



AMERICAN UNIVERSITY OF ARMENIA
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CENTER FOR HEALTH SERVICES RESEARCH AND DEVELOPMENT

ARPI SIMONIAN HEALTHY NUTRITION AND LIFESTYLE PROJECT



Prepared by:

Ruzanna Grigoryan, MD, MPH
Hripsime Martirosyan, MD, MPH
Nune Truzyan, DVM, MPH
Byron Crape, MSPH, PhD
Varduhi Petrosyan, MS, PhD

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EXECUTIVE SUMMARY

Nutrition is one of the major modifiable determinants for non-communicable diseases. The Armenian diet is considered as high in fat, sugar and salt. To improve the family and community knowledge, attitude and practice in healthy nutrition and lifestyle, community-based training of trainers (TOT) were conducted in seven villages of Shirak and Tavush marzes of Armenia with the financial and technical support from Arpi Simonian. The leaders among the women in the village communities and other women who were responsible for cooking in their families were invited to participate in the TOT. Overall, 19 TOT sessions were conducted from May to July of 2010 for 274 women. Each TOT session was based on interactive methods, including group discussions, exercises and role-plays and education materials were developed for personal use and dissemination.

Surveys with women just prior to the TOT and three months after the TOT showed substantial improvements in knowledge, attitude and practice in healthy nutrition and lifestyles as a result of the trainings and the effective dissemination of health information from those women who were trained. This is a model that can be used throughout the rural areas of Armenia and possibly in other countries to improve the lives of families and communities.

The success of this program calls for expansion to other villages and adaptation and testing in urban areas as well. Some topics, especially in food safety such as the prevention of botulism, should be more emphasized given that the production, storage and preparation of much of the consumed foods in Armenia are done within the household. Though the attitudes of women in some healthy lifestyles changes were positive, such as opposition to smoking in the households and in the presence of children, men were the large majority of smokers and made the decisions concerning the smoking in the household. Resolving these issues require empowering women and targeting males for future programs.

INTRODUCTION

Background

According to the World Health Organization (WHO), “nutrition is the intake of food, considered in relation to the body’s dietary needs. Good nutrition – an adequate, well balanced diet combined with regular physical activity – is a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity”¹.

Industrialization, urbanization, economic growth and market globalization over the last decades led to drastic changes in diet and lifestyle of people worldwide². These changes significantly impact their health and nutritional status, particularly in developing countries and in countries in transition, including Armenia. The standard of living has improved, food availability and diversity has increased, and access to services has improved. However, there have been significant negative impacts as well in dietary patterns (such as increased consumption of energy-dense food high in fat, particularly saturated fat, and low in unrefined carbohydrates, low consumption of vegetables and fruits), decreased physical activity (sedentary lifestyle) and increased tobacco use².

These negative changes in lifestyle and diet eventually lead to overweight and obesity, lower work productivity, various non-communicable diseases (NCD) such as diabetes mellitus, cardiovascular disease (CVD), and cancer, and poor immunity and susceptibility to infectious diseases^{1,3}. Nutrition is one of the major modifiable determinants of NCDs². Moreover, dietary changes may not only influence present health, but may determine whether or not an individual will develop such diseases as CVD, diabetes, and cancer later in life².

The burden of NCDs is rapidly increasing worldwide. It has been calculated that in 2005 NCDs contributed approximately to the 60% of the 56.5 million total reported deaths in the world and approximately 46% of the global burden of disease. The proportion of the burden of NCDs is expected to increase to 57% by 2020. Approximately half of the total NCD deaths are due to CVDs; however obesity and diabetes trends are also alarming especially because they impact more people at a younger age². Each year, at least 2.6 million people die as a result of being overweight or obese, 4.4 million people die as a result of raised total cholesterol level, 7.1 million people die as a result of hypertension, and 4.9 million people die as a result of tobacco use⁴.

Situation in Armenia

According to the Food and Agriculture Organization of the United Nations staple food items in Armenia include wheat bread, potatoes, rice, and pasta⁵. In mountainous areas, potatoes can be cheaper than wheat and therefore more important. Depending on the season some fruits (apple, pear and grapes), vegetables (carrots, cabbage, red beets and onions) and nuts complement the staple food items. Imported fruit are expensive products and much less often consumed by most Armenians. Consumption of home-made canned fruit and vegetables is very common mainly during winter and spring. Consumption of meat and fish is limited. Meat mainly includes poultry and beef products. The cost of meat is the main limiting factor in the amount of meat consumed. Eggs as an animal food product are consumed more often. Cheese and traditional plain yoghurt (matsun) are the most frequently consumed dairy products. The majority of the population use animal fat and vegetable oil for cooking as an affordable and accessible source of fat. Fat and oil consumption other than for cooking purposes is limited to butter, margarine, and mayonnaise. Among vulnerable communities, the main source of food is self-produced fruits, vegetables, greens, milk and dairy products⁵. The Armenian diet is relatively high in fat⁵. In addition, the common consumption of high sugar jams and canned fruit, salt and oil-rich canned vegetables, and preserved meat with high levels of saturated fats, cholesterol and sodium, are among unhealthy dietary habits of Armenians⁵.

According to the data of the National Statistical Service, in 2009, the per capita monthly consumption of staple foods increased compared to the previous year⁶. The monthly consumption of fruits and berries increased by 15.7%, eggs by 3.9%, and potatoes by 1.0%. Monthly consumption of all types of cheese decreased by 3.8%, bread and bakery products decreased by 3.7%, vegetables decreased by 3.5%, sugar, vegetable oil, and milk and yogurt by 2.9% each, and meat and meat product by 0.5% (Table 1)⁶.

In Armenia the situation regarding nutrition-related diseases and conditions such as obesity, anemia and stunting is relatively poor. According to the Armenian Demographic and Health survey (ADHS) 2005, approximately two in five Armenian women had a BMI of 25 or higher

with 27% of women being overweight and 16% obese*. Obesity and overweight among women remained about the same from 2000 to 2005⁷. In 2005, 25% of Armenian women suffered from some degree of anemia with 21% having mild anemia, 3% having moderate anemia and less than 1% having severe anemia⁷.

ADHS 2005 revealed that 37% of children aged 6-59 months suffered from anemia; half of them had moderate anemia (hemoglobin concentration 7.0-9.9 g/dl) and 1% had severe anemia (hemoglobin concentration less than 7.0 g/dl)⁷.

According to the same survey, 13% of children under age five were stunted (short for their age), including 3% severely stunted⁷. Five percent of children suffered from wasting at the time of the survey (wasting represents the failure to receive adequate nutrition in the period immediately before the survey and often is a result of recent illness, especially diarrhea, or of a rapid deterioration in food supplies). Overall, 4% of Armenian children were underweight, which is a higher percent than the percent of the standard international reference population⁷.

