Attitudinal and Behavioral Patterns, Socio-Demographical Characteristics of Risk for Cervical Cancer

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PAP is an efficient method to diagnose cervical cancer in its early stages; in our sample only 17.9% of women received in the last two years.

Abstract

Objectives: *Identification of the characteristics and attitudinal-behavioral barriers in compliance with the routine gynecological examination and Babes-Papanicolau test (PAP) recommendations.*
Methods: *961 women and 941 men that were randomly selected from 8 cities. From the survey questionnaire that covered the concept of sexual-reproductive health we evaluated 2 items (for the whole sample) and 2 specific items dedicated to the women. Pearson Chi square test, binary logistic regression, latent class cluster analysis and classification tree analysis were used.*
Results: *Over one-fourth of the sample considered gynecological examination necessary only in sickness and unnecessary in early ages, only 17.9% have received a PAP test; the proportion of women aged over 44 years with a low visit rate to gynecologist was significantly higher. Statistical modeling revealed that the high-risk women have a lower income and educational level and are aged under 24 and over 50.*
Conclusions: *We give notice about the under-representation of women included in the optimal standard of gynecological healthcare..*
Keywords: *Cervical cancer, PAP test, screening, social disparities*

Introduction

The second most frequent type of feminine cancer worldwide is the cervical cancer, with about 500,000 new cases and 250,000 deaths each year, almost 80% of cases occurring in low income countries[(1)].

Taking into account women and man from Columbia and Spain, two countries with very different patterns of sex-life, the risk of cervix cancer was higher for Columbia, than for Spain. Columbia is a country, with monogamous women (70%) but with many men that declare having over 20 sexual partners (55%). In contrast, Spain is a country, with mostly monogamous women (90%) but only 20% of the men declare having 20 or more sexual partners. The first sexual intercourse at ages younger than 17 was 68% in the Columbian men, and only 24% in the men from Spain 24% of men. The correspondent respective figures for women were 26%, in Columbia, and only 6%, in Spain[(2)].

Contamination with oncogenic strains of HPV is in 95% of the cases, related to cancer. The discovery of the anti-HPV vaccine was an important moment for the primary prophylaxis of cervical cancer. The immunization campaign started in Romania in November 2008, with girls of fourth grade (an average of 11 years old) but a lot of parents refused vaccination for their girls. The real efficacy of the vaccination and the level of secondary effects will be known only after 30 years from the vaccination.

The vaccine is not active against all oncogenic strains, so vaccination has to be combined with regular Papanicolau (PAP) test, as a method of pre-cancerous lesions screening. The American Cancer Society (ACS) recommends that women who are sexually active or who have reached the age of 18 should have an annual PAP test. Other associations and specialists appreciate that all women aged between 20-65 years should regularly be included in screening. First, the test must be taken once a year. After two normal consecutive results, women should be tested once in three years[(3)].

Some authors recommend annual testing from the sex-life debut or from 18-21 years. In relation with the presence of other risk factors and with the normality of the test, it should be repeated every 2 or 3 years[(4,5)].

In Romania, the incidence of cervical cancer was in 2004 of 3,761 cases (33.88/100,000 women) and there were 1,800 deaths in the 45-54 years age-segment, representing 16.93/100,000 women. Cervical cancer is the second cause of mortality by cancer in women and the first cause of death for women between 25 and 44 years[4]. The mortality rate is 6.3 times higher than the average in EU countries, similar with that from underdeveloped countries. The high mortality rate, caused by cervical cancer, is due to the late diagnosed of the disease, which is generally discovered in the stage of invasive cancer. More alarming, in the last 18 years the rate is in a continuous growth, in contrast with other countries, like UK[6].

In 2005 the incidence in Romania was almost 30/100,000 inhabitants. In 2002, the mortality by this disease was 15.6/100,000 inhabitants, but in 2005 increased at over 16/100,000. Unfortunately, the lowering of the efficiency of early detection was due to the abandonment, at some moment, of the screening program[7].

The prevention of cervical cancer has two major action levels: vaccination and screening. The percent of curing cervical cancer in the first stage of the disease rises up to almost 85-90% of the patients, but in the last (fourth) stage, it's only of 5-15%. The mortality risk for unscreened population can be 10 times higher[8,9,10].

