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## Analysis of the relationship between neonaticide and denial of pregnancy using data from judicial files.

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26 **Abstract**

27 *Objectives:* Using judicial files on neonaticides, 1) examine the frequency of the association  
28 between neonaticide and denial of pregnancy; 2) assess the accuracy of the concept of denial  
29 of pregnancy; 3) examine its usefulness in programs to prevent neonaticides.

30 *Methods:* Quantitative and qualitative analysis of data collected from judicial files during a  
31 population-based study carried out in 26 courts in 3 regions of France over a 5-year period.

32 *Results:* There were 32 cases of neonaticides identified; 24, perpetrated by 22 mothers, were  
33 solved by police investigation. Aged 26 years on average, the mothers had occupations that  
34 resembled those of the general population and 17 had jobs, 13 were multiparous and 11 lived  
35 in a couple relationship. No effective contraception was used by women in 20 cases.

36 Psychopathology was rare but mothers shared a personality profile associating immaturity,  
37 dependency, weak self esteem, absence of affective support, psychological isolation and poor  
38 communication with partners. No pregnancy was registered nor prenatal care followed. Two  
39 (perhaps 3) pregnancies were unidentified until delivery. No typical denial of pregnancy was  
40 observed in the other cases. Pregnancies were experienced in secrecy, with conflicting  
41 feelings of desire and rejection of the infant and an inability to ask for help. Those around the  
42 mothers, often aware of the pregnancy, offered none. In the absence of parallel clinical data, it  
43 is not possible to calculate the frequency of the association neonaticide-denial of pregnancy.

44 *Conclusions:* The term “denial of pregnancy” poorly describes the complexity of emotions  
45 and feelings felt by perpetrators of neonaticides. The term is used differently by different  
46 professionals. It gives a pathologizing label to women while absolving those around them and  
47 has little operational value in preventing neonaticides. It appears necessary to replace the term  
48 “pervasive denial” by “unknown pregnancy” and “concealed pregnancy” by “secret  
49 pregnancy”.

50 **Key words:** neonaticide, population-based study, pregnancy denial, judicial data, psychology.

51



77 **Definitions of Denial**

78 As a mental process, “Denial, in and of itself, is a perfectly normal and ubiquitous  
79 phenomenon. In fact, it is impossible to draw a definitive line between normal and  
80 pathological denial” (Stotland & Stotland, 1998, p. 248). For some authors, denial implies  
81 first the recognition of a reality, then its active but unconscious rejection, a refusal to accept  
82 its existence (Bardou, Vacheron-Trystram, & Cheref, 2006; Spinelli, 2001). Others consider  
83 this a relatively conscious adjustment mechanism (for example, Brezinka, Huter, Biebl, &  
84 Kinzl, 1994). The concept of denial of pregnancy is multidimensional and includes notions of  
85 levels of consciousness, psychopathology and temporality (linked to the date the pregnancy  
86 was discovered).

87 According to Miller (2003), there are three types of pregnancy denial: *Affective denial*  
88 “occurs when a woman acknowledges intellectually that she is pregnant but experiences very  
89 few or none of the accompanying emotional or behavioral changes” (p. 82). Affective denial  
90 is associated with feelings of detachment from the infant. *Pervasive denial* “occurs when not  
91 only the emotional significance but the very existence of the pregnancy is kept from  
92 awareness” (p. 84). Weight gain, amenorrhea, and breast changes may not be present or may  
93 be misconstrued; even labor pains may be misinterpreted. Partners and families may also fail  
94 to notice pregnancies and there is a collective response of denial among those around the  
95 woman. *Psychotic denial* occurs when “physical symptoms and sign of pregnancies generally  
96 occur but are misinterpreted, sometimes in bizarre fashion” (p.85). Contrary to non psychotic  
97 women, these mothers do not conceal their pregnancy and those around them do not  
98 participate in denying the pregnancy.

99 While Miller, in discussing “pervasive denial”, leaves a margin of uncertainty as to the  
100 constancy of clinical signs (as suggested by the repeated use of the word “may”), Beier *et al*  
101 propose stricter criteria for justifying the assumption of pregnancy denial such as the

102 subjective certainty of the pregnant woman that she is not pregnant, unguarded behavior  
103 around others that could lead to discovery of a pregnancy, visits to the doctor for pregnancy-  
104 typical symptoms, lack of preparation for birth, misinterpretation of labor pains and surprise  
105 at the birth (Beier, Wille, & Wessel, 2006, p. 724). The problem is less-well defined for  
106 others: “There is no clear dividing line between conscious coping and unconscious defence  
107 mechanisms ....”(Brezinka et al., 1994, p. 6).

108 Many authors (for example Friedman, Heneghan, & Rosenthal, 2007; Friedman &  
109 Resnick, 2009; Beier et al., 2006), differentiate denied pregnancy from concealed pregnancy:  
110 “In contrast to the denial of pregnancy, concealment of pregnancy occurs in women who  
111 know that they are pregnant and actively conceal pregnancy from family, partners, friends,  
112 teachers, and coworkers” (Friedman et al., 2007, p. 117). Wessel, Gauruder-Burmester, &  
113 Gerlinger (2007) define pregnancy concealment as a situation in which the woman is aware of  
114 her pregnancy, often from an early stage. But for Miller (2003), “Pregnancies denied are also  
115 pregnancies concealed” (p. 84). Yet Friedman and Resnick (2009) note there are “several  
116 subtypes of both denial and concealment of pregnancy” (p. 45). In studies carried out in  
117 obstetrics departments, the diagnosis of denial was based on the date of “discovery” of the  
118 pregnancy by the woman, and a threshold suggested: either 20 weeks of amenorrhea (Beier et  
119 al., 2006; Wessel & Buscher, 2002), or between 21 and 26 weeks of amenorrhea (Brezinka et  
120 al., 1994).