The prevalence of NCD significantly increased in the last decade in Armenia. According to the World Health Organization and National Statistical Service of Armenia, the incidence of cardiovascular diseases increased from 233.9 per 100 000 population in 2004 to 307.6 in 2008. The incidence of cancer increased from 192.1 in 2004 to 226.8 per 100 000 population in 2008. The death rate from cardiovascular diseases remained almost the same, with 437.9 in 2004 and 423.0 per 100 000 population in 2008. The death rate from cancer increased from 139.9 in 2004 to 170.2 per 100 000 population in 2008^{8,9}.

Appropriate changes in food consumption can influence the health of the population and improving the knowledge on nutrition can contribute to these changes³. A sustainable approach to improving this knowledge and changing nutritional and lifestyle behaviors is the training of trainers (TOT) approach which has been effectively used in Armenia by the Center for Health Services Research and Development (CHSR) at the American University of Armenia (AUA).

*BMI more than 25 and less than 30 is defined as “overweight,” and BMI over 30 is defined as “obese”.

INTERVENTION

To improve the family and community knowledge, attitude and practice in healthy nutrition and lifestyle community-based training of trainers (TOT) were conducted in villages of Shirak and Tavush marzes of Armenia. The remote and border villages with no practicing physicians were selected, given that these villages would have the greatest need for healthy nutrition and lifestyle intervention. To increase the effectiveness of information dissemination, the villages were selected where the Primary Health Care Reform (PHCR) project established Community Health Committees (CHC). These CHC included active representatives of the village communities such as teachers, nurses, village mayor office staff, or socially active villagers who would more successfully disseminate information within their communities. In addition to CHC members, the CHSR team decided to also involve in the TOT from 30 to 60 year old women who were responsible for the preparation of meals in their families. The number of women selected to be included in the TOT in each village was proportionate to the size of the village population. The mean number of participants for the TOT session was 15.

The CHSR team developed a training package using the Armenian version of Arpi A. Simonian's book "Healthy Nutrition and Lifestyle: daily tips for development of healthy eating habits and promotion of energetic lifestyle" and educational materials from the World Vision Armenia and the Ministry of Health of Armenia.

Three trainers from the CHSR spent one week preparing sessions with an experienced certified trainer-nutritionist from the World Vision Armenia to strengthen their training skills. During these sessions the certified trainer-nutritionist and the CHSR trainers together reviewed, discussed and finalized the training materials, assuring their highest quality. In addition, the CHSR trainers observed the certified trainer-nutritionist conducting a TOT session for the target population in one of the selected communities. Finally, the certified trainer-nutritionist observed each CHSR trainer during TOT and provided individual feedback to improve the effectiveness of their approach.

Overall, seven villages were targeted - four in Shirak marz (Voskehask, Karnut, Garnarich, and Aregnadem) and three in Tavush marz (Verin Karmiraghpyur, Tsaghkavan, and Lusahovit). From May to July of 2010 the CHSR team conducted 19 TOT sessions - five in Voskehask village, three in each of the villages of Verin Karmiraghpyur, Tsaghkavan,

Lusahovit, and Karnut and one in each of the villages of Garnarich and Aregnadem. There were 274 total participants, with an average of 15 women per session; about 5.7% of the general population of the targeted villages received TOT. Table 2 provides numbers and percents of the recipients of the training in each village. Seven women who were not selected because they were younger than 30 were allowed to participate because they showed enthusiastic interest in participating – though these women were excluded from the final calculations of numbers and percents of TOT participants.

Each TOT session was conducted by two trainers and was based on interactive methods which included group discussions, exercises, and role-play. The mean duration of the sessions was 3.0 hours. At the end of the sessions all TOT participants received educational materials on healthy nutrition and lifestyle, including a copy of the training module, two copies of the Armenian translation of Arpi A. Simonian’s book “Healthy Nutrition and Lifestyle: daily tips for development of healthy eating habits and promotion of energetic lifestyle” (one for personal use and the other one for dissemination within the community), various booklets on healthy nutrition from the World Vision Armenia, a booklet on “Second hand smoke and the health of your family” developed by the CHSR in collaboration with the Johns Hopkins University Institute of Global Tobacco Control.

Though villages were similar in terms of socio-economic conditions and their needs, the willingness of village mayors, nurses or participants to support the TOT sessions varied from village to village. The most supportive villages were Voskehask and Aregnadem in Shirak marz and Verin Karmiraghbyur and Lusahovit in Tavush marz.

To evaluate the impact of the community-based TOT three months after the intervention, the CHSR team designed and implemented baseline and follow-up knowledge, attitude and practice (KAP) surveys to be conducted in the villages selected for the TOT intervention. In addition to the main intervention, all the participants of the baseline KAP survey received copies of Arpi A. Simonian’s book “Healthy Nutrition and Lifestyle.”

METHODS

Study Design

A pre-post independent sample study design was used to evaluate the TOT impact using knowledge, attitude and practice (KAP) surveys in Voskehask, Karnut and Garnarich of

Shirak marz and Verin Karmiraghpyur, Tsaghkavan, and Lusahovit in Tavush marz just prior to conducting the TOT sessions and three months after.

Sampling Strategy

To have a representative sample for detecting statistically significant differences before and after the intervention, the formula for two sample mean comparison was used with the aim of detecting a 10% pre-post difference with alpha cut-off of 0.05 and power of 0.75¹⁰. These estimates were based on the data from the previous KAP survey of the PHCR project in Lori and Shirak marzes in 2008^{10, 11}.

$$n = \frac{2\sigma^2 [z_{1-\alpha/2} + z_{1-\beta/2}]^2}{(\mu_1 - \mu_2)^2}, \text{ where}$$

$$\sigma = 15.3, \quad z_{1-\alpha/2} = 1.96, \quad z_{1-\beta/2} = 0.75, \quad \mu_1 = 51.8, \quad \mu_2 = 46.8$$

$$n = \frac{2 * 15.3^2 [1.96 + 0.75]^2}{(51.8 - 46.8)^2} = 137$$

Assuming a 90% response rate, the sample size was recalculated to be 153. Multistage random sampling was used to select the study population for the survey. Using proportionate to size sampling, the CHSR team calculated the number of participants to be surveyed in each village. The sampling frames of 30-60 years old women were obtained from the village mayor offices. The same sampling approach was used for both baseline and follow-up surveys.

