

Maternal mortality in St. Petersburg, Russian Federation

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Objective To study the levels and causes of maternal mortality in St. Petersburg, Russian Federation.

Methods We collected data about all pregnancy-related deaths in St. Petersburg over the period 1992–2003 using several sources of information. An independent research group reviewed and classified all cases according to ICD-10 and the Confidential Enquiries into Maternal Deaths in the United Kingdom. We tested trends of overall and cause specific ratios (deaths per 100 000 births) for four 3-year intervals using the χ^2 test.

Findings The maternal mortality ratio for the study period was 43 per 100 000 live births. A sharp decline of direct obstetric deaths was observed from the first to fourth 3-year interval (49.8 for 1992–94 versus 18.5 for 2001–03). Sepsis and haemorrhage were the main causes of direct obstetric deaths. Among the total deaths from sepsis, 63.8% were due to abortion. Death ratios from sepsis declined significantly from the first to second study interval. In the last study interval (2001–03), 50% of deaths due to haemorrhage were secondary to ectopic pregnancies. The death ratio from thromboembolism remained low (2.9%) and stable throughout the study period. Among indirect obstetric deaths a non-significant decrease was observed for deaths from cardiac disease. Death ratios from infectious causes and suicides increased over the study period.

Conclusions Maternal mortality levels in St. Petersburg still exceed European levels by a factor of five. Improved management of abortion, emergency care for sepsis and haemorrhage, and better identification and control of infectious diseases in pregnancy, are needed.

Keywords Maternal mortality/trends; Pregnancy complications/mortality; Abortion, Spontaneous/mortality; Abortion, Criminal; Comparative study; Prospective studies; Russian Federation (*source: MeSH, NLM*).

Mots clés Mortalité maternelle/orientations; Grossesse compliquée/mortalité; Avortement spontané/mortalité; Avortement illégal; Etude comparative; Etude prospective; Fédération de Russie (*source: MeSH, INSERM*).

Palabras clave Mortalidad materna/tendencias; Complicaciones del embarazo/mortalidad; Aborto espontáneo/mortalidad; Aborto criminal; Estudio comparativo; Estudios prospectivos; Federación de Rusia (*fuentes: DeCS, BIREME*).

الكلمات المفتاحية: وفيات الأمهات، اتجاهات وفيات الأمهات، مضاعفات الحمل، وفيات ناجمة عن مضاعفات الحمل، الإجهاض، الإجهاض التلقائي، وفيات الإجهاض، الإجهاض الجنائي، دراسة مقارنة، دراسات استقبلية، الاتحاد الروسي. (المصدر: رؤوس الموضوعات الطبية، المكتب الإقليمي لشرق المتوسط)

Bulletin of the World Health Organization 2006;84:283-289.

Voir page 288 le résumé en français. En la página 288 figura un resumen en español.

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Introduction

Maternal mortality is a sensitive public health indicator.¹ After the Second World War, a sharp decline was observed in direct obstetric deaths in European countries, which was parallel to socio-economic development and improved health-care services with general access to emergency obstetric care.^{2,3} In some places the decrease was accompanied by an increase in indirect obstetric deaths.³ Today pulmonary embolism, pregnancy-induced hypertension, and haemorrhage are the main causes of maternal deaths in Europe.²⁻⁴ The leading causes of indirect deaths are cardiovascular and psychological factors.

Reduction of maternal mortality is an important Millennium Development Goal¹ of special concern in low-income countries where one in 16 women may die of pregnancy-related complications compared to one in 2800 in high-income countries.⁵ In the Russian Federation the maternal mortality ratio (MMR) varies between regions by a factor of nine. Generally, the ratio in the western part of the Russian Federation is closer to the European level, but even there it is much higher compared to the average in Western European countries. In 2000, the reported MMRs per 100 000 live births were 45 for the Russian Federation, 5 for Germany, 1.1 for Norway, 7 for the

