



**HAL**  
open science

## Adaptation of independent midwives to the COVID-19 pandemic: A national descriptive survey

Sophie Baumann, Laurent Gaucher, Yann Bourgueil, Olivier Saint-Lary,  
Sylvain Gautier, Anne Rousseau

### ► To cite this version:

Sophie Baumann, Laurent Gaucher, Yann Bourgueil, Olivier Saint-Lary, Sylvain Gautier, et al.. Adaptation of independent midwives to the COVID-19 pandemic: A national descriptive survey. *Midwifery*, 2021, 94, 10.1016/j.midw.2020.102918 . hal-03171236

**HAL Id: hal-03171236**

**<https://hal.science/hal-03171236>**

Submitted on 3 Feb 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial 4.0 International License

## Adaptation of independent midwives to the COVID-19 pandemic: a national descriptive survey

Sophie Baumann<sup>a,b</sup>, Laurent Gaucher<sup>c,d</sup>, Yann Bourgueil<sup>e</sup>, Olivier Saint-Lary<sup>f,g</sup>, Sylvain Gautier<sup>f,h</sup>, Anne Rousseau<sup>a,b</sup>

a Midwifery Department, EA 7285, Versailles Saint Quentin University, F-78180 Montigny-le-Bretonneux, France

b Department of Obstetrics and Gynecology, Poissy-Saint Germain Hospital, F-78300 Poissy, France

c Univ Lyon, University Claude Bernard Lyon 1, Health Services and Performance Research HESPER EA 7425, F-69008 Lyon, France

d Hospices Civils de Lyon, Hôpital Femme – Mère-Enfant, F-69500 Bron, France

e Mission RESPIRE , EHESP-CNAMTS-IRDES - EA MOS 7348, 93210 la Plaine saint Denis, France.

f Université Paris-Saclay, UVSQ, Univ. Paris-Sud, Inserm, Équipe soins primaires et prévention, CESP, 94807, Villejuif, France

g UVSQ, Faculty of Health sciences Simone Veil, Department of Family Medicine, Montigny le Bretonneux, France

h AP-HP, GHU Paris Saclay, Hôpital Raymond Poincaré, Département Hospitalier d'Epidémiologie et de Santé Publique, Garches, France

Word count: 2720 words

Corresponding author:

Sophie Baumann

UFR Simone Veil-Santé - 2 avenue de la Source de la Bièvre - F-78180 Montigny-le-Bretonneux, France

sophie.baumann@uvsq.fr

+33 1 70 42 92 37

Funding statement: none.

Competing interests' statement: There are none to declare.

### 1. Conflict of Interest

The authors certify that they have NO affiliations with or involvement in any organisation or entity with any financial or non-financial interests in the subject matter of this article.

### 2. Ethics Approval

The questionnaire was anonymous. Participants gave their consent by participating in the study, which they were able to stop at any time to withdraw permission. The objective of the study was clearly stated at the beginning of the questionnaire. This study was approved by the National Data Protection Authority: 'Commission Nationale de l'Informatique et des Libertés', 13 March 2020 (CNIL, number 2217247).

### 3. Funding Sources

None

### 4. Clinical Trial Registry

None

### 5. Acknowledgements

We thank the ACCORD network (Assembler, Coordonner, COMprendre, Rechercher, Débattre en soins primaires) for their reflection and help in the construction of the questionnaire. ACCORD is composed of the National College of GP Instructors (CNGE), National Federation of Multiprofessional Health Houses (AVECSanté), Research Institute of Health Care Centres (IJFR), URE RETINES (Risque, Epidémiologie, Territoire, INformations, Education en santé) Université de Nice, National Association of Health Teams in Primary Care (ASALEE), Mission RESPIRE (EHESP) and the Midwifery Department, EA 7285, Versailles Saint Quentin University group.

We thank Adrien Gantois as president of the French national college of midwives (Collège National des Sages-Femmes de France) and the French union of midwives (Organisation nationale syndicale des sages-femmes) for the distribution of the survey, and Jo Ann Cahn for editing our English.

## 1 **Introduction**

2           On December 31, 2019, the World Health Organization (WHO) issued an alert about  
3 several cases of pneumonia in the city of Wuhan in China (Huang et al., 2020; WHO, 2020a). On  
4 January 7, 2020, the Chinese authorities confirmed that these cases were caused by a new virus of  
5 the coronavirus family. On January 29, France officially notified WHO of four confirmed cases  
6 of COVID-19 (WHO, 2020b). On March 1, France had more than 5,000 confirmed cases, and on  
7 March 16, the government closed all schools before confining (locking down) the entire  
8 population except for essential workers on March 17 (WHO, 2020c).

