Abortion and depression: A population-based longitudinal study of young women

Willy Pedersen

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Abortion and depression: A population-based longitudinal study of young women

WILLY PEDERSEN

Department of Sociology and Human Geography, University of Oslo, Blinderen, Oslo, Norway

Abstract

Aim: Induced abortion is an experience shared by a large number of women in Norway, but we know little about the likely social or mental health-related implications of undergoing induced abortion. International studies suggest an increased risk of adverse outcomes such as depression, but many studies are weakened by poor design. One particular problem is the lack of control for confounding factors likely to increase the risk of both abortion and depression. The aim of the study was to investigate whether induced abortion was a risk factor for subsequent depression. *Methods:* A representative sample of women from the normal population (n=768) was monitored between the ages of 15 and 27 years. Questions covered depression, induced abortion and childbirth, as well as sociodemographic variables, family relationships and a number of individual characteristics, such as schooling and occupational history and conduct problems. *Results:* Young women who reported having had an abortion in their twenties were more likely to score above the cut-off point for depression (odds ratio (OR) 3.5; 95% confidence interval (CI) 2.0–6.1). Controlling for third variables reduced the association, but it remained significant (OR 2.9; 95% CI 1.7–5.6). There was no association between teenage abortion and subsequent depression. ***Conclusions:*** **Young adult women who undergo induced abortion may be at increased risk for subsequent depression.**

Key Words: *Abortion, adolescent, depression, female*

Introduction

A considerable number of Norwegian women experience an induced abortion. Extrapolating from current statistics, for every 1000 females up to their 50th birthday, about 470 abortions will be performed. Women aged 20–24 years have the highest abortion rate [1]. While abortion has been a topic of public debate in recent years in Scandinavia, comparatively little attention has been paid to its possible social and health-related consequences. In the international literature, studies are also relatively meagre. They appear, nevertheless, to agree that giving birth at a young age will often be associated with interrupted education, unemployment, and dependency on state benefits [2,3]. For young women, abortion is associated with a better prognosis than giving birth on dimensions such as long-term education, employment, and income [4]. A different picture emerges with regard to problems with substance abuse [4,5] and mental health [6–8], with several studies suggesting that abortion could represent a risk factor. However, the findings are not uniform, and other studies indicate a better prognosis in these areas [9,10]. Several commentators have drawn attention to problems with research designs and data in this type of study, and some have criticized studies that link abortion to negative outcomes [11].The problems arise partly because of the small, selected samples, often accompanied by low response rates, and in particular, lack of control for third or confounding variables. On the basis of current research, one would expect a range of third factors to impinge on the risk faced by young women who have abortions, including social class, difficult family background and childhood, conduct problems, low achievement rate at school, and a

Correspondence: Willy Pedersen, Department of Sociology and Human Geography, University of Oslo, Box 1096, Blinderen, 0317 Oslo, Norway. Tel: +47 22854096. Fax: +47 22855253. E-mail: willy.pedersen@sosiologi.uio.no

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previous history of depression. Each of these has been shown to covary with an increased risk of unwanted pregnancy and abortion [12–14]. A woman's cohabitation status may also have an effect, since women who undergo abortion more often tend to live alone, which in itself could be a risk factor for depression. With one exception [4,8], longitudinal studies on the normal population have not controlled adequately for likely confounding factors such as these.

We ask here whether abortion increases the risk of depression. The study is based on a representative sample of young women, monitored at intervals over a period of 11 years, and controlled for a wide range of confounding or third variables. More precisely, we ask:

1. whether depression rates vary between (a) women who have never been pregnant, (b) women who have given birth, and (c) women who have had an abortion;
2. whether there is any effect of the subject's age when the abortion took place;
3. whether significant differences remain between the groups after controlling for confounding variables.

Material and methods

The study is based on the ''Young in Norway'' longitudinal study, a detailed review of which has been published elsewhere [15]. The first survey (T1) took place in 1992, when subjects were pupils at 67 Norwegian schools. All schools in the country were included in the register from which the schools were selected. The sample was stratified according to geographical region and school size, which, in Norway, is closely related to the degree of urbanization. The number of students sampled in each stratum was proportional to the total number of students in the stratum (proportional allocation). Within each stratum, schools were drawn with a probability proportional to their size. All the students at each school were included in the study. (In Norway, 98.5% of the cohorts aged between 12 and 16 years attend compulsory public lower secondary schools.)

