Measuring clients' experiences with care during pregnancy before and after childbirth: Does it matter?

Marisja Scheerhagen [1, 2] , Erwin Birnie [Corresp., 3] , Arie Franx [2] , Henk F van Stel [4] , Gouke J Bonsel [3]

1 Department of Obstetrics and Gynecology, Erasmus Medical Centre, Rotterdam, The Netherlands

2 Department of Obstetrics and Gynecology, University Medical Center Utrecht, Utrecht, The Netherlands

3 Department of Obstetrics and Gynecology, Academic Collaborative Maternity Care, University Medical Center Utrecht, Utrecht, The Netherlands

4 Julius Center for Health Sciences and Primary Care, Department of Healthcare Innovation and Evaluation, University Medical Center Utrecht, Utrecht, The Netherlands

Corresponding Author: Erwin Birnie
Email address: e.birnie@umcutrecht.nl

Background. When clients' experiences with maternity care are measured for quality improvement, surveys are administered once, usually six weeks or more after childbirth. Most surveys conveniently cover pregnancy, childbirth and postnatal care all in one. However, the validity of measuring the experiences during pregnancy (antenatal experiences) after childbirth is unknown. We explored the relation between the measurement of antenatal experiences late in pregnancy but prior to childbirth ('test' or gold standard) and its retrospective measurement after childbirth (retrospective test). Additionally, we explored the role of modifying determinants that explained the gap between these two measurements. **Methods and Findings**. Client's experiences were measured by the ReproQuestionnaire that consists of an antenatal and postnatal version, and covers the eight WHO Responsiveness domains. 462 clients responded to the antenatal and postnatal questionnaire, and additionally filled out the repeated survey on antenatal experiences after childbirth. First, we determined the association between the test and retrospective test using three scoring models: mean score, equal or above the median score and having a negative experience. The association was moderate for having any negative experience (absolute agreement=68%), for the median (absolute agreement=69%) and for the mean score (ICC =0.59). Multiple linear and logistic regression analysis for all three scoring models revealed systematic modifiers. The gap between antenatal and postnatal measurement was (partly) associated with clients' experiences during childbirth and postnatal care and by professional discontinuity during childbirth but unrelated to the perceived health outcome. **Conclusions**. The antenatal experiences should be measured before and not after childbirth, as the association between the antenatal experiences measured before and after childbirth is moderate.

1 Title: Measuring clients' experiences with care during pregnancy before and after childbirth:

2 Does it matter?

4 Authors: Marisja Scheerhagen[1,2], MSc; Erwin Birnie[3], PhD; Arie Franx[2], MD, PhD; Henk F van

5 Stel[4], PhD; Gouke J Bonsel[3], MD, PhD.

7 1) Erasmus Medical Centre, Department of Obstetrics and Gynecology, 's-Gravendijkwal 230,

8 3015 CE Rotterdam, The Netherlands

9 2) University Medical Center Utrecht, Department of Obstetrics and Gynecology, Lundlaan 6,

10 3508 AB Utrecht, The Netherlands.

11 3) University Medical Center Utrecht, Department of Obstetrics and Gynecology, Academic

12 Collaborative Maternity Care, Lundlaan 6, 3508 AB Utrecht, The Netherlands.

13 4) University Medical Center Utrecht, Julius Center for Health Sciences and Primary Care,

14 Department of Healthcare Innovation and Evaluation, Heidelberglaan 100, 3508 GA UTRECHT,

15 The Netherlands

17 **Corresponding author at:** Erwin Birnie PhD, University Medical Center Utrecht, Department

18 of Obstetrics and Gynecology, Academic Collaborative Maternity Care, Lundlaan 6, Room

19 KE.04.153.0, 3508 AB Utrecht, The Netherlands. E-mailadres: e.birnie@umcutrecht.nl.

20   ABSTRACT

21   **Background**. When clients' experiences with maternity care are measured for quality

22   improvement, surveys are administered once, usually six weeks or more after childbirth. Most

23   surveys conveniently cover pregnancy, childbirth and postnatal care all in one. However, the

24   validity of measuring the experiences during pregnancy (antenatal experiences) after childbirth is

25   unknown. We explored the relation between the measurement of antenatal experiences late in

26   pregnancy but prior to childbirth ('test' or gold standard) and its retrospective measurement after

27   childbirth (retrospective test). Additionally, we explored the role of modifying determinants that

28   explained the gap between these two measurements. **Methods and Findings**. Client's

29   experiences were measured by the ReproQuestionnaire that consists of an antenatal and postnatal

30   version, and covers the eight WHO Responsiveness domains. 462 clients responded to the

31   antenatal and postnatal questionnaire, and additionally filled out the repeated survey on antenatal

32   experiences after childbirth. First, we determined the association between the test and

33   retrospective test using three scoring models: mean score, equal or above the median score and

34   having a negative experience. The association was moderate for having any negative experience

35   (absolute agreement=68%), for the median (absolute agreement=69%) and for the mean score

36   (ICC =0.59). Multiple linear and logistic regression analysis for all three scoring models revealed

37   systematic modifiers. The gap between antenatal and postnatal measurement was (partly)

38   associated with clients' experiences during childbirth and postnatal care and by professional

39   discontinuity during childbirth but unrelated to the perceived health outcome. **Conclusions**. The

40   antenatal experiences should be measured before and not after childbirth, as the association

41   between the antenatal experiences measured before and after childbirth is moderate.

43   INTRODUCTION

44   Clients' experiences with care are considered to be an important independent indicator of

45   health care performance (Valentine et al. 2003; Valentine et al. 2007). Being relevant for its own

46   sake, clients' experiences could also affect health outcome through several pathways (Campbell

47   et al. 2000; Sitzia & Wood 1997; Wensing et al. 1998; Williams 1994). For example, clients who

48   truly understand the explanation of their caregiver are more likely to comply to treatment or

49   lifestyle change.

50   As clients' experiences are an independent indicator of performance, clients' experiences

51   are systematically measured using surveys, usually held after the care-episode. Such

52   measurements could help to identify areas for improvement (Haugum et al. 2014; Weinick et al.

53   2014). Targets of quality improvement are found by identifying health care organizations or

54   areas with below average scores or single negative outliers on questions representing the

55   characteristics of service delivery, e.g. communication and prompt access to services. Next, the

56   organization develops and implements a plan to meet these goals, and verifies if the goals are

57   met (Department of Health 2010; Ellis 2006; Ettorchi-Tardy et al. 2012; Kay 2007).

58   Clients' experiences in maternity care are routinely measured in several countries. Data

59   on clients' experiences are usually collected through surveys administered six weeks or more

60   after childbirth. Most surveys cover pregnancy, childbirth and postnatal care in one measurement

61   (Dzakpasu et al. 2008; Hay 2010; Redshaw & Heikkila 2010; van Wagtendonk et al. 2010;

62   Wiegers et al. 1996). As these surveys cover almost about 9 months of care, with different health

63   care professionals, settings and possibly events, measurement of client's experiences bears the

64   risk of being vulnerable to memory failure and/or changes in perception due to modifying

65   intercurrent events that happened since the antenatal experiences. Assuming the antenatal

66   measurement of such experiences to be the gold standard, the question is whether the response

67   on the postnatal survey shows random and/or systematic error. Stated otherwise, when the

68   clients' experiences are measured before childbirth and repeated after childbirth, does this lead to

69   the same clients' experience scores? Ideally, valid measurement of antenatal experiences

70   postnatally should not be systematically affected by the care process, experiences or outcomes

71   that occur *after* antenatal measurement. Despite the widespread practice of a one-stage postnatal

72   measurement, to our knowledge this question has never been explored. If random error is

73   considerable or systematic shifts are present, the convenient one-stage measurement perhaps

74   should be replaced by a two-stage measurement procedure, that includes the measurement of

75   clients' experiences not only after childbirth but also antenatally.

