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Breast Self-Examination Practice in Yerevan women

Cross-Sectional KAP (Knowledge-Attitude-Practice) Survey

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Abstract

Breast Cancer is one of the leading causes of death for women in the world. It is an important public health problem in Armenia as well, where both the morbidity and the mortality rates of breast cancer remain rather high.

Breast cancer is a critical target for secondary prevention, because it is one of the cancers that can be cured by current means if detected at early stages. Breast Self-Examination (BSE) is a low-cost, low-risk self-performed screening, which, according to the evidence from the literature, improves the prospects for women's survival. Despite this, there are no large-scale, properly designed BSE educational programs in Armenia currently. Besides, no detailed investigation concerning the patterns of BSE practice and the knowledge of different factors affecting it was carried out in Armenia. Hence, to identify Armenian women's BSE and other breast cancer screening behaviors and the factors of decisive importance for Armenian women's BSE practice, and to assess the need for the future educational programs in this sphere, a Knowledge-Attitude-Practice (KAP) cross-sectional survey was conducted with Yerevan women in two age categories (from 25 to 50 and over 50). The women were surveyed by telephone interviewing, with using Random Digit dialing technique to generate the sample of women for the study. Random Digit dialing, which was not used in Armenia previously, proved to be a rather effective technique, resulted in the sample of 201 women from different city districts. The information on women's sociodemographics, health habits, family history of cancer, breast-problem related care, breast cancer screening practices, breast cancer screening knowledge, exposure to the information regarding breast cancer, screening methods and risk-perception was obtained.

By the means of STATA analysis, it was revealed that relatively a small proportion of Yerevan women (0.20-0.33) perform some form of BSE and an even smaller proportion performs BSE as it is specified by BSE guidelines (0.06-0.15). Of those practising BSE, the majority does it once a month or more often. Income, employment, education, number of children, family history of cancer, BSE training in the past, and the source of BSE learning were shown to affect BSE behavior in Yerevan women. The association between BSE and mammography screening in terms of both women's awareness and practice was revealed. No major differences in BSE practice were noticed in different age strata. The investigation found the risk-perception and attitude-related factors not to be decisive for women's practice of BSE. It was shown that there is a substantial lack of knowledge in Yerevan women regarding BSE in general and BSE techniques.

Based on the survey findings, some recommendations about the design and the implementation of the corresponding BSE training programs are suggested, with the emphasis put on the availability of these programs for the large population of women and on the mechanisms, which would ensure their long-term effect.

Introduction

General background

Breast cancer is one of the most widespread forms of cancer in women all over the world. According to the data from the American Cancer Society, breast cancer is second only to lung cancer as the leading causes of cancer deaths among American women (1). From birth to age 39 years, women in the US have a 1 in 219 chance of developing breast cancer. The probability increases to 1 in 26 for women aged 40 to 59 years and 1 in 14 for women aged 60 to 79 years. One out of every 10 women will develop breast cancer in her lifetime (1).

Armenia is not an exception in this sense. Breast cancer is the most widespread cancer among Armenian women (2). According to the data from the Republican Oncological Dispensary and the Information-Analytical Center of the Ministry of Health of Armenia, the incidence rate in 1996 was 29.7, in 1997 - 29.6 and in 1998 - 33.1 (per 100,000 women). Although there is no stabile increase in morbidity of breast cancer in the last years, the data show increase in mortality and neglected cases of the disease in Armenia up to the year 1996, for which the data are available (the case-fatality rate was about 68.3% and the neglected cases were 27.9 % of the total number of cases in 1996, which is rather high in comparison with previous years) (2).

It is widely known that breast cancer is one of those most "curable" by current means, if detected at early stages, when there are no cancerous lymph nodes (1). In the US the overall breast cancer mortality rate has dropped over 6% during the past years as a result of the early detection of the cancer at curable stages (2). Thus, reducing mortality is the goal of screening for breast cancer (1). Screening involves the surveillance of asymptomatic persons to detect their disease before it becomes clinically apparent (1). I. Miller noticed that the increasing incidence of breast cancer in developing countries, and the late stage at diagnosis of most disease, supports efforts to introduce screening for breast cancer (3).

Among the methods of detection of breast cancer at an early stage and thus, of the increase of long-term survival rates are mammography, physical examination by a health care professional, and breast self-examination (BSE). The American Cancer Society (ACS) guidelines for breast cancer screening include each of these three activities (4).

Despite the existence of these means in Armenia, the leading cause of death from cancer for women is breast cancer. This can be partially explained by the lack of knowledge among women of the methods and benefits of the early diagnosis of breast cancer, bad financial conditions of women as

a result of the difficult socio-economic conditions in the Republic, which determines their late appeal or no appeal to health care facilities, and lack of advanced diagnostic equipment and proper educational programs at presently functioning oncological centers of Armenia.

The largest program including the provision of the reliable high-standard mammography and sonography to women, distribution of educational materials on breast cancer and teaching of women to perform monthly breast self-examinations is being carried out at the Armenian American Mammography Center functioning in Yerevan since 1997. Still, the program does not cover all the strata of the population, because the cost of the services provided there is rather high for todays' Armenian woman. As it is indicated by I. Miller, there is a need for developing countries to evaluate simpler screening tests, such as physical examination of the breasts and breast self-examination, as they can be applied by existing health personnel, and more readily integrated into medical care (3).

Physical examination by health care professionals was widespread in primary care facilities of Armenia during the Soviet period. Nowadays this method is rarely practised and in most cases a woman is examined by a health care professional when she already has problems concerning her breast and seeks a treatment, but not as a part of routine health care.

Thus, it can be considered that the most appropriate and available method of breast cancer early detection for todays' Armenian woman can be breast self-examination.

Breast Self-Examination (BSE) is a systematic method of self inspection and palpation of the breast and axillary regions, performed monthly by women at home (5).

BSE has broad appeal as an important tool in the early detection of carcinoma of the breast, especially since many breast cancers are originally brought to the attention of clinicians by the patient (1).

Currently, there is a certain controversy surrounding the breast self-examinations, with several randomized trials and meta-analyses conflicting on the effectiveness of BSE in reducing mortality. According to P. Vafiadis, who reviewed the literature regarding this controversy there is evidence indicating that women who practise some form of BSE, and who are diagnosed as having breast cancer, have their cancers detected at an earlier stage and have improved prospects for survival compared with women who have not practised BSE (5). Most scientific studies support the recommendation of BSE, suggesting that mammography alone is not 100 % accurate and that breast clinical and self-examinations should also be emphasized (5) (7) (8). A conservative perspective is that although BSE may not be the most reliable screening method, it is an important adjunct to other detection methods, such as physical examination by a physician or mammography (9). It also should be noticed that monthly BSE can be considered as a partially inexpensive alternative to mammography screening for women under 50 for which mammography was shown to be not as beneficial as for older women (10) (11) (12). In some developed countries, especially in Europe, mammography screening is not recommended for women of this age group after weighing mortality benefits against the negative effects of the screening (13).

