SOME REPRODUCTIVE HEALTH INDICATORS IN UKRAINE

A study with special emphasis on factors behind induced abortion and perinatal mortality

by

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Objectives: To study indicators specifically reflecting the reproductive health of Ukrainian women and to analyse factors behind the indicators.

Methods: Induced abortion and maternal mortality were studied in some countries/regions of the former Soviet Union, using official statistics. Abortion rates, contraceptive practices and intentions in Ukrainian women were analysed by a large self-completion survey in 1996, and by a classroom questionnaire to first year medical students in 1999 in Donetsk, Ukraine. Totally, 1694 women and 689 students participated. Perinatal mortality was studied, applying the Nordic-Baltic perinatal death classification to all cases in the Donetsk region in 1997-98 (n=1126) and in Denmark in 1996 (n=540). Clinical guidelines, use of technology and rates of interventions in the two regions were analysed.

Results: Abortion remains a major method of fertility control and abortion-related mortality contributes to maternal deaths. Perinatal mortality rate is twice as high in the Donetsk region as in Denmark. A substantial proportion of sexually active women do not practice contraception. Modern methods of contraception are not widely used. There is a lack of knowledge in reproductive health issues and negative attitude to OCs. There is a positive attitude towards abortion as an acceptable fertility control method and of having abortion instead of using OCs or IUD. Poor economy is an obstacle to the use of contraceptive methods associated with a cost. Lack of experience with contraception reduces the intention to use any method in the future. Being single, younger than 19 years, living with parents, having a positive attitude towards abortion as fertility control method, having a history of previous childbirth and/or abortion are important factors associated with pregnancy termination. Antepartum deaths of growth-retarded fetuses, intrapartum and neonatal deaths associated with asphyxia are more common in Ukraine than in Denmark, particularly among premature infants. Lack of evidence-based clinical guidelines and adequate resources for fetal monitoring during pregnancy and labour, together with negative attitudes towards, and limited resources for, instrumental delivery, contribute to high perinatal mortality.

Conclusion: Better reproductive education/information of all strata of society is needed. Implementation of evidence-based guidelines in perinatal medicine, where international collaboration can be of great value, should be a matter of high priority.

Key words: Ukraine, induced abortion, contraception, perinatal mortality, self-completion survey, perinatal audit.
To be well is to know what
gwill happen to me tomorrow

Middle-aged man,
Razgard, Bulgaria

To all those whom I love with all my heart
This thesis is based on the following papers, which are referred to by their Roman numerals:


II. Mogilevkina I, Odlind V. Contraceptive practices and intentions of Ukrainian women (submitted).


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ABBREVIATIONS

95%CI - 95% Confidence interval  IUD - Intrauterine device
99%CI - 99% Confidence interval  IUGR - Intrauterine growth retardation
AIDS - Acquired Immune Deficiency Syndrome  OCs - Oral contraceptives
ANC - Antenatal Care  OR - Odds ratio
CTG - Cardiotocography  SD - Standard deviation
FHR - Fetal heart rate  STI - Sexually transmitted infections
HDI - Human Development Index  US - Ultrasonography
HIV - Human Immunodeficiency Virus  WHO - World Health Organisation

DEFINITIONS

Abortion mortality  The annual number of deaths per 100 000 abortions
Abortion rate  Annual number of abortions per 1000 women of fertile ages
Abortion ratio  Number of abortions per 100 live births
Age specific abortion and fertility rate  Number of abortions and live births in age categories per number of women in the same age-group
Crude birth rate  The number of live births per 1000 of the population
Crude death rate  The number of deaths per 1000 of the population
Fertility rate  Annual number of live births per 1000 women aged 15-49
Highly effective modern contraceptives  Include OCs, IUD, injectables, sterilization
Infant mortality rate  The annual number of deaths of infants during 12 months in a given year per 1000 live births in that same year
Intrauterine growth retardation (IUGR)  For the infants in the Donetsk Region, Ukraine, the Swedish-Danish growth curve was used. Infants with birth weights below mean minus 2 standard deviations or below the 2.5th centile using the Swedish-Danish growth curve introduced by Karel Marsal (Marsal et al., 1996)
Maternal mortality ratio  The annual number of deaths arising during pregnancy or from puerperal causes within 42 days postpartum per 100 000 live births during the same period
Perinatal mortality (Ukrainian Birth register)  Number of stillborn infants and number of infants dying within 1-7 days (either born after 28 weeks of gestation or with a birth weight above 1000 g), per 1000 delivered babies (dead and alive)
Rate of natural increase  The difference between the birth rate and the death rate, per 1000 of the population
The rates of use of IUD and OC  Annual number of users of IUD and OC per 1000 women aged 15-49
Total abortion rate  The number of abortions a woman between ages 15-49 would have during her lifetime if she were to have abortions at the currently observed age-specific abortion rates
Total fertility rate  The number of children a woman between ages 15-49 would have during her lifetime if she were to bear children at the currently observed rates
INTRODUCTION

Reproductive health is very important for the health of society (Batar, 1999) because the reproductive health of the present generation has an impact on the health of the next generation and is crucially important for healthy socio-economic development (Diczfalusy, 1997).

The wind of political change blowing through Central and Eastern Europe, combined with economic turmoil, has had a significant impact on the status of women (David, 1992). As a result of the dissolution of the former Soviet Union, Ukraine obtained independence. At the same time, the country inherited all the problems, especially in the field of reproductive health, inherent in Soviet society (Barr and Field, 1996).

Reproductive health in Ukraine today is a matter of great concern (UNDP, 2002). The First Deputy Foreign Minister of Ukraine, Olexander Chalyi, at the 21st Special Session of the United Nations General Assembly in 1999, stated that despite the extension of family planning services, many women still lack access to modern contraceptive methods, which has resulted in a high level of abortions and teenage baby deliveries. Besides, the incidence of sexually transmitted infections (STI) and Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) is taking epidemic proportions in Ukraine (Chalyi, 1999). The Ukrainian government has declared that women’s reproductive health is a priority for the government’s actions in the health sector (Kisselyova, 1999).

General information about Ukraine

Ukraine

In the past, Ukraine has been an independent state for short periods only, the last being 1918-1920. Thereafter, Ukraine was part of the former Soviet Union, and since 1991, Ukraine is an independent state.

Common characteristics

Today, Ukraine is one of the European countries (Fig. 1) with a total population of 51 921 000 (1994), an area of 603 700 square kilometres and a density of population of 86 people per sq. km. Sixty-nine per cent of the population are living in urban areas, the rest in rural areas. Ukraine has 24 administrative regions and also includes the Republic of Crimea, which has special status with a great internal autonomy (The world guide, 1997).

The majority, 72.7%, are Ukrainians, 22.1% are Russians, 0.9% Belarussians, 0.6%, Moldavians and 0.4% are Poles. The dominant religions are the Ukrainian Orthodox Church, and the Ukrainian Greek Catholic Church (Ukraine, 2000). Historically, Ukraine is divided into two parts: the Eastern part being the highly industrial region with a high density of population and the Western part, which is dominated by farming and tourism (MPH, 1997; Ukraine, 2000).
Economy in transition

Since 1991, Ukraine has experienced extreme economic difficulties, with inflation sometimes reaching 100 per cent per month. The economic reform in Ukraine is directed towards a complete restructuring from planned to market economy, a transition that has created economic insecurity and hardship (Investing in Women's Health, 1995). The gross domestic product (GDP) fell by more than 20 per cent in 1994 and more than 12 per cent in 1995, resulting in a constantly falling standard of living, and increases in poverty and inequality (The world guide, 1997). This deterioration was reflected in an increase of adult mortality (World Bank, 2001). As a result, Ukraine has experienced a Human Development Index (HDI) that was lower in 1999 than it was in 1990 (Table 1). HDI measures the overall achievements in a country in three basic dimensions of human development: longevity (by life expectancy at birth), knowledge (by adult literacy rate and combined primary, secondary and tertiary education enrolment ratio) and standard of living (by GDP per capita, US$) (UNDP, 2001).
Table 1. Some basic indicators in Ukraine during transition

<table>
<thead>
<tr>
<th>Indicators</th>
<th>1990</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (gross domestic product) per capita, US$</td>
<td>5 433²</td>
<td>3 458¹</td>
</tr>
<tr>
<td>Life expectancy at birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>70.5³</td>
<td>68.1¹</td>
</tr>
<tr>
<td>Male</td>
<td>65.4</td>
<td>62</td>
</tr>
<tr>
<td>Female</td>
<td>74.9</td>
<td>73</td>
</tr>
<tr>
<td>HDI (Human Development Index)</td>
<td>0.793¹</td>
<td>0.742¹</td>
</tr>
</tbody>
</table>

Sources: ¹- (UNDP, 2001), ²- (UNDP, 1993) ³- (MPH, 1997)

Demographical situation
The political, economic and social changes recently occurring in Ukraine have created unfavourable living conditions and lack of funds to maintain a health care system, which has fundamentally affected population growth (Investing in Women’s Health, 1995). A drastic reduction of birth rate and increase in death rate has resulted in a decrease of population (Zhylka, 2001). This decrease was first registered in 1991 (-0.8 per 1000) and in 1999 the decrease was -6.0 per 1000 (Fig. 2). Preliminary data from the Population Census showed that the total population in Ukraine 2001 was 48 760 474 (2001 Census, 2001).