Survey Instrument

The CHSR team developed interviewer-administered KAP questionnaire based on the CHSR training package and similar instruments used for other healthy nutrition and lifestyle assessments^{3, 10, 12}. The baseline survey questionnaire had three main sections – knowledge, attitude, and practice - on healthy nutrition and lifestyle. The knowledge section had 34 questions, the attitude section 11, and the practice section 27 questions on nutrition, with two additional questions on smoking. The questionnaire included five social-demographic questions. The same questionnaire was also used for the follow-up survey with five additional questions identifying TOT participation, sources of information dissemination and

materials over the last three months. The CHSR team developed the questionnaire in English and then translated into Armenian. It was pretested and revised accordingly. In addition to the survey instrument, the journal form was developed to calculate the response rate.

Appendix 1 presents both the survey instrument and the journal form.

Data Collection and Entry

The CHSR team conducted data collection for both baseline and follow-up surveys which took place in May-June and October of 2010, respectively. Appendix 2 includes the photo-album of the fieldwork including TOT and survey activities. The data was entered into SPSS 11 statistical package for data cleaning and analysis.

Ethical Consideration

The AUA Institutional Review Board approved the study for compliance with locally and internationally accepted ethical standards. Before starting the interview an oral consent form with project description, confidentiality, anonymity, voluntary nature as well as benefits and risks of participation, was read to each respondent, providing the women the choice not to participate if they did not choose to.

Data Analysis

The SPSS 11 statistical software package was used for data entry and analysis. The CHSR team used both descriptive and analytic statistics for baseline and follow-up comparisons applying various statistical tests including independent t-test of means, chi-square test, non-parametric two independent samples test, linear and logistic regression. The comparison was conducted first between baseline participants and all the participants at follow-up. Secondly, the CHSR team excluded those who received the “Healthy Nutrition and Lifestyle” book at baseline and/or participated in the TOT sessions organized by the American University of Armenia to assess the pure impact of the information dissemination as a result of TOT sessions.

For “knowledge” questions, each correct response to one of the 34 questions was scored as one, while incorrect or “don’t know” responses were scored as zero. For the 11 “attitude” questions a score of one was given for each favorable attitude and a zero to each unfavorable or indifferent response. The attitude questions included 4 questions regarding harms of active and passive smoking, and banning smoking in public places including houses. For the 27

“practice” questions, responses consistent with evidence-based recommendations were scored as one with other responses being scored as zero. There were two additional practice questions regarding smoking and child exposure in the household. The CHSR team calculated cumulative scores for knowledge, attitude, and practice by summing correct or desired scores for each of these three domains and computed the mean percent scores as a percent of the mean cumulative score out of the maximum possible value for that score. The scores were not calculated if answers to any element were missing. The percent of missing values were less than 1% in all cases.

RESULTS

Characteristics of the Study Population

In total, 152[†] respondents participated in the baseline and 153 in the follow-up surveys. Interviewers approached 189 households at baseline and 181 at follow-up to complete the required sample size: the response rates were 76.8% and 84.5%, respectively. The main reasons for non-response were absence of the eligible respondent (12.6% at baseline and 13.6% at follow-up), absence of all household members (5.8% at baseline and 0.6% at follow-up), or the selected respondent did not meet the eligibility criteria at that moment (3.2% at baseline and 1.1% at follow-up). None of the participants refused to participate in the interviews.

The study populations were similar in socio-demographic characteristics between baseline and follow-up assessments. The Table 3 presents the details of the socio-demographic characteristics of the study participants at baseline and follow-up.

The mean age of the interviewed women at baseline was 45.6 and at follow-up was 44.6 years old. The mean number of household adult members was 3.7 at baseline and 3.8 at follow-up. The mean number of children per household was 1.3 at both baseline and follow-up. The majority of participants had either high school or secondary special education both at baseline and follow-up (81.1% at baseline and 83.0% at follow-up). A few women reported having medical education (9.9% at baseline and 6.5% at follow-up).

[†] One completed interview was removed from the baseline assessment because the age of the participant (28 years old) did not correspond to the inclusion criteria of 30-60 years old.

Health Information Dissemination

At baseline most of the study participants (86.3%) never received any health education materials from their community members. At follow-up 35.9% of the participants (55 women out of 153) reported that they received information on healthy lifestyle and nutrition in the last three months. Out of these 55 women, the majority received this information from the AUA specialists (58.2%) and the community nurse (20.0%). The main modes of information dissemination according to respondents were trainings, printed reading materials and personal talks. The vast majority of women (92.6%) considered that the received information was useful for making changes in nutrition and lifestyle of their families. Among those who received printed materials everybody (except one participant) read all or some of them. The details on information dissemination are summarized in Table 4.

Knowledge

The mean cumulative knowledge score for baseline was 19.9 (mean percent score 58.5%) out of possible 34 with the range of cumulative knowledge score of 8.0 to 32.0. While the mean score for the follow-up was 22.6 (mean percent score 66.8%) with the range of values of 8.0 to 33.0. The study found a statistically significant difference between baseline and follow-up for the cumulative knowledge score ($p \leq 0.01$). Graph 1 depicts the change of cumulative knowledge score.

There was also statistically significant increase of the score between baseline and those in follow-up who did not receive health information directly from the AUA specialists ($p \leq 0.01$). The mean cumulative knowledge score for this group of follow-up was 21.7 (mean percent score 63.8%) with the range of cumulative score of 8 to 30.

Overall, out of 34 knowledge questions 14 showed statistically significant positive improvements in three months after the training was conducted (Table 5). The knowledge for the questions concerning usefulness of eating less meat ($p \leq 0.01$), sausages and ham ($p \leq 0.01$) and sugary food ($p \leq 0.05$) showed statistically significant improvement in proportion of correct answers from baseline to follow-up.

In the list of different products (chicken, cheese, beans, greens, potato, fruits, and margarine), there were significant improvements in knowledge in identifying chicken ($p \leq 0.1$) and cheese ($p \leq 0.05$) as good sources of proteins and for margarine ($p \leq 0.01$) and potato ($p \leq 0.05$) as not

being sources of protein. There was also an increase in the proportion of correct answers for the question regarding chicken without skin containing the least amount of cholesterol ($p \leq 0.01$).

The knowledge question concerning high intake of salt as a contributing factor for hypertension, cataract, stroke, and heart diseases showed a significant improvement from baseline to follow-up ($p \leq 0.1$). There was also statistically significant improvement in knowledge concerning the question on overweight contributing to cancer ($p \leq 0.01$). Though some less than statistically significant positive changes were observed in improvement in knowledge concerning botulism prevention from baseline to follow-up, both rates on knowledge in this area were still relatively low.