The method of BSE has its positive sides as well as drawbacks. The biggest advantage is that BSE is a low-cost, low-risk technique of Breast Cancer detection that every woman can perform at home on a regular basis (14). In addition, it is generally applicable technique, which promotes self-familiarirty and responsibility for health in women (5).

As it was mentioned, the method of BSE has also its "drawbacks". First of all there is an evidence for the fact that monthly BSE require rather strong motivation on women's side, as well as the recognition of breast cancer as a potential hazard (14), (15). Second, BSE can promote anxiety in women (when finding a mass or in poor technique) (5). The most important disadvantage is that even if BSE is performed regularly by a woman, it will be useless, if she does not use the proper and correct techniques of the examination. Quality (proficiency) of BSE refers to the degree to which women use effective techniques during palpation, and it is also recommended that the techniques of BSE should be periodically refreshed (5), (14). In order for BSE to be effective, women must also pay attention to the appropriate time in the month for performance (it should be performed after the menstrual period in premenopausal women) (9).

Thus, the compliance (frequency and accuracy) of the BSE performance even among women trained at the corresponding facilities much depends on the motivation of women, teaching and reinforcement techniques used, their perception of breast cancer risk and other knowledge and attitude related factors, which may hinder or stipulate the performance of BSE (9), (11). The barriers to BSE performance must be considered and addressed when planning a BSE training program and when designing strategies to maintain the women's behavior after the training (14). It is not surprising, then, that there are a lot of research papers in the literature devoted to the careful examination of the numerous factors affecting BSE practice in different countries. Despite the public health importance of this issue and the rich area of the investigations it opens, no detailed research was conducted in Armenia regarding this topic.

Factors Associated with Breast Self-Examiantion Practice

There is numerous evidence in the literature indicating that different factors may be associated with the practice of each method of the early detection of breast cancer. Rather wide attention has been given to the correlates of the BSE performance during the last decades (9)

Several hypotheses have been examined in prior studies to find out what may stipulate or hinder the practice of BSE by a woman and why. Authors used different conceptual models based on a number of theories aimed to explain why and how people change their health behavior. Among these theories and orientations are Health Believe Model, Social Learning Theory, Theory of Planned

Behavior and Theory of Reasoned Action (9), (11), (16), (17). Knowledge and attitude related factors derived from these models seem to affect significantly the performance of BSE in women.

It was discovered that knowledge of general breast cancer-related issues (11) and knowledge of BSE (9), (17) predict the performance of BSE. The other important factor mentioned by many authors is the confidence (faith/trust) in one's ability to perform BSE. (9), (16), (18). It was shown that the concern about getting breast cancer (perceived susceptibility to breast cancer) is also associated with the BSE and the frequency of its performance (9), (11), (18).

Joyce A. Mamon and other authors indicate that being taught to perform BSE and having breast examined by a physician are related to the BSE practice (9), (17). Among the factors related to the attitude towards BSE and Breast Cancer in general, feeling uncomfortable when performing BSE (when examining/touching the breast) and fear of discovering a lump were found to be associated with BSE performance. Several authors indicate that cultural and religious beliefs may also play a role in BSE practice in women. (19), (20). The exposure to messages about breast cancer was found to be associated with BSE practice as well.

Socio-demographic characteristics of women are related to BSE performance. It is indicated in numerous studies that age, employment status, origin and education are significantly associated with the BSE performance (9), (11), (21), (17).

As it was noted earlier there is no information regarding the practice of BSE in Armenian women (whether they practise it or not, and if yes, with what frequency), as well as regarding Armenian women's knowledge of BSE and Breast Cancer issues in general, and their attitude towards these issues. Taking into consideration the existing conditions of the health care in the Republic, the socio-economic status of women and the state of preventive medicine, as well as having evidence from the literature of the BSE practice in countries similar to Armenia in many characteristics, it can be supposed that the rate of women performing BSE is rather low. As it was mentioned earlier, the success of breast self-examination (BSE) requires strong motivation and the recognition that breast cancer is a potential hazard. Both these requirements are unlikely to be met in developing countries and, consequently, compliance will be low and BSE will not be performed properly (15).

In order to make this practice common among Armenian women, teaching and educational programs in this sphere are needed which would target as much women as possible, not depending on their socio-economic status or place of residence. Before the designing of corresponding educational programs, preliminary information is needed on the Armenian women's knowledge, attitude and practice of BSE, so that the corresponding programs will be effective and targeted, fit the specific circumstances of Armenian women and satisfy their needs.

From this point of view it is also interesting to reveal the attitude of women to and their utilization of already functioning in Yerevan breast cancer screening tool such as mammography screening, hoping that it will help to find the cues for involving in future BSE screening programs as many women as possible.

The objectives of the present study are the following:

To define the patterns of Armenian women's Breast Self-Examination practices to assess the need for future interventions in this area.

To identify factors of decisive importance for Armenian women's performance or non-performance of Breast Self-Examionation, which could form the basis of future educational programs in this sphere.

Thus, the main research questions are the following:

1. What is the level of BSE practice in Armenian women?
2. What are the factors associated with the BSE practice in Armenian women?
3. What is the current knowledge and attitude of Armenian women regarding BSE and other forms of breast cancer screening and breast cancer in general?

Methods

Study Design

A Knowledge-Attitude-Practice (KAP) cross-sectional quantitative survey was used for investigation of the BSE performance and general knowledge and attitude related factors associated with it among Yerevan women. A cross-sectional quantitative design was chosen to have systematically collected data on the topic of interest and generate statistics which will provide an assessment of the need for the Breast Cancer related educational programs in the general population, that hopefully will be used by the decision-makers and public health professionals concerned with the design and the implementation of such programs.

The survey was conducted through telephone interviewing. The telephone survey was used because it is a more cost-effective approach (22). Still, it imposes certain limitations on the study. Sampling bias is inherent in telephone survey research due to the noncoverage of people without telephone (22), (23). But since it is known that the majority of people in Yerevan have telephones, it can be considered that the coverage of the population was at the sufficient level.

The Random Digit dialing technique, which was not used in Armenia previously, was used for the generation of a sample of women for the study. This method allows to make the study sample generation as random as possible and for the sample to be as representative of the whole city as possible (taking into consideration the fact that the different codes used in Random Digit dialing identify people from different geographic locations within the city). Besides, Random Digit Dialing in comparison with surveying using the telephone number lists is unimpeded by the problem of missing people with unlisted numbers (22).

Telephone interviews were conducted starting from August 1 until August 27 1999. Telephone numbers were randomly drawn from a Random Digit Table. Yerevan phone numbers consist of 6 digits, the first two being the codes identifying the different telephone stations and thus, different regions within the city. Overall, there are 32 2-digit telephone codes in Yerevan and they all were used for the generation of the sample. The remaining four digits for each of 32 codes were drawn from the Random Digit Table.

