



LJMU Research Online

Meyer, Y, Frank, F, Muntwyler, FS, Fleming, V and Pehlke-Milde, J

Decision-making in Swiss home-like childbirth: A grounded theory study

<http://researchonline.ljmu.ac.uk/id/eprint/13785/>

Article

Citation (please note it is advisable to refer to the publisher's version if you intend to cite from this work)

**Meyer, Y, Frank, F, Muntwyler, FS, Fleming, V and Pehlke-Milde, J (2017)
Decision-making in Swiss home-like childbirth: A grounded theory study.
Women and Birth, 30 (6). pp. 272-280. ISSN 1871-5192**

LJMU has developed [LJMU Research Online](http://researchonline.ljmu.ac.uk/) for users to access the research output of the University more effectively. Copyright © and Moral Rights for the papers on this site are retained by the individual authors and/or other copyright owners. Users may download and/or print one copy of any article(s) in LJMU Research Online to facilitate their private study or for non-commercial research. You may not engage in further distribution of the material or use it for any profit-making activities or any commercial gain.

The version presented here may differ from the published version or from the version of the record. Please see the repository URL above for details on accessing the published version and note that access may require a subscription.

For more information please contact researchonline@ljmu.ac.uk

<http://researchonline.ljmu.ac.uk/>

1 **Decision-making in Swiss home-like childbirth: a grounded theory study**

2

3 Yvonne MEYER¹, RN, RM, MA

4 Franziska FRANK², lic.phil.

5 Franziska SCHLÄPPY-MUNTWYLER¹, RM

6 Valerie FLEMING³, RN, RM; PhD.

7 Jessica PEHLKE-MILDE³, RM, PhD

8

9 ¹School of Health Sciences (HESAV), University of Applied Sciences and Arts, Western Switzerland (HES-
10 SO), Lausanne, Switzerland

11 ² School of Sociology and Southwest Institute of Research on Women SIROW, University of Arizona, Tucson,
12 United States of America

13 ³Institute of Midwifery, School of Health Professions, Zurich University of Applied Sciences, Switzerland

14

15 Corresponding author at: Av. de Beaumont 21, 1011 Lausanne, Switzerland, ++41 21 316 81 69,

16 yvonne.meyer@hesav.ch

17

18

19

20

21

22

23

24

25

26

27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50

Abstract

Background: Decision-making in midwifery, including a claim for shared decision-making between midwives and women, is of major significance for the health of mother and child. Midwives have little information about how to share decision-making responsibilities with women, especially when complications arise during birth.

Aim: To increase understanding of decision-making in complex home-like birth settings by exploring midwives' and women's perspectives and to develop a dynamic model integrating participatory processes for making shared decisions.

Methods: The study, based on grounded theory methodology, analysed 20 interviews of midwives and 20 women who had experienced complications in home-like births.

Findings: The central phenomenon that arose from the data was "defining / redefining decision as a joint commitment to healthy childbirth". The sub-indicators that make up this phenomenon were safety, responsibility, mutual and personal commitments. These sub-indicators were also identified to influence temporal conditions of decision-making and to apply different strategies for shared decision-making. Women adopted strategies such as delegating a decision, making the midwife's decision her own, challenging a decision or taking a decision driven by the dynamics of childbirth. Midwives employed strategies such as remaining indecisive, approving a woman's decision, making an informed decision or taking the necessary decision.

Discussion and conclusion: To respond to recommendations for shared responsibility for care, midwives need to strengthen their shared decision-making skills. The visual model of decision-making in childbirth derived from the data provides a framework for transferring clinical reasoning into practice.

Keywords

51 Decision-making, home-like childbirth, partnership relationships, midwife, commitment,
52 grounded theory.

53

54

55

56

57

Statement of Significance (100 words)

58

Problem or Issue

59

Shared decision-making when complications arise during childbirth in home-like
60 settings has not been studied yet.

61

62

What is already known?

63

Shared decision-making is an ethical ideal that was outlined in a position statement from
64 the International Confederation of Midwives. Shared decision-making offers
65 opportunities for mutual understanding through a dialogue between client and care
66 provider.

67

What this paper adds

68

This paper describes a dynamic model of decision-making in childbirth. The model
69 provides a framework, which enables defining/redefining decision as a joint
70 commitment to healthy childbirth. A diagram shows all steps of the model.

71

72

73

74

Introduction

75 In Switzerland, women supported by midwives can choose to give birth at home or in a birthing
76 centre. In 2014 a total of 2,122 births, amounting to 2.48% of births registered in the country
77 took place in such settings.¹ As the organisational models of care delivery vary in such settings,
78 Hodnett et al.'s expression "home-like settings" was adopted in this article to describe them².
79 This model includes the naturalness of birth, no routine input by medical practitioners and
80 variable staffing models. Therefore, midwives working in home-like settings have at least two
81 years' professional experience and are registered with the *canton* (administrative area) in which
82 they practise. Costs for non-hospital births are covered by the woman's medical insurance.
83 Generally, women contact their midwife during pregnancy to arrange their maternity care.
84 Should unexpected complications develop during labour, women and midwives jointly can
85 decide whether or not to transfer to hospital. According to the European Charter on Patient
86 Rights³, some cantonal health laws (Switzerland is a federal state with cantonal laws) include
87 the right to free and informed consent⁴ stipulating that an individual of sound mind cannot be
88 forced to have medical treatment they do not want. Thus, professionals always have to act based
89 on informed consent given by the patients. Guidelines or other formal agreements between
90 hospitals and midwives concerning medical reasons for transfers do not exist at a national level
91 in Switzerland. A recent report by the Swiss Academy of Medical Sciences⁵ concluded that
92 recommendations fail to encourage patient engagement and involvement. Substantial progress
93 could be made by looking more closely at women-centred care and one of its fundamental
94 principles: women's participation in decision-making. For example, in the United States, the
95 Home Birth Summit, with representatives of all stakeholders, developed best practice
96 guidelines for transfer from planned home birth to hospital to address the shared responsibility
97 for care of women who plan home births.⁶

