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PREVENTION OF FEMALE REPRODUCTIVE SYSTEM CANCER AMONG RURAL AND URBAN POLISH PREGNANT WOMEN

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Abstract: Based on data obtained from the system MoZMaD – PL (Polish Mother and Child Health Monitoring System; an equivalent of the American system PRAMS (Pregnancy Risk Assessment Monitoring System). In the developed countries prevention programmes proved to be efficient in reducing morbidity and mortality due to breast and cervical cancer. In Poland, these diseases still constitute a very big problem, despite relatively easy and early diagnostics of pathological conditions preceding their development. The objective of the study was analysis of the usage of prophylactic examinations and the assessment of knowledge concerning risk factors of the development of reproductive cancers among pregnant women from rural and urban environments in Poland. The study was based on questionnaire forms within the Pregnancy Risk Assessment Monitoring System (MoZMaD – PL) implemented in Poland. The precise date of the study for the whole of Poland is announced annually by the Chief Sanitary Inspector. The questionnaire forms were correctly completed in 2010 by 2,877 women. The replies to the questions were introduced by surveyors into the MoZMaD – PL system central database managed by the Institute of Agricultural Medicine in Lublin. The results obtained were subjected to statistical analysis. The studies of pregnant women in Poland showed that the situation with respect to the performance of prevention examinations for cervical cancer was significantly worse among rural than urban women. Pregnant women from both rural and urban areas very rarely had breast USG performed. Awareness concerning cervical cancer risk factors was lower among rural than urban women. Also, knowledge concerning the examinations which should be performed for the prevention of breast cancer was poorer among rural, compared to urban women. The recognition of the attitudes of women at reproductive age towards prevention examinations is necessary in order to effectively plan health education and social health promotion campaigns aimed at limiting morbidity and mortality due to cancerous diseases.

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INTRODUCTION

The World Health Declaration of 1998, Health 21 – Health for All in the 21st Century, which is being currently executed and contains the main directions of activities in health policy to be considered by the member states, assumes that 'the enjoyment of the highest attainable standard of health is one of the fundamental rights of every

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human being...'. The targets contained in the document are the reply to experiences gained while executing 'Health for All', considering regional variations and natural possibilities for the realization of these goals – 'a blend of today's reality and tomorrow's dreams". The document defines 21 targets for the 21st century on behalf of health [17] Target 1. 'Solidarity for health in the European Region,' assumes that by 2020 the present disproportion in the health status between the European Region member states should be reduced by at least one third. According to Target 2, 'Equity in health,' by 2020 health differences should be reduced between socio-economic groups inside the countries by at least one quarter in all member states, due to a significant improvement in the state of health of underprivileged population groups. Target 8. 'Reducing non-communicable diseases' states that by 2010 the population in the region should possess a far better access to primary health care, biased towards families and communities, supported by an adequate and efficient system of hospital services.

In the developed countries, prevention programmes proved to be efficient in reducing morbidity and mortality due to breast and cervical cancer. However, in the developing countries, where such programmes also exist, they have not fulfilled their assumptions due to logistic, financial and social problems [5, 13].

Cervical and breast cancer in Poland still remain a very big problem, despite a relatively easy early diagnostics of pathological states preceding the development of these cancers. Morbidity and mortality due to these diseases in Poland is still high, which places our country in an unfavourable situation, compared to other European countries. The active cervical cytology and mammography screening programmes, realized since 2006 by the National Health Insurance Agency, in which participated only approximately 10% of the patients qualified (in the case of cytology), and 5% (in the case of mammography), do not bring about success. Despite many social campaigns carried out in our country concerning the above-mentioned problems, a disproportion is still visible in the access to prophylactic examinations and their usage between women living in the urban areas, compared to the rural inhabitants.

Expectant mothers are the population of women motivated for regular gynecological check-up examinations. This creates conducive conditions for the performance of prophylactic examinations. Breast and cervical cancers are the cancerous diseases most frequently diagnosed in pregnant women, and this tendency will intensify, which may be due to the fact that women make pregnancy decisions at an increasingly older age [6]. Therefore, according to the recommendations by gynecological associations worldwide and in Poland, cytology and mammary gland examinations should be an element of the first physical examination of a pregnant woman.

The objective of the study was analysis of the usage of prevention examinations and the assessment of knowledge concerning risk factors of the development of reproductive cancer among pregnant women from the rural and urban environments in Poland.

