



## Case report

# Maternal suicide during pregnancy and the first postpartum year in Austria: Findings from 2004 to 2017



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## ABSTRACT

Suicide is one of the leading causes of maternal death during pregnancy and the first postpartum year. This retrospective investigation aimed at characterizing suicides in Austria during pregnancy and the first postpartum year between 2004 and 2017. We identified 10 suicides of pregnant/ postpartal women in that period, all of whom used violent methods, resulting in a maternal suicide rate of 0.89 per 100,000 birth events. The comparably low number of found suicides is arguably attributable to methodological issues in identifying perinatal suicides. Hence, a more comprehensive inquiry into perinatal deaths and further improvements in perinatal mental health care are called for.

## 1. Introduction

Maternal suicide is one of the leading causes of death for pregnant and postpartal women in high-income countries (Cantwell et al., 2011; Oates, 2003). In comparison with other European countries, Austria exhibits elevated suicide rates with 6.4 per 100,000 female residents and 22.6 per 100,000 male residents in 2016 (Grabenhofer-Eggerth and Kapusta, 2018). Research on suicide in pregnant and postpartum women is internationally rare and representative data on maternal suicide among the Austrian population have not been analyzed previously (Grigoriadis et al., 2017; Khalifeh et al., 2016). Therefore, it was our aim to describe the population of Austrian women, who died by suicide within the first postpartum year or during pregnancy between 2004 – 2017, using data on sociodemographic factors and methods of suicide.

## 2. Methods

All data was obtained through Austria's national statistics bureau (Statistics Austria), which provided anonymized data on suicide related deaths in Austria, based on medical examiners inquests. We only analyzed cases in which suicide was certain (ICD-10; X60-X84), thereby excluding deaths with undetermined intent (ICD-10; R95-R99, V01-X59, Y10-34, Y87.0, Y87.2, Y89.9) in a study population of women of

childbearing age (14–44 years). Regarding the age limits of the study population we followed previously applied restrictions (Samandari et al., 2011).

We categorized women's age, cause of death, noted pregnancies, and postpartum periods of up to one year as well as up to six weeks before death. Suicide rates are presented in relation to the respective cumulative population (or corresponding cumulative birth events) between 2004 and 2017.

This study was approved by the ethics board of the Medical University of Vienna (No. 1484/2016).

## 3. Results

A total of 9978 women of childbearing age died in Austria between 2004 and 2017; 1102 (11%) thereof by suicide. Ten women who committed suicide had been pregnant or postpartum and 25.8% of declared suicides by women of childbearing age were examined post-mortem. Notably, 67% of death certificates specified pregnancies as unknown and only 15.3% noted that the women had not been pregnant at the time of death. Hence, 84.7% of women of childbearing age could potentially have been pregnant or postpartal at the time of suicide.

As presented in Table 1, the suicide rate of pregnant and postpartal women was 0.89 per 100,000 birth events (taking multiple birth into account) in relation to the cumulative total between 2004 and 2017.

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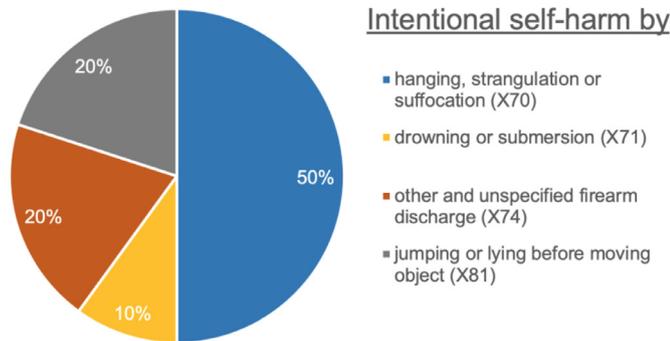
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**Table 1**  
Female suicides in Austria.

