



Reasons for Non-appearance on Organized Cervical Screening in Hungary

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Abstract: *The occurrence of cervix cancer is outstandingly high in Zala County, which is situated in the Western Transdanubian region of Hungary. The aim of our study was to reveal why women do not take the opportunity offered by the state and what reasons there are for the non-attendance at screenings. A total of 1000 Hungarian women aged 15 to 60 years were included in the sample. The results of our study revealed that 13.8% of women participating in our research program have never been to a gynaecological cancer screening. Concerning this fact, the following groups deserve greater attention: 15-19 years old, those only with basic school qualifications, the unmarried and the unemployed. To improve our national mortality indexes, it is necessary to continue the cancer screenings in a well motivated target population. Achieving this in cervix cancer screening, there are available conception and infrastructure alike provided by the health administration. The weakness of the system is the low participation rate of the population.*

Keywords: awareness, cervical cancer, motivation, non-attendance, screening

Introduction

Our chosen field of research is related to gynaecological screenings, which are remarkably significant in terms of general health care and public health politics. Considering the frequency of cervical cancer, it is the second most typical malignant tumour among women in the world, in Europe it takes the first place, in developing countries it takes the third place. In Hungary there have been efforts made in order to improve cervical cancer screenings for about fifty years. Although, there has been a success to decrease mortality rates in developed countries, this positive

shift has not happened in Hungary yet. Every year nearly the same number of women, that is about 500, die of this gynaecological disease, thus in 2004, 439 women lost their lives, which is almost the same number (484 women) as it was 33 years ago, in 1971 (Antilla et al, 2009.a; Antilla et al, 2009.b; Central Statistical Office, 2008).

The age-related optional cervical screening was made possible by the number 51/1997. (XII. 18.) ministry order, which allowed women between the ages of 25 and 55 to attend a cervical screening annually, and for women between the ages of 55 and 65 to attend at screenings every second year. The screening procedure was defined by the legislator as “a gynaecological, oncological screening, with special consideration towards the screening of any cervix deformation”, and gynaecological surgeries were entitled to accomplish such screenings. These screenings were ratified into national health related, organized screenings by law from 24th July, 2003. The frequency of screening was changed from 1 year to 3 years, however, the procedure remained unvaried, i.e.: “starting from the first screening with negative results, the gynaecological, oncological cervical screening must be repeated every third year with special consideration towards the cytological study of any cervix deformation and the colposcopic study.” (Kovács et al, 2007; Kovács et, al 2008; National Audit Office, 2008). The most important objectives of the cross-sectional studies were as follows:

1. Socio-demographic factors were analysed, which influences the frequency of participation at cervical screening through female population in Zalaegerszeg County, Hungary.
2. The reasons for non-attendance on organized screenings.
3. Getting to know those who do attend screenings and becoming familiar with their motivational factors that influence them to participate in screenings.
4. Unveiling the cause and effect relations, which influence the appearance on screenings.
5. Our aim was to identify those devices that may be applied to increase the effectiveness of organized cervical screenings for the population, also offering solutions to decrease the differences in participation rates and the inequalities among the particular layers within the screened population so as to improve the overall participation rate.

Based on the results of our motivational research, our aim was to contribute to the general health and the health-economic researches and to the international comparative analyses.

Materials and methods

Participants

A descriptive, cross-sectional study design was used. The age-stratified representative sampling of 1000 women was based on Hungary's general distribution of 15-60 years old women. Our representative survey was carried out in Zalaegerszeg County, Hungary (Zalaegerszeg is located close to the Slovenian and Austrian borders, 220 km southwest of Budapest by

road). Eligible subjects were included if they (a) were aged 15–60 years, (b) lived in Zalaegerszeg and (c) at least 90% of all questions were answered relevantly. Those women who had any kind of qualifications related to health care (i.e. doctor, nurse, physiotherapy, midwife) were excluded.

Measurement tools

The instruments for this study were: social-demographic data, knowledge about the National Public Health Programme, gynecological screening examination, invitation letters and motivation scale. Our survey was helped by university students specialized in nursing and physiotherapy at the Faculty of Health Sciences at the University of Pécs. Participants were informed about the purpose and design of the study and it was also explained that participation meant to answer all questions individually, voluntarily and anonymously. Confidentiality of the responses was ensured through the use of coded numbers rather than the names of the participants.