9 Few studies thus far have reported the impact of coronaviruses during pregnancy, and they are all  
10 case reports or series (Chen et al., 2020). To the best of our knowledge, there are currently no  
11 data on first trimester COVID-19 infections, and the morbidity and mortality associated with this  
12 disease remain uncertain. Nevertheless, since the immune system of the pregnant woman is  
13 compromised, we might expect an equally impaired response to viral infection. The Chinese  
14 series showed an increase in preterm births for women with COVID-19, but it is unclear how  
15 many of these preterms births were iatrogenic and how many spontaneous. (Chen et al., 2020).

16 Despite the lack of evidence, and in accordance with the precautionary principle, various  
17 professional societies have proposed guidelines aimed at limiting the risk of contamination  
18 (RCOG, 2020; CNGOF, 2020; ACOG, 2020; Favre et al, 2020). These guidelines differ between  
19 countries; for example, the RCOG recommends separating mother and child at birth in the case of  
20 a coronavirus-infected mother, whereas the French prefer they not be separated (CNGOF, 2020,  
21 Ioannidis, 2020).

22 Faced with this pandemic of uncertain consequences for the pregnant woman, and with  
23 guidelines changing daily as new data are reported, we wondered how primary-care pregnancy  
24 professionals are adapting their practices to limit the risk of contamination while ensuring  
25 continuity of care.

26 In France, the activities that midwives can perform are specified by statutes and regulations  
27 (Code de la Santé Publique L4151-1–6; Code de la Santé Publique, R4127-318). Independent  
28 midwives are authorised to monitor healthy pregnancies and offer birth preparation. They can  
29 also provide postpartum follow-up care for mothers and newborns, practice postpartum pelvic  
30 floor rehabilitation, and prescribe and practice vaccinations of mothers and newborns and anyone

31 living in their household. Midwives are authorised to perform preventive gynaecological  
32 monitoring, prescribe contraception, and terminate pregnancy by medical methods. Apart from  
33 their medical skills and trained judgement, independent midwives are involved in primary care  
34 and thus have a key role in prevention and in informing women.

35 The main objective of this survey was to identify how independent midwives, who work  
36 mainly in primary care, modified their practices at the beginning of the pandemic in France. Our  
37 assumption was that this practice adaptation would vary according to both geographical area  
38 (timing of pandemic effect) and whether they had a solo or group practice. Secondary objectives  
39 were to understand their office organisation and to quantify the amount of protective equipment  
40 available to them.

41

42

## 43 **Material and Methods**

### 44 *Screening and recruitment*

45 This descriptive cross-sectional survey using an on-line questionnaire took place from  
46 March 16 to March 23, 2020. All participants included in the survey were independent midwives  
47 working in France.

48 The link to the survey was distributed by email and Twitter to all independent midwives  
49 who had signed up to receive news from the French national college of midwives (Collège  
50 National des Sages-Femmes de France) and the French union of midwives (Organisation  
51 nationale syndicale des sages-femmes).

### 52 *Survey instrument*

53 The survey was adapted from a questionnaire aimed at general practitioners and designed  
54 on the basis of information from an expert group working on COVID-19 guidelines for outpatient  
55 care (Haut Conseil de la Santé Publique, 2020). The questionnaire was then reworked in a multi-  
56 professional setting with the Accord group (a multi-professional group whose objective is to  
57 Assemble, Coordinate, Understand, Research, Debate in Primary Care). It was tested with 10  
58 midwives to verify the clarity of the questions and its reliability.

59 The midwives received a link to a self-administered questionnaire with closed-ended

60 questions and one open-ended questions (Appendix 1).

61 The survey included 28 questions, 7 of which focused on the midwives' characteristics  
62 (i.e., age, sex, practice setting: solo or group, and if the latter, if the others were all also midwives  
63 or if it was a multi-professional medical office); 8 concerned modifications of their office  
64 organisation (i.e. secretarial work, number of and distance between patients in the waiting room,  
65 children in the waiting room, communications that others could hear or see) and adaptation of  
66 practices concerning postponed or cancelled activities. Of these 8 questions, 7 were closed-ended  
67 questions and one was an open-ended question allowing participants who answered that they had  
68 cancelled or postponed an activity to specify which ones. Finally, 13 questions covered the  
69 various protective equipment available and procedures in use (i.e. hand washing, masks, medical  
70 gowns, protective eyewear, and non-contact thermometers). Midwives were also asked if they  
71 would like to be authorised to perform virtual visits, as they were not allowed to do so at the time  
72 of the survey.

### 73 *Measures and definitions*

74 The primary outcome was the proportion of participant midwives who reported cancelling  
75 or postponing one or more of the activities they practiced. It was obtained by the closed-ended  
76 question “Since the beginning of the epidemic, have you changed practices?” The primary  
77 outcome was clarified with the rank, in descending order of frequency, of the postponed or  
78 cancelled activities. It was obtained by the open-ended question asking for a list of the activities  
79 they had cancelled or postponed. Two co-authors (AR and SB) independently conducted the  
80 content analysis of the open-ended questions. They classified responses by themes; discrepancies  
81 were analysed and resolved through discussion. The secondary outcomes were: 1) office  
82 adaptations (3 questions), and 2) protective equipment available (5 questions).

