

The prevalence of posttraumatic stress among women requesting induced abortion

Inger Wallin Lundell^{*†}, Inger Sundström Poromaa^{*}, Örjan Frans[‡], Lotti Helström[§], Ulf Högberg^{*}, Lena Moby^{*}, Sigrid Nyberg[#], Gunilla Sydsjö[^], Susanne Georgsson Öhman^{†,+}, Ingrid Östlund[§] and Agneta Skoog Svanberg^{*}

^{*}Department of Women's and Children's Health, Uppsala University, Uppsala, Sweden, [†]Sophiahemmet University, Stockholm, Sweden, [‡]Department of Psychology, Uppsala University, Uppsala, Sweden, [§]Department of Clinical Science and Education, Karolinska Institutet, Stockholm, Sweden, [#]Department of Clinical Sciences Obstetrics and Gynaecology, Umeå University, Umeå, Sweden, [^]Department of Clinical and Experimental Medicine, Faculty of Health Sciences, Linköping University, Linköping, Sweden, ⁺Department of Women's and Children's Health, Karolinska Institutet, Stockholm, Sweden, and [§]Department of Obstetrics and Gynaecology, Örebro University Hospital, Örebro, Sweden

ABSTRACT **Objectives** To describe the prevalence and pattern of traumatic experiences, to assess the prevalence of posttraumatic stress disorder (PTSD) and posttraumatic stress symptoms (PTSS), to identify risk factors for PTSD and PTSS, and to analyse the association of PTSD and PTSS with concomitant anxiety and depressive symptoms in women requesting induced abortion.

Methods A Swedish multi-centre study of women requesting an induced abortion. The Screen Questionnaire – Posttraumatic Stress Disorder was used for research diagnoses of PTSD and PTSS. Anxiety and depressive symptoms were evaluated by the Hospital Anxiety and Depression Scale (HADS).

Results Of the 1514 respondents, almost half reported traumatic experiences. Lifetime- and point prevalence of PTSD were 7% (95% confidence interval [CI]: 5.8–8.5) and 4% (95% CI: 3.1–5.2), respectively. The prevalence of PTSS was 23% (95% CI: 21.1–25.4). Women who reported symptoms of anxiety or depression when requesting abortion were more likely to have ongoing PTSD or PTSS. Also single-living women and smokers displayed higher rates of ongoing PTSD.

Conclusions Although PTSD is rare among women who request an induced abortion, a relatively high proportion suffers from PTSS. Abortion seeking women with trauma experiences and existing or preexisting mental disorders need more consideration and alertness when counselled for termination.

KEY WORDS Abortion; Posttraumatic stress disorder; Posttraumatic stress; Depression, Anxiety

INTRODUCTION

Most women cope well with an induced abortion¹ and the strongest predictor of mental health problems after induced abortion is the pre-existing mental health²⁻⁴. However, although induced abortion generally does not cause mental health problems^{2,5}, the concern that it may has been raised repeatedly⁶.

Every fifth woman in the US who experiences a trauma will develop a posttraumatic stress disorder (PTSD), and the most common trauma exposures in women are rape and sexual molestation⁷. Lifetime population prevalence of PTSD in women is 7% and 10% in Sweden and the US, respectively^{7,8}.

Pre-existing anxiety and depression disorders may increase the vulnerability to PTSD following a traumatic exposure⁹. Personality traits and an avoidant coping style are other factors that predispose for PTSD, and co-morbidities with major depression, anxiety disorders, social phobia and substance abuse are common^{4,9-11}. For individuals who only partly meet the diagnostic criteria of the disorder, the terms *sub-threshold PTSD*, *partial PTSD* or *posttraumatic stress symptoms* (PTSS) have been used¹². The relevance of sub-threshold PTSD has been discussed, particularly as a broadening of diagnostic criteria hypothetically could dissolve the border between disease and normal stress reactions¹³. However, sub-threshold PTSD is often exhibited by Vietnam veterans¹⁴, and since it is associated with impaired work and school functioning^{12,15}, clinical attention is often required for it¹⁶.

