

Anonymous birth law saves babies—optimization, sustainability and public awareness

Chryssa Grylli¹  · Ian Brockington² · Christian Fiala³ · Mercedes Huscsava⁴ · Thomas Waldhoer⁵ · Claudia M. Klier¹

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Abstract The aims of this study are to assess the impact of Austria's anonymous birth law from the time relevant statistical records are available and to evaluate the use of hatches versus anonymous hospital delivery. This study is a complete census of police-reported neonaticides (1975–2012) as well as anonymous births including baby hatches in Austria during 2002–2012. The time trends of neonaticide rates, anonymous births and baby hatches were analysed by means of Poisson and logistic regression model. Predicted and observed rates were derived and compared using a Bayesian Poisson regression model. Predicted numbers of neonaticides for the period of the active awareness campaign, 2002–2004, were more than three times larger than the observed number ($p=0.0067$). Of the 365 women who benefitted from this legislation, only 11.5 % chose to put their babies in a baby hatch. Since the law was introduced, a significant decreasing tendency of numbers of anonymous births ($p=0.047$) was observed, while there was significant increase of neonaticide rates ($p=0.0001$). The implementation of the anonymous delivery law is associated with a decrease in the number of police-reported

neonaticides. The subsequent significantly decreasing numbers of anonymous births with an accompanying increase of neonaticides represents additional evidence for the effectiveness of the measure.

Keywords Anonymous birth · Baby hatches · Neonaticide · Child abandonment legislation

Introduction

The day of birth is the day in which an individual runs the highest risk of being murdered. The term 'neonaticide' has replaced the old term 'infanticide' to denote the murder of a baby within 24 h of its birth, while 'filicide' (also previously called 'infanticide' or sometimes 'family murder') is now used for the parental killing of a child up to the age of 18 years (Resnick 1970). One can distinguish between 'customary neonaticide', which in some cultures was an accepted means of population control, from 'anomic' or 'criminal neonaticide', which has no social legitimacy, but results from the panic or fury of a woman who has in despair concealed or denied her pregnancy and has consequently given birth secretly (Friedman and Resnick 2009; Craig 2004).

This used to be a common crime and was considered a major public health problem. In the 1780s, a judge in Mannheim, Germany, gave a prize for an essay on the prevention of this crime, which was won by Pfeil (1788) who suggested 38 different solutions (Ulbricht 1990; Michalik 1997). In the twentieth century, as rates of this crime were already dropping, sociologists and psychologists began to study the social background and motives of women who were perpetrators. Gleispach (1907) found that almost half were illiterate. Gummersbach (1938), who wrote a series of

✉ Chryssa Grylli
chryssa.grylli@meduniwien.ac.at

¹ Department of Pediatrics and Adolescent Medicine, Medical University of Vienna, Währinger-Gürtel 18-20, 1090 Vienna, Austria

² University of Birmingham, Lower Brockington Farm, Bredonbury, Bromyard, Herefordshire HR7 4TE, UK

³ GynMed, Clinic, Mariahilfer Gürtel 37, 1150 Vienna, Austria

⁴ Department of Child and Adolescent Psychiatry, Währinger-Gürtel 18-20, Vienna 1090, Austria

⁵ Department of Epidemiology, Center for Public Health, Medical University of Vienna, Kinderspitalgasse 15, 1090 Vienna, Austria

papers in the 1930s, emphasised passivity in their attitudes towards sexual exploitation and pregnancy.

Today, despite contraception, widespread legalisation of pregnancy termination procedures, toleration of single motherhood and provision for social welfare benefits, this crime has not been contained.

In the modern literature, Bonnet (1993) conducted 22 psychoanalytic interviews with women who used the anonymous birth law in France, including four who killed their babies. According to her analysis, relinquishment resulted primarily from a combination of psycho-dynamic rather than socio-economic factors: for example, traumatic experiences such as rape and/or incest, fear to act out negative feelings, failure to act at the right time, violent fantasies and finally denial and despair were the most important factors in both groups of mothers she studied (Bonnet 1993).