The response rate was 97%. Every pupil gave his or her consent in writing based both on an oral and a written description of the project formulated according to the standards prescribed by the Norwegian Data Inspectorate. According to these standards, written consent was also obtained from the parents of pupils younger than 15 years of age. The pupils put the completed questionnaires in an envelope and sealed it themselves. For the next survey (T2 in 1994), we chose respondents who were in the seventh year at lower secondary or in the first year at upper secondary schools. Originally, only two surveys were intended; hence, we needed to obtain respondents' consent for subsequent data collection. Ninety per cent agreed to take part. They received a postal questionnaire in 1999 (T3), and another in 2005 (T4). At T3, the response rate was 84%, and at T4, it was 82%. The analyses reported here focus on the youngest cohort, i.e. those aged 12–15 years at T1. The sample comprises 968 persons, none of whom had given birth or terminated a pregnancy prior to T2. Their mean age at T2 was 15 years (SD=0.6), at T3 it was 20 years, and at T4 it was 27 years.

Variables

Abortions/births. At T3 and T4, we asked the young women whether they had ever undergone an (induced) abortion; and if so, how many times and their ages at the first and last abortion. There were 16.3% (n=125) who had undergone a total of 143 abortions prior to T4. To validate these responses, we compared them with data compiled by Statistics Norway. Abortion statistics are reported by Statistics Norway at the aggregated level only [1], and the observed rate in our sample (186 per 1000 before age 26 years) was 74% of what would have been expected from national figures. This would signify either a certain level of underreporting or some selective sample attrition. The consistency of abortion reports between T3 and T4 was very high indeed. Only one woman who reported having had an abortion at T3 failed to report it again at T4. We also asked whether they had given birth and how old they were when they did so. We included questions about partner relationships at T3 and T4, and the answers were classified into three groups: single, cohabiting, and married. We further asked respondents to tell us who the father of the last aborted fetus was. Response alternatives were: ''my current boyfriend/live-in partner/husband''; ''my then boyfriend/live-in partner/husband''; ''a former boyfriend/live-in partner/husband with whom I no longer had a relationship at the time of the abortion''; or ''no relationship with the father''.

Depression. We used Kandel and Davies' Depressive Mood Inventory at T2, T3 and T4 [16]. This instrument, which comprises six questions, was originally developed by Mellinger et al. [17] before incorporation into the Johns Hopkins Symptom Checklist (SCL-90). Examples of items include ''sense of hopelessness about the future'' and ''felt unhappy, sad or depressed''. Total scores varied

from 0 to 18 (Cronbach's alpha=0.82). At T3 and T4, we applied a dichotomous scale and a cut-off point between 8 and 9.

Sociodemographics. We divided the country into five regions for place of residence (Eastern, Western, Southern and Northern Norway and Trøndelag). We differentiated density of population (Oslo, other cities, towns, small communities, thinly populated areas), and parents' education (classified stepwise from 7-year compulsory schooling through to college/university) and occupation (including whether mother or father was out of work, living on a pension or living on benefit). Parental socioeconomic status was measured by classifying the father's and mother's occupations according to ISCO-88, the official classification standard of the International Labour Organization. The information was re-coded into five categories, ranging from ''owners/professional managers'' to ''manual workers''. A separate question was asked about whether the mother or father was on social welfare or was unemployed (scored dichotomously).

Family-related factors. We asked whether respondents' parents had split up or divorced. To record levels of parental monitoring, we used an instrument developed by Olweus [18], with questions pertaining to parental norms and knowledge of children's friends and children's activities (e.g. ''Do your parents know your friends?'', ''Do your parents know where you are during the weekend?''). Responses were added together to form an index. Perceived parental support was measured by an instrument devised by Sarason et al. [19], which uses hypothetical situations to measure perceived parental support (''Imagine you've got a personal problem that's getting you down, who would you probably talk to about it?''). We also asked ''Would you say your father (mother) has had a problem with alcohol?'' Responses were ranked on a 1–5 scale.

Individual characteristics. The T2 survey recorded school marks for the subjects of Norwegian, English and mathematics, and added these to form an index. At T3, respondents were asked whether they had studied after compulsory schooling (yes/no) and their source of income. If respondents ticked the social assistance, unemployment or incapacity/disablement benefit alternatives, they were categorized as being outside the labour market. Fifteen questions sought to map conduct problems at T2 and T3 based on the conduct disorder diagnosis in DSM-III-R [20], which gave an index with values ranging from 1 to 15.

Statistics

Results are expressed as prevalence and unadjusted and adjusted odds ratios (ORs) derived from logistic regression. We also performed a Wald test with forward inclusion in order to include variables in the multivariate analyses ($p<0.10$). All of the socio-demographic, family and individual explanatory variables from T2 described above were used to predict depression (measured dichotomously) at T3. We also incorporated other explanatory variables measured at T3 for prediction of depression at T4 (measured dichotomously). At T4, we attempted to measure the effect of the mother's age at childbirth or abortion on outcome. Some women had given birth and also undergone an abortion, and this information was entered as independent events. Some women had terminated several pregnancies and also had several children, and we ran separate analyses to determine whether multiple abortions/live births had any effect.