98

99

100 ***Background***

101 The process of decision-making involves choosing between at least two alternative actions.⁷
102 Based on this assumption the term “clinical reasoning” has been used to conceptualise the
103 process of decision-making in midwifery practice. Clinical reasoning is the prevalent model of
104 decision-making in the medical context. It is a form of logical, hypothetical-deductive decision-
105 making relying mainly on biological and medical facts. The steps used provide a systematic
106 approach for deciding the best alternative based upon rationality and clinical features. Jefford
107 et al.⁸ reviewed the literature on the cognitive process of midwives’ clinical decision-making
108 in context of birth and reached the following conclusions: a. Clinical decision-making
109 encompasses clinical reasoning as essential but is not sufficient for midwives to make a
110 decision; b. Women’s roles in shared decision-making during birth has not been explored by
111 midwifery research. In another study, Jefford et al.⁹ analysed the existing decision-making
112 theories and their usefulness to the midwifery profession. One of the theories presented is the
113 five-step framework of the International Confederation of Midwives adapted from the medical
114 clinical reasoning process, with the involvement of women for care planning and evaluation.
115 While the model of clinical reasoning undeniably contributes to decision-making in midwifery,
116 the authors conclude that it is not sufficient to guide best midwifery practice, as it does not
117 address the autonomous decisions of healthy women. Additionally, midwifery decision-making
118 should incorporate contextual and emotional factors and the midwife has to consider both the
119 woman and the baby as an indivisible whole. Furthermore, Jefford and Fahy¹⁰ have indicated,
120 in a study during second stage labour, that only 13 of 20 midwives demonstrated clinical
121 reasoning as their way of making a decision.

122

123 Decision-making in midwifery, including the claim for shared decision-making, has been
124 embedded in a philosophy of partnership with women defined in the midwifery model.¹¹

125 Partnership between women and midwives, where a woman's informed choice is used to
126 conceptualise the process of decision-making in midwifery, is now included in a position
127 statement of the International Confederation of Midwives¹². Shared decision-making offers
128 opportunities for mutual understanding through a dialogue between client and care provider.
129 The emphasis is on the process of coming to a decision with shared power and acceptance of
130 responsibility for the decision.¹³ Ideally, the decision is made consensually, with the woman at
131 its centre. The woman takes on the role of decision-maker if she has been informed
132 comprehensively and can make a well-reasoned choice. Partnership in decision-making has
133 been shown to range over a continuum from unilateral to joint, with little emphasis placed on
134 the need for equality.^{13, 14} A joint decision may be achievable when the woman and the midwife
135 both have enough information to participate actively in decision-making. In the event of
136 different interpretations of the information, the joint decision may not be equal.

137

138 The process in which a woman makes choices and controls her care and her relationship with
139 her midwife is considered the essence of the concept of woman-centred care.¹⁵ Other studies
140 supporting choice for women and involvement in the birth process are associated with positive
141 birth experience being favourable to women's satisfaction.^{16 - 18} In addition, the home-like
142 setting has a special impact on the processes used in clinical decision making. Indeed, the
143 collaborative relationships between the midwife, the woman and the medical system guarantee
144 regulating processes, which allow safe and effective midwifery practice.¹⁹ Furthermore,
145 bringing information and sensitivity around decision-making in cases of transfer from a birth
146 centre to hospital is essential to help women adjust to changing circumstances.²⁰

147

148 Other research has focused on decision-making processes related to a concrete question. These
149 studies analysed shared decision-making regarding birth position during the second stage of

150 labour²¹, augmentation of labour,¹⁶ transfers for prolonged labour,²² and birth of the placenta.²³
151 Results highlighted that decision-making in midwifery is a dynamic process integrating
152 understandings of choices in the context of care.

153

154 Despite the significance of competent decision-making, the concept of shared decision-making
155 when complications arise during labour does not seem to be well established in Switzerland or
156 elsewhere.

157

158

159 *Aim*

160 The purpose of this study was to increase understanding of decision-making in complex home-
161 like birth settings by exploring midwives' and women's perspectives and to develop a dynamic
162 model integrating participation processes for making shared decisions.

163

164

165

Method

166 Because the focus was on understanding of processes, a grounded theory approach was used to
167 allow a deeper understanding of participants' decision-making through rich descriptions in their
168 own words. Accordingly, data were collected and analysed using theoretical sampling and
169 constant comparative analysis. Development of the central phenomenon and subsequent
170 categories was based on the coding paradigm described by Strauss & Corbin.²⁴

171

172 *Sampling and study population*

173 The sample was composed of 20 midwives and 20 women from the French and German-
174 speaking parts of Switzerland. Midwives were recruited using registers of the Swiss Midwives'

175 Federation, which list all self-employed midwives in Switzerland. At the time of data collection,
176 14 midwives worked in the French-speaking part (*canton Vaud*) and 30 midwives in the
177 German-speaking part (*canton Zurich*), attending women with home births or in a birth centre.
178 The inclusion criterion for the midwives was their ability to talk about a birth in which
179 unexpected complications arose requiring a decision of whether or not to transfer. A decision
180 leading to an actual transfer was not a requirement. Additional selection criteria such as the
181 scope of practice of the midwives and the location of their work in rural or urban areas were
182 used to diversify the sample. The midwives provided access to the women. Following their
183 interviews, the midwives were asked to contact one of the women described in the interview
184 and to ask for permission to pass on contact data to the research team. With permission, the
185 research team contacted the women, obtained their consent and, when appropriate for them,
186 invited partners to be part of the study.

187

188 ***Data collection***

189 Data were collected in two Swiss cantons from February 2012 until March 2013. In *Vaud*, the
190 French-speaking researchers (F.S. and Y.M), and in *Zurich*, the German-speaking researchers
191 (F.F. and J.P.M,) conducted interviews. In general, the interviews with the midwives took place
192 in their workplaces, the interviews with women and partners in their homes. Researchers
193 encouraged midwives to talk with an initial broad question: “Can you describe a labour where
194 complications arose and you had to consider a transfer?” The interviews with mothers and
195 fathers started with an equivalent narrative stimulus. Next, researchers reworded or questioned
196 to maintain the narrative flow and as the study progressed, they asked further in-depth questions
197 to highlight the emerging central phenomenon. The interviews averaged an hour and were
198 recorded with the approval of the participants and transcribed verbatim. All quotes from the
199 interviews used in this study were translated from French and German into English.