83

### 84 *Statistical analysis*

85 Qualitative variables were described with numbers and percentages, with proportions  
86 compared with the Chi-2 or Fisher exact test, as appropriate. Percentage were calculated for  
87 available data. Quantitative variables were described by their means and standard deviations, or  
88 by their medians and interquartile ranges, as appropriate.

89 To overcome response bias and on the assumption that geographic area may play a role in  
90 the adaptation of midwives' practices, we describe both raw and weighted midwives'  
91 characteristics. Weighting is based on the proportion of midwives who responded per  
92 administrative district among the number of independent midwives registered in that district  
93 according to the National Council of the Order of Midwives (CNOSF, 2020).

94 We first calculated the percentage of midwives reporting that they adapted at least one of  
95 the activities of their practices to the context of the COVID-19 pandemic. Secondly, we  
96 calculated the percentage of midwives reporting that they adapted each specific activity of their  
97 practice. Lastly, we described office adaptations and protective equipment available, again with  
98 raw and weighted data. The 95% confidence intervals (95% CIs) of these percentages were  
99 calculated by the exact binomial method, for raw and weighted data. Next, from the sample of  
100 observed (raw) data, we compared the various aspects of these modifications according to  
101 whether the midwives had solo practices or worked in a group office and according to whether  
102 their district was affected by the pandemic early or later on. The early pandemic area was defined  
103 as districts with a ratio of more than 2 deaths per 100,000 residents on March 23, 2020, according  
104 to Santé Publique France (Santé Publique France, 2020). Finally, we used a multivariate analysis  
105 to look at the factors predictive of modifications of professional activities, again from observed  
106 data. Adaptation of activities was defined by the postponement or cancellation of at least one of  
107 the types of professional activities they practiced (i.e., pelvic floor rehabilitation, birth  
108 preparation, non-emergency preventive gynaecology consultation, early prenatal interview,  
109 postnatal follow-up). All independent variables (i.e., age, gender, office type, early pandemic  
110 district) with  $p < 0.20$  were included in the multivariate model. Odds ratios (ORs) and their 95%  
111 CIs were estimated.

112 All statistical tests were two sided, and  $p < 0.01$  was considered statistically significant, in  
113 view of the number of statistical tests carried out. Statistical analysis was conducted with R 3.6.2.

114

115



## 116 **Results**

117 As the flow chart shows (Figure 1), complete responses were received from 1,517  
118 participants, i.e., 20.3% of French independent midwives (n=7478, CNOSF, 2020). Table 1  
119 summarises their characteristics. The raw and weighted descriptions were relatively similar,  
120 except for those in early pandemic areas. All mainland districts were represented except Vienne,  
121 and the distribution according to the number of independent midwives in each district was fairly  
122 homogeneous.

123 . Responses to the question concerning our main objective showed that almost all  
124 midwives (90.6%) have modified their activities, by cancelling or postponing at least one type;  
125 this finding did not differ according to type of practice (solo vs group) or geographical area (early  
126 vs later pandemic). Cancelled or postponed activities identified by the open-ended question were,  
127 listed in descending order: postpartum pelvic floor rehabilitation (n=1270, 83.7%), birth  
128 preparation (n=1188, 78.3%), non-emergency preventive gynaecology consultation (n=976,  
129 64.3%), early prenatal interview (n=170, 11.2%), and postnatal follow-up (n=158, 10.4%).  
130 Similarly, most midwives have changed their organisation of their office; patients encounter one  
131 another significantly less often in solo practitioners' offices (75.8% versus 50.9%,  $p<0.001$ ), and  
132 the proportion of midwives who closed their offices was lower among those in group practice.  
133 There were significantly more e-mail responses to women in early pandemic districts (37.4%  
134 versus 30.0%,  $p=0.003$ ). Table 2 describes the total raw (n=1517) and weighted (n=1494)  
135 adaptations of activities and office organisation. Note that the subgroup analysis is reported only  
136 for observed data (n=1517): solo versus group practice and early versus later pandemic  
137 development.

138 Three-quarters of midwives had masks (n=1136, 74.9%), half of them had hand sanitizer  
139 available for women (n=935, 61.6%), but few had medical gowns (n=237, 15.6%) or protective  
140 eyewear (n=118, 7.8%).