76   We explored the presence of memory effects in the measurement of clients' experiences

77   in maternity care using the ReproQuestionnaire (ReproQ). ReproQ is the national survey for

78   client experience measurement in childbirth care in the Netherlands. It was especially designed

79   for a two-stage measurement procedure, consisting of antenatal and postnatal versions. ReproQ

80   was extensively validated (n>18,000) (Scheerhagen et al. 2015; Scheerhagen et al. 2016) and is

81   currently regarded as one of the national maternity care indicators (CPZ 2015).

82

83

84

85   METHODS

86   *ReproQuestionnaire*

87   The ReproQ consists of two versions, each covering the experiences of two reference periods.

88   The antenatal version covers the experiences during early and late pregnancy; the postnatal

89   version covers the experiences during childbirth and postnatal care. Both versions are identical,

90   in the sense that the same type of experiences is asked for, but items (questions) are contextually

91   adapted. Altogether, a client is invited to judge a typical item for four consecutive periods.

92   The conceptual basis of the ReproQ was the WHO responsiveness model (Valentine et al.

93   2003; Valentine et al. 2007). The WHO developed this universally applicable concept that

94   consists of four domains on the interactions of the client with the health professional (dignity,

95   autonomy, confidentiality, and communication), and of four domains on the client orientation of

96   the organizational setting (prompt attention, access to family and community support, quality of

97   basic amenities, and choice and continuity of care) (Valentine et al. 2003; Valentine et al. 2007).

98   The response mode of all the experience items uniformly consists of four categories: "never",

99   "sometimes", "often", and "always", with a numerical range of 1 (worst) to 4 (best).

100   Additional sections of the ReproQ address the client's socio-demographic characteristics,

101   details about the care process during pregnancy and childbirth, and maternal and infant health

102   outcomes in non-medical terms as perceived by the mother. We also added a relevance question

103   on which two out of eight domains were most important to the client.

104   Previous psychometric analyses showed that content and construct validity were good, as

105   was the test-retest reliability of the experience during childbirth. Full details of the development

106   and the psychometric properties of the questionnaire are described elsewhere (Scheerhagen et al.

107   2015; Scheerhagen et al. 2016).

108

109

110   *Design, ReproQ scoring models, outcomes*

111   The Medical Ethical Review Board, Erasmus Medical Center, Rotterdam, the Netherlands,

112   approved the study protocol (study number MEC-2013-455).

113   The study was designed as a cohort study with three measurements. First, women received an

114   invitation to fill out the antenatal ReproQ around a gestational age of 34 weeks. This is called

115   'test'. Second, women received an invitation to fill out the postnatal ReproQ six weeks after the

116   expected date of childbirth. Non-responding women received a reminder two weeks after

117   invitation to the antenatal and postnatal questionnaire. Third, we invited women who responded

118   to the antenatal and postnatal ReproQ again to fill out the antenatal experiences after childbirth.

119   This is called the 'retrospective test'. We sent the retrospective test at least 14 days after women

120   filled out the postnatal ReproQ.

121   Three different scoring models exist to summarize clients' experiences and to monitor

122   adverse outcomes at the individual or aggregate level. The three models may be applied to an

123   individual item, to an individual domain (called domain score), to two summary scores of the

124   four personal and four setting domains (called personal and setting score), or to a summary score

125   of all domains (called total score).

126   Table 1 displays the scoring models and their definitions. The first model creates a

127   dichotomous variable (called 'negative score') at the client level, reflecting the presence of any

128   so-called negative experience. As Table 1 shows, the definition of a 'negative' experience is

129   based in part on the two domains that a client identifies as most important, thereby creating a

130   personalized score. Since the likelihood of a negative experience partially depends on the

131   number of items per domain, absolute percentages of negative scores cannot be compared across

132   domains. The negative score model assumes that, for the individual client or for an organisation,

133   a negative experience cannot be compensated by very good experiences on other items or

134   domains. This is contrary to the mean score where good experiences can compensate poor

135   experiences.

136   The second scoring model computes a continuous mean score (called 'mean score', range 1.0-

137   4.0) at the client level, for each domain or group of domains separately. The total, personal and

138   setting summary scores are not the mean of all items involved in the domains, but the

139   unweighted mean of the mean domain scores involved in that summary measure. For the

140   calculation of the summary scores, each domain has the same weight, even if the domains rest on

141   a different numbers of items.

142 Finally, the third model creates a dichotomous variable at the client level reflecting whether her

143 mean item, domain or summary score is equal to/above *or below* the median *of the distribution*

144 of the respective item, domain or summary scores *of all cases* (called 'median score'). The

145 'median score' model was added because of the skewed distributions of clients' experience

146 scores.

147

148 [Table 1]

149

150 *Data collection*

151 ReproQ data were obtained from two sources: 10 perinatal units (a hospital with its associated

152 community midwife practices) and two maternity care organizations. These organizations deliver

153 postnatal care at home from childbirth onwards over a period of seven to 10 days. Women can

154 register and apply for this service during pregnancy. For perinatal units, clients were invited to

155 participate by their caregiver, who asked for consent. For maternity care organizations, all

156 women were invited to fill out the client experience questionnaire, after consent was ticked.

157 Data were collected in two periods. In the first period (October 2013 to January 2015),

158 data was collected with the antenatal ('test') and postnatal ReproQ. There were no restrictions to

159 invite women to fill out the antenatal and postnatal ReproQ; all women could participate

160 provided that informed consent was signed or ticked. The second period, December 2014,

161   administered the data of the retrospective test. Women were excluded from participation of the

162   retrospective test for the following reasons: 1) women did not respond to the antenatal and

163   postnatal questionnaires, 2) women filled out less than 50% of the antenatal and/or postnatal

164   experience score, or 3) they filled out the questionnaires on paper. (This was done for the reasons

165   of data management efficiency; n=166). Women were excluded from analyses if they filled out

166   less than 50% of items of the retrospective test questionnaire, or if women filled out the

167   retrospective test over 1.5 years after childbirth. The latter criterion excluded women who could

168   be pregnant again.

169

170   *Measures of agreement*

171   In this study we used two dichotomous scores and one continuous score for the domain and

172   summary scores, with two different agreement statistics. For the negative and median scores, we

173   used the percentage absolute agreement (AA), classified as 'excellent' (90%-100%), 'good'

174   (75%-89%), 'moderate' (60%-74%), or 'poor' (< 60%) (Singh et al. 2011). For the mean score,

175   we used the Intraclass Correlation Coefficient (ICC) as measure of agreement (two way mixed

176   model, absolute agreement, single measure), and classified the estimated ICCs as: 'excellent' ($\geq$

177   .81), 'good' (.61 - .80), 'moderate' (.41 - .60), 'poor' ($\leq$ .40) (Singh et al. 2011).

178   For the individual items, agreement between the test and retrospective test was quantified as the

179   percentage absolute agreement.