To minimize noncontact, which arises when respondents are not at home at the time of call, the interviews were conducted mostly at evening hours (starting from 17.00 p.m. until 22.00 p.m.) during the workdays, and at any time during the weekends. Noncontact can also be reduced through increasing of the number of calls (by raising the so-called "effort level" of the survey) (22). Each phone number was tried a total of three times (2 times at once, and once more at the end of each interview day). A female interviewer conducted all the interviews. Whenever the eligible household was contacted a short introduction and consent statement was presented to the respondent (the eligibility criteria included age less than 25 or more than 71 and presence of breast cancer).

Overall, 896 telephone numbers were attempted for participation, of these, 499 were not connectable (185 busy lines and 314 no connection-nobody picking a phone). Of the remaining 397 numbers, 18 were not households, 3 had answering machines and 131 households had no eligible respondents (129 did not fit the age requirements and 2 women had breast cancer). From 245 eligible women 201 interviews were obtained, 28 women refused to respond and 16 were not at home and were not contacted later. The response rate based on the households with eligible women was 82.04%, the response rate based on the eligible women directly contacted was 87.8%.

As it was decided, for each code (region) 6-7 interviews were obtained, of these half with women in 25-50 age group, and the other half with women over 50.

Study Instrument

A questionnaire that takes approximately 10-15 minutes to administer was used for the purpose of the present study (see Appendix 1). The questionnaire included information regarding

women's sociodemographics, health habits, family history of breast cancer, breast-problem-related care, breast cancer screening practices, breast cancer and BSE knowledge, exposure to information regarding breast cancer and screening methods, including mass-media campaigns, and some risk-perception questions. The general nature of the questionnaire and time limitations of the telephone interviews put some restrictions on the specificity of the questions asked. The American Standardized Annual Breast Cancer Questionnaire was consulted when designing the questionnaire.

Study Population

The final sample consisted of women aged 25-71, living in Yerevan (see Appendix 2, Graph 1). Based on the numerous published studies in the sphere of BSE practice, it made sense to investigate the study questions in the two different age groups of women (from 25 to 50, and over 50), since it was expected that they will differ in their BSE practise and many related characteristics (9).

The women were residents of different city regions, and it should be noted that all the city districts were represented in the sample, but with different coverage (see Appendix 2, Graph 2). Of 201 women, 6.96% had 8-year school education, 27.86% - 10-year education, 16.92% - college education, 47.26% - University/Institute education and only approximately 1% of the respondents were postgraduates. Approximately 34% of women were married, 9.45% single, 9.45% divorced, and 15.92% widowed. 59% of respondents reported their monthly family income to be less than 20,000 drams (see Appendix 2, Graph 3). 13.43% of women reported current smoking and only 38% reported the usage of alcohol.

Data analysis

A rather large set of independent variables was examined in the study (see Appendix 1). There were few dependent variables on which the study was focused, such as awareness of BSE, presence or absence of BSE practice in general, BSE performance according to the specific procedure, the frequency of BSE, ever-performance of BSE, awareness of mammography screening and ever undergoing mammography screening.

The statistical analysis of the data was carried out using STATA computer program. Pearson χ^2 test of association was used to identify the associations between each independent variable and dependent variables. Logistic regression was applied when analyzing independent ordinal variables

and for the interpretation of the associations found with nominal variables. Also the z test for difference in proportions was carried out to find the difference in BSE patterns in the two age groups of women and Binomial Exact test was used for the estimation of the true proportion of BSE practice in Yerevan women.

Findings

BSE awareness

Of 201 women 196 responded on whether they have ever heard about BSE. Of those, 55.10% answered positively.

Table 1 shows the women's awareness of BSE by age categories.
The χ^2 analysis showed statistically significant difference between the two age groups, with the higher quantity of younger women who ever heard about BSE. The other factor, which was associated with women's awareness of BSE, was the employment status of women (p=0.02). The logistic regression analysis showed that the employed women were more likely to know about BSE. The additional analysis was conducted regarding this association, since it was suspected that age is a confounder for the association between the employment status and BSE awareness. The stratified analysis showed that in older women employment was predicting the awareness of BSE, whereas in younger it was not. The additional logistic regression test run with the newly created "interaction variable" (age*employment) showed the interaction between these two variables.

Two variables: awareness of BSE and awareness of mammograms were significantly associated (p=0.000…) with being aware of mammograms multiplying the odds of breast cancer awareness by 6.85. Having ever heard about BSE was also significantly associated with education – more educated women seemed to know about BSE (p=0.001). The women who are aware of breast cancer screening services offered in the city were also aware of BSE. These two variables were significantly associated with p=0.0000…

No associations were found with other independent variables, which could be related to ever hearing about BSE, such as income, number of children, marital status, cancer history, having breast problems previously, women's risk perception on breast cancer, number of visits to a doctor in the last 5 years and number of physical examination of the breast during the last 5 years.

Table 1. Awareness of BSE by two age categories, the Stata analysis of c^2 association.

```
                      Heard about BSE
     Age category |     No     |    Yes   |    Total
------------------|-----------|---------|----------
    Less than 50 |     38    |      62  |       100
 More or equal 50 |     50    |      46  |        96
------------------|-----------|---------|----------
           Total |     88    |     108  |       196
-----------------------------------------------------
         Pearson chi2(1) =    3.9267   Pr = 0.048
```

BSE performance

As regards to the BSE performance in women, the data showed the following. Of 108 women who ever heard about BSE, only 51 were performing BSE (47.22%).

One of the main research questions was to estimate the proportion of women in the Yerevan who perform BSE. As it was already noted, only 108 women of 196 answered to the question regarding BSE awareness positively, and they were later asked about their performance of BSE. The proportion of women performing BSE was calculated from 196 women, thus, considering those who have never heard about BSE also answering negatively to the question regarding BSE performance. he analysis shows that the proportion of women performing BSE in the study population lies between 0.20 and 0.33.

BSE performance was found to be associated with income (the higher the income, the lower is the odds of BSE practice, p=0.034) and with having a mammogram (those who ever had a mammogram are more likely to practise BSE, see Table 2).

Again, the association was found between BSE and awareness of BC services, which can be explained by the fact that the overwhelming majority (except one person) of those who had mammogram are aware of breast cancer screening services.

All the other variables were found to be not related to BSE performance in women, and what is more important, the BSE performance didn't vary by age category.

```
Ever done          BSEperformance
mammogram|      No     |    Yes |      Total
----------|-------------|---------|----------
       No |      36     |     32 |        68
      Yes |       1     |      8 |         9
----------|-------------|---------|----------
    Total |      37     |     40 |        77
-----------------------------------------------
       Pearson chi2(1) =    5.5713   Pr = 0.018
```

BSE performance according to a specific procedure

It occurred that from 51 women practising BSE currently only 20 (39.22%) were performing BSE according to a specific procedure ("true BSE"), and the others were just palpating their breasts without following any guidelines.

