Long-term incidence and recurrence of common mental disorders after abortion. A Dutch prospective cohort study

Jenneke van Ditzhuijzen[a,*], Margreet ten Have[b], Ron de Graaf[b], Carolus H.C.J. van Nijnatten[a], Wilma A.M. Vollebergh[a]

[a] Department of Interdisciplinary Social Science, Utrecht University, Utrecht, The Netherlands
[b] Netherlands Institute of Mental Health and Addiction (Trimbos Institute), Utrecht, The Netherlands

A B S T R A C T

In a previous study (Van Ditzhuijzen et al., 2017) we investigated the incidence and recurrence of mental disorders 2.5 to 3 years post-abortion. The aim of the current study was to extend these findings with longer term follow up data, up until 5–6 years post-abortion. We compared data of women who had had an abortion of the Dutch Abortion and Mental Health Study (DAMHS) to women who did not have an abortion from the Netherlands Mental Health Survey and Incidence Study-2 (NEMESIS-2) (N_{total} = 2227). We used 1-to-1 matching on background confounding variables and measured post-abortion incidence and recurrence of common DSM-IV mental disorders (mood, anxiety, and substance use disorders) using the Composite International Diagnostic Interview (CIDI) version 3.0. After matching on confounding variables, abortion did not increase the likelihood that women had incident or recurrent mental disorders in the 5–6 years post-abortion (any incident mental disorder: OR = 3.66, p = .16; any recurrent mental disorder: OR = 0.22, p = .47). We found no evidence that experiencing an abortion increases the risk on new or recurrent mental disorders on the longer term.

1. Introduction

Credible review studies have stated that there is no evidence that abortion causes adverse mental health outcomes (APA, 2008; Charles et al., 2008; NCCMH, 2011). However, the field is characterized by methodological limitations such as insufficient confounder control, and conclusions have mostly been based on cross-sectional or short-term follow-up studies. It could therefore be argued that mental health problems that might arise only years after an abortion, are being missed in research; but the few high-quality studies that have focused on long-term postabortion mental health have found no evidence for this (e.g., Biggs et al., 2015, 2017; Munk-Olsen et al., 2011). These studies measured either the prevalence of (sub)clinical symptoms of a limited selection of mental disorder categories with brief inventories (Biggs et al., 2015, 2017), or psychiatric contacts from population-based registry data, which might underestimate actual psychiatric morbidity (Munk-Olsen et al., 2011). So far, no studies have used structured diagnostic interviews which assess long-term incidence and recurrence of a wide array of common clinical mental disorders. The current study aims to fill this gap.

In an earlier case-controlled cohort study, we found that abortion was not associated with higher incidence of disorders in the 2.5–3 years

post-abortion, but women who had an abortion seemed at slightly increased risk for recurrence of any mental disorder (Van Ditzhuijzen et al., 2017). In the current study, we investigated whether these results hold in the long term. The aim was to answer the question whether the life event of terminating an unwanted pregnancy increases the risk on the development of clinical DSM-IV mental disorders 5–6 years post-abortion.

2. Methods

2.1. Study design

In this prospective three-wave cohort study we compared women who had an abortion with women from the general population who never had an abortion. In research like this, it is impossible to use random assignment to treatment (abortion) or control condition, which implies that selectivity and confounding are inherent to this type of research. We used Coarsened Exact Matching (CEM) to deal with this general problem (Stuart, 2010; Rosenbaum and Rubin, 1983; Dehejia and Wahba, 2002; Cook et al., 2008), hereby inducing balance in the distributions of the covariates. No additional adjustment for covariates was needed, besides for timing between measurement waves. We

demonstrated the effect of matching with CEM on the distribution of covariates in an earlier study (Van Ditzhuijzen et al., 2017).

2.2. Setting

The Dutch Abortion and Mental Health Study (DAMHS) participants were recruited from seven Dutch abortion clinics spread out over the country. Shortly after the abortion procedure, abortion clinic staff members asked the women to read the research flyer, complete a reply card including a consent-to-contact statement or a non-response form, and deposit this card in a locked mailbox. Participants were interviewed by professionally trained female interviewers at three time points. First, approximately 20–40 days post-abortion, between April 2010 and January 2011 (T0), then between December 2012 and November 2013, which was on average 2.7 years later (T1), and lastly, between April 2015 and November 2015 (T2), on average 4.9 years postabortion. The mean duration of the interviews was around 2.5 h (T0) and 1.5h (T1 and T2). Participants received a gift card of 50 Euros for each interview.

The reference cohort was taken from the Netherlands Mental Health Survey and Incidence Study -2 (NEMESIS-2). NEMESIS-2 Participants were first interviewed (T0) between November 2007 and July 2009. First follow-up (T1) was 3 years later between October 2010 and May 2012, and second follow-up 6 years later between November 2013 and June 2015 (T2). The selection strategy of NEMESIS-2 is described extensively elsewhere (De Graaf et al., 2010).

