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# The comparison of the interpersonal action component of woman-centred care reported by healthy pregnant women in different sized practices in the Netherlands: A cross-sectional study

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### ABSTRACT

**Background:** The number of interventions is lower, and the level of satisfaction is higher among women who receive midwife-led primary care from one or two midwives, compared to more midwives. This suggests that midwives in small-sized practices practice more woman-centred. This has yet to be explored.

**Objective:** To examine pregnant women's perceptions, of the interpersonal action component of woman-centred care by primary care midwives, working in different sized practices.

**Methods:** A cross-sectional study using the Client Centred Care Questionnaire (CCCQ), administered during the third trimester of pregnancy among Dutch women receiving midwife-led primary care from midwives organised in small-sized practices (1–2 midwives), medium-sized (3–4 midwives) and large-sized practices ( $\geq 5$  midwives). A Welch ANOVA with *post hoc* Bonferroni correction was performed to examine the differences.

**Results:** 553 completed questionnaires were received from 91 small-sized practices/104 women, 98 medium-sized practices/258 women and 65 large-sized practices/191 women. The overall sum scores varied between 57–72 on a minimum/maximum scoring range of 15–75. Women reported significantly higher woman-centred care scores of midwives in small-sized practices (score 70.7) compared with midwives in medium-sized practices (score 63.6) ( $p < .001$ ) and large-sized practices (score 57.9) ( $p < .001$ ), showing a large effect ( $d .88$ ;  $d 1.56$ ). Women reported statistically significant higher woman-centred care scores of midwives in medium-sized practices compared with large-sized practices ( $p < .001$ ), showing a medium effect ( $d .69$ ).

**Conclusion:** There is a significant variance in woman-centred care based on women's perceptions of woman-midwife interactions in primary care midwifery, with highest scores reported by women receiving care from a maximum of two midwives. Although the CCCQ scores of all practices are relatively high, the significant differences in favour of small-sized practices may contribute to moving woman-centred care practice from 'good' to 'excellent' practice.

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### Statement of significance

#### Problem or issue

A minority of primary care midwives work as a solo-practitioner or in teams with a maximum of two midwives - despite the evidence that women have fewer interventions

and perceive higher levels of satisfaction when they receive care from one or two midwives. The nature of the woman-midwife relationship has been put forward as an explanation for these differences. It is likely that there are differences in providing woman-centred care, in different sized practices, but this assumption has not been explored.

#### What is already known?

Woman-centred care is authentic to the midwifery profession and is associated with core attributes such as woman-midwife interactions. Woman-centred care meets the needs of childbearing women.

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**What this paper adds?**

This paper shows the presence of variance of women's direct experiences of interactions in woman-centred care, by primary care midwives, when looking at smaller and larger organised groups of midwives. This paper adds to the existing body of knowledge that in terms of the number of midwives: 'less is more'.

**1. Introduction***1.1. Maternity services in the Netherlands*

Most healthy pregnant women in the Netherlands receive maternity care provided by a primary care midwife - so called midwife-led primary care [1]. Women receiving this type of care are women with uncomplicated/ low risk pregnancies who do not require obstetric/medical care. Consultation or referral to obstetric-led care at any point during childbirth occurs when complications arise or threaten to arise or when medical interventions are needed. In 2018, nearly 90% of all pregnant women started their antenatal care with the primary care midwife [2].

*1.2. Organisation of midwife-led primary care in the Netherlands*

Midwife-led primary care includes antenatal, intrapartum, and postnatal care. Women receive care from traditionally organised community-based midwives, who work in varying team structures [3,4]. A total of 2315 of primary care midwives work in 555 practices throughout the Netherlands. Practices are divided into 16% solo practices, 24% duo practices, so called small-sized practices, and 60% group practices. Of the group practices, 58% contain 3 or 4 midwives (medium-sized practices) and 42% consist of group practices with 5 or more midwives (large-sized practices). A team of four midwives is the norm [4]. An annual caseload consists of approximately 100 women per full time working midwife. Of all practicing midwives, half of them work part time. Caseloads per practice thus vary, depending on the number of midwives and their full time equivalent [5]. The first appointment with the midwife usually takes place around eight weeks' gestation [1]. According to the Dutch guidelines for prenatal primary care, women have approximately 11 antenatal consultations with the midwife. The average time of a booking visit is 40 min and a regular consultation or prenatal counselling lasts on average 15 min, although we know that the number and the length of consultations vary between practices [1,6].