The interesting finding related to the BSE performance in women according to a specific procedure is the association between this variable and the number of children a woman has. It was shown that each additional child multiplies the odds of BSE according to a specific procedure by 0.04239 (odds are lower).

The statistically significant associations were found also with cancer history in women's family, with those having a relative ever diagnosed with cancer more likely to practice BSE according to a specific procedure, but it should be noted that the significance was marginal (0.0481) and the confidence intervals for OR=3.2, obtained by logistic regression included 1). Being taught to perform BSE also increases the likelihood of BSE according to the specific procedure (odds multiplied by 11.67) (see Table 3 for Pearson association). The analysis showed the association between BSE according to specific procedure and the confidence in BSE performance, with marginal significance (logistic regression p=0.051). The additional analysis was carried out to reveal whether the confidence in BSE and being taught to perform BSE are associated. It was shown, that there is an association between these variables, and the logistic regression run with the newly created "interaction variable" (confidence*BSE taught) showed that the effect of BSE being taught interacts with the confidence variable. This allowed concluding that confidence in BSE performance is related to the performance of BSE according to the specific procedure through the being taught BSE.

Table 3. Being taught to perform BSE and BSE performance according to
a specific procedure, the Stata analysis of c^2 association.

```
                      Specific BSE
                        procedure
        BSE taught|      No       Yes  |      Total
        ----------|--------------------|----------
               No |      25         6  |         31
              Yes |       5        14  |         19
        ----------|--------------------|----------
            Total |      30        20  |         50
        --------------------------------------------
         Pearson chi2(1) =  14.4878   Pr = 0.000
```

Frequency of BSE performance

One of the study objectives was to analyze the frequency of BSE performance among Yerevan women. It occurred that of 51 women practising BSE currently 35 (68.63%) were performing it once a month or more often, 7 people (13.72%) practising it every 3 months, 4 people (7.84%) – every 6 months, 1 person – once a year and 3 women doing it not regularly (from time to time, when remember or when breast is aching).

For the convenience of the analysis all these categories were grouped into two major ones: those performing BSE once a month or more frequently (considered to be the right frequency) and all the other versions (not correct frequency).

The frequency of the performance was shown to be associated significantly only with the source of BSE learning, (see Table 4).

Table 4. The frequency of BSE performance by the source BSE learned
from, the Stata analysis of c^2 association.

```
                      Frequency of
    Source of BSE     BSE performance
       Learning    |Not correct   Correct|      Total
    -----------+--------------------+----------
          Other |       5         6  |         11
         Doctor |       0         7  |          7
    -----------+--------------------+----------
          Total |       5        13  |         18
        --------------------------------------------
         Pearson chi2(1) =   4.4056   Pr = 0.036
```

BSE ever performed

Of those who answered negatively to the question regarding the current practice of BSE, 37.5% reported ever-practising BSE. This variable was associated only with the employment status of the women (employed women are more likely to have ever practised BSE). All the other variables were shown to be not related to ever practising BSE by Yerevan women.

Table 5. Women's ever-performance of BSE by the employment status, the Stata analysis of c^2 association.

```
                  BSE ever performed
Employment|     No    |    Yes  |    Total
----------+------------|---------+----------
      No  |     23    |      8  |      31
      Yes |     12    |     13  |      25
----------+------------|---------+----------
    Total |     35    |     21  |      56
-------------------------------------------
          Pearson chi2(1) =   4.0513   Pr = 0.044
```

Awareness of mammography screening

101 women of 194 (52.06%) asked about whether they have ever heard about mammograms answered positively.

Numerous significant associations were found with this variable. It was shown that the higher the education level, the more likely is that the woman has ever heard about mammogram. The same is with the employment status (employed women are more likely to hear about mammograms, p=0.016). It was estimated that with the raise in income category (from lower to higher) the odds of ever hearing about mammogram increase by 1.54 (p=0.006). As it was already shown when discussing the variable "ever heard about BSE", these two variables are found to be associated (p=0.000...) (see Table 6). This was shown to be associated with the fact that employed women are more likely to be aware of BSE.

Table 6.   Women's awareness of mammography screening and of breast self-examinations, the Stata analysis of c^2 association.

```
             Heard about mammograms
      Heard
About BSE  |      No    |    Yes   |    Total
-----------|------------|----------|-----------
        No |      62    |    24    |     86
       Yes |      29    |    77    |    106
-----------|------------|----------|-----------
     Total |      91    |   101    |    192
----------------------------------------------
Pearson chi2(1) =  38.1091   Pr = 0.000
```

Having a physical examination in the past 5 years was associated with having ever heard about mammograms (odds of being aware of mammogram multiplied by 2.097 with each additional PE, p=0.028).

Undergoing mammography screening

Of those 101 women who ever heard about mammogram, only 11 people had done mammogram (10.89%).

Different factors were found to affect the women's undergoing mammography screening. It is associated with employment (the odds of having a mammogram increase by 4 if the women is employed, p=0.05) and having previous breast problem (p=0.001) (see Table 7). The important finding is that those women performing BSE are also more likely to have done mammogram (p=0.043). The other factors occurred to be not associated with women's undergoing mammography screening.

Table 7. Women's ever having a mammogram according to having a breast problem in the past, the Stata analysis of c^2 association.

```
    Breast      Ever had mammogram
   problems |     No    |    Yes    |    Total
 ----------+-----------|-----------+----------
        No |     84    |     6     |     90
       Yes |      6    |     5     |     11
 ----------+-----------|-----------+----------
     Total |     90    |    11     |    101
 -------------------------------------------
        Pearson chi2(1) =  15.1954   Pr = 0.000
```

Breast Cancer Risk Perception in Yerevan Women

There were two questions included in the questionnaire regarding how women assess their risk of developing a breast tumor. First, women were asked about how likely is that they can get breast cancer. Of 188 women answering this question, 36.17% considered that it is not likely, 32.98% - somewhat likely, only 15.96% found it to be very likely and 14.89% chose the "Don't know" option.

The other question on this topic was "Do you consider that your health is too good to think about breast cancer?" 15.76% strongly disagreed with this statement, 60.33% disagreed, 19.56% agreed and only 3.3% chose the option "Strongly agree".

Sources of Information on Breast Cancer Screening

The two breast cancer screening methods: BSE and mammography were of interest in this study, and the sources of information about them available to Yerevan women were revealed.

Of 108 women who ever heard about BSE, 43.52% pointed TV as the source of information on BSE, 2.78% mentioned radio, 12.96% - magazines and newspapers, 16.67% - doctors, 25.96% were told about BSE by friends and/or relatives and 13.89% got the information from brochures. 3.7% heard about BSE because they had medical speciality.

Only 22 women were taught to perform BSE. Of these, 40.9% were taught by a doctor, 22.73% by friend/relative, 9% learned BSE from a brochure. 2 women told that they learned BSE from TV.