Studies performed on women diagnosed with cancer revealed that most of them have never had PAP testing or have had it more than 4 years before[11].

American Cancer Society states that 60-80% of the women newly diagnosed with invasive cervical cancer haven't received the PAP test in the last 5 years preceding the diagnosis and many of them have never had the PAP test[12].

Methods

Without national representativeness, this study included subjects from all historical, socio-economical and cultural areas of the Romania. The stratification of the sample was made taking into account the zone coverage for the seven historical geographical Romanian regions: Muntenia, Oltenia, Banat, Maramures, Moldova, Dobrogea, Transylvania and, considered separately, Bucharest. From each region, we selected a town, economically and culturally representative. A sample of 1902 subjects (961 women and 941 men) was randomly selected from Ploiesti, Craiova, Timisoara, Baia Mare, Iasi, Constanta and Bucharest. From the 8 towns, have been randomly extracted equal samples with homogeneous distribution by gender, demographic age groups, aged between 15-82 years, instructive-educative level (low, medium, high). A 105 items questionnaire was used, with 15 specific items for women, designed to cover the concept of sexual reproductive health as defined by World Health Organization (WHO)[13,14].

In the present study we refer to 4 items. As partner, husband, father, male significantly contributes to women's adopting correct attitudes towards: gynecological exam, PAP test, sex-sexuality-gender themes. In this context we analyzed two items in both men and women. One was: "In your opinion, do you consider the gynecological examination necessary?" with the response options:

1. Only if you are sick,
2. Not if you are young,
3. Yes, almost every year.

The other question was formulated as follows: "To what extent did you discuss with parents about these topics: sexual abstinence before marriage, cycle-pollution, how pregnancy occurs, pregnancy prevention, abortion, STDs and any sexual problem?" with three answering choices:

1. Not at all,
2. Just a little bit,
3. A lot.

The other two items were specific for women as follows. The women were asked to answer questions regarding their last routine gynecological examination and their last PAP-test and, if they hadn't received the test during the last 2 years respondents had to motivate why they didn't attend a doctor for those two investigations with the following response options:

1. I haven't heard about this test,
2. The doctor didn't recommend it,
3. I'm healthy, I have no gynecological problems,
4. I neglected,
5. I was embarrassed,
6. I don't have a partner, I'm not sexually active,
7. Another reason (2007 was the reference-year and „the last two years" was the period between August 2005 and May 2007).

Cervical cancer onset is possible at any age, but most cases are at age 35-65 years, when problems related with menopause occur. Knowing that cervical cancer is the first mortality cause for Romanian women having 24-44 years, we built our analysis on women who started sex life (88.2%), divided in 2 categories: before 44 (552 women) and after 44 years (296 women), and named fertile/infertile, as they are considered in demographical studies (not from a biological point of view).

We wanted to identify the characteristics of women with a low presentation to the doctor for PAP test screening.. For this purpose we employed 3 statistical methods: binary logistic regression, latent class cluster analysis and classification tree analysis using the SPSS statistical package (SPSS Inc.) and Latent Gold (Statistical Innovation Inc.)[15,16,17,18]. In the analyzed models, we considered as dependent variable the personal history of PAP testing (if the respective person has ever received or not a PAP test), and as independent variables (factors): information sources, income level, educational level, abortion history and age group.

The study focuses on socio-cultural factors involved in cervical cancer prevention.

Results

1. Attitudes towards gynecological examination and communication with parents in matters of sex

In the whole sample (941 men and 961 women): 20.5% considered this examination necessary only if

Table 1 Perception of the gynecological examination necessity - distributions by gender

Gender	Gynecological examination necessity			Total
	Only when you are unhealthy	No if you are young	Yes, almost every year	
Feminine	37.3	41.2	55.1	50.5
Masculine	62.7	58.8	44.9	49.5
Total	100	100	100	100

(Pearson Chi-Square = 45,64, df = 4, p <0,001)

you are unhealthy, 6.9% believed that it is useless if you are young, and the rest considered that a gynecological examination is necessary every year. Here are, more than one-fourth of the sample have a prevention-oriented behavior.