180

181 *Data analysis*

182 Figure 1 shows the analytic framework. All analyses were performed on the reported experience

183 of the second half of the pregnancy, because in psychometric analysis the experiences during

184 first and second half of pregnancy are highly associated (AA_{Neg}=91.6%; AA_{MD}=85.9%;

185 ICC=0.83). The late antenatal experiences were chosen as comparator ('test' or gold standard),

186 because the second half of pregnancy covers more antenatal check-ups than the first half, and

187 therefore thought to be more representative for the entire antenatal phase. Moreover, the

188 timespan between the second half the pregnancy and the retrospective test is smaller than the

189 timespan between early pregnancy and the retrospective test, and therefore the risk of memory

190 effects is probably smaller.

191   We used all retrospective test data collected up to 1.5 years after childbirth (range: 3.5

192 month to 1.5 years after birth). The wide range had limited impact on the experience scores of

193 the retrospective test and the association between the test and retrospective test; both slightly

194 decreased over time.

195   First we explored the crude agreement between the antenatal experiences measured before

196 (test or gold standard) and after childbirth ('retrospective test'). For that purpose the three

197 outcome measures were computed for a. the total score, b. the personal and setting summary

198 scores, and c. the individual domain scores, and subsequently the agreement of the gold standard

199   and retrospective test was calculated. The agreement of the individual items between the before

200   (gold standard) and after childbirth (retrospective test) measurement was calculated. While the

201   domain and summary measures were calculated conventionally, for the individual item analyses,

202   we split the 'no-agreement' category into "test better experience than retrospective test" and "test

203   worse than retrospective test".

204   Second, we explored the effects of background characteristics and systematic effects of

205   intercurrent events, as determinants of the antenatal total experience score as measured after

206   childbirth. For the negative and median score models, we used multiple binary logistic regression

207   analysis. For the continuous mean score model, we applied multiple linear regression analysis.

208   Dependent variable was the antenatal total experience score as measured after childbirth;

209   independent variables were the antenatal total experience score as measured before childbirth

210   (gold standard score) and a set of potentially modifying factors. The following sets of

211   determinants were included in the regression model (enter method): socio-demographic

212   characteristics, previous experiences with care (antenatal, childbirth and postnatal care),

213   characteristics of the care process during pregnancy and childbirth including interventions during

214   childbirth, and perceived health outcomes of mother and child.

215   Considering the abundance of possible determinants and limited sample size, we included

216   in the multivariable analyses only those that were determinants of clients' experiences during

217   birth (Scheerhagen et al. 2017). A determinant was overall judged as significant if the estimated

218   adjusted beta- or OR-coefficient was statistically significant (p<0.05, two-sided) in at least two

219   of these analyses, a conservative approach.

220   For the binary logistic regression analysis, the goodness of fit was assessed using the

221   proportion of correct predictions. For linear regression we used the adjusted R^2.

222

223   [Figure 1]

224 RESULTS

225   Figure 2 shows the flow diagram. We invited 3,313 women for the retrospective test, of

226 whom 1,091 women responded (33%). Of these, 629 women were excluded from analysis. The

227 remaining 462 women were included.

228

229 [Figure 2]

230

231   Table 2 presents the characteristics of the included women (n=462). Mean age was 32

232 years (SD=4.8). Half of the women gave childbirth for the first time. 26 (6%) women were of

233 non-Western background; and 14 (3%) women reported to have a low educational level. 241

234 (52%) women reported not to know the health care professional who supervised their delivery.

235 70 (16%) women were referred to secondary care during their pregnancy and 144 (32%) were

236 referred during parturition. 84 (18%) women reported that they felt unhealthy and that they were

237 hospitalized after childbirth. Additionally, 59 women (13%) perceived their babies' health as

238 unhealthy and reported that their babies were hospitalized.

239

240 [Table 2]

241

242   Table 3 shows the crude agreement between the antenatal experiences measured before

243   and after childbirth for the summary and domain scores. For the total score, 35% of the women

244   reported one or more negative experiences filling out the 'test', and 33% when filling out the

245   retrospective test. The absolute test-retrospective test agreement (AA) of 'having a negative

246   experience' was 67.5% (CI: 63.0-71.8%). The absolute test-retrospective test agreement (AA) of

247   'a score above the median' was 69.6% (CI: 65.2-73.8%). The ICC of the total experience scores

248   ($\text{mean}_{\text{test}}$=3.77; $\text{mean}_{\text{retrospective test}}$=3.69) was 0.59. The negative, median and mean score models

249   all indicated a moderate association. The associations of the personal and setting scores were

250   comparable for the negative and median score models, but the association for the mean personal

251   score was weaker then for the mean setting score (ICC 0.49 vs 0.59).

252   All individual domains showed a good to excellent association for having a negative

253   experience. For the median and mean scores, all domain associations were moderate, except for

254   Confidentiality, which had an ICC of 0.27, indicating a poor association.

255

256   [Table 3]

257

258   The item analyses showed good to excellent associations for having a negative experience

259   (see Table 4). For the median score, the associations varied from excellent to moderate, except

260   for 'Influence on childbirth plan' (AA=59.7%) which was poor. For the mean score, not only this

261   item (AA=56.6%) but also 'Waiting time for service' (AA=57.7%) and 'Continuity of care

262   provision when change of professional' (across disciplines) (AA=55.2%), had a poor association.

263   Table 4 also depicts the magnitude and direction of change between the before and after

264   birth measurements. For the negative score, agreement was very high, indicating that scores were

265   fairly stable between the test and retrospective test, with slightly more clients reporting negative

266   scores at the test, the 'Birthplan' item being an exception. The median and mean scores showed

267   more variability in scores between the test and retrospective test, with the overall trend of higher

268   scores at the test.

269

270   [Table 4]

271

272   Table 5 shows the results of the regression analyses. The experience score of the

273   retrospective test were not significantly influenced by any of the socio-demographic

274   characteristics. However, the retrospective test score was significantly associated with the

275   women's antenatal, childbirth and postnatal experiences. Of the care process determinants, only

276   professional continuity was relevant. Finally, the perceived maternal and infant health outcome

277   had no significant influence on the retrospective test. Despite the different analyses and scoring

278   models, the goodness of fit was comparable for the three measures (70-73%).

279

280   [Table 5]

281   DISCUSSION

282   To determine the optimal timing of the collection of data on clients' antenatal

283   experiences, we assessed the association between the antenatal experiences measured before and

284   after childbirth for the summary, domain and item scores. The total score showed a moderate

285   association, irrespective of the scoring model used. For the domain scores, the associations

286   varied with the scoring model selected, being overall excellent for the negative score, and

287   moderate for the median and mean scores. For the domains, agreement was quite uniform within

288   the scoring model used. Confidentiality was the only domain with a poor association for the

289   mean score. For the individual items, associations were particularly low for 'Influence on your

290   childbirth plan', 'Waiting time for service', and 'Continuity of care provision when change of

291   professional (across disciplines)'. Overall, the measurement of antenatal experiences after birth

292   results in elevated variability of experiences across clients, with the overall trend that scores after

293   birth are somewhat lower than before birth. Additionally, the gap between antenatal and

294   postnatal measurement is (partly) associated with clients' experiences during childbirth and

295   postnatal care and by professional discontinuity during childbirth, but it is unrelated to the

296   perceived health outcome.