Sexual abuse and intimate violence are exposures associated with mental health problems following abortion³. A new trauma may be a reminder of an earlier traumatic experience and trigger posttraumatic reactions¹⁶, and some researchers have suggested that abortion can function as a traumatic stressor capable of causing PTSD and PTSS¹⁷. Thus far, data regarding induced abortion and PTSD are few and yield imprecise estimates. A study by US researchers that compared American women with their Russian counterparts revealed that about 14% of the 217 American women and 1% of the 331 Russian women were diagnosed with PTSD, while posttraumatic reactions were present in 65% of the American women and 13% of the Russian women¹⁸. The large differences in prevalence rates between the two countries might be due to the cultural differences of the acceptance of abortion within each of these nations.

Together with positive feelings, emotional distress is part of the mix of contradictory emotions expressed by the majority of abortion-seeking women¹. However, those with ongoing PTSD or PTSS are hypothetically a vulnerable group in need of targeted efforts during the abortion process. Hence, these are first results from a longitudinal study addressing PTSD and PTSS among women wanting to have an abortion. The paper describes the prevalence and pattern of traumatic experiences, assesses the prevalence of PTSD and PTSS, identifies risk factors for PTSD and PTSS and examines the association of PTSD and PTSS with concomitant anxiety and depressive symptoms among women seeking an induced abortion in clinics in Sweden.

MATERIALS AND METHODS

Between September 2009 and June 2010, a multi-centre study targeting women who requested an induced abortion was conducted at the outpatient clinics of the Departments of Obstetrics and Gynaecology of six public hospitals in Sweden. All those who requested an abortion before the end of the 12th week of gestation were approached for participation in the survey. They were informed about the study by research nurses or midwives, when registering for the first abortion visit. Women who agreed to participate received written information together with a questionnaire, coded with a study-specific ID number. They were asked to sign an informed consent form, and to fill out the questionnaire. Completed questionnaires were deposited in a locked mail-box. The only exclusion criterion for the study was inability to read and understand the questionnaire because of language difficulties.

Ethics

The study was approved by the Independent Research Ethics Committee at Uppsala University, dnr 2009/012.

Questionnaire

The questionnaire contained questions on socio-demographic variables including age, relationships, education, ethnicity, tobacco and alcohol use. In addition, the following research instruments were employed:

the Screen Questionnaire – Posttraumatic Stress Disorder (SQ-PTSD) and the Hospital Anxiety and Depression Scale (HADS).

The SQ-PTSD is based on the diagnostic criteria for PTSD, according to the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV)^{8,19}. The reliability, validity, sensitivity and specificity of the SQ-PTSD have been tested with satisfactory results⁸. Only women who met all DSM-IV criteria from A to F were classified as having a research diagnosis of PTSD. The criteria are: A1: confrontation with the stressor should involve actual or threatened death or serious injury, or a threat to the physical integrity of self or others; A2: the response to the confrontation should involve fear, helplessness or horror; B: persistent re-experiencing of the traumatic event in intrusive thoughts, nightmares or flashbacks; C: persistent avoidance of stimuli associated with the event and emotional numbing symptoms, described as an inability to experience any positive feelings such as love, contentment, satisfaction and happiness; D: hyper-arousal symptoms such as difficulties in sleeping, concentrating and controlling anger; E: duration of the disturbance (symptoms of criteria B, C, and D) for more than one month; and F: the disturbance causes clinically significant distress or impairment in social and occupational, or other important areas of functioning¹⁹. PTSS was defined as prevalence of A1 and A2 criteria together with one or more of the re-experiencing, avoidance or hyper arousal symptoms (B–C–D criteria). Controls were defined as women with neither PTSD nor PTSS.