Also, women, who have not started sex-life, did not consider necessary to visit a gynecologist. The Pearson χ2 statistical test indicated a significant difference by gender in assessing the need of a gynecological examination (p<0.001). Men have the tendency to consider that a visit to a gynecologist is only necessary if you are unhealthy and unnecessary in youth (table 1).

Evaluation of responses to the item regarding parents' openness for communication on matters of sex showed that more than 75% of respondents have discussed with their parents "not at all" or "a little" about family planning, STDs, abortion and other issues of sexual reproductive health. We must notice that in all these issues the parent-child communication was statistically significantly weaker in men (p<0.001). The extent to which the women discussed "a lot" with their parents about these issues was twice as great.

2. Routine gynecological examination, Babes-Papanicolau test (PAP)

Routine gynecological examination. Between 2005 and 2007, 49.1% of sexually active women had a routine gynecological examination. 11.9% had that examination in the last 3-5 years, previous to our inquiry and 27.9% of them reported they never had it. In most cases, the gynecological examination was received with the following occasions: pregnancy evaluation, oral contraception advice, placing an intra-uterine device, health problems. Most of the women aged under 44, who never visited the gynecologist, were between 15-24 years, at the beginning of their sex life. Pearson χ2 test indicated significant differences when was taken in account the age distribution of women (after/before 44) in relation with the year of their last gynecological examination (p<0.001). The majority of the women having over 11 years since the last gynecological examination (at least three-fourth of the total) were over 44 years (table 2).

Babes-Papanicolau test (PAP). The PAP test has been received, in the last two years, only by 17.9% of the women. 67% of the persons, who already started sexual life, have never had this test. The distribution of the time interval since the last screening by age groups (before or after 44), was statistically significant different (p<0.001). Among all women who had PAP test in the last 2 years, only 23.8% were over 44 years. The situation was not better for women under 44, as it can be observed in table 3.

The main reason for not having PAP test was the lack of medical recommendation (23.81%). Some of women considered that they were not needed to receive the test, because they were healthy (19.4%) or not sexually active (7.65%). 15.3% of the women did not even know about the existence of this test.

3. Identification of the women with a low degree of compliance regarding PAP test - statistical models

3.1. Binary logistic regression model indicated that attitude towards PAP can be statistically explained by

Table 2 Time period since the last gynecological control by age groups

Time period since the last gynecological control	% from fertile/infertile ages	
	Up to 44 years	Over 44 years
Last 2 years (august 2005–may 2007)	76.0	24.0
3-5 years	60.4	39.6
6-10 years	41.1	58.9
over 11 years	21.1	78.9
Never	60.8	39.2
Total	65.1	34.9

(Pearson Chi-Square = 69,93, df = 4, p <0,001)

Table 3 Variability of the time interval since last PAP test by age groups

Time interval since the last PAP test	% from fertile/infertile ages	
	Up to 44 years (fertile)	Over 44 years (infertile)
Last 2 years (august 2004 - may 2006)	76.2	23.8
3-5 years	55.1	44.9
6-10 years	37.2	62.8
Over 11 years	10.0	90.0
Never	66.7	33.3
Total	65.1	34.9

(Pearson Chi-Square = 47,61, df = 4, p <0,001)

the contribution of the independent factors mentioned in the „methodology" subchapter. The equation of the suggested model was:

Ln (odds (PAPTEST)) = B0 + B1 x INFORMATION + B2 x INCOME + B3 x ABORTION + B4 x EDUCATION

Where the variables in model are the binary independent PAPTEST (The PAP test history) with the possible values: Yes and No, INFORMATION (The information sources quality regarding sexual health) with three values (categories): Reliable, Fair and Unreliable, INCOME (The income level) with three categories: Low, Medium and High, ABORTION (The abortion history) with two values: Yes and No and EDUCATION (The education level) with three ordered categories: Low, Medium and High.

