.017
Educational level*		
School (ref. group)		
Technical professional	0.76 (0.37- 1.56)	0.46
University degree	0.46(0.24-0.85)	0.014
Socio-economic status*		
<50.000AMD(ref. group)		
51.000-300.000AMD	2.60(0.88- 7.70)	0.085
>301.000AMD	3.97(1.15-13.75)	0.03

Appendix 1: Questionnaire in English

Antibiotic use: a cross-sectional survey of knowledge, attitude and practice among Yerevan adult population

Day / Month / Year

Date of the interview ___/___/_____

Beginning of the interview __:___ End of the interview __:___

ID _____

1. Have you ever used antibiotics? (e.g. Amoxicillin, Amoxiclav, Penicillin, Rifampicin, Ceftriaxone, Sumamed)

1. Yes

2. No *if not, jump to question #3*

88. Don't know/don't remember *if don't know/don't remember, jump to question #3*

2. How many times have you used antibiotics in the last 12 months? _____times

3. Do you have children under 18?

1. Yes

2. No

4. Have any of your children been ever given antibiotics?

1. Yes

2. No *if no jump to the question 6*

88. Don't know/don't remember *if don't know/don't remember jump to the question 6*

5. How many times has/have your child (ren) been given antibiotics during last 12 months? _____times

Read out:

Now I am going to read a few statements your attitude towards antibiotic use. You can answer to them by choosing the following options:

strongly disagree, disagree, neither agree nor disagree, agree, strongly agree.

2. Attitude towards antibiotic use

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
6.It is good to be able to get antibiotics from relatives or friends without having to see a doctor	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
7.It is good to be able to buy antibiotics over-the-counter at the pharmacy/chemist without seeing a doctor	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
8.The use of antibiotics when you are sick in order remain active (work, family or study) is appropriate	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

3. Use and Misuse

Read out:

Now I am going to read a few statements about antibiotic use. You can answer to them by choosing yes /no or other options that would be provided.

9. Have you ever started antibiotic therapy when you were sick without consulting with a doctor?

1. Yes

2. No if no jump to the question 11

10. How often do you buy antibiotics from the pharmacy without a doctor's prescription?

1. Always

2. Usually

3. Occasionally

4. Rarely

5. Never

11. Do you usually take antibiotics when you have cold?

1. Yes

2. No

12. Do you usually take antibiotics for sore throat?

1. Yes

2. No

13. Do you usually take antibiotics for fever?

1. Yes

2. No

14. Do you usually stop taking antibiotics when you start feeling better?

1. Yes

2. No

15. How often do you get antibiotics from the doctor?

1. Always

2. Usually

3. Occasionally

4. Rarely

5. Never

16. Do you keep leftover antibiotics at home?

1. Always

2. Usually

- 3. Occasionally
- 4. Rarely
- 5. Never *if never, jump to the question 18*

17. Have you ever used leftover antibiotics without doctor's prescription?

- 1. Yes
- 2. No

4. Knowledge about antibiotics and resistance

Read out:

Now I am going to read a few statements regarding your knowledge about antibiotics and antibiotic resistance.

You may answer to the questions by choosing one of the answer options, which are the following:

“ agree, don't agree or don't know”.

18. When one gets a cold, antibiotics help to get better more quickly than not taking them.

- 1. Agree
- 2. Don't agree
- 3. Don't know

19. Antibiotics are effective against bacteria.

- 1. Agree
- 2. Don't agree
- 3. Don't know

20. Antibiotics are effective against viruses.

- 1. Agree
- 2. Don't agree
- 3. Don't know

21. Antibiotic leftovers can be used again without a doctor's instructions.

- 1. Agree
- 2. Don't agree
- 3. Don't know

22. Antibiotics can cause imbalance in the body's bacterial flora.

1. Agree

2. Don't agree

88. Don't know

23. Inappropriate use of antibiotics reduces their efficacy.

1. Agree

2. Don't agree

3. Don't know

24. Bacteria can be resistant to antibiotics.

1. Agree

2. Don't agree

3. Don't know

25. Resistant types of bacteria can spread from human to human.

1. Agree

2. Don't agree

3. Don't know

26. Antibiotic resistance is due to:

	<i>Yes</i>	<i>No</i>	<i>Don't know</i>
1. <i>Using antibiotics when they are not necessary</i>	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>

2. *Not completing the full course of antibiotic therapy* 1. 2. 3.