United Kingdom, 21 for Bulgaria, and 6 for the Czech Republic.¹

According to official statistical data, in St. Petersburg the leading causes of death among women of reproductive age are injuries and poisoning (32.1%). Even though the mortality from pregnancy and obstetric complications only accounts for 0.3% of deaths in this age group, it is of great concern since most maternal deaths are of young healthy women. The present situation in the Russian Federation is further complicated by a very low fertility rate. In St. Petersburg in 2002 the fertility rate was 1.13, and this was the highest reported rate of the last decade.⁶

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Ref. No. 05-020677

(Submitted: 27 December 2004 – Final revised version received: 10 May 2005 – Accepted: 13 May 2005)

We collected data for a detailed analysis of levels and causes of maternal deaths in St. Petersburg over the 12-year period 1992–2003 in order to highlight some of the issues that can explain the relatively high ratio maternal mortality ratio and to assess any possible trends in causes of death.

Material and methods

We did a retrospective study of maternal mortality in St. Petersburg. For this purpose, we counted and assessed all deaths that were reported in pregnancy or within 42 days of its termination, irrespective of the duration or site of implantation. We classified deaths as direct or indirect obstetric deaths, or coincidental deaths, according to the definitions provided by International Classification of Disease (10th revision (ICD-10) and WHO.¹ Late maternal deaths (more than 42 days but less than 1 year after the termination of pregnancy) were not included in the present study.

We collected data from three sources:

1. Department of Mother and Child; St. Petersburg Public Health Committee
2. Medical Information Analytical Centre
3. St. Petersburg Statistic Committee

Information from these independent institutions is exchanged routinely. Any discrepancies that exist can be explained by administrative factors. Underreporting of maternal deaths in St. Petersburg is improbable because of strict administrative control. The St. Petersburg Public Health and Statistic Committees granted permission for the study, which used only non-identifiable data.

We built the research database from two separate forms used for mandatory

registration of births and deaths: 1) “*Chart of signal report for cases of maternal death*”; and 2) “*Report No. 32 — Data of medical care during pregnancy, labor, and postpartum period*”. The St. Petersburg Commission of Maternal Mortality investigates every maternal death and completes the first of these forms, which contains 30 maternal characteristics, and which we used selectively. The second form is the standard statistical report to the Ministry of Health and Social Affairs — we used this for confirmation of cause of death according to ICD-10 and as a source of the total number of births in the city.

An independent research group, including two Norwegian specialists in obstetrics and gynaecology (SV and JS) and one Russian researcher (NG), collectively reviewed and classified all deaths according to definitions and recommendations in the “Confidential Enquiries into Maternal Deaths in the UK” (CEMD).² The original data derived from the Department of Mother and Child of St. Petersburg over the period 1992–2003 included 171 cases of maternal and 32 cases of coincidental deaths. After reviewing the information the independent research group identified 179 cases of maternal deaths, 23 coincidental deaths, and 1 unclassified case.

To show possible trends in causes of deaths the research group divided the study period from 1992–2003 into four 3-year intervals. We chose the initial interval from 1992 to 1994 as the reference period. The main variables were maternal mortality trends, type, time, causes of death, and the possibility of prevention. Maternal mortality trends were studied as differences between mean MMRs for each of four 3-year intervals. MMRs were defined as the number of maternal

deaths, divided by live births, multiplied by 100 000. We classified causes of death as direct or indirect obstetric deaths, coincidental or unclassified, according to the rules of the Confidential Enquiries into Maternal Deaths.² We noted whether deaths occurred antepartum, intrapartum, or postpartum. Abortion-related deaths were classified as spontaneous, illegal or legal — further classified as early (<12 weeks of pregnancy) or late (13–22 weeks) — and ectopic pregnancy. We also determined which deaths were potentially preventable, according to the circumstances surrounding each death (preventive, conditionally preventive or not preventive) as judged by the Commission on Maternal Mortality.

We analysed the data using SPSS 11.0 software. Maternal mortality and causes of maternal deaths between the four 3-year intervals were compared using χ^2 tests with correction for continuity. We used a pooled estimate of the variance of the difference between the proportions of deaths among the live births.