The Hospital Anxiety and Depression scale (HADS) measures anxiety and depressive symptoms and contains seven items evaluating anxiety and seven more assessing depressive symptoms²⁰. The instrument has been validated in several clinical populations with satisfactory results²¹ and for Swedish circumstances²². Depressive and anxiety symptoms are defined by the HADS questionnaire as: none (score 0–6), depressive mood/ mild or moderate anxiety (score 7–10), and risk for depression/possible anxiety disorder (score > 10)²⁰.

Statistical analyses

In the sample size calculation a prevalence of 8.9% was assumed, based on a previous population-based study on prevalence of PTSD among women 20–39 years performed by Frans *et al.*⁸. We wanted the standard error (SE) of the two-sided 95% confidence interval

(CI; calculated by use of the large sample normal approximation) for the prevalence not to exceed (\pm) 0.014. Simulations based on the above assumptions showed that if $N=1,500$, the SE will exceed 0.014 with a probability of 0.12; i.e., the power was 0.88.

Socio-demographic data were classified accordingly: age groups, according to the Official Statistics of Induced Abortion in Sweden²³, and duration of education, as less than 12 years (high school not completed) or 12 years or more. ‘Single living’ is defined as ‘not partnered’. Alcohol use was categorised as no use, moderate drinking or heavy drinking, where moderate drinking was defined as less than 1.5 bottles of wine (1 bottle of wine = 75cl) or seven beers (1 beer = 35cl) per week or the equivalent, and heavy drinking was defined as more than 1.5 bottles of wine or seven beers per week or the equivalent. Those limits are defined as hazardous alcohol use according to Alcohol Use Disorders Identification Test developed by WHO.

Country of birth was categorised into high-income countries and low- and middle-income countries and from that perspective classified into three groups: (i) Native-born Swede, (ii) EU-countries/Norway/Australia, (iii) Other countries; two non EU-countries that were part of the former Yugoslavia were categorised as low and middle-income countries alongside countries from Asia, Africa and South America. Anxiety and depressive scores on the HADS were dichotomised as none (0–7) or present (8–21), to clarify whether anxiety and depression symptoms were present or not.

The chi-square test was used to analyse the associations between socio-demographic factors and PTSD and PTSS, respectively. The 95% confidence intervals [CIs] for the lifetime- and point prevalence were calculated using the normal approximation. Logistic regression analyses were performed to assess the risk factors of PTSD, PTSS as well as the association of depressive and anxiety symptoms to PTSD. Dependent variables were PTSD and PTSS, respectively, and adjustments were made for socio-demographic variables that were significant in the bivariate analyses. The statistical software package IBM SPSS version 20 was used for all statistical analyses.

RESULTS

During the study period 4001 abortions were induced at the six out-patient clinics. Because the

study inclusion depended on specific study personnel who were not always present, and because the patient-flow sometimes was too intense, 1086 women were never approached for the study. A total of 313 women were excluded, the reasons for exclusion reported by the clinics being: not mastering the Swedish language ($n = 96$), wishing to continue the pregnancy ($n = 13$), miscarriage ($n = 14$), and not pregnant ($n = 11$); for 179 of the women no reasons were disclosed by the clinics. In all, 2602 women were invited for participation and 1514 women consented and completed the questionnaire (overall response rate 58%; response rate per clinic 45–77%; Figure 1). Forty-four of these 1514 women had not filled out the entire SQ-PTSD, leaving 1470 women available for evaluation of PTSD or PTSS research diagnoses.

Distribution across age groups differed significantly between responders and non-responders ($p < 0.01$; Table 1). Also, the age distribution of the study responders differed from the population-based Official Statistics of Induced Abortions in Sweden²³ ($p < 0.001$). Both of these findings were driven by a lower proportion of women younger than 20 years among the responders (Table 1).