The association between cumulative knowledge score and socio-demographic characteristics such as age, education, medical education, and monthly income, was found only for education ($p \leq 0.01$ both at baseline and follow-up) and medical education ($p \leq 0.1$ at baseline and $p \leq 0.05$ at follow-up). When TOT was added to the linear regression model for follow-up, the association was also found between training and cumulative knowledge score ($p \leq 0.01$). For those who did not receive any direct information from the specialists from the AUA the statistically significant association between cumulative knowledge score was found only for education ($p \leq 0.01$).

Attitude

The number of women at baseline who completed the attitude questions was 151. The mean cumulative attitude score at baseline was 9.1 (mean percent score 82.7%) out of possible 11 points with the range of cumulative attitude score of 4.0 to 11.0. The total number of women with completed attitude questions at follow-up was 153. The cumulative mean score at follow-up was 9.7 (mean percent score 88.2%) out of possible 11 points and the range of cumulative score was 6 to 11. The study found that there was a statistically significant difference between cumulative attitude scores at baseline and follow-up ($p \leq 0.01$). Graph 2 depicts the change of cumulative attitude score.

The analysis of difference between baseline and follow-up by individual questions revealed that there was a statistically significant improvement concerning the question about the usefulness of the hydrogenated fat for the family ($p \leq 0.01$). For the two questions regarding

1) the reduction of salt intake to prevent high blood pressure, and 2) the harm of second hand smoke there was marginally statistically significant improvement ($p \leq 0.1$). For the rest of the questions no statistically significant difference was found between baseline and follow-up (Table 6).

The number of women in follow-up who did not receive any direct information from the specialists of the American University of Armenia was 121. The cumulative mean score for this group of follow-up was 9.5 and the range of cumulative attitude score was 6 to 11. A statistically significant improvement was shown for cumulative attitude score between baseline and follow-up for those who did not receive direct health information from the AUA specialists ($p \leq 0.05$). When analyzing the specific attitude question scores, a statistically significant difference was found only when the baseline score for the individual question was less than 50%. The only attitude question that showed a statistically significant improvement ($p \leq 0.01$) between baseline and follow-up for this group that did not receive direct information from the AUA specialists was about the usefulness of the hydrogenated fat (44.4% in baseline and 71.2% in follow-up). For the rest of the attitude questions there was no statistically significant difference between baseline and follow-up for this group.

At baseline, an evaluation of associations between socio-demographic factors and cumulative attitude score only found an association between cumulative attitude score and education ($p \leq 0.05$), and cumulative attitude score and medical education ($p \leq 0.01$). At follow-up no statistically significant association was found between cumulative attitude score and any of these socio-demographic characteristic. When TOT was added to the linear regression model with socio-demographic factors, the only association was found between training and cumulative attitude score at follow-up ($p \leq 0.01$). For those who did not receive any direct information from the AUA specialists, there was no association between cumulative attitude score and socio-demographic characteristics.

Practice

A total of 151 women at baseline completed the questions in the practice domain. The mean cumulative practice score of baseline was 12.5 (mean percent score 46.3%) out of possible 27 with a range of 12.5 to 19.0. A total of 153 women completed practice questions at follow-up. The cumulative mean score at follow-up was 14.1 (mean percent score 52.4%) with a range of 14.1 to 20.0. The study found a statistically significant difference in cumulative

practice scores between baseline and follow-up ($p \leq 0.01$). Graph 3 depicts the change of cumulative practice score.

In addition, the analysis revealed a statistically significant improvement ($p \leq 0.01$) in the mean cumulative practice scores between baseline and follow-up who did not directly receive health information from the AUA specialists (46.3% at baseline versus 51.0% at follow-up).

Table 7 presents the proportion of reported recommended practices on 27 questions at baseline and follow-up. The study found a statistically significant difference between baseline and follow-up for the following questions: 1) when preparing poultry, the skin is always or usually removed ($p \leq 0.05$), 2) when preparing beef, pork, ham, veal or lamb, the fat is always or usually removed in certain prepared food ($p \leq 0.01$), and 3) always or usually steam vegetables ($p \leq 0.05$). The proportion of women who reported following other recommended practices improved but not statistically significantly.

For food consumption, statistically significant improvements ($p \leq 0.05$) were observed in the recommended use of pasta (85.5% at baseline vs. 96.7% at follow-up), poultry (52.6% vs. 69.3%), fresh fruits (48.7% vs. 68.6%), carbonated soft drinks (60.5% vs. 71.2%), hydrogenated oil (65.1% vs. 77.1%), and a marginally significant improvement ($p \leq 0.1$) was observed in the daily or weekly consumption of legumes at follow-up. For sweet consumption, there was a statistically significant decrease ($p \leq 0.05$) between baseline and follow-up (10.5% at baseline vs. 4.6% at follow-up).

No association between socio-demographic characteristics (age, educational status, medical education and average monthly income) of the study participants and cumulative practice was found either at baseline or at follow-up. When TOT was added to the linear regression model, an association was found between training and cumulative practice score at follow-up ($p \leq 0.01$). For those who did not receive any direct health information from the AUA specialists, no association was found between any of the socio-demographic characteristics and practice score at follow-up.

Smoking Attitude and Practice

No statistically significant improvement was found in cumulative smoking attitude and practice scores between baseline and follow-up (Tables 8 and 9). The mean cumulative

attitude score and mean percent attitude score for smoking were calculated based on the four attitude questions on smoking: both scores were relatively high at baseline (desired mean cumulative score for smoking 3.89 and desired mean percent attitude score 97.3%), yielding no statistically significant improvement at follow-up (desired mean cumulative score for smoking 3.93 and desired mean percent attitude score 98.3%).

Though the desired attitude scores for smoking were relatively high at both baseline and follow-up, more than half of the women (56.9% at baseline and 56.2% at follow-up) reported that people daily smoke in their households; only 29.4% at baseline and 32.0% at follow-up reported that people never smoke in their houses. At baseline 48.5% of the households with children and 37.0% at follow-up reported that people daily smoke in the presence of children. The only marginally significant improvement ($p \leq 0.1$) was observed in the number of households with children where people never smoke in the presence of children (28.3% at baseline vs. 41.0% at follow-up).

Needs for Future Health Education

The majority of the participants reported interest in future health education both at baseline and follow-up. At baseline the participants were more interested in healthy nutrition, hypertension and joint pain, while at follow-up women were more interested in reproductive health, hypertension, joint pain, arthritis, diabetes, and gastrointestinal diseases. Only 17.0% of respondents were not interested in any health topic both at baseline and follow-up.

DISCUSSION AND RECOMMENDATIONS

Three months after the training of trainers intervention in the seven remote border villages of Shirak and Tavush marz women's knowledge, attitude and practice substantially improved not only among women who participated in the TOT sessions but also among those women who did not participate in TOT or receive health education materials from the AUA specialists. The study found that for all women who participated in the surveys, there was an average of 14% improvement in knowledge score, 7% improvement in attitude score and 13% improvement in practice score.