Results

Comparison between the first 3-year triennium (1992–94) versus the last (2001–03) showed a statistically significant downward trend in MMRs (62.8 versus 33.5) (Table 1). The sharpest decline was observed from the first to the second triennium. A marked reduction of direct obstetric deaths from 49.8 to 18.5 per 100 000 live births contributed to this change. The proportion of direct: indirect deaths declined from 3.9 to 1.2 during the study period. Indirect obstetric death ratios showed a slight increase. Abortions accounted for 35.2% of the maternal deaths.

The antepartum death ratio declined significantly during the study

Table 1. Distribution of direct and indirect causes of maternal deaths, 1992–2003, St. Petersburg, Russian Federation

	1992–94 ^a	1995–97	1998–2000	2001–03	Total
No. of live births	108 332	101 755	92 690	113 265	416 042
Deaths					
Direct	54 (49.8) ^b	28 (27.5) ^c	22 (23.7) ^d	21 (18.5) ^e	125 (30.0)
Indirect	14 (12.9)	10 (9.8)	13 (14.0)	17 (15.0)	54 (13.0)
Direct:indirect	3.9	2.8	1.7	1.2	2.3
Total	68 (62.8)	38 (37.3) ^c	35 (37.8) ^c	38 (33.5) ^c	179 (43.0)
Coincidental	6	9	4	4	23

^a Reference period.

^b Figures in parentheses are the maternal mortality ratio.

^c $P < 0.05$.

^d $P < 0.01$.

^e $P < 0.001$.

Table 2. Distribution of time of death, 1992–2003, St. Petersburg, Russian Federation

	1992–94 ^a	1995–97	1998–2000	2001–03	Total
No. of live births	108 332	101 755	92 690	113 265	416 042
Deaths					
Antepartum	42 (38.8) ^b	13 (12.8) ^c	15 (16.2) ^d	17 (15.0) ^c	87 (20.9)
Intrapartum	3 (2.8)	1 (0.98)	3 (3.2)	5 (4.4)	12 (2.9)
Postpartum	23 (21.2)	24 (23.6)	17 (18.3)	16 (14.1)	80 (19.2)

^a See footnote a Table 1.^c $P < 0.001$.^b See footnote b Table 1.^d $P < 0.01$.

period (38.8 for 1992–94 versus 15.0 for 2001–03) (Table 2). While a slight non-significant decline was found for the postpartum death ratio, the intrapartum death ratio remained stable. In total, the antepartum and postpartum death ratios were approximately similar and accounted for 93.2% of all deaths.

Sepsis and haemorrhage were the main causes of direct obstetric deaths throughout the study period (Table 3). A particularly high MMR was found for sepsis in the first triennium. A total of 60% of deaths due to sepsis and 50% of the deaths due to haemorrhage were secondary to abortions. Mortality from sepsis, haemorrhage and eclampsia showed a declining trend over the study

period, but the reduction was statistically significant only for sepsis (24.0 for 1992–94 versus 5.3 for 2001–03). Among the deaths from sepsis, 78% were due to abortion in the first study triennium (1992–94) compared to 50% in the last (2001–03). Among deaths from haemorrhage, 72.7% were due to abortions and ectopic pregnancy in the first study triennium (1992–94) while in the last triennium 50% of these were due to ectopic pregnancy alone. Deaths from pulmonary embolism remained relatively stable and accounted for 9.6% of direct obstetric deaths.

The main causes of indirect obstetric deaths were infectious and cardiac diseases and suicides. Cardiac diseases

showed a non-significant reduction throughout the study period while death rates from infectious diseases showed a slight increase.

Among the abortion-related deaths, the highest ratios were observed for illegal abortions after week 12 of gestation (Table 4). Abortion-related MMRs declined significantly from 32.3 to 8.8 during the study period. In particular, a sharp decrease was observed for the ratios of spontaneous and late illegal abortions. However, death ratios from ectopic pregnancy remained stable. As far as suicides and deaths from legal abortions are concerned (Table 3 and Table 4), the numbers were too small to determine trends.

