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Large social disparities in spontaneous preterm birth rates in transitional Russia

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Summary *Objective*. This study estimated the effect of maternal sociodemographic, obstetric and lifestyle factors on the risk of spontaneous preterm birth in a Russian town.

Methods. All women with singleton pregnancies registered at prenatal care centres in Severodvinsk in 1999 comprised the cohort for this study ($n=1559$). Analysis was based on spontaneous live singleton births at the maternity home ($n=1103$). Multivariable logistic regression was applied to quantify the effect of the studied factors on the risk of preterm birth. Differences in gestation duration were studied using multiple linear regression.

Results. In total, 5.6% of all spontaneous births were preterm. Increased risks of preterm delivery were found in women with lower levels of education and in students. Placental complications, stress and a history of fetal death in previous pregnancies were also associated with elevated risks for preterm delivery. Smoking, hypertension and multigravidity were associated with reduced length of pregnancy in metric form.

Conclusion. In addition to medical risk factors, social factors are important determinants of preterm birth in transitional Russia. Large disparities in preterm birth rates may reflect the level of inequalities in transitional Russia. Social variations in pregnancy outcomes should be monitored.

Introduction

Preterm birth is a leading cause of infant mortality in industrialized societies.[1] It is associated with elevated risks for perinatal mortality, serious neonatal morbidity, moderate to severe childhood disability, and high healthcare expenditures.[2] These risks make preterm birth a serious public health problem.

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A large body of evidence suggests that adverse pregnancy outcomes are more frequent among socially disadvantaged women, although the mediating factors may vary. According to Kramer, the most important causes of preterm delivery are genital tract infections, multiple birth, pregnancy-induced hypertension, low pre-pregnancy body mass index, incompetent cervix, prior preterm birth, abruptio placentae, heavy work and cigarette smoking.[3] However, despite a great number of studies, many preterm births remain unexplained. Moreover, a majority of preterm births occur in low-risk groups.[4] Economic reforms introduced in Russia after the break up of the Soviet Union in 1991 led to impoverishment of the majority of the population, a considerable decline in overall life expectancy, and increased social and health inequalities. In our earlier publications, we showed a clear gradient between maternal educational level and birth weight in a Russian setting,[5] and we found that poor housing, self-perceived stress and smoking are important determinants of fetal growth in transitional Russia.[6] However, it is now recognized that the aetiological determinants of gestational duration are different from the determinants of fetal growth.[7] Countries of the former Soviet Union provide scarce information on risk factors for preterm delivery. We found only two studies on the determinants of preterm birth in these countries. A Ukrainian study concluded that the problems associated with transition did not alter this pregnancy outcome when the classical risk factors for preterm delivery were present.[8] An Estonian study showed an independent effect of maternal education, marital status and nationality on the risk of preterm birth, although clinical data were not included in the analysis.[9]

This study estimated the effects of maternal sociodemographic, obstetric and lifestyle factors on preterm delivery and gestational length in a community-based cohort in a Russian town.

Methods

The study was performed in Severodvinsk, a town in north-west Russia with a population of 233,800 in 1998. The study included all the pregnant women in the town who were registered in prenatal care centres ($n=1559$). The cohort was followed through delivery. Pregnant women who attended antenatal clinics for abortion counselling or who were not permanent residents in Severodvinsk were excluded. The sampling material is summarized in Fig. 1 and is described elsewhere.[5,10] Spontaneous and induced preterm births are likely to have different risk factors.[11] As researchers understand more about the causes of the latter that mainly relate to maternal complications and/or endangered fetal wellbeing,[4] all the analyses were only performed in a subgroup of spontaneous births.

Delivery was classified as preterm if it occurred before the 37th completed week of gestation, measured from the last menstrual period. Data on maternal education, occupation, marital status, pre-pregnancy weight, gestational length and

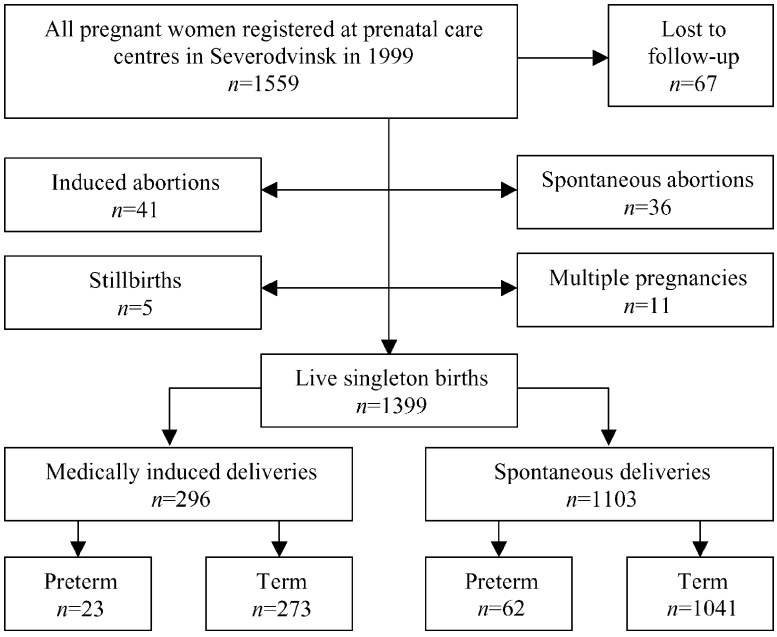

Figure 1 Sampling procedure. Severodvinsk cohort, 1999.