200

201 ***Ethical Considerations***

202 The Ethics Commission of the Canton of Vaud (protocol 118 02/12) approved the study. Major
203 ethical issues in this study were informed consent, ensuring anonymity and maintaining
204 confidentiality. All participants were given detailed information and they were invited to ask
205 questions prior to giving written consent to the interviewers. Information was given at least 48
206 hours before the consent form was signed. All participants were informed of their right to
207 withdraw from the study without recrimination. Anonymity required special attention in this
208 study since home births or those in birth centres are relatively uncommon in Switzerland.
209 Participants might be identifiable, if additional information such as diagnoses and local
210 circumstances resulted in readers making a connection. However, in this study, the researchers
211 have protected anonymity and confidentiality by allocating numbers to participants and
212 removing all possible identifying data during the transcription of interviews. Likewise,
213 anonymised data were stored on password-protected folders, accessible only to the research
214 team.

215

216 ***Data Analysis***

217 Software programmes (*ATLAS.ti*, *MAXQDA*) were used for the coding of narratives and to
218 support the analytical process. Analysis was conducted in French and German by two senior
219 researchers (YM, JPM) and two research associates (FSM, FF). Three researchers were
220 midwives and one a sociologist. The coding steps of open coding, axial coding and selective
221 coding were used to identify theoretically relevant concepts (categories) and to demonstrate
222 relationships between them. The constant comparative method was used to generate-theoretical
223 categories from the data and to work out specific characteristics and dimensions of those
224 categories. Memo writing helped the emerging conceptual thoughts and enabled the building

225 of theoretical sensibility. An intensive exchange in bilingual research workshops helped to
226 merge the results of the analysis and ensure joint data interpretation. Another senior researcher
227 (VF) who had no other part in the data analysis participated in the audit trail and discussed the
228 results. This constant comparison process allowed amending or realigning the data. From a
229 rather descriptive and static initial view of a decision-making space, we have developed this
230 into a central concept addressing women's and midwives commitment to joint decision-making.
231 Quality was mainly provided through reflexivity, critical self-reflection and peer debriefing.
232 Moreover, in the light of a paper which systematically documents the saturation of the data,²⁵
233 the following parameters of our study correspond: good sample size given the heterogeneity of
234 the population and the study objective; agreement between researchers for first coding in both
235 sites; and incorporation of main variation into the emerging theory.

236

237

238

Findings

239

Demographic background

241 Of the 20 midwives and 20 women included in the study, 16 midwife-woman pairs were
242 established. Three interviews took place with mothers and fathers together. The midwives were
243 between 27 and 62 years old. All had more than three years of professional experience with six
244 having more than 20 years of professional experience. The majority of midwives attended
245 between 10 and 40 non-hospital births per year. The parents averaged 30-40 years of age; all
246 were European and most had a tertiary education qualification. Ten of the women were
247 primiparas and 10 multiparas. Of the 20 women interviewed, 12 had opted to give birth at home
248 and eight in a birth centre. Five women were able to give birth spontaneously in a non-hospital
249 setting despite their complications. One woman had her baby delivered by vacuum by a medical

250 practitioner who had been called in. Reasons for transferring the remaining 14 women were
251 manifold and took place during all stages of labour.

252

253 ***Central phenomenon: “Defining / redefining decision as a joint commitment to healthy***
254 ***childbirth*”**

255 All the analysis steps have shown that in case of complications in home-like childbirth,
256 decision-making was motivated by the sense that women and midwives felt committed to find
257 adequate solutions and make joint decisions. Inductive and deductive thinking based on Strauss
258 and Corbin’s coding paradigm²⁴ allowed identification of the major concept of joint
259 commitment to healthy childbirth with its axially coded sub-indicators: safety commitment,
260 responsible commitment, mutual commitment and personal commitment. Each of these four
261 axial codes derived from the initial open codes. Furthermore, the indicators of the concept of
262 “decision as joint commitment” also identified their influence on temporal conditions of
263 decision-making and varying strategies of shared decision-making. Out of this, the central
264 phenomenon “*defining / redefining decision as a joint commitment to healthy childbirth*”
265 emerged to form the core category of the present research. This selective coding systematically
266 related to other categories, validating a strong theoretical understanding of midwives’ decision-
267 making. Finally, this reflection led to the development of a dynamic model of decision-making
268 in childbirth (figure 1).

269

270

271 Insert Figure 1. [Dynamic model of decision-making in childbirth](#)

272

273 ***Indicators of decision as joint commitment to healthy childbirth***

274 *Safety commitment*

275 Perception of the commitment to safety applies to the detection of low or high risk situations.
276 In turn, this depends on clear or diverse perceptions of warning signs or symptoms, which, if
277 acute or prolonged, may result in an emergency or even become fatal. Vaginal bleeding, labile
278 blood pressure or persistent foetal bradycardia were clearly perceived and associated with life-
279 threatening emergencies. With such complications the leeway for decision-making had become
280 tight; immediate measures had to be taken and appropriately communicated. Midwives’
281 commitment to safety meant being clear that in high-risk situations professional responsibility
282 impinged upon other factors and a decision had to be made based on professional judgement:
283 *“When the situation becomes critical for the baby or the mother, I say very clearly, ‘all right,*
284 *it’s time now’, then I decide, then I take over”*, (Midwife, 12). For women, even if there was
285 little leeway, commitment to safety needed careful explanations so they could accept the failure
286 of a planned home birth.: *“If we give birth at home, there is a deep-rooted wish for this to be*
287 *an intimate experience at home, and, if that has to be changed, we need to know why”*, (Woman,
288 36)

289 Women reported diverse perceptions of complications. They said that they were not always
290 alerted by their own body signals or that the contractions had modified their perceptions. They
291 therefore needed the midwives’ explanations to realise that a complication had arisen. *“Then*
292 *the contractions began to get stronger and stronger, increasingly violent (...)And at the same*
293 *time, however, I simply noticed, as the midwife told me (...) that there was no progress”*,
294 (Woman 24). In the presence of non-acute critical symptoms, such as uterine inertia or maternal
295 exhaustion, the leeway for decision-making was greater. After a lack of progress in the second
296 stage of labour, the commitment to safety comprised allocating more time and gathering
297 information. One woman reported that, as she wanted to continue as long as she could bear
298 strong contractions, the midwife suggested waiting an hour to see if the head descended, after
299 which a decision would be made (Woman 26).

300

301 *Responsible commitment*

302 The study showed that women and midwives made a responsible commitment that combined
303 safety and, as far as possible, acceptance of the plan to give birth out of hospital. Responsible
304 commitment was sometimes an individual, and sometimes a collective response.