Figure 2. Population growth and negative natural increase in Ukraine and in the Donetsk region (1990-1999), per 1000 inhabitants.
Donetsk region
The socio-economic situation was worst in industrial areas of Ukraine during the transition period (Mokhovikov and Donets, 1996; UNAIDS, 1997). Donetsk region, situated in the south-east part of Ukraine, is one of the biggest industrial regions with a total population of 5.2 million in 1996, of which 1.4 million women are within fertile ages (15-49 years). The region includes the city of Donetsk (with a total population of 1.04 million, among them 320,000 women of fertile ages), and 27 other cities and surrounding suburbs, and rural communities. According to official statistics, 80 per cent (1.12 million) of the women of fertile age live in urban, and 20 per cent (280,000) live in rural areas.

The population decrease was more pronounced for the Donetsk region (Fig. 2) than in Ukraine as a whole with an annual decline of around 50,000 inhabitants, and the total population of the region decreased from 5,346,700 in 1990 (World Bank, 1990) to 4,843,000 in 2001 (2001 Census, 2001).

Reproductive health indicators

Reproductive Health
The constitution of the World Health Organisation (WHO; 1948) defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (The Szeged declaration, 1994). Viewed against this definition, reproductive health has a number of basic elements, such as the ability for procreation, regulation of fertility and enjoying sex, success as far as the outcome of pregnancy, infant and child survival, growth and development are concerned, and safety in pregnancy and childbirth, fertility regulation and in having sex. In 1994, The International Conference on Population and Development in Cairo agreed on a package of reproductive health services incorporating family planning as well as maternal and child health programmes (United Nation, 1995). Reproductive health includes everything that affects reproduction – safe motherhood, avoiding and treating STI, preventing unwanted pregnancy, promoting responsible sexual behaviour (Sadik, 2000), prevention and management of infertility, and treatment of malignancies of reproductive organs (Malini, 1996). Reproductive health affects, and is affected by, other aspects of health, in particular HIV infection, nutrition, infant and child health, adolescent health and sexuality, lifestyle and environmental factors. Various social and cultural factors, but especially the status of women in society, are crucial (Malini, 1996; Mbizvo, 1996; Gender, 2000). To assess reproductive health some indicators are used.

Reproductive health indicators (RHIs)
Indicators are measurable characteristics or variables that help to describe a particular aspect of the actual health situation (WHO, 1998). In principle, indicators are statistics selected from a large pool because they have the power to summarise, to represent a large body of statistics, and to serve as indirect or proxy measures for information that is lacking.
RHIs summarise the data that have been collected in order to answer questions relevant to the planning and management of reproductive health programmes. Most indicators “indicate” problems that need action rather than being tools for diagnosis. Thus, they should be regarded as suggestive of problems requiring action.

Reproductive health indicators are used for three purposes:
1. To assess the current reproductive health status in the population in order to plan the development or improvement of programmes.
2. To monitor the implementation and output of a programme to make sure it is on track, or to monitor policy commitment.
3. To evaluate the effectiveness and impact of a programme aimed at improving reproductive health or achieving specific targets.

Selection criteria for RHIs
According to WHO definition, RHIs should be ethical, useful (marker of progress), scientifically robust (valid: issue it is supposed to measure; specific: reflects change in the issue under consideration; sensitive: ability to reveal changes in the factor of interest, and reliable: gives almost the same value if the measurement is repeated on the same population and at about the same time), representative (adequately encompasses all issues or population group), understandable (simple to define and value easy to interpret), accessible (data required are already available or easy to acquire by feasible methods validated in field trials) (WHO, 1998).

Number of indicators
Seventeen indicators are recommended by WHO to assess reproductive health status at national and international levels (WHO, 1998). Meanwhile, there are numerous recommendations from different countries/groups of countries and international organisations regarding which indicators that should be collected. The number of indicators varies from 10 in Denmark to 43 indicators ± 9 in Canada.

Sources of RHIs
There are two different types of national reproductive health databases. The first contains routinely collected case-based data on many reproductive health events. Midwives and obstetricians are obliged to report data to the National Boards of Health, where analyses are performed. Such registries are reported by a majority of developed countries in Europe (for example, Sweden, Denmark, Norway, United Kingdom).

The other type of register contains aggregated data on number of deliveries, any complications, instrumental deliveries, stillbirths, and neonatal deaths, as well as number of abortions and modern contraceptives used. Such databases are used in some countries of the former Soviet Union, Ukraine being one of them. The information is based on annual reports from regional Departments of Medical Statistics, which rely on quarterly hospital reports that compile information from the local case records. The official hospital report form contains the aggregated data and
does not include any personal characteristics of the patients. Regional Departments of
Demographic Statistics provide the fertility data and the population estimates.

**RHIs currently in use in Ukraine**

Some RHIs are currently in use in Ukraine: fertility rate, abortion rate, abortion ratio,
contraceptive prevalence rate (OC, IUD), maternal mortality ratio, perinatal mortality
rate, infant mortality rate and antenatal care coverage, etc.

Some data on reproductive health in Ukraine and in the Donetsk region obtained from
the official statistics are presented in Table 2. Data for Sweden are provided in order
to view the situation from an international perspective.

Table 2. Some data on reproductive health from Ukraine, the Donetsk region, and
Sweden, 1996

<table>
<thead>
<tr>
<th></th>
<th>Ukraine</th>
<th>Donetsk region</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>51 608 000(^1)</td>
<td>5 200 000</td>
<td>8 819 000(^1)</td>
</tr>
<tr>
<td>Urban population, %</td>
<td>71(^1)</td>
<td>80</td>
<td>83(^1)</td>
</tr>
<tr>
<td>Crude birth rate, per 1000</td>
<td>9.1(^2)</td>
<td>7.0(^2)</td>
<td>12(^1)</td>
</tr>
<tr>
<td>Crude death rate, per 1000</td>
<td>15.2(^2)</td>
<td>16.8(^2)</td>
<td>11(^1)</td>
</tr>
<tr>
<td>Annual population growth, per 1000</td>
<td>-6.1(^2)</td>
<td>-9.8(^2)</td>
<td>1</td>
</tr>
<tr>
<td>Fertility rate 1000</td>
<td>36.6(^2)</td>
<td>27.9(^2)</td>
<td>55.9</td>
</tr>
<tr>
<td>Total fertility rate</td>
<td>1.3(^2)</td>
<td>1.08(^2)</td>
<td>1.9(^1)</td>
</tr>
<tr>
<td>Life expectancy at birth</td>
<td>67.1(^2)</td>
<td>65.1(^2)</td>
<td>78(^1)</td>
</tr>
<tr>
<td>Maternal mortality ratio, per 100 000 live births</td>
<td>30.4(^2)</td>
<td>52.3(^2)</td>
<td>5.2</td>
</tr>
<tr>
<td>Perinatal mortality rate</td>
<td>12.2(^2)</td>
<td>14.1</td>
<td>5.2</td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td>14.3(^2)</td>
<td>16.8(^2)</td>
<td>4(^1)</td>
</tr>
<tr>
<td>Abortion rate, per 1000 women aged 15-44</td>
<td>51.9(^2)</td>
<td>50.5(^2)</td>
<td>18.7(^3)</td>
</tr>
<tr>
<td>Abortion ratio, per 100 live births</td>
<td>144(^2)</td>
<td>177.5(^2)</td>
<td>33.7</td>
</tr>
<tr>
<td>Abortions, per 100 known pregnancies</td>
<td>57.6(^3)</td>
<td>25.2(^3)</td>
<td></td>
</tr>
<tr>
<td>Abortion mortality, per 100 000 abortions</td>
<td>6.2(^2)</td>
<td>9.1(^2)</td>
<td>0</td>
</tr>
<tr>
<td>Total abortion rate</td>
<td>1.72(^3)</td>
<td></td>
<td>0.56(^3)</td>
</tr>
<tr>
<td>IUD rate, per 1000 women</td>
<td>169.5(^2)</td>
<td>311.3(^2)</td>
<td>Not assessed</td>
</tr>
<tr>
<td>OCs rate, per 1000 women</td>
<td>34.3(^2)</td>
<td>117.3(^2)</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Syphilis rate, per 100 000 women</td>
<td>119(^2)</td>
<td></td>
<td>0.8(^4)</td>
</tr>
<tr>
<td>Gonorrhoea rate, per 100 000 women</td>
<td>57.7(^2)</td>
<td></td>
<td>2.4(^4)</td>
</tr>
</tbody>
</table>

Sources: \(^1\) - (UNICEF, 1998), \(^2\) - (MPH, 1997), \(^3\) - (Henshaw et al., 1999), \(^4\) - for 1997.