141 Overall, 1,356 (89.4%) midwives wanted to be able to perform video visits. As shown in  
142 Table 3, the only factor predicting the adaptation of activities was age, after adjustment for  
143 gender and type of practice (solo or group); midwives aged 45 years or older were less likely to  
144 have modified their activities (adjusted OR: 0.53, 95% CI [0.37; 0.75]).

145

146 **Discussion**

147 *Main findings*

148 Independent midwives have adapted their practices, especially by cancelling or  
149 postponing non-urgent consultations and activities (gynaecology: 64.3%, birth preparation:  
150 78.3%, pelvic floor rehabilitation: 83.7%). They reorganized the flow of patients in their offices  
151 (to prevent women from contact with others in the waiting room and by forbidding the presence  
152 of children). These adjustments were more frequent for midwives working in solo practices than  
153 for those in a group office with other professionals. Ten percent of respondents closed their  
154 practices, and the percentage was again higher for those in solo practice. Most midwives  
155 answered questions and provided advice to women by telephone or videoconference. However,  
156 many independent midwives reported they did not have a sufficient quantity of protective  
157 equipment: some had masks (74.9%) and hand sanitizer for patients (61.6%); very few of them  
158 had medical gowns (15.6%) or protective glasses (7.8%).

159

160 *Strengths and Limitations*

161 Our survey is a 20.3% sample of the population of all French independent midwives  
162 (CNOSF, 2020), with homogeneous geographical coverage and including all but one French  
163 district. The weighting applied was based on the assumption of differential response rates by  
164 districts. This enabled us to consider the higher response rate in early pandemic districts  
165 (unweighted percentage 40.1% versus 36.3% weighted).

166 It has however some limitations. First, the responses are based wholly on self-report.  
167 Second, the midwives who participated in our survey were probably those most interested in the  
168 topic, and those who were best informed, since they follow news from the CNSF or ONSSF.  
169 Moreover, midwives in early pandemic zones were more likely to respond and probably also  
170 more likely to have modified their practices, which could have resulted in an overestimation of  
171 the adaptation of practices in our sample. Finally, each midwife is likely to have different  
172 proportions of clinical activities, including some with none of one kind or another: some may not  
173 practice an activity at all (before and during the COVID-19 pandemic) that others reported  
174 cancelling or postponing; as a result our percentages might be underestimated, because this  
175 percentage is calculated over the total number of answers collected. Thus, it is not possible for us

176 to interpret non-responses.

177

178 *Interpretation*

179 At the beginning of the pandemic and early during confinement, we observed that some  
180 non-urgent activities were postponed or cancelled: postpartum pelvic floor rehabilitation (83.7%),  
181 birth preparation (78.3%), and non-urgent preventive gynaecology consultations (64.3%).  
182 Without guidelines, each midwife had to decide individually which activities she considered to be  
183 non-essential, or at least non-urgent. The postponement of birth preparation is worrisome,  
184 because these appointments provide an important opportunity for midwives to detect and support  
185 maternal mental fragility, especially as a Chinese study has shown that young adults are the most  
186 susceptible to anxiety in this pandemic period (Huang et Zhao, 2020). It is important to remember  
187 that maternal mental disorders are associated with adverse outcomes, both somatic and  
188 psychological, for both mother and child (Oates et al., 2003; Stein et al., 2014). Another source of  
189 concern is repercussions due to lack of screening on the removal of breast and cervical cancers  
190 and on the management of interruptions of pregnancy. As this pandemic and its consequences  
191 continue to spread without any certainty about when it will end, these cancellations unfortunately  
192 may contribute to a reduction in the availability of care, without alternatives possible. A few days  
193 after our survey closed, several associations issued recommendations to help independent  
194 midwives and enable a collective adaptation of practices in the face of the virus, (CNSF, ANSFL,  
195 ONSSF, 2020). The HAS (Haute Autorité de Santé, equivalent of NICE in France) issued  
196 recommendations on March 30 (HAS, 2020). All recommend maintaining accessibility and  
197 continuity of care for pregnant women, with priority to video or virtual visits whenever possible.

198 In the survey, 89.4% of midwives reported they wanted to have these visits not only to  
199 maintain their activity but also to ensure close follow-up of women. Since March 20, midwives  
200 have been authorised to perform — and reimbursed for — these visits. It would be interesting to  
201 know what use they make of it and if they have adapted their activity. Telemedicine by virtual  
202 visits should help midwives to keep in regular contact with women and to reduce their patients'  
203 anxiety and stress in the current situation (Rashidi Fakari and Simbar , 2020). Regarding  
204 prevention, we observed that midwives were rigorous in washing their hands (100% reported  
205 they do so between each patient), but some lacked some protective equipment. Hand washing is

206 one of the most important barrier measures of prevention (Lotfinejad et al, 2020). The lack of  
207 available protective equipment remains a major difficulty for professionals; only 6 masks per  
208 week were available in French pharmacies for midwives from the beginning of the crisis until  
209 mid-June. In this respect, the rights that WHO recommends be accorded for health workers  
210 (WHO, 2020d) have been undermined. Access to protective equipment is crucial to ensure the  
211 safety and quality of care, and to prevent transmission of the virus to and via professionals. This  
212 lack of materiel may be one of the causes for the cancellation of some activities and may  
213 therefore have contributed to a decrease in the availability of care.