In a previous study where national registers were used to examine all neonaticide cases occurring in Austria and Finland in 1995–2005 (Amon et al. 2012), unwanted pregnancy, concurrent with denial or deliberate concealment, was identified as a potential predictor of neonaticide, while fear of abandonment by the partner, close family members and friends were identified as predominant motives. Unlike filicide, the crime of neonaticide is committed at a moment of emotional crisis, most of the time without evidence of mental illness, such as psychosis or depression (Amon et al. 2012).

Neonaticide can be relatively easily concealed, and most perpetrators are never found; it is safe to assume therefore that the recorded cases represent only the tip of the iceberg. In most countries, neonaticide is not defined as a distinct crime, and coroners' reports are often inconclusive (Marcikic et al. 2006; Baralic et al. 2010; Tursz and Cook 2011). These factors make research and assessment of preventive measures particularly difficult.

A number of countries have introduced legislation to address this issue. In France, many laws and regulations have been implemented in the past 50 years (Bonnet 1992). The most recent in 2002 concerned the establishment of a national council to regulate the exchange of information and facilitate encounters, in case the mother later decided to disclose her identity (National Council for the Access of Personal Origins 2013). The effectiveness of the French model has not yet been evaluated. In the USA, there is a so-called 'safe haven law' in at least 45 of the 50 States, and similar practices have been introduced in various countries worldwide, such as Belgium, the Czech Republic, France, Germany, Hungary, India, Italy, Japan, Pakistan, the Philippines, South Africa and Switzerland (Friedman and Resnick 2009), but there are no statistical data available on the impact of these legal measures on the recorded number of babies abandoned or killed.

In 2001, after a number of highly publicised cases, Austria enacted a law on Anonymous Delivery/Birth, which also included the possibility to anonymously attend ante-natal care

baby (Austrian Ministry of Justice 2001). This law allows mothers to give birth in any hospital anonymously and free of charge or to place the baby in a baby hatch without risking criminal prosecution for abandoning it. The modern hatch is an incubator at the outer wall of a hospital, where the baby can be left, whereupon a signal is given to the staff to collect it. The introduction of the new law in Austria was followed by a public awareness campaign. Women are also encouraged to attend ante-natal care anonymously at a hospital as early as possible, so that the mother can receive free counselling and social service support. A child born anonymously or placed in a baby hatch becomes the responsibility of the child welfare authorities and is put up for adoption. It remains in hospital until an adoptive family is found.

In Austria, this only lasts a few days given the waiting list for adoption. The biological mother has the right to reclaim her child at any time up until the completion of the adoption process, which usually takes several months. She is also encouraged to leave information about herself that the child may have access to in the future (Anonymous Birth as an emergency solution 2013). Official municipal or regional web pages clearly state that the mother should leave some information for the child, invite her to come into care as soon as pregnancy is detected and make it clear that she can decide after birth if she would like to remain anonymous. There is an increasing trend (up to 40 %) of mothers who decide at a later stage to make themselves known and either opt for a conventional adoption or live with the child (Orthofer and Orthofer 2013).

Interestingly, anonymous birth was made possible in Austria as early as 1784 when Emperor Joseph II opened the General Hospital in Vienna and included an obstetric clinic with an adjacent foundling hospital where mothers could leave their infant after birth without disclosing their identity (Pawlowsky 2001). The mortality rate of these children was initially as high as 100 % in the nursery or at the foster homes, but greatly improved over time. Although as many as 100 births per month were recorded, this practice was stopped in 1910 due to lack of funding.

In 1974, neonaticide became a specific crime in Austrian law (§79 Austrian Penal Code 1974).

...A mother, who kills her child during child birth, or as long as she was influenced by the process of giving birth, should be punished with one to five years of imprisonment...

Austrian police statistics categorise therefore neonaticide cases separately from homicide cases and therefore recorded separately from filicides. For this reason, Austria represents a unique opportunity to study the epidemiology of neonaticide and most importantly to assess the impact of the adopted legislation and other preventive measures.