121 By and large, there is no agreed definition for denial of pregnancy and no agreement  
122 on the relationship between deliberate concealment and pregnancy denial but the great rarity  
123 of pervasive denial has been demonstrated in population-based studies: 1 case for 2455  
124 pregnancies in a prospective study carried out in all obstetrical facilities in an area of Berlin in  
125 1995-96 (Wessel & Buscher, 2002); 1 for 2500 in a retrospective and hospital-based Welsh  
126 study (Nirmal, Thijs, Bethel, & Bhal, 2006). Since these studies were carried out in clinical

127 settings, they excluded women who did not deliver under professional care, who may have  
128 delivered in a clandestine manner, and who were occasionally perpetrators of neonaticide.

## 129 **Legal Background**

### 130 **Legislation on Homicide**

131 Since 1994, the concept of infanticide in France is no longer distinct from the rest of  
132 child homicides. The penal code groups together all homicides of children under 15 years of  
133 age and there are neither separate statistics nor specific sentences for infanticides. The French  
134 Penal Code provides that “Persons suffering, at the time of their acts, from a psychiatric or  
135 neuropsychiatric disorder that abolished their judgment or the control of their acts” are not  
136 criminally responsible. In cases of people suffering a “disorder that altered their judgment or  
137 hindered the control of their acts ... the court takes this circumstance into account when  
138 determining the sentence and how it is to be carried out” (Article 122-1 – lines 1 & 2).

139 Expert psychiatrists must answer the question of whether or not there was an  
140 abolishment or alteration of judgment. They must also determine if the subject examined has  
141 any mental or psychological abnormalities and whether these may be related to the alleged  
142 offense. Expert psychologists are asked by the court to submit the subjects to any  
143 examinations, interviews and tests useful for understanding their intelligence, manual  
144 dexterity, attention state, affectivity and disposition and to infer all data useful for  
145 understanding the motivations behind their acts.

### 146 **Legislation on Reproductive Health**

147 Since the 1970s, declaring a pregnancy to the government health administration is  
148 obligatory and confers rights to maternal leave and prenatal benefits, subject to a number of  
149 mandatory prenatal visits to the doctor. Since 1967, French legislation authorizing  
150 contraception has provided a number of measures for dealing with unwanted pregnancy (by  
151 its prevention or termination) while taking into account the special case of minors

152 (prescription of contraceptive pills without parental consent, anonymity and free service in  
153 family planning centers). Abortion was legalized in 1975 and can be carried out within the  
154 first 12 weeks following the last menstruation. Since 2000, emergency contraception  
155 (“morning after pill”) can be given by a school nurse to a minor student. Anonymous  
156 childbirth refers to the possibility of a mother not revealing her identity during a delivery.

### 157 **Population and Methods**

158 This analysis of neonaticides is part of a research project carried out in a large  
159 geographical population in France on “suspicious infant deaths” (Tursz, Crost, Gerbouin-  
160 Rérolle, & Cook, 2010; Tursz & Cook, 2011). In the context of this study, an expert advisory  
161 committee was assembled, composed of representatives of the judicial system, pediatrics,  
162 forensic medicine, pathology, maternal and child health, psychology, and epidemiology. This  
163 study was approved by the French Data Protection Authority (CNIL).

### 164 **Cases Included in the Study and Documents Used**

165 A retrospective study was carried out in 26 of 27 courts (one small court refused to  
166 participate) in 3 regions of France: Brittany, Île de France (Paris Region), and Nord-Pas-de-  
167 Calais. These regions have very different socio-economic characteristics and rural/urban  
168 composition. During the study period, there were 1,286,253 live births, comprising 34.6% of  
169 all births from the 22 regions of continental France (INSEE, Annual). Included in the study  
170 were all cases of infants dying on the day of birth during a five-year period (1996-2000) that  
171 were submitted to the courts by the State prosecutors’ offices in the three regions. This period  
172 was chosen so judicial proceedings would be concluded at the time of data analysis. Complete  
173 court case data cover the period from 1996 to 2008, due to often lengthy investigations.

174 The study was carried out at all levels of the judicial system, including criminal and  
175 appellate courts. Following identification and selection of cases using computer tools  
176 available in each court, judicial files were obtained and data entered into individual

177 anonymous questionnaires by the research team (a field coordinator and two trained  
178 investigators). Each file was exhaustively examined and several documents were analyzed:  
179 transcripts of interviews by police and interrogation by the investigating judge of the mother  
180 and witnesses (mother's companion or husband, family members, friends, work colleagues,  
181 neighbors, first responders at the scene of the newborn's death); prosecutor's charges; the  
182 indictment; expert reports by psychiatrists and psychologists; results of personality tests;  
183 report of the forensic examination of the infant.