Table 3. Distribution of causes of death, 1992–2003, St. Petersburg, Russian Federation

Causes	1992–94 ^a	1995–97	1998–2000	2001–03	Total
No. of live births	108 332	101 755	92 690	113 265	416 042
Direct obstetric deaths					
Sepsis	26 (24.0) ^b	9 (8.8) ^c	6 (6.5) ^d	6 (5.3) ^e	47 (11.3)
Haemorrhage	11 (10.2)	12 (11.8)	9 (9.7)	6 (5.3)	38 (9.1)
Eclampsia/pre-eclampsia	9 (8.3)	6 (5.9)	2 (2.2)	3 (2.7)	20 (4.8)
Pulmonary embolism	3 (2.8)	1 (0.98)	4 (4.3)	4 (3.5)	12 (2.9)
Anaesthesia	2 (1.9)	–	–	2 (1.8)	4 (0.96)
Amniotic fluid embolism	2 (1.9)	–	–	–	2 (0.5)
Air embolism	1 (0.9)	–	–	–	1 (0.2)
Indirect obstetric deaths					
Infectious disease	2 (1.9)	3 (2.95)	3 (3.2)	6 (5.3)	15 (3.6)
Cardiac disease	7 (6.5)	2 (1.97)	2 (2.2)	1 (0.9)	12 (2.9)
Suicides	1 (0.9)	3 (2.95)	3 (3.2)	2 (1.8)	9 (2.2)
Disease of the circulatory system	3 (2.8)	–	3 (3.2)	1 (0.9)	7 (1.7)
Disease of the central nervous system	–	1 (0.98)	1 (1.1)	–	2 (0.5)
Disease of the respiratory system	–	–	–	2 (1.8)	2 (0.5)
Disease of the gastrointestinal system	1 (0.9)	–	–	1 (0.9)	2 (0.5)
Cancer	–	–	1 (1.1)	2 (1.8)	3 (0.7)
Endocrine or immunological disease	–	–	1 (1.1)	1 (0.9)	2 (0.5)
Lyell's syndrome	–	1 (0.98)	–	–	1 (0.2)

^a See footnote a Table 1.^b See footnote b Table 1.^{c–e} See corresponding footnotes, Table 1.

Table 4. Abortion-related maternal deaths, 1992–2003, St. Petersburg, Russian Federation

	1992–94 ^a	1995–97	1998–2000	2001–03	Total
No. of live births	108 332	101 755	92 690	113 265	416 042
Spontaneous abortion	8 (7.4) ^b	2 (2.0)	2 (2.2)	1 (0.9) ^c	13 (3.1)
Illegal abortion:					
<12 weeks	6 (5.5)	0 ^c	0 ^c	0 ^c	6 (1.4)
>12 weeks	12 (11.1)	2 (1.97) ^c	1 (1.1) ^c	2 (1.8) ^c	17 (4.1)
Legal abortion:					
<12 weeks	2 (1.8)	–	1 (1.1)	1 (0.9)	4 (0.96)
>12 weeks	3 (2.8)	2 (1.97)	2 (2.2)	1 (0.9)	8 (1.9)
Ectopic pregnancy	4 (3.7)	3 (2.95)	3 (3.2)	5 (4.4)	15 (3.6)
Total	35 (32.3)	9 (8.8) ^e	9 (9.7) ^d	10 (8.8) ^d	63 (15.2)

^a See footnote a Table 1.

^b See footnote b Table 1.

^c $P < 0.05$.

^d $P < 0.001$.

Of direct obstetric deaths, 33% were classified as preventable (Table 5), 38% as conditionally preventable, while 29% were not preventable. Most indirect obstetric deaths were not preventable (81%). The proportion of deaths classified as preventable and conditionally preventable declined significantly during the study period reflecting the changing death pattern with declining ratios of direct obstetric deaths. Road traffic accidents and poisoning were the main causes of coincidental deaths throughout the study period.

Discussion

Maternal mortality in St. Petersburg declined sharply from the first to the second study triennium predominantly because of the reduction of abortion-related deaths, mainly in the early 1990s. Over the remaining study time the MMR was stable or declined slightly. Sepsis and haemorrhage were the main causes of direct obstetric deaths. While death from sepsis and haemorrhage declined throughout the study period, deaths from pulmonary embolism remained stable.

