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CLINICAL ARTICLE

Knowledge about HIV infection and acceptability of HIV testing among women delivered in Podkarpackie Province, Poland

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ABSTRACT

Objective: To assess the knowledge of pregnant Polish women regarding the risk of perinatal HIV transmission, the ways to reduce this risk, and the importance of HIV testing in pregnancy, as well as their willingness to be tested for HIV. **Methods:** A multicenter survey was conducted with 2123 pregnant women from Podkarpackie Province using a 4-part questionnaire. **Results:** Only 15.4% of the women, mainly those with higher education, correctly assessed the risk of perinatal HIV transmission; 61.9% showed adequate knowledge of perinatal HIV transmission, mainly older, well-educated, multiparas residing in towns; and 81.1% declared a willingness to undergo HIV testing, mainly well-educated primigravidas in the 26 to 30 years age group residing in towns. **Conclusion:** These pregnant women from Poland, where prenatal HIV testing is rarely done, showed a limited knowledge of perinatal HIV transmission but a high willingness to undergo HIV testing.

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1. Introduction

According to the United Nations Program on HIV/AIDS (UNAIDS) report for the year 2007, an estimated 2 million individuals died of AIDS-related conditions, 2.7 million were newly infected with the HIV virus worldwide during that year, and an estimated 33 million people were living with HIV [1].

A significant increase in rates of HIV infection has also been observed in Eastern Europe and Central Asia, where the number of new cases has increased by 50% each year since 2004 [1]. The percentage of persons living with HIV in Ukraine and the Russian Federation probably amounts to 2% of the population, and probably as much as 30% of those infected are women. The number of new infections increased nearly 2-fold in Western Europe over the last 8 years, and most of these infections are the result of heterosexual contacts. In the European Union, an increase in both internal migration and immigration—the latter mostly from areas of higher HIV prevalence—have accelerated the spreading of HIV. The HIV epidemic reveals the extreme diversity of the European Union, where the HIV situation may be completely different in neighboring countries.

The dynamics of the HIV/AIDS epidemic has remained low in Scandinavia and Central Europe, which includes Poland [2]. However, epidemiologists are alarmed that the number of HIV carriers is growing in Poland. More than 700 new infections are detected each year, and the number of infected persons is growing annually by

nearly 30%. Contact with persons from countries such as Ukraine and Russia, where the epidemic is more active, is responsible for this growth. The Podkarpackie Province, which shares a border with Ukraine, is at special risk.

Although the increase in rates of perinatal HIV transmission parallels the spreading of HIV in Poland, preventive programs targeting pregnant women mostly aim at raising their awareness and knowledge about HIV infection. Pregnant women are not routinely tested for HIV infection in Poland.

The present study was conducted using a questionnaire. Its aim was to evaluate: (1) the knowledge of pregnant women from Podkarpackie Province about the risk of perinatal HIV transmission; (2) possible ways to reduce the risk; (3) the importance of HIV testing in pregnancy; and (4) the women's willingness to be tested.

2. Participants and methods

In 2008, 2310 pregnant women from rural Polish Podkarpackie Province participated in the multicenter survey. The 187 women who returned the questionnaire with missing information were excluded, and the remaining 2123 constituted a study group representative of the 22 224 women who were delivered in the province in 2008.

In the study group 808 women (38%) were aged between 26 and 30 years, 689 (32.5%) between 17 and 25 years, and 626 (29.5%) between 31 and 46 years; 1020 (48%) were primigravidas and the remaining 411 (52%) were multiparas; 411 (19%) had a primary education, 929 (44%) graduated from secondary school, and 783 (37%) received higher education; and 907 (43%) lived in towns and the remaining 1211 (57%) in villages.

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Table 1
Adequate knowledge about the risk of mother-to-child HIV transmission.

Variable	Adequate answers, No. (%)
Age, y ^a	
17–25	113 (16.4)
26–30	107 (13.2)
31–46	108 (17.3)
First pregnancy ^b	
Yes	159 (15.6)
No	169 (15.3)
Education ^c	
Primary	85 (20.7)
Secondary	135 (14.5)
Higher	204 (16.8)
Place of residence ^d	
Town	124 (13.7)
Village	204 (16.8)

^a First vs second group, $P=0.08$; first vs third, $P=0.66$; second vs third, $P=0.03$.

^b $P=0.87$.

^c First vs second group, $P=0.005$; first vs third, $P=0.002$; second vs third, $P=0.68$.

^d $P=0.05$.

The questionnaire inquired about date of birth, previous deliveries, level of education, and place of residence; then there were questions about the participant's knowledge of perinatal HIV transmission, possible ways to reduce the risk of this transmission, the rationale for testing pregnant women for HIV infection, and her willingness to be tested. The survey began after it was approved by the institutional ethics committee. All women were informed that participation was voluntary and anonymous. The χ^2 test was used for analysis, with $P<0.05$ considered significant.

3. Results

Of the 328 women (15.4%) who correctly assessed the risk of perinatal HIV transmission, most of them were older and had received higher education (Table 1).

Of the 1314 women (61.9%) who knew about the possibility of reducing the risk of perinatal HIV transmission, most were older, were multiparas, had received higher education, and were living in towns (Table 2).

Of the 1745 women (82.2%) who knew that HIV testing during pregnancy reduces the risk of perinatal HIV transmission, most were in the 26 to 30 years age group, were primigravidas, and had received higher education (Table 3).

Table 2
Adequate knowledge about the possibility to reduce the risk of mother-to-child HIV transmission.

Variable	Adequate answers, No. (%)
Age, y ^a	
17–25	369 (53.6)
26–30	523 (64.7)
31–46	422 (67.4)
First pregnancy ^b	
Yes	605 (59.3)
No	709 (64.3)
Education ^c	
Primary	206 (50.1)
Secondary	543 (58.4)
Higher	565 (72.2)
Place of residence ^d	
Town	595 (65.6)
Village	719 (59.1)

^a First vs second group, $P<0.001$; first vs third, $P<0.001$; second vs third, $P=0.29$.

^b $P=0.02$.

^c First vs second group, $P=0.005$; first vs third, $P<0.001$; second vs third, $P<0.001$.

^d $P=0.002$.

Table 3
Adequate knowledge about the usefulness of HIV testing in pregnancy.

Variable	Adequate answers, No. (%)
Age, y ^a	
17–25	547 (79.4)
26–30	691 (85.5)
31–46	507 (81)
First pregnancy ^b	
Yes	857 (84)
No	888 (80.5)
Education ^c	
Primary	298 (72.5)
Secondary	778 (83.7)
Higher	669 (85.4)
Place of residence ^d	
Town	767 (84.6)
Village	978 (80.4)

^a First vs second group, $P=0.002$; first vs third, $P=0.46$; second vs third, $P=0.03$.

^b $P=0.04$.

^c First vs second group, $P<0.001$; first vs third, $P<0.001$; second vs third, $P<0.33$.

^d $P=0.05$.

Of the 1721 women (81.1%) willing to undergo HIV testing, most were in the 26 to 30 years age group, were primigravidas, had received higher education, and were living in towns (Table 4).

4. Discussion

Knowing the HIV status of pregnant women allows to prescribe antiretroviral therapy, which, combined with the avoidance of breastfeeding, reduces the risk of mother-to-child transmission to less than 1% [3,4]. International studies have shown that the acceptability of HIV testing is high among pregnant women in most countries, but that acceptability depends on the women's awareness of the potential benefits for their future child [5]. In Poland, HIV testing is not routinely offered to pregnant women. Although the Polish Gynecological Society [6] clearly recommends testing women for HIV infection during the first prenatal visit, currently only 3% of all pregnant women are tested in Poland, compared with 60% in the rest of Europe. The results of ignorance are alarming. Furthermore, there is no reliable domestic statistics in Poland. The National Institute of Hygiene officially recorded 116 children as having HIV in the last 10 years, but experts estimate their number to be 3 times as high. In some cases, a mother's HIV infection became known after her child was diagnosed as having AIDS.

In 2004, at the Dublin Conference of the Health Ministers of the countries of the European Region, to which Poland belongs, a joint

Table 4
Willingness to be tested for HIV infection.

Variable	Women willing to be tested, No. (%)
Age, y ^a	
17–25	553 (80.3)
26–30	677 (83.8)
31–46	491 (78.4)
First pregnancy ^b	
Yes	846 (82.9)
No	875 (79.3)
Education ^c	
Primary	282 (68.6)
Secondary	775 (83.4)
Higher	664 (84.8)
Place of residence ^d	
Town	789 (87)
Village	932 (76.6)

^a First vs second group, $P=0.08$; first vs third, $P=0.38$; second vs third, $P=0.008$.

^b $P=0.03$.

^c First vs second group, $P<0.001$; first vs third, $P<0.001$; second vs third, $P<0.33$.

^d $P=0.44$.

declaration was signed obliging all member states to eliminate HIV infection in children by 2010. As the acceptability of testing pregnant women for HIV was believed to be low, a necessary condition to reach this goal was to popularize being tested. In our survey, however, more than 81% of the participants were willing to be tested overall, but the lowest rate of acceptance (68.6%) was among the women with the lowest education level. The acceptance rates in our study are much higher than those reported by Dube [7] or Guo [8] in studies conducted in Africa, but they still are not satisfactory. Moreover, whether pregnant women are willing to be tested does not determine the frequency of the test's administration in a given population [9]. In Poland, 3% of all pregnant women are tested for HIV whereas 81% of the pregnant women in our study were willing to be tested. The difference is drastic. According to Stokes et al. [10], along with the acceptance of the test by pregnant women, medical personnel need to be convinced of the need to perform the test.

Our findings show that the acceptability of HIV tests depends on the level of education of the pregnant women and their knowledge about the possibility of perinatal HIV infection. This interdependence of education, knowledge, and acceptance of the test is consistent with the results of studies conducted in other countries, and is unaffected by geographical, cultural, or ethnic differences [11–13].

It is natural to fear a diagnosis, and HIV testing may arouse negative emotions. Temmerman et al. [14] have suggested a personal right to remain ignorant of one's own HIV infection status; however, informing all pregnant women that it is possible to reduce the risk of mother-to-child transmission of the virus may arouse in them a desire to know, and therefore the willingness to be tested [15,16]. A higher awareness of the risk of perinatal HIV transmission in the population at large may have contributed to the adequate knowledge of the benefits of a prenatal diagnostic in our study.

Although we believe that the awareness of pregnant women regarding the different ways of HIV transmission is generally increasing, we found the acceptability of HIV testing to be proportional to the level of education of the pregnant women. A targeted social education would therefore not only increase the acceptability of the test, but also reduce the frequency of HIV infection in the general population. However, based on our findings, we propose that such education be accompanied by mandatory HIV testing in pregnancy.

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