#### 184 **Analysis**

185 In order to analyze each file, criteria of pregnancy denial from international  
186 publications were used: date of discovery of the pregnancy by the mother and those around  
187 her, medical declaration and monitoring of the pregnancy, adaptations in behavior, signs of  
188 pregnancy and birth pains, preparation for birth, the presence and nature of emotions and  
189 thoughts connected with the pregnancy, and the mental representation formed of the child.

190 A data base of texts was created using Nvivo 8<sup>®</sup> (a program for qualitative analysis) to  
191 enable exploration and comparison of data from various documents using content analysis. In  
192 addition to variables on the progress of the pregnancy and elements constituting "denial", a  
193 preliminary examination was done of the emotional history of the women and their general  
194 psychological characteristics (Tursz, Simmat-Durand, Gerbouin-Rérolle, Vellut, & Cook,  
195 2011).

196 A 153 item questionnaire was constructed according to a typology of factors likely to  
197 explain the act of murder: factors linked to the personality of the mother, to the family and  
198 social context both at the time of the event and in the past, to the mental representation of the  
199 infant, to the pregnancy and how it was perceived and to factors preceding the act. The  
200 quantitative data from this questionnaire were analyzed using Modalisa 6<sup>®</sup> (a program for  
201 creating and analyzing questionnaires).

202

**Results**

203           There are 32 cases of neonaticide in the sample analyzed below (infants born alive and  
204 viable), 27 cases recognized as such by the courts and 5 identified by the expert advisory  
205 committee. Judicial inquiries on person or persons unknown were opened for 8 cases after the  
206 discovery of an infant corpse (or 2 in one case). Out of 24 solved neonaticides, 22 mothers  
207 were implicated, two having repeated the offense.

**208 Mothers' Characteristics**

209           **Socio-demographic aspects.** The mothers' median age was 26, with the youngest  
210 being aged 17 and the oldest 44. Nearly two-thirds already had children before the offense.  
211 Close to half, 10 of 22, lived in a couple relationship. These mothers were not physically  
212 isolated, as only two lived with just their children. Only five mothers were without a  
213 professional activity, with one of these being out of work not by choice (Table 1).

214           **Psychopathological aspects.** Forty-one assessments were done on 17 mothers: 22  
215 psychiatric assessments on 16 mothers (supplemented by a psychological assessment for 6  
216 cases), and 19 exclusively psychological assessments. Four mothers were considered to have  
217 psychotic personalities, but the assessments were contradictory for 3 of them. Out of 16  
218 mothers for whom a psychiatric assessment was ordered, all were found to be criminally  
219 responsible. However, 11 mothers were considered to have had altered judgment and control  
220 of their acts while committing the offense, although for one of these 11 mothers the  
221 psychiatric assessments were contradictory. These findings were felt by the experts to be  
222 related to the particular psychological context of delivery and/or the neurotic personality of  
223 the mother, as shown in the conclusions of a psychiatric assessment:

224           It is necessary ... to take into account the neurotic character of the personality, with  
225 mechanisms of avoidance and inhibition present during the committing of the offense,  
226 and the physical and psychological stress of a delivery experienced completely alone.

227 This leads to the conclusion that it is appropriate to consider there was significant  
228 mitigation of responsibility. Indeed, there was alteration and hindrance of control of  
229 these acts. (Case of Ms. B).

### 230 **Reproductive History**

231 **Parity.** Only 9 of 22 mothers were primiparous. Information was unavailable on  
232 whether this was the first pregnancy for these 9 (Table 1). When information was available on  
233 prior pregnancies and deliveries, it was in order to point out problems or dysfunctions. Three  
234 mothers committed neonaticides or attempted neonaticides before the current offense for  
235 which they were indicted. Four mothers noted difficulties in dating their prior pregnancies  
236 because they were belatedly acknowledged, and one of these mothers may have had  
237 ‘pervasive denial’ of pregnancy.

238 **Contraception.** In 20 out of 22 cases, it was noted there was either total absence of  
239 any contraception by women, its cessation, irregular use or even its active refusal. Some  
240 young primiparous women did not use contraception out of fear of their own mothers (3  
241 cases). Two women did not seem able to envisage the potential reproductive consequences of  
242 sexual intercourse. Contraception was often a source of conflict in couples who usually were  
243 not able to discuss contraception, let alone agree upon its use.

244 I talked about it to my wife. I told her it was really time to do something. For example,  
245 I was thinking about tubal ligation. There was the pill, but she didn’t take it. My wife  
246 didn’t give me an answer; you couldn’t really talk to her in general. As soon as we  
247 started talking about contraception, she would leave.... I didn’t insist....In spite of that  
248 and although I knew my wife took no contraception, I took no precautions to keep her  
249 from getting pregnant. I didn’t want to use a condom. (Testimony, husband of Ms. H.,  
250 mother of 6 living children and perpetrator of four neonaticides).

251           He [her husband] would never have accepted an abortion; besides, I had a lot of  
252           trouble figuring out the exact terms of my pregnancies. In fact, it wasn't his problem, it  
253           was mine. I had problems with the pill, it gave me headaches. We had envisaged an  
254           IUD, but he didn't want it. He didn't want to hear anything about condoms, it was for  
255           me to handle things. (Hearing testimony, Ms. K.).