3. *Using antibiotic without physician prescription* 1. 2. 3.

27. Antibiotic resistance is a problem in Armenia today.

- 1. Agree
- 2. Don't agree
- 3. Don't know

28. Antibiotic resistance is a problem in the rest of the world today.

- 1. Agree
- 2. Don't agree
- 3. Don't know

5. Expectations of and trust in doctors' decisions on antibiotic prescriptions

Read out:

Now I am going to read a few statements regarding your expectations of and trust in doctor's decisions on antibiotic prescription. You can answer to them by choosing one of the answer options, which are the following:

“ agree, don't agree or don't know”.

29. I trust the doctor's decision when s/he prescribes antibiotics.

- 1. Agree
- 2. Don't agree
- 88. Don't know

30. Doctors often prescribe antibiotics because the patient expects it.

1. Agree

2. Don't agree

88. Don't know

31. Doctors often take time to inform the patient during the consultation how antibiotics should be used.

1. Agree

2. Don't agree

88. Don't know

32. You usually know if you yourself need an antibiotic before seeing a doctor

1. Agree

2. Don't agree

88. Don't know

33. I trust the doctor's decision if s/he decides not to prescribe antibiotics.

1. Agree

2. Don't agree

88. Don't know

34. I will go from my doctor to another doctor if he/she doesn't prescribe antibiotics when I think that he/she should.

1. Agree

2. Don't agree

88. Don't know

6. Socio-demographic characteristics

35. Your age in years at the last birthday _____.

36. Gender 1. Male

2. Female

37. What is the total number of people living in your household (including you)? _____

38. What is the highest level of education you completed?

- 1. Basic school
- 2. Secondary / High school
- 3. Professional technical education
- 4. Institute / University or Postgraduate

39. Have you had any medical care education/training?

- 1. Yes
- 2. No

Jump to Question 8 if the respondent has no medical education or training.

40. What medical education and training do you have? _____

41. What is your current occupational status?

Please select all answers that apply to you.

- 1. Employed/Self-employment
- 2. Seasonal work/migrant
- 3. Unemployed
- 4. Student
- 5. Retired

42. On average, how much money does your family spend monthly?

- 1. Less than 50,000 AMD
- 2. From 51,000 to 150,000 AMD
- 3. From 151,000 to 300,000 AMD
- 4. Above 301,000 AMD
- 88. Don't know / refuse to answer

43. In which district are you living?

- | | | | |
|-------------------|--------------------------|---------------------|--------------------------|
| 1. Ajapniak | <input type="checkbox"/> | 7. Malatia-Sebastia | <input type="checkbox"/> |
| 2. Nor Nork | <input type="checkbox"/> | 8. Avan | <input type="checkbox"/> |
| 3. Nork-Marash | <input type="checkbox"/> | 9. Arabkir | <input type="checkbox"/> |
| 4. Nubarashen | <input type="checkbox"/> | 10. Davitashen | <input type="checkbox"/> |
| 5. Shengavit | <input type="checkbox"/> | 11. Erebuni | <input type="checkbox"/> |
| 6. Qanaqer-Zeytun | <input type="checkbox"/> | 12. Kentron | <input type="checkbox"/> |

Thank you for your participation.

Հարցաշար – Հայերեն

Հարցազրուցավար

Հարցվող

Օր/Ամիս/Տարի

Ամսաթիվ ____/____/____

Հարցազրույցի սկիզբը ____:____

Հարցազրույցի ավարտը ____:____

1. Դուք երբևէ հակաբիոտիկ օգտագործե՞լ եք: (օրինակ՝ Ամոքսացիլին, Ամոքսիկլավ, Պենիցիլին, Ռիֆամպիցին, Ցեֆտրիաքսոն, Սումամեդ)

1. Այո

2. Ոչ *եթե ոչ, անցեք հարց համար 3-ին*

88. Չգիտեմ/Չեմ հիշում *եթե չգիտեմ/չեմ հիշում, անցեք հարց համար 3-ին*

2. Քանի՞ անգամ եք վերջին 12 ամսվա ընթացքում հակաբիոտիկ օգտագործել: _____

3. Դուք 18 տարեկանից փոքր երեխաներ ունե՞ք:

1. Այո

2. Ոչ *եթե ոչ անցեք հարց համար 6-ին*

4. Ձեր երեխան/ երեխաները երբևէ օգտագործե՞լ են հակաբիոտիկ:

1. Այո

2. Ոչ *եթե ոչ, անցեք հարց համար 6-ին:*

88. Չգիտեմ/Չեմ հիշում *եթե չի հիշում, անցեք հարց համար 6-ին:*

5. Վերջին 12 ամսվա ընթացքում քանի՞ անգամ են Ձեր երեխան/ երեխաները ընդունել հակաբիոտիկ: _____

1. Հակաբիոտիկների օգտագործման մասին մարդկանց վերաբերմունքը

Կարդացեք բարձրաձայն:

Հիմա ես կկարդամ մի քանի պնդումներ հակաբիոտիկների օգտագործման՝ Ձեր վերաբերմունքի վերաբերյալ: Դուք կարող եք պատասխանել հարցերին ընտրելով հետևյալ պատասխանների տարբերակներից մեկը.

միանշանակ համաձայն չեմ, համաձայն չեմ, ոչ համաձայն եմ ոչ էլ ոչ, համաձայն եմ, միանշանակ համաձայն եմ:

Միանշանակ համաձայն	Համաձայն	Ոչ համաձայն	Համաձայն	Միանշանակ համաձայն
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	չեմ	չեմ	եմ ոչ էլ ոչ	եմ	եմ
6. Ես դրական եմ վերաբերում նրան, որ կարող եմ հակաբիոտիկներ վերցնել հարևաններից կամ բարեկամներից առանց անզամ բժշկի այցելելության:	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
7. Ես դրական եմ վերաբերում նրան, որ կարող եմ հակաբիոտիկներ ձեռք բերել դեղատնից առանց բժշկի այցելելության:	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
8. Մրսածության ժամանակ տեղին է օգտագործել հակաբիոտիկներ մարմնի ակտիվությունը պահպանելու համար:	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

2. Հակաբիոտիկների օգտագործում

Կարդացեք բարձրաձայն:

Հիմա ես կկարդամ մի քանի պնդումներ հակաբիոտիկների օգտագործման մասին: Դուք կարող եք պատասխանել հարցերին ընտրելով այո կամ ոչ տարբերակները կամ այլ տարբերակներ որոնք կառաջարկվեն:

9. Երբ դուք հիվանդ եք եղել երբևէ սկսե՞լ եք հակաբիոտիկային բուժում ինքնուրույն՝ առանց բժշկի ցուցման:

1. Այո

2. Ոչ եթե ոչ, անցեք հարց համար 11-ին:

10. Որքա՞ն հաճախ եք Դուք գնում հակաբիոտիկներ դեղատնից առանց բժշկի դեղատոմսի:

- 1. Միշտ
- 2. Սովորաբար
- 3. Ժամանակ առ ժամանակ
- 4. Հազվադեպ
- 5. Երբեք

11. Դուք սովորաբար ընդունու՞մ եք հակաբիոտիկներ երբ դուք մրսածություն ունեք:

- 1. Այո
- 2. Ոչ

12. Դուք սովորաբար ընդունու՞մ եք հակաբիոտիկներ երբ դուք կոկորդացավ/անգինա ունեք:

- 1. Այո
- 2. Ոչ

13. Դուք սովորաբար ընդունու՞մ եք հակաբիոտիկներ երբ ջերմություն եք ունենում:

- 1. Այո
- 2. Ոչ

14. Դուք սովորաբար դադարեցնու՞մ եք հակաբիոտիկների ընդունումը երբ սկսում եք Ձեզ լավ զգալ:

- 1. Այո
- 2. Ոչ

15. Որքա՞ն հաճախ եք դուք ձեռք բերում հակաբիոտիկներ ըստ բժշկի ցուցման:

- 1. Միշտ
- 2. Սովորաբար
- 3. Ժամանակ առ ժամանակ
- 4. Հազվադեպ
- 5. Երբեք

16. Դուք Ձեր տանը մնացորդային հակաբիոտիկներ պահու՞մ եք:

- 1. Միշտ
- 2. Սովորաբար
- 3. Ժամանակ առ ժամանակ
- 4. Հազվադեպ
- 5. Երբեք

եթե երբեք, անցեք հարց համար 18-ին:

17. Դուք երբևէ ընդունել եք մնացորդային հակաբիոտիկներ առանց բժշկի ցուցման:

- 1. Այո
- 2. Ոչ

3. Հակաբիոտիկների և հակաբիոտիկային դեղեկայունության մասին մարդկանց գիտելիքները

Կարդացեք բարձրաձայն:

Հիմա ես կկարդամ մի քանի պնդումներ հակաբիոտիկների և հակաբոտիկային դեղակայունության մասին: Դուք կարող եք պատասխանել հարցերին ընտրելով հետևյալ տարբերակներից մեկը.