297   One key result is that the antenatal experience score measured after childbirth was only

298   moderately associated with the antenatal experiences measured before childbirth, irrespective of

299   the scoring model applied. In contrast, the personal, setting, domain and item scores were

300   stronger associated for having a negative experience than for the median and mean scores. One

301   explanation for this is that a negative experience lingers better in one's memory than an equally

302   moderate or good experience, as shown in decision and judgment theory (Kahneman & Tversky

303   1979; Redelmeier & Kahneman 1996; Redelmeier et al. 1993). An alternative explanation is of a

304   statistical nature: changes in experiences are less easy to capture using a dichotomous measure

305   like the negative score, producing much more agreement between the test and the retrospective

306   test. The same argument, however, does not apply to the dichotomous median score. For the

307   negative score, the cut-off has a fixed definition and is therefore absolute. In contrast, the cut-off

308   for the median score equals the median of the distribution of the summary and domain scores 'as

309   observed', and is therefore a relative position. Furthermore, the odds of having a negative

310   experience increases with the number of items, whereas the odds of having an experience score

311   equal or above the median is independent from the number of items.

312   In the ideal situation, a strong association between the antenatal experiences measured before

313   and after childbirth is expected and desired. Furthermore, valid measurement of antenatal

314   experiences postnatally should not be systematically affected by the care process, experiences or

315   outcomes that occur *after* antenatal measurement. However, our results strongly suggest the

316   opposite: women's experiences with childbirth and postnatal care had a positive and systematic

317   impact on the antenatal experiences measured postnatally.

318   One possibility is that women's response scales changed after birth. It is well known from

319   research on judgment and decision (Stiggelbout & de Vogel-Voogt 2008) and response shift

320   (Rapkin & Schwartz 2004; Schwartz et al. 2007; Sprangers & Schwartz 1999), that pre-treatment

321   judgment scales may differ systematically from post-treatment scales with, in our case, childbirth

322   as the so-called catalyst. A change of reference frame or internal standards of comparison might

323   result in scale recalibration (Rapkin & Schwartz 2004; Schwartz et al. 2007; Sprangers &

324   Schwartz 1999; Stiggelbout & de Vogel-Voogt 2008). The change comparison process may be

325   related not only to a change of status quo, but also to the change of women's affect and mood

326   after childbirth (Stiggelbout & de Vogel-Voogt 2008). Another possibility is that retrospective

327   judgment of past experiences invokes the risk of memory errors. Recall bias, i.e. 'wrong'

328   assessment post-hoc of a former outcome (Blome & Augustin 2015), may have occurred under

329   the influence of childbirth and/or postnatal events or experiences. Another form of memory

330   error, so-called hindsight bias (i.e. the influence of outcome knowledge on memory

331   reconstruction, increasing the predictability of the outcome) is less likely as (favorable)

332   childbirth and postnatal experiences contributed positively to the gap between antenatal and

333   postnatal measurement instead of bridging it (Fischhoff 2003).

334

335   In the ideal situation, the gap between antenatal and postnatal measurement should be

336   independent from the care process and intervention determinants. Overall, effect sizes of these

337   variables were moderate to negligible and not significant. One exception to this is professional

338   continuity during childbirth that was of significant impact on the antenatal experiences measured

339   after childbirth. This is probably due, at least in part, to clients' expectations: a new professional

340   during childbirth is never as well informed about a client's wishes and customs as her attending

341   professional during pregnancy, and trust between the new health care professional and the client

342   is lacking. Even though the antenatal health care professional could (and should) inform a client

343   that a transfer during childbirth is possible, clients may not feel prepared for a change of

344   professional.

345   Surprisingly, the perceived health outcome of mother and child had no impact on the

346   antenatal experiences measured after childbirth. This is in contrast with literature, which suggests

347   that, in retrospect, when women after childbirth recollect their antenatal experiences, these

348   experiences could adapt in the direction of the (perceived) health outcome during childbirth; i.e.

349   hindsight bias (Fischhoff 2003; Pohl et al. 2002; Ruoss 1997). One explanation is that hindsight

350   bias did not occur in our case. Another explanation is that clients do not perceive a relationship

351   between the health outcomes of birth and the experiences during pregnancy, as different services

352   are provided, often by different health care professionals and often in different settings.

353   Another surprise is that none of the included socio-demographic determinants were

354   significantly associated with the gap between the test and the retrospective test. This is contrary

355   to the results of research on judgment and decision (Stiggelbout & de Vogel-Voogt 2008) and

356   response shift (Rapkin & Schwartz 2004; Schwartz et al. 2007; Sprangers & Schwartz 1999).

357   Several explanations can be put forward. Firstly, contrary to Sprangers & Schwartz, a change of

358   antenatal and postnatal scales (recalibration, with childbirth as the so-called catalyst) did not

359   occur or the change was small or undetectable. Secondly, several studies suggest that the

360   agreement between the test and retrospective test is similar between subgroups, even though the

361   experiences are different (Britton 2012; Quintana et al. 2006; Raleigh et al. 2010; Scheerhagen et

362   al. 2017). Stated otherwise, the effect may have been cancelled within patients or even be

363   unrelated to patient characteristics. Thirdly, the socio-demographic characteristics do not directly

364   affect the experience scores but only exert an indirect effect, through influencing the clients'

365   mechanisms to accommodate the change in her situation (here: childbirth) (Rapkin & Schwartz

366   2004; Schwartz et al. 2007; Sprangers & Schwartz 1999). Consequently, the impact of socio-

367   demographics may already be incorporated in the impact of previous experiences. Fourthly, our

368   sample was too small to detect any impact of socio-economic status and ethnicity on the

369   antenatal experiences measured after childbirth. However, that argument did not apply for

370   marital status, maternal age and parity, which are socio-demographic characteristics that did not

371   qualify for the multivariable analyses. Finally, we may have omitted relevant variables, e.g.

372   personality traits or affect and mood (Saposnik et al. 2016; Stiggelbout & de Vogel-Voogt 2008).

373   Our study in maternity care is a specific case of a general problem - as such it provides a

374   warning for similar studies. Measurement problems may occur when experiences with care are

375   evaluated but adjacent care episodes are different in terms of disease course or severity or care

376   provided (e.g., in terms of professionals involved, locations) and separated by a critical event

377   which could serve as 'catalyst' (e.g., intervention, hospitalization, complication). A possible

378   change of patient's pre- and post 'catalyst' response scales and the risk of memory errors when

379   patient's experiences are measured afterwards may result in reduced validity and/or reliability of

380   measurements. To avoid these risks, we recommend that patient experiences with care to be

381   measured within its own care episode.

382   Strengths & Limitations

383   One strength of this study is that, to our knowledge, this is the first study exploring the

384   validity of clients' antenatal experiences measured after childbirth. Nevertheless, several

385   limitations merit discussion. Firstly, women with a low educational level, non-Western women,

386   women < 24 years of age, and setting continuity (referral to secondary care) were slightly

387   underrepresented compared to the national pregnancy population (PRN Foundation 2013),

388   despite considerable efforts to adapt the questionnaire and other measures taken to further the

389   participation of these groups. Our results suggest, however, that these variables are all unrelated

390   to the gap between the antenatal and postnatal measurements. Parity, induced labour, mode of

391   delivery, and maternal and neonatal admission rates were comparable to the national average.

392   National data on professional continuity are lacking, but data are comparable to one of our other

393   studies (n=3,479 women (Scheerhagen et al. 2017)). Secondly, we did not register whether the

394   clients' situation changed during the interval between test and retrospective test other than the

395   events, experiences and perceptions during childbirth and postnatal care. It is possible that

396   omitted variables could further modify the gap between test and retrospective test.