## 256 **The Discovery, Acknowledgement, and Experience of Pregnancy**

257           **Registering of the pregnancy and prenatal care.** None of the women registered their  
258           pregnancy, regardless of the time of its discovery. More than half the women (12 out of 22)  
259           knew they were pregnant before or at 20 weeks (Table 1). Prenatal care was very rare. Only 3  
260           mothers had a pregnancy test, only 5 had medical visits related to their pregnancy, with 1 of  
261           these 5 going to the hospital only a few hours before delivering back at home, with dramatic  
262           consequences. One visited her general practitioner and another her occupational physician for  
263           reasons unrelated to pregnancy, but the health professionals did not detect their pregnancies.

264           I saw Ms. N. in my office twice this year: February 22<sup>nd</sup> and March 26<sup>th</sup>. March 26<sup>th</sup>  
265           she came for immunizations. I had her disrobe and examined her but I didn't notice she  
266           was pregnant [Ms. N. delivered April 10<sup>th</sup>]. (Testimony, general practitioner).

267           Seven mothers thought of getting an abortion during their pregnancy, but the legal  
268           time limit had passed for 5 of them. Only one mother planned giving birth anonymously. Five  
269           mothers said they had wished to keep the baby and planned neither abortion nor  
270           abandonment. Ten mothers took no steps to terminate pregnancy and made no statement on  
271           this matter during judicial investigations. The pregnancies seem to have been experienced  
272           during a period where time stopped, without anticipation of the birth of the baby. In addition,  
273           the rare medical personnel consulted were unable to help in any way.

274           **Unknown pregnancies.** This phenomenon concerned 3 mothers who appear not to  
275           have known they were pregnant until delivery. Ms. U. was a 17 year old living with her

276 parents and sisters, and stated she didn't know she was pregnant. Her family and neighbors  
277 gave similar testimony. The expert psychologist referred to pregnancy denial. Ms. V. was a 31  
278 year old primiparous woman still living with her parents. She gave birth at the home of her  
279 partner, the father of the baby. She and those around her (family, employer, colleagues) stated  
280 they did not know she was pregnant. She said she took the pill during her pregnancy, but she  
281 had had no prescriptions for at least 2 years according to her physicians and the police found  
282 two unused pregnancy tests at her home. No psychiatric or psychological expert reports were  
283 available for this case.

284 I was completely unaware I was pregnant. I had abdominal pains. I had seen my  
285 general practitioner who prescribed medicine for constipation. [...] I never had a  
286 pregnancy test because I never imagined I was pregnant. I always wore the same  
287 clothes and didn't have any particular symptoms. (Testimony by Ms. V.)

288 Ms. W., 24 years old and pregnant for the fourth time, stated she had not known she  
289 was pregnant. Her family and professional circle said the same. However, the father had  
290 noticed she had put on weight. She went to the doctor who prescribed a diet. The psychiatric  
291 expert spoke of repetitive denial – the fire department (first responders) had intervened for a  
292 sudden home delivery during a preceding pregnancy. The doctor was not alerted by this  
293 preceding unmonitored pregnancy and did not notice the mother's fourth pregnancy.

294 I hadn't realized I was pregnant. I usually have my periods during my pregnancies and  
295 that was the case this time. I am not in the habit of weighing myself, but I didn't have  
296 the impression I had gained weight, I could still get into my clothes. (Hearing  
297 Testimony, 1<sup>st</sup> appearance of Ms. W. before the judge).

298 I feel we are faced henceforth with a classical context of true and complete  
299 pregnancy denial, which is recurring in this particular case. (Psychiatric expert  
300 assessment of Ms. W.)

301           These three files give a relatively uniform description of the experience of the  
302 pregnancy and its discovery at delivery, although the situation for Ms. V. is subject to caution,  
303 especially since expert assessment was lacking in her case.

304           **The criteria of denial.** There is broad heterogeneity in the experiences of pregnancy.  
305 A complete set of criteria defining pregnancy denial was not found in any of the files. In 13  
306 out of 22 judicial files, the usual physical signs of pregnancy were not mentioned. Normal  
307 amenorrhea of pregnancy was noticed and acknowledged by 11 mothers. Weight gain was  
308 noted in 15 files, but approximations were used: the woman “gained weight” or gained “some  
309 weight”. Fetal movements were not mentioned in 7 files. They were felt by 9 mothers and not  
310 by 6 others. As for pains prior to and signaling delivery, they were not mentioned in 11 files  
311 and confused with other pains (most often linked to digestive pains) in 6 files.

312           Statements made by the same woman were often contradictory. Ms. B. thought of  
313 getting an abortion but decided to keep the baby. The pregnancy was the subject of fantasies:  
314 I looked in a school book to see the development of the baby in the womb [...] I  
315 pictured what the baby would be like [...] I thought about the cradle [...] (Hearing  
316 testimony). I wanted to have a girl..., I pictured her at 3 years old with a pretty  
317 smile..., I saw myself with her in my arms or in a stroller..., my parents would have  
318 taken her in their arms.... (Expert psychological assessment).

319           She chose a name for the future baby and changed her eating habits during pregnancy.  
320 However, she did not seek prenatal care and did not prepare for the birth.

321           Ms. D. knew she was pregnant, her family knew it, the father knew it and asked her to  
322 get prenatal care for the pregnancy. “I didn’t do any of that. I don’t know why.” (Testimony  
323 by Ms. D.) Her knowledge of the pregnancy and its signs – she felt the baby move, asked her  
324 daughter to touch the baby in her belly – led to no consequences in terms of getting an  
325 abortion or preparing for the birth: “I was just pregnant, that’s all. [...] this pregnancy was

326 beyond me [...] it was as though it wasn't me that was pregnant, like it was my sister for  
327 example". (Hearing testimony, 1<sup>st</sup> appearance before the judge).