Earlier research showed that women in practices with one or two midwives are significantly more likely to have a non-interventionist (home) birth; they have significantly fewer interventions in general and specifically pain relief, cardiotocography and secondary caesarean sections when compared to women in larger sized practices [3,7,8]. Women in small-sized practices received statistically significant more often continuity of carer by a known primary care midwife after referral to the obstetrician, in comparison to women in practices with three or more midwives [3]. Moreover, women receiving care from midwives in small-sized practices had higher levels of a satisfaction with care compared to women in practices with more than two midwives [3]. The evidence suggests that the woman-midwife relationship and interpersonal interactions play a profound role in positive birth outcomes and satisfactory maternal experiences. The woman-midwife relationship and interaction are known to be essential and central in the concept of woman-centred care [9,10]. It is known that woman-midwife

interaction is higher in small teams of midwives than in bigger teams [11,12].

*1.3. Woman-centred care in the Netherlands*

The concept of woman-centred care is central to midwifery and has been recognised as a marker of quality in maternity services [13]. Dutch governmental policies have recommended to place women closer to the centre of maternity care services, appointing woman-centred care as a defining feature of midwifery [14]. Dutch childbearing women have expressed a strong desire for woman-centred care and voiced that current midwifery care is not responsive to this particular need [15,16]. Woman-centred care is defined as "a midwifery philosophy and a consciously chosen tool for the care management of the childbearing woman, where the collaborative relationship between the woman—as an individual human being—and the midwife—as an individual and professional—is shaped through co-humanity and interaction; recognising and respecting one another's respective fields of expertise. Woman-centred care has a dual and equal focus on the woman's individual experience, meaning and manageability of childbearing and childbirth, as well as on health and wellbeing of mother and child" [9]. This definition recognises that woman-centred care can be achieved by relational continuity, interpersonal actions but also by recognising the woman as an important and essential stakeholder in her own care. When approaching the given woman-centred care definition in a reductionist way, we recognise three components: a core assumption or philosophy, action and interaction, and purpose - where action and interaction connects the core assumption and the purpose, merging the concept of woman-centred care [9,17]. Earlier research showed that primary care midwives hold distinctive perceptions and thought patterns about woman-centred care, suggesting that the midwife who works in a small-sized practice holding a smaller caseload - respecting relational continuity - best reflects the woman-centred care core principles [17]. Relational continuity is fundamental to develop a trusting relationship, requiring opportunities to meet with the same midwife or midwives throughout the entire childbirth experience. When relational continuity is better achievable in a small-sized practice, we hypothesise that woman-centred care is more likely to be provided by midwives in small-sized practices. Women have ranked the woman-centred care of various maternity healthcare professionals, appointing the primary care midwife as the best woman-centred care provider in Dutch maternity services [16,18]. However, without distinguishing between midwives in different sized practices. Both the woman-centred care definition and Dutch midwives' views of woman-centred care are based on midwives' evaluation of existing practice [9,17], but have not been evaluated by women, which is quite essential in woman-centred care where the woman is a key player.

We are aware of the reports of higher woman-midwife interaction in small teams of midwives [11,12]. Furthermore, women and midwives report differences in the number of interventions and levels of satisfaction with care when these are compared on practice size level - the fewer midwives involved in the care of a woman, the fewer interventions and the higher the level of satisfaction [3,11,12]. Accepting the thought that these differences are related to the number of midwives, in other words 'less is more'- it would be logical to test the hypothesis that there are differences in women's reports of perceived woman-centred care between primary care midwives in different sized practices. Examining the relation between organisation of care, that is, practice size and the utilisation of woman-centred care, is of interest for an international midwifery audience - as woman-centred care is regarded a core premise of midwifery practice, as real and authentic midwifery [19]. This leads to the following

research question: Do women who receive midwife-led primary care, report differences in midwives' woman-centred care, when these midwives are organised in different sized practices, that is: small-sized practices (1–2 midwives), medium-sized practices (3–4 midwives) and large-sized practices ( $\geq 5$  midwives)? In many countries midwives look at the Dutch system for inspiration. The way that Dutch midwife-led primary care has been organised, offers an ideal opportunity to conduct this study and to explore the possible variance in women's perceptions of woman-centred care experienced on the woman-midwife interaction level in midwife-led primary care.

## 2. Methods

### 2.1. Design

We performed a cross-sectional study among a sample of low-risk pregnant women, receiving midwife-led primary care from midwives organised in small-sized practices (1–2 midwives), medium-sized practices (3–4 midwives) and large-sized practices ( $\geq 5$  midwives). The data were collected between September 2017 and June 2018, using online self-completed questionnaires.