We relied upon reported deaths, which is a possible weakness in our data. However, the exchange of information between the three independent institutions involved their strict administrative procedures concerning deaths and the different methods of data collection prevent underreporting of non-citizens who die in St. Petersburg. Thus we consider our estimated MMRs to be of high validity. Another limitation of the study

is the lack of information on late maternal deaths.

With regard to causes of deaths, we reclassified 9.6% of the deaths. In three cases the research group disagreed on classification of deaths as maternal or coincidental. This was mainly due to the broadened definitions provided by ICD-10 and reclassification of suicide cases from coincidental to maternal deaths. The high rate of agreement between the St. Petersburg Commission of Maternal Mortality and the independent research group diminished the uncertainty of cause of the death classifications.

As medical records were not available, the research group could not confirm the reported preventability of the deaths.

Comparisons of maternal mortality levels

Berg CJ et al.⁷ noticed a sharp decline in MMR in the United States of America until 1982. Since then, no further decrease has occurred. Some increase was even reported from 1991 to 1997. Our data show a similar trend, but the sharp decline was observed one decade later. Since then no further significant changes have been observed. Even though the US levels of MMR include later maternal deaths (8 per 100 000 live births since 1982 until present), the St. Petersburg maternal mortality level (for the overall study period from 1992 to 2003) of 43 per 100 000 live births is five times greater.

A stable situation was also reported from the United Kingdom with variation between triennia with overall MMR

11 per 100 000 from 1985 to 1999.² A similar plateau was reported from the European Concerted Action on Mothers' Mortality and Severe Morbidity (MOMS) study, which included 11 European countries⁴ with overall MMR 8.7 per 100 000 live births.

Our analysis showed a significant decrease in direct obstetric deaths and a slight non-significant increase in indirect obstetric deaths over the last 12 years in St. Petersburg. Data for the German state of Bavaria showed the same pattern for this period.³ In comparison, in the United Kingdom from 1985 to 1999 no marked reduction was observed in direct obstetric deaths but a significant increase in indirect obstetric deaths was observed. For the last triennium, the number of indirect maternal deaths was greater than direct ones in the United Kingdom² while in St. Petersburg, direct obstetric deaths remained more common than indirect. The observed increase may be explained by improved case ascertainment, rather than by a real increase. Our results cannot be explained by improved reporting because the system of collecting data remained the same during the study period and the independent research group reviewed all original cases using the same principles.

We found a significantly declining trend of antepartum deaths. Apart from the last study triennium, approximately 50% of deaths occurred antepartum. In Bavaria and the USA, as many as two-thirds of deaths occurred postpartum.^{3,7} The MOMS study reported the largest proportion of intrapartum deaths (40.6%) in a group of countries with

Table 5. Preventability of obstetric deaths, St. Petersburg, Russian Federation^a

	1992–94 ^b	1995–97	1998–2000	2001–03	Total
No. of live births	108 332	101 755	92 690	113 265	416 042
Direct obstetric deaths					
Preventable	20 (18.5) ^c	6 (5.9) ^d	8 (8.6)	6 (5.3) ^e	40 (9.6)
Conditionally preventable	21 (19.4)	13 (12.8)	8 (8.6)	4 (3.5) ^f	46 (11.1)
Not preventable	13 (12.0)	9 (8.8)	6 (6.5)	7 (6.2)	35 (8.4)
Total direct obstetric deaths	54 (49.8)	28 (27.5) ^d	22 (23.7) ^e	17 (15.0) ^f	121 (29.1)
Indirect obstetric deaths					
Preventable	0	2 (1.97)	1 (1.1)	0	3 (0.7)
Conditionally preventable	2 (1.8)	2 (1.97)	1 (1.1)	2 (1.8)	7 (1.7)
Not preventable	12 (11.1)	6 (5.9)	11 (11.9)	13 (11.5)	42 (10.1)
Total indirect obstetric deaths	14 (12.9)	10 (9.8)	12 (12.9)	15 (13.2)	52 (12.5)

^a Missing data: 4 cases of direct obstetric deaths and 2 cases of indirect obstetric deaths.