The comparison of scores of women who did not receive any direct health information from the AUA specialists between baseline and follow found statistically significant improvements for the three domains of knowledge ($p \leq 0.01$), attitude ($p \leq 0.05$) and practice ($p \leq 0.01$). This

indicates that the community-based training of trainers was effective and that dissemination of information by trainees led to changes in health knowledge, attitude and practice of women living in these remote border communities.

To exclude the impact of other programs or other sources of information dissemination, the research team further investigated the sources and means of information dissemination within the previous three months in the target communities. No other programs had interventions in the target communities within the time interval of interest. Besides the AUA training, the primary source for information in these communities was TV. To assess the contribution of information received from TV on the improvement in knowledge, attitude and practice in healthy nutrition and lifestyle, the research team compared the scores between baseline and follow-up among those who received information exclusively from TV. The CHSR team could not detect statistically or practically significant contribution of reported TV programs to improvements in these domains. Only the AUA trainings influenced women participants of the survey by improving their nutrition and healthy lifestyle related KAP.

Some small non-significant improvements were observed in knowledge in botulism prevention. Given the common practice of canning food in Armenia, this topic needs stronger emphasis in future programs.

Though the attitudes of women against smoking were nearly universal, the proportions of households that were exposed to daily second hand smoking were more than half of the households at both baseline and follow-up, and at follow-up more than a third of the households had smokers who daily smoke in the presence of children. Men smoke at much higher rates than women in Armenia and they are the decision makers when it comes to smoking in the household and in the presence of children.

The recommendations based on the baseline-follow-up surveys and the community-based training of trainers are:

- Continue the community-based training of trainers in other rural parts of Armenia to increase the knowledge and improve the attitude and practices towards healthy nutrition and lifestyle.
- Evaluate, adapt and implement similar effective programs to urban communities of Armenia, including in the capital city Yerevan.

- Place more emphasis on food safety including the prevention of botulism in future programs.
- Empower women in Armenia to participate in decision-making over the smoking in households and in other healthy lifestyle decisions.
- Conduct trainings among men on second-hand smoking, nutrition and other healthy lifestyles.

If resources are available, the CHSR team would recommend conducting a similar follow-up survey in one year after the intervention to check the longer-term effectiveness of the community trainings.

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TABLES

Table 1: Average monthly per capita consumption of main food products in Armenia by years*

	2005	2006	2007	2008	2009
Bread and bakery products (kg)	13.34	13.77	13.25	12.72	12.25
Potatoes (kg)	4.20	4.48	3.89	3.87	3.91
Vegetables (kg)	5.76	6.14	6.41	6.27	6.05
Fruits and berries (kg)	3.53	3.80	3.87	3.89	4.50
Sugar (kg)	0.67	0.69	0.77	0.69	0.67
Vegetable oil (liter)	0.26	0.28	0.34	0.35	0.34
Meat and meat products (kg)	1.66	1.94	1.95	2.0	1.99
Cheese of all types (kg)	0.79	1.19	1.20	1.06	1.02
Milk and yogurt (matsun) (litter)	1.89	1.85	1.87	1.73	1.68
Butter (kg)	0.17	0.18	0.19	0.19	0.19
Eggs (pieces)	9.18	8.69	9.38	10.12	10.51
Fish and fish products (kg)	0.26	0.21	0.14	0.15	0.15

*Calculations of food consumption indicators are made based on the average weighted number of de jure population (person/present day).

Source: National Statistical Service of RA. "Food security and poverty", January-June, 2010.

Table 2: Number and percents of trained population for each rural community of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

Village name	Trainees n	Trainees out of population - %
Voskehask	66	3.6
Karnut	38	4.2
Garnarich	16	6.2
Areghadem	22	5.8
V. Karmiraghbyur	50	2.7
Tsaghkavan	36	3.7
Lusahovit	46	13.9

Table 3: Socio-demographic characteristics of the KAP survey participants from rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

Characteristics	Baseline	Follow-up	P value
Age - mean (SD)	45.5 (8.2)	44.6 (8.2)	0.30
Family adult members - mean (SD)	3.7 (1.4)	3.8 (1.5)	0.85
Number of children - mean (SD)	1.3 (1.3)	1.3 (1.2)	0.95
Education- n (%)			
Incomplete primary education	10 (6.6)	10 (6.5)	1.00
School (primary, secondary)	57 (37.5)	68 (44.4)	0.20
Secondary-special	66 (43.4)	59 (38.6)	0.39
Incomplete undergraduate	2 (1.3)	3 (2.0)	0.43
Undergraduate (institute, universities)	17 (11.2)	13 (8.5)	0.43
Graduate (post-institute, post- university)	0	0	-
Medical education – n (%)	15 (9.9)	10 (6.5%)	0.30
Average monthly income- n (%)			
Less than 25,000 drams	39 (25.7)	48 (31.4)	0.27
25,000 – 50,000 drams	49 (32.2)	41 (26.8)	0.30
51,000-100,000 drams	44 (29.0)	30 (19.6)	0.06
101,000-250,000 drams and more	16 (10.5)	26 (17.0)	0.10
More than 250,000 drams	2 (1.3)	2 (1.3)	1.0
Don't know/ Refuse to answer	2 (1.3)	6 (3.9)	0.2

Table 4: TOT health information dissemination: follow-up data from the rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

	n	% out of 153	% out of 55
Women receiving health information in last 3 months	55	35.9	100
The information was provided by[±]			
AUA specialists	32	20.9	58.2
CHC member	2	1.3	3.6
Community nurse	11	7.2	20.0
Other community member	5	3.3	9.1
The information was received through[±]			
Trainings	27	17.6	49.1
Printed reading materials	39	25.5	70.9
Meetings, discussions	3	2.0	5.5
Personal talks	17	11.1	30.9
Others sources: mainly TV	14	9.2	25.5
Usefulness of received information to make changes in nutrition and lifestyle			
Helped	28	18.3	51.9
Helped to some extent	22	14.4	40.7
Did not help	4	2.6	7.3
Reading printed materials			
Read all of them	12	7.8	30.8*
Read some of them	26	17.0	66.7*
Did not read at all	1	0.7	2.6*

[±]this question was designed to have multiple answers

*out of those 39 women who received printed reading materials

Table 5: Number and percentage of respondents who demonstrated correct answers for knowledge questions at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