### 2.2. Sampling procedure

We included women living in the Netherlands who received midwife-led primary care. There were no restrictions for parity, ethnicity or socio-economic status. We included women with a good comprehension of the Dutch language, 18 years of age or older, and with a minimal gestational period of 28 weeks (third trimester of pregnancy). We anticipated that women at this point in pregnancy had at least five regular antenatal contacts/consultations, including the booking visit and counselling for prenatal screening in early pregnancy and for the anomaly scan in the second trimester [1]. We expected that in the third trimester women had met several, if not all, midwives in their practice to form an opinion about the woman-centred care by the primary care midwives.

We aimed to represent women receiving midwife-led primary care, primary care midwifery practices and the various practice sizes that exist. Sample size calculation with 95% Confidence Interval (CI) and  $p .05$ , showed that we needed a minimum of 384 women to be representative of women in the third trimester of pregnancy receiving midwife-led primary care. To represent primary care midwifery practices in the Netherlands, sample size calculation with 95% CI and  $p .05$ , showed that we needed 227 different practices, including at least 90 small-sized practices, 79 medium-sized and 58 large-sized practices [4]. To obtain large enough sample sizes in each practice size group to obtain reliable results, a sample fraction calculation showed that we needed a minimum of 77 women receiving care from 1 to 2 midwives; 178 women from 3 to 4 midwives and a minimum of 129 women receiving care from 5 or more midwives for a total sample of 384 women. Stratification sampling showed unequal strata and because power of effect is based on the smallest group, in this case the number of women in small-sized practices, a large effect could be measured based on an alpha probability of  $p .05$  and power of .80.

Aiming to include the required number of midwifery practices and the desired number of women within the different sized practices, we took sequential steps in our convenience sampling techniques. First, we contacted 218 practices from existing publicly available email lists of professional midwifery (education) networks. Second, to ensure heterogeneity of practices covering all 12 provinces of the Netherlands with a set ratio of 1:5 (based on an overall expected response rate of 70%), we used

the following formula to randomly approach Dutch midwifery practices throughout the Netherlands: (total number of midwifery practices  $\div$  set ration)  $\div$  number of provinces = practices per province to recruit. The calculation:  $(555 \div 5) \div 12$ , showed that we needed to recruit 9 midwifery practices per province, 108 in total. We searched midwifery practices via Google Maps and used the online Random Integer Generator (<https://www.random.org/integers/>) to randomly select 108 practices. We continued the selection until we had a sample of practices that were not included in the networks' email lists. We approached the total of 326 practices per email, explaining the study and asking permission to recruit women through practices via flyers and practices' social media platforms such as Facebook, Twitter and practice websites. After two reminder emails, we received a positive response of 165 practices (51%). The 165 midwifery practices distributed the links and QR-codes among their clientele. After five months of data collection, we had received 320 questionnaires and sent a reminder to the practices. As a third step in our sampling, we purposively recruited women through social media platforms for pregnant women (e.g. Facebook, fora) to reach the target numbers of practices and women with, fourth, additional snowball sampling (see Fig. 1).

### 2.3. Measurement

We collected women's socio-demographic factors and personal details. We did not collect names of practices and/or midwives but collected partial postcodes (first 4 digits), identifying the participants' location of residence as well as the midwives' location of practice. The partial postcodes allowed us to verify the location and size of the midwifery practices that were evaluated. We asked women to identify the number of midwives in their practice, the number of consultations so far, and how many midwives they had met in-person during the antenatal consultations. Online survey software SurveyMonkey was used to collect the data.

#### 2.3.1. Client-Centred care questionnaire (CCCQ)

We measured the reciprocal interpersonal action component of the concept of woman-centred care, which can be directly experienced by the woman in interaction with the midwife [9,17]. We used the 15-item self-report Client-Centred Care Questionnaire (CCCQ) which was originally developed and validated to measure interpersonal interaction, for use among adults receiving home care [20,21]. More recently, the CCCQ has been used to evaluate one-on-one contacts between the woman and her maternity caregiver, including the primary care midwife [22]. Because no instruments exist to capture women's self-report of the interpersonal action level of woman-centred care in midwifery practice, the CCCQ was adjusted, pilot-tested and validated for use among a pregnant and postpartum Dutch population showing a two-factor model, labelled: 'participation in own care' and 'self-determination' (i.e. the degree and consciousness of personal choices in care) [18,22]. These constructs acknowledge the collaborative nature of woman-centred care in the proposed definition and the recognition of the woman's individuality and experiential knowledge [9]. Each CCCQ item was scored on a 5-point Likert-type scale, ranging from "1" (totally disagree) to "5" (totally agree) (Example item: I can tell that the midwife takes my personal wishes into account). The total CCCQ score ranges from 15 to 75, expressing women's perceptions of community midwives' woman-centred care. A higher score indicated positive observations of woman-centred care. The CCCQ in a pregnant and postpartum Dutch population showed good internal consistency ( $\alpha .93$ ) and an acceptable model fit (GFI .92; CFI .91; and RMSEA .07) [18].