Of the participants, 92% were born in Sweden and 5% were born outside Europe. Age varied from 15 to 52 years, with a mean age of 28 years and a median age of 27 years. The overall prevalence of prior trauma was 41%, and as many as 4% had experience of war. Having been subjected to severe physical threat, psychological threat and severe physical injury were the most commonly reported trauma

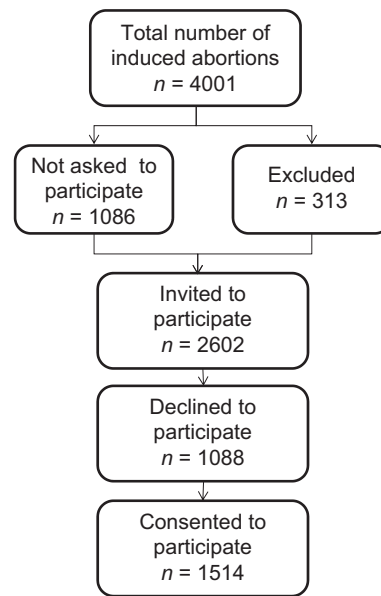


Figure 1 Flowchart of the recruitment of patients during the study period.

experiences. In addition, 12% and 18% of women had experiences of sexual assault and robbery, respectively (Table 2).

Lifetime- and point prevalence of PTSD were 104 (7%; 95% CI: 5.8–8.5) and 60 (4%; 95% CI: 3.1–5.2), respectively. The overall reporting of PTSS was 340 (23%; 95% CI: 21.1–25.4). Rates of ongoing PTSD and PTSS did not differ between the participating clinics (5–9% and 15–28%, respectively). Most women with PTSD had concomitant anxiety (90%) and depressive symptoms (76%), but also those with PTSS displayed much higher rates

Table 1 Women requesting induced abortion before the end of gestational week 12, age distribution between responders, non responders and the Official Statistics of Induced Abortion in Sweden²³.

Age, years	Responders		Non responders		Official Statistics of Induced Abortion in Sweden, year 2010	
	n	%	n	%	n	%
< 19	140	9	152	14	5930	17
20–24	463	31	303	28	9438	27
25–29	350	23	231	21	7025	20
30–34	238	16	177	16	5678	16
35–39	187	12	139	13	4675	13
> 40	136	9	86	8	2350	7
Total	1514	100	1088	100	35,096	100

Table 2 Reported trauma experiences among women requesting induced abortion (N= 1514).

	n	%
Self-experience or witness of severe physical threat	659	43
Self-experience or witness of severe psychological threat	588	39
Self-experience or witness of severe physical injury	544	36
Self-experience or witness of a traffic accident	370	24
Self-experience or witness of death threat	366	24
Death of a relative or close friend by accident, homicide or suicide	332	22
Robbery	275	18
Sexual assault	183	12
War	61	4

Multiple responses possible, frequencies reported for each item.

of anxiety (60%) and depressive symptoms (38%) than controls (Table 3).

In Table 3 the association between socio-demographic factors, anxiety and depressive symptoms,

and ongoing PTSD as well as PTSS, are displayed. Women who were living with their partner (62%; $p < 0.05$), who were smokers (52%; $p < 0.001$), used no alcohol (37%; $p < 0.001$) or were heavy drinkers

Table 3 Associations between socio-demographic factors, anxiety and depressive symptoms and on-going posttraumatic stress disorder (PTSD), point prevalence, as well as posttraumatic stress symptoms (PTSS) among women requesting abortion.

	Ongoing PTSD (n = 60)			PTSS (n = 340)			Controls (n = 1026)	
	n	%	p-value	n	%	p-value	n	%
Age								
< 19 years	7	12	<0.05	37	11	0.3	89	9
20–24 years	23	38		101	30		301	29
25–34 years	26	43		137	40		392	38
> 35 years	4	7		65	19		244	24
Education								
< 12 years	45	76	0.2	250	74	<0.05	688	67
> 12 years	14	24		88	26		332	32
Cohabiting	36	62	<0.05	237	73	0.8	734	74
Smoking	31	52	<0.001	103	30	0.5	291	29
Snuff use	8	15	0.3	44	14	0.2	112	10
Alcohol								
No	22	37	<0.001	73	21	0.5	195	19
Moderate drinking	33	56		255	75		801	78
Heavy drinking	4	7		11	3		27	3
Anxiety symptoms	53	90	<0.001	199	60	<0.001	343	34
Depressive symptoms	45	76	<0.001	127	38	<0.001	259	25
Country								
Sweden	52	87	0.3	309	91	0.8	939	92
European countries, Australia	2	3		4	1		15	1
Other countries	6	10		25	7		65	6