Both studies were approved by a local medical ethics committee. In both studies, written informed consent was obtained before each interview, and all interviews were fully laptop-assisted, face-to-face, and done by professionally trained interviewers.

2.3. Participants

The DAMHS study enrolled Dutch-speaking women of 18–46 years old, obtaining an abortion (medical or aspiration, until a maximum of 22 weeks) for an unwanted pregnancy, without clear fetal or maternal medical indications. We included from NEMESIS-2 women in the same age range as in DAMHS (18–46), who reported they never experienced abortion. Participants were updated through e-mail or regular mail about the study planning, and re-approached to schedule the follow-up interviews by telephone, e-mail, and text messages.

2.4. Measures

2.4.1. Mental disorders

In both cohorts, presence of lifetime and last-year DSM-IV disorders was assessed at T0 with the Composite International Diagnostic Interview (CIDI) version 3.0. (Alonso et al., 2004; Haro et al., 2006). At T1 and T2, presence of mental disorders since the last interview was assessed. The following disorders were included: mood disorders (major depression, dysthymia, bipolar disorder); anxiety disorders (panic disorder, agoraphobia, social phobia, specific phobia, generalized anxiety disorder); and substance use disorders (alcohol/drug abuse and dependence). For incidence, women who never had one or more disorders within a specific disorder category before T0 were included in the at risk group. For recurrence, women who had one or more disorders within a specific disorder category in their lifetime, but not in the 12 months before T0, were included. By excluding 12-month prevalent cases, women who had a disorder around the time of the abortion were excluded, this way the correct order of the events (abortion and mental disorder) was ensured. In addition to the three disorder categories, we also included the aggregate measure any mental disorder. For this variable, the at risk group for incidence consisted of women who never had a disorder in any of the three disorder categories. Likewise, recurrence referred to disorders in any of the three categories.

2.4.2. Covariates

Demographic variables assessed at baseline were age category (18–24, 25–34 and 35–46 years); living situation (with or without a partner); having children (yes or no); western or non-western ethnicity based on the definition of Statistics Netherlands (Stronks et al., 2009); considers herself religious (yes or no); employment situation (paid job or not); education level; and urbanicity of place of residence (urban or rural). Furthermore, we also included childhood abuse as a covariate, because it has been found that childhood abuse can predispose women for both mental disorders (Kessler et al., 1997; Green et al., 2010), and abortion (Boden et al., 2009; Steinberg and Tschann, 2013). Following other NEMESIS-2 studies (De Graaf et al., 2010), childhood abuse was scored '1' when one or more types of abuse had happened at least once (sexual abuse) or more than once (emotional, psychological, and physical abuse) before the age of 16.

2.5. Statistical analysis

First, multivariable logistic regression analyses were performed with unmatched data, only adjusting for the difference in time interval between T0 and T2. Based on the literature, we then identified potential covariates associated with both abortion and mental health. For each of these variables, we individually tested whether they were associated with the predictor (abortion versus control cohort), and second, whether they were associated with the various outcome variables (incidence or recurrence of the four categories of mental disorders at T2). We selected only variables that were associated with the predictor and at least one outcome measure. All variables selected for matching (age category, living situation, having children, western or non-western ethnicity, employment situation, living in an urban environment, and a history of childhood abuse) were categorical. Matching was implemented in the Coarsened Exact Matching package (Iacus et al., 2011, 2012) for SPSS. We matched participants 1-to-1, and included only exact matches (282 pairs). This implies that pairs of women from both cohorts were formed that are identical on all selected covariates, and differed only with respect to having had an abortion. Matching was done on T0 data, before attrition. After this, multivariable logistic regression analyses were performed for each disorder on T2 (both incidence and recurrence), for matched data; adjusting for the length of the time interval between T0 and T2 in years. Loss to follow-up was addressed in an attrition analysis. Testing was two-sided, and statistical significance was considered to be p < .05. Analyses were performed using SPSS version 22.

3. Results

3.1. Participants

At T0, we included 325 participants in DAMHS. The initial response rate was 36.5%, mainly because we were unable to schedule interviews with women who had agreed to participate. Participant flow and response analysis results at T0 are described extensively in an earlier study (Van Ditzhuijzen et al., 2013). Of the initial 325 participants in DAMHS, 264 (81.2%) were re-interviewed at T1, 40 women could not be traced, 13 refused participation, and 8 women did not show up at the interview. At T2, 231 out of 264 (87.5%) women were re-interviewed, 15 could not be traced, 9 refused participation, and 9 did not show up at the interview.

NEMESIS-2 had an initial response rate at T0 of 65.1%. We included 1902 women in our T0 reference cohort from NEMESIS-2. Of the 1902 women selected from NEMESIS-2 for this study at T0, 1496 were re-interviewed at T1 (78.7%), and 1297 at T2 (87.2%). Of these, 14 had undergone abortion between T0 and T2. They were excluded, leaving 1283 participants in the reference group at T2.

Demographic characteristics of the DAMHS and the NEMESIS-2 cohort at T0 are described in Van Ditzhuijzen et al. (2013). Of the 325