In Ukraine, the prevalence of human immune deficiency virus (HIV) is approaching
epidemic proportions. Regarding official data, prevalence of HIV was 0.96% among
adults aged 15 to 49, and 70 000 women in reproductive age were HIV infected in
Ukraine in 1999 (UNDP, 2001). The situation was the worst in Europe.
Thus, reproductive health in Ukraine is far from the international standard. High abortion rate as well as high perinatal mortality rate reflects deterioration of socio-economic conditions (Investing in Women's Health, 1995), limited access to safe and effective health services and severe limits of viable options for women to choose a healthy lifestyle. These two indicators substantially contribute to the death rate via abortion-related maternal mortality and infant mortality. There is relationship between contraceptive use, abortion rate, and maternal and child health (Grishenko, 1997; Kovacs, 1999). Thus, these three indicators were chosen to specifically reflect reproductive health status of Ukrainian women.

**Induced abortions and contraception**

**Induced abortions and contraception history**
The number of abortions in a given society depends on variables such as degree of urbanization, literacy and education, socio-economic status of women, reproductive patterns, religion, culture and access to family planning, just as much as on the legislation (Odlind, 1997). Induced abortion was very frequent in the former Soviet Union and was a major method of birth control (Popov et al., 1993; Visser et al., 1993; Bruyniks, 1994; Sabatello, 1995; Lakhova, 1997). According to data published in 1999 (Little et al., 1999) sixty percent of the pregnancies during 1992-1994 in Ukraine were terminated, generally before the 13th week of gestation.

Historically, abortion has been the primary form of contraception in many countries of the former Soviet Union (Blum et al., 1996; United Nations, 2002). To understand the present situation with induced abortions in Ukraine, a short review of abortion history is helpful. In 1920 the Soviet Union became the first country to legalize in-hospital abortion upon the request of women in their first trimester of pregnancy (David, 1992). In 1936, during the Stalin regime, abortions were prohibited in an effort to increase fertility (Cwikel et al., 1994). Abortions were then legalized again in 1955 (Rahman and Katzive, 1999). A low rate of fertility was thereafter maintained, probably by making abortion easily accessible. Abortion was free of charge in state hospitals and abortions became very common, particularly since contraceptives were difficult to obtain (Rosenfield, 1994; Tulchinsky and Varavikova, 1996). Moreover, in 1974 the Government effectively banned the widespread use of oral contraceptives (Popov et al., 1993; Bruyniks, 1997; Oddens, 1997; United Nations, 2002). In reality, the state encouraged women to use induced abortion as a method of family planning (Stone and Waszak, 1992; Blum et al., 1996; Kovacs, 1997). Thus, whereas Western European family planning promoted careful and consistent contraceptive use, countries of the former Soviet Union relied heavily on correction post hoc, i.e. abortion (David, 1992; Visser et al., 1993; Oddens, 1997) and contraceptive use remained low (Visser et al., 1993; Lakhova, 1997; Oddens, 1997; Vovk, 1997). Therefore, induced abortion rates in the former Soviet Union (Henshaw, 1990) were up to 35 times higher than the rate in the Netherlands (Ketting and Visser, 1994;
David and Rademakers, 1996). Those practices have remained a common pattern in the newly independent states after the dissolution of the former Soviet Union (UNFPA and WHO, 1995).

**Recent induced abortions and contraception practices**
The picture changed in the early and mid 1990s. Contraceptive use increased, especially use of the intrauterine contraceptive device (IUD), and abortion rates declined (Entwisle and Kozyreva, 1997).

More recently in Ukraine, like in other countries of the former Soviet Union, both abortion rates and the annual number of abortions have declined very rapidly (MPH, 1997; Kosey, 1997; Kovacs, 1997; Vovk, 1997; Dolian et al., 1998; Zhylka, 2001; Hoida, 2002), possibly following the expansion of contraceptive services (Conly, 1997). By the decision of the Cabinet of Ministers of Ukraine, the “National Program on Family Planning” was adopted in September 1995 (Kisselyova, 1999) to implement the Cairo Conference objectives by creating family planning facilities (Zhylka, 2001). However, implementation of this programme was far from perfect (Reproductive health, 1999; Hoida, 2002) and, in spite of the considerable decrease in the number of abortions (Hoida, 2002), abortion still remains common, with the abortion rate higher than in many European countries (Drife, 1993; Knudsen, 1997; Mandelin, 1997; Henshaw et al., 1999; Gissler et al., 2000).

Thus, the tradition of induced abortion as a major method for birth control remains after independence (UNFPA and WHO, 1995; Bruyniks, 1997; Kisselyova, 1999; Kovacs, 1999; Monaghan et al., 2000). In Ukraine, induced abortion on demand is legal during the first trimester of pregnancy. Abortion techniques include dilatation and curettage or vacuum aspiration. The combined treatment (mifepristone in combination with misoprostol), which is as effective and safe during early pregnancy as vacuum aspiration (Bygdeman et al., 2000), is not used in Ukraine. After completed 12 gestational weeks, women have to apply to the abortion committee at a hospital for approval (United Nations, 2002). In general, however, abortions are not performed after 22 weeks of gestation (Rosenfield, 1994).

Family planning services allow women and men to determine when and if they would like to conceive a child. These services are important because they can prevent unintended pregnancy and improve perinatal outcomes (Mitchell and McCormack, 1997).

**Perinatal mortality**

Infant mortality, with perinatal mortality being a substantial part of it, is a particularly sensitive indicator of economic deprivation (Investing in Women's Health, 1995).
Statistics
Ukraine, like other parts of the former Soviet Union, has a perinatal mortality rate about 2 times higher than that of most countries in Western Europe (Langhoff-Roos et al., 1998) (Table 3).

<table>
<thead>
<tr>
<th></th>
<th>Perinatal deaths per 1000 live born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukraine</td>
<td>10.5 (^1)</td>
</tr>
<tr>
<td>Sweden</td>
<td>5.6 (^2)</td>
</tr>
<tr>
<td>Norway</td>
<td>6.1 (^2)</td>
</tr>
<tr>
<td>Finland</td>
<td>5.1 (^2)</td>
</tr>
<tr>
<td>Denmark</td>
<td>8.0 (^2)</td>
</tr>
</tbody>
</table>

Source:  \(^1\) - (Zhylka, 2001),  \(^2\) - (NOMESCO, 2001)

However, data from different countries on stillbirth and early neonatal death are not always comparable, since definitions vary. In Ukraine, like in other countries of the former Soviet Union, perinatal mortality data includes only those being stillborn or born alive either after 28 weeks of gestation or with a birth weight above 1000 g and dying within the first week. A liveborn infant born before 28 complete weeks of gestation or weighing less than 1000 g, and dying within 7 days, will not be included in the official statistics. In most Western European countries, at least those infants born alive, regardless of gestational age, will be included. If WHO definitions of stillbirth and early neonatal death were applied, the rates of perinatal mortality in Ukraine would increase two-three times (Mogilevkina et al., 1999).

According to a censor study published in 1999 (Little et al., 1999) regarding pregnancies delivered at 20+ weeks in Ukraine in 1992-1994, fetal mortality was 29 per 1000, nearly 5 times the rate among white inhabitants in the United States. When deaths occurring in the first week of life were included, estimated perinatal mortality was between 32 and 36 per 1000 infants.