Results

At T3, 27 women (4%) had given birth, and 40 (5%) had had an induced abortion. As Table I shows, the childbirth group was more likely than the never-pregnant group to score above the cut-off for depression, but the difference disappeared when we controlled for confounding variables. We found no correlation between teenage abortion and subsequent depression.

Table I. Depression among women aged 20 years who have never been pregnant, have brought pregnancy to term, or have undergone induced abortion (95% confidence intervals in parentheses).

	%	*n*	Unadjusted odds ratio	Adjusted odds ratio[a]
Never pregnant	17	119	1.0	1.0
Live birth	32	12	2.2 (1.1–4.6)	1.7 (0.7–4.3)
Induced abortion	21	9	1.1 (0.5–2.4)	1.0 (0.4–2.2)

[a]Adjusted for parental education level, parental smoking habits, parental support, and depression at T2.

By T4, 232 women (30%) had given birth, and 125 (16%) had had an abortion. We see from Table II that depression at age 27 years was still more prevalent among those who had given birth during the teenage years, but again this difference disappeared when we controlled for third variables. Those who had an abortion in their twenties had clearly increased rates of depression at age 27 (OR 3.5, 95% confidence interval 2.0–6.1), and this difference remained significant after controlling for confounding variables. Separate analyses revealed no effect from number of abortions, whether the woman had a live-in partner at T3 or T4, or from particulars about the father of the aborted fetus.

Discussion

The most important finding in this study is the higher prevalence of depression among young adult women who have had an abortion. The association remained significant after controlling for a broad range of confounding variables related to socio-demographics, family and childhood, individual characteristics such as conduct problems, history of depression, marital history, and partner relationships at the time of the abortion. The study confirms what other studies have found, suggesting a heightened risk of depression among women who have undergone induced abortion [7,8]. In the teenage years, a slightly different picture was observed: while abortion does not appear to affect the likelihood of depression, childbirth does. However, this association disappeared after controlling for confounding variables, and the risk seems therefore to derive from other factors, not giving birth per se.

This study is robust in several respects. The response rate is high, respondents were observed over a considerable length of time, and measures of the key variables are well validated. We have also controlled for a large number of other factors pertaining to the lives of the women that are likely to affect whether a pregnancy is brought to term or aborted, and the likelihood that depression will set in at a later date. Nonetheless, the sample's abortion rate does indicate either underreporting or a slight non-response bias. The sample is, moreover, relatively small, making the abortion and childbirth groups small as well. The study would have benefited from a larger sample.

Studies in this area present an inconsistent picture. Most identify abortion as a mental health risk factor, but they typically have selected samples, poor response rates and/or inadequate control for other aspects of the women's lives that could affect future risk of depression. The most robust study was conducted in New Zealand [4,8]. This study found that abortion seemed to be a risk factor for poor mental health, including the likelihood of depression. Reactions to abortion are, one may assume, strongly coloured by the local sociocultural climate. A sense of guilt, loss and lower self-esteem are assumed to mediate between an induced abortion and later onset of depression [21]. New Zealand's abortion laws are much more stringent than Norway's [8], and this in itself could possibly increase the risk of social stigmatization and negative sentiment regarding abortion. It is therefore worth noting that such reactions are also experienced by many Norwegian women following an abortion. In light of this finding, women who terminate a pregnancy would probably benefit from post-abortion counselling.

Our data suggest, then, that abortion is associated with a heightened risk of depression among young Norwegian women, but not among teenagers. We also need to remember that several other factors affecting the lives of women who have an abortion, which it was not possible to control for in the present study, could be implicated as increasing their susceptibility to depression. We need to gather more information on groups exhibiting a higher risk of unwanted pregnancy and abortion. It is a cause for concern that we know so little about these groups, particularly given different governments'

Table II. Depression among women aged 27 years who have never been pregnant, have brought pregnancy to term, or have undergone induced abortion (95% confidence intervals in parentheses).

	%	*n*	Unadjusted odds ratio	Adjusted odds ratio[a]
Never pregnant	10	44	1.0	1.0
Live birth at age:				
15–20 years	21	8	2.4 (1.0–5.5)	1.7 (0.8–4.7)
21–26 years	1	21	0.9 (0.5–1.6)	1.0 (0.6–1.7)
Abortion at age:				
15–20 years	11	5	1.1 (0.4–3.0)	0.9 (0.4–2.7)
21–26 years	26	21	3.5 (2.0–6.1)	2.9 (1.7–5.6)

[a]Adjusted for depression at T2 and T3, break-up of parental relationship, and unemployment at T3.

determination to target abortion prevention measures more accurately towards those most at risk [22].

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