The logistic model coefficients B indicated the significant factors that can influence the chance of receiving a PAP test (table 4). We could notice from the table, looking to the exp (B) values, that the odds of the woman to receive PAP test are increased by a factor of 1.632 (the 95% confidence interval [1.134; 2.348]), by being a women informed from reliable sources (medical staff, scientific publications), rather than the women informed from unreliable sources (relatives, friends). The model also indicated an increase by a factor of 1.477 of the odds to receive a PAP test by being a woman with abortions history rather than a woman that never had an abortion. The odds of receiving a PAP test are increased by a factor of 1.922 by being at a high level of education, rather than at low a level of education.

3.2. Cluster analysis in latent classes model indicated that the most adequate model was the one with 3 clusters (BIC=834.16, p=0.25). The first two clusters (segments) were characterized by low probabilities to receive a PAP test (0.23 for the first cluster and 0.02 for the second one). In the third cluster, including approximately 25% of the respondents, the members were more likely (0.75) to have received a PAP test. This cluster was characteristic for persons with medium or high income and with a high level of education. Classification in latent classes showed that women with low PAP test screening compliance were aged 15-24 or were over 50 years.

3.3. Classification tree analysis model confirmed again the previous logistic model of the behavior patterns of the women regarding PAP test screening (fi-

Table 4 The B coefficients and odds ratios Exp (B) of the binary logistic model

Variables	B	Standard Error	Wald	df	p	Exp(B)	95,0% C.I.for EXP(B)	
							Lower	Upper
INFORMATION			7.042	2	0.030			
INFORMATION (1) - Fair	0.459	0.691	0.442	1	0.506	1.583	0.409	6.127
INFORMATION (2) - Reliable	0.490	0.186	6.942	1	**0.008**	**1.632**	**1.134**	**2.348**
INCOME			3.997	2	0.136			
INCOME (1) - Medium	0.306	0.239	1.649	1	0.199	1.358	0.851	2.168
INCOME (2) - High	1.147	0.702	2.673	1	0.102	3.150	0.796	12.467
ABORTION (1) - Yes	0.390	0.184	4.495	1	**0.034**	**1.477**	**1.030**	**2.120**
EDUCATION			5.687	2	0.058			
EDUCATION (1) - Medium	0.365	0.273	1.784	1	0.182	1.441	0.843	2.461
EDUCATION (2) - High	0.653	0.281	5.390	1	**0.020**	**1.922**	**1.107**	**3.335**

gure 1). The high risk persons not to receive a PAP test were identified by the classification (segmentation) in the terminal node 7, where 91% of women never have had PAP test. Persons with high risk were characterized by the fact that they were relying on not trustworthy, unreliable information resources, that have never had an abortion and had a medium or low level of education. We could also notice, from the right branch of the classification tree, that chance for a person, even if well (reliable) informed, to have received a PAP test was higher, if the income was medium or high.

Discussions - Conclusions

The results reveal an under-representation of women included in the optimal standard of gynecological healthcare, focused on the discovery of the early onset of cervical cancer. This study reveals the socio-cultural impact on genital affections' prevention behavior.

1. The fact that more than one-fourth of the sample considered gynecological examination necessary only in sickness or unnecessary in youth, demands actions guiding towards a preventive behavior. Considering that this type of answers was 1.61 more frequent among men, we concluded that men should also be educated and informed about the role and the necessity of the gynecological examination. They, in case of a family for example, could help encouraging the maintaining of an acceptable regular gynecological examination control for the females in the family (wife, daughter etc.).

2. Parents have a critical role in the sexual-reproductive health education. Studies show that the opening of communication with parents, especially with mothers on sex-sexuality-gender theme, encourages an attitude towards preventive behavior and increases the chances as women to visit a physician for PAP-testing[19]. The girlfriend, wife or teenage daughter, may be influenced by their boyfriend, husband or father on the attitude towards the usefulness of preventive gynecological examination.

The fact that most men and women had a low communication on sexual reproductive health, even though the women still have communicated with their parents more than men, shows that it is necessary to increase the availability of parents for communication on sex-sexuality-gender theme. In such manner the girls, the future women, would not be embarrassed to visit the gynecologist. Furthermore, children's continuous learning on sexual reproductive health and communication with less informed parents could be beneficial for mothers and fathers health care education.