The applied motivation assessment scale for our analysis contained 15 questions, which emphasized motivation, evaluation of reasons for non-appearance, along with the role of health-care personnel involved in the check-ups. Possible answers along the scale were defined by a five-item Likert scale ranging between 1=strongly agree and 5=strongly disagree choices. Questions with positive and negative statements were included along the scale (Lampeck & Kívés, 2012; Pakai & Kívés, 2013; Karamánné Pakai & Oláh, 2015).

Reliability and validity of Motivation Scale

The Principal Component Analysis method for the additional processing of our data was applied. The 9 statements of the questionnaire distributed into three factors each having an individual value higher than one. In this specific case MSA values (Measures of Sampling Adequacy) ranged between 0.54-0.87. The result of the KMO (Kaiser-Meyer-Olkin) and Bartlett tests within the Hungarian sample was 0.75 (adequate). The variance accounted for by the three components was 46.64%. Reliability is the degree of consistency with which a tool measures the construct it is supposed to measure. Common methods used to assess reliability are Cronbach's alpha and item-total scale correlation (Nunnally & Bernstein 1999). Cronbach's alpha, which represents the degree of internal consistency and homogeneity of the items, was 0.74 for this tool. According to Nunnally (1978), a newly developed tool must have a Cronbach's alpha of 0.70 or higher. Item-total correlation ranged from 0.31-0.57. Based on the primary component results of attitude towards cervical cancer, items of the three components were as following: 1. Reason for non-appearance depending on time and location, 2. Medical staff making the screening test 3. Motivation (Table 1). Table 1 summarizes factor loadings, eigenvalues, variance, and Cronbach's alpha for the subscales.

Table 1. Exploratory Factor Analysis with Factor Loadings for Each Item on the Attitudes Towards Cervical Cancer Screening in Motivation Scale (Varimax) After Reverse Coding

Factor	Items	Mean(SD)	Factor Loading	Eigenvalue	Accounts for what % proportion of variation	Cumulative explanatory power	Alfa Coefficient
1. factor Reason for non-appearance depending on time and location	I don't take part in the screening test because the date indicated on the invitation letter is not convenient for me and arranging a new appointment is too complicated.	3.99 (1.09)	0.763	1.953	21.700	21.700	0.7565
	I would take part in the screening test if this service was available after working time.	4.08 (0.96)	0.597	-	-	-	-
	I don't take part in the screening test because I'm not invited on exact time (hour, minute)	3.60 (1.08)	0.594	-	-	-	-
	I don't take part in the screening test at the expense of my freetime.	4.21 (0.81)	0.573	-	-	-	-
	I would take part in the screening test if the examination was done in my GP's consulting room.	4.17 (0.88)	0.530	-	-	-	-
2. factor Medical staff making the screening test	In case of choice I would choose a nurse or health visitor to execute my screening test.	3.60 (0.91)	0.659	1.071	11.895	33.594	0.6307
	I would prefer if the screening test was done by an assistant too (not only by gynaecologist).	4.14 (0.87)	0.661	-	-	-	-
3. factor Motivation	I would prefer if the health visitor, GP or nurse phoned me to arrange an appointment to the screening test.	3.22 (1.03)	0.748	1.030	11.446	45.040	0.6368
	I would prefer if the health visitor met me and gave me detailed information about the screening test.	2.88 (1.05)	0.635	-	-	-	-

Validity test has been taken with re-test method and results are evaluated by Pearson Correlation. Measured data are controlled through fifteen persons studying health organization at University of Pécs Faculty of Health Sciences. Re-test was made within twenty days by correlation method, which value (r) was 0.71-1 and it was appeared as close correlation. It would be an unexpected result, if the correlation coefficient of personal data was different with $p < 0.001$ significance level. Precision of query was confirmed by Pearson correlation test and find correlation could be found between questions, which have logical relationship.

Data analysis

Data analysis was completed with the help of the SPSS 17.0 statistical programme. Average, deviation, frequency, odds ratio were calculated with the application of a descriptive method and in cases of quantitative variables we calculated correlation. The Chi-square test was used to evaluate the connection of the categorical variables. The Cramer V contingency coefficient was applied to measure the strength of connections in cases of discrete variables. The non-normal distributional variables were analysed with the help of the Spearman correlation calculation. We relied on the Independent t test when calculating the difference between the averages of the two variables within the motivational question group. The concordance of deviation was checked with the help of Levene's test. If the deviation was concordant in the two groups ($p > 0.05$) then the results of the Independent t test were considered to be relevant. In cases of differing deviations ($p < 0.05$), the results of the Welch d test were taken into account. The oneway analysis of variance (ANOVA) was also used with more groups. In order to be able to evaluate validity, a varimax rotational (an angle of 90 degrees), main component factor analysis was accomplished. The definition of the Cronbach coefficient was used to check reliability (Pakai & Kívés, 2013).