համաձայն եմ, համաձայն չեմ կամ չգիտեմ:

18. Մրսածության ժամանակ հակաբիոտիկները օգնում են ավելի արագ առողջանալ:

1. Համաձայն եմ
2. Համաձայն չեմ
3. Չգիտեմ

19. Հակաբիոտիկները արդյունավետ են բակտերիաների դեմ:

1. Համաձայն եմ
2. Համաձայն չեմ
3. Չգիտեմ

20. Հակաբիոտիկները արդյունավետ են վիրուսների դեմ:

1. Համաձայն եմ
2. Համաձայն չեմ
3. Չգիտեմ

21. Մնացորդային հակաբիոտիկները առանց բժշկի ցուցման կարող են կրկին օգտագործվել նմանատիպ սիմպտոմների դեպքում:

1. Համաձայն եմ
2. Համաձայն չեմ
3. Չգիտեմ

22. Հակաբիոտիկները կարող են առաջացնել դիսբալանս/ անհավասարակշռություն մարմնի սեփական բակտերիալ ֆլորայում:

1. Համաձայն եմ
2. Համաձայն չեմ
3. Չգիտեմ

23. Հակաբիոտիկների ոչ տեղին օգտագործումը նվազեցնում է դրանց արդյունավետությունը:

1. Համաձայն եմ
2. Համաձայն չեմ
3. Չգիտեմ

24. Բակտերիաները կարող են կայուն լինել՝ այսինքն անզգայունակ դառնալ հակաբիոտիկների նկատմամբ:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

25. Կայուն տեսակի բակտերիաները կարող են փոխանցվել մարդուց մարդու:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

26. Ըստ Ձեզ հակաբիոտիկների դեմ կայունությունը (անզգայունակ դառնալը) պայմանավորված է հետևյալ գործոններով.

	Այո	Ոչ	Չգիտեմ
1. Օգտագործելով հակաբիոտիկներ, երբ դրանք անհրաժեշտ չեն	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>
2. Չավարտելով հակաբիոտիկներով բուժման ամբողջական կուրսը	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>
3. Ընդունելով հակաբիոտիկներ առանց բժշկի դեղատոմսի (ինքնաբուժմամբ զբաղվել)	1. <input type="checkbox"/>	2. <input type="checkbox"/>	3. <input type="checkbox"/>

27. Հակաբիոտիկների դեմ կայունությունը խնդիր է այսօր Հայաստանում:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

28. Հակաբիոտիկների դեմ կայունությունը խնդիր է այսօր ամբողջ աշխարհում:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

4. Ակնկալիքները և վստահությունը բժիշկների՝ հակաբիոտիկներ նշանակելու որոշումների վերաբերյալ

Կարդացեք բարձրաձայն:

Հիմա ես կկարդամ մի քանի պնդումներ բժշկներից՝ հակաբիոտիկներ նշանակելու հետ կապված Ձեր ակնկալիքների և վստահության վերաբերյալ: Դուք կարող եք պատասխանել հարցերին ընտրելով հետևյալ տարբերակներից մեկը.
համաձայն եմ, համաձայն չեմ կամ չգիտեմ

29. Ես վստահում եմ բժշկի որոշմանը երբ նա հակաբիոտիկ է նշանակում:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

30. Բժիշկները հաճախ հակաբիոտիկ են նշանակում քանի որ դա հիվանդի ակնկալիքն է նրանցից:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

31. Բժիշկները ժամանակ են տրամադրում հիվանդներին տեղեկացնելու թե ինչպես է պետք հակաբիոտիկներն օգտագործել:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

32. Ես հաճախ արդեն գիտեմ որ հակաբիոտիկի կարիք ունեմ մինչև բժշկի հետ հանդիպելը:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