214 As mentioned above, we observed that it was easier in solo practice to prevent patients  
215 from meeting each other in the waiting room but solo practitioners were also obliged to close  
216 their offices more often. This suggests that it may be more difficult to modify activity within  
217 offices that are multi-professional or in group practices. On the other hand, we did not explore  
218 other potential adaptations, such as greater distance between chairs and specific pathways for  
219 COVID-19 patients, which also exist in those practices. Video and home visits appear to be good  
220 alternatives to avoid higher risks of contamination due to unnecessary social meeting.  
221 Nevertheless, compliance with the barrier rules is difficult to implement during home visits  
222 without sufficient protective equipment (mask, gown, etc.).

223

#### 224 *Perspectives*

225 Our survey was conducted before the publication of guidelines. A new survey should take  
226 place to assess subsequent adjustments, especially with the use of video visits. We are entering a  
227 long outbreak period, which will require sustainable adaptations of primary care services to  
228 maintain accessibility and continuity of care while protecting patients and providers from  
229 COVID-19 disease. It would also be interesting to see the adaptations by midwives and other  
230 perinatal health professionals elsewhere.

231

#### 232 *Implication for practices/conclusions*

233 French independent midwives have strongly modified their practices to adapt to the  
234 pandemic without waiting for guidelines; this was especially true for the youngest of these  
235 professionals and for those in areas where the pandemic struck early. This study had important

236 practical implications; on the basis of these data, the CNSF alerted the public authorities, who  
237 revised regulations rapidly to enable midwives to participate in telemedicine. The CNSF also  
238 produced its own guidelines for independent midwives before it was requested to do so by the  
239 HAS. However, the reduction of contacts with pregnant women and young mothers is worrisome.  
240 Evaluation and support for women's mental health during this period of lockdown remains a  
241 major concern for which we lack data.

242 Video visits and improved coordination between private practitioners and hospitals are probably  
243 major challenges in the current context.

244

245

246

247

248 **References**

249  
250 American College of Obstetricians and Gynecologists, 2020. Outpatient Assessment and  
251 Management for Pregnant Women With Suspected or Confirmed Novel Coronavirus (COVID-  
252 19). [Internet] Available from: [https://www.acog.org/-](https://www.acog.org/-/media/project/acog/acogorg/files/pdfs/clinical-guidance/practice-advisory/covid-19-algorithm.pdf?la=en&hash=2D9E7F62C97F8231561616FFDCA3B1A6)  
253 [/media/project/acog/acogorg/files/pdfs/clinical-guidance/practice-advisory/covid-19-](https://www.acog.org/-/media/project/acog/acogorg/files/pdfs/clinical-guidance/practice-advisory/covid-19-algorithm.pdf?la=en&hash=2D9E7F62C97F8231561616FFDCA3B1A6)  
254 [algorithm.pdf?la=en&hash=2D9E7F62C97F8231561616FFDCA3B1A6](https://www.acog.org/-/media/project/acog/acogorg/files/pdfs/clinical-guidance/practice-advisory/covid-19-algorithm.pdf?la=en&hash=2D9E7F62C97F8231561616FFDCA3B1A6)  
255

256 Chen, H., Guo, J., Wang, C., et al., 2020. Clinical characteristics and intrauterine vertical  
257 transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of  
258 medical records. *Lancet* 395(10226) :809-815 doi: [https://doi.org/10.1016/S0140-](https://doi.org/10.1016/S0140-6736(20)30360-3)  
259 [6736\(20\)30360-3](https://doi.org/10.1016/S0140-6736(20)30360-3)  
260

261 Chen, L., Li, Q., Zheng, D., Jiang, H., Wei, Y., Zou, L., et al., 2020. Clinical Characteristics of  
262 Pregnant Women With Covid-19 in Wuhan, China. *N Engl J Med.* 382(25) :e100 .doi:  
263 [10.1056/NEJMc2009226](https://doi.org/10.1056/NEJMc2009226).  
264

265 Collège National des Gynécologues et Obstétriciens Français, 2020. [Management in maternity  
266 for pregnant women suspected or infected by the coronavirus (COVID-19)]. [Internet] Available  
267 from: [file:///C:/Users/Admin-MAIE.P3SAN-MAIE-77B/Downloads/COVID-19-](file:///C:/Users/Admin-MAIE.P3SAN-MAIE-77B/Downloads/COVID-19-CNGOF%20(1).pdf)  
268 [CNGOF%20\(1\).pdf](file:///C:/Users/Admin-MAIE.P3SAN-MAIE-77B/Downloads/COVID-19-CNGOF%20(1).pdf)  
269