As it was noted earlier, of 194 women who were asked whether they have ever heard about mammograms, 52.06% answered positively. Of these, 42.57% heard about mammogram from TV, 2.97% mentioned radio, 4.95% - magazines and newspapers, 12.87% were informed by a doctor, 34.65% were told by friends and relatives and only 2 persons (1.98%) got this information from brochures.

Information about Breast Cancer Screening Services

Of 196 women only 81 (41.33%) were aware of breast cancer screening services functioning in Yerevan. But from these many answers were found to be incorrect (indicating non-existing services or wrong health care facilities).

The study women were asked about from where would they like to receive the information regarding breast cancer screening services offered in the city. The overwhelming majority of the 192 women who answered this question (67.19%) preferred TV, 7.29% preferred newspapers and magazines, 6.25% mentioned radio, another 6.25% - pamphlets, 4.16% - doctors. 7.81% did not want to know or did not see a need for such information. One person wanted to get such information from friends/relatives and one woman mentioned that she would not be able to access the screening services anyway because of the lack of time and money.

Reasons for Practising Breast Cancer Screening

Besides revealing patterns of breast cancer screening practice, the present study investigated women's motivations in practicing BSE or undergoing mammography screening.

Of 72 women currently or ever performing BSE, 23.61% performed it since it was recommended by a doctor, 48.61% of women were self-motivated to do it, 1.39% (1 woman) mentioned previous breast problem as a reason, 13.89% knew about breast cancer cases among their friends and relatives and decided to perform BSE, 9.72% heard the recommendations to do BSE from TV programs. As for mammography screening, of 11 women who ever had a mammography test, 45.45% had it because of a doctor's recommendation, for 27.27% it was a self-motivated own idea, 18.18% had a previous breast problem and 9.09% (1 woman) mentioned that it was recommended by friends.

Women were also asked about the reasons for <u>not undergoing</u> mammography screening. Ninety women heard about mammograms, but never had it. Of these 90, the majority (58.89%) mentioned that it was not necessary, 28.89% identified the high cost of mammography as a reason, 3.33% said that it was not recommended by a doctor, and 3.33% considered themselves to be too young for mammogram. One person mentioned that she is too old for screening, one person considered any screening to be useless, one person mentioned the lack of time and two women (2.22%) were afraid of and nervous about screening.

Knowledge- and Attitude-Realted Factors

All the women who have ever heard about BSE were asked later about the frequency of BSE performance that they consider being the right amount (they may practise BSE not necessarily with

this frequency). Of 104 women asked, 28.85% considered that BSE should be practised more often than once a month, 18.27% said that it should be practised every month, 7.69% mentioned every 3 months as a right frequency, 6.73% - every 6 months, 1.9.2% - once a year and 35.5% of women did not know what is the right frequency of BSE performance at all. One woman noted that BSE should not be practised at all.

The other important question regarding the knowledge of women of BSE practice was regarding the time during the month when BSE should be performed. Of 65 women answering this question 18.46% considered that BSE should be performed before menses, 21.54% - after menses, and 16.92% thought that it can be performed at any time in the month. About forty three percent chose the option "Don't know".

With regards to the attitude towards BSE, of the 102 women who answered, the majority (50.98%) "agreed" that regular BSE done by women helps to reduce the number of deaths from breast cancer, 30.39% "strongly agreed". Only 2.94% of women "strongly disagreed" with this statement and 13.72% "disagreed". Two people did not know what to answer.

In order to reveal the attitude of women towards BSE, the women were asked also about whether they feel uncomfortable touching their breast. Of 187 women 24.60% "strongly disagreed" with this statement, 64.70% "disagreed", 8.56% "agreed" and only 3 persons (1.60%) "strongly agreed" with this statement.

Of 193 women who answered the question whether they would like to receive training on BSE or not, only 44.56% answered positively, 52.33% answered negatively and 3.11% chose the "Don't know option".

The reasons for not willing to have such training were no time for BSE training, having other health problems, having economic financial problems, problems with transportation, etc. Some women mentioned that there is no need for such training at all. Women were also asked about the way in which they preferred to have such training. The most frequent way of training mentioned was the TV program at specified hours, some of women though were not against the training in their district polyclinic. In anyway the majority of women would not participate in the training if it were not free of charge.

Discussion

As it was already mentioned in the "Results" section, the proportion of women in the Yerevan practising BSE was found to be between 0.20 and 0.33, which is equal or a little more than what was expected before the data were gathered (0.20). Still, the sample size needed for the estimation of the true proportion was considered to be 245, and 196 women were questioned instead,

which lowers the power of the finding. It was also considered necessary to reveal the proportion of women in Yerevan who practise BSE according to the specific procedure. The additional analysis carried out showed it to be between 0.06 and 0.15, which is extremely low.

Factors Related to BSE practice

At the beginning of the study it was hypothesized that Yerevan women of different age categories (under 50 and over 50) will differ in their patterns of BSE performance. The results of this study show that the practice of any form of BSE, the practice of BSE according to a specific procedure and the frequency of BSE performance do not differ significantly across the age strata and this correlates with some evidence from the literature (24), although the majority of the studies proved that age is rather an important factor determining a woman's intention and the frequency of BSE performance (9), (17), (21).

As a possible reason for not detecting a difference, the small number of women exposed to the question regarding the BSE practice should be considered. Although the total number of women in the study is rather large, the unexpected high proportion of women have never heard about BSE at all, and these women were not asked further questions about their BSE practice, fairly assuming that they definitely do not perform it. Thus, instead of at least 91 women in each age group (the sample size needed for the estimation of the difference in proportions of 20%, according to statistical calculations), we had 61 women under 50 and 46 over 50 left for the analysis of the mentioned variable.

This explanation is supported also by the fact that we found statistically significant differences between the two age categories regarding their awareness of (having ever heard about) BSE, with older women having lower odds of ever hearing about BSE. The sample size for the analysis of this variable was much larger (100 younger women and 96 women over 50). Still, the meanings of these two variables are completely different and we cannot form any conclusions regarding the BSE patterns in different age categories, basing just on women's awareness of BSE.

One of the most interesting findings of the study is the association found between the income and BSE practice. It is shown that the higher the income, the lower is the odds of BSE performance. Nevertheless it is difficult to interpret these results, and one possible explanation for this fact can be that richer women pay less attention to their health, probably having in mind the idea that they are able to pay for the medical services if the disease is already developed. These findings correlate to some extent with another study, where it was found that the odds of practising BSE every month or every few months increases with the increase in income, but then significantly drops in the highest income category (24).

It was found that the increase in the education level was associated with the higher odds of having ever heard about BSE, but there was no association of this variable with BSE practice.

The number of children a woman has was found to be related to the BSE performance according to the specific procedure ("true BSE"), with each additional child lowering the odds of BSE. We did not find such an association in other studies and maybe it can be explained by some specific characteristics of Armenian families, where women who have many children do not have time and desire to take care of their own health and adhere to specific guidelines of BSE.