328 Ms. L. knew she was pregnant from the 4<sup>th</sup> or 5<sup>th</sup> week of pregnancy. She put on  
329 weight and her pregnancy "was visible" (Hearing testimony) but when she was asked about it,  
330 she denied being pregnant. She felt the baby moving and thought, "...bring a baby into the  
331 world" (psychiatric assessment) but also thought, "If I quit eating, the baby will leave by  
332 itself" (Testimony by Ms. L.).

333 In these conflicting situations, the mothers all adopted the same defense mechanism:  
334 secrecy. They took refuge in "silence". Statements like: "I couldn't speak to anyone about it"  
335 came back time and again in the discourse of several women. Three mothers spoke of a  
336 "mental block". This block is similar to a "retreating" into oneself, mentioned by 3 other  
337 mothers and may also be compared to a refusal to simply think about the pregnancy, as 7  
338 mothers testified. While this refusal may resemble a conscious defense mechanism, including  
339 purposeful dissimulation of the pregnancy, it is sometimes much more complex to understand.

340 I was going to talk to my husband but I didn't do it because I had a mental block, I  
341 don't know exactly why. In any case, I was blocked when I wanted to bring up the  
342 subject with him. (Hearing testimony, Ms. M.).

343 I rejected the idea of pregnancy from the beginning. [...] I refused to accept the  
344 idea of being pregnant. I rejected all the signs. (Hearing testimony, Ms. J.).

345 I finally started living with the idea I was carrying a baby in me. That was a  
346 difficult period, where I had to hide the pregnancy at every instant. (Testimony, Ms.  
347 E.).

348 This refusal or the impossibility to plan, to anticipate, to imagine the consequences of  
349 the pregnancy was particularly evident in the files of 8 mothers.

350           **The desire for a child.** The desire of a neonaticidal mother for a child elicited  
351 numerous questions on the part of the police and the judges and led to investigations by expert  
352 examiners. Apart from the 3 mothers with unknown pregnancies, mothers often gave  
353 contradictory statements about this. Four subjective situations were noted: 4 mothers  
354 confirmed the rejection of their pregnancy and the future child; 8 said they wanted a child; 3  
355 mothers vacillated between rejection and desire, expressing these two options in turn; 4  
356 mothers gave no opinion.

357           I would have preferred to live my pregnancy alone [...] I wanted to keep the baby [...]  
358 I wanted that baby for me. (Testimony, Ms. O.).

359           I think the baby cried when it came out [...] if I kept it my life was finished, no  
360 more friends, no studies, I disappointed my family. [...] I decided not to keep it. I told  
361 myself that I had to find some plastic bags. (Testimony in police custody, Ms. I.)

362           I never thought about abortion because I wanted the baby. I would have kept it  
363 even if I didn't want it in the beginning. (Hearing testimony, Ms. M.). I stand by the  
364 fact I hid the pregnancy from my spouse. [...] I always told myself, that baby, I didn't  
365 want anything to do with that baby. (Testimony, Ms. M.).

366           Whether the child was desired or not, the mental representation of it was problematic  
367 in most cases. "I didn't want to look [at the baby after the birth] because I don't know what I  
368 would have done afterwards; if I had seen it, perhaps I would have kept it." (Testimony in  
369 police custody, Ms. H.).

### 370 **The Mother's Family Circle**

371           While the family circle apparently did not know about the pregnancy in 7 cases, in all  
372 other cases, at least one close relative, or even the whole family, had strong suspicions or  
373 actual knowledge about the pregnancy. In 1/3 of cases, ignorance of the pregnancy was  
374 asserted: "I never noticed that my daughter was pregnant, I'm telling you [...] I'm a nurse's

375 aide and I know what I'm talking about [...]" (Testimony, mother of Ms. S.). However, when  
376 the pregnancy was learned about by those close to the mother, this sometimes occurred early  
377 on: "I bought the [pregnancy] test around November 11<sup>th</sup> and it turned out positive [the  
378 mother delivered July 10]" (Witness testimony by Ms. D's partner).

379 Family members may have had suspicions, and when faced with these, neonaticidal  
380 mothers denied they were pregnant. Nevertheless, these suspicions or this certainty did not  
381 prevent the tragic outcome of these pregnancies. Suspicions were sometimes so strong they  
382 were considered a form of complicity, to the point where the courts decided to charge three  
383 fathers (those of babies belonging to Ms. H., V., and W.), one maternal grandmother (mother  
384 of Ms. W.), a maternal uncle (brother of Ms. S.), and even the entire maternal family of Ms.  
385 D. with "involuntary homicide" or "failure to report a crime".

386 The absence of communication in couples that was mentioned concerning  
387 contraception includes all family relationships. It is difficult to know who – her relatives or  
388 the mother – was responsible for this lack of communication, but the atmosphere of silence  
389 and emotional isolation is clear. This silence was doubtless linked to fear felt by these women  
390 and expressed by 11 mothers. In 5 cases, this fear concerned the father of the baby, in 2 cases  
391 their own mother, in 2 cases the whole family, and in 2 cases those around them in general.