305

306 Among the women, individual responsibility was repeatedly stressed. The wish to give birth at
307 home wasn't "*at any price*", (Woman 36). Should problems arise, they were ready to "*give up*
308 *their plan*" and be treated in hospital, (Woman, 26). One woman made the difference between
309 individual responsibility, where she said that she was "*capable of bearing more*", and her
310 responsibility to her "*tiny, fragile*" baby which she should protect (Woman, 34). Collective
311 responsibility was also emphasized. A woman felt reassured to have two midwives at birth
312 working "*hand in hand*", (Woman 22). Another woman felt the same and explained as follows:
313 "*if one midwife thinks this and the other agrees, it must be right*", (Woman 33).

314

315 Among the midwives, the responsibility was often shared with the woman and her partner. A
316 midwife specified that shared responsibility was possible on condition that "*no one was in*
317 *danger*", (Midwife, 13). In other words, she was saying that the woman and her partner were
318 free to define their "*comfort zone*" [walk, bath] and that she would only intervene if she
319 considered that there was "*a medical risk*" or that the woman was becoming exhausted. Another
320 midwife referred to her role as "*the child's advocate*". She pleaded in favour of the weakest
321 and thus placed herself within the collective framework of health policies ensuring appropriate
322 intrapartum care. This midwife considered the role of the child's advocate to be "*elementary*"
323 even if it could theoretically generate a conflict difficult to manage in respect to the women's
324 wishes (Midwife, 1).

325

326 Several midwives also highlighted the fact that a responsible commitment from midwives
327 exceeded the woman/midwife's joint responsibility in decision-making. Responsible
328 commitment included collaborative care between midwives of homely birth setting and with
329 the receiving health care providers when transfer to a hospital occurred. Often, the responsible
330 commitment consisted in calling a colleague midwife for the second stage of labour. The
331 perceived benefits were: *"four hands are better than two"* (Midwife 20), *"listen to each other
332 and agree with decision"* (Midwife 12). A midwife insisted on the fact that *"everyone needs to
333 feel safe in order to work together"* and, consequently, she felt responsible for attaining a safe
334 birth with a timely transfer (Midwife, 20). Another midwife said that *"she never let the patient
335 have all her way"* in order not to diminish the trust of the hospital team and thus ensure a good
336 reception of the women on her arrival at the hospital" (Midwife, 14).

337

338 Consequently, responsible commitment consisted of informing during the pregnancy and labour
339 of the fluidity of situations. A midwife explained this well by using a metaphor of warning
340 lights:

341 *"I always tell them: 'If you like, I'm a little like a car mechanic. I know how the car works.
342 When I begin to see flashing lights I tell you, I say, ok all's fine now, but there is a little
343 warning light on my dash board (...) it's not a breakdown yet but it's not smooth running.'
344 And then I tell them that, in general, after 3 warning lights coming on, I think it's time to
345 leave. That's my basic criterion, but then it depends on what warning light comes on.
346 Obviously, if it's (.) a baby who decelerates to 60, I don't need two other lights to come
347 on!"* (Midwife, 19)

348

349 *Mutual commitment*

350 Mutual commitment was predominant in the relationships of the woman / partner and the
351 midwife and fell into two categories: trusting or suspicious relationship.

352

353 Relationships of trust were often said to be essential for the birthing process to go well. For
354 women, trust was linked to respect and knowing the midwife well. A woman showed just how
355 much she trusted a midwife by letting the midwife take practically all the decisions (Woman,
356 35). Another woman, in a situation of trust and respect, did not find it "so terrible" to have been
357 transferred (Woman, 23). The midwives also emphasised the importance of knowing the
358 woman by meeting her several times during the pregnancy (Midwife, 10) or by having
359 monitored at least one previous birth, (Midwife, 13). For some, trust went beyond an
360 interpersonal relationship, was more a "*faith*" in the potential of women to give birth naturally
361 (Midwife, 9) and "*trust in the baby's vitality*" (Midwife, 15). Moreover, the interpersonal skills
362 of midwives were predominant in the experience of a transfer: calmly announcing the transfer
363 and talking to the partner being positive points. (Woman, 32).

364

365 In a few cases mistrust developed in the relationship between the midwife and the couple. In
366 one such case, the decision to transfer had to be made earlier since the relationship between the
367 midwife and the partner had become difficult, (Midwife 1). In another case, while the birth of
368 the placenta was delayed and the woman felt no longer at ease, the latter did not feel taken
369 seriously:

370 *"I just had a bad feeling from the beginning (...) Somehow (...) Yes and I also found (...)*
371 *that the bleeding was not taken seriously (...). For me it really was not comfortable (...)*
372 *I also said a few times that I didn't feel so good but I was simply reassured (...)."*
373 (Woman, 27)

374

375 *Personal commitment*

376 The analysis of the interviews showed that personal commitment was a relationship between
377 oneself and the changing circumstances. Women and midwives reported examples of personal
378 commitment with more or less participation in decision-making corroborated by an active or
379 passive attitude. A woman with the desire to be involved felt she had played a role in decision:
380 *“I had the feeling I have been involved”*, (Woman, 24). Another woman felt that she was not
381 involved in decision-making as she was accepting things as they were: *“the decision was made*
382 *without me (laughs), it was happening to me”* (Woman, 22). In both cases, the personal
383 commitment to decision-making was satisfactory, either by actively participating in decision-
384 making or in feeling well without having to take part in the decision.

385

386 Several midwives said that beyond clinical conditions, decision-making was influenced by their
387 personal situations, such as previous experiences or fatigue. A participant implied that a
388 previous experience of foetal distress prompted her to act more quickly the next time to limit
389 her stress: *“I think, in fact, I want less stress. And perhaps I would end up saying ‘we do not*
390 *insist’”* (Midwife, 16). Another midwife sought solutions according to her belief that "nature is
391 much wiser". Therefore, she was not too bound by time schedules, particularly in cases of
392 uterine inertia: *“If a woman is tired and it’s weakening her contractions (...) I let her rest and*
393 *afterwards the pains come again”* (Midwife 3). Again, personal commitment was important.
394 Experiencing obstetric deviations, the two midwives were acting with more or less flexibility
395 within a framework of security and depending on their personal situations.