Results

1000 out of the 1116 questionnaires were suitable for statistical treatment, which meant 90% of the motivational questionnaires. The average age of women involved in our survey was 37.72 years ($SD=12.59$). In terms of marital status, the married status is typical (50.7%). Single women have a high rate (25.9%) as well. The common-law marriage status is the most frequent in the age group of 20-39 years old women. The rate of the divorced was 9.3% and as expected the rate of the widows increased among the 50-59 years old women. When examining the educational background, it is noticeable that there is a high rate (56.8%) of those having a secondary grammar school or a technical school qualification. 11.6% of the women questioned have a vocational school certificate. The rate of those having a university degree is also significant (25.7%). The number of those women having only a primary school certificate is infinitesimal.

Information about the National Programme

The Hungarian National Programme pays special attention to both the prevention and the organization of screenings related to malignant tumours. Within the scope of this programme there have also been cervix screenings about which 84.1% of the questioned women heard in radio programmes (20.6%) or in different TV programmes (20.6%), and by reading newspapers (37.1%). It also deserves attention that slight information is given by medical personnel as 22.6% of the questioned

women heard about this Programme from their gynaecologist, 13.7% from a health service employee and 8.6% from their family doctor. Total gaps in knowledge occurred only in 7.8% and 6.6% of women confessed that they had heard something about the Programme, but they did not have any further information about it.

Appearance at gynecological screening examinations

Table 2 summarizes characteristics of the study participants. From the entire sample population 85.5% (N=855) participated in cytological screening at least once during their lives. Women having a vocational school certificate, women having a university degree, women between the ages of 30-59 (more than 90%), and the active workers have appeared on a gynaecological cancer screening at least once in their lives at a more significant percentage ($p < 0.05$). 13.8% of the responding women have stayed away from the gynaecological cancer screening so far. In this regard there is a greater attention on women between the ages of 15-19, women having only a primary school certificate, single women and women not having a labour relation (pensioners, students, women on maternity leave).

The frequency of the screening is observed by more than 90% among the women aged from 20 to 29 and from 40 to 49, by 82% among the women aged from 30 to 39, by 76.2% among the women aged from 15 to 19 and by 72.7% among the women aged from 50 to 59. Considering the marital status, women living in a common-law marriage or who are married or single tend to appear on a screening at a greater percentage within a 1 to 3 years of interval compared to divorced women (76.2%) and widows (78.9%). 14.3% of the divorced women attend less frequently than three years and 8.3% of them puts their gynaecologist's opinion forward. A high rate of appearance can be experienced among women having a university degree (86.1%) and having a school leaving certificate (84.5%). 69.4% of women having a primary school certificate appear on the screening within the appropriate interval, but 22.2% decide on their appearance based on their gynaecologist's advice. 74.8% of women having a vocational school certificate attend a screening at least annually, but 15.5% admitted to appear less frequently. The presence of an underage child in the family did not show a significant difference at any of the variables ($p > 0.05$).

Table 2 - Demographic and health characteristics of the study population, by history of Pap-test

Characteristics	Total (n/%)	Ever (n/%)	Never (n/%)	p-value
Ever had Pap-test				
yes	855 (85.5)	-	-	
no	138 (13.89)	-	-	-
missing	7 (0.7)			
Age				
15-19 years	92 (9.3)	43 (46.7)	49 (53.3)	
20-29 years	216 (21.8)	172 (79.6)	44 (20.4)	
30-39 years	241 (24.3)	227 (94.2)	14 (5.8)	p<0.05
40-49 years	198 (19.9)	187 (94.4)	11 (5.6)	
50-59 years	246 (24.8)	226 (91.9)	20 (8.1)	
Marital status				
married	505 (51)	472 (93.5)	33 (6.5)	
single	256 (25.8)	167 (65.2)	89 (34.8)	
life partner	83 (8.4)	79 (95.2)	4 (4.8)	p<0.05
divorced	92 (9.3)	86 (93.5)	6 (6.5)	
widowed	41 (4.1)	38 (92.7)	3 (7.3)	
Highest educational level attained				
elementary school	54 (5.4)	37 (68.5)	17 (31.5)	
vocational school	115 (11.6)	106 (92.2)	9 (7.8)	
high school graduation	566 (57.1)	472 (83.4)	94 (16.6)	p<0.05
diploma	256 (25.8)	239 (93.4)	17 (6.6)	
Residence				
town	692 (69.7)	602 (87.0)	90 (13)	
village	301 (30.3)	253 (84.1)	48 (15.9)	p>0.05