The performance of BSE according to the specific procedure showed another, important relationship with the family history of cancer, with a presence of a relative with a cancer well predicting the performance of a "true BSE". Being taught to perform BSE and being confident in BSE performance also increase the odds of BSE performance according to a specific procedure. It should be underlined here that all the relationships with this variable are very similar to what was found in the studies carried out in other women populations, who are more aware of what BSE is and how it should be performed. This supports the idea that we should consider as real BSE with all its patterns and associations only the BSE performance according to the specific procedure, so that we can make the corresponding comparisons of this research with the other investigations on this topic.

The association between BSE performance and ever having a mammogram supports the idea of combining different breast cancer screening methods when designing the programs of breast cancer mass screening and education. The correlation between mammography intentions and BSE screening was found in other studies as well (11). The positive association between the awareness of BSE and the awareness of mammography screening provides another evidence for this conclusion.

Based on the evidence from the literature (9), having a physical examination of the breast done by a health professional may also play a role in BSE performance, but no such association was found in this study.

Many investigations focused their attention on factors related to the frequency of BSE performance (9), (24). In this study the BSE learned from a doctor was the only predictor of the BSE performance with the right frequency, which underlines the importance of the BSE learned from a health worker for the compliance with at least some of the BSE guidelines.

Factors Related to Mammography Screening

Previous studies indicate that age, education, income, perceived succeptibility and the concern about breast cancer are reliable correlates of mammography intention and participation (11),

21

(25), (17). The results of this study indicate some of these and other factors to be related to the mammography-screening behavior.

It was revealed that employed women were more likely to be aware of mammograms and practise mammography screening. The last association cannot be explained by the fact that mammography cost is rather high and is available only to women earning money, since no association between having a mammogram and the income of women was revealed. The raise in income category multiplies the odds of ever hearing about mammogram by 1.54. This finding is difficult to interpret. The association between having previous breast problem and undergoing a mammography test is understandable and logically sound.

One of the aims of this study was to investigate how Yerevan women's breast cancer risk perception is affecting their BSE practices. Although there is evidence in the literature that these factors are rather important for breast cancer screening behaviors (25), (11), (9), the current study found these factors to be not as important for Yerevan women in respect to their performing BSE or undergoing mammography screening. The only significant finding regarding these issues was the fact that a higher percentage of women considered that it is not likely that they can get breast cancer, than the percentage of those who found it to be likely.

As regards to the motivation of women to perform BSE, it was interesting to find out that for the highest percentage of women (48.61%) the performance of BSE was self-motivated. This shows that even not being recommended to perform BSE by the doctor, the women care for their health, probably using other sources of information on healthy practices. Still, 23.61% of women reported that they were recommended by a doctor to perform BSE. It was also important to reveal that approximately 13.89% of women were concerned about breast cancer cases among their relatives and friends and started BSE for this reason. This shows that breast cancer issues can be brought to the attention of the women more often, increasing the awareness of the existence of this problem in society.

With respect to mammography screening, the picture is quite different, which is most probably stipulated by the different characteristics of these two types of screening. BSE and a screening mammogram both relate to the early detection of breast cancer, but they are rather different behaviors (11). Here for the major part of women, the doctor's recommendation was the main reason for their undergoing the mammography screening test. As for mammograms, we were interested also to find out whether the cost of mammography hinders women's practice of screening. The majority of women (58.89%) considered the mammography screening not necessary for them and only a small number of women (28.89%) identified high cost as a reason for not having a mammogram screening.

The attitude of Yerevan women towards BSE is rather positive, with the majority of women considering BSE to be beneficial for women's health. In addition to that, no attitudinal barriers to BSE performance related to women's discomfort when examining their breasts were revealed among the

majority of the women surveyed. Thus, the reasons for Yerevan women's low rate of BSE performance are most probably not of attitudinal nature.

The reasons that are more likely to explain women's non-practice of BSE are probably related to the lack of the information on BSE and the knowledge of how it should be performed. The overwhelming majority of women who have at least ever heard about BSE were unaware of the right time of the month for BSE performance. On the other hand, many respondents were able to identify the right frequency of BSE performance (i.e. more often than once a month or once a month).

With regards to the sources of information on BSE and mammography screening, the importance of TV as a transmitter of breast cancer screening-related messages was stressed by women themselves, with the majority of them preferring to receive the information regarding the screening centers functioning in the Yerevan again from TV. It should be underlined that the majority of surveyed women were unaware of breast cancer screening services offered in the city, which indicates impermissible lack of information in conditions of the growing morbidity and mortality of breast cancer in Yerevan.

Study Limitations

The main limitation of the study was that the sample size was small, because of time and money constraints. It should be noted also that because of the nature of the questionnaire which included skipping patterns, selective refusals to the certain questions and few missing values, different sample sizes were used for the analysis of different variables, and this also reduced the power of the analysis performed.

Since the sample consisted of Yerevan women, it is not possible to generalise the results of the investigation to the whole female population of Armenia, especially to those living in rural regions, where breast cancer screening behaviors are supposed to be different from those in large urban areas.

It also can be noted that a rather large set of variables was included in the questionnaire, and they were mostly of a general nature, providing the understanding of the associations found for various practices, which is superficial to some extent. Still, because the main purpose of this study was to have a general picture of BSE attitude, knowledge and practice patterns of Armenian women, it can be considered that the objectives set at the start were achieved. However, the need for a more specific targeted survey, which would go more in depth and analyze any of the sub-topics defined in the current study should be considered.

Conclusions and Recommendations

The lack of information about BSE in general and the lack of knowledge on the techniques of its performance define the urgent need for the educational programs on BSE for Yerevan women.

These programs can be similar and can be presented to all the strata of the population of women, with no diversity in their design and implementation, since the survey failed to reveal major differences in BSE practice patterns in women with different socio-demographic characteristics.

It can be inferred from the study that future programs, if designed properly, are most likely to be successful, since no significant attitudinal barriers to BSE performance among Yerevan women were revealed.

The most important predictors of a "true BSE" (with proper techniques and frequency) were the family history of cancer, being taught to perform BSE, being confident in BSE performance and BSE being taught by a doctor. These findings suggest that the role of physicians in future interventions in this sphere be emphasized. Nevertheless, this is a controversial issue, since it was also revealed that the majority of women currently receives and prefers to receive the information regarding breast cancer screening from TV and from their close environment (friends/relatives). This well correlates with the fact that a rather small percentage of women see physicians, even if they already have health problems. Also the study women themselves stressed the reluctance to take part in BSE training program, which would require active participation on their side, preferring to receive information on BSE practice from TV or from brochures, not leaving their houses and children and not wasting time. Despite this, it seems obvious that the detailed training on BSE techniques is not likely to be provided with means of TV programs. It can be suggested to use TV as the transmitter of the general information about BSE to evoke and to keep interest and awareness in the public, as well as to encourage women to see doctors of the Mammography Center or other corresponding facilities to get the additional information regarding this issue. The "true" training needs to be conducted with women under conditions of direct interaction between a woman and a health care worker. Regardless, the cost mechanisms of such programs should be accommodated to reduce to the minimum the women's out-of-pocket expenses for training.