396

397 The situation may become difficult due to professional differences. A midwife spoke of her
398 wait-and-see attitude in a situation of prolonged labour. She waited longer than usual before
399 transferring the woman who was reluctant to go to the hospital. Upon arrival at the hospital, the

400 midwife faced hospital staff who focused on protocols rather than on clinical aspects and
401 women's needs: "Why did you do this and not THAT and why did you not come earlier?"
402 (Midwife, 2)

403

404

405 ***Indicators' influence on temporality of decision-making***

406 The intrapartum decision-making temporality was balanced by granting some leeway. Based
407 primarily on the safety commitment, midwives talked of "grey zones", "room for manoeuvres",
408 "safety margins", or "allowed delay" to describe this leeway between two poles defined
409 respectively as either wide, narrow. Narrow leeway meant that the decision for an intervention
410 was taken rapidly and with little resistance, for example in an emergency situation.

411

412 Midwives described assessing these situations as challenging. According to them, situations did
413 not always lend themselves to the application of standardised obstetric protocols and their
414 assessment was more influenced by professional and personal experience:

415 *"And then, when you arrive at that grey area (...), do you still give time or do you refuse*
416 *more time? You always have to watch: the rule is you use what you have learnt and*
417 *then, if you take a different course, you explain why do you do this?" (Midwife, 17).*

418

419 The women had more diverse impressions of temporality on decision-making and were mainly
420 influenced by safety. For one, the time was relative, because of her childbirth pains, while for
421 another all occurred so quickly, because of an emergency. For the latter woman and her partner
422 it was important that the decision be made in time so that both mother and baby were healthy
423 and not feeling culpable for a disability in the child (Woman, 30; Woman, 31).

424

425

426 *Indicators' influence on shared decision strategies*

427 As reported in other research^{13, 14}, our data have shown wide variations in participation in
428 decision-making. The novelty of the present research is the proposal of a range of shared
429 decision strategies resulting from the crosschecking of data with the indicators of joint
430 commitment. For clarity, the range of decision-making strategies is presented below.

431

432 *The woman delegates decision-making to the midwife*

433 Building on mutual commitment, relationship of trust and recognition of skills of their midwife,
434 some women chose to delegate decision-making. Within this framework, they felt their baby
435 and themselves to be protected so that in labour they could engage with trust.

436 *“So it is not like we sit at the table and discuss, how can I say this now? I do think I*
437 *was a bit protected simply because I was already so exhausted. So I, anyway, did not*
438 *feel like I had to enter the process in the sense that I had to be responsible for an*
439 *important decision myself. I do not think I could have done that, so I was glad to hand*
440 *over the responsibility and, yes, the trust was absolutely there.” (Woman, 24)*

441

442 *The woman makes her midwife's decision her own*

443 Decision-making owes much to personal commitment. The following example illustrates how
444 a woman appropriated the decision of the midwife and how the process of acceptance was
445 quick.

446 *“No, I really didn't think about a transfer, it was a big surprise. But then I really had*
447 *the feeling, 'ok let's do that'. So then I had perhaps to decide quite quickly... in the space*
448 *of two or three contractions.” (Woman, 25)*

449

450 *The woman challenges midwife's decision*

451 In one case, given a deterioration in her condition, a woman manifested her responsible
452 commitment by challenging the midwife's lack of response. Several times this woman felt she
453 had expressed the wish to go to hospital before insisting on it.

454 *"I understand that they must reassure, that's extremely important during the birth*
455 *process (...) but just so I knew yes (...) they must somehow see that the bleeding has not*
456 *stopped (...) I was really frightened there [in the birth centre] I was not comfortable*
457 *there and I was always extremely CLEAR in the head. I already had the feeling that I*
458 *had somehow said two or three times 'aren't we going to the hospital?' And obviously,*
459 *I then really say somehow 'so now I want to go to this hospital'." (Woman 27)*

460

461 *The woman takes a decision driven by childbirth dynamics*

462 In one case, when a breech presentation was diagnosed late in labour shortly before the baby
463 was born, the process was so far under way that the woman had no choice but to give birth.
464 Although it may have been a high-risk situation, her commitment to safety was to give birth
465 where she was and transfer was not an option for her. The decision was made with the midwife
466 and agreed upon with an obstetrician who had been called in.

467 *"Because, at that moment it was clear for me. No fear or doubt either. I was so sure, I*
468 *would just bring the baby into the world and that was it. So, I did not feel that a transfer*
469 *at that point would be useful. Because the process was just so well under way." (Woman,*
470 *22)*

471

472 *The midwife remains indecisive*

473 The frontier between an expected highly professional decision and indecision is not always
474 immediately clear as seen in the testimony of a midwife who explained her reason for waiting

475 to transfer a woman with a retained placenta. It is only *a posteriori*, reflecting on her personal
476 commitment, that she was able to say that she was not in agreement with the decision to wait.

477 *“The timing of my transfer was clearly influenced by the fact that the couple didn’t want*
478 *the transfer and the fact that both were nurses. And when I said: ‘But you do know that*
479 *there is a risk of a haemorrhage, there is a lot of bleeding on delivery’, the woman said:*
480 *‘Yes, I know’, and her husband too. Therefore, I said to myself that it was a risk for her*
481 *health that she was prepared to take (...). But then I realised that I was wrong (...)”*
482 *(Midwife, 19)*

483

484 *The midwife approves woman’s decision*

485 Typically, women who wished to be transferred because they felt exhausted or were unable to
486 bear any more pain had these wishes respected unless the midwife assessed the woman’s
487 experience as an expression of imminent birth. These situations followed on from mutual
488 commitment.

489 *“Whenever a woman says: ‘I am done, I cannot continue, let’s go, I want to go’ then it*
490 *is clear, I will not persuade her. But that is not the same as when she feels ‘no, I cannot*
491 *do it anymore’ (...). There is really always a time like this during labour, when the cervix*
492 *is almost open.” (Midwife, 5)*

493

494 *The midwife makes an informed decision*

495 Several examples of informed consent concerning responsible engagement were shown in
496 relation to certain situations which had arisen. The information was provided in a variety of
497 ways, such as open-ended questions to let the woman in labour to say what she felt: *“I would*
498 *like you to tell me how you feel. Do you feel you can still wait a little? I can wait, no problem”,*
499 *(Midwife, 12)*. It was also a matter of presenting various measures so that the woman in labour

500 may choose what she prefers: *“I tell them what I would do, I tell them what the hospital would*
501 *do” (...)* And then I ask them *“So what do we do?”* (Midwife, 19). Alternatively, a deadline
502 was set giving some leeway before deciding to transfer: *“We give it another hour (...) and if it*
503 *there is no progress then we just have to go”*, (Midwife, 2)