Organized screenings

Cervix screenings happen under organized circumstances and their efficiency can be tested based on the rate of the invited and the appeared women. From among those answering our questionnaire, only 24.5% received an invitation for cervical screening during the past three-year period (N=245). In the course of our study we also evaluated how strongly those women were motivated to appear on the examination who had actually received an invitation letter. Within our survey population only 18.8% appeared on the screening as a result of the letter; however it is reassuring that 60% would have requested an examination irrespectively of an invitation. Unfortunately, 20% of our respondents could not have been encouraged to attend a check-up, not even with an invitation letter. The issue was of purely theoretical significance in more than three-fourth of the sample group (73.6%), since they had not ever received an invitation at all, nevertheless it is again reassuring that they did actually participate on a screening in a 64% proportion during the year 2007.

Private gynaecologist

63.2% of the women who were questioned have a private gynaecologist, which means that they do not resort to this service under the scope of governmental support. After examining the connections, it can be stated that certain groups are more likely to choose a private gynaecologist at a greater percentage, namely these women are married (70.4%), living in a common-law relationship (75.9%), living in cities (67.3%), aged from 30 to 39 (76.9%), aged from 40 to 49 (73.5%), active workers (67.4%), and those who do "a lot" for their health (83%) and women having an underage child (70.8%). It must be emphasised that women having a private gynaecologist attend an annual screening at a more significant percentage (68.4%) ($p < 0.05$). 31.6% of women living in a village, 43.5% of those aged between 15 and 19, 48.9% of women belonging to the category of those who "do very little for their health", 50.4% of single women, 51.2% of widows do not resort to a private medical attendance.

Factors, which affecting the screen

8.2% of women believe that they do not want to go for the examination because the appointment determined in the letter is not appropriate for them and making another appointment would be too complicated. 12.4% of the questioned women is withheld from participation because they have a fear of not being called in to the screening at the exact time of given appointment. 17.7% of the women would only participate in the screening if appointments were available apart from the working hours. Only 3.2% would not sacrifice her leisure time in order to participate in a screening. On the whole, fear does not at all frighten away 81.5% of the questioned women. Fear is an uninteresting factor in 6.8% of the cases, however, because of it 11.1% of the members of the sample stay away from screenings. From among the women filling out our questionnaire 27.5% the collection of the swab is uncomfortable. 17.5% feel ashamed in case of gynaecological screenings. In this respect an important connection may be established depending on age ($r = 0.151$, $p < 0.001$). Women above 50 feel a greater sense of shyness as compared to younger generations. If in the future, assistants were also allowed to perform screenings in addition to physicians, 79% of women would not trust the assistant. Options vary in case of the question about the district nurse visiting and giving information related to screenings. More than one third (34.1%) of the women would be disturbed by the district nurse's visit, another third is not interested whether she would be or would not be visited by the district nurse, and 29.3% expressed that she would welcome such an initiative. 47% of the layman group motivates others to go to the screenings. 38.6% of the questioned women considers that they do not force the collective appearance neither in their closer nor their wider neighbourhood. The question, would you like to participate in a screening at your workplace, split the sample into three parts. One third (32.5%) would be embarrassed, one third (33.1%) would not assign any importance to the location and one third (32.6%) would like to participate in such an organized screening.

Factors influencing participation on screenings

The mean of “Reason for non-appearance depending on time and location” component shows significant differences in terms of age, school qualification and frequency of taking part in screening tests ($p < 0.05$). Significantly higher score was obtained and favourable behavior was detected in the 20-49 age group, among women with degree or certificate of final examination in secondary school or industrial school, and among those who appear on preventive screening tests yearly. These women take part in screening tests on the debit of their freetime and despite the long waiting time and unpunctual incall. Women in 15-19 and 50-59 age groups, and those who had never taken part in screening test in their life as well as those who appear on gynaecological screening tests less frequently than 3 years obtained lower score. To the questions related to the date of screening tests they gave most frequently the answer „it doesn't matter', which shows a kind of uninterested behaviour according to our supposition.

The second component focuses on the medical staff making the screening tests. Analysing the mean of „The medical staff making the screening tests” component we found significant differences in terms of age and frequency of taking part in screening tests ($p < 0.05$). According to the mean scores of all variables unexpectedly the respondents showed uninterested attitude to the medical staff making the screening tests, in other words it is indifferent to them who makes the examinations (doctor or nurse).