In our first analysis, we demonstrated a significant decrease in neonaticide rates after the implementation of the new law (Klier et al. 2013). When comparing to Sweden and Finland, we did not find a similar decrease in the same period (1992–2001 versus 2002–2009).

The aim of the present analysis is to further examine the impact of Austria's new law using neonaticide police records from the time relevant statistical records are available, 1975–2012. Furthermore, in this analysis, we evaluate emerging trends not only concerning neonaticide rates but also in relation to the impact of specific measures, more specifically in regard to the use of hatches versus anonymous hospital delivery and emerging trends.

Methods

Reported cases of neonaticide were obtained from Austrian police criminal statistics for 1975–2012 (Vienna: Federal Criminal Police Office, Austrian Federal Ministry of the Interior 2013). These include cases in which no perpetrator was found. The law legalising anonymous delivery was implemented in the second half of 2001. This period (1975–2001) is defined as the pre-law period, and 2002–2012 as the post-law period. Birth rates were drawn from the national birth registry (Statistics Austria. Live and still Births since 1871, 2013). The number of women who gave birth anonymously (Statistics Austria: anonymous births since 2002, 2013) and the number of babies who were placed in baby hatches were also obtained (Lischka 2011). The time trend of neonaticide rates was analysed by means of a Poisson regression model in SAS/STAT using proc genmod Version 9.3 2002–2010 program. The introduction of legal measures allowing anonymous birth in 2001 is indicated by a binary variable (change point). A possible break of the trend in 2001 was modelled by an interaction term year*change point.

In addition to the regression model for the years 1975 to 2012, we tested the hypothesis that in the years 2002 to 2004 the number of observed neonaticides is lower than expected based on the time trend 1975 to 2001. This was done by estimating a Bayesian Poisson regression model for the years 1975 to 2001, estimating predicted values for 2002 to 2004 and calculating the standardised mortality ratio (SMR) based on observed and expected cases. A Bayesian approach was chosen in addition to the classical approach in order to include the variability of the predicted values. The posterior distribution of the estimated SMR was described by calculating the 95 % highest posterior density (HPD) interval by means of the R-package CODA version 0.16-1 (Coda version 0.16-1, available at: <http://cran.r-project.org/web/packages/coda/index.html>). Additionally, a 95 % confidence interval was estimated based on the classical approach (Fisher exact). The period 2002 to 2004 was chosen, as for those years, we could

ensure that the awareness campaign was still active in Austria. Rates are given per 100,000 births.

Poisson regression was also used for reported neonaticides in 2002–2012 and for anonymous birth in 2002–2012.

The trend of the proportion of babies placed in a baby hatch in relation to the total sample of anonymous births (including the baby hatches) was estimated by means of a logistic regression in SAS/STAT using proc genmod Version 9.3 2002–2010 program. Significance concerning the trend was calculated by two means, exact and by applying the DSCALE-option of SAS to account for over-dispersion of the data.

Results

The neonaticide rate curve (Fig. 1) shows a striking discontinuity in 2002, just after the implementation of the new law. Prior to 2002, rates are fluctuating strongly, ranging from 2.46 to 15.22 with an average of 8.5 cases per 100,000 births, whereas after 2002, rates display a sudden drop and remain at low levels with limited scattering, ranging between 1.28 and 3.93 for 9 consecutive years with an average of 3.1 cases per 100,000 births. The number of births and neonaticides for 1975–2012 are shown in Table 1. In 2007, there were six reported neonaticides, but the same mother committed three of them more than 20 years earlier (News 2007), so only three cases have been included in the calculations.

The Poisson regression model for the years 1975 to 2012 shows a significant drop at 2001–2002 (change point, $p=0.0063$) indicating a significant change from a decrease in rates until 2001 to an increase afterwards (Fig. 1, Table 2).

The 95 % HPD interval for the estimated SMR for the years 2002 to 2004 was 0.21–0.41 (mean SMR=0.31), the classical 95 % confidence interval, ignoring variability of expected rates, was 0.08 to 0.78. Both types of intervals being far off SMR=1 clearly showed a non-random decreased number of observed neonaticides for the period 2002–2004 when compared to the number of expected cases based on 1975–2001. In fact, for the period of 2002–2004, the predicted numbers of neonaticide were more than three times larger than the observed numbers ($p=0.0067$), applying the classical approach (Fisher exact).