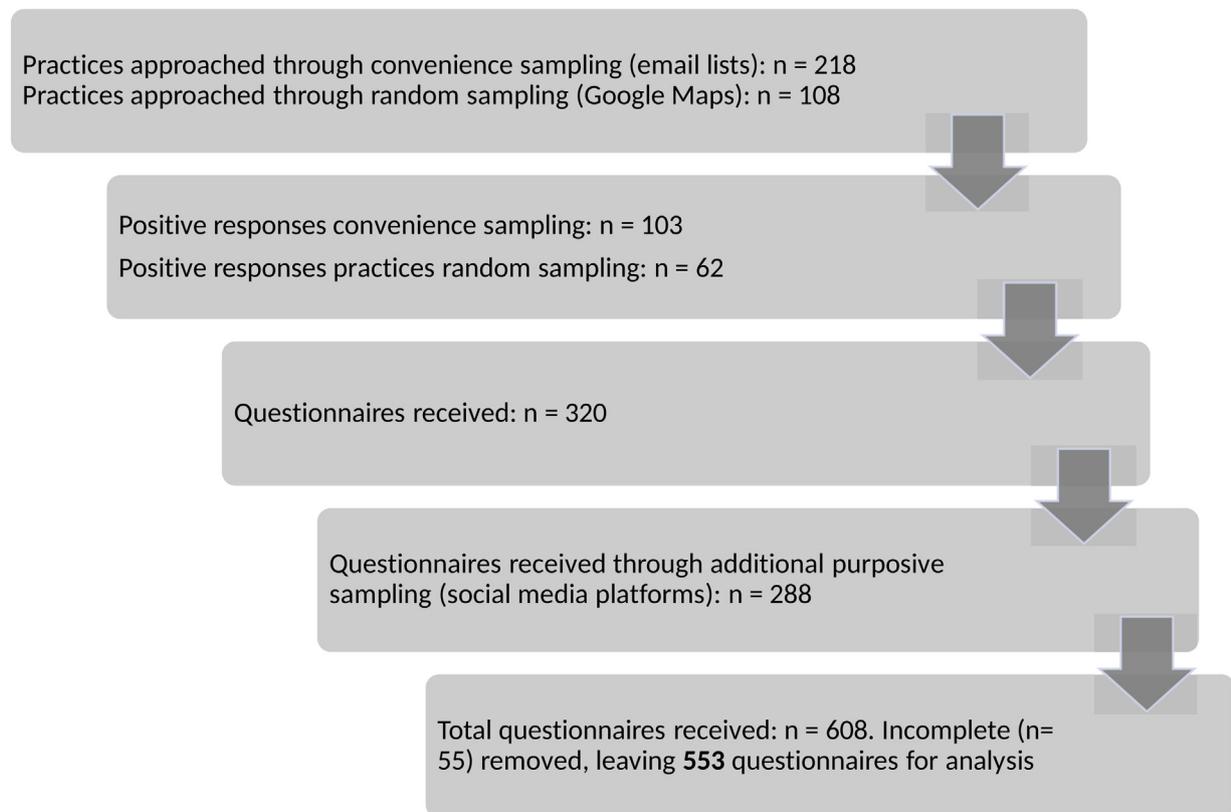


Fig. 1. Flowchart recruitment and data collection.

#### 2.4. Data analysis

Using the partial postcodes, we identified the available midwifery practices in this postcode area and verified the number of midwives per practice with the participants' responses, using Google Maps. We used a structured matrix (MS Excel) to organise and quantify the postcodes, practices in the postcode areas and the number of midwives per practice. No corrections in women's responses regarding practice size were required. We deleted the partial postcodes prior to data analysis. We conducted logistic regression to evaluate which independent variables were predictors for non-responding to the questionnaire. We regarded non-responding when  $>10\%$  of the participant's CCCQ scores were missing [23]. We used the collected data of socio-demographic and personal characteristics for comparison of responders and non-responders. We also compared socio-demographic and personal characteristics between the three groups (small-sized, medium and large-sized practices), using Kruskal–Wallis tests and analysis of variance. When significant differences in women's characteristics between the various practice sizes were observed, the effect on the CCCQ sum score was tested before the main analysis, exploring the prediction of the characteristics. To handle the at random missing values, we imputed missing values using maximum likelihood methods (expectation maximization) [23]. Normality of distribution was visually interpreted with the graphical tests: histograms and Q–Q plots. We calculated Cronbach's alpha ( $\alpha$ ) to measure internal consistency of the CCCQ scale items and the results were considered as questionable at  $\alpha .7 > \alpha \geq .6$ , acceptable at  $\alpha .8 > \alpha \geq .7$ , good at  $\alpha .9 > \alpha \geq .8$ , and excellent at  $\alpha \geq .9$  [23]. We summed the scores of the CCCQ and calculated a total score per practice size group. Considering the unequal variances of the groups, we performed Welch ANOVA with *post hoc* Bonferroni correction, adjusting for error rates of