504

505 *The midwife takes the necessary decision*

506 In one case, a unilateral decision for a transfer to hospital was made in the interest of the
507 labouring woman. The arguments for safety commitment were that the head had not descended,
508 the woman was under the influences of endorphins and had a low capacity for a shared decision:

509 *“Right, there comes a moment when I must decide (...) and then often we have the*
510 *husbands on our side. We should not forget that a woman will say anything when she is*
511 *at full dilation (smile) (...) I don’t think I’ve ever had to force anyone to go to hospital.*
512 *By discussing, talking, we manage to come to an agreement.”* (Midwife, 17)

513

514 ***Findings summarised***

515 From our research, it becomes evident that the phenomenon of decision as a joint commitment
516 to healthy childbirth is implicit in decision-making. Our analysis has resulted in the
517 development of a visual model of dynamic decision making where defining and redefining the
518 phenomenon is essential (Figure 1). The model uses the three approaches described in the
519 analysis: indicators of common commitment, the influence of temporality and strategies for
520 sharing decisions. The model is intended to help reflection on how shared decision-making can
521 work in situations of unexpected complications during labour. A clinical retrospective analysis
522 of the significant elements and the visualization of their link with any of the three approaches
523 of the model as described above will probably make the complexity of shared decision making
524 more understandable and easy to use.

525

526

527

Discussion

528 The term commitment is used in our results to conceptualise our data. It has roots in psychology
529 and sociology and is described as a cornerstone of human social life. Commitment has to do
530 with engagement and the will and is observed in the joint actions of humans.²⁶ Commitment is
531 also used to understand a form of action in specific groups or individuals.²⁷ It is not surprising
532 that this concept of commitment has found a key position in the description of the central
533 phenomenon of our study. The psychological approach to commitment and decision-making is
534 useful in understanding joint actions. Michael et al.²⁶ distinguish unilateral commitment from
535 interdependent commitment. This distinction has also been found in our data and has been
536 developed in indicators of joint commitment that include personal and mutual commitment.
537 The sociological approach to engagement refers to a particular organisation, such as a birth
538 centre where women and midwives believe it is important to share joint values and to be willing
539 to get involved. Adhering to such a structure means being committed to safety and to
540 responsible decision decision-making, hence these two indicators support joint commitment.

541

542 Regarding shared decision-making, parts of our findings are consistent with VandeVusse's
543 model of decision-making between caregiver and woman during birth.¹⁴ This author suggests a
544 dynamic model with an ascending order of emotions expressed in women's allowing six stages
545 of decision-making, from unilateral to joint. Our model turns away from such rankings and
546 rather illustrates various strategies of shared decision-making, from the perspective of women
547 and the midwives.

548

549 Other research has established a model of shared decision-making where responsibility and
550 power are determined within an agreement of a common aim that woman and midwife wish to
551 achieve, recognising their differences.¹³ In this model, parameters are set so that women and
552 midwives can define their individual and joint accountabilities as well as their ethical
553 responsibilities to each other, whilst sharing the decision-making. The model distinguishes low-
554 risk decisions (woman makes decision with midwife input); medium-risk decision (decisions
555 are made jointly following negotiation); and high-risk decisions (midwife makes decisions
556 based on professional judgement). As in the previous model, there is little emphasis on the need
557 for equality in decision-making. In our model too, decision-making is unevenly shared. What
558 counts is the distinction between different forms of participation of women and midwives in
559 decision-making. Our model has much in common with Freeman's model¹³, considering the
560 degree of the complication and the responsibilities each may assume. Leeway is clearly limited
561 in an obstetric emergency and women's autonomy in decision-making affected. In contrast, our
562 model gives more consideration to mutual and personal commitment that subtly influence
563 decision-making. Boyles et al.²⁸ also mention that relationships based on trust and respect
564 facilitate shared decision-making. Everly²⁹ adds that the midwife's trust in the woman and in
565 the normal process of birth has been identified as facilitating components of the decision-
566 making process. In the home-like setting of this study, women's involvement in their birthing
567 decisions was widely practised. Women's trust in the midwives' professional competence was
568 dominating for the delegation of the decision-making authority to the midwife. It was the
569 women's active decision at times when they did not want to be involved in decisions. It was
570 not as in Porter's et al. descriptions³⁰ where midwives felt that women did not want to be
571 involved or that women were seen as not capable of being involved. The exception was the loss
572 of discernment under the influence of endorphins, but this incapability resulted from a
573 professional judgment and the woman was still as involved as much as possible in the decision

574 regarding her, which is consistent with the patient's rights.³ Conversely, a breach of trust was
575 the door open to challenging decision-making. The requirement of a transfer to hospital was
576 then a solution that has occurred twice, once at the request of a woman and once at the request
577 of a midwife.

578

579 The findings also showed also how women and midwives had to advise each with regard to
580 their personal positions and with those of the professionals in the hospitals. Unlike Van der
581 Hulst et al.³¹, our findings did not suggest tension between midwives' non-interventionist
582 positions and women's desire for technical interventions. If a woman was exhausted and wanted
583 to have pharmaceutical pain relief at a hospital, the woman's wish was granted. On the other
584 hand, midwives had to find a balance between being active or passive to juggle the competing
585 needs of women and of hospital staff. Stapleton et al's. description of vulnerability of midwives
586 supporting women in making decisions against the flow of medically defined customs and
587 practices is confirmed³² concluding that cultural changes are needed to embrace a model of care
588 which privileges the position of the childbearing woman.

589

590 Noseworthy et al.²³ suggest a model of decision-making in midwifery care embedded in choices
591 influenced by complex human, contextual and political factors. These authors advocate a
592 relational model of decision-making that enables consideration of how factors such as identity,
593 individual practices, the organisation of maternity care, local hospital culture, medicalised
594 childbirth, workforce shortages, funding cuts and poverty shape the way in which care decisions
595 are made. This relational model of decision-making is also close to ours. The method used for
596 conceptualisation with midwife-woman interviews and the results on the complexity of the
597 factors influencing decision-making have much in common. Our model is a continuation of the
598 relational model in that it places the decision as a joint commitment.

599

600 Finally, to accomplish shared decision-making, Elwyn et al.³³ propose a three-step model for
601 clinical practice which illustrates the process of moving from initial to informed preferences.
602 The described key steps are “choice talk”, “option talk” and “decision talk”. This model
603 emphasises the deliberation space as a process that may require time and may include the use
604 of decision support and discussions with others, which might be very appropriate in clinical
605 interactions during pregnancy, but less so in changing circumstances of childbirth.