METHODS

The study was based on questionnaire forms within the Polish Mother and Child Health Monitoring System (MoZMaD – PL) implemented in Poland. The survey was conducted by trained surveyors – employees of regional and provincial sanitary stations (a total number of more than 600 surveyors), on the same day in each calendar year, simultaneously in all Polish hospitals where mothers after childbirth were hospitalized together with their newborn babies. Consent to conduct the survey was expressed by the following number of hospitals: in 2010 – 373 (which constituted 94% of all hospitals in Poland where deliveries occurred). Most frequently, the survey was carried out within the first 3 days after childbirth. The mothers and neonates hospitalized for a period longer than 3 days (pathological deliveries, with Caesarean section performed, premature babies with low birth weight, defects or severe condition after birth) were surveyed after this time, according to the hospitalization time.

The exact day of the survey is designated annually in the whole of Poland by the Chief Sanitary Inspector. The survey consists of two sections: the first section – completed by the hospitalized mother, and the second section – completed by the medical staff (a physician or nurse) providing hospital care for the mother and her baby. In 2010, 3,980 women were asked to complete the questionnaire form. Each time, the managers of the hospitals expressed their permission to conduct the research. Consent was also obtained from Bioethical Commission. The questionnaire forms were correctly completed in 2010 by 2,877 women. The replies to the questions were introduced by the surveyors into the MoZMaD – PL system, the central database managed by the Institute of Agricultural Medicine.

The results obtained were subjected to statistical analysis. The relationships between variables were evaluated with the use of the chi-square test of independence, and chi-square test of independence with Yate's correction. The p values $p<0.05$ were considered statistically significant.

RESULTS

The majority of the pregnant women in the study group were married (82%), approximately 10% of respondents lived in informal partnerships, less than 7% were unmarried, whereas only 1% of the respondents were divorced and 4 widowed.

The smallest percentage constituted women without education (only 2 respondents declared lack of education), the percentages of those with elementary and junior school education level were also low: 3.6% and 2.8%, respectively. Pregnant women with elementary vocational education level constituted approximately 15% of respondents,

Table 1. Cytology test prior to pregnancy, according to respondents' place of residence.

Have you had cytology test performed prior to pregnancy?	Urban area n (%)	Rural area n (%)	p
Not performed	467 (34.57)	450 (43.73)	<0.001
Up to 6 months ago	221 (16.36)	156 (15.16)	
Up to 12 months ago	337 (24.94)	201 (19.53)	
More than 12 months ago	177 (13.10)	131 (12.73)	
Performed/date not reported	149 (11.03)	91 (8.84)	
Total (% of the total)	1,351 (56.76)	1,029 (43.24)	2,380 (100)

Table 2. Cytology test in pregnancy according to respondents' place of residence.

Have you had cytology performed in current pregnancy ?	Urban area	Rural area	p
Yes	1,026 (65.77)	746 (65.61)	ns
No	534 (34.23)	391 (34.39)	
Total (% of the total)	1,560 (57.84)	1,137 (42.16)	2,380 (100)

whereas the percentage of those who possessed secondary school education was 9.15%. The largest number of respondents had university Master's degree or post-secondary school education – 30.9% and 23.8%, respectively.

Analysis of the women examined in 3-year age categories showed that the smallest group constituted women aged under 23 (12.7%), and those over 34 (14.6%). Nevertheless, with the exception of the age group 26–28, which was the largest (23.4%), the remaining age groups were characterized by a similar percentage distribution by age.

Slightly more than 42% of the women examined were rural inhabitants, while about 58% lived in urban areas.

As many as 65.6% of the total number of pregnant women in the survey had a cytology test performed, and only approximately 1/3 of respondents regularly performed breast self-examination.

43.7% of pregnant women from the rural areas had no cytology performed prior to pregnancy, whereas among urban women this percentage was 34.6%, which constitutes a significant statistical difference. 41.3% of urban women, and 34.7% of women living in the rural areas had cytology performed within 12 months preceding pregnancy. Approximately 21.5% of rural women had a cytological examination performed earlier than 12 months preceding pregnancy or did not remember the date of examination. 24.1% of urban women had cytology performed earlier than one year prior pregnancy or they did not remember the date (Tab. 1).

In current pregnancy, nearly the same percentage of rural and urban women had cytology performed: 65.77% and 65.61%, respectively. About 35% of respondents from both environments analyzed had no cytological examination performed in current pregnancy (Tab. 2).