significance [23]. We anticipated differences in the CCCQ scores between the different sized practices. To detect a large effect, we needed the standard deviations of the CCCQ-scores between the various practices sizes to differ by .8 or more, for a medium effect .5, and to detect a small effect the standard deviations needed to differ by .2 [23]. A value of  $p < .05$  was considered statistically significant. We used the Statistical Package for the Social Sciences (SPSS) version 25.0 for analysis.

#### 2.5. Ethical considerations

This study received ethical clearance from the Scientific Research Ethics Committee Rotterdam (TWOR) (Protocol Ref No. T2016-72). Participation was voluntary and informed consent for participation and dissemination of the study results was obtained (via box ticking) before the questionnaire could be completed. We kept the list of practice contact details separate from the data. The list was only accessible to the researchers and was removed after analysis. Privacy and confidentiality of midwives and women were protected.

### 3. Results

We received a total of 608 questionnaires, including 55 questionnaires with  $>10\%$  missing CCCQ scores (non-responders). A total of 553 questionnaires (91%) was included in the analysis (See Fig. 1). The women in our sample received care from 254 different midwifery practices, covering all geographical areas in the Netherlands. A representative division of women over three practice groups arose: 91 small-sized practices including 104 women, 98 medium-sized practices represented by 258 women and 65 large-sized practices including 191 women (see Table 1).

**Table 1**Characteristics of women in small-sized (1–2 midwives), medium (3–4 midwives) and large-sized ( $\geq 5$  midwives) practices.

	91 practices with 1–2 midwives 104 women		104 practices with 3–4 midwives 258 women		98 practices with 5 or more midwives 191 women		Total 254 practices 553 women	
	Mean; SD $\pm$ (range)	N / %	Mean; SD $\pm$ (range)	N / %	Mean; SD $\pm$ (range)	N / %	Mean; SD $\pm$ (range)	N / %
Age in years	31.2 $\pm$ 4.4 (30.3–32)		30 $\pm$ 4.1 (29.4–30.5)		29.8 $\pm$ 5 (29.7–30.5)		30.1 $\pm$ 4.5 (18–48)	
Gestation in weeks	33.9 $\pm$ 3.5 (33.2–34.6)		33.4 $\pm$ 3.7 (32.9–33.9)		34 $\pm$ 3.7 (33.5–34.6)		33.7 $\pm$ 3.7 (28–41)	
Gravidity <sup>a</sup>	2.9 $\pm$ 1.8 (2.5–3.3)		2.3 $\pm$ 1.2 (2.2–2.5)		2.4 $\pm$ 1.6 (2.2–2.6)		2.5 $\pm$ 1.5 (1–13)	
Parity	1.2 $\pm$ 1.1 (1–1.4)		1 $\pm$ .9 (.9–1.1)		.9 $\pm$ .9 (.8–1.1)		1.01 $\pm$ .9 (0–8)	
Nulliparous		25/ 14 <sup>b</sup>		81/ 45.5		72/ 40.5 <sup>b</sup>		178/32.2
Multiparous		79/ 21 <sup>b</sup>		177/ 47		119/ 32 <sup>b</sup>		375/67.8
N of consultations	5.9 $\pm$ 1.6 (1–12)		5.8 $\pm$ 1.5 (1–12)		5.9 $\pm$ 1.5 (1–10)		5.8 $\pm$ 1.5 (1–12)	
With partner <sup>b</sup>		88/84.6		213/82.6		141/73.8		442/79.9
<b>Ethnicity<sup>a</sup></b>								
Dutch		94/90.4		229/88.8		156/81.7		479/86.6
Other Western country		5/4.8		8/3.1		10/5.2		23/4.2
Non-Western country		5/4.8		21/8.1		25/13.1		51/9.2
<b>Occupation</b>								
Working (paid) job		87/83.7		223/86.4		161/84.3		471/85.2
No paid job/ job seeking		13/12.5		25/9.7		26/13.6		64/11.6
Student		4/3.8		10/3.9		4/2.1		18/3.2
<b>Education<sup>** b</sup></b>								
Low level		58/55.8		91/35.3		101/52.8		250/45.2
Medium level		18/17.3		56/21.7		41/21.5		115/20.8
High level		28/26.9		111/43		49/25.7		188/34

<sup>a</sup>Dutch: Respondent born in the Netherlands and both parents born in the Netherlands; Other Western country: Respondent born in other Western country and/ or at least one parent born in other Western country; Non-Western country: Respondent born in non-Western country and/ or at least one parent born in non-Western country.