During the 2002–2012 period, 365 anonymous births, including babies placed in baby hatches, were reported. Babies placed in 1 of the 15 baby hatches spread over all Austria represented only 11.5 % ($n=42$) and most of the babies were placed in the baby hatch in Vienna ($n=25$), whereas in other areas hatches were not used at all during a decade.

Poisson regression analysis indicated a significant increase of neonaticide ($p=0.0001$) for the post-law period 2002–2012 and a decrease of anonymous birth ($p=0.047$) for the same time period (Fig. 1).

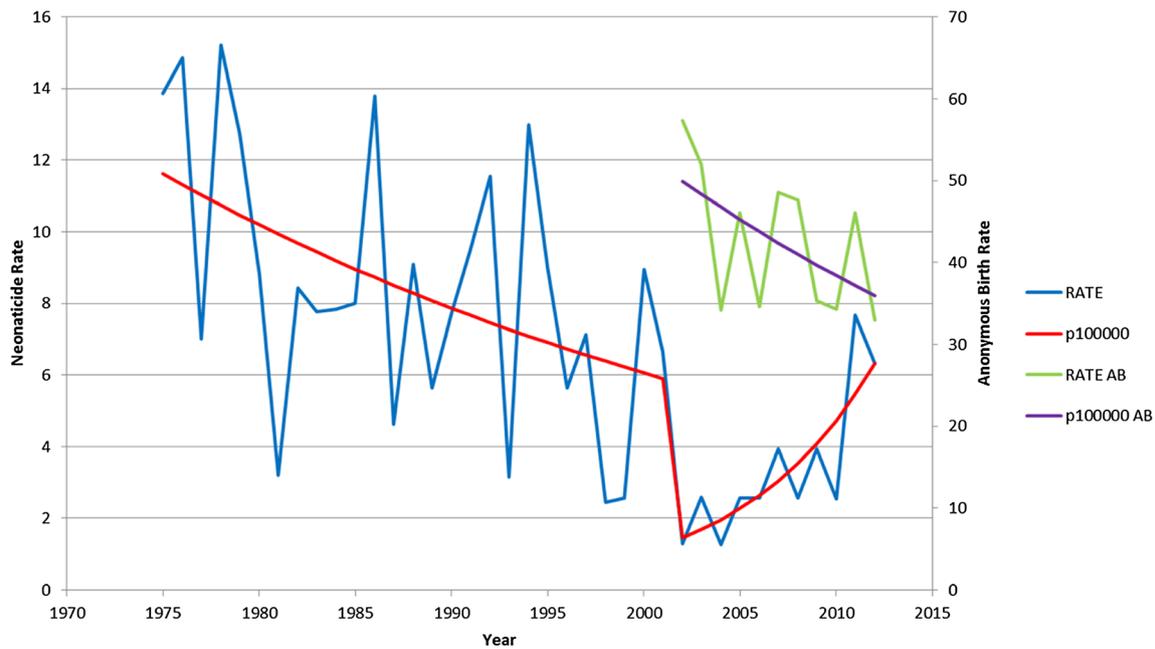


Fig 1 Neonaticide and anonymous birth rates (1975–2012 and 2002–2012, respectively) versus Poisson regression rates. Neonaticides: observed rates (RATE), obtained by Poisson regression (p100000); anonymous birth: observed rates (RATE AB), obtained by Poisson regression (p100000 AB)

Logistic regression analysis of the proportion of babies put into baby hatches as compared to the total sample of anonymous births (including the baby hatches) showed a significant increase ($p=0.0149$ [DSCALE]; $p=0.0457$ [exact]) after the implementation of the new law.

Discussion

The analysis shows a significant decrease in the number of reported neonaticides shortly after the implementation of the Anonymous Birth Law. The sudden drop from 2002 onwards in both scattering and average values of neonaticide rates is prominent. All time low values were observed right after the implementation of the new law.