The expectant mothers in the study were asked about their knowledge of risk factors of cervical cancer. The results of the study showed that awareness of cervical cancer risk was low both among rural and urban women. A large group of respondents indicated age as a risk factor (about 2/3 of respondents from both groups). Less than a half of rural and urban women mentioned a large number of sexual partners as a risk factor of cervical cancer. Only 1/5 of respondents from both groups were aware that an early beginning of sex life, and use of oral contraceptives, are risk factors of the above-mentioned diseases, and every 1/10 of woman examined associated a large number of deliveries with an increased risk. One third of both rural and urban women reported tobacco smoking as a cervical cancer risk factor.

Also, knowledge of the viral etiolology of cervical cancer still remains insufficient, despite many social campaigns carried out in Poland. Women living in the rural areas had less knowledge of this problem, compared to the urban women, 65.95% and 737%, respectively (p<0.05) (Tab. 3).

Table 3. Knowledge of cervical cancer risk factors by respondents' place of residence.

	Urban area	Rural area	p
In your opinion, which of the below-mentioned factors may be the cause of development of cervical cancer?			
Age			
Yes	976 (65.95)	716 (66.60)	NS
Yes	504 (34.05)	359 (33.40)	
HPV infection			
No	389 (26.28)	366 (34.05)	<0.001
Yes	1091 (73.72)	709 (65.95)	
Beginning sex life early			
No	1,192 (80.54)	872 (81.12)	NS
Yes	288 (19.46)	203 (18.88)	
Large number of sexual partners			
No	779 (52.64)	581 (54.05)	NS
Yes	701 (47.36)	494 (45.95)	
Large number of deliveries			
No	1,350 (91.22)	977 (90.88)	NS
Yes	130 (8.78)	98 (9.12)	
Tobacco smoking			
No	1,010 (68.24)	750 (69.77)	NS
Yes	470 (31.76)	325 (30.23)	
Oral contraceptives			
No	1,173 (79.26)	856 (79.63)	NS
Yes	307 (20.74)	219 (20.37)	
Total (% of the total)	1,480 (57.93)	1,075 (42.07)	2,555 (100)

Table 4. Regular breast self-examination prior to pregnancy according to respondents' place of residence.

	Urban area	Rural area	p
Did you perform regular breast self-examination before pregnancy?			
Yes	545 (35.03)	317 (27.73)	<0.001
No	1,011 (64.97)	826 (72.27)	
Total (% of the total)	1,556 (57.65)	1,143 (42.35)	2,699 (100)

USG of the breast in pregnancy is not an examination routinely performed. Approximately 95% of respondents had no such examination performed in pregnancy.

Not earlier than the specified moment (after current pregnancy/delivery) about 4.5% of respondents from both rural and urban areas had ultrasonography of the breast performed.

A significantly larger number of urban than rural women regularly performed breast self-examination prior to pregnancy; 35% and 27.7%, respectively ($p<0.05$). However, the percentage of women at reproductive age who regularly examined their breasts was very low, considering the fact that breast cancer is the most frequent cancer occurring among Polish women (Tab. 4).

Despite rarely performed breast self-examination the majority of women know that they should examine their breast; however, the difference in the awareness of urban and rural women is statistically significant (84% of urban women and 77.6% of rural women) ($p<0.05$).

A significant difference is also noted between rural and urban women concerning the knowledge of other methods of early diagnosis of breast cancer recommended for women at a given age. Nearly half of the women living in the urban areas reported breast palpation as one of the basic methods, whereas only 1/3 of rural women associated this examination with an early breast cancer diagnosis ($p<0.05$).

Approximately by 10% less women living in the rural areas, compared to the urban women, consider the USG of the breast as the method of early breast cancer detection applied in young women, and this difference was statistically significant. Only a half of the rural women indicated this examination as useful in the prophylaxis of breast cancer appropriate for their age.

Considering mammography, approximately 55% of respondents from both groups analyzed did not report this examination as recommended in the prevention of breast cancer for women at reproductive age (Tab. 5).

Urban women evaluated their knowledge of the possibilities of breast cancer prevention in more positive terms (only 8.45% of them were not familiar with the methods of early breast cancer diagnosis), compared to those living in the rural areas, where 13.4% of respondents admitted that they did not know the possibilities of breast cancer prevention appropriate for age ($p<0.05$).

Table 5. Knowledge of the methods of early breast cancer diagnosis appropriate for women at reproductive age according to place of residence.