Anxiety and depressive symptoms according to HADS. Frequencies are reported according to number of responders for each item. p -values refer to the comparison with the control group, Chi-square test.

Table 4 The association between socio-demographic factors, posttraumatic stress disorder (PTSD) and posttraumatic stress symptoms (PTSS) among women requesting abortion.

	OR	95% CI	p-value
Ongoing PTSD (n = 60)			
Anxiety symptoms	8.1	2.9–22.2	<0.001
Depressive symptoms	4.1	2.0–8.5	<0.001
Smoking	2.4	1.3–4.4	<0.001
Alcohol			
Moderate drinking	1		
No	2.1	1.1–4.0	<0.05
Heavy drinking	1.8	0.5–6.4	0.4
PTSS (n = 340)			
Anxiety symptoms	2.8	2.1–3.8	<0.001
Education			
> 12 years	1		
< 12 years	1.41	1.06–1.9	<0.05

OR, odds ratio; CI, confidence interval. All socio-demographic variables in Table 4 were considered and those with significant regression coefficients were entered in the model. Only significant associations in the multivariate model are presented in the table. Anxiety and depression symptoms according to the Hospital Anxiety and Depression Scale (HADS).

(7%; $p < 0.001$) displayed higher rates of ongoing PTSD, whereas women with PTSS more often had a low level of education (74%, $p < 0.05$). In addition, women who reported high levels of anxiety or depression at the time of the induced abortion were also more likely to fulfil criteria for ongoing PTSD or PTSS. In the multivariate regression model, anxiety and depressive symptoms, smoking and no alcohol use remained significantly associated with PTSD. PTSS was significantly associated with anxiety symptoms and low educational level, following adjustment for socio-demographic variables (Table 4).

DISCUSSION

Findings

The main findings of the study were that women who requested an induced abortion had a point prevalence of PTSD and PTSS of 4% and 23%, respectively. Women with PTSD or PTSS displayed higher rates of anxiety and depressive symptoms than controls.

Strengths and weaknesses of the study

The study is strengthened by the use of standardised and validated instruments, the size of the study population, and the multi-centre nationwide design. The major limitation of our study was the relatively low response rate (58%). One explanation could be the practical aspects of the recruitment process, where women were asked to fill out the questionnaire at the clinic. Some women might have been under a time constraint or felt too stressed by the overall situation of requesting an abortion. Another reason for this outcome was the substantial variation in response rate by clinic due to factors such as continuity of field supervision and organisation of the recruitment at each site. The best response rates were obtained at the hospitals where only one study coordinator was responsible for the recruitment.

The prevalence of PTSD and PTSS was, however, similar between sites. The non-responders were characterised by a different age distribution, with a higher proportion of women under 20 years. Previous analyses of drop-outs in abortion studies have suggested that non-responders are younger, have a lower level of education and more often live alone than responders²⁴. As all of these factors are of importance for PTSD, it is thus possible that the prevalence of the disorder is underestimated in this study.

Differences in results and conclusions in relation to other studies

The lifetime prevalence of PTSD of 7% in this study is the same as in the general female population (7%). The corresponding figure for Swedish women, aged 20–39 years, is 9% (reanalysed prevalence rates)⁸. By comparison, the US population-based prevalence rate of lifetime PTSD in women is 10%, and by age-group the corresponding rates are 16%, 10% and 5% in women aged 15–24 years, 25–34 years and 35–44 years, respectively⁷.