Knowledge items	Baseline n=152(%)	Follow-up n=153(%)	P- value
Health experts recommend that people should be eating more:			
Vegetables	149 (98.0)	151 (98.7)	0.65
Fruits	150 (98.7)	153 (100)	0.16
Greens	152 (100)	153 (100)	1.00
Fish	132 (86.8)	141 (92.2)	0.13
Health experts recommend that people should be eating less:			
Meat	68 (44.7)	92 (60.1)	0.01 [±]
Sausages ham	87 (57.2)	115 (75.2)	0.00 [±]
Fatty food	143 (94.1)	148 (96.7)	0.27
Salty food	145 (95.4)	149 (97.4)	0.35
Sugary food	95 (62.5)	113 (73.9)	0.03 [*]
The following food are good sources of proteins:			
Chicken	41 (27.0)	55 (35.9)	0.09 ⁺
Cheese	88 (57.9)	109 (71.2)	0.02 [*]
Beans	47 (30.9)	60 (39.2)	0.13
Greens	96 (63.2)	84 (54.9)	0.14
Potato	69 (45.4)	88 (57.5)	0.03 [*]
Fruits	91 (59.9)	99 (64.7)	0.38
Margarine	92 (60.5)	117 (76.5)	0.00 [±]
Animal fat is recommended to cut down in the diet	135 (88.8)	142 (92.8)	0.23
Chicken without skin contains the least amount of cholesterol	53 (34.9)	78 (51.0)	0.01 [±]
For cooking it is the most harmful to fry with oil or fat	78 (51.3)	91 (59.5)	0.15
Botulism can be prevented by:			
Sterilizing two hours during food preservation	27 (17.8)	31 (20.3)	0.58
Boiling home-made canned food for 15-20 m. before eating	87 (57.2)	99 (64.7)	0.18
Washing fruits/vegetables with running water before preservation	97 (63.8)	105 (68.6)	0.38
Drying/freezing vegetables and fruits	74 (48.7)	85 (55.6)	0.23
Pickling/ marinating vegetables in non hermetic jars	41 (27.0)	52 (34.0)	0.18
High intake of salt can contribute to:			
Hypertension	103 (67.8)	118 (77.1)	0.07 ⁺
Cataract	13 (8.6)	32 (20.9)	0.00 [±]
Stroke	65 (42.8)	88 (57.5)	0.01 [±]
Heart diseases	74 (48.7)	104 (68.0)	0.00 [±]
Overweight can contribute to:			
Heart diseases	149 (98.0)	149 (97.4)	0.71
Stroke	117 (77.0)	129 (84.3)	0.11
Pneumonia	54 (35.5)	76 (49.7)	0.01 [±]
Hypertension	124 (81.6)	129 (84.3)	0.53
Goiter	38 (25.0)	47 (30.7)	0.27
Cancer	50 (32.9)	74 (48.4)	0.01 [±]

[±]highly statistically significant difference, $p \leq 0.01$

^{*}statistically significant difference, $p \leq 0.05$

⁺marginally statistically significant difference, $0.05 \leq p \leq 0.1$

Table 6: Number and percentage of respondents who demonstrated desired attitudes at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

Attitude items	Baseline n=151 (%)	Follow-up n=153 (%)	P- value
People could benefit by reducing their use of added sugar.	100 (66.2)	112 (73.2)	0.19
Reducing salt intake in food can help to prevent high blood pressure (hypertension).	107 (70.9)	123 (80.4)	0.05*
Obesity is a sign of good health.	117 (77.5)	124 (81.0)	0.44
People could control their weight better if they reduce their fat intake.	126 (83.4)	129 (84.3)	0.84
The use of hydrogenated fat (“Aftab”. “Reddy”, “Gonche”) is useful for my family.	67 (44.4)	109 (71.2)	0.00[‡]
A baby could benefit if fed only with breast milk for the first six months of life.	147 (97.4)	150 (98.7) [‡]	0.41
Physically active lifestyle could help to prevent high blood pressure (hypertension).	121 (80.1)	132 (86.3)	0.15
Smokers can improve their health if quit smoking.	149 (98.7)	151 (98.7)	0.99
People would harm their health breathing the smoke from someone else’s cigarette (2nd-hand smoke).	143 (94.7)	151 (98.7)	0.05*
Smoking should be prohibited in public buildings (schools, kindergartens, medical facilities, stores, etc).	150 (99.3)	151 (98.7)	0.57
Smoking should be avoided inside the house/room.	145 (96.0)	148 (96.7)	0.74

[‡]highly statistically significant difference, $p \leq 0.01$

*statistically significant difference, $p \leq 0.05$

[‡]for this item only the sample size was 152

Table 7: Number and percentage of respondents who demonstrated recommended practices at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

Recommended practice items	Baseline n=152 (%)	Follow-up n=153 (%)	P- value
Food preparing habits of women			
Preparing poultry the skin is always or usually removed	34 (22.4)	53 (34.6)	0.02*
Preparing meat fat is always or usually removed	45 (29.6)	73 (47.7)	0.00[‡]
Always or usually steam vegetables.	89 (58.6)	107 (69.9)	0.03*
Occasionally or never fry vegetables.	38 (25.7)	41 (26.8)	0.82
Occasionally or never fry meat.	75 (49.3)	82 (53.6)	0.46
Always or usually BBQ vegetables	62 (40.8)	75 (49.0)	0.15
Always or usually BBQ meat	52 (34.2)	62 (40.5)	0.26
When preparing salads rarely or never add mayonnaise?	101 (66.4)	114 (74.5)	0.12
Mainly use for cooking vegetable oil	61 (10.1)	66 (43.1)	0.60
Food consumption of women and their household adult members			
Monthly or never use white flour bread or lavash	7 (4.6)	6 (3.9)	0.77
Daily or weekly use whole meal flour bread or lavash	23 (15.1)	18 (11.8)	0.39
Weekly or monthly use pasta	130 (85.5)	148 (96.7)	0.00[‡]
Daily or weekly use grains (rice, oat, wheat etc)	114 (75.0)	110 (71.9)	0.54
Daily or weekly use legumes (beans, lentils etc.)	86 (56.6)	102 (66.7)	0.07⁺
Daily use milk and milk products	110 (72.4)	105 (68.6)	0.48
Weekly or monthly use eggs	35 (23.0)	67 (43.8)	0.00[‡]
Weekly or monthly use red meat	140 (92.1)	145 (94.8)	0.35
Weekly use poultry	80 (52.6)	106 (69.3)	0.00[‡]
Weekly use fish and fish products	32 (21.4)	35 (22.9)	0.70
Daily use fresh fruits	74 (48.7)	105 (68.6)	0.00[‡]
Daily use vegetables	101 (66.4)	111 (72.6)	0.25
Never or monthly use sausages, hot dogs, ham	60 (39.5)	69 (45.1)	0.32
Never or monthly use Coca-cola, Fanta, Sprite	92 (60.5)	109 (71.2)	0.04*
Daily use vegetable oil	104 (68.4)	97 (63.4)	0.36
Never or monthly use butter	37 (24.3)	92 (60.1)	0.48
Never use hydrogenated oil/ margarine	100 (65.1)	118 (77.1)	0.02*
Never or monthly use sweets and pastries	16 (10.5)	7 (4.6)	0.05*

