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CenteringPregnancy in the Netherlands: Who engages, who doesn't, and why

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Abstract

Background: CenteringPregnancy (CP), a model of group antenatal care, was implemented in 2012 in the Netherlands to improve perinatal health; CP is associated with improved pregnancy outcomes. However, motivating women to participate in CP can be difficult. As such, we explored the characteristics associated with CP uptake and attendance and then investigated whether participation differs between health care facilities. In addition, we examined the reasons why women may decline participation and the reasons for higher or lower attendance rates.

Methods: Data from a stepped-wedge cluster randomized controlled trial were used. Univariate and multivariate logistic regression models were used to determine associations among women's health behavior, sociodemographic and psychosocial characteristics, health care facilities, and participation and attendance in CP.

Results: A total of 2562 women were included in the study, and the average participation rate was 31.6% per health care facility (range of 10%-53%). Nulliparous women, women <26 years old or >30 years old, and women reporting average or high levels of stress were more likely to participate in CP. Participation was less likely for women who had stopped smoking before prenatal intake, or who scored below average on lifestyle/pregnancy knowledge. For those participating in CP, 87% attended seven or more out of the 10 sessions, and no significant differences were found in women's characteristics when compared for higher or lower attendance rates. After the initial uptake, group attendance rates remained high.

Conclusion: A more comprehensive understanding of the variation in participation rate between health care facilities is required, in order to develop effective strategies to improve the recruitment of women, especially those with less knowledge and understanding of health issues and smoking habits.

KEYWORDS
centeringpregnancy, group prenatal care, participation, perinatal health, pregnancy

1 | INTRODUCTION

In 2010, perinatal morbidity and mortality rates were higher in the Netherlands relative to other European countries, especially among women with low socioeconomic status (SES).[1] Access to prenatal care is critical to improving birth outcomes.[2,3] Traditional prenatal care in the Netherlands is delivered via individual appointments with a health professional during pregnancy.[4] To improve health care access and perinatal outcomes, CenteringPregnancy (CP), a model for group prenatal care, was initiated in the Netherlands in 2012.[4,5] CP, developed in 1994 in the United States, replaces individual visits with group appointments wherein cohorts of women gather together for prenatal care. Visits include health assessments, interactive learning, and community building.[4-6] Women with a similar gestational age engage in nine prenatal and one postnatal group sessions of approximately two hours each, facilitated by a health care provider. During these sessions, participants receive their usual physical examinations, monitor their own health, and discuss various topics related to pregnancy, birth, and parenthood.

Studies in other countries have shown promising results from CP, such as an increased level of knowledge about healthy lifestyle and pregnancy, fewer adverse birth outcomes, and higher rates of breastfeeding initiation and continuation.[7-10] Women who have received CP group care also feel more confident, empowered, and supported.[11,12] Despite promising results, it remains challenging to motivate pregnant women, especially women with high-risk pregnancies, to participate in and continue to attend CP.[9,13] Young women and women with postsecondary education seem more likely to choose group prenatal care instead of traditional care,[14-16] and women who married, Caucasian, nulliparous, and who initiate early uptake of prenatal care.[17,18] Traditional care is more frequently chosen by women with planned pregnancies and among women who smoked before pregnancy.[16,18] Other psychosocial characteristics and/or types of health behavior of the women choosing group prenatal care are, as yet, unknown.

A higher attendance rate after initial uptake of CP is associated with better pregnancy outcomes,[19] but research on the characteristics of those not fully attending CP is limited. A study of women in the United States (US) found no significant differences between the characteristics of women who continued CP and those who did not fully attend, except that women born outside the United States were more likely to have increased group attendance rates as compared to those born within the United States.[15] A higher attendance rate and greater patient engagement were also reported when women with more diverse ages comprised a group.[20]

It is unknown to what extent women with lower socioeconomic status (SES) are reached by CP in the Netherlands and what their adherence and participation rates are. This study aimed to explore the characteristics of all women that start and continue CP, as well as differences between health care settings. In addition, the study explores women's reasons to decline CP participation along with reasons for low attendance.