In the mean of “Motivation factors” component related to the examined variables we found significant difference only in term of age ($p < 0.05$). Considering the way of informing about the screening test (personally or by invitation letter) respondents prefer notification in letter apart from the age group and the type of settlement. While the younger age group and women who have taken part in screening test at least once in their life do not care if medical staff visits them for a personal consultation whereas the older age group and women who do not appear on screening tests feel that personal invitation to gynaecological screening test would be disturbing (Table 3).

Table 3 - Average value of factor points is analysed by ANOVA

Variable	Attributum	1. factor Reason for non- appearance depending on time and location		2. factor Medical staff making the screening test		3. factor Motivation	
		mean	SD	mean	SD	mean	SD
		Age	15-19 years	18.49	3.35	7.18	1.52
	20-29 years	20.29	3.58	7.65	1.61	6.24	1.72
	30-39 years	20.54	3.65	7.92	1.47	6.05	1.92
	40-49 years	20.12	3.65	7.88	1.58	5.87	1.79
	50-59 years	18.28	4.15	7.35	1.78	5.79	1.82
	ANOVA	16.06***		6.96***		3.69**	
Educational Level	elementary school	18.20	3.72	7.55	1.31	6.29	1.84
	vocational school	19.42	3.96	7.41	1.76	5.77	1.95
	high school graduation	19.57	3.71	7.70	1.59	6.10	1.79
	diploma	20.31	4.04	7.67	1.70	5.95	1.79
	ANOVA	5.41**		1.07 ^{ns}		1.65 ^{ns}	
The frequency of appearance in cancer screening	1-3 years	20.38	3.70	7.79	1.58	6.09	1.75
	less than 3 years	16.93	3.85	6.86	1.86	5.60	1.93
	as recommended by the gynaecologist	19.67	3.47	7.46	1.76	6.06	2.22
	other	20.0	3.30	7.33	1.88	6.0	2.07
	ANOVA	20.187***		8.11***		1.33 ^{ns}	

Scale values: 1: strongly agree, 2: agree, 3: unsure, 4: disagree, 5: strongly disagree
 $*p < 0.05$, $**p < 0.01$, $***p < 0.001$, $ns = \text{non significant}$

Discussion

In Hungary, the given research is the first which examined the motivational appearance on screenings in a direct way among women. In similar researches authors have only concerned the frequency of consulting the doctor (Kopp et al., 2006; Pálfiné et al., 2009). Our research allowed us to introspect into the appearance of women on screenings and their attitude towards the screening. Although, the more detailed clarification is not an epidemiological problem, but rather belongs to other fields researching motivation, including special fields such as sociology, behaviour and social sciences.

After having reviewed the theoretical technical literature, it can be assessed that the introduction of the organized cervical cancer screenings in the 1960s led to a notable decrease in mortality in European countries, however, the organisation of the screening programmes is different in every country (Gakidou et al., 2008). Unfortunately, the efforts made in Hungary in the last decades do not reflect in the mortality rates: 500 women lose their lives because of cervical cancer annually. At present the screening is completed on the basis of the National Public Health programme and is organized with personal invitation. Regrettably, the programme, which was launched in September, 2003, shows an unfavourable picture. About 2 million invitational letters were posted from September, 2003 to September, 2006, however, barely 96.000 women,

which is about 5% of the invited women, appeared on a screening. On the grounds of the regional data the appearance provided significant deviations (2.26-18.26%) in the counties (Kovács et al., 2007). In our observed population sample the appearance on cervical screenings is not that low as it is shown by the national screening coordinational data. According to our results, although not annually but 69.4% of the observed sample appeared on a gynaecological consultation within a 3-year period. Unfortunately, 13.8% has not appeared at all.

The women filling in the questionnaire decide with difficulty to appear on a screening because of fear, the harm of their intimacy, the experience or the assumption of an unpleasant examination and the long waiting period. The majority of women participate in the screenings as they feel responsible for their own status of health. If the reports are only treated mechanically then it is clear, that 24.5% of the observed population received a notice and only 18.8% of this group appeared. It is worth considering the differences in choosing the location of the screening, more precisely the forms of institutional attendances that are given a priority. One third of the sample (306 people), turn to their private doctor even in case of a preventive routine medical examination. There is a large-scale rejection against smear taking at the family doctor's surgery.