3. It is alarming that over half of sexually active women have had their last PAP test in previous period ranging from 3 up to over 11 years, that they had no routine gynecological examination and that most of them, who had it, this was with the occasion of a child birth event, of birth prevention methods fitting or due to genital symptoms. It also alarming that almost three-fourth of the women who already started sexual life has never had a PAP test.

A synthesis article finds that having a higher income predicts a more compliant screening behavior. Studies show that rates of cervical cancer increase with socioeconomic deprivation and that the incidence of invasive cancer is higher in low-income classes[20,21]. Among the elderly persons the screening compliance is lower and they are more likely to be diagnosed in advanced disease stages[22,23].

In most countries, the identified barriers in the way of genitourinary cancer screening were: low educational and economic status, minority status, lonely person status, advanced age, lack of screening knowledge, absence of doctor recommendation, difficult access to the health system, negligence, embarrassment, anxiety and costs[9,19].

All the three analysis methods used, confirmed that information sources, income and education are the main factors influencing the attitude of women towards PAP testing. Women with positive attitude use authorized information sources (doctors, medical magazines) and have a high level of income and education. The fact that a woman, that has a medical abortion history, has an increased probability to have a PAP, test could be explained the usual gynecologists' procedure to recommend the PAP test to the women that have an abortion. The subject is worthy to be explored in a different context especially that after 1989 in Romania exist the possibility to use legally modern methods of contraception.

4. Given that embarrassment and anxiety were named by women as reasons for not visiting the gynecologist, is necessary to improve the patient-physician relationship and the communication with the gynecologist and the family doctor. Attitudinal pattern policy of physician-patient connection is quite different, and so, some of them, more watchful, more empathic are preferred. The gynecologist's gender seems to be quite significant, women rather preferring to have a women-specialist, aspect to be improved through education[24,25].

The association of the women-doctors with the high rates of attendance in cervical cancer (PAP test) and breast cancer (mammography, breast ultrasound) screening could be an issue worthy to be exploited.

5. The economic benefits of cancer prevention are well known worldwide, both through actual studies and by statistical modeling projections[26,27].

At least, from a financial standpoint nationwide screening is less expensive than the costs involved in treating cancer. If this nationwide screening involves costs difficult to cover, a solution could be the screening on some target populations. National public health programs should be adapted to the specific socio-demographic characteristics of the population at risk. But the biggest benefit of screening is the lives saving of many women with positive effects both in micro level (family, friends etc.) and macro level (labor force, the population reproduction, and so on).