2 | METHODS

2.1 | Study design

The study used data from a stepped-wedge cluster randomized controlled trial, exploring the effects of CP in Dutch prenatal care. Detailed information about the design, data collection, and measurement tools can be found in a previous article, published by Zwicht et al.[21] Before the start of this study, all thirteen midwifery practices and hospitals that decided to participate in the study offered only individual prenatal care. Data for the control period were collected beginning in November 2013 until the start of the intervention period. During the intervention period, CP was implemented gradually in the participating health care facilities, beginning in April 2014, and data were collected until the end of the intervention period in November 2016. CP was offered to all women attending prenatal care at the thirteen participating health care facilities, but women could participate in CP or not at their own discretion.

During the initial intake, women provided informed consent, including permission to collect routine anonymized data on pregnancy outcomes, as registered in the National Dutch Perinatal Data Registry.[21] Group sessions were facilitated by two CP trained health care providers, with midwives generally acting as the primary facilitators.

At the start of the study, the care providers received a two-day CP training, and they were expected to attend at least 3 follow-up supervision sessions to discuss implementation barriers and to further practice their facilitation skills. The Dutch foundation for Centering-based

Group Care provided free consultations and support for participating health care facilities, and each health care facility was visited by a CP consultant to discuss any implementation issues.

2.2 | Setting and participants

Participants from 13 midwifery practices and two hospitals in the area of Leiden in the Netherlands (urban—semi-urban population) were included in this study. To be included in this study, patients needed to proficient in Dutch and/or English. All women who filled in the first questionnaire after intake (T1) were included, regardless of their choice of prenatal care type. If women did not fill in questionnaire T1, they were defined as nonrespondents.

2.3 | Data collection

The data used for this study were extracted from the questionnaires and registrations undertaken by the group facilitators and were supplemented by demographic and obstetric data from the national perinatal data registry. At the initial individual prenatal intake (approximately 8-12 weeks), all potential participants received a hard copy questionnaire from their care provider that could be filled in at home and returned to the researchers in a pre-addressed, prepaid envelope. The follow-up questionnaires were administered at 28 weeks (T2), 36 weeks (T3) and 6 weeks postpartum (T4), and these were pseudonymous and sent directly to the woman via email or, alternatively, provided in the same manner as the first questionnaire. Three reminders were automatically sent after each missing questionnaire.

2.4 | Participation and attendance

At T1, the intention to participate in CP was measured among all women. Identification of participants and nonparticipants was based on the group facilitator's registration forms and the follow-up questions filled out by participants at T2, T3, and T4, where women were asked whether they still participated in CP or had stopped attending the sessions (T2 and T3). They were also asked how many CP sessions they had attended in total (T4) and why they had either stopped attending CP sessions or continued with CP; the questionnaires at T2, T3, and T4 were used solely for this purpose.

This entire set of data was combined to calculate the percentage of women who participated and (dis)continued their participation in CP, as well as the attendance rate. Individuals were defined as a CP participant if they had participated in any CP session during the intervention period. If women declined to participate from the start, they were defined as nonparticipants. Women were also categorized as having a high (7 or more sessions), medium (4-6 sessions), or low (less than 4 sessions) attendance rate.

2.5 | Variables

All demographic variables were collected at T1. Data extracted from T1 were used to compare nonrespondents and respondents to the questionnaire, and within the respondents, CP participants and non-CP participants. Demographic variables included age, ethnicity, religion, marital status, education, work status of the women and partner, and parity. The age at the time of giving informed consent was calculated based on date of birth. Ethnicity was categorized as Dutch, non-Western (African, Surinamese, Hindustani, Moroccan, Turkish, and Asian) and other Western. Religion was categorized as Christian, nonreligious, and other religion (Islam, Hinduism, Buddhism, Jewish, and other). Marital status was categorized as married/registered partnership or relationship living together, relationship not living together or single. Education was defined as high (higher professional education or university), medium (secondary education), and low (no or lower education, prevocational education). Parity was measured based on the question of whether they gave birth previously in their life or not (nulliparous or multiparous).

The psychosocial variables that were measured at T1 were stress, coping, and support (see van Zwicht et al for more detail).[3] Because of the length of the questionnaires and the absence of a short, validated tool to measure coping during pregnancy, we created a custom questionnaire.[21-23] Questions about coping were linked to active, passive, or negative coping and categorized accordingly. For example, women who searched for information to manage a specific problem they were facing were allocated to the group of active coping. When passive or negative coping strategies were used, they were correspondingly categorized as having passive/negative coping strategies. The level of social support was measured by the Social Support List (SSL-I 12) questionnaire.[24] Level of stress was measured with the Revised Prenatal Distress Questionnaire (NUPDQ) and Cambridge Worry Scale.[25] Lifestyle and pregnancy knowledge variables were measured based on the Prenatal/Postnatal Care Knowledge Questionnaire.[26] For the level of social support, stress and lifestyle, and pregnancy knowledge, the average score was calculated and women were classified as below average if they scored −1SD, average if they scored within the range

of average +1SD and −1SD, and above average if the score was above +1SD.