Classifications of perinatal mortality
Quality assessment of perinatal care can be carried out by classifying perinatal deaths (Holt et al., 2000). The aim of a classification of perinatal mortality should be to derive strategies to understand the reasons for, and ultimately prevent, perinatal death (Keeling et al., 1989). Since perinatal deaths can be classified by several parameters representing different aspects, a large number of classifications have been introduced (Johansen and Hod, 1999). The best-known cause of perinatal death classification is the Aberdeen-classification, first described in 1954, classifying each perinatal death in accordance with the factors that initiated the chain of events ending in death (Baird et al., 1954). Another, well known, classification was suggested by Wigglesworth in 1980 (Wigglesworth, 1980). The aim of this classification was “to subdivide cases into groups with clear implications for clinical management”. A Swedish register-based cause of death classification system (NICE) has been suggested for large epidemiological studies (Winbo et al., 1997; 1998). However, in order to compare perinatal deaths between countries a common classification, based on few and well-
defined variables, is needed. The purpose of using the Nordic-Baltic classification for perinatal deaths, introduced in 1995, is to define cases as potentially avoidable by improved care at different levels: antenatal, intrapartum and neonatal care (Borch-Christensen et al., 1997).

**Structure of perinatal care**

In principle, most antenatal and intrapartum care in Ukraine is free and accessible to all. In Ukraine, at least 14-15 antenatal visits to a specialist are recommended. In the Donetsk region, less than 1% of pregnant women are non-attendants, 99.2% of women give birth at obstetrical departments and 0.8% are delivered either at home (accidentally) or during transportation. Only a minority of births in the Donetsk region takes place in hospitals with a neonatal intensive care unit (2 out of the 56 hospitals). Intrapartum care is provided by specialists in obstetrics with assistance of midwives. Specialists in neonatology are there to take care of babies at practically all hospitals in the Donetsk region. In the Donetsk region, large distances and communication problems impede transfer of babies from small hospitals to regional neonatology departments.

**Summary of current situation**

Thus, from this review it is apparent that the reproductive health in Ukraine still requires considerable improvement (Chalyi, 1999). Unfortunately, official statistics at the national as well as at the regional level provide only restricted aggregated data, which cannot be used to assess associations between RHIs and factors behind them in order to develop reproductive health policies (Hoida, 2002).

In 1996, the Donetsk region had one of the most negative population developments as well as poorest reproductive health indicators in Ukraine (MPH, 1997). Consequently, there is a need for increased attention on quality improvement of reproductive health care in the Donetsk region, Ukraine.

In view of the poor situation and the restricted resources available it seemed necessary to gain more detailed information in order to understand and subsequently meet the needs. Therefore, the present study was conducted to achieve this.
AIMS OF THE STUDY

Principal objective

The overall aim of this research was to study some reproductive health indicators specifically reflecting the reproductive health of Ukrainian women and to analyse factors behind the indicators, in order to highlight strategy areas for improving the reproductive health of Ukrainian women.

Specific aims

- To study induced abortion and maternal mortality based on official statistics in Ukraine and some other countries of the former Soviet Union during 1970-1994.

- To investigate abortion rates, contraceptive practices and intentions, and factors behind future contraceptive preferences among women in the Donetsk region, Ukraine.

- To study experiences, attitudes, and knowledge about reproductive health among first year medical students as educationally oriented teenagers and future health care providers in Ukraine.

- To investigate factors associated with pregnancy termination in women in the Donetsk region, Ukraine.

- To analyse reasons for perinatal deaths and the association of avoidable perinatal mortality with quality of perinatal care in Ukraine.
MATERIAL AND METHODS

In this thesis several different sources to assess important reproductive health indicators were used: official national statistics, questionnaires and case-records. Using material from those sources and looking at reproductive health in a broad context we have used an analytical approach similar to that described by McCarthy J in 1993 for maternal mortality in Safe Motherhood Programs: Options and Issues (Maine, 1993). Such an approach (Fig. 3) allows highlighting of factors behind reproductive health indicators of interest.

![Analytical model of Reproductive Health]

**Induced abortion**

A comparative descriptive approach was used to study official statistical data from Ukraine (the Donetsk region), Latvia, Estonia, Lithuania, Russia (the Kaliningrad region) and Belarussia (Minsk) on induced abortions, teenage pregnancies and maternal mortality in order to analyse trends between 1970 and 1994. The annual statistics of the National Board of Health and Welfare in Sweden on induced abortions and teenage abortions was used as a comparison (Paper I).
Additional information on induced abortion was obtained through an anonymous self-completion survey on reproductive health and behaviour of Ukrainian women (Paper II) and class-room survey on sexual behaviour among medical students (Paper III).

**Contraception**

Contraceptive practices and intentions were analysed through anonymous surveys: a hospital-based survey among women of reproductive age attending women’s clinics (Paper II) and a class-room survey among first year medical students (Paper III) (see below).

**Factors behind contraceptive practices and intentions, and induced abortion**

Factors behind reproductive health indicators of interest (contraceptive use, induced abortion) were analysed through an anonymous hospital-based survey on reproductive health and behaviour of Ukrainian women (Papers II, IV).

**Hospital-based survey on reproductive health and behaviour of Ukrainian women**

**Study design**

In order to study abortion rates and factors behind contraceptive practices and intentions, as well as pregnancy termination in Ukrainian women for Paper II and Paper IV, a hospital-based unmatched case-control study was conducted in five women’s clinics in the Donetsk Region, Ukraine, in 1996. Three clinics were situated in large cities and two clinics were in smaller towns where they were the only clinics. In order to evaluate the overall age representativity of the sample obtained, a comparison with official regional data for 1996 was made.

**Study population**

All women (n = 1993) of fertile ages (15-49) who attended these clinics for the first time during February, March, September and October, 1996 and were not infertile or climacteric, were consecutively asked to participate in the study and to complete an anonymous self-questionnaire. Fifteen percent of them refused participation (n = 299). Therefore, 1694 women completed the questionnaire. Among them there were 297 non-pregnant women, attending a gynaecologist for routine check-up, 919 women, undergoing an induced abortion, and 478 pregnant women, who planned to continue their pregnancy and were antenatal care (ANC) attendants (Fig. 4). Participation was voluntary and anonymity was assured.

**Questionnaire**

A 192-item survey was handed out at the clinics. The questionnaire, which had been tested in a pilot study on 104 women, obtained information on the woman’s demographic and personal characteristics, attitudes towards abortion as a birth control method and previous experience of pregnancies, abortions and STI. Questions were also asked on sexual experience, contraceptive use and contraceptive preferences for the future, and on sources of sexual education/information.
For **Paper II** we compared women undergoing an induced abortion \(n = 919\) and non-pregnant women, coming for check-up visits \(n = 297\) to study abortion rates, contraceptive practices, contraceptive intentions, and factors behind future contraceptive preferences in Ukrainian women.

For **Paper IV** we compared women undergoing an induced abortion \(n = 919\) and pregnant women who planned to continue their pregnancy \(n = 478\) to investigate factors behind pregnancy termination in Ukrainian women.

![Figure 4. Study design of the reproductive health and behaviour survey.](image)

**Class-room survey on sexual behaviour among medical students**

**Study design**

The study for **Paper III** was designed to investigate experiences, attitudes, and knowledge about reproductive health of Ukrainian medical students as educationally oriented teenagers and future providers of reproductive health care in the country.

In the 1999 first-year class, 689 of 4,317 students attending, Donetsk State Medical University were Russian speakers \(92\%\) of 750), and we asked them to participate in the survey. Participation in the study was voluntary and students were assured anonymity. We excluded foreign students because of their diverse social and cultural backgrounds. Between 25 and 30 students were present in the classrooms at the time.
the survey was distributed. All students who were present completed the questionnaires.

**Questionnaire**
A classroom questionnaire consisted of 37 items concerning age, gender, and knowledge about STI, personal sexual experience, age at first intercourse, use of contraceptives, and experience of abortion and STI. To assess the students’ estimated risks for contracting STI, the extent to which they felt embarrassed when purchasing condoms, and their intention of using condoms with a new partner, we used a visual analogue scale (100 mm).

**Perinatal mortality**
For Paper V perinatal deaths in the Donetsk region (Ukraine) in 1997-98 were compared with those in Denmark in 1996. Perinatal audit was done to study factors behind high perinatal mortality rate in Ukraine.

Since the definition of perinatal mortality applied by the Danish Birth register was used in the study, the number of perinatal deaths in the Donetsk region was recalculated, adding all early neonatal deaths between 22 and 28 weeks of gestation regardless of birth weight. Recalculation of Ukrainian data showed 69 782 births and 989 perinatal deaths. By a request to all local delivery wards, the records from a total of 1126 cases of perinatal death were obtained and studied and the perinatal deaths classified from the information in the records. There were 67 963 births and 540 perinatal deaths in Denmark in 1996.

The perinatal deaths were classified using the Nordic-Baltic classification for perinatal deaths (Borch-Christensen *et al.*, 1997). Clinical guidelines, use of technology and rates of interventions were studied.