	Female Austrian population between 2004 and 2017		
	Total (n = 60,288,178)	Age 14–44 (n = 24,263,755)	Pregnant/postpartum within one year (n <sub>birth events</sub> = 1121,962)
Total number of suicides	4299	1102	10
Suicides per 100,000	7.13	4.54	0.89



**Fig. 1.** Methods of suicide during pregnancy and the first postpartum year in Austria, 2004–2017.

During that period, overall suicide rates of women of childbearing age showed a receding trend, decreasing from 6.07 per 100,000 women between 14 and 44 years in 2004 to 3.72 per 100,000 women of childbearing age in 2017.

The distribution of recorded suicides was skewed towards the older age group of 30–44 years (704 cases) in comparison to the younger age group between 14 and 29 years (398 suicides).

While six women (0.54%) were noted to be pregnant at the time of death, two (0.18%) were recorded to have had a miscarriage/termination or delivery six weeks prior to their death and two additional miscarriages/terminations or deliveries were noted within one year to six weeks prior to their death.

As shown in Fig. 1, pregnant/ postpartal women chose ‘hard’ suicide methods in all registered cases.

#### 4. Discussion

The observed suicide rate of pregnant and postpartal women in Austria was 0.89 per 100,000 birth events, thus being considerably lower than rates in the United Kingdom, or North America, which varied between 2 and 3 per 100,000 live births (Grigoriadis et al., 2017; Oates, 2003; Palladino et al., 2011).

Approximately, one in every 9 deaths of women between 14 and 44 years was noted as suicide, but only one in 110 Austrian women aged 14–44 that died by suicide was identified to be pregnant or in the first postpartum year. However, with a large percentage of our sample specifying pregnancy as unknown, the comparatively low number of maternal suicides in Austria is arguably attributable to a non-exhaustive identification of cases, as overall Austria ranks among European countries with comparatively high suicide rates (Etzersdorfer et al., 2015).

Regarding suicide methods, our results support previous findings that pregnant and postpartal women tend to choose methods with a high chance of completed suicide (Cantwell et al., 2011). Similarly to results from Swedish register data and the UK’s CMACE, we found that more women of the older age group (30–44 years) died by suicide compared to women between 14 and 29 years (Cantwell et al., 2011; Esscher et al., 2016).

Although the validity of Austrian suicide mortality statistics, which is based on coroner reports, is regarded to be rather high in international comparison (Kapusta et al., 2011), it must be highlighted that pregnancy or postpartum status could have gone undetected, leading to

an underestimation of the actual cases. Hence, the process of case identification could be improved upon by applying more elaborate enquiries as modelled by the UK’s Center for Maternal and Child Enquiries (CMACE), which cross-matches and reviews data from multiple registries with additional information from all health professionals involved in the care of the women (Kurinczuk et al., 2014). Before the full implementation of this advanced program, approximately half of all maternal suicides had not been adequately reported (Cantwell et al., 2011). Also, Grigoriadis et al. (2017) reported a more than 30% increase of identified perinatal suicide cases, when collecting data from multiple sources instead of relying solely on coroner reports. Further options might lie in raising autopsy rates in women of childbearing age and using postmortem pregnancy tests in unclear cases, thereby providing a better foundation for preventive measures.

Another limiting aspect of our study was the relatively small sample size, which hindered inferential statistical analyses.

Finally, it’s important to highlight the role of specialized perinatal mental health care services with Mother and Baby inpatient and outpatient units. Compared to the well-established system in the UK (Kurinczuk et al., 2014), there only exist a limited number of specialized perinatal mental health care units in Austria, potentially resulting in insufficient diagnostics and care for pregnant and postpartal women.

In conclusion, further improvements in perinatal mental health care services including a more comprehensive inquiry into perinatal deaths following best practice examples from the UK are called for.

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#### Declaration of Competing Interest

Without any relevance to this work, B. Vyssoki has received honoraria from Germania pharmaceuticals within the last 3 years.

#### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2019.112530.

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