Self-reported lifestyle variables included at T1 were as follows: healthy eating, physical activity, dental care, smoking status, alcohol use, and drug use. The healthy eating criterion was based on the Guidelines published by the Dutch Nutrition Center. Eating healthy every day of the week was scored as healthy, 6 times a week was moderately healthy, and less was unhealthy. Physical activity was measured with the question: How many days have you been physically active for at least 30 minutes in the past week? (eg, walking, cycling, or exercising). Women were considered healthy if they exercised ≥5 times per week, moderately healthy if it was 4 times and unhealthy if it was ≤3 times. Women were grouped as a nonsmoker (if they had never smoked or had stopped smoking before the first prenatal visit) or smoker. Alcohol and drug use were defined as "yes" if they used any alcohol or drugs since becoming pregnant and "no" if they had not.

Missing data from the questionnaires was coded as "missing" for the data analysis.

2.6 | Analyses

Descriptive statistics were used to calculate frequencies of women that did or did not intend to participate, the actual participation rate in CP, to present the characteristics of women with low, medium, and high attendance and to explore reasons for participating or not participating. Bivariate and multivariate logistic regression models were used to determine (independent) associations between individual characteristics and CP participation and attendance. Univariable and multivariable analyses were conducted to determine the association of health care facility with participation; in the multivariate analyses, the participation rate was adjusted according to the health care facility and individual characteristics of women. A *P*-value of 0.05 or less was considered statistically significant. All analyses were executed with the Statistical Package for Social Sciences, version 23.0.

3 | RESULTS

In total, 2562 women agreed to participate in the study during the intervention period, enabling us to collect basic characteristics from the national perinatal data registry. Among those women, 1765 returned the first questionnaire (respondents). Respondents differed statistically significant from nonrespondents (n = 797) in being more often Dutch (86% vs 78% $P < 0.001$).

The majority of the respondents were nonreligious (50%), Dutch (86%), between 26 and 30 years old (42%), and they had a higher levels of education (55%). Most women were employed and either married or in a registered partnership with an employed partner. Around half of the respondents were nulliparous. The majority of the women were nonsmokers (66%), nonalcohol users (99%), and used no drugs (99%). The results showed that there were few respondents with a low SES (not in the table).

The participation rates of the 1765 respondents are presented in Table 1 and organized per health care facility. The participation rate varied between 10% and 100%. The highest scores of 100% and 66% occurred at the two hospitals; however, these hospitals mostly included women in the study who agreed to participate in CP. They did not include women who chose traditional care, resulting in artificial inflation of the CP participation rate for these facilities. This may also have been the case for midwifery practice 4, given the overall low number of both participants and nonparticipants and the high participation rate. Therefore, we excluded these 3 health care facilities and calculated the average participation rate from the remaining health care facilities (n = 1647), which was 31.6% (range between 10% and 52%). There were some statistically significant differences in attendance rates between the remaining midwifery practices. After adjustment for differences in women's characteristics, some midwifery practices differed significantly in response rate (Table 1).

In total, 1610 women answered the question whether they intended to participate or not (Figure 1). Out of those women, 31% said they wanted to participate (n = 499), though 11% (n = 55) eventually did not. From the women who did not intend to participate (n = 892), and of the women that had not decided yet (n = 219), 6% (n = 68) changed their mind and eventually participated.

The results of the univariable logistic regression analysis (Table 2) show that participation was more likely when women were nulliparous, younger than 26 years old, cohabitating without being married or in a registered partnership, single, and when the individual reported average to high levels of stress. Participation was less likely when women identified as Christian, had stopped smoking before the first prenatal visit, scored above average on lifestyle and pregnancy knowledge, and had a passive and/or negative coping style.