	Urban area	Rural area	p
Are you acquainted with the methods of early breast cancer diagnosis appropriate for your age?			
Breast self-examination			
No	236 (16.02)	230 (22.40)	<0.05
Yes	1,237 (83.98)	797 (77.60)	
Breast palpation			
No	768 (52.14)	681 (66.31)	<0.001
Yes	705 (47.86)	346 (33.69)	
Breast usg			
No	552 (37.47)	477 (46.45)	<0.001
Yes	921 (62.53)	550 (53.55)	
Mammography			
No	805 (54.65)	566 (55.11)	NS
Yes	668 (45.35)	461 (44.89)	
Total (% of the total)	1,473 (58.92)	1,027 (41.08)	2,500 (100)

DISCUSSION

A reduction in morbidity and mortality due to cancerous diseases is among the main challenges for health policy of all countries worldwide. Cervical cancer is the type of cancer which may be detected by means of a simple cytological examination, and is most often preceded by precancerous changes, the treatment of which prevents further development of the disease. For this reason, as well as for economic reasons, this cancer should be diagnosed at early stages of its development. In the case of diagnosing pathological changes in a cytological examination, further histopathologic diagnostics is a standard medical procedure.

In the case of breast cancer, mammography is a basic prevention examination. This examination, however, is more precise in older women; therefore, in young women the USG of the breasts is most frequently performed within breast cancer prevention, despite the fact that international guidelines recommend breast USG as an auxiliary examination, and not as a basic method of screening [1, 2, 7, 14, 15]. Pregnant women are the group which requires special caution with respect to diagnostic and therapeutic interventions due to the possibility of a negative effect on the foetus. In this group, apart from breast self-examination and physical medical examination, within prevention, performance of an USG of the breast is recommended.

In own studies, a significantly worse situation with respect to the performance of prevention examinations for cervical cancer was observed among women from the rural environment, compared to those from urban areas. Also, the awareness of cervical cancer risk factors was lower among rural than urban women. Concerning breast cancer prevention, only a small percentage of pregnant women from both rural and urban areas had ever had USG of the

breasts performed in their lives. Nevertheless, knowledge concerning the examinations which should be performed for prevention against breast cancer is poorer among rural than urban women.

An important issue is the obtaining of a high level of participation in prevention examinations, which is necessary for gaining an adequate extent and effect of the programme. The most frequently mentioned barriers to the use of screening tests are lack of knowledge of the disease and methods of prevention, geographic and economic inaccessibility of health care, low quality of medical services and lack of support on the part of the family [3, 9]. Studies conducted by Loibl *et al.* indicated that in the rural areas of the developing countries, irrespective of the test used, a good participation rate in the programmes may be obtained by the application of appropriate mechanisms for the provision of services consisting in an improvement of accessibility [6].

In own studies, approximately 65% of women had a cytological test performed in pregnancy or shortly before pregnancy. Similarly, in the studies by Nygard *et al.*, 69% of pregnant women had cytology performed within one year prior to delivery [12].

The Norwegian coordinated cervical cancer screening programme was introduced in 1995, and 71% of women aged 25–69 in Norway had cytology performed during the period from 1998 – 2000 [11]. However, more than 50% of cases of cervical pathology were diagnosed among the remaining group of women who did not participate in the programme and constituted a population at high risk of cervical cancer [10]. Most frequently, precancerous changes were detected among women aged 25–35, which shows that the peak of occurrence of pathology overlaps with peak reproductive age [4, 16]. From this perspective, prenatal care is an opportunity to offer cytological examinations to women who do not yet qualify for screening tests. In the studies by Nygard *et al.*, only 32% of pregnant women aged <25 had cytology performed prior to pregnancy, while among those aged 15–19 this percentage was still lower [12].

In India, a developing country, the general level of participation in cytological examinations was high (79%); however, it was noted that the participation in the programmes of women from the groups at risk was less probable. The lowest participation rate was observed among nulliparous women. Women who used contraception and those who have had a larger number of pregnancies were less willing to participate in the study [9].

CONCLUSIONS

In the studies of pregnant women in Poland concerning the performance of prevention examinations for cervical cancer, a significantly worse situation was observed among women from the rural environment, compared to those living in the urban areas. Pregnant women from both rural and urban environments very rarely had USG of the breast performed. The awareness of cervical cancer risk factors was lower among rural than urban women. Also, the knowledge of the examinations which should be performed within breast cancer prevention was lower among rural women, compared to those living in the urban areas. The recognition of the attitudes of women at reproductive age towards prevention examinations is necessary in order to effectively plan health education and social health promotion campaigns aimed at the reduction of morbidity and mortality due to cancerous diseases.

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