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Original article

Induced abortions and birth outcomes of women with a history of severe psychosocial problems in adolescence

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ABSTRACT

Objective: To increase knowledge on the reproductive health of women who have been placed in a residential school, a child welfare facility for adolescents with severe psychosocial problems.
Methods: All women ($n = 291$) who lived in the Finnish residential schools on the last day of the years 1991, 1996, 2001 and 2006 were included in this study and compared with matched general population controls. Register-based information on induced abortions and births was collected until the end of the year 2011.
Results: Compared to controls, women with a residential school history had more induced abortions. A higher proportion of their births took place when they were teenagers or even minors. They were more often single, smoked significantly more during pregnancy and had a higher risk of having a preterm birth or a baby with a low birth weight.
Conclusions: The findings have implications for the planning of preventive and supportive interventions that aim to increase the well-being of women with a residential school history and their offspring.
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1. Introduction

Adolescents placed in Finnish residential schools represent a selected group of young people with severe behavioural problems and a history of various psychosocial difficulties. Residential schools are residential care institutions operating under the child welfare system and, despite the delinquent behaviour of most of the adolescents, do not have a punitive function. The goal is to support the adolescents in becoming independent to prevent further psychosocial problems. Even though all adolescents placed in residential schools are able to complete their compulsory education, the risk of poor outcomes in later life is high. Discontinuation of vocational education and unemployment [17] as well as having a psychiatric disorder [17,32] are very common and most boys get a criminal record [17,31].

Very little is known about the sexual and reproductive health outcomes of Finnish women who have been placed in a residential school or in other out-of-home care. This information would be important for child welfare and reproductive health services, even though being pregnant or a mother is not a reason for a residential school placement. A previous small-scale interview study assessing two residential school cohorts whose placement ended in 1996 and 2000 showed that 46% of the women in the older cohort and as many as 58% of those in the younger cohort had become mothers by the year 2002, but the dropout rate was very high [17]. The results from studies conducted among institutionalized adolescents in other countries may not be generalizable to Finland because of the uniqueness of the residential school system. Child welfare systems in other Nordic countries, however, have many similarities. A large population-based register study conducted in Sweden showed that the likelihood of becoming a teenage parent was increased among all child welfare clients even when controlled for various known risk factors, but it was highest among those who had during their teens received in-home services or been placed in out-of-home care for up to 5 years [51]. In addition, a Swedish questionnaire-based survey showed that indicators of sexual risk behaviour such as early sexual initiation, unprotected sex, multiple partners, substance use before sex and early pregnancy were more common among adolescents placed in detention centres than among non-institutionalized youths [29].

Population-based studies conducted in Finland, as well as in other countries, have identified many factors related to sexual

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behaviour that are common among adolescents placed in residential schools. It has been shown that conduct problems, which are characterised by impulsivity, aggressiveness and risk-taking, increase the likelihood of sexual risk behaviour [41], becoming pregnant or a mother in adolescence [3,4,13,24] and having an induced abortion [26,37]. Bullying others in childhood is associated with becoming a teenage mother [25]. Leaving school early and dislike of school are associated with teenage pregnancy [16] and poor school performance with early sexual debut [23]. Family structure other than two biological parents is associated with becoming pregnant or a mother in adolescence [24,50] and having an induced abortion [26,46]. Lack of closeness with parents and poor parental monitoring are associated with early sexual debut, multiple partners and early pregnancy [35].

The aim of this longitudinal study was to examine the association between placement in a residential school and reproductive health outcomes. Based on previous studies, it was assumed that women who have lived in a residential school have an increased risk of becoming a teenage mother and having an induced abortion. In addition, because of their risk-taking tendencies and high prevalence of substance use disorders [27], we hypothesised that women with a residential school history have an increased risk of smoking during pregnancy and their offspring have an increased risk of neonatal problems. The study was conducted among women placed in residential schools and their general population controls using register-based information, which minimized the loss to follow-up.