The multivariable logistic analysis showed that, after adjustment, participation was higher if women were between 22 and 26 years old, nulliparous, cohabitating without being married or in a registered partnership and for those who reported average or high levels of stress. Participation was less likely when women had stopped smoking before the first prenatal visit and scored below average on lifestyle and pregnancy knowledge.

TABLE 1 (Un)adjusted odds ratios with 95% confidence interval for practice and hospital differences in participation rates in Centering Pregnancy (n = 1647)

	% Participation In CP	Total N In CP	Unadjusted OR (95% CI)	Adjusted OR (95% CI)[a]
Midwifery care 0	27.8%	162	REF	REF
Midwifery care 1	52.8%	233	2.91 (1.89-4.47)	2.71 (1.64-4.48)
Midwifery care 2	43.0%	149	1.96 (1.22-3.14)	1.30 (0.74-2.28)
Midwifery care 3	36.1%	202	1.47 (0.94-2.30)	1.31 (0.78-2.19)
Midwifery care 5	24.5%	102	0.84 (0.48-1.49)	0.58 (0.30-1.13)
Midwifery care 6	19.3%	249	0.62 (0.39-0.99)	0.34 (0.20-0.61)
Midwifery care 7	28.8%	177	1.05 (0.66-1.69)	0.96 (0.55-1.68)
Midwifery care 8	33.3%	84	1.30 (0.74-2.30)	0.89 (0.46-1.75)
Midwifery care 9	31.7%	120	1.21 (0.72-2.02)	0.83 (0.45-1.51)
Midwifery care 10	9.6%	114	0.28 (0.14-0.57)	0.18 (0.08-0.42)
Midwifery care 11	25.5%	55	0.89 (0.44-1.78)	0.48 (0.21-1.11)
OUTLIERS				
Midwifery care 4	83.3%	12		
Hospital 1	100%	10		
Hospital 2	65.6%	96		

[a]Adjusted for the individual characteristics of the women.

Among respondents who started with CP (n = 594), the registration of attendance by the group facilitators was seen to be inconsistent. Only 424 women (71%) had their attendance registered consistently by the group facilitator. From those, 40 women (9,4%) initially started with CP but discontinued participation at some point. The majority of the respondents (87%) showed high attendance, 5% had medium attendance, and 8% had low attendance. No significant differences were found between demographic or psychosocial characteristics in the different groups (Table 3).

Women indicated that they did not want to participate in CP, or ceased to attend CP sessions mainly because they did not want to be in a group (21%). Some also conveyed that it consumed too much time (12%), that they had no day-care for their other child(ren) (5%), that they thought it was not useful (3%), and other reasons (4%).

Furthermore, analysis of the answers provided as "other" reasons showed that some women were unable to participate or continue participation in CP because of logistic reasons in the midwifery practice, such as groups were too small and canceled. Women also mentioned that they missed the involvement of their partner, or thought it would only be useful during a first pregnancy. Work commitments were also mentioned as a reason for nonparticipation (interference with work hours, workload, or the content of their work), as well as traumatic experiences during a previous pregnancy or miscarriage(s). Other reasons stated included a need for privacy and medical reasons. In particular, women who stated that they did not want to participate also reported that they associated the sessions with complaining pregnant women: "I don't need the negativity of others," "I don't feel like listening to other peoples' problems," and "I have had negative group meetings in the past." Other reasons for not participating were that CP was not properly explained. One woman said: "The explanation of CP was not clear to me. Afterwards I heard very enthusiastic stories about it, and I regretted not participating. At that moment, it was not possible for me to join CenteringPregnancy anymore."

Participants indicated that they participated to receive information about pregnancy and birth (41%), to share their experiences with others (38%), for fun and socializing (26%), to get to know more people (24%). Multiparous women said they would participate to have more attention for their current pregnancy. Other reasons for participation were to educate each other and to find more support. One woman indicated that she would have participated if there were groups that were specifically focused on large families and another participant said that she had only decided to join because she thought there would be a reward, specifically more ultrasounds during pregnancy.

Ten out of 33 women from the low attendance rate group reported that they stopped attending because it was not useful for them. Nonparticipants, women with low attendance, and women who discontinued CP, had comparable reasons for declining or stopping with CP.