270 Conseil National de l'Ordre des Sages-Femmes [Internet] Available from: [http://www.ordre-](http://www.ordre-sages-femmes.fr/annuairesflib/)  
271 [sages-femmes.fr/annuairesflib/](http://www.ordre-sages-femmes.fr/annuairesflib/)  
272

273 College National des Sages-Femmes, Association Nationale des Sages-Femmes Libérales,  
274 Organisation Nationale des Syndicats de Sages-Femmes, 2020. [COVID sheet on the  
275 organisation of the activities of liberal midwives]. [Internet] Available from:

276 <https://ansfl.org/document/fiche-covid-19-organisation-des-activites-pourles-sages-femmes->  
277 [liberales/](https://ansfl.org/document/fiche-covid-19-organisation-des-activites-pourles-sages-femmes-)  
278  
279 Favre, G., Pomar, L., Qi, X., Nielsen-Saines, K., Musso, D., Baud, D., 2020 Guidelines for  
280 pregnant women with suspected SARS-CoV-2 infection. *Lancet Infect Dis.* 20(6):652-653  
281 [http://dx.doi.org/10.1016/S1473-3099\(20\)30157-2](http://dx.doi.org/10.1016/S1473-3099(20)30157-2).  
282  
283 Ioannidis, J.P.A., 2020. Coronavirus disease 2019: the harms of exaggerated information and  
284 non-evidence-based measures. *Eur J Clin Invest.* e13223 <https://doi.org/10.1111/eci.13222>  
285  
286 Haute Autorité en Santé. [Continuity of pregnant women monitoring]., 2020. [Internet] Available  
287 from: [https://www.has-sante.fr/jcms/p\\_3168584/fr/continuite-du-suivi-des-femmes-enceintes](https://www.has-sante.fr/jcms/p_3168584/fr/continuite-du-suivi-des-femmes-enceintes)  
288  
289 Haut Conseil de la Santé Publique, 2020. [Coronavirus SARS-CoV-2: care at home or in a care  
290 structure]. [Internet] available from:  
291 <https://www.hcsp.fr/Explore.cgi/avisrapportsdomaine?clefr=793>  
292  
293 Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., et al., 2020. Clinical features of patients  
294 infected with 2019 novel coronavirus in Wuhan, China.. *Lancet.* 395(10223):497-506 S0140-  
295 6736(20)30183-5. [https://doi.org/10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5) PMID: 31986261  
296  
297 Huang, Y., Zhao, N., 2020. Generalized anxiety disorder, depressive symptoms and sleep quality  
298 during COVID-19 epidemic in China: a web-based cross-sectional survey. *Psychiatry Res.*  
299 288:112954 <https://doi.org/10.1016/j.psychres.2020.112954>  
300  
301 Lotfinejad, N., Peters, A., Pittet, D., 2020. Hand hygiene and the novel coronavirus pandemic:  
302 The role of healthcare workers. *J Hosp Infect.* 105(4):776-777 doi: 10.1016/j.jhin.2020.03.017.  
303  
304 Oates, M., 2003. Perinatal psychiatric disorders: a leading cause of maternal morbidity and

305 mortality. Br. Med. Bull. 67, 219–229. <https://doi.org/10.1093/bmb/ldg011>

306

307 1. Public Health Code : Articles L4151-1 to L4151-6. [Internet] Available from:

308 <https://www.legifrance.gouv.fr>

309

310 2. Public Health Code : Article R4127-318 modified by Order of Council n°2012-881 on 17

311 January 2012. [Internet] Available from: <https://www.legifrance.gouv.fr>

312

313 Rashidi Fakari F, Simbar M. Coronavirus Pandemic and Worries during Pregnancy; a Letter to

314 Editor. Arch Acad Emerg Med. 2020 Mar 16;8(1):e21. eCollection 2020.

315

316 RCOG. Coronavirus (COVID-19) infection and pregnancy. 2020 [Internet]. Available from:

317 [https://www.rcog.org.uk/globalassets/documents/guidelines/2020-03-28-covid19-pregnancy-](https://www.rcog.org.uk/globalassets/documents/guidelines/2020-03-28-covid19-pregnancy-guidance.pdf)

318 [guidance.pdf](https://www.rcog.org.uk/globalassets/documents/guidelines/2020-03-28-covid19-pregnancy-guidance.pdf)

319 Santé Publique France. [Internet] Available from:

320 <https://mapthenews.maps.arcgis.com/home/index.html>

321

322 Stein, A., Pearson, R.M., Goodman, S.H., Rapa, E., Rahman, A., McCallum, M., Howard, L.M.,

323 Pariante, C.M., 2014. Effects of perinatal mental disorders on the fetus and child. Lancet 384,

324 1800–1819. [https://doi.org/10.1016/S0140-6736\(14\)61277-0](https://doi.org/10.1016/S0140-6736(14)61277-0)

325

326 a. World Health Organization (WHO), 2020. Pneumonia of unknown cause – China. Geneva:

327 WHO. [Internet] Available from: [https://www.who.int/csr/don/05-january-2020-pneumonia-of-](https://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en/)

328 [unkown-cause-china/en/](https://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en/)

329

330 b. World Health Organization (WHO), 2020. Novel Coronavirus (2019-nCoV) situation report 9.