Another factor, which should be considered in planning BSE interventions, is women's vulnerability to information about breast cancer cases found in their immediate environment. This supports the idea that more information regarding not only BSE, but the rates of breast cancer in Armenia, the risk factors for breast cancer and treatment methods be delivered through the mass media, so that women have an adequate understanding of their risk and the availability of means to fight with this disease.

Taking into consideration the lack of awareness of the large part of the population regarding BSE and mammography, it should be suggested that breast cancer screening programs should not be a one-time interventions but be designed in a way that emphasizes long-term education, in order to evoke substantial and a long-lasting shift in BSE behavior.

Another recommendation that can be suggested based on the results of this investigation relates to the methods used in this survey. The Random Digit dialing technique is cheap and effective in current conditions of the telephone network in Yerevan. The use of Random Digit dialing allowed generating a relatively large sample of women from different districts in the city. The coverage of the districts was different, with central districts, such as Center and Arabkir contributing to the sample more than the other ones. Further research is needed to find out whether it is determined by the large number of people dwelling in these two districts, or by the unequal distribution of people owning telephones across the city. The geographical coverage and the overalpping of different codes within the same district should also be investigated.

It can be considered that overall this technique proved to be successful and appropriate for survey purposes, and possibly of use for other researchers in the public health sphere.

Acknowledgment

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Appendix 1

Questionnaire

Questionnaire #____

Date of interview____

Time of interview____

Introductory Statement

Good day. I am a student of Public Health Department of the American University of Armenia. I am conducting a survey concerning breast self-examination practices in Armenian women. I would be very thankful to you if you answer some questions that I am going to ask. Any personal information that you provide will be anonymous and will not cause harm to you. Your participation is very important and valuable for the investigation and hopefully it will help to improve the health of Armenian women. The interview will not take more than 15 minutes. Thank you in advance.

Part 1. **Sociodemographics**

1. What is your current address?
   _____

2. What is your age? _____

3. What is your level of education?
   ___1. School (8)
   ___2. School (10)
   ___3. College (2)
   ___4. Institute/University (5-6)
   ___5. Postgraduate
   ___6. Other_____
   Total years _____

4. Do you work now?
   ___Yes
   ___No (skip to #6)

5. a. Please specify where? _____
   b. What is your job title? _____
   c. How many years did you work in this job? _____ (skip to #7)

6. Have you ever held job?
   ___Yes
   ___ No

7. What is your marital status?
    ___1. Single
    ___2. Married
    ___3. Divorced
    ___4. Widowed

8. What is the total monthly family income of your family?
    ___1. Below 20,000 dram
    ___2. 20,000 to 40,000 dram
    ___3. 40,000 to 60,000 dram
    ___4. 60,000 to 80,000 dram
    ___5. More than 80,000 dram

9. How many people live with you in your house (apartment)?
    ___ people

10. How many rooms are in your house (apartment)?
    ___1
    ___2
    ___3
    ___4
    ___ More than 4

11. How many children do you have?

    ___
    ___Zero

12. What religion do you confess? _____

Part 2. **Health habits**

13. Are you a smoker?
    ___Yes
    ___No (skip to #15)

14. How many cigarettes do you smoke per day?
    ___ < 20 cigarettes per day (skip to #16)
    ___ 20-40 cigarettes per day (skip to #16)
    ___>40 cigarettes per day (skip to #16)

15. Have you ever smoked?
    ___Yes
    ___No

16. What is your average weekly alcohol use?
    ___None
    ___<3 drinks per week
    ___ 4-9 drinks per week
    ___ 10-14 drinks per week
    ___>15 drinks per week

Part 3. **Family history of cancers**

17. Were any of your relatives ever diagnosed with cancer?
    ___Yes
    ___No (skip to # 19)
    ___Don't know

18. Please specify the types of cancer that they had

Relative (type)	Type of cancer

___Don't know

Part 4. **Breast-problem-related care and perceived risk of breast cancer**

19. Have you ever had any breast problems that were benign such as lumps, cysts, and/or fybrocystic disease?
    ___Yes
    ___No
    ___Don't know

20. What do you think, how likely is that you can get breast cancer?
    ___Not likely
    ___Somewhat likely
    ___Very likely
    ___Don't know

21. Do you think that your health is too good to think about breast cancer?
    ___Strongly disagree
    ___Disagree
    ___Agree
    ___Strongly agree

22. Would you like to be more informed regarding breast cancer related issues?
    ___Yes
    ___No
    ___Don't know

Part 6. **Knowledge, attitude and practise of breast cancer screening**

23. Have you ever heard about breast self-examination?
    ___Yes
    ___No (skip to #36)

24. Where from did you hear about BSE? *(Check few or all the answers if necessary)*
    ___TV
    ___Radio
    ___Magazines, newspapers
    ___Doctor
    ___Friends, relatives
    ___Brochures
    Other, specify_____

25. Have you ever been taught to perform BSE?
    ___Yes
    ___No (skip to #27)

26. Where did you learn from to perform BSE? *(Check few or all the answers if necessary)*
    ___From a doctor
    ___From a nurse
    ___From friend, relative
    ___From brochure
    ___Other, specify_____

27. Do you perform breast self-examination?
    ___Yes
    ___No (skip to #30)

28. Are you currently practising breast self-examinations according to a <u>specific procedure</u>?
    ___ Yes
    ___ No

29. How often do you perform breast self-examination? (skip to 31)
    ___More often than once a month
    ___Every month
    ___Every 3 months
    ___Every 6 months
    ___Once a year
    ___Other, specify _____

30. Have you ever performed breast self-examination?
    ___Yes
    ___No (skip to # 33)

31. Why do/did you perform breast self-examinations?
    ___Recommended by Doctor
    ___Self-motivated own idea
    ___Had previous breast problem
    ___Other, specify _____

32. Are you confident in BSE performance?
    ___Very confident
    ___Confident
    ___Not confident
    ___Very inconfident
    ___Don't know

33. How often do you think a woman should perform breast self-examination?
    ___More often than once a month
    ___Every month
    ___Every 3 months
    ___Every 6 months
    ___Once a year
    ___Don't know
    ___Other, specify _____

34. At what time during a month should BSE be performed? *(Ask this only for those under 50)*
___Before menses
___After menses
___At any time
___Don't know

35. What do you think about the following statement: Regular BSE done by women help to reduce deaths from breast cancer
___Strongly disagree
___Disagree
___Agree
___Strongly agree