397

398   Conclusion

399   Clients' experiences during pregnancy, childbirth and postnatal care are often measured for

400   quality improvement cycles. We recommend measuring the antenatal experiences in late

401   pregnancy instead of after childbirth, as the agreement between the antenatal experiences

402   measured before and after childbirth is overall moderate for the summary scores.

403   The gap between antenatal and postnatal measurement is (partly) associated with clients'

404   experiences during childbirth and postnatal care and by professional discontinuity during

405   childbirth. Furthermore, measuring the antenatal experiences during pregnancy is the golden

406   standard from a psychometric point of view. From an efficiency point of view, one could also

407   argue to measure the antenatal experiences after birth and adjust the data to meet the experiences

408   of the golden standard.

410 REFERENCES

411 Blome C, and Augustin M. 2015. Measuring change in quality of life: bias in prospective and retrospective
412   evaluation. *Value Health* 18:110-115. 10.1016/j.jval.2014.10.007
413 Britton JR. 2012. The assessment of satisfaction with care in the perinatal period. *J Psychosom Obstet*
414   *Gynaecol* 33:37-44. 10.3109/0167482x.2012.658464
415 Campbell SM, Roland MO, and Buetow SA. 2000. Defining quality of care. *Soc Sci Med* 51:1611-1625.
416 CPZ. 2015. Uniform gebruik cliëntervaringslijst ReproQ in de Geboortezorg [Uniform use client
417   experience list ReproQ in maternity care]. *Available at*
418   http://www.goedgeboren.nl/netwerk/h/215/0/3596/rubriek--9/Uniform-gebruik-cli-ntervaringslijst-
419   ReproQ-in-de-Geboortezorg2015).
420 Department of Health. 2010. Essence of Care 2010. Crown: The Stationery Office.
421 Dzakpasu S, Kaczorowski J, Chalmers B, Heaman M, Duggan J, and Neusy E. 2008. The Canadian
422   maternity experiences survey: design and methods. *J Obstet Gynaecol Can* 30:207-216.
423 Ellis J. 2006. All inclusive benchmarking. *J Nurs Manag* 14:377-383.
424 Ettorchi-Tardy A, Levif M, and Michel P. 2012. Benchmarking: A method for continuous quality
425   improvement in health. *Healthcare Policy* 7:e101-e119.
426 Fischhoff B. 2003. Hindsight not equal to foresight: the effect of outcome knowledge on judgment under
427   uncertainty. 1975. *Qual Saf Health Care* 12:304-311; discussion 311-302.
428 Haugum M, Danielsen K, Iversen HH, and Bjertnaes O. 2014. The use of data from national and other
429   large-scale user experience surveys in local quality work: a systematic review. *Int J Qual Health*
430   *Care* 26:592-605.
431 Hay H. 2010. A report on the development of the questionnaire for the 2010 maternity survey. *Available at*
432   http://www.nhssurveys.org/surveys/483
433 Kahneman D, and Tversky A. 1979. Prospect theory: An analysis of decision under risk. *Econometrica*
434   4:263-291.
435 Kay JFL. 2007. Health care benchmarking. *Hong Kong Medical Diary* 12:22-27.
436 Pohl RF, Bender M, and Lachmann G. 2002. Hindsight bias around the world. *Exp Psychol* 49:270-282.
437   10.1026/1618-3169.49.4.270
438 PRN Foundation. 2013. Netherlands Perinatal Registry. 2004-2013.
439 Quintana JM, Gonzalez N, Bilbao A, Aizpuru F, Escobar A, Esteban C, San-Sebastian JA, de-la-Sierra E,
440   and Thompson A. 2006. Predictors of patient satisfaction with hospital health care. *BMC Health*
441   *Serv Res* 6:102. 10.1186/1472-6963-6-102
442 Raleigh VS, Hussey D, Seccombe I, and Hallt K. 2010. Ethnic and social inequalities in women's
443   experience of maternity care in England: results of a national survey. *J R Soc Med* 103:188-198.
444   10.1258/jrsm.2010.090460
445 Rapkin BD, and Schwartz CE. 2004. Toward a theoretical model of quality-of-life appraisal: Implications of
446   findings from studies of response shift. *Health Qual Life Outcomes* 2:14. 10.1186/1477-7525-2-14
447 Redelmeier DA, and Kahneman D. 1996. Patients' memories of painful medical treatments: real-time and
448   retrospective evaluations of two minimally invasive procedures. *Pain* 66:3-8.
449 Redelmeier DA, Rozin P, and Kahneman D. 1993. Understanding patients' decisions. Cognitive and
450   emotional perspectives. *Jama* 270:72-76.
451 Redshaw M, and Heikkila K. 2010. Delivered with care: A national survey of women's experience of
452   maternity care. *Available at* https://www.npeu.ox.ac.uk/delivered-with-care.
453 Ruoss M. 1997. [Pain patients show a higher hindsight bias]. *Z Exp Psychol* 44:561-588.
454 Saposnik G, Redelmeier D, Ruff CC, and Tobler PN. 2016. Cognitive biases associated with medical
455   decisions: a systematic review. *BMC Med Inform Decis Mak* 16:138. 10.1186/s12911-016-0377-1
456 Scheerhagen M, Brinie E, Franx A, Van Stel HF, and Bonsel GJ. 2017. What determines women's birth
457   experiences? Applications for a benchmark. Submitted.
458 Scheerhagen M, van Stel HF, Birnie E, Franx A, and Bonsel GJ. 2015. Measuring Client Experiences in
459   Maternity Care under Change: Development of a Questionnaire Based on the WHO
460   Responsiveness Model. *PLoS One* 10:e0117031. 10.1371/journal.pone.0117031
461 PONE-D-14-18958 [pii]