606

607 As discussed above, our dynamic model of decision-making in childbirth incorporates many
608 elements found in previous studies. The model based on joint commitment clarifies the
609 involvement of women and midwives in birthing decisions, taking into account influencing
610 indicators. The proposed visual model provides a framework for decision-making in the
611 changing context of home-like births.

612

613 Nevertheless, our findings showed that decision as a joint commitment has sometimes been
614 challenged. An example is the midwife who wanted to avoid stress after having previously
615 experienced serious foetal distress. This situation resonates with the recognition of a possible
616 co-existence of woman centred care and midwife centred care. For Foureur et al.³⁴, midwives
617 should not feel guilty or selfish for taking care of themselves. When the meaning of woman-
618 centred care might be contested, Leap³⁵ advocates examining the language used and which can
619 help determining if the decision was jointly made. In the example where the midwife (16)
620 announced "I would end up saying that we do not insist", the interpretation speaks for a joint
621 decision: the midwife was ensuring foetal safety in a situation of potential danger and using the
622 pronoun “we”, she was including the woman. Depending on trusting or suspicious relations
623 between woman and midwife, the message might either bring the woman to make the midwife’s

624 decision her own or challenge the midwife's decision (see Table 1). Another example is a
625 midwife (2) reporting a situation of prolonged labour who had to face hospital staff's questions
626 after the transfer: "Why did you do this and not THAT and why did you not come earlier". Here
627 the interpretation speaks in favour of a joint decision between the woman and the midwife for
628 a delayed transfer to hospital on the woman's request. However, the staff did not acknowledge
629 this joint decision having criteria based on their own clinical protocols. After having reviewed
630 many protocols of large maternity hospitals, Freeman and Griew³⁶ denounced the lack of
631 description of women's role in decision-making in low-, medium- and high-risk situations. The
632 last description illuminates the same inflexible experience without taking into account
633 individual needs.

634

635 *Strength and limitation*

636 This study enables a new dynamic model of participation in decision-making during childbirth
637 emerging from our data using grounded theory and its associated systematic processes. The
638 accuracy of the proposed model comes out strengthened, since it appears in the light of previous
639 search results that our theoretical model can be considered as an additive synthesis of other
640 models.^{13, 14, 23, 32} Thus, with the help of the visual support, decision making in childbirth can
641 be understood in all its complexity.

642

643 Study limitations arise from the fact that the perspectives of fathers were limited, since there
644 were only a few interviews with them. In addition, the use of the model has not been shared
645 outside the research team. It is very possible that study results will not be fully applicable to
646 other countries and other settings where social, political and cultural influences on decision-
647 making and organisation of maternity care may be different. A close description of the study

648 context within the specific cultural setting of home-like birth in Switzerland should contribute
649 to an examination of the applicability of the results of the study in other practice settings.

650

651

652

Conclusion

653 The proposed model provides a framework, which is empirically based and rooted in the reality
654 of midwifery practice and women's experiences in home-like settings. The knowledge gained
655 in this study enriches existing knowledge on decision-making in midwifery care. The dynamic
656 model of decision-making may support midwives in defining/redefining competent decisions
657 whilst sharing the decision-making. To meet this challenge, the following issues should be
658 addressed. First, since safety and responsible commitment are not sufficient for decision-
659 making in home-like settings, midwives should be aware of the influence of mutual and
660 personal commitments. Second, it is important to bear in mind that the leeway in decision-
661 making is variable depending on the situation and that in all cases appropriate information is
662 needed to enable women to accept the change to their plans. Finally, shared decision-making
663 does not need equality; a range of shared decision-making strategies exists. Further research is
664 needed to confirm and/or complement these results. It would be very useful to assess the
665 efficacy of our model in order to present measurable benefits that will encourage the widespread
666 of the visual representation of decision-making in childbirth in midwifery education and long-
667 term training. Multi-dimensional In depth Long Term Case Studies (MITCs)³⁷ is a multiple
668 evaluation method which apply to visualization systems. MITCs is appropriate in modest size
669 projects supporting flexible composition for people working on challenging problems.
670 Therefore, it could be an indicated appraisal tool.

671

672

673

Acknowledgments and Disclosures

674 The authors wish to thank all the women and midwives who participated in the study.

675 The Swiss National Science Foundation (grant 13DPD3 – 136765) funded this research.

676 The authors declare that they have no conflicts of interest to declare.

677

678

679

References

680 1. Erdin R, Iljuschin I, van Gogh S, Schmid M, Pehlke-Milde J. Recensement des activités
681 des sages-femmes indépendantes de Suisse, rapport sur le recensement 2014. Mandat de
682 la Fédération Suisse des Sages-Femmes. Oct 2015, Corrigendum June 2016. French.

683 [cited 2016 Sept 14] Available from:
684 http://www.hebamme.ch/x_dnld/stat/Statistikbericht_2014_f.pdf

685

686 2. Hodnett ED, Downe S, Edwards, N, Walsh. D. Home-like versus conventional
687 institutional settings for birth. Cochrane Database Syst Rev.2005 Jan 25; (1):CD000012

688

689 3. European charter of patients' rights. Rome, 2002 Nov [cited 2016 Aug 16]. Available
690 from:

691 http://ec.europa.eu/health/ph_overview/co_operation/mobility/docs/health_services_co
692 [108_en.pdf](http://ec.europa.eu/health/ph_overview/co_operation/mobility/docs/health_services_co)