331 Geneva: WHO. [Internet] Available from: [https://www.who.int/docs/default-](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200129-sitrep-9-ncov-v2.pdf?sfvrsn=e2c8915_2)

332 [source/coronaviruse/situation-reports/20200129-sitrep-9-ncov-v2.pdf?sfvrsn=e2c8915\\_2](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200129-sitrep-9-ncov-v2.pdf?sfvrsn=e2c8915_2)



333

334 c. World Health Organization (WHO), 2020. Novel Coronavirus (2019-nCoV) situation report 56.  
335 Geneva: WHO. [Internet] Available from: [https://www.who.int/docs/default-](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200316-sitrep-56-covid-19.pdf?sfvrsn=9fda7db2_6)  
336 [source/coronaviruse/situation-reports/20200316-sitrep-56-covid-19.pdf?sfvrsn=9fda7db2\\_6](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200316-sitrep-56-covid-19.pdf?sfvrsn=9fda7db2_6)  
337

338 d. World Health Organization, 2020. Coronavirus disease (COVID-19) outbreak: rights, roles and  
339 responsibilities of health workers, including key considerations for occupational safety and  
340 health. [Internet] Available from: [https://www.who.int/docs/default-source/coronaviruse/who-](https://www.who.int/docs/default-source/coronaviruse/who-rights-roles-respon-hw-covid-19.pdf?sfvrsn=bcabd401_0)  
341 [rights-roles-respon-hw-covid-19.pdf?sfvrsn=bcabd401\\_0](https://www.who.int/docs/default-source/coronaviruse/who-rights-roles-respon-hw-covid-19.pdf?sfvrsn=bcabd401_0)  
342  
343  
344  
345  
346  
347  
348

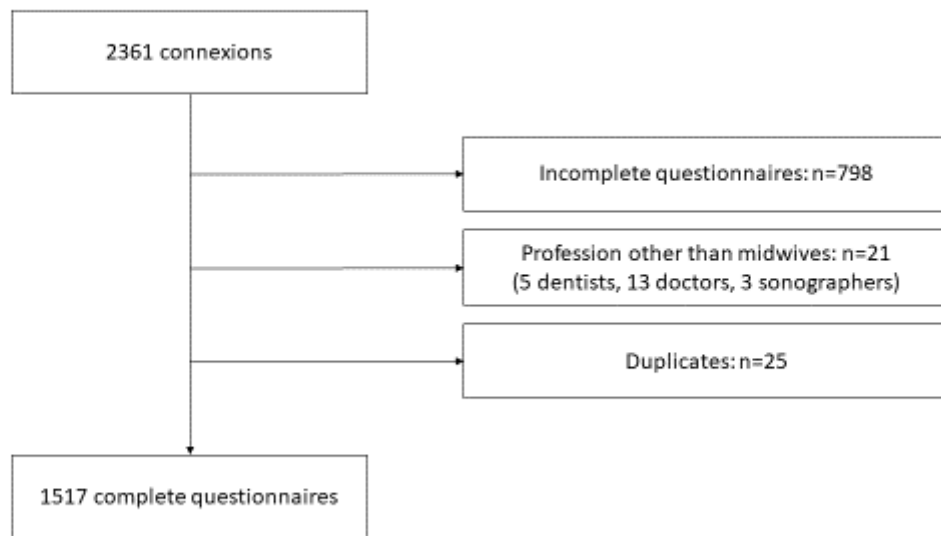


Figure1: Flow chart

		Unweighted result	Weighted result
		N=1517	N=1494
Age (years), mean +/- SD		40.7 +/-10.3	40.2 +/- 24.5
Gender, n (%)	Female	1469 (96.9)	1441 (96.5)
Medical office, n (%)	Group practice	705 (46.5)	700 (46.9)
Medical office, n (%)	Multiple medical / paramedical professionals	384 (25.3)	387 (25.9)
Early pandemic area, n (%)		609 (40.1)	543 (36.3)