However, along with these optimistic results, an alarming observation has emerged. After the initial drop following the implementation of the new law, we observe a significant increase in neonaticide rates coupled with a significantly decreasing number of anonymous births. This trend may indicate the emergence of a fading effect of the awareness campaign. The high rates in 2011 and 2012 are especially alarming. These results are important because they underscore the importance of awareness raising. However, such campaigns were discontinued sometime after the implementation of the anonymous birth law, despite evidence that public awareness is fundamental for the success of preventive measures (Farrelly et al. 2012). It is of critical importance that women are aware of this law. Schools, social networking and advertising on television and/or in prominent locations

can be used to this end. Furthermore, 24-h ‘hot lines’, available since 1996 in USA, are said to have saved over 685 babies and helped thousands of women in despair (Project Cuddle 2013). Awareness campaigns in schools, on the internet and on radio and television, involving famous actors, athletes and other celebrities, can also be very influential. In the USA, in New York and in Illinois, teachers, coaches, nurses and parents are trained to recognise early signs of pregnancy in teenagers’ behaviour and appearance, and how to refer them to the appropriate services (NY Senate ADAMS 2011; Teacher’s Kit. No shame. No blame. No names. Now there’s a way to safely relinquish your newborn. Illinois’ Abandoned Newborn Infant Protection Act 2013). Schools can also include adolescent pregnancy and birth in their health education classes, and provide information on confidential counselling (Vallone and Hoffman 2003). In Australia, researchers have noted that in light of recent political interest in preventing neonaticide, there was a pressing need for more research for evidence-based prevention in this area (De Bortoli et al. 2013).

In our effort to further understand the results of our analysis, we studied the number of women who made use of this law throughout 2002–2012. Only a small percentage of these women made use of baby hatches, while the vast majority of women (90 %) gave birth in a hospital under anonymity. However, it is worrying that the proportion of women using baby hatches also increased significantly over the same period. It is obvious that baby hatches are not optimal compared to anonymous births since the latter protect both the mother and child from morbidities and mortality associated with pregnancy, labour and post labour. Mental disturbances during

Table 1 Neonaticide: cases and rates 1975–2012; anonymous birth: cases and rates 2002–2012

Year	Cases (N)	Births	Rates (N)	Cases (AB)	Rates (AB)
1975	13	93,757	13.87		
1976	13	87,446	14.87		
1977	6	85,595	7.01		
1978	13	85,402	15.22		
1979	11	86,388	12.73		
1980	8	90,872	8.8		
1981	3	93,867	3.2		
1982	8	94,840	8.43		
1983	7	90,118	7.77		
1984	7	89,234	7.84		
1985	7	87,440	8		
1986	12	86,964	13.8		
1987	4	86,503	4.62		
1988	8	88,052	9.08		
1989	5	88,759	5.63		
1990	7	90,454	7.74		
1991	9	94,629	9.51		
1992	11	95,302	11.54		
1993	3	95,227	3.15		
1994	12	92,415	12.98		
1995	8	88,669	9.02		
1996	5	88,809	5.63		
1997	6	84,045	7.14		
1998	2	81,233	2.46		
1999	2	78,138	2.56		
2000	7	78,268	8.94		
2001	5	75,458	6.63		
2002	1	78,399	1.28	45	57.40
2003	2	76,944	2.6	40	51.99
2004	1	78,968	1.27	27	34.19
2005	2	78,190	2.56	36	46.04
2006	2	77,914	2.57	27	34.65
2007	3 (6 ^a)	76,250	3.93	37	48.52
2008	2	77,752	2.57	37	47.59
2009	3	76,344	3.93	27	35.37
2010	2	78,742	2.54	27	34.29
2011	6	78,109	7.68	36	46.09
2012	5	78,952	6.33	26	32.93

Observed cases of neonaticide and anonymous birth, total births and the rates per 100,000 births, all per year, respectively; *N* neonaticide, *AB* anonymous birth

^a Three cases were excluded because they were committed by the same mother more than 20 years earlier

unassisted births without analgesia and delivery-associated conditions such as stupor, collapse, rage or delirium represent increased risks, threatening both infant and mother in unsupervised deliveries (Brockington 1996). In Austria, the initial