Conclusion

In the results it can be assessed, that the motivated and continuous completion of cancer screenings is still necessary to provide further improvement of the Hungarian mortality rates. Based on social-demographic data, it can be pointed out that women stay away from cervical screenings who are in the ages of 15 to 19, are single, having a primary school qualification and not having a labour relation.

On the whole, the screening of the population can only be effective if the population itself has a demand for the screening. There are several crucial steps that can be taken to increase the participation rate: spreading a wider range of knowledge, introducing the risk factors, relegating the fear of cancer screenings, refuting misconceptions (cancer is still considered to be an incurable disease among inexpert women) and motivating women (they should accept the invitation for the free screening). All women must be made aware of the process, the possible benefits and risks and the incidental side-effects of the screening, as well as identifying the risks that may appear if the participation is neglected. It is inevitable to establish the responsible health attitude systematically. It must be started at an early stage of life (at school) with the enlargement of knowledge about health prevention.

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References

- Antilla, A., von Karsa, L., Aasmaa, A., Fender, M., Patnick, J., Rebolj, M., Nicula, F., Vass, L., Valerianova, Z., Voti, L., Sauvaget, C., & Ronco, G. (2009.a). Cervical cancer screening policies and coverage in Europe. *European Journal of Cancer*, 45 (15), 2649-2658.
- Antilla, A., & Ronco, G. (2009.b.). Working Group On The Registration and Monitoring of Cervical Cancer Screening Programmes in the European Union; within the European Network for Information on Cancer (EUNICE). Description of the national situation of cervical cancer screening in the member states of the European Union. *European Journal of Cancer*, 45 (15), 2685-2708.
- Gakidou, E., Nordhagen, S., & Obermeyer, Z. (2008). Coverage of Cervical Cancer Screening in 57 Countries: Low Average Levels and Large Inequalities. *PLoS Medicine*, 5 (6), 863-868.
- Karamánné Pakai, A., & Oláh, A. (2015). A theoretical overview of scientific research. In Ács, P. (Ed.), *Data analysis in practice* (pp. 11-34). Pécs: University of Pécs, Faculty of Health Sciences.
- Kopp, M., & Kovács, M.E.(ed) (2006). *A magyar népesség életminősége az ezredfordulón*. Budapest: Semmelweis.
- Kovács, A., Döbrössy, L., Budai, A., Boncz, I., & Cornides, A. (2007). The state of the organized cervical screening programme in Hungary in 2006. *Orvosi Hetilap*, 148 (12), 535-540.
- Kovács, A., Döbrössy, L., Budai, A., Boncz, I., & Cornides, Á. (2008). Cervical screening in Hungary: why does the „English model” work but the „Hungarian model” does not? *European Journal of Gynaecological Oncology*, 29 (1), 5-9.
- Karamán Pakai, A., Németh, K., Dér, A., Kriszbacher, I., Mák, E., Mészáros, L., Lampek, K., Oláh, A., & Balázs, P. (2008). Investigating the reasons why Hungarian women avoid organized screening for cervical cancer. *Bulletin of Medical Sciences*, 81 (4) 271-274.
- National Audit Office (2008). *Jelentés az egyes onkológiai szűrési programokra fordított pénzeszközök hasznosulásának ellenőrzéséről*. Budapest: Állami Számvevőszék.
- Nunnally, J. & Bernstein, I. (1999). *Psychometric Theory*. New York: McGraw-Hill.
- Nunnally, J. (1978). *Psychometric Theory*. New York: McGraw-Hill.
- Pakai, A., Dér, A., Kriszbacher, I., Németh, K., Zsigmond, E., & Balázs, P. (2010). Why don't Hungarian women take part in organized cervical screening? *New Medicine*, 1 (14), 27-30.

- Pakai, A. (2011). *A méhnyakrák szűrésen való megjelenés motivációjának a vizsgálata*. [PhD Thesis]. Budapest: Semmelweis Egyetem.
- Pakai A., & Kívés Zs. (2013). Kutatásról ápolóknak. Mintavétel és adatgyűjtési módszerek az egészségtudományi kutatásokban. *Nővér*, 26 (3), 20-43.
- Pálfiné Szabó, I., Teknős, M., Oláh, A., Németh, K., & Betlehem, J. (2009). Egészség határok nélkül. *Nővér*, 22 (1), 13-23.
- Sándor, J., Brantmüller, É., Bödecs, T., Bálint, L., Szücs, M., & Péntek, E. (2008). The introduction of call-recall method into national cancer screening program organization and the social gradient of participation. *Studia Sociologia*, 1 (2), 39-62.