Table 1: Midwives' characteristics

	Raw description	Weighted description	Solo	Group		Later pandemic area	Early pandemic area	
	N=1517 n (%)	N=1494 n (%)	N=812 n (%)	N=705 n (%)	p	N= 885 n (%)	N=609 n (%)	P
<b>Adaptation of medical activities (cancelled or postponed activities)</b>								
pelvic floor rehabilitation	1270 (83.7)	1258 (84.2)	690 (85.0)	580 (82.3)	0.18	759 (85.8)	494 (81.1)	0.02
birth preparation	1188 (78.3)	1165 (78.0)	621 (76.5)	567 (80.4)	0.07	693 (78.3)	481 (79.0)	0.80
non-emergency preventive gynaecology consultations	976 (64.3)	978 (65.5)	519 (63.9)	457 (64.8)	0.75	600 (67.8)	370 (60.8)	<b>0.006</b>
early prenatal interview	170 (11.2)	156 (10.4)	84 (10.3)	86 (12.2)	0.29	86 (9.7)	83 (13.6)	0.02
postnatal follow-up	158 (10.4)	150 (10.0)	80 (10.0)	69 (9.8)	0.44	90 (10.2)	69 (11.3)	0.53
<b>At least one of the above adaptations</b>	1375 (90.6)	1364 (91.3)	731 (90.0)	644 (91.3)	0.43	812 (91.8)	545 (89.5)	0.16
<b>Adaptation of office</b>								
women do not meet in the waiting room	893 (58.9)	872 (58.4)	534 (75.8)	359 (50.9)	<b>&lt;0.001</b>	531 (60.0)	351 (57.6)	0.39
children not allowed in the waiting room	1188 (78.3)	1175 (78.6)	639 (78.7)	549 (77.9)	0.74	708 (80.0)	460 (75.5)	0.05
increased phone use to answer questions	1199 (79.0)	1174 (78.6)	631 (77.7)	568 (80.6)	0.19	695 (78.5)	487 (80.0)	0.54
increased email use to answer questions	500 (33.0)	482 (32.3)	248 (30.5)	252 (35.7)	0.04	265 (30.0)	228 (37.4)	<b>0.003</b>
closed office	177 (11.7)	158 (10.6)	115 (14.2)	62 (8.8)	<b>0.002</b>	99 (11.2)	77 (12.6)	0.44
<b>At least one of the above adaptations</b>	1465 (96.6)	1444 (96.7)	789 (97.2)	676 (95.9)	0.22	855 (96.6)	589 (96.7)	1
<b>Protective equipment available</b>								
masks	1136 (74.9)	1119 (74.9)	606 (74.6)	530 (75.2)	0.85	655 (74.0)	467 (76.7)	0.27
hand sanitizer for women	935 (61.6)	905 (60.6)	493 (60.7)	442 (62.7)	0.46	533 (60.2)	391 (64.2)	0.13
medical gown	237 (15.6)	228 (15.3)	121 (14.9)	116 (16.5)	0.45	137 (15.5)	97 (15.9)	0.87
protective eyewear	118 (7.8)	123 (8.2)	65 (8.0)	53 (7.5)	0.80	65 (7.3)	53 (8.7)	0.39
non-contact thermometer	359 (23.7)	355 (23.8)	189 (23.3)	170 (24.1)	0.75	188 (21.2)	171 (28.1)	<b>0.003</b>

Table 2: Description of midwives' adaptation

	Adaptation of medical activities			
	n (column %)	n (row %)	Crude OR (95% CI)	Adjusted OR (95% CI) **
	n=1517	n=1375		
Age				
≤45years	1012 (66.8)	936 (92.5)	<b>1</b>	<b>1</b>
>45years	502 (33.2)	437 (87.1)	<b>0.55 [0.38; 0.78]</b>	<b>0.53 [0.37; 0.75]</b>
Gender:				
Female	1469 (96.9)	1334 (90.8)	1	1
Male	47 (3.1)	40 (85.1)	0.57 [0.27;1.43]	0.46 [0.21;1.15]
Office practice:				
Solo	812 (53.5)	731 (90.0)	1	
Group	705 (46.5)	644 (91.3)	1.17 [0.83; 1.66]	
Office:				
Midwives only	1133 (74.7)	1033 (91.2)	1	
Multiple medical/ paramedical professionals	384 (25.3)	342 (89.1)	0.79 [0.54; 1.16]	
Crisis area				
Later pandemic area	885 (59.2)	812 (91.8)	1	1
Early pandemic area	609 (40.8)	545 (89.5)	0.77 [0.54; 1.09]	0.77 [0.54; 1.10]

Table 3: Multivariate predictors of midwives' adaptation \*

\* overall observed sample (n=1,517)

\*\* multivariate logistic regression adjusted for age, gender, and pandemic timing

\*\*\*  $p < 0.20$  (chi-2 test or Fisher exact test as appropriate)

Values in bold are statistically significant