In line with previous studies, we found that young age, single living, smoking, and heavy drinking were associated with a higher risk of PTSD, at least in the bivariate analyses^{7,8,25,26}. Previous studies have suggested a declining PTSD prevalence with advancing age⁸, and that was similar to our finding that women

aged 35 years or more had a lower prevalence of PTSD compared to those who were younger.

Smoking rates are high among individuals with PTSD²⁵. Studies imply that smoking reduces negative affect, thus individuals who meet the criteria for PTSD may be more likely to smoke for this reason²⁵⁻²⁷. The Swedish National Board of Health and Welfare²⁸ has reported a decrease of smoking among Swedish women, except in groups with a low level of education. Women with limited education and smokers are overrepresented among women seeking abortion and they more often display symptoms of emotional distress^{29,30}. Tobacco use and a low level of education are also risk factors for repeat abortions³¹. In Sweden, both a low educational background and smoking are strongly linked to low socio-economic status²⁸.

Heavy drinking was also associated with PTSD in the bivariate analysis, which is consistent with earlier findings that alcohol and substance abuse often are co-morbid with PTSD⁷. Nevertheless, an even higher percentage (37%) of women with PTSD reported no alcohol use. No reasonable explanation for the association between PTSD and alcohol abstinence has been found, but reasons for not consuming alcohol could be a wish for self-control, negative experiences of alcohol use in the family, medication with antidepressants, religious beliefs or a goal of being healthy. Furthermore, alcohol use may also be underreported due to the design of the question, where only three response alternatives were given.

Anxiety and depressive symptoms were common among women with PTSD, far more so than in those not having PTSD or PTSS, i.e., beyond normal negative feelings reported by abortion seeking women¹. Psychiatric co-morbidity is often observed in PTSD^{7,32}, with the most frequent disorders being major depression and generalised anxiety disorder, followed by alcohol abuse or dependence³². Earlier findings suggested that ethnicity may be a risk factor for PTSD as those born abroad may have had a higher exposure to traumatic events⁸. The present study did not confirm any association with ethnicity, but we did note that 4% of the women in the study had experiences of war. Although more than half of the latter were born in Sweden, it is reasonable to assume that some of these had visited war zones in their parents' countries.

Traumatic experiences were common in the study population. Nearly half of the women reported trauma experience of severe physical threat and 12% had experience of sexual violence or threats. The high rate

of trauma exposure in this survey is in line with what has been found in earlier studies^{8,33,34}: exposure to violence appears to be more prevalent in women who seek an abortion than among those who choose to give birth⁴.

Relevance of the findings: Implications for clinicians and policy makers

PTSS was more common than PTSD in our population, with an estimated prevalence of 23%. While these women did not fulfil criteria for PTSD, a great proportion of them had co-morbid depressive and anxiety symptoms. Anxiety and depressive symptoms, smoking and alcohol abstinence were associated with a risk for PTSD, whereas PTSS was significantly associated with anxiety symptoms and low educational level. The results indicate that women who are asking for an induced abortion should be questioned about the aforementioned risk factors and subjects presenting these risk factors should be counselled about stress symptoms and related management. From a clinical point of view, it is possible that women with PTSS are as susceptible as those with PTSD to trauma events after an abortion.

Unanswered questions and future research

Further studies are needed to address possible long-term consequences of PTSD/PTSS in abortion care. In addition, future research should clarify and compare the mental well-being, including PTSD and PTSS, of the women who already had an induced abortion with that of those who are planning to have an induced abortion. Results of studies of PTSD following a traumatic experience at childbirth demonstrate, among other factors, an association with low levels of support from staff and partners, intolerable pain, and unanticipated complications³⁵⁻³⁹. So far, this has not been addressed in longitudinal studies of abortion care.

CONCLUSION

Although PTSD is rare (7%) among women who request an induced abortion, a relatively high proportion (23%) suffers from PTSS. Women who seek abortions who have had trauma experiences in the past and/or have had symptoms of mental distress

need more consideration and alertness from the medical personnel when they are counselled for termination.

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