[‡]highly statistically significant difference, $p \leq 0.01$

*statistically significant difference, $p \leq 0.05$

⁺marginally statistically significant difference, $0.05 \leq p \leq 0.1$

Table 8: Cumulative attitude and mean % scores of smoking at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

	Baseline	Follow-up
Mean cumulative score	3.89	3.93
Mean % score	97.3 %	98.3 %

Table 9: Smoking in households and child exposure to second hand smoke at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

		Daily n (%)	Occasionally n (%)	Rarely n (%)	Never n (%)	Total n
How often do people smoke inside this household?	Baseline	87 (56.9)	8 (5.2)	15 (9.8)	45 (29.4)	152*
	Follow-up	86 (56.2)	2 (1.3)	16 (10.5)	49 (32.0)	153*
How often are children present when someone is smoking in this household?	Baseline	49 (48.5)	9 (9.1)	14 (14.1)	28 (28.3)	99 [±]
	Follow-up	37 (37.0)	7 (7.0)	15 (15.0)	41 ⁺ (41.0)	100 [±]

⁺marginally significant difference, $0.05 \leq p \leq 0.1$ between baseline and follow-up

*total number of participants

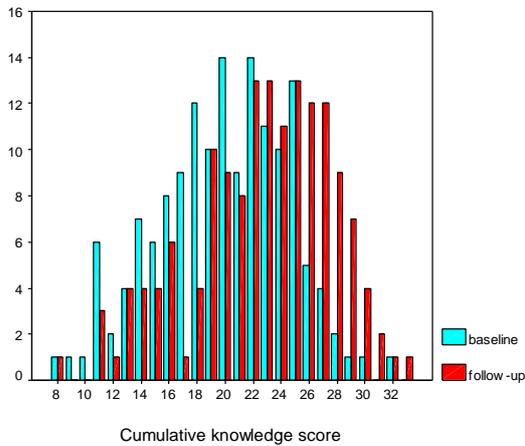
[±] number of participant who have a child/children in their households

Table 10: The mean % cumulative KAP scores at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010

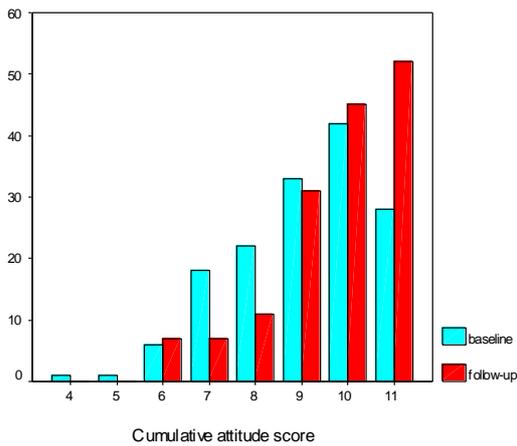
Characteristic	Mean % cumulative Knowledge Score		Mean % cumulative Attitude Score		Mean % cumulative Practice Score	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Age						
30-40	56.5	65.9	80.0	88.2	45.7	51.7
41-50	60.6	67.6	84.5	88.2	45.8	52.0
51-60	58.2	65.6	82.7	88.2	47.4	53.7
Education						
School	52.1	60.9	79.1	87.3	45.9	52.1
Secondary-special	61.8	71.8	84.5	88.2	46.6	52.9
University	69.7	74.1	87.3	90.9	46.4	51.9
Medical education						
Have	66.2	78.8	91.8	90.0	49.2	52.2
Do not have	57.6	65.6	81.8	88.2	45.9	52.4
Average monthly income (Armenian dram)						
<25,000	55.6	65.6	80.0	85.5	45.6	53.2
25,000 – 50,000	57.9	63.8	83.6	88.2	46.8	51.8
51,000-100,000	60.0	69.4	81.8	90.9	47.2	51.6
>100,000	63.5	70.3	87.3	91.8	43.2	52.4

GRAPHS

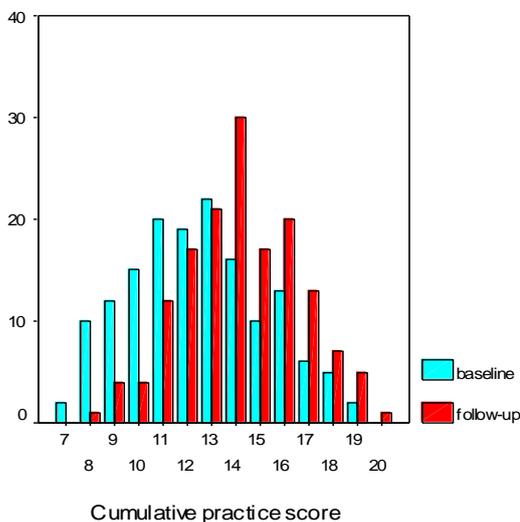
Graph 1. Cumulative knowledge score at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010



Graph 2. Cumulative attitude score at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010



Graph 3. Cumulative practice score at baseline and follow-up KAP surveys in rural communities of Tavush and Shirak participating in Arpi Simonian Healthy Lifestyle Project, 2010



APPENDIX 1: STUDY INSTRUMENTS

KAP Questionnaire
American University of Armenia
Center for Health Services Research and Development
Knowledge, Attitude and Practice Survey
on Healthy Nutrition and Lifestyle

Date ____/____/____

ID _____

Marz _____

Village _____

Interviewer _____

Starting time _____

1. How old are you? (in years) _____
2. How many adults and children live in your household including yourself?
 - Adults (above 18 years old) _____
 - Children (18 and below) _____

3. Food preparation habit

Food preparation habit	Always	Usually	Rarely	Never
1. When you prepare poultry how often is the skin removed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. When you prepare beef, pork, ham, veal or lamb, how often is the fat removed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. How often do you cook (boil in water) vegetables?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. How often do you fry vegetables?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. How often do you fry meat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. How often do you BBQ vegetables?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. How often do you BBQ meat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. When you prepare salads how often do you add mayonnaise?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. What kind of fat or oil do you mostly use for cooking? (Check only one answer)

- Butter
- Boiled butter
- Lard
- Hydrogenated vegetable oil (“Gonche”, “Reddy”, “Aftab” etc.)
- Margarine
- Sunflower oil
- Corn oil
- Olive oil
- Do not use

5. How frequently are the following food items consumed by the adult members of your household (18 and over)?

Food	Daily	Weekly	Monthly	Never
1. White bread, lavash made from white flour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Dark bread, lavash made from whole meal flour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Pasta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Grains (rice, oat, wheat etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Legumes (beans, lentils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Food	Daily	Weekly	Monthly	Never
6. Milk and milk products (cheese, cottage etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Eggs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Poultry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Fish and fish products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Fresh fruits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Sausages, hot dogs, ham	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Coca-cola, Fanta, Sprite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Vegetable Oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Hydrogenated oil/ Margarine (Aftab”, “Reddy”, “Gonche” etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Sweets and pastries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. How often do people smoke inside this household?