693

- 694 4. Loi sur la Santé Publique du Canton de Vaud du 29 mai 1985. French. Pub. L 800.01,
695 art. 23. (Sept 01, 2015) [cited 2016 Aug 16] Available from:
696 http://www.rsv.vd.ch/rsvsite/rsv_site/index.xsp
- 697
- 698 5. Haselbeck J, Mohylova M, Zanoni S. Patienten und Angehörige beteiligen. Swiss
699 Academies Communications. 2016;11(10):1-20
- 700
- 701 6. Home Birth Summit, Collaborative task force. Best practice guidelines: Transfer from
702 planned home birth to hospital. 2011 and 2013. [cited 2016 Sept 10]. Available from:
703 [http://www.homebirthsummit.org/wp-](http://www.homebirthsummit.org/wp-content/uploads/2014/03/HomeBirthSummit_BestPracticeTransferGuidelines.pdf)
704 [content/uploads/2014/03/HomeBirthSummit_BestPracticeTransferGuidelines.pdf](http://www.homebirthsummit.org/wp-content/uploads/2014/03/HomeBirthSummit_BestPracticeTransferGuidelines.pdf)
- 705
- 706 7. Marshall JE, Raynor MD, Sullivan A. Decision-making in midwifery practice.
707 Edinburgh: Elsevier Churchill Livingstone; 2005.
- 708
- 709 8. Jefford E, Fahy K, Sundin D. A review of the literature: Midwifery decision-making and
710 birth. Women & Birth. 2010;23(4):127-134.
- 711
- 712 9. Jefford E., Fahy K. & Sundin D. Decision-making theories and their usefulness to the
713 midwifery profession both in terms of midwifery practice and the education of midwives.
714 Int j Nurs Pract. 2011;17(3):246-253.
- 715
- 716 10. Jefford E, Fahy K. Midwives' clinical reasoning during second stage labour: Report on
717 an interpretive study. Midwifery. 2015;31(5):519-525.
- 718

- 719 11. Guilliland K, Pairman S. The midwifery partnership – a model for practice. New Zealand
720 College of Midwives Journal. Oct 1994; 11: 5-9.
721
- 722 12. International Confederation of Midwives. Partnership between women and midwives,
723 Position statement. Brisbane International Council Meeting. 2005, revised 2011 [cited
724 2016 Sept 10]. Available from: [http://internationalmidwives.org/who-we-are/policy-
725 and-practice/icm-position-statements-general/](http://internationalmidwives.org/who-we-are/policy-and-practice/icm-position-statements-general/)
726
- 727 13. Freeman L, Timperley H, Adair V. Partnership in midwifery care in New Zealand.
728 Midwifery. 2004; 20(1):2-14.
729
- 730 14. VandeVusse L. Decision-Making in Analyses of Women’s Birth Stories. Birth. 1999;
731 26(1), 43-50.
732
- 733 15. Maputle MS, Donavon H. Woman-centred care in childbirth: A concept analysis (Part
734 1). Curationis. Jan 2013;36, E1-8.
735
- 736 16. Blix-Lindenström S, Christensson K, Johansson E (2004). Women’s satisfaction with
737 decision-making related to augmentation of labour. Midwifery. 2004; 20(1):104-112.
738
- 739 17. Lavender T, Walkinshaw S, Walton I. A prospective study of women's views of factors
740 contributing to a positive birth experience. Midwifery. 1999;15(1) :40-46.
741
- 742 18. Waldenström U. Experience of labor and birth in 1111 women. J Psychosom res.
743 1999;47(5):471-482.

744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767

19. Bailes A, Jackson E. Shared responsibility in home birth practice: collaborating with clients. *J Midwifery Wom Heal.* 2000;45(6):537-543.
20. Rowe RE, Kurinczuk JJ, Locock L, Fitzpatrick R. Women’s experience of transfer from midwifery unit to hospital obstetric unit during labour: a qualitative interview study. *BMC Pregnancy & Childbirth.* 2012;12,129:1-15.
21. Nieuwenhuijze M, Low LK, Korstjens I, Lagro-Janssen T. The role of maternity care providers in promoting shared decision-making regarding birthing positions during the second stage of labor. *J Midwifery Wom Heal.* 2014; 59(3): 277-285.
22. Patterson J, Skinner J, Foureur M. Midwives’ decision-making about transfers for “slow” labour in rural New Zealand. *Midwifery* 2015;31(6):606-612.
23. Noseworthy D, Phibbs S, Benn CA. Towards a relational model of decision-making in midwifery care. *Midwifery* 2013; 29:e42-e48.
24. Strauss A, Corbin J. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques.* Newbury Park, London, New Dehli: Sage Publications; 1990.
25. Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. *Field Methods.* 2006;18(1):59-82.

- 768 26. Michael J., Sebanz N., Knoblich G. The sense of commitment: A minimal approach.
769 Front Psychol. 2016;6:1968. doi: 10.3389/fpsyg.2015.01968
770
- 771 27. Becker HS. Notes on the concept of commitment. Am J Sociol. 1960;66(1):32-40. Article
772 translated in French in SociologieS. 2006 [cited 2016 Sept 10]. Available from:
773 <http://sociologies.revues.org/642>
774
- 775 28. Boyle S., Thomas H, Brooks F. Women's views on partnership working with midwives
776 during pregnancy and childbirth. Midwifery. 2015; Jan 32:21-29.
777
- 778 29. Everly M. Facilitators and Barriers of Independent Decisions by Midwives during Labor
779 and Birth. J Midwifery Wom Heal. 2012; 57(1) :49-54.
780
- 781 30. Porter S, Crozier K, Sinclair M, Kernohan WG. New midwifery? A qualitative analysis
782 of midwives' decision-making strategies. JAN 2007;60(5):525-534.
783
- 784 31. Van der Hulst LAM, van Teijlingen ER, Bonsel GJ, Eske M, Birnie E, Blecker OP. Dutch
785 women's decision-making in pregnancy and labour as seen through the eyes of their
786 midwives. Midwifery. 2007;23:279-286.
787
- 788 32. Stapleton H., Kirkham M., Thomas G, Curtis P. Midwives in the middle: balance and
789 vulnerability. BJM. 2002;10(10):607-611.
790
- 791 33. Elwyn G, Joseph-Williams N, Lloyd A, Kinnersley P, Cording E, Tomson D, et al. Shared
792 decision making: A model for clinical practice. J Gen Intern Med. 2012;27(10):1361-7.

793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808

34. Foureur M., Brodie P., Homer C. Midwife-centered versus woman-centered care: A developmental phase? *Women and Birth*. 2009;22:47-49.
35. Leap N. Woman-centred or women-centred care: does it matter. *Br J Midwifery*. 2009;17(1):12-16
36. Freeman L.M, Griew K. Enhancing the midwife-woman relationship through shared decision making and clinical guidelines. *Women and Birth*. 2007;20:11-15
37. Shneiderman B., Plaisant C. Strategies for evaluation information visualization tools: Multidimensional In-depth Long-term Case Studies. Proceeding. BELIV'06 Proceedings of the 2006 AVI workshop on Beyond time and errors: novel evaluation methods for information visualization. 1-7