6. The information campaigns, oriented towards preventive behavior, should be consistent and should

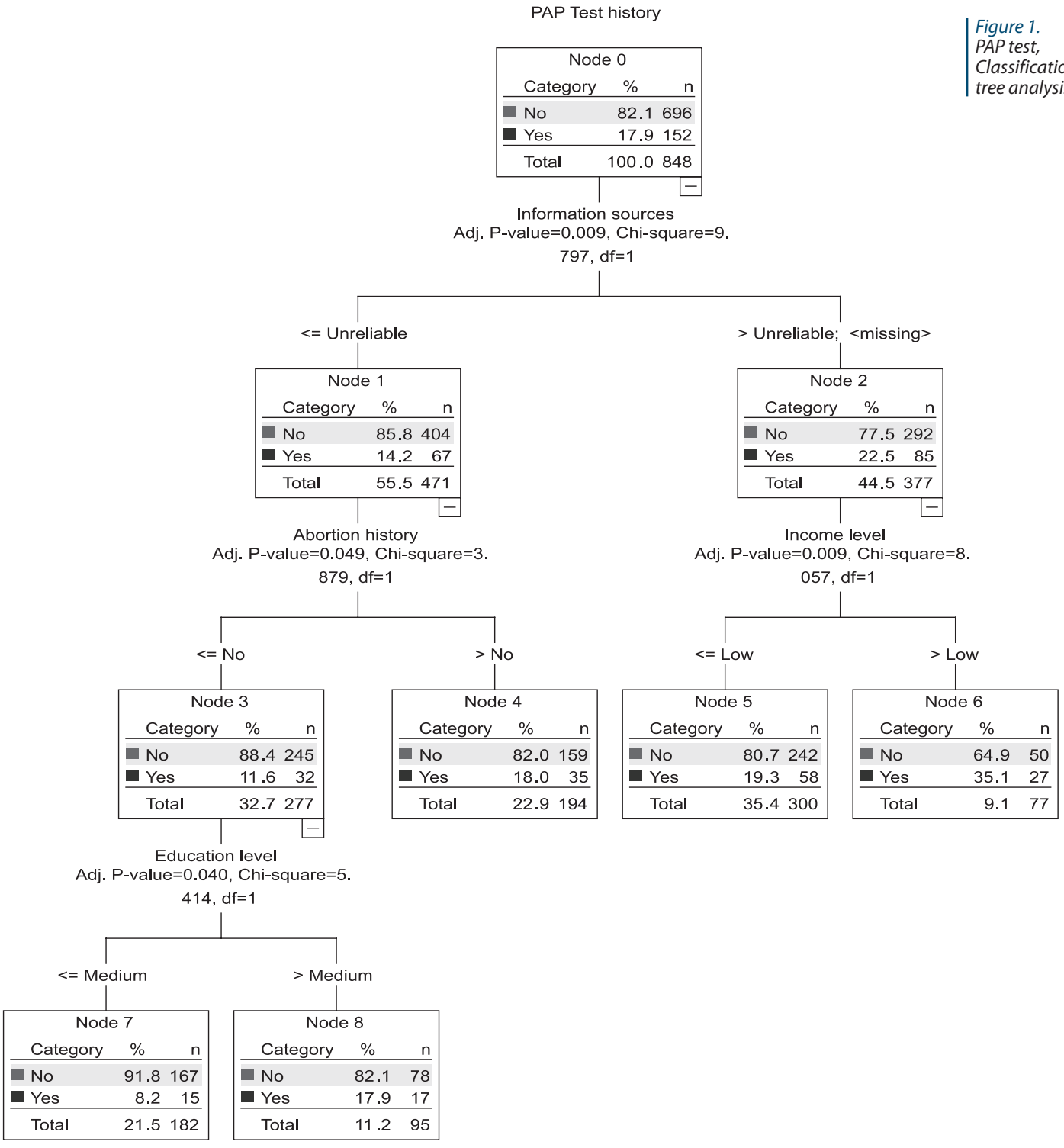

Figure 1.
PAP test, Classification tree analysis

provide guarantees, that the information about the benefits of routine gynecological examination and PAP test is received mainly by the population with no knowledge or motivation. Encouraging the women at risk, who never have had a PAP test or had the PAP test within the past 3 years, may be a way to reduce the incidence of cervical cancer, but especially to reduce mortality due to the late presentation in advanced stages the disease.

Given that our sample has only 961 women, and that it is selected from urban area, we can say without mistake, that the proportion of the women that had no PAP test in the last 2-3 years could be greater, particularly in rural areas.

It is clear that these issues go beyond medical concerns. Indeed, one of the most significant achievements in the last decade was the recognition and confirmation of the social, economic and political complex influencing people's vulnerability to sexual diseases. In the light of such understanding, it is obvious that the efforts to change individual or groups' behaviors are unlikely to be successful in improving sexual health if we continue to remain isolated. We mostly refer to the forms of exclusion and inequity - particularly poverty, gender discrimination, uneven access to education and health care, and also the lack of political resonances.

By identifying the profile of Romanian women with a low compliance, the routine gynecological examination and PAP test we have achieved the objective of this article. But we still remain, like other authors, with a sense of frustration[28].

Although, almost all studies find that unsteadiness of instructive education, lack of information, incorrect attitudes and beliefs are risk factors for cervical cancer (and other types of cancer), still actions to address these disparities are very undersized. It turns out that the efforts of those who write and present papers at conferences on this issue are insufficient, as the information reaches in small extent to the target audience at risk. Under these circumstances, becomes very important to support all multidisciplinary efforts within national public-health policies, because otherwise it all remains on an ascertainment and narrative state.

Key points

As an efficient method to diagnose the cervical cancer in its early stages, the regular screening by PAP test was used by only in last two years 17.9% of the women from our study.

Since the positive healthy attitude towards screening is negatively correlated with the level of education and income and may be associated with the ages under 25 years and over 50, special methods of education must be applied targeting exactly the these women groups. ■

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