392 I didn't confide in anyone. I didn't know what to do and I let the situation continue. I  
393 thought it was too late for an abortion and I told myself that I would see and I would  
394 find an occasion to talk about it to someone. In fact, I never had the courage. As  
395 concerns [the father of the baby], I was afraid of his reaction and I thought my parents  
396 would not have understood. (Testimony in police custody, Ms. I.).

### 397 **The Psychosocial Profile of the Mothers**

398 This profile includes aspects of personality such as immaturity, dependence on others,  
399 withdrawal, inhibition, and self-disparagement, as well as aspects of relationships such as

400 isolation, absence of communication, inexpressive or unfeeling family members, unstable  
401 couples. These women felt alone while living with a spouse and children. They very often had  
402 parents who could not or did not express feelings and emotions. They were frequently afraid  
403 of being abandoned by the father of their children or rejected by their family. They were  
404 invisible for their parents as well as for the men they lived with, and could only live out their  
405 pregnancy in secret. Indeed, it is clear that pregnancies that ended in neonaticide were  
406 pregnancies these women could not allow themselves to have, pregnancies they experienced  
407 under the tension of conflicting needs they could not talk about.

408         In view of this testimony, emotional deprivation seems to have begun early with Ms.  
409 N. and the parental ‘guardians’ were often at fault. [...] Her married life before the  
410 drama was not a model of success [...] the dialogue in the couple had become  
411 practically nonexistent. We see a sad waste because neither one made the effort of  
412 confiding in the other nor expressing their feelings. A drama that is the result of a lack  
413 of communication. (Personality assessment of Ms. N.)

#### 414 **Use of the Concept of Pregnancy Denial by the Different Actors in the Judicial Process**

415         Denial of pregnancy was cited in 15 of the 22 files. In 14 cases, it was cited in the  
416 psychiatric and/or psychological expert assessments, in 3 cases in police documents and in 7  
417 cases in judicial documents. In 3 cases, pregnancy denial was mentioned only to be rejected.  
418 In one case, the expert psychologist stated it was not a denial of pregnancy but a denegation,  
419 whereas the indictment stipulated that it was a denial of pregnancy but associated it with  
420 dissimulation of pregnancy, which assumed the pregnancy was known. Denial of pregnancy  
421 was indeed associated with knowledge of the pregnancy in several files. Thus, for Ms. G., the  
422 expert noted that she “did not doubt that she was pregnant” but concluded in the “power of  
423 denial”. The notion of denial was sometimes enlarged to include not only denial of pregnancy  
424 but also denial of reality or denial of the baby to be born.

425 For the 3 “unknown pregnancies”, experts concluded in a “classic denial of  
426 pregnancy” for Ms. W. and in a “complete denial” for Ms. U. (as noted, no assessment was  
427 done on Ms. V.). In two rulings for case dismissal for “insufficient evidence” concerning Ms.  
428 V. and W., it was explained that the mother was unaware of her pregnancy and that, in this  
429 case, her delivery took place “in exceptional circumstances”.

430 Although the expert assessments identified 4 psychotic personalities, only one  
431 psychotic denial was diagnosed. It concerned a women who was aware of her pregnancy at 20  
432 weeks of amenorrhea and felt fetal movement that she interpreted as such.

### 433 Discussion

434 Our study has shown neonaticide to be at least 5.4 times as frequent in France as  
435 recorded in official mortality statistics (Tursz & Cook, 2011). This justifies reflecting on the  
436 most appropriate prevention strategies and, from this perspective, questioning the use of the  
437 concept of denial of pregnancy.

438 Our research benefited from having been carried out within a defined geographic  
439 population and we chose the judicial system as the information source with a view of reaching  
440 exhaustivity, since every known homicide of a newborn immediately triggers police and  
441 judicial action. However, in our sample, 25% of cases corresponded to the discovery of the  
442 body of a newborn child whose family was never found, a fact that raises at least two  
443 questions. The first concerns the unknown number of bodies never discovered and therefore  
444 the true frequency of neonaticides. The second question concerns the characteristics of the  
445 mothers that were never identified. We do not know if these women, who were better at  
446 hiding their crime, had demographic, socio-economic and psychological characteristics  
447 different from the mothers of 75% of the infants in our study population.

448 Studies on neonaticides are usually population-based and draw on judicial sources  
449 (Mendlowicz, Rapaport, Mecler, Golshan, & Moraes, 1998; Putkonen, Weizmann-Henelius,

450 Collander, Santtila, & Eronen, 2007) and/or forensic sources (Herman-Giddens, Smith,  
451 Mittal, Carlson, & Butts, 2003; Mendlowicz et al., 1998) The under-evaluation of the problem  
452 is always mentioned, especially in countries with legislation recognizing possible mitigating  
453 circumstances (exhaustion, anxiety...) in a child's death, and thus often excluding the case  
454 from statistics on neonaticide (Putkonen et al., 2007). Most studies on "denial of pregnancy"  
455 originate in hospital gynecology/obstetrics departments (Friedman et al., 2007; Nirmal et al.,  
456 2006; Pierronne, Delannoy, Florequin, & Libert, 2002; Wessel & Buscher, 2002). However,  
457 population-based studies on deliveries cannot be exhaustive since they do not take into  
458 account deliveries unassisted by health care professionals, including clandestine deliveries  
459 followed by neonaticide. It thus appears that it is not possible to calculate the frequency of the  
460 association between "denial of pregnancy" and neonaticide since all potential information  
461 sources in the same geographical area are never investigated together and over a sufficient  
462 time span to demonstrate a link between these two rare phenomena.