462 Scheerhagen M, van Stel HF, Tholhuijsen DJ, Birnie E, Franx A, and Bonsel GJ. 2016. Applicability of the
463   ReproQ client experiences questionnaire for quality improvement in maternity care. *PeerJ*
464   4:e2092. 10.7717/peerj.2092
465 Schwartz CE, Andresen EM, Nosek MA, and Krahn GL. 2007. Response shift theory: important
466   implications for measuring quality of life in people with disability. *Arch Phys Med Rehabil* 88:529-
467   536. 10.1016/j.apmr.2006.12.032
468 Singh AS, Vik FN, Chinapaw MJ, Uijtdewilligen L, Verloigne M, Fernandez-Alvira JM, Stomfai S, Manios
469   Y, Martens M, and Brug J. 2011. Test-retest reliability and construct validity of the ENERGY-child
470   questionnaire on energy balance-related behaviours and their potential determinants: the
471   ENERGY-project. *Int J Behav Nutr Phys Act* 8:136.
472 Sitzia J, and Wood N. 1997. Patient satisfaction: a review of issues and concepts. *Soc Sci Med* 45:1829-
473   1843.
474 Sprangers MA, and Schwartz CE. 1999. Integrating response shift into health-related quality of life
475   research: a theoretical model. *Soc Sci Med* 48:1507-1515.
476 Stiggelbout AM, and de Vogel-Voogt E. 2008. Health state utilities: a framework for studying the gap
477   between the imagined and the real. *Value Health* 11:76-87. 10.1111/j.1524-4733.2007.00216.x
478 Valentine N, de Silva A, Kawabata K, Darby C, Murray C, and Evans B. 2003. Health system
479   responsiveness: concepts, domains and measurement. In: Murray C, and Evans B, eds. Geneva,
480   Switzerland: World Health Organization, 573-596.
481 Valentine NB, Bonsel GJ, and Murray CJ. 2007. Measuring quality of health care from the user's
482   perspective in 41 countries: psychometric properties of WHO's questions on health systems
483   responsiveness. *Qual Life Res* 16:1107-1125.
484 van Wagtendonk I, Hoek vd, and Wiegers T. 2010. Development of a consumer quality index of post-
485   natal care. *Available at*
486   http://www.zorginstituutnederland.nl/kwaliteit/toetsingskader+en+register/cq-index/cqi-
487   vragenlijsten - CQIKraamzorg
488 Weinick RM, Quigley DD, Mayer LA, and Sellers CD. 2014. Use of CAHPS patient experience surveys to
489   assess the impact of health care innovations. *Jt Comm J Qual Patient Saf* 40:418-427.
490 Wensing M, Jung HP, Mainz J, Olesen F, and Grol R. 1998. A systematic review of the literature on
491   patient priorities for general practice care. Part 1: Description of the research domain. *Soc Sci*
492   *Med* 47:1573-1588.
493 Wiegers TA, Keirse MJ, Berghs GA, and van der Zee J. 1996. An approach to measuring quality of
494   midwifery care. *J Clin Epidemiol* 49:319-325.
495 Williams B. 1994. Patient satisfaction: a valid concept? *Soc Sci Med* 38:509-516.
496

497   ACKNOWLEGDEMENTS

498   We are grateful to Bas Henk Peter Brummelhuis for his assistance with the data collection.

Figure 1

Framework of analyses to determine the association of the antenatal experiences measured before vs. after childbirth.