^b See footnote a Table 1.

^c See footnote b, Table 1.

^d $P < 0.05$.

^e $P < 0.01$.

^f $P < 0.001$.

higher MMR level. In the present study we found a relatively small proportion of intrapartum deaths (7%). The MOMS study found a larger proportion of 45.4% in postpartum deaths for countries with lower MMRs.⁴

An explanation of such differences lies in the causes of maternal deaths. In locations where MMRs are low, such as Bavaria, Sweden the United States of America, and the United Kingdom, the leading cause of maternal death was thromboembolism, which is difficult to prevent and commonly occurs postpartum.^{2, 3, 7, 8} In the MOMS study the leading cause in the group of lower MMR settings was pregnancy-induced hypertension compared to haemorrhage in those with higher MMR. The greatest difference between higher and lower MMR countries was found for sepsis, which was significantly more common in the higher settings.⁴ In the present study, sepsis accounted for the highest total death ratios followed by haemorrhage — 68% of the total number of direct obstetric deaths.

Pregnancy-induced hypertensive disorders and pulmonary embolism did not play a major role in our study. While pregnancy-induced hypertensive disorders showed a slight non-significant decrease, the death ratio from thromboembolism was low and remained stable throughout the study period (2.9 per 100 000 live births for the last triennium). In the United Kingdom, thromboembolism was reported as the main cause of death — 16.5 per 100 000 maternities for years 1997–99. After the introduction of guidelines for thromboprophylaxis after Caesarean section,

death rates from thromboembolism have declined in the United Kingdom. Further research is required to understand why the level is lower and stable in St. Petersburg compared to other settings.

Our data support the established pattern of causes that contribute to different levels of maternal mortality. The MOMS study found that more than half of the deaths from haemorrhage occurred intrapartum.⁴ In our study half of haemorrhage and sepsis deaths were due to abortions and occurred antepartum. Women in St. Petersburg experienced a higher mortality from abortions during 1992–94. Illegal late abortions performed in week 16–20 of pregnancy played a crucial role (Table 4). The practice of aborting a fetus >12 weeks of gestation for social reasons was legalized in 1991.⁹ However, due to lack of access to appropriate health services, the number of illegal abortions has remained high. In 1996 the law was further liberalized and almost all women could request abortion up to the 22nd week of gestation.⁹ In 1991, several public health interventions aimed at reducing maternal mortality were initiated. The age at which parental consent was required for abortions was decreased from 18 years to 15 years. Access to reproductive health services was improved. Health-care providers received training and family planning services were integrated into routine prenatal, postpartum or gynaecological care.¹⁰

Parallel to this, abortion-related maternal deaths declined sharply. During the first study triennium, abortion deaths contributed to one-third of maternal deaths. Later, the proportion

of abortion deaths varied between 14% and 17% — still higher than in other European countries (10%).⁴

In Bavaria and the United Kingdom, maternal mortality caused by ectopic pregnancy has decreased over the last decades^{2, 3} while in St. Petersburg it did not show any change.

The pattern of indirect obstetric deaths changed during the study period. Cardiac diseases were the leading cause of such deaths in the first triennium, but declined in the next and remained stable and low thereafter. In the last triennium, infectious diseases (including miliary tuberculosis, viral hepatitis B and C infections, HIV, pneumonia, influenza, and infection of the urogenital system), were the leading causes. Thus, infectious diseases were the fourth most common cause of death after sepsis, haemorrhage and pre-eclampsia/eclampsia. An even larger increase was observed for deaths due to drug or alcohol abuse. For example, in 2002 approximately 44% of the women who died were drug abusers, had viral hepatitis B or C, or HIV infections.

Other cases of concern are deaths from suicide, linked to postpartum depressions or similar diagnoses. All these cases were originally classified as coincidental, most probably because of lack of the appropriate diagnosis, but later were reclassified as indirect obstetric death according to the recommendation of the Confidential Enquiries into Maternal Deaths.² Valuable lessons may be learned from the discussion of these cases. It may help to identify women with psychiatric disorders during pregnancy. Improved care for such women

may prevent postpartum depression with a fatal outcome.