463         Aside from the prospective study in Berlin (Wessel & Buscher, 2002), all studies cited  
464 above were retrospective, as was our own. There is no standardization of judicial files in  
465 France, which explains the absence of some information (such as the symptoms associated  
466 with pregnancy), a problem found in all retrospective studies. However, judicial files relating  
467 to serious cases are rich from several perspectives, and the existence of multiple expert  
468 assessments, testimonies from the accused woman, but also from numerous witnesses, enables  
469 a better understanding of the context surrounding the pregnancy and neonaticide and brings a  
470 strong light to bear on the personality of the mothers.

471         What can our study say about "denial of pregnancy" as described in the literature and  
472 whose definitions we used in analyzing our data? The notion of "pervasive denial" applies to  
473 two cases, perhaps three, in which the pregnancy appears to have been completely unknown.  
474 None of the cases in our study conformed to all criteria described by Miller (2003) or Beier et

475 al. (2006), in particular, feelings of detachment from the infant were not always present and  
476 some mothers fantasized about the fetus. What we see are rather mechanisms of self-  
477 protection, sometimes contradictory, sometimes underlain by the desire for a child whose  
478 existence it would be impossible to deal with, and one must indeed distinguish between  
479 pregnancy on the one hand and the desire to have a child on the other. Mothers appeared to  
480 disconnect pregnancy from childbirth. While a majority was conscious at one time or another  
481 of being pregnant, none of them anticipated or prepared for delivery, even though some of  
482 them wanted the child. They spoke to no one, did not assign a social existence to the  
483 pregnancy, did not register it and did not have prenatal care. In these circumstances, they  
484 could only give birth alone, in a panic and secretly and became victims of their own deception  
485 because they were unable to share their pregnancy with others.

486         Those around the mother often suspected the existence of the pregnancy, or even  
487 actually knew about it. However, no one did anything, reinforcing the women in their  
488 conviction that “they could not allow themselves” this pregnancy and they could not ask for  
489 help. The causes of neonaticide are in fact to be looked for prior to pregnancy among these  
490 women who appeared to lack knowledge about the realities of sexuality and affective  
491 relationships.

492         The age and occupation of the women in our study were as varied as those in the  
493 general population from the same geographical area (INSEE, 1999; Tursz & Cook, 2011).  
494 Thus no distinctive socio-demographic profile could be identified, but our results suggest  
495 these women shared a similar psychosocial profile. Their relationships with their  
496 spouse/partner were especially marked by difficult and even absent communication. The latter  
497 characteristic, as well as psychological isolation and weak social support, are part of risk  
498 factors for poor and insecure maternal-fetal attachment (Cranley, 1984), itself hypothesized to

499 play a role in fetal and/or child abuse (Brandon, Pitts, Denton, Stringer, & Evans, 2009;  
500 Pollock & Percy, 1999).

501         This psychosocial profile offers an important key to thinking about issues of  
502 prevention. In the context of a country with a wide range of free reproductive health services,  
503 these women did not use contraception effectively. Thus, at the community level, visibility of  
504 family planning centers should be improved (these are very active in France but are presently  
505 undergoing severe budget cuts) and sex education strengthened in junior and senior high  
506 schools by supplementary education on affective relationships, relations between the sexes,  
507 and parenthood.

508         On the clinical level, identifying these women within the framework of organized  
509 prenatal care is doubtless not possible. Therefore, thought must be given to various types of  
510 training and information for general practitioners in France who, at one time or another, see  
511 nearly all patients from all age groups. They could receive information on the particular  
512 psychological profile of neonaticidal mothers, and more significantly, general information on  
513 the importance of discussing patients' wishes and knowledge concerning reproductive health,  
514 regardless of the motivation behind their visit to the doctor.

515         Within the framework of an information campaign on risk factors for neonaticide, the  
516 concept of "pregnancy denial" appears to have little operational validity. There is no  
517 consensus on its definition and collaborating professionals from different disciplines have  
518 difficulty agreeing on the concept. Indeed, "denial of pregnancy" is a concept used by persons  
519 in the judiciary in a muddled and even contradictory manner, which raises the question  
520 whether it should be used in the judicial setting (especially as a tool in court battles). There is  
521 no indication it is a risk factor for neonaticide (women with pregnancy denial delivered in  
522 hospitals in studies cited above, those in our study did not present a typical picture of  
523 pregnancy denial). The term is unable to account for the complexity of emotions troubling

524 women who perpetrate neonaticides. It polarizes attention only on the woman, giving her a  
525 “mental illness” label, while those around her are cleared of responsibility and rarely affected  
526 in spite of providing little social support during her difficult pregnancy. Thus, consideration  
527 should be given to the meaning of the terms “denial of pregnancy” and “concealed  
528 pregnancy”. To the latter, we prefer “secret pregnancy”, a more objective term than that of  
529 concealed pregnancy, which has a pejorative connotation that may have legal implications,  
530 with dissimulation suggesting premeditation of homicide in the extreme case. These secret  
531 pregnancies should be accurately distinguished from “unknown pregnancies”, a more  
532 appropriate term than that of pervasive denial of pregnancy, to the extent that one cannot deny  
533 something of which one has not had prior knowledge.