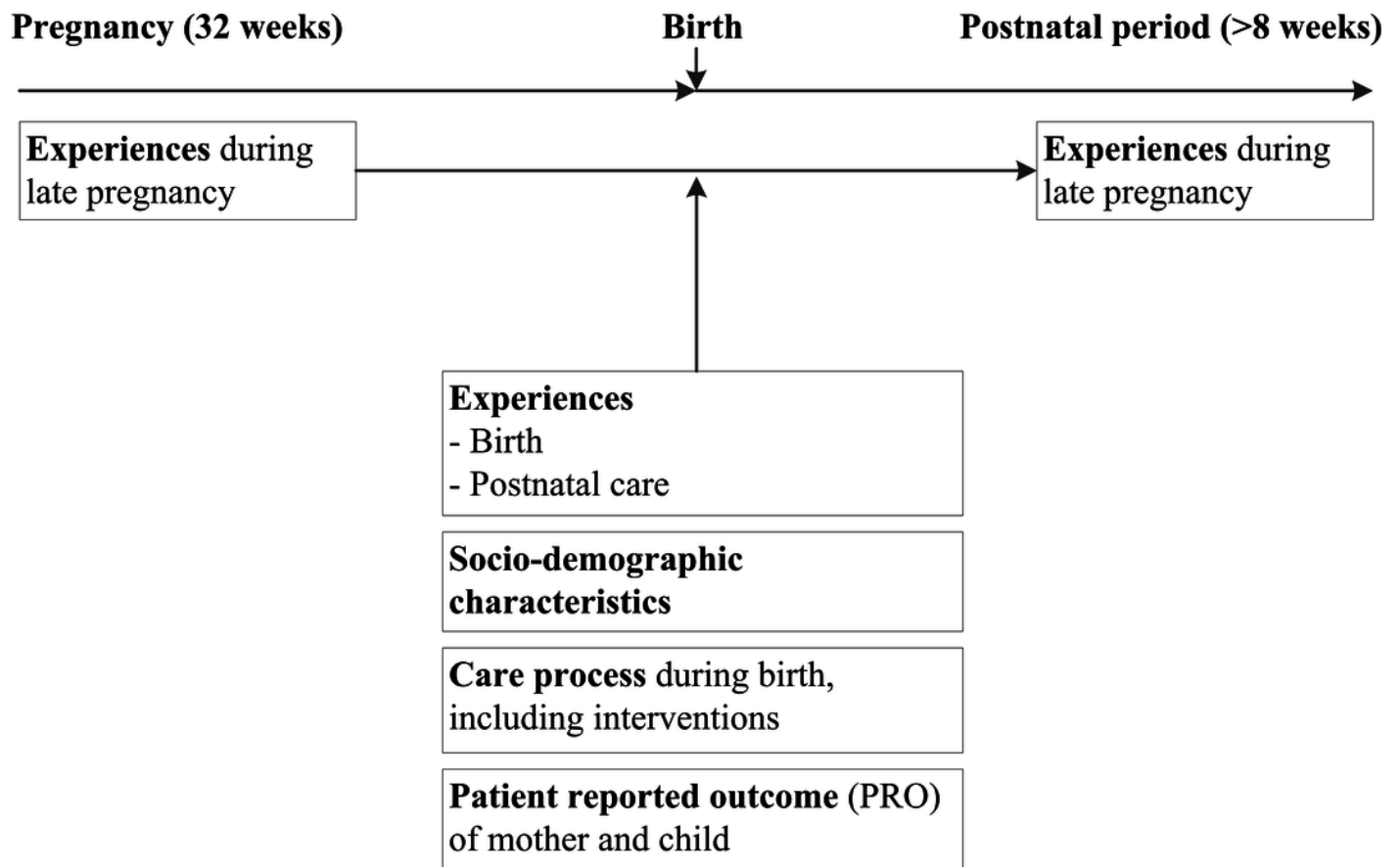



Figure 2

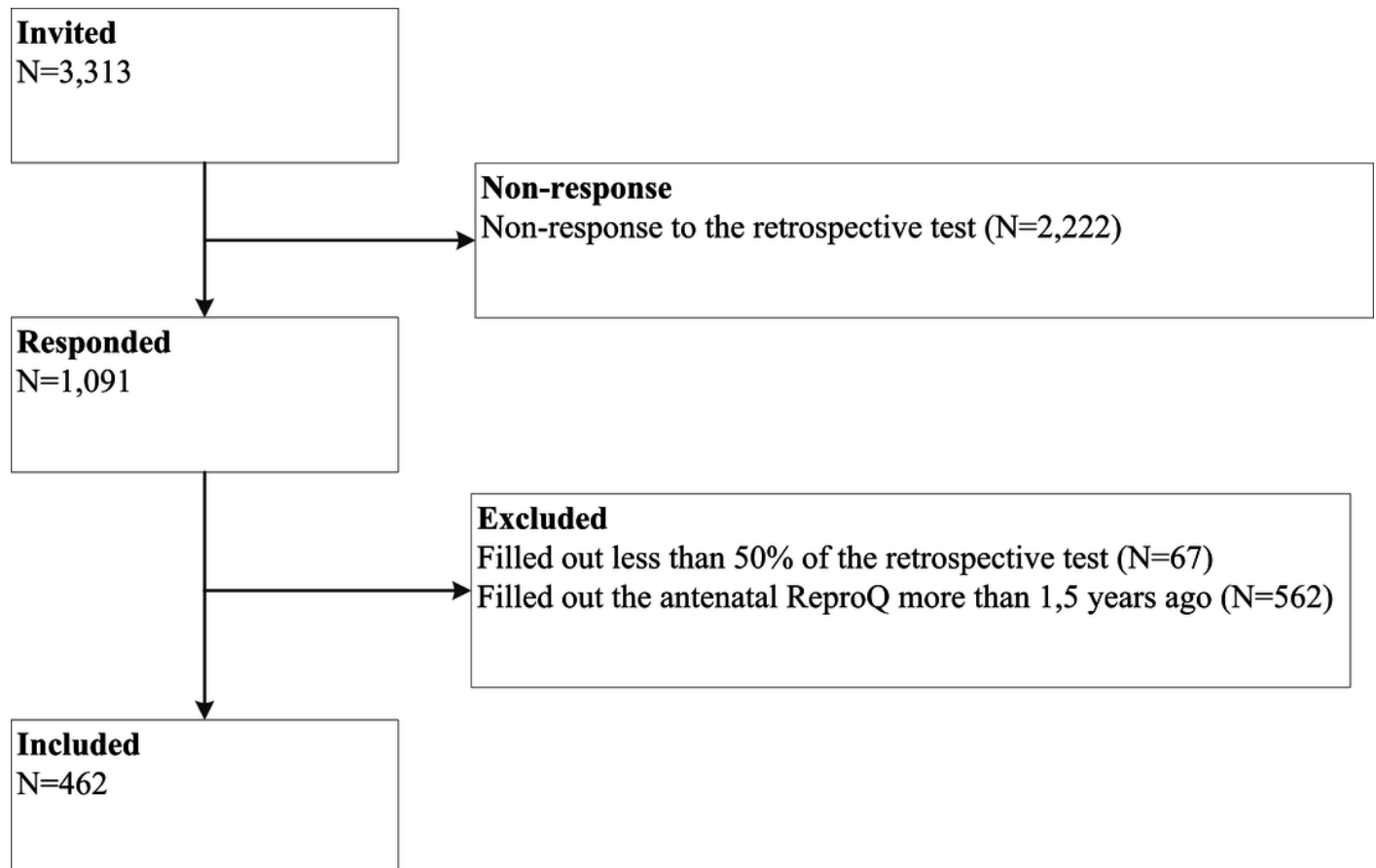
Flow diagram of study

Invited
N=3,313

Non-response
Non-response to the retrospective test (N=2,222)

Responded
N=1,091

Excluded
Filled out less than 50% of the retrospective test (N=67)
Filled out the antenatal ReproQ more than 1,5 years ago (N=562)

Included
N=462

Score models, outcome measures and measures of association.

Score model	Definition	Outcome measure	Measure of association		
			For summary and domain scores	For item scores	In regression analysis
Negative score	Ticking the category 'never' in at least one of the items of a domain (indicating a very poor experience), and/or filling out 'sometimes' in at least one of the items of the two domains that the client identified as most important	Dichotomous	AA	AA	OR
Mean score	The unweighted average score of items within a domain, treating the item response categories numerically; the total, personal and setting summary scores equal the mean of the mean domain scores involved in that summary measure	Mean (SD)	ICC	AA	β
Median score	Whether the client's mean item, domain or summary score is equal to/above or below the median of the distribution of the respective item, domain or summary scores of all cases	Dichotomous	AA	AA	OR

Characteristics of women who filled out both the test and retrospective test (n=462)$^$.

$^$The percentage of missing data was below 3% for all characteristics.

		N	%
Socio demographic characteristics			
Age	≤24	13	3
	25-29	130	28
	30-34	185	40
	≥35	130	28
Parity	Primiparous	229	50
	Multiparous	233	50
Ethnic background	Western	435	94
	Non-Western	26	6
Educational level	Low	14	3
	Middle	135	29

	High	312	68
Marital status	Married/living together	447	97
	Not living together or no relationship	14	3
Planned pregnancy	Yes	421	91
	No	41	9

Care process

Professional continuity	Yes	220	48
	No	241	52
Setting continuity	No referral	238	53
	Referral to secondary care during pregnancy	70	16
	Referral to secondary care	144	32

	during parturition		
Realization of the expected place of childbirth	Yes	263	58
	No	182	40
	No prior expectations	11	2
Intervention			
Induced labor	No	355	78
	Yes	103	23
Mode of childbirth	None	270	58
	Episiotomy	81	18
	Vacuum or forceps extraction	46	10
	Cesarean	65	14

Patient reported outcome

Baby	Healthy and not hospitalized	315	68
	Healthy, but hospitalized	60	13
	Unhealthy, but not hospitalized	28	6
	Unhealthy and hospitalized	59	13
Mother	Healthy and not hospitalized	245	53
	Healthy, but hospitalized	27	6
	Unhealthy, but not hospitalized	106	23
	Unhealthy and hospitalized	84	18

The association between the late antenatal experiences measured during pregnancy and after childbirth, expressed as having a negative experience, below the median score and mean score (n=462).

Having a negative experience (never in a domain and/or 'sometimes' in the individually chosen two most important domains).$ Equal or above the median

	Negative experience score #			Median experience score $			Mean experience score			
	test (%)	retrospective test (%)	Absolute agreement (AA) (%)	test (%)	retrospective test (%)	Absolute agreement (AA) (%)	Mean test	SD test	Mean retrospective test	SD retrospective test
Total score	**35.1%**	**32.5%**	**67.5%**	**60.4%**	**47.7%**	**69.6%**	**3.77**	**0.23**	**3.69**	**0.29**
Personal score	**22.1%**	**19.5%**	**75.8%**	**74.6%**	**59.0%**	**70.5%**	**3.81**	**0.23**	**3.72**	**0.29**
Setting score	**18.8%**	**19.9%**	**76.8%**	**50.2%**	**44.0%**	**69.6%**	**3.73**	**0.28**	**3.66**	**0.33**
Dignity	2.6%	3.5%	96.1%	74.0%	58.7%	69.9%	3.89	0.24	3.81	0.31
Autonomy	19.9%	15.6%	77.5%	75.1%	86.0%	74.0%	3.64	0.42	3.61	0.45
Confidentiality	0.4%	1.1%	98.5%	88.1%	76.6%	76.8%	3.91	0.26	3.82	0.38
Communication	1.9%	3.0%	96.8%	50.6%	42.7%	71.4%	3.78	0.29	3.69	0.38
Prompt Attention	3.5%	5.4%	94.2%	53.5%	43.0%	69.2%	3.68	0.31	3.59	0.37
Social Considerations	1.1%	1.5%	97.8%	67.3%	64.6%	71.9%	3.79	0.35	3.76	0.41
Basic Amenities	2.2%	1.9%	96.8%	70.1%	59.1%	69.6%	3.83	0.32	3.74	0.39
Choice and Continuity	13.6%	13.9%	80.7%	53.5%	47.4%	69.2%	3.61	0.54	3.54	0.58

Level of absolute agreement between the items measured during pregnancy and after childbirth (n=462).