It is generally considered that more than half of maternal deaths are preventable.¹ In the United Kingdom, 64.4% of direct obstetric deaths over the period 1997–99 were associated with substandard care² whereas our data showed that 71% of the deaths were either preventable or conditionally preventable. The proportion of preventable cases declined during the study period. This could indicate improved care, mirrored by the

declining MMRs from sepsis, haemorrhage and pre-eclampsia/eclampsia.

Conclusion

The MMR in St. Petersburg declined from the first to the second study triennium and remained stable thereafter. This decline may have been due to several factors including liberalized abortion legislation, improved management of abortion by development of family planning services and better access to

medical units with high quality of care. However, the level of maternal mortality in St. Petersburg still exceeds the European level by a factor of five. More work is needed on the pre-existing health problems of women who have had previous abortions. Deaths from sepsis and haemorrhage continue to play a major role, which indicates that there is still potential for preventing maternal deaths in this city. ■

Competing interests: none declared.

Résumé

Mortalité maternelle à Saint-Petersbourg (Fédération de Russie)

Objectif Etudier la mortalité maternelle et ses causes à Saint-Petersbourg (Fédération de Russie)

Méthodes Des données ont été réunies sur tous les décès liés à la grossesse survenus à Saint-Petersbourg entre 1992 et 2003 à partir de plusieurs sources d'information. Un groupe de recherche indépendant a examiné et classé tous les cas sur la base de la CIM-10 et des enquêtes confidentielles sur les décès maternels du Royaume-Uni. On a analysé les tendances des taux de décès toutes causes confondues et par causes (nombre de décès pour 100 000 naissances) pour quatre intervalles de 3 ans, en utilisant le test du chi-carré.

Résultats Le taux de mortalité maternelle au cours de la période étudiée était de 43 pour 100 000 naissances vivantes. On a observé une forte diminution du nombre de décès maternels directs entre le premier et le quatrième intervalle de 3 ans (49,8 pour 1992-1994 contre 18,5 pour 2001-2003). Les principales causes des décès maternels directs étaient des septicémies et

des hémorragies. Sur le nombre total des décès par septicémie, 63,8 % étaient consécutifs à un avortement. Le taux de mortalité par septicémie a diminué de manière statistiquement significative entre le premier et le deuxième intervalles. Au cours du dernier intervalle étudié (2001-2003), 50 % des décès par hémorragie étaient secondaires à une grossesse extra-utérine. Le taux de décès par thromboembolie est resté faible (2,9 %) et stable sur la durée de l'étude. Parmi les causes de décès maternels indirects, une diminution non significative a été observée pour les décès par cardiopathie. Les taux de décès par pathologies infectieuses et par suicide ont augmenté au cours de la période étudiée.

Conclusion La mortalité maternelle à Saint-Petersbourg reste cinq fois plus élevée que la mortalité maternelle au niveau européen. Une amélioration de la prise en charge de l'avortement et des soins d'urgence en cas de septicémie et d'hémorragie, ainsi que de l'identification et du traitement des maladies infectieuses au cours de la grossesse s'imposent.

Resumen

La mortalidad materna en San Petersburgo, Federación de Rusia

Objetivo Estudiar los niveles y las causas de mortalidad materna en San Petersburgo, Federación de Rusia.

Métodos Reunimos datos sobre todas las defunciones relacionadas con el embarazo registradas en San Petersburgo durante los años 1992–2003, utilizando para ello varias fuentes de información. Un grupo de investigación independiente revisó y clasificó todos los casos de acuerdo con la CIE-10 y con las Investigaciones Confidenciales sobre las Defunciones Maternas en el Reino Unido. Se utilizó la prueba de ji cuadrado para determinar las tendencias de las razones (nacimientos/ 100 000 defunciones) generales y por causas para cuatro intervalos de 3 años.