Table 2 Poisson regression results

Parameter	Estimate	95 % Confidence interval		<i>p</i> value
Intercept	−26.06	−39.33	−12.80	0.0001
Year	0.15	0.02	0.27	0.0190
Change point	18.95	5.59	32.31	0.0054
Year*change point	−0.17	−0.30	−0.05	0.0063

The Poisson regression model of the neonaticide rates for 1975–2012 shows a significant break in the trend of the neonaticide rate, modelled by the interaction term year*change point ($p=0.0063$)

awareness campaign was eventually stopped because of concerns about possible misuse of the measure. Consequently, the only “awareness” feedback at present is sporadic media reports about babies placed in hatches, which might explain the increased use of these hatches. Given our results, it is advisable to relaunch official awareness campaigns to promote the safer option for both mothers and children.

In countries with sufficient support for anonymous delivery, baby hatches could eventually become redundant, as a woman can deliver and leave her child at any hospital. The focus of all relevant legal measures should therefore always be to provide the best care for both, mother and child.

The preference for safe and anonymous delivery becomes even more important in light of recent reports concerning an alarming increase of baby abandonment across Europe (Nadeau 2012; Browne et al. 2012). Having said this, it is also very important to note that not all women who give birth under anonymity are potential candidates for neonaticide. The choice of women who decide for personal and other valid reasons that anonymous birth is best for them and their babies should be respected. Societies with high rates of neonaticide who wish to promote the health of pregnant women and babies should therefore ensure that they can give birth anonymously.

In conclusion, neonaticide represents a largely preventable tragedy. In this paper, we have provided evidence that the Austrian prevention model, namely anonymous delivery law, is associated with a decrease in the number of police-reported neonaticides and with a very low number of newborns put in baby hatches.

We believe that anonymous delivery represents an effective measure for neonaticide prevention that can be used by countries who report a high neonaticide rate. However, the implementation of this prevention strategy is highly dependent on the health care systems and their budgetary provisions as well as their social and cultural context.

Finally, it should be highlighted that legislation that facilitates mothers to deliver their babies safely fulfils their human rights to dignity, privacy, equality and autonomy. The European Court of Human Rights ruled in the landmark case *Odièvre v. France* in 2003 that not disclosing the identity of the mother did not violate Articles 8 (right to respect for private and family life) or 14 (prohibition of discrimination) of

the European Convention of Human Rights. The Court found that French law had struck a fair balance between the competing interests at stake: the public interest (prevention of abortions—especially illegal abortions—and the abandonment of babies); a child's personal development and right to know her/his origins; a mother's right to protect her health by giving birth in appropriate medical circumstances; and the protection of other members of the various families involved (European Court of Human Rights; Grand Chamber Judgment in the Case of *Odievre vs France* 2003).

An important limitation of our study is that although undiscovered neonaticides and illegally abandoned babies represent a considerable phenomenon (Marcikic et al. 2006; Baralic et al. 2010; Tursz and Cook 2011), our methodology based on police records do not allow us to shed light on the extent of this problem. However, although not ideal, police statistics remain the most accurate available method to assess the effect of the anonymous delivery law (Klier et al. 2013). In addition, since our study extends over a period of 37 years, we believe that the differences observed in neonaticide cases in post-law period vs pre-law period are real and are not affected by a probable underestimation of neonaticides.

There may be confounding factors occurring over time, that could have affected the situation, and may partially influence our findings. However, to our knowledge, the basic socio-cultural and economic situation in Austria during the entire study period (1975–2012) has not changed.

Further qualitative research into the socio-economic, cultural and psycho-social characteristics of women who make use of these measures would yield important results that could contextualise and enrich the statistical analysis. More importantly, understanding better the circumstances and motives associated with such acts could lead to the design of better suited and more accurately targeted prevention and awareness campaigns.

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Chryssa Grylli developed the study design, assisted with the analysis and interpretation and wrote the paper; she has final responsibility to submit for publication, and is the guarantor.

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