36. Do you feel uncomfortable touching your breast?
___Strongly disagree
___Disagree
___Agree
___Strongly agree

37. Have you ever heard about mammograms?
___Yes
___No (skip to #42)

38. Where from did you hear about mammograms? *(Check few or all the answers if necessary)*
___TV
___Radio
___Magazines, newspapers
___Doctor
___Friends, relatives
___Brochures
Other, specify_____

39. Have you ever done a mammogram?
___Yes
___No (skip to #41)

40. Why did you get a mammogram?
___Recommended by the doctor
___Self-motivated own idea
___Had previous breast problem
___Other, specify

41. Why didn't you get a mammogram?
___Not recommended
___Cost
___Not necessary
___Too young
___No transportation
___Inconvenient hours
___Other, specify: _____

42. How often have you seen a doctor in the past five years?
___Times

43. In the last five years, how many times have you had a breast examination by a doctor or other health care professional?
___Times
___Never

44. Are you aware of any breast cancer screening services *(if a woman had a mammogram, ask about any <u>other</u> services)* offered in health centers in the city?
    ___Yes
    ___No (skip to #46)

45. Please, specify t hem_____

46. What do you feel would have been a good way to inform you of such services?
    ___Television
    ___Radio
    ___Newspaper
    ___Pamphlets
    ___Other, specify _____

47. Would you like to receive training regarding the proper techniques of BSE performance?(*if training was already received, ask whether she would like to repeat or have an additional training*)
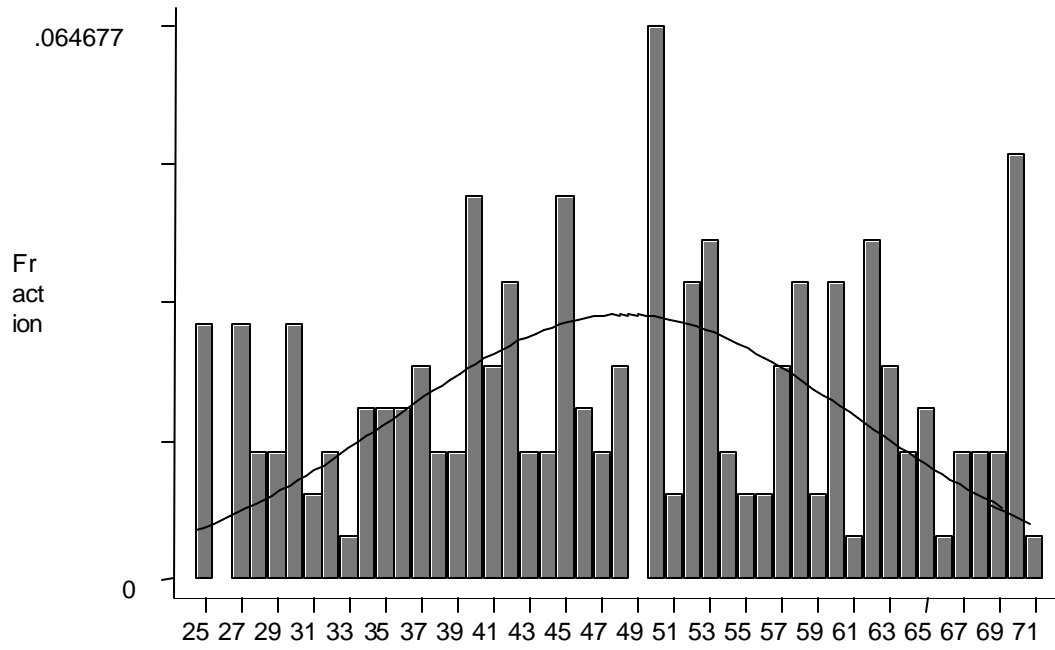   ___Yes
    ___No
    ___Don't know

48. Can you specify the reasons for not participating in such training?
    _____

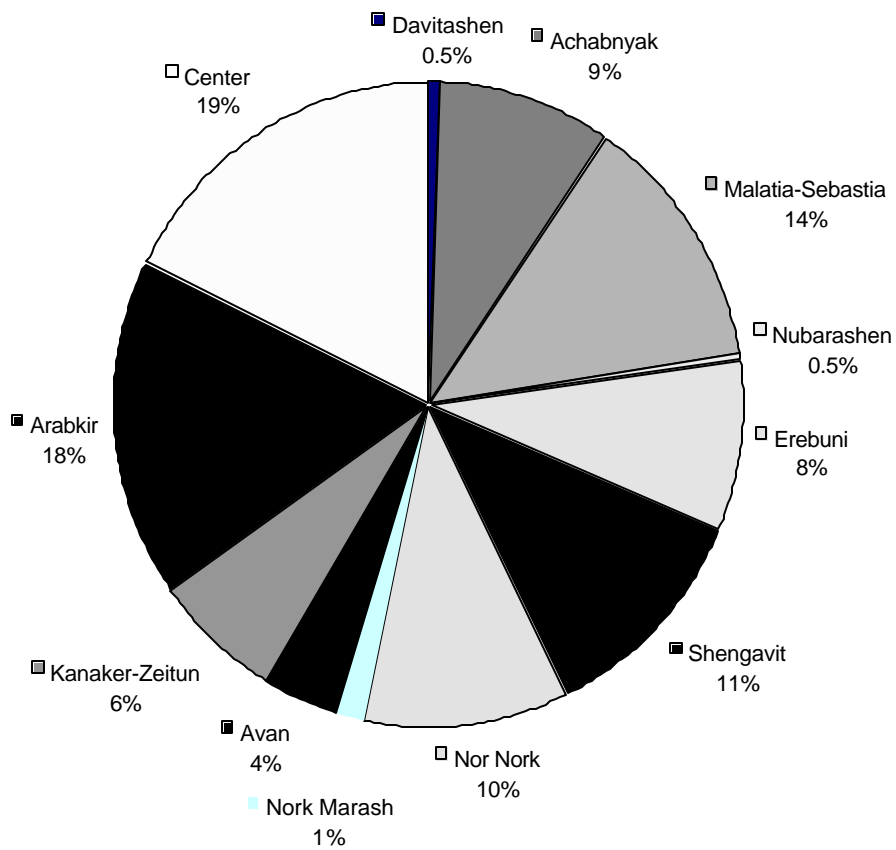49. Can you specify the way in which you would prefer to receive such training?

    _____

Thank you for your time. Your answers were very valuable for the investigation.

Graph 1. Age distribution of the surveyed women, Yerevan, 1999.

Graph 2. The % coverage of the different Yerevan districts in the sample of Yerevan women, 1999.

Davitashen
0.5%

Achabnyak
9%

Center
19%

Malatia-Sebastia
14%

Nubarashen
0.5%

Arabkir
18%

Erebuni
8%

Shengavit
11%

Kanaker-Zeitun
6%

Avan
4%

Nor Nork
10%

Nork Marash
1%

Graph 3. Income distribution in the surveyed women, Yerevan, 1999.