33. Ես վստահում եմ բժշկի որոշմանը երբ նա որոշում է հակաբիոտիկ չնշանակել:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

34. Ես կայցելեմ մեկ այլ բժշկի մոտ եթե իմ բժիշկը որոշի հակաբիոտիկ չնշանակել երբ ես կարծում եմ որ դա անհրաժեշտ է:

- 1. Համաձայն եմ
- 2. Համաձայն չեմ
- 3. Չգիտեմ

5. Սոցիալ-ժողովրդագրական ցուցանիշներ

Կարդացեք բարձրաձայն:

Հիմա ես կ'իսկողնեմ Ձեզ պատասխանել մի քանի հարցի որոնք վերաբերվում են Ձեր սոցիալ-ժողովրդագրական տվյալներին:

35. Կասե՞ք ինդրեմ Ձեր տարիքը: _____

36. Ձեր սեռը՞

1. Արական

2. Իգական

37. Քանի՞ հոգի է բնակվում Ձեր տանը(ներառյալ դուք): _____

38 Ո՞րն է Ձեր կրթության ամենաբարձր աստիճանը:

1. Հիմնական դպրոց

2. Միջնակարգ / Ավագ դպրոց

3. Միջին մասնագիտական (տեխնիկում, ուսումնարան, քոլեջ)

4. Ինստիտուտ/Համալսարան, հետդիպլոմային

39. Բժշկական կրթություն կամ վերապատրաստում ունե՞ք/անցե՞լ եք:

1. Այո

2. Ոչ

Անցեք հարց համար 41-ին եթե հարցվողը բժշկական կրթություն կամ վերապատրաստում չունի:

40.Ի՞նչ բժշկական կրթություն կամ վերապատրաստում ունեք/անցել եք: _____

41. Նշեք ինդրեմ Ձեր ներկայիս զբաղվածությունը:

Նշե՛ք, բոլոր տարբերակները, որոնք համապատասխանում են:

1. Աշխատում եմ / անհատ ձեռներեց

2. Սեզոնային / արտագնա

3. Գործազուրկ

4. Ուսանող

5. Թոշակառու

42. Միջինում ամսական որքա՞ն գումար է ծախսում Ձեր ընտանիքը:

1. 50,000 դրամից պակաս

2. 51,000 - 150,000 դրամ

- 3. 151,000 - 300,000 դրամ
- 4. 301,000 դրամ և ավել
- 88. Չգիտեմ/ հրաժարվում եմ պատասխանել

43. Ո՞ր վարչական շրջանում եք բնակվում:

- | | | | |
|--------------------|--------------------------|--------------------|--------------------------|
| 1. Աջափնյակ | <input type="checkbox"/> | 7.Սալաթիա-Սեբաստիա | <input type="checkbox"/> |
| 2. Նոր Նորք | <input type="checkbox"/> | 8.Ավան | <input type="checkbox"/> |
| 3. Նորք-Մարաշ | <input type="checkbox"/> | 9.Արաբկիր | <input type="checkbox"/> |
| 4. Նուբարաշեն | <input type="checkbox"/> | 10. Դավիթաշեն | <input type="checkbox"/> |
| 5. Շենգավիթ | <input type="checkbox"/> | 11. Էրեբունի | <input type="checkbox"/> |
| 6. Քանաքեռ-Զեյթուն | <input type="checkbox"/> | 12. Կենտրոն | <input type="checkbox"/> |