2. Methods

The study design was a retrospective cohort study. The association between residential school placement and reproductive health was studied by linking information from four national registers. The study protocol was approved by the Ethics Committee of the National Institute for Health and Welfare (THL) in Finland, and the data keeping organisations authorised the use of their confidential register data in this study.

2.1. Participants

The participants were identified from the Child Welfare Register, which is a national register established in 1991 and maintained by THL. The child welfare authorities in all Finnish municipalities are obliged to report information on all children who have been placed out of home. The register includes personal identification numbers and information on the legal reason, duration and type of the placement. All women who lived in a residential school on the last day of the years 1991, 1996, 2001 and 2006 were included in the study ($n = 291$). A control population was selected from the Finnish Central Population Register. Five controls were matched to each residential school participant by sex, age and place of birth. Due to difficulties in finding suitable controls because of place of birth in a small municipality or abroad, we did not have five controls for each residential school adolescent, which led to a control population of 1425 participants. The mean age of the sample at baseline was 15.3 years and the age range was from 9 to 20 years.

2.2. Information on reproductive health outcomes

All public and private health care units are obliged to report abortions to the Register of Induced Abortions and Sterilisations, which includes information on sociodemographic characteristics, previous pregnancies, contraception, indication for abortion and details of the procedure. All births in Finland are registered to the Finnish Medical Birth Register, which covers information on maternal background, pregnancy, delivery and early outcomes of the newborn. This information is collected during prenatal care and at birth hospitals and it is reported to the register by birth hospitals and, in the very rare case of births outside hospital, by the health care personnel assisting in the delivery. Both registers are maintained by THL and they include women's personal identification numbers, which were used for the linkage with other registers.

The outcome variables used in this study were having an induced abortion, becoming a young mother, becoming a single mother, smoking during pregnancy, having a preterm birth and having a child with low birth weight or small for gestational age (SGA). All induced abortions from the start of the years 1992, 1997, 2002 and 2007 until the end of the year 2011 were included (124 for residential school girls and 174 for controls). Separate analyses were conducted for repeated and late (after 12 gestational weeks) abortions. All births for the same follow-up period were included (318 for residential school girls and 781 for controls). Only one of the parturients was pregnant when the residential school placement started. She gave birth 4 months after her arrival. Becoming a young mother was defined in two ways: giving birth at younger than 20 years (teen) and giving birth at younger than 18 years (minor). Single mother status was based on a mother's report of being in a relationship at the time of birth. Women who smoked during pregnancy were defined as smokers even if they stopped during the first trimester. Preterm birth was defined as birth before 37 gestational weeks and low birth weight as weight less than 2500 g. SGA was calculated according to national sex-specific weight distribution standards at a given gestational age [45] and defined as less than 2 standard deviations (SD). Only singleton births were included in the analyses on newborn outcomes (314 for residential school girls, 771 for controls).

2.3. Statistical analysis

The rate of induced abortions per 1000 follow-up years in each cohort was calculated for women with a residential school history and their controls. Risk ratios (RR) with their 95% confidence intervals (CI) were calculated separately for all abortions and for the first abortions. The associations between residential school placement and different pregnancy outcomes were quantified by calculating odds ratios (OR) and 95% CI by using generalized linear model and logistic regression analysis. All abortions or births of a woman were separately taken into account when using generalized linear model. Adjusted analyses including selected covariates (year of termination for induced abortions and age as well as year of delivery and maternal smoking for births) were also conducted. Statistical analysis was performed using SAS statistical software.

3. Results

The abortion rates for women with a history of residential school placement and their controls as well as risk ratios (RR) are shown in Table 1. During the follow-up, the number of abortions per 1000 follow-up years was 54.8 among those who had been placed in a residential school and 12.1 among their controls (RR 4.53, 95% CI 3.61–5.68 when all abortions were included). Compared to controls, it was more common among those with a history of residential school placement to have an abortion after the gestational week 12, but the difference was statistically significant only when generalized linear model including all abortions was used (age- and year-adjusted odds ratio 1.71, 95% CI 1.01–2.42) (Table 2). Having repeated abortions was also more common among women who had been in a residential school (aOR 1.94, 95% 1.48–2.41).

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