**Nordic Baltic Perinatal Deaths Classification**
The classification takes into account five variables: fetal malformations, time of death in relation to delivery, significant fetal intrauterine growth-retardation (IUGR; with birth weight below mean – 2 standard deviations (SDs), or < 2.5 percentile), gestational age in completed weeks and Apgar score (< 7 at 5 minutes) in neonatal deaths.

Altogether 13 categories have been characterised using these five variables. They are as follows:
I. Fetal malformation.
II. Antenatal death. Single growth-retarded fetus after (≥) 28 weeks.
III. Antenatal death. Single, non-IUGR, after (≥) 28 weeks.
IV. Antenatal death. Before (<) 28 weeks.
V. Antenatal death. Multiple pregnancy.
VI. Intrapartum death. After (≥) 28 weeks.
VII. Intrapartum death. Before (<) 28 weeks.
VIII. Neonatal death. Preterm (28-33 weeks) and Apgar score > 6 after 5 min.
IX. Neonatal death. Preterm (28-33 weeks) and Apgar score < 7 after 5 min.
X. Neonatal death. After (≥) 34 weeks and Apgar score > 6 after 5 min.
XI. Neonatal death. After (≥) 34 weeks and Apgar score < 7 after 5 min.
XII. Neonatal death. Before (<) 28 weeks.
XIII. Unclassified.

Statistics

The JMP (SAS Institute, Cary, NC, 1994) program package was used for data-entering and analysis. Computed descriptive statistics included proportions, means, and SDs. In the univariate analyses chi-square tests were used for nominal, and t-tests for interval scaled variables.

Odds ratios (OR) were calculated when cases and referents were compared. The odds ratio for a defined category of an independent variable approximates the adjusted risk, relative to the reference category, of having a particular outcome. Relationships between contraceptive intentions and factors behind them (Paper II), pregnancy termination and factors behind (Paper IV) were estimated by logistic regression analyses. The results are presented as univariate ORs and adjusted ORs (aORs) with 95% confidence interval (95%CI). Findings of a p-value less than 0.05 were considered statistically significant.

National and regional perinatal mortality rates were calculated using the total number of infants born as denominator (Paper V). Risk of dying during the perinatal period in each category of perinatal death, when comparing the Donetsk region, Ukraine, with Denmark, was calculated by a case-referent approach. The results are presented as univariate ORs with 99% confidence interval - OR (99% CI).

Ethical consideration

All the studies were approved by the local ethics committee at the Institute of Medical Problems of Family, Donetsk State Medical University, Donetsk, Ukraine.
RESULTS

Induced abortions (Papers I, II, III)

High abortion rates were seen in all the countries/regions of the former Soviet Union studied (Fig. 5), but since 1980 a continuing decrease was noted for some countries (Ukraine, Russia, Estonia and Latvia) with a lowest rate of 57 abortions/1000 women in Latvia in 1993. The corresponding figure for Ukraine was 82.6 abortions per 1000 women of fertile ages in 1990, which was around four times higher than in Sweden (Paper I).

Figure 5. Abortion rates (per 1000 women of fertile ages) in some countries of the former Soviet Union, 1970-1993.

The number of induced abortions far exceeded the number of live births in all the countries/regions studied (155.1/100 live births for Ukraine in 1990), whereas in Sweden, like in other Western countries, the number of abortions usually is less than one-third of the number of live births (Fig. 6).
Figure 6. Abortion ratio in Ukraine and in Sweden, 1986-1990.

From 1989 to 1993 there was a continuous increase of both teenage abortions and teenage deliveries in Ukraine (Fig. 7).

Figure 7. Teenage induced abortion (IA) and childbirth (CB) rates (per 1000 teenagers) in the Donetsk region, Ukraine and in Sweden (1989-1993).
Maternal mortality was a reality in all the countries/regions studied with an annual incidence between 30 to 40 deaths/100 000 live births. In some regions, i.e. Ukraine and Belarussia, induced abortions contributed to a substantial proportion – around 30% - of the maternal mortality.

The cumulative average number of abortions (Fig. 8) reported by the respondents of the survey on reproductive health and behaviour of Ukrainian women rose with age up to 2.4 abortions per woman in the late reproductive years (ages 35-49) among the non-pregnant and up to 4.6 abortions per woman in the abortion group (Paper II).

![Figure 8. Mean number of abortions by five-year age groups in women coming for abortion and non-pregnant women.](image)

About 10% of the first-year medical students, whose median age was 18 years, reported having had an abortion (Paper III).

**Contraceptive practices (Papers II, III)**

Data obtained through an anonymous self-questionnaire on reproductive health and behaviour (Paper II) showed that twenty-seven per cent of the women in the abortion group and twenty per cent of the non-pregnant women reported no contraceptive use last year (OR 1.5, 95%CI 1.1-2.1), and 61% and 51% (OR 1.5, 95%CI 1.2-2.0), respectively, during the time of conception or last month. Because contraceptive use was inconsistent, even if the women in the study population did report some contraceptive use during the most recent year, more than half of them were under the risk of unplanned pregnancy last month. There was no difference between the women
coming for abortion and the non-pregnant women regarding sexual activity in general or sexual activity during last month.

Condoms and natural methods (rhythm, withdrawal) were the most popular methods in both groups last year (Fig. 9).

![Figure 9. Prevalence of contraceptive use last year in women coming for abortion (AG) and non-pregnant women (NPG), %.

In both groups, younger women preferred barrier methods, which constituted approximately 38% of all methods reported by women under 19 in the abortion group and 43% of methods reported by women under 19 in the non-pregnant group. The second choice for teenagers was to practice natural methods, with 28% prevalence in the abortion group and 25% prevalence in the non-pregnant group. The third preference among teenagers was to use no method and use of highly effective methods was the fourth and last preference among teenagers, both in the abortion and in the non-pregnant group.

In a 1999 classroom survey (Paper III) of sexual behaviour among 689 first-year medical students at Donetsk State Medical University, Ukraine (median age of participants was 18 years), 59% of the women and 83% of the men revealed that they had ever had sexual intercourse. Mean age at first intercourse was 15.7 years for men and 16.6 years for women.
Thirty-two percent of the students reported that they had not used contraceptives at their first intercourse, and 19% said they had used no contraceptive at their most recent coitus. Condoms were the most frequent means of contraception (38% of respondents reported condom use at their first and 52% at the most recent intercourse), followed by coitus interruptus (26% and 15%, respectively). Less than 5% used oral contraceptives.

**Contraceptive intentions (Paper II)**
Highly effective modern contraceptives were rated the first choice for the future in both the abortion (39%) and the non-pregnant (41%) group, followed by barrier methods (29%) in the non-pregnant and by natural methods (28%) in the abortion group. Still, intention to use no contraception in the future was reported by 15% of the women in the abortion and 8% of the women in the non-pregnant group (OR 2.0, 95%CI 1.3-3.3).

**Factors behind contraceptive practices and intentions (Papers II, III)**

**Lack of knowledge on sexual matters**
Six per cent of the women coming for abortion mentioned lack of knowledge in family planning as a reason for current unplanned pregnancy and abortion (Paper II). Seventy-three per cent of the students reported that they were afraid to use OCs (Paper III). Among those who were afraid to use them, 91.2% were concerned about potential negative health consequences (ie, infertility, genetic consequences, their own future health or the health of their future children).

All the students were aware of HIV as a STI. Forty-one percent of the students knew about chlamydia and 53% of the respondents believed gonorrhea to be the most common STI in Ukraine. Human papilloma virus was recognised as an STI by only 12% of the students.

**Sources of education/information on sexual matters**
Doctors were less often reported (Paper II) as a source of education/information on sexual matters (28.9% in abortion group vs. 43.4% in non-pregnant group, OR 0.5, 95%CI 0.4-0.7) than literature (58.5% vs. 65.3%, OR 0.8, 95%CI 0.6-0.98), friends (40.9% vs. 54.9%, OR 0.6, 95%CI 0.4-0.7) and mass media (35.9% vs. 52.9%, OR 0.5, 95%CI 0.4-0.7).

**Acceptance of abortion as fertility control method**
Thirteen per cent of women indicated that acceptance of abortion as a birth control method was the main reason for the current unplanned pregnancy and abortion.

As compared with women in the non-pregnant group, women in the abortion group 2.3 times more often reported abortion as an acceptable method to control fertility. Moreover, they stated 2.4 times more often that, in a situation of choice, they preferred to have an abortion than to take OCs and 3.1 times more often that they preferred to have an abortion than to use IUD (Fig. 10).
Income
Those in the study population who reported low income or did not respond to the question regarding income, less often reported use of contraceptives that had to be paid for (OCs, condom; Fig. 11).