<sup>\*\*</sup>Low: elementary, pre-vocational secondary education; Medium: vocational secondary education, secondary education preparing for higher education; High: secondary education preparing for university, Bachelor(-equivalent), Master(-equivalent), university.

<sup>a</sup> $p < .05$ .

<sup>b</sup> $p < .001$ .

### 3.1. Participants

The 55 non-responders were significantly more likely to be single (OR 10.4, 95% CI 2.1–52.4,  $p = .005$ ) and to have significantly higher levels of education compared to responders (OR .65, 95% CI .55–.76,  $p < .001$ ). Characteristics of the participants are presented in Table 1. There were significant differences between the women in the different practice groups, regarding gravidity ( $p = .01$ ), ethnicity ( $p = .04$ ), level of education ( $p < .001$ ) and relationship (i.e. with or without partner) ( $p < .001$ ). Parity of women in small-sized practices showed a statistically significant difference compared to the parity of women in bigger sized practices ( $p < .001$ ).

### 3.2. Number of (known) midwives

Table 2 shows the actual number of midwives in the practice and the number of known midwives identified/ counted by the participants. Participants in medium-sized and large-sized practices reported significant differences between the number of available midwives per practice person ( $p < .001$ ) and the number of midwives met in-person ( $p < .001$ ). In the medium and large-sized practices, women had met fewer midwives than were available. This did not apply to the small-sized practices ( $p = .57$ ).

### 3.3. CCCQ scores

Histograms and Q–Q plots showed normal distribution of the CCCQ scores, for the total sample as per practice group. Cronbach's Alpha showed excellent internal consistency ( $\alpha = .91$ ). The CCCQ sum scores are presented in Table 3. The Kruskal-Wallis test showed significant differences in the CCCQ sum scores between the different practice sizes (H191.49,  $df = 2$ ,  $p < .001$ ). ANCOVA showed that the independent variables gravidity ( $p = .19$ ), parity ( $p = .29$ ), ethnicity ( $p = .4$ ), the level of education ( $p = .06$ ) and relationship

status ( $p = .07$ ) did not predict the CCCQ sum scores (dependent variable). Welch ANOVA showed a significant effect of the size of practice for the CCCQ scores ( $F(2,55) = 119.63$ ,  $p < .001$ ). Bonferroni *post hoc* test showed significantly higher CCCQ scores that women assigned to midwives working in a practice with 1 to 2 midwives compared with midwives working in a practice with 3 to 4 midwives ( $p < .001$ ), and midwives working in a practice with 5 or more midwives ( $p < .001$ ). This also applied to CCCQ scores assigned to midwives working in a practice with 3 to 4 midwives compared with midwives working in a practice with 5 or more midwives ( $p < .001$ ) (see Table 4). There was a large effect between the CCCQ-scores of small-sized and medium-sized practice ( $d = .88$ ) and between the scores of small-sized and large sized-practices ( $d = 1.56$ ). There was a medium effect between the scores of medium and large-sized practices ( $d = .69$ ).

## 4. Discussion

The results support our hypothesis that women report differences in the interpersonal action level of woman-centred care between small-sized, medium, and large-sized midwife-led primary care practices. Small-sized practices show the highest scores on the interpersonal action component of woman-centred care, representing women's positive perceptions of woman-centred care. Large-sized practices show the lowest scores, representing women's less than good experiences with woman-centred care. The statistically significant differences between the CCCQ-scores of the various practice sizes show that we were able to reject the null-hypothesis. The largest effect differences were found between the solo/duo practitioners and group practices but not between the different group practices, that is, between medium and large-sized practices. We measured women's perceptions of the interpersonal action level of woman-centred care during antenatal care provided by midwives, measuring the woman's perceived participation in care and her level of self-determination [18]. We did not analyse the two constructs

**Table 2**  
Number of midwives and number of known (met in-person) midwives.

	Total of midwives per practice	Known midwives per practice	Difference total vs known midwives
	Mean; SD± (range)	Mean; SD± (range)	P-value
1–2 midwives	1.84 ± .36 (1–2)	1.81 ± .4 (1–2)	.57
3–4 midwives	3.57 ± .50 (3–4)	2.99 ± .82 (1–3)	<.001
5 or more midwives	5.93 ± 1.5 (5–11)	3.83 ± 1.2 (1–6)	<.001

**Table 3**  
Total (sum) CCCQ scores per practice size.

	CCCQ sum score; SD± (range)
1–2 midwives	70.73; ±5.27 (69.70–71.75)**
3–4 midwives	63.60; ±6.41 (62.81–64.38)**
5 or more midwives	57.99; ±7.99 (56.84–59.12)**