Resultados La razón de mortalidad materna para el periodo estudiado fue de 43 por 100 000 nacidos vivos. Se observó una pronunciada disminución de las defunciones obstétricas directas entre el primer y el cuarto intervalo de 3 años (49,8 para 1992–1994, frente a 18,5 para 2001–2003). La septicemia y las hemorragias fueron las principales causas de las defunciones

obstétricas directas. De las defunciones totales por septicemia, el 63,8% se debieron a abortos. Las razones de mortalidad por septicemia descendieron significativamente entre el primer y el segundo intervalo de estudio. En el último intervalo analizado (2001–2003), el 50% de las defunciones por hemorragia se debieron a embarazos ectópicos. La razón de mortalidad por tromboembolia se mantuvo baja (2,9%) y estable a lo largo del periodo de estudio. Entre las defunciones obstétricas indirectas, se observó una disminución no significativa de las defunciones por enfermedades cardiacas. Las razones de mortalidad por causas infecciosas y suicidio aumentaron durante el periodo de estudio.

Conclusión Los niveles de mortalidad materna en San Petersburgo son aún del orden del quintuple de los europeos. Hay que introducir mejoras en el manejo del aborto, la atención de urgencia de la septicemia y la hemorragia y la identificación y el control de las enfermedades infecciosas durante el embarazo.

ملخص

وفيات الأمهات في سنت بطرسبرغ، الاتحاد الروسي

الأكثر أهمية في الوفيات وقت الولادة، ومن بين مجمل الوفيات الناجمة عن الإبتان كان 63.8% من الحالات ناجماً عن الإجهاض. وقد هبط معدل الوفيات بسبب الإبتان هبوطاً ملحوظاً في الفترة الثانية من الدراسة عما كان عليه في الفترة الأولى منها. أما في الفترة الأخيرة من الدراسة وهي 2001-2004 فإن نصف الوفيات الناجمة عن الترف كانت تلو الحمل المهاجر. وقد بقي معدل الوفيات الناجمة عن الصمة الخنثارية منخفضاً (2.9%) ومستقراً طيلة فترة الدراسة. ومن بين الوفيات غير المباشرة وقت الولادة لوحظ نقص غير هام في الوفيات الناجمة عن الأمراض القلبية، فيما تزداد معدلات الوفيات الناجمة عن العدوى وعن الانتحار مع تقدّم سنوات الدراسة. الاستنتاج: لا يزال معدل وفيات الأمهات في سنت بطرسبرغ يفوق ما هو عليه في الدول الأوروبية بخمسة أضعاف، وتتمس الحاجة إلى تحسين التدبير للإجهاض والرعاية الإسعافية للإبتان وللتروف، والتعرّف بشكل أفضل على الأمراض المعدية في الحمل ومكافحتها.

الهدف: دراسة مستويات وأسباب الوفيات لدى الأمهات في سنت بطرسبرغ في الاتحاد الروسي.
الطريقة: جمعنا معطيات حول جميع الوفيات المتعلقة بالحمل في سنت بطرسبرغ خلال الأعوام 1992-2003، مستخدمين عدة مصادر للمعلومات. فقد استعرض فريق مستقل للبحوث جميع الحالات، وصنّفها وفقاً للمراجعة العاشرة لتصنيف الدولي للأمراض، وللاستبيان السري حول وفيات الأمهات في المملكة المتحدة. ودرسنا الاتجاهات للمعدلات العامة والمعدلات الخاصة لكل سبب على حدة (عدد الوفيات لكل ألف من الولادات) لأربع فترات زمنية يتألف كل منها من 3 سنوات مستخدمين اختبار خي المربع. **الموجودات:** لقد بلغ معدل وفيات الأمهات في فترة الدراسة 42 لكل مئة ألف ولادة حية. وقد لوحظ حدوث انخفاض حاد في الوفيات بدءاً من الفترة الزمنية الأولى وانتهاءً بالفترة الزمنية الأخيرة. فقد كان 49.8 في الفترة 1992-1994 وأصبح 18.5 في الفترة 2001-2003. وقد كان الإبتان والترف هما السببان

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