534         The cases of neonaticide described here show us there is no simple way of preventing  
535 these situations. Neonaticide is not unconditionally linked to the denial of pregnancy, just as it  
536 is not automatically the consequence of a rejection of the future child. Similarly, the desire for  
537 a child does not necessarily lead to a realistic representation of the child and its needs. These  
538 cases of neonaticide also teach us that the process of human reproduction is a profoundly  
539 social process. The most important characteristic these pregnancies share is their lack of  
540 social existence. A common feature among the mothers, as among women who suffer from  
541 difficulties of prenatal attachment, is a lack of support from those around them. As seen in the  
542 psychosocial profile we have described, the characteristics of their personalities and the nature  
543 of their relationships to those around them are inextricably linked, leading to situations of  
544 secrecy and isolation that can terminate in neonaticide.

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case	DDP by woman	age	Family status	Occupational status	Siblings	Suivi médical pendant grossesse	Connaissance grossesse par entourage	Signes de grossesse
A	2 WA (suspicion)	18	lives with parents	unemployed	0	aucun suivi médical	Yes (partner)	Aménorrhée : oui Prise de poids : oui Mouvements fœtaux : non
B	2/3 WA	21	lives with parents	unemployed child care worker	0	aucun suivi médical	no	Aménorrhée : oui Prise de poids : oui Mouvements fœtaux : oui
C	4/5 WA	26	lives in couple	housewife	2 (under child protective services, 1 still birth at home)	2 RDV médicaux	no	Aménorrhée : oui Prise de poids : légère Mouvements fœtaux : ?
D	4/5 WA	31	lives with her mother	cleaning lady	1 living child	aucun suivi médical	yes	Aménorrhée : oui Prise de poids : oui Mouvements fœtaux : oui
E	6 WA	19	lives with parents	highschool student	0	1 RDV médical	Yes (mother's family)	Aménorrhée : oui Prise de poids : oui Mouvements fœtaux : ?
F	8 WA	21	lives with parents	highschool student	1 attempted néonaticide	2 RDV médicaux	Suspicion (mother's family)	Aménorrhée : oui Prise de poids : oui Mouvements fœtaux : ?
G	9 WA	29	lives with	waitress	1 living child	aucun suivi	Suspicion ++	Aménorrhée : oui

			son and friends		1 neonaticide 1 enfant abandonné à la naissance	médical		Prise de poids : oui Mouvements fœtaux : oui
H	9 WA	39	married, lives in couple	housewife	6 living children 1 previous neonaticide +2 subsequent	aucun suivi médical	Suspicion ++ (partner and mother's family)	Aménorrhée : oui Prise de poids : ? Mouvements fœtaux : ?
I	15 WA	21	lives in couple	university student	0	1 RDV médical	Suspicion (partner + mother's family)	Aménorrhée : oui Prise de poids : oui Mouvements fœtaux : ?
J	15 WA	32	lives in couple	middle-level manager	1 living child	aucun suivi médical	Suspicion (partner)	Aménorrhée : oui Prise de poids : légère Mouvements fœtaux : ?
K	18/19 WA	44	married, lives in couple	middle-level manager	3 living children	aucun suivi médical	Suspicion à partir de 27/28 SA (partner)	Aménorrhée : spotting Prise de poids : oui Mouvements fœtaux : non
L	17/21 WA	17	lives in couple with mother-in-law	sales lady	0	1 RDV médical	oui	Aménorrhée : oui Prise de poids : ? Mouvements fœtaux : oui
M	20 WA	23	married, lives in	housewife	3 living children	aucun suivi médical	Yes (mother's friend)	Aménorrhée : from 20 WA Prise de poids : oui

			couple					Mouvements fœtaux : oui
N	21 WA	28	lives in couple	cleaning lady	2 living children	Aucun suivi médical	Suspicion (partner)	Aménorrhée : from 18 WA Prise de poids : ? Mouvements fœtaux : oui
O	23 WA	37	lives with her children	assistant director	2 living children	aucun suivi médical	non	Aménorrhée : from 23 WA Prise de poids : ? Mouvements fœtaux : ?
P	24 WA	31	married, lives in couple	student training in pharmaceutics	2 living children	aucun suivi médical	oui	Aménorrhée : non (règles irrégulières) Prise de poids : ? Mouvements fœtaux : oui
R	27 WA	25	lives alone with her children	housewife	2 living children	aucun suivi médical	non	Aménorrhée : ? Prise de poids : légère Mouvements fœtaux : oui
S	27 WA (suspicion)	20	lives with her mother	university student	0	Aucun suivi médical	Suspicion (mother's family)	Aménorrhée : spotting Prise de poids : légère Mouvements fœtaux : non
T	30 WA	26	lives with parents	nurse	0	aucun suivi médical	Suspicion à partir 37 SA (partner)	Aménorrhée :spotting Prise de poids : légère Mouvements fœtaux : oui
U	at delivery	17	lives with parents	highschool student	0	aucun suivi médical	non	Aménorrhée : non Prise de poids : non ?

								Mouvements fœtaux : non
V	at delivery	31	lives with parents	secretary	0	aucun suivi médical	non	Aménorrhée : non Prise de poids : non Mouvements fœtaux : non
W	at delivery	24	married, lives in couple	supermarket employee	3 living children	aucun suivi médical	non	Aménorrhée : non Prise de poids : non ? Mouvements fœtaux : non