\*\*  $p < .001$ .

separately thus we can't assume that higher CCCQ scores indicate that women significantly perceived higher levels of participation in care and/or a higher degree to execute personal choices regarding the content and organisation of their care in practices with a maximum of two midwives, compared to bigger sized group practices. However, the results do suggest that in small-sized practices the woman is overall highly regarded as a partner in care, with respect for the woman's autonomy, her experiential knowledge and adherence to relational autonomy - so central to the concept of woman-centred care [9,10,17]. While most midwives highly value interprofessional collaboration in case of a second opinion or decision-making, women regard relational continuity with a known midwife more essential to discuss options and to make decisions. Apparently, midwives in small-sized practices do not seem to utilise a hierarchy of knowledge and expertise, where a colleague midwife has more decisive authority compared to the woman [17,24]. Although working in teams facilitates ample opportunities for interprofessional collaboration, this does not necessarily lead to better labour and birth outcomes compared to small-sized midwifery practices [3,7,8].

The significant difference between available midwives in the practices and the number of midwives known by the woman, suggest that the woman-midwife relationship is more difficult to establish in environments with more midwives [11,25,26] Women have indicated that to form a bond with their midwife and/or midwives, they prefer one or two midwives [27]. Without a doubt, relational caring - a relationship following key principles such as connection, acknowledgment of interdependence and collaboration [9,17,27]- is easier to achieve in small-sized practices. Relationships have shown repeatedly to be at the heart of midwifery, yet small-sized practices are unsupported by health policy, undermining the centrality of the woman-midwife relationship. The number of small-sized practices in Dutch maternity services have more than halved over the last years. In 1980, approximately 90% of all primary care midwifery consisted of small-sized practices, while currently this has more than halved [4]. This study points to the need to foster practice and

organisation of midwife-led primary care that allows qualities as woman-centred care, meeting women's needs, to flourish.

Overall, women assigned high CCCQ scores, irrespective of practice size, albeit that small-sized practice received the highest scores. It is known that childbearing women are generally positive about, and usually give a high rating to midwifery care [15,16,18]. As the CCCQ does not employ a cut-off point, our results might suggest that we are not dealing with good versus bad woman-centred care but with excellent versus good woman-centred care or good care versus less than good woman-centred care - with the small-sized practices representing good or excellent woman-centred care. Details of care that appeal to women are relational continuity with a known midwife, having met the midwife who is present at the birth and the presence of a known midwife during intrapartum transfer of care [3,15,16,26]. Studies have shown that midwives have different professional attitudes towards the woman-midwife relationship [9,11,12,17]. It has been suggested that true professional woman-centred care attitudes are associated with models of care containing one or two midwives [17]. This study supports the influence of practice size on the provision of woman-centred care. Qualitative research would be of merit to understand what aspects of care distinguish between excellent and good personal interaction in woman-centred care or between good and less than good personal interaction in woman-centred care.

It can very well be that in a group practice with, for example, five part time working midwives, these midwives have a smaller workload per midwife. Nonetheless, when being on call the individual midwife carries the whole practice caseload [5]. We are aware that the midwife's personal characteristics, the midwife's core assumption of woman-centred care and/or the attitude of the midwife towards woman-centred care, influence the utilisation of daily interaction in woman-centred care [10,17,28]. However, we looked at the number of midwives per practice and not at the case or workload per midwife nor at her personal characteristics or core values, although this can be interesting for future research.

Although our study included almost half of all primary care midwifery practices in the Netherlands, our sample of women did not fully represent the Dutch childbearing population, specifically with regard to parity, ethnicity, relationship status and level of education [1,29]. It is, however, notable that our sample contained a high proportion of women with low levels of education (45%) and 14% of women with a non-Dutch background, compared with 20% and 30% of the national female population between 20 and 45 years of age respectively [30]. In contrast to this study, these

**Table 4**  
Post hoc Bonferroni CCCQ mean scores compared between different practice sizes.

Practice size	Mean difference	95% Confidence Interval		
		Lower bound	Upper bound	
1–2 midwives	3–4 midwives	7.133**	5.233	9.035
	≥ 5 midwives	12.746**	10.752	14.741
3–4 midwives	≥ 5 midwives	5.613**	4.051	7.174

\*\*  $p < .001$ .

groups are usually being underrepresented in studies among childbearing populations. Nonetheless, generalisability of the findings of this study is limited to women with similar characteristics as the women in our study. Future studies would ideally fully represent the sociodemographic and personal details of the target population. In our sample sociodemographic factors or personal details such as age, gestation, parity, ethnicity, relationship, occupation and level of education, were not associated with women's reported scores about woman-centred care. This is in line with the results of a large Dutch national cohort study [15], that showed that sociodemographic and personal factors do not predict women's satisfaction with maternity care. The lack of association between care and maternal characteristics suggests the strong impact of practice size as an independent factor on women's perceptions of woman-centred care.