Having a negative experience (never in a domain and/or 'sometimes' in the individually chosen two most important domains).$ Equal or above the median

Itemscore	Negative experience score #			Median experience score $			Mean experience score		
	Test = retrospec-tive test	Test > retrospec-tive test	Test < retrospec-tive test	Test = retrospec-tive test	Test > retrospec-tive test	Test < retrospec-tive test	Test = retrospec-tive test	Test > retrospec-tive test	Test < retrospec-tive test
Dignity									
Respecting privacy	99.6	0.4	0.0	87.4	10.6	1.9	87.1	10.7	2.2
Treating with respect	99.6	0.2	0.2	90.0	7.8	2.2	89.7	8.1	2.2
Giving personal attention	97.6	1.1	1.3	81.8	12.6	5.6	80.5	13.4	6.1
Treating with kindness	98.9	0.6	0.4	87.0	8.7	4.3	86.3	9.0	4.6
Considering your wishes and customs	97.6	1.7	0.6	77.5	16.0	6.5	74.8	18.0	7.2
Trustworthy as health professional	98.3	1.1	0.6	75.5	16.9	7.6	74.0	17.9	8.1
Autonomy									
Refuse treatment	96.5	0.6	2.8	74.2	15.8	10.0	69.9	17.4	12.7
Involved in decision-making	98.1	1.5	0.4	73.2	16.9	10.0	71.0	17.5	11.6
Consent screening	95.5	2.8	1.7	95.5	2.8	1.7	95.8	3.1	1.2
Birthplan	83.3	6.1	10.6	65.6	17.7	16.7	56.6	25.1	18.3
Confidentiality									
Handeling your medical details and records	100.0	0.0	0.0	85.5	9.1	5.4	85.1	9.6	5.3
Secured provision of medical information to others	98.9	0.9	0.2	82.0	14.1	3.9	80.9	15.2	3.9
Communication									
Responsive to client questions	99.6	0.4	0.0	83.1	12.6	4.3	82.4	13.2	4.3
Consistency of advice across professionals	97.8	1.7	0.4	68.6	20.6	10.8	62.7	24.3	13.0
Comprehensibility of explanation	99.6	0.2	0.2	82.7	11.5	5.8	81.9	12.2	5.9
Provision of information while treated	98.5	0.9	0.6	74.5	16.5	9.1	72.7	17.8	9.5
Prompt attention									
Access for appointment/contact in urgent situations	100.0	0.0	0.0	87.4	8.0	4.5	83.9	9.2	7.0
Access for appointment/contact without urgency	98.5	1.1	0.4	66.9	21.4	11.7	62.5	23.7	13.8

Time from health care professional when requested	99.6	0.4	0.0	77.3	15.8	6.9	75.6	17.4	7.0
Waiting time for service	95.2	2.8	1.9	85.9	10.0	4.1	57.7	25.7	16.6
Setting within reach	99.4	0.4	0.2	82.3	11.3	6.5	81.6	11.6	6.8
Prompt phone response of health professional	99.6	0.4	0.0	76.0	16.2	7.8	74.2	17.7	8.1
Social considerations									
Involvement of the partner in care provision	98.7	0.9	0.4	77.7	13.4	8.9	74.1	15.1	10.8
Taking into account of family duties	99.4	0.2	0.4	78.6	11.9	9.5	75.3	13.3	11.4
Feeling supported by your family	99.4	0.4	0.2	87.7	6.1	6.3	85.8	7.2	7.0
Basic amenities									
Comfort of setting	97.4	2.6	0.0	71.0	19.0	10.0	66.7	22.2	11.1
Hygiene of setting	99.1	0.6	0.2	84.0	11.3	4.8	82.6	12.4	5.0
Accessibilty of setting	99.6	0.2	0.2	88.7	7.4	3.9	88.3	7.6	4.1
Choice and continuity									
Continuity of care provision when change of individual professional (same discipline)	99.1	0.2	0.6	69.9	19.5	10.6	67.8	20.7	11.5
Continuity of care provision when change of professional (across disciplines)	97.8	1.5	0.6	73.2	18.8	8.0	55.2	26.4	18.4
Allowance for selecting a preferred type of health professional	81.6	8.4	10.0	73.8	14.5	11.7	66.8	17.9	15.3
Being clear WHO was in charge of your care	97.0	1.7	1.3	79.4	12.1	8.4	72.0	16.3	11.7

Impact of antenatal, birth and postnatal experiences with care and other determinants on the total antenatal experience score measured after birth, according to three score models (n=462).

Having a negative experience (never in a domain and/or 'sometimes' in the individually chosen two most important domains).$ Equal or above the median^ The determinant had a significant impact for at least two of the outcome measures* p<0.05, two-sided

	Overall sign ^	Negative experience score #			Median experience score $			Mean experience score		
Goodness of fit		71%			73%			70%		
		OR	95% CI	p	OR	95% CI	p	β	95% CI	p
Socio demographic characteristics										
Ethnic background										
Western (ref)		1			1			0.00		
Non-Western		1.22	0.47 - 3.13	0.69	0.75	0.27 - 2.07	0.58	-0.03	-0.11 - 0.06	0.53
Educational level										
Low / middle		0.75	0.46 - 1.21	0.23	1.24	0.76 - 2.01	0.40	-0.02	-0.06 - 0.02	0.11
High (ref)		1			1			0.00		
Planned pregnancy										
Yes (ref)		1			1			0.00		
No		1.22	0.47 - 3.13	0.87	1.33	0.59 - 3.00	0.49	0.06	-0.01 - 0.13	0.12
Experiences with care										
Antenatal experience	*	3.08	1.95 - 4.88	<0.01	3.94	2.51 - 6.19	<0.01	0.62	0.52 - 0.71	<0.01
Birth experience	*	2.07	1.32 - 3.26	<0.01	1.89	1.16 - 3.08	0.01	0.27	0.17 - 0.38	<0.01
Postnatal experience	*	1.45	0.89 - 2.37	0.14	2.17	1.35 - 3.49	<0.01	0.14	0.05 - 0.23	<0.01
Care process										
Professional continuity										
Yes (ref)		1			1			0.00		
No	*	1.60	0.99 - 2.60	0.06	0.50	0.31 - 0.82	0.01	-0.05	-0.09 - 0.00	0.04
Setting continuity										
No referral (ref)		1			1			0.00		
Referral during pregnancy		0.91	0.47 - 1.76	0.77	1.05	0.51 - 2.14	0.89	0.00	-0.06 - 0.06	0.97
Referral during birth		1.16	0.61 - 2.23	0.65	0.86	0.43 - 1.70	0.66	-0.02	-0.08 - 0.04	0.79
Expected place of birth was realized										
Yes (ref)		1			1			0.00		

No / no prior expectation		0.93	0.52	- 1.64	0.79	2.09	1.15	- 3.78	0.02	0.03	-0.02	- 0.08	0.23
Intervention													
Induced labor													
No (ref)		1				1				0.00			
Yes		1.50	0.88	- 2.55	0.14	0.77	0.44	- 1.35	0.37	0.02	-0.03	- 0.07	0.33
Intervention													
No (ref)		1				1				0.00			
Yes		1.73	1.05	- 2.87	0.03	0.85	0.51	- 1.43	0.54	0.03	-0.02	- 0.07	0.58
Perceived (patient reported) outcome													
Outcome baby													
Healthy and not hospitalized (ref)		1				1				0.00			
Unhealthy and/or hospitalized		0.98	0.59	- 1.60	0.92	0.87	0.52	- 1.46	0.60	0.00	-0.05	- 0.05	0.99
Outcome mother													
Healthy and not hospitalized (ref)		1				1				0.00			
Unhealthy and/or hospitalized		0.89	0.56	- 1.43	0.63	0.81	0.51	- 1.30	0.39	-0.03	-0.08	- 0.01	0.11
Constant		0.12				0.29				-0.20			