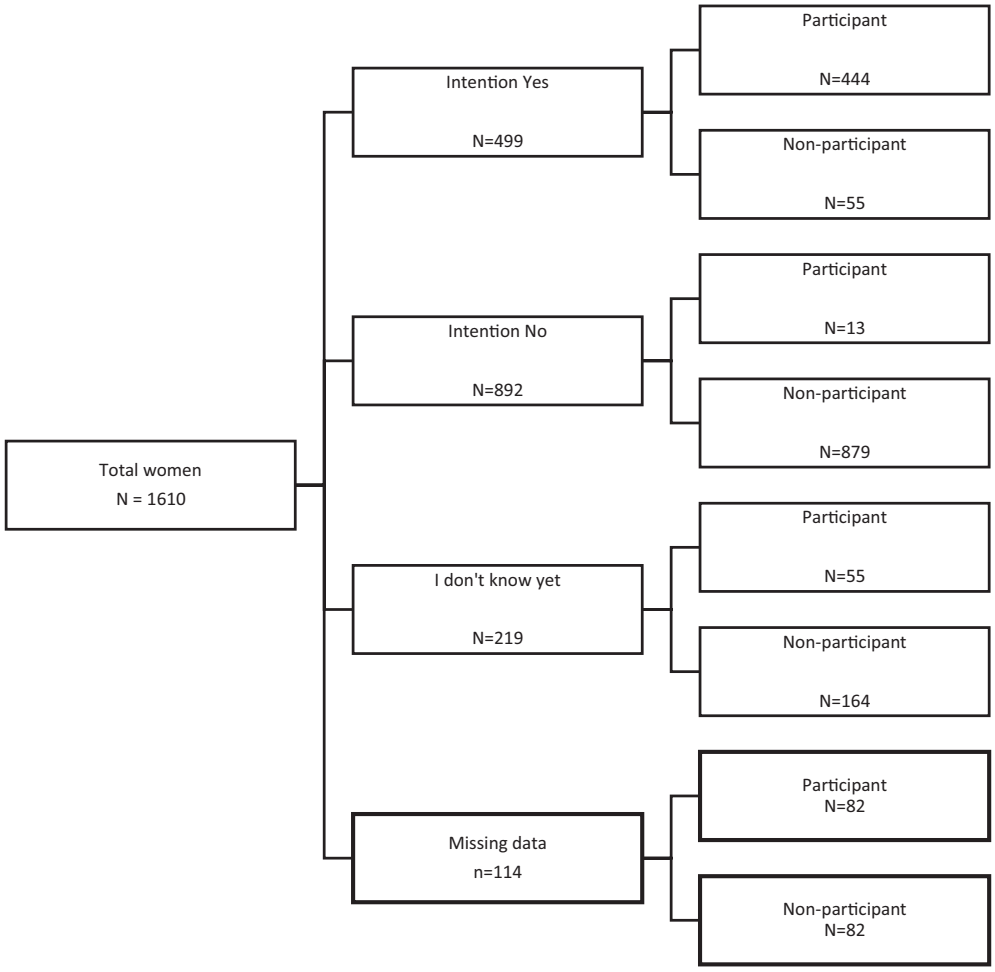

FIGURE 1 Participation flowchart of all women who responded to the question about intention to participate in CP (n = 1724, missings = 114)

4 | DISCUSSION

About one third of eligible women contributed to CP throughout this investigation, and this investigation is comparable to other studies describing the first phase of implementation of CP.[27,28] Similar to other research, our current study shows that more nulliparous than multiparous women participated in CP.[17,18,28] A lower involvement rate of women who stopped smoking before the first prenatal visit was also found in this study.

Research suggests that participation rates increase once CP becomes more established, as there are many implementation challenges when starting CP, one of which is the recruitment of CP participants.[29] Furthermore, studies are required to establish the effect that more experience level in providing CP has on participation rates in general populations of pregnant women, as well as in specific groups. The intention of women to participate or not closely corresponded with their final decision. Women who were still unsure about their participation at the prenatal intake were more likely to decline participation. Furthermore, if women decided to participate at intake, attendance rates were high irrespective of sociodemographic differences.

Other studies showed that active smokers are less likely to participate in CP.[18,28] However, in this study, a lower participation rate was found for women who stopped smoking before the first prenatal visit. Low participation rate among smokers can be explained by a woman's fear of having their smoking habits discussed within the group. They may also fear being blamed by group members for smoking during pregnancy. This does not, however, explain why ex-smokers decline participation. Francis et al reported that women who