Half of our sample was approached by the participant's own midwife to participate in the study. This could have caused selection bias. It is unknown exactly how many women were approached and if midwives consciously and categorically asked certain women to participate rather than others, which could have resulted in gratitude bias. However, half of our sample was recruited more directly through social media platforms. This allows women to be less inclined to provide socially desired answers. On the other hand, self-selection might have resulted in including women with more outspoken ideas about their midwives, either positively or negatively. We included women in their third trimester of pregnancy, expecting that women had at least five antenatal consultations, including two counselling consultations [1]. We anticipated that five antenatal consultations should allow sufficient quantity (i.e. number of visits) and quality of consultations (e.g. time, information, communication, decision making moments) for women to form a reliable opinion about their received care. Recruitment of women in our study occurred prior to the moment of birth. Mode of birth, that is, instrumental births and secondary caesarean sections as well as birth-related factors such as intrapartum referral and discontinuity of carer, negatively influence postpartum ratings of midwifery care [3,15]. Because we collected the data before the moment of birth, we believe to have reliable scores of women, representing midwives' woman-centred care during the antenatal period. Because there were more multiparous than nulliparous women in our study, it might be possible that women also relied on their recall from care received during a previous pregnancy. We do, however, not know if multiparous women received care from the same sized practice and/or the same practice during every pregnancy or whether they had experiences with obstetric-led care, which would have allowed recall bias. For future research, a randomized controlled trial (RCT) would be needed to test the attributes of woman-centred care in different sized practices. Ideally, an RCT among nulliparous women with maternal value-driven outcomes and birth outcomes should be performed. Having said that, women might be reluctant or unwilling to be randomised because they want to decide for themselves about model and type of care [31–33]. Because the woman's autonomy and self-determination are so highly valued in woman-centred care, randomisation is somewhat morally in conflict with the core of the concept itself. Therefore, it seems more appropriate to perform studies where women participate on a voluntary basis, controlling for population characteristics and methodological aspects such as bias, as much as possible. We have to bear in mind that visible factors in maternity care such as clinical outcomes and interventions are easier to measure, whereas woman-centred care, that hold midwifery care management together, is more difficult to measure [27]. It would be feasible to study the relationship between levels of participation in care and self-determination and interventions and satisfaction.

Despite the limitations of this study, it can be suggested that the number of midwives per practice play an important role in woman-centred care, provided to low-risk childbearing women. When we add our results to similar studies looking at birth outcomes, interventions and maternal satisfaction of women in small-sized practices or in similar models of care [3,7,8,32,34–36], hopefully drive evidence into practice. We encourage and promote the re-orientation of maternity services to ensure more women have access to receive care from a maximum of two midwives as this meets the needs of women in maternity services [15]. It has been suggested that a woman-centred approach will contribute to humanising maternity care as the strength of the relationship is stressed [36]. Additionally, we encourage midwives to explore deeper the aspects of their interactions in relation to woman-centred care.

## 5. Conclusion

Overall CCCQ-scores of midwife-led primary care are relatively high, highlighting the variation in women's perceptions of personal interaction in woman-centred care within midwife-led primary care in favour of small-sized practices. This study shows that women perceive higher levels of woman-midwife interaction, when receiving midwife-led primary care from midwives in small-sized midwifery practices, most likely to positively affect the collaborative relationship between the woman and the midwife, measured by the CCCQ constructs participation in care and self-determination. These aspects of woman-centred care allow the experiential knowledge of the woman in interaction with the midwife and emphasise the importance of relationship-based care. Findings of this study might aid in moving good practice into excellent woman-centred practice and interactions between women and midwives.

## Conflict of interest

None declared.

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## Ethical statement

Name of the ethics committee: Toetsingscommissie Wetenschappelijk Onderzoek Rotterdam.

Approval number: T2016-72.

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## CRediT authorship contribution statement

**Yvonne (Fontein) Kuipers:** Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data curation, Writing - original draft, Visualization, Supervision, Project administration. **Elise van Beeck:** Methodology, Formal analysis, Investigation, Writing - review & editing, Visualization. **Linda van den Berg:** Methodology, Software, Validation, Resources, Data curation, Writing - review & editing. **Mirjam Dijkhuizen:** Methodology, Software, Validation, Resources, Data curation, Writing - review & editing.

## Declaration of Competing Interest

The authors report no declarations of interest.

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