Appendix 2: Consent form in Armenian and English

Հայաստանի Ամերիկյան Համալսարան

Հանրային առողջապահության բաժին

Գիտահետազոտական էթիկայի թիվ 1 հանձնաժողով

Իրազեկ համաձայնության ձև

Բարև Ձեզ, իմ անունը Նարե Նավասարդյան է: Ես սովորում եմ Հայաստանի Ամերիկյան Համալսարանի Հանրային առողջապահության ֆակուլտետի ավարտական կուրսում: Մեր ֆակուլտետն իրականացնում է հետազոտություն, որի նպատակն է ավելի լավ հասկանալ Երևանում բնակվող և 18-ից բարձր տարիք ունեցող անձանց գիտելիքները, վերաբերմունքը և վարվելակերպը հակամանեային դեղորայքի ճիշտ ընդունման վերաբերյալ: Դուք հրավիրված եք մասնակցելու այս հարցազրույցին, քանի որ դուք ապրում եք Երևանում: Մենք զանգահարել ենք Ձեզ քանի որ համակարգչային ծրագիրը պատահականության սկզբունքով ըտրել է Ձեր հեռախոսահամարը: Դուք կլինե՞ք այն 452 մասնակիցներից մեկը ովքեր ընտրվել են այդ սկզբունքով: Ձեր մասնակցությունը սահմանափակվում է միայն ներկայիս հարցազրույցով, որը կտևի ոչ ավել քան 15-20 րոպե: Ձեր հեռախոսահամարը չի արձանագրվի հարցաթերթիկում և չի ներկայացվի ոչ մի զեկույցում: Ձեր պատասխանները մեր հարցերին կնպաստեն այս հետազոտության իրականացմանը և միևնույն ժամանակ Ձեր պատասխանները կընդարացվեն մյուս մասնակիցների պատասխանների հետ: Ձեր մասնակցությունն այս հետազոտությանը կամավոր է: Ձեզ ոչինչ չի սպառնում, եթե Դուք հրաժարվեք մասնակցել այս հետազոտությանը: Դուք կարող եք հրաժարվել պատասխանել ցանկացած հարցի կամ ցանկացած պահի ընդհատել հարցազրույցը: Դուք չեք ստանալու որևէ ֆինանսական հատուցում կամ պարգևատրում հետազոտությանը մասնակցելու դեպքում: Դուք ոչ մի ռիսկի չեք դիմում մասնակցելով այս հետազոտությանը: Ձեր անկեղծ պատասխանները կօգնեն իրականացնել այս հետազոտությունը, որի արդյունքները կարող են կիրառվել այլ հետազոտողների և Հայաստանում հանրային առողջապահության ոլորտում աշխատող քաղաքականություն մշակողների կողմից: Ոչ ոք բացի հետազոտությանը մասնակցող անդամներից չեն կարող օգտվել Ձեր կողմից տրամադրված տվյալներից: Այս հետազոտության վերաբերյալ հարցեր ունենալու դեպքում կարող եք զանգահարել հետազոտության համակարգողին՝ Ծովինար Հարությունյանին (374060)612592 հեռախոսահամարով: Եթե Դուք կարծում եք, որ հետազոտության ընթացքում Ձեզ լավ չեն վերաբերվել և/կամ հետազոտությունը Ձեզ վնաս է հասցրել, կարող եք կապվել ՀԱՀ-ի Էթիկայի հանձնաժողովի համակարգող Քրիստինա Հակոբյանին, հետևյալ հեռախոսահամարով (+374 60) 61 25 61:

Համաձայն էք մասնակցել (այո կամ ոչ): Շնորհակալություն: Եթե այո, կարո՞ղ եմք
շարունակել:

American University of Armenia

School of Public Health

Institutional Review Board #1

Consent form

Hello, my name is Nare Navasardyan. I am the graduate student of the Master of Public Health program at the American University of Armenia. Our department is conducting a study which aims to better understand the knowledge, attitude and practice regarding appropriate use of antibiotics among Yerevan adult population. You are invited to participate in an interview for this project because you are a resident of Yerevan. We called you as the computer program randomly chooses your phone number. You will be one of the 452 participants that are selected through this procedure. Your participation only involves this interview today that should take no longer than 15-20 minutes to complete. Your phone number will not be recorded on the questionnaire and not appear in any presentation of the project. Your responses to our questions will contribute to this project and your answers will be put together with the answers of other participants. Your participation in this study is voluntary. There is no penalty if you decline to take part in this project. You may refuse to answer any question or stop the interview at any time. You will not gain any financial compensation or other personal benefits by participating in this study. There are no known risks to you resulting from your participation in the study. Your honest answers will help us to conduct this study and the results of the study can be used by other researchers and policy makers in the sphere of public health in Armenia. Nobody except research team will have access to the data you provided. If you have any questions regarding this study you can call the Principal Investigator Tsovinar Harutyunyan (374060)612592 . If you feel you have not been treated fairly or think you have been hurt by joining the study you should contact Human Subject Protection Administrator in the American University of

Armenia Dr. Kristina Akopyan (+374 60) 61 25 61. Do you agree to participate? (YES or NO)

Thank you. If yes, shall we continue?