- Daily
- Occasionally
- Rarely
- Never

Only for those households where there are children ask question 7.

7. How often the children are present when someone is smoking in this household?

- Daily
- Occasionally
- Rarely
- Never

8. Have you received any healthy nutrition and lifestyle printed materials (book, pamphlets, brochures) from training, a Community Health Committee (CHC) member (including a primary healthcare nurse) or any other member of your community

- 1. Yes
- 2. No (If no, go to question 11)

9. Have you read these materials?

- 1. Yes, all of them
- 2. Yes, some of them
- 3. No

10. Do you think that the information received from the CHC members or from the reading materials helped you to make changes in your or your household members' diet and lifestyle?

- 1. Yes
- 2. To some extent
- 3. No

11. What other health related topics are of interest to you and your family? (Please give examples) _____

Do you agree or disagree with the following statements?	Agree	Disagree	Not sure
12. People could benefit by reducing their use of added sugar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Reducing salt intake in food can help to prevent high blood pressure (hypertension).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Obesity is a sign of good health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. People could control their weight better if they reduce their fat intake.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The use of hydrogenated fat (“Aftab”. “Reddy”, “Gonche”)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you agree or disagree with the following statements?	Agree	Disagree	Not sure
is useful for my family.			
17. A baby could benefit if fed only with breast milk for the first six months of life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Physically active lifestyle could help to prevent high blood pressure (hypertension).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Smokers can improve their health if quit smoking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. People would harm their health breathing the smoke from someone else's cigarette (2 nd -hand smoke).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Smoking should be prohibited in public buildings (schools, kindergartens, medical facilities, stores, etc).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Smoking should be avoided inside the house/room.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. Do you think health experts recommend that people should be eating more, the same amount, or less of these foods? (Check one box per food)

Food item	More	Less	Not sure
Vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sugary foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish and sea food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Greens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sausages, ham	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. In your opinion, which of the mentioned food items are good sources of proteins? (Check all that apply)

- Chicken
- Greens
- Cheese
- Fruit
- Beans
- Potato
- Margarine
- None of the above
- Don't know

25. Which type of fat do experts say is the most important for people to cut down on?

(Check only one answer)

- Vegetable oil
- Animal fat
- None of the above
- Don't know

26. In your opinion which of the mentioned food items contain the least amount of cholesterol? (Check only one correct answer).

- Ham
- Chicken without skin
- Pork
- Beef
- None of the above
- Don't know

27. For cooking it is the most harmful to: *(Check all that apply)*

- Fry with oil, fat
- BBQ in oven or on fire
- Boil with water
- Steam
- None of the above
- Don't know

28. You can prevent botulism by *(Check all that apply)*

- Sterilizing two hours during food preservation
- Boiling home-made canned food for 15-20 minutes before eating
- Washing fruits and vegetable under running water thoroughly before food preservation
- Drying/freezing vegetables and fruits
- Pickling/ marinating vegetables in non hermetic jars
- None of the above
- Don't know

29. Do you agree or disagree that high intake of salt can contribute to the following diseases? *(Check one answer for each disease)*

	Agree	Disagree	Not sure
1. Hypertension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Cataract	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Stroke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Heart diseases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. Do you agree or disagree that overweight can contribute to the following diseases? *(Check one answer for each disease)*

	Agree	Disagree	Not sure
1. Heart diseases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Stroke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Pneumonia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Hypertension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Obesity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Goiter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

31. Do you have a medical education? Yes No

32. What is the highest level of education you have completed?

- Incomplete primary education
- School education (primary, secondary education)
- Secondary-special education
- Incomplete undergraduate
- Undergraduate (institute, universities)
- Graduate (post-institute, post-university education)

33. Average monthly income of your household:

- Less than 25,000 drams
- 25,000 – 50,000 drams
- 51,000-100,000 drams
- 101,000-250,000 drams
- More than 250,000 drams
- Don't know

Refuse to answer

The questions below are for follow-up only.

34. During the last three months did you receive any information about healthy nutrition and lifestyle?

1. Yes 2. No (*If no, stop the interview*)

35. Who provided the information? (*Check all that apply*)

- Trainers from the American University of Armenia
 Community Health Committee member
 Primary healthcare nurse
 Other member of your community (neighbor, relative)
 Other _____

36. How did you receive the information? (*Check all that apply*)

- Trainings
 Printed materials (books, brochures, manuals)
 Meetings
 Personal talks
 Other _____

37. Have you read the provided printed materials?

1. Yes, all of them 2. Yes, some of them 3. No

38. Do you think that the information received helped you to make changes in your or your household members' diet and lifestyle?

1. Yes 2. To some extent 3. No

Thank you for your participation

Journal Form

Date: _____

ID _____

Marz _____

City/Village _____

Interviewer's name _____

Visit/ attempt number	01	02	03	04	05	06	07	08	09	10	11	12	13	14
Result code														

Visit/ attempt number	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Result code														

Visit/ attempt number	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Result code														

RESULT CODES

1. Completed interview
2. Nobody at home
3. No eligible respondent
4. Selected respondent not at home
5. Refusal
6. Refusal by selected respondent
7. Respondent unable to participate
8. Other _____
9. Incomplete interview

APPENDIX 2: PHOTO-ALBUM

ARPI SIMONIAN HEALTHY NUTRITION AND LIFESTYLE PROJECT IN RURAL COMMUNITIES OF ARMENIA PHOTO-ALBUM May-October 2010



Voskehask, Shirak Marz, Armenia

The community nurse of the village Health Post (on the left) is assisting the research team to conduct the follow-up assessment.



Voskehask, Shirak Marz, Armenia



Voskehask, Shirak Marz, Armenia



Verin Karmiraghbyur, Tavush Marz, Armenia. The treasurer from the village Mayor Office is assisting the research team to conduct the follow-up KAP assessment.



Verin Karmiraghbyur, Tavush Marz, Armenia



Tsaghkavan, Tavush Marz, Armenia
Training



Aregnadem, Shirak Marz, Armenia
Training



Aregnadem, Shirak Marz, Armenia
Training



Aregnadem, Shirak Marz, Armenia
Training