Fig. 11 Contraceptive use and intention prevalence (%) in the study population with regard to the reported income.
Intention to use highly effective contraceptives in the future (OCs, IUD, Depo Provera, sterilisation)

A history of previous childbirth, at least two induced abortions and sexual information/education obtained from literature were associated with increased preference to use modern contraceptives in the future (Fig. 12).

Figure 12. Factors behind preferred use of highly effective contraception in the future (results from logistic regression analyses, adjusted odds ratio, only statistically significant associations are shown).

Intention to use no methods in the future

Intention to use no contraception in the future (Fig. 13) was associated with giving no answer about acceptance of abortion as a birth control method, no answer about housing situation, reporting low income, and stated uncertainty to use abortion or IUD in a situation of choice.

Lack of experience with different types of contraception reduced the intention to use any method in the future.

No association was found between age, educational level, marital status and the intention to use effective contraceptives or to use no contraception in the future.
Factors behind pregnancy termination (Paper IV)

Termination of pregnancy was strongly associated with being single (aOR 11.8, 95%CI 7.5-18.9). Both previous childbirth and previous induced abortion were other determinants for having an abortion as well as being younger than 19 years (aOR 3.8, 95%CI 2.4-6.0), having a positive attitude towards abortion as a birth control method (aOR 2.7, 95%CI 2.0-3.7), and sharing apartment with parents (aOR 1.9, 95%CI 1.4-2.7). The higher the number of previous abortions the women reported, the higher was the risk for repeat abortion. Neither income nor educational level was identified as a risk factor for pregnancy termination.

Perinatal mortality (Paper V)

A two-fold increase in PMR was found in Ukraine compared with Denmark (OR 2.1, 99%CI 1.8-2.4), mainly explained by higher rates of antenatal deaths of growth-retarded fetuses (OR 2.6, 99%CI 1.8-3.8), intrapartum deaths (OR 2.7, 99%CI 1.6-4.8), and neonatal deaths after 33 weeks of gestation due to asphyxia (OR=4.6, 99%CI 2.8-8.3). The largest contribution to the two-fold increase of perinatal mortality in Ukraine versus Denmark came from neonatal deaths of asphyxiated premature infants (OR=15.6, 99%CI 6.8-46.5).
DISCUSSION

Methodological aspects

The current studies have produced an assessment of some aspects of reproductive health in Ukraine. It is not a complete investigation of the country’s reproductive health since several important areas are not included or just briefly touched on, such as maternal mortality, infertility and sexually transmitted infections. The aim of the present work was to study some reproductive health indicators (induced abortions and perinatal mortality) specifically reflecting the reproductive health of Ukrainian women, and to analyse factors behind the indicators.

In order to analyse induced abortions and maternal mortality trends a comparative descriptive approach was used, by studying official statistical data from different countries/regions (Paper I).

To investigate factors behind some reproductive health indicators in Ukraine we have conducted studies in the Donetsk region, where 10% of the Ukrainian population live. The occurrence rate of major indicators for this region was close to the average data for reproductive health of the whole country (see Table 2). Thus, it could be supposed that the data obtained for the Donetsk region might reflect the situation for the whole country.

Although it was not possible to obtain a random sample of the population of women for the survey on reproductive health and behaviour of Ukrainian women (Papers II&IV), the clinics from which the respondents were recruited were situated all over the region, both in urban and rural districts. All consecutive women who met inclusion criteria were invited and as many as 85% of them accepted participation in the study which is likely to have decreased any potential selection bias. The comparison between our study sample and the official statistics showed that the women in the study coming for induced abortion and for antenatal care had a similar age distribution as those reported to the official statistics, suggesting that our sample was representative. Also, the non-pregnant women in the study had a similar age distribution as those coming for abortion. Even if those in the non-pregnant group coming for check-up could be assumed to be more proactive in their approach to health care than a segment of the general population, we believe that the non-pregnant women in the study were representative of sexually active women in the region and well comparable with women experiencing an unwanted pregnancy. We have no information about the non-participants - but there is no reason to believe that the non-participants differ from the participants in any respect.

In the survey of sexual behaviour among the first year medical students (Paper III), all Russian speaking students who were present in the classroom on the day that the questionnaires were distributed responded to the survey. As the median age of the students was 18 years, 82% were less than 19, and they were the only first year
students, it can be assumed that the results obtained reflect sexual behaviour of educationally oriented teenagers in Ukraine.

It is widely known that sexual issues are sensitive and difficult subjects to investigate. Legal, moral and ethical questions surrounding abortion add additional difficulties to research on all aspects of abortion (Uygur and Erkaya, 2001). Thus, the quality of the information obtained could possibly be affected.

Anonymous self-completion questionnaires were used in our studies. In the hospital-based survey, women were allowed to complete the questionnaire either in the waiting room or at home, which probably could reduce a pressure for socially acceptable responses. That was not the case in the classroom survey among medical students. It could not be ruled out that individual students may have felt such a pressure. However, the teachers who delivered the questionnaires conveyed their impression that the students had a positive attitude toward the investigation and responded in a serious way.

We believe, however, that because participation in the surveys was voluntary and anonymity was assured, women and students had the opportunity to answer seriously and truthfully.

The perinatal mortality rate can serve as a reasonable indicator of the quality of antenatal and perinatal care (Richardus et al., 1997; Richardus et al., 1998). A requirement for any comparison of perinatal deaths between two regions is that common definitions are applied and all cases are included. Common definitions and classification were used for quality assessment of perinatal care in our study (Paper V). In both the Ukrainian (Donetsk region) and the Danish material, validity was assured by using both national birth registers and retrieved medical records. The fact that the number of cases in the Donetsk region identified by the hospital registrations and medical records exceeded the number registered at the regional level supports the assumption that the effort was necessary to improve validity of the officially reported perinatal mortality rate.

Case-control study designs were used to investigate possible factors behind contraceptive intentions (Paper II), pregnancy termination (Paper IV) and risk of dying during perinatal period in different categories of perinatal death (Paper V). The designs of these studies do not give any final evidence of causality of a particular outcome, however, we were able to demonstrate associations to potential risk factors.

Some reproductive health indicators in Ukraine

The findings from our studies confirmed the recent data (Zhylka, 2001), showing serious gaps in the reproductive health of Ukrainian women.
Abortion remains a major method of fertility control
Although downward trends in induced abortion rates have been found since the 1980s, induced abortion is still very frequent and an essential method of fertility regulation in Ukraine, as is also the case in other countries of the former Soviet Union (Paper I). Teenage pregnancy is an important issue. Our data showed that around 10% of the first year medical students whose median age was 18 years reported having had an abortion (Paper III). In spite of the total abortion rate for Ukraine in 1996 being officially reported to be 1.72 (Henshaw et al., 1999), data from our survey demonstrated sharp increase in the average number of abortions with age (Paper II) which is in accordance with previous data for Russia (Rankin-Williams, 2001). The present results agree with other studies from countries of the former Soviet Union indicating that use of abortion remains a major method of fertility control (Visser et al., 1993; Visser et al., 1993; UNFPA and WHO, 1995; Conly, 1997; Entwisle and Kozyreva, 1997; Lakhova, 1997; Oddens, 1997; Rankin-Williams, 2001; UNDP, 2002).

Contraception is not widely used
It is known that unintended pregnancies result from contraceptive non-use, misuse and method failure (Williams et al., 1997). Many unintended pregnancies would, in principle, be preventable if more effective methods were used, or if these methods (in particular OCs) were used more consistently (Oddens, 1997).

Our data on current contraceptive practices are in accordance with previous data for Ukraine, showing that 22% (Kosey, 1997) to 32.5% (URHS, 2001) of women did not use any contraceptives, and are slightly higher than data reported for Sweden (Larsson et al., 2002). Moreover, there is high inconsistency in contraceptive use that is in accordance with previous data reported for the former Soviet Union in 1993 (Visser et al., 1993) and recent data reported for Ukraine (URHS, 2001).

In the present study (Paper II), barrier methods were the most widely used methods, followed by natural methods, whereas in other studies from Ukraine natural methods are usually the most prevalent, followed by condom (Kosey, 1997) or by IUD (MPH, 1997; URHS, 2001). Our data demonstrated lower prevalence of IUD use and higher prevalence of OC use as compared with other Ukrainian studies, which may probably reflect differences in study populations (MPH, 1997; Kosey, 1997; URHS, 2001).

Higher actual use of barrier methods by Ukrainian women than by Russian women (Rankin-Williams, 2001), especially among teenagers (Papers II&III), can probably be explained by the nationwide AIDS information campaign in Ukraine, which started in 1996 in order to increase awareness about HIV. In the survey at the Medical University, we found that at least the first year medical students in Ukraine showed good awareness of HIV. This is in accordance with the previous study from Denmark, where it was shown that condom use was the most commonly reported method among young single Danish women as a straightforward consequence of the AIDS epidemic (Svare et al., 1997).
We have found that teenagers in Ukraine demonstrate many of the same practices in contraceptive use as older women, by mainly relying on no or traditional methods rather than modern contraceptive methods. A similar finding was reported also for Russia (Rankin-Williams, 2001).

**Perinatal mortality rate is high**
Our data from Perinatal Audit being conducted in 1997-1998 in the Donetsk region, Ukraine (Paper V) showed that perinatal mortality rate was two times higher in Ukraine than in Denmark (1996), which is in accordance with previous studies (Langhoff-Roos et al., 1998).

The most striking difference between the groups of perinatal deaths in the Donetsk region, Ukraine and Denmark was found among antepartum deaths of growth retarded fetus, intrapartum deaths of non-malformed babies and neonatal deaths of preterm and term babies without malformations with Apgar scores below 7 after 5 minutes, all of which are perceived as categories that can be reduced by optimal care. Perinatal hypoxia was also reported as the main cause of perinatal deaths in Latvia – a country in economic transition - in 1997 (Jansone and Lazdane, 1997).

In addition to the differences in the socio-economic standards and living conditions, there might be also differences in the organisation and content of perinatal care.

**Factors behind induced abortion and perinatal mortality in Ukraine**

**Lack of knowledge in reproductive health issues**
An important question is why contraceptive use is so low, particularly use of modern effective family planning methods. It was mentioned by Bruyniks in 1994 (Bruyniks, 1994) that poor contraceptive knowledge results in negative attitudes towards contraception and subsequent low use of effective, modern contraceptives.

Our study showed that only few women coming for abortion mentioned lack of knowledge on family planning as a reason for the unplanned pregnancy (Paper II), which is in contrast to another study where 28% of Ukrainian women reported no knowledge and 40% little knowledge on matters of contraception (Kosey, 1997). However, if only few women in the present study reported no knowledge, it does not mean that the majority had adequate and correct knowledge. There were no questions in the survey to estimate women’s contraceptive knowledge. Nevertheless, it was reported that the lack of sexual culture among the majority of the population in Ukraine is one of the important reasons for the high rate of abortions. Sexual education at school has a very weak position. Although a course on “Psychology and Ethics of Relations within the Family and Marriage” was introduced in secondary schools for 9th grade students, in practices the schools fail to find academic hours for it and the lectures are being delivered as extracurricular activities and by teachers without adequate training for lecturing on this discipline (Kisselyova, 1999; UNDP, 2002).
In the survey among the first year medical students we found that 73% of them reported being afraid to use OCs, and among them, almost all were concerned about potential negative health consequences (Paper III). This negative attitude towards OCs, which probably reflects lack of, or inadequate, contraceptive knowledge among teenagers, may explain the infrequent use of highly effective contraceptives and the comparatively high abortion rate. Moreover, the students’ knowledge and risk awareness was either inadequate or missing on other STI except HIV.

Traditionally, physicians have been viewed as influential and credible sources of medical information in general (Halpern and Blackman, 1985; Kalda et al., 1998). Our data demonstrated that doctors were less often reported as a source of information/education on sexual matters than literature, friends and mass media (Paper II). We have not studied the reasons for that. But this probably may reflect some gaps in the reproductive health education of medical doctors, as was reported for the former Soviet Union (Visser et al., 1993). As doctors are gatekeepers of women’s access to effective reproductive health services, their attitudes, knowledge and practices are of importance for the outcome as well as the quality of services provided. From this point of view, analysis of sexual practices and knowledge of reproductive health within specific segments of the population, e.g. medical students, may affect changes in the education of physicians, who, in their future professional practice, may improve the existing situation of STI and unwanted pregnancy and abortion (Visser et al., 1993).

Implementation of an STI-prevention programme for university students in Sweden increased the awareness of STI and concerns about safety of OCs decreased significantly (Tyden et al., 1996). In view of the findings in the young student group, representing educationally oriented teenagers and future medical doctors, and thus the next generation of health care providers, it seems important to make strong efforts to implement training in modern reproductive health in the curriculum not only of medical schools but also in pre-university high schools.

**Acceptance of abortion as a fertility control method**

Another obstacle to the use of modern contraceptives in Ukraine might be the historically developed positive attitude towards abortion as an acceptable birth control method, which was confirmed in our study (Paper II). Moreover, the attitude towards abortion as an acceptable method for birth control was recognised in our study as one of the significant factors associated with pregnancy termination (Paper IV). As was pointed out in 1993 (Visser et al., 1993), the traditional orientation of the former Soviet Union health care system was to terminate rather than to prevent unwanted pregnancy. Many authors assumed that this orientation might have arisen from a shortage of effective means of contraception as well as negative opinions on modern contraceptives by doctors and patients, together with socio-economic pressure for small-size families (David, 1992; Popov et al., 1993; Visser et al., 1993; Čwikel et al., 1994; Sabatello, 1995; Kovács, 1997; Thomas, 1997; Vovk, 1997; Brandrup-Lukanow, 1999; Kovács, 1999). Furthermore, limited efforts to inform women about potential health risks of induced abortion resulting in a general perception of abortion
as a safe and routine procedure by society might also explain the acceptance of abortion as a method of birth control that cannot be expected to disappear within a short time. Also in other studies from the former Soviet Union, abortion was mentioned as a primary method of birth control by 9-25% of women (Popov et al., 1993; Remennick et al., 1995). Our data confirmed that not only did a high proportion of women consider abortion an acceptable method for birth control, but also, in a situation of choice, a substantial proportion of women would prefer abortion to the use of modern contraceptives (Paper II). Pregnancy is definitely not risk-free for the mother (Perlman et al., 2001) and such an attitude is particularly worrying in a situation where complications to induced abortion still cause a substantial proportion of the maternal mortality (Bruyniks, 1997; UNICEF, 1999; Brandrup-Lukanow, 1999; Kovacs, 1999), a finding that was confirmed by our results (Paper I). Data from the recent Ukrainian study (URHS, 2001) showed that the majority of the women rated induced abortions negatively, particularly with regard to safety and health consequences. However, in contrast to our anonymous self-questionnaire survey, the former was an interview study, which might have affected the results.

Apart from lack of adequate knowledge, it has previously been pointed out that the high price of modern contraceptive methods in relation to family income also affects contraceptive use (Sinimae, 1997), a finding that was not contradicted by our results.

**Socio-economic situation**

An important reason for heavy reliance on induced abortion as a method of controlling fertility seems to be that modern methods of contraception are not widely available to all women (Popov et al., 1993). As was assumed in the previous studies (Grady et al., 1986; Vovk, 1997; Brandrup-Lukanow, 1999; Macaluso et al., 2000), it seems from our study that effective family planning services are more easily available to women with adequate income (Paper II), whereas women below the poverty level are more likely to have an unplanned pregnancy as a result of no or inconsistent use of contraceptive methods. The cost of modern contraceptives makes them inaccessible (Kisselyova, 1999; Mannan, 2002), and abortion becomes the only means of family planning available (UNFPA and WHO, 1995; Dickens, 1999).

The major constraint in implementing the Cairo Platform of Action in Ukraine is the social and economic crisis. As a result of the economic crisis, the state budget has decreased and, as a result, budget cuts have been made in the health sector (Kisselyova, 1999). Recent economic changes in Ukraine may have further jeopardised women’s reproductive rights by pressuring them to rely on abortion as their only method for family planning (Belhadj-el Ghouayel, 1999).

On August 17, 1998, the Cabinet of Ministers of Ukraine adopted a Decree “About regulation of free of charge and favourable medicines issued by doctors’ prescription”. In accordance with this Decree, teenage girls, women with contraindications to pregnancy, and people who suffered from the Chernobyl accident can get contraceptives free of charge. However, information about this Decree has not been widely disseminated (Kisselyova, 1999; UNDP, 2002).
Getting an abortion for very little money, but having to give at least one-fifth to one-third of one’s salary for contraceptives does not allow women a choice (UNFPA and WHO, 1995). Abortion is relatively inexpensive in Ukraine, and women are more able to afford an occasional abortion than to take oral contraception over a prolonged period of time (Bergthold et al., 1998; Brandrup-Lukanow, 1999).

Women attending for abortion consider the choice of pregnancy termination as a personal decision and the reasons they give for terminating a pregnancy vary with their social situation (Skjeldestad, 1994). Marital status, young age, housing situation, parity, previous induced abortion experience, occupational situation and attitudes towards abortion have been reported to be major determinants for pregnancy termination in studies from Norway and the USA (Forrest, 1994; Skjeldestad, 1994), findings that were confirmed by our results.

Our results were slightly in contrast to some other studies, that had shown socio-economic status as the most important factor to determine whether a pregnancy will end in abortion or not (Henshaw et al., 1991; Forrest, 1994). Family income was not recognised as a significant determinant for pregnancy termination (Paper IV), which might be explained by the very low cut-off limit of income used in our study. This income was officially quoted as the minimum salary for basic needs during that period and was probably far too low to provide basic needs for an individual.

Education does not seem to be as clear a marker of good material status in Ukraine as it is in the West, as was pointed out by Gilmore et al in 2001 (Gilmore et al., 2001). Thus, our data are in accordance with data from St Petersburg for 1995 (Rankin-Williams, 2001), showing that socio-economic correlates, such as high education, which could be suspected to imply high use of modern contraceptive technologies, do not in fact appear to positively affect the use of modern effective contraceptive methods.

Thus, we can assume that the main reasons for the high utilisation of abortion found was due to widespread negative attitudes towards oral contraceptives, a traditionally high degree of acceptance of abortion as a fertility control method and the high costs of contraceptives, which are inaccessible for most people (UNDP, 2002). Thus, there is little evidence that the present trend with high abortion rates and increasing abortion utilisation with increasing age will change in the near future.

**Outdated perinatal care practices**

Quality assurance is an ongoing process, including not only the assessment and evaluation of the quality of care, but also the definition and implementation of strategies to improve the quality. The process of quality assurance must start from the identification of health problems and of the appropriate interventions to address those problems (Lindmark, 1997).
Despite the fact that the Public Health system in Ukraine provides full-coverage health care services to pregnant women, perinatal mortality rate remains high. The primary cause of this problem might be that perinatal care is opinion-based rather than evidence-based (Bergthold et al., 1998). Doctors in Ukraine, as in other countries of the former Soviet Union, often employ procedures during pregnancy, labour, delivery, and postpartum care that differ from the recommendations of the World Health Organisation and other international bodies. Thus, perinatal care practices are often in conflict with evidence-based medicine.

Data from the Perinatal Audit (Paper V) showed that the clinical guidelines for care differ significantly between Ukraine and Denmark. Management in the case of suspected fetal IUGR (Box 1) and intrapartum hypoxia (Box 2) were analysed.

**Box 1. Management of suspected fetal intrauterine growth retardation (IUGR)**

| **Denmark** | When fetal IUGR is suspected on the basis of repeated symphysis-fundus measurement (Cnattingius et al., 1984; 1985; Steingrimsdottir et al., 1995), intensive monitoring with ultrasonography (US), Doppler velocimetry and timely elective delivery, even preterm, is carried out. |
| **Ukraine** | Diagnosis of fetal IUGR on the basis of US is indication for intensive medical care of placental insufficiency, including vitamins, glucose and medicines to improve placental blood flow (Saveljeva et al., 1991) under US control. Elective delivery is discussed only after 36 weeks of gestation. |

**Box 2. Management of intrapartum hypoxia**

| **Denmark** | Partogram, fetal heart rate (FHR) monitoring with CTG, pH when appropriate and expedite delivery in case of signs of asphyxia. |
| **Ukraine** | Diagnostic problems |
| | Lack of appropriate equipment for surveillance during delivery (absence of CTG and scalp pH measurements). Rare use of partograms. Only intermittent auscultation and vaginal examination with inspection of amniotic fluid is available. |
| | Management |
| | When asphyxia is suspected the condition is treated with medicines and oxygen administration to the mother (Fedorova, 1982). |
| | **Postponing of appropriate intervention:** |
| | - A problem to perform an emergency caesarean section in some small hospitals since anaesthesiologists are not present at the departments at night and during weekends. |
| | - Vacuum extraction was non-officially forbidden for a long period of time, use of forceps was not encouraged. |
Since intrapartum deaths, often caused by asphyxia, as well as neonatal deaths of infants with low Apgar scores are more frequent in Ukraine, both intrapartum surveillance and neonatal care need to be improved.

As a result of negative attitudes towards vacuum extraction and forceps, only 0.5% of vaginal deliveries in the region were instrumental. The extremely low rate of vacuum extractions in the Donetsk region may be another important contribution to the high death-rates in these groups as expedited delivery in cases of asphyxia in the second stage of labour may be life-saving.

Thus, evidence-based education and training of medical students and of specialists is vital to improve the quality of all aspects of reproductive health.
GENERAL CONCLUSIONS AND SUGGESTIONS FOR FUTURE ACTIONS

Induced abortion and perinatal mortality are reproductive health indicators specifically reflecting the reproductive health of Ukrainian women.

- Abortion remains a major method of fertility control in Ukrainian women. Abortion-related mortality contributes a substantial proportion of maternal deaths.
- Perinatal mortality rates are twice as high in Ukraine as in Denmark.

Contraceptive practices of Ukrainian women contribute to the current situation with a high frequency of induced abortions.

- A substantial proportion of sexually active women in Ukraine do not practice contraception although they do not plan to become pregnant.
- Modern effective methods of contraception are not widely used.

The most important factors behind induced abortion and low modern contraceptive use rate in Ukraine are:

- Lack of knowledge in reproductive health issues and negative attitude to OCs. Gaps in reproductive health knowledge among first year medical students affect their own reproductive health and may be crucial for sexual and reproductive health of future generations if not corrected properly.
- Doctors are less often reported as a source of information/education on sexual matters for Ukrainian women than literature, friends and mass media.
- There is a positive attitude towards abortion as an acceptable fertility control method and a positive attitude to having abortion instead of using OCs or IUD in a situation of a choice.
- Poor economy is an obstacle to the use of contraceptive methods that are associated with a cost.

Several factors are associated with contraceptive intentions of Ukrainian women for the future:

- A history of previous childbirth, at least two induced abortions and sexual information/education obtained from literature were associated with preference to use modern contraceptives in the future.
- Intention to use no contraception in the future was associated with being uncertain about acceptance of abortion as a birth control method, stated uncertainty to use abortion or IUD in a situation of choice, reporting low income, no answer about housing situation. Lack of experience with different types of contraception reduced the intention to use any method in the future.

The most important factors associated with pregnancy termination in Ukrainian women are:

- Being single, being younger than 19 years, living with parents and having a
positive attitude towards abortion as a birth control method. History of previous childbirths and previous abortions were determinants for another abortion.

Antepartum deaths of growth-retarded fetuses, intrapartum deaths and neonatal deaths associated with asphyxia were more common in Ukraine compared with Denmark, particularly among premature infants. The most important factors behind this situation are:

- Lack of evidence-based clinical guidelines and adequate resources for fetal monitoring during pregnancy and labour together with negative attitudes towards and limited resources for instrumental delivery.

Decrease of the high proportion of women who consider induced abortion as an acceptable method of birth control might be achieved through better reproductive education and information of all strata of society. Incentives, preferably economic, and attractive services, can strongly assist positive changes. Cultural acceptance of unplanned pregnancy is related to sexual and contraceptive behaviour, and approaches that target cultural attitudes may contribute to reduce the number of abortions.

Implementation of reproductive health knowledge and awareness in the population can be accomplished by emphasising awareness of these issues among future health providers, such as medical students. These young people will thereby be better prepared to meet the great challenge for an effective approach to STI control and better use of family planning in Ukraine.

Implementation of evidence-based, or at least well-documented, perinatal guidelines should be a matter of high priority. Guidelines for appropriate use of existing technology in perinatal medicine as well as implementation of both simple methods for monitoring (partogram, symphysis-fundus measurements) and modern technology for monitoring are important factors.

Strong governmental commitment in reproductive health issues is essential to improve reproductive health of Ukrainian women. Reproductive health needs to be acknowledged by society in general as an important priority area for future successful development of Ukraine.

International collaboration may be of great value, especially in the field of introduction and implementation of evidence-based approaches in perinatal medicine. The “Quality improvement in perinatal care” programme, initiated by Uppsala University with support from the Swedish East European Committee and “Effect of different approaches for introducing the partogram as a step for initiating obstetrics best practices in Ukraine” supported by WHO, are two current projects that may play an important role to incorporate modern evidence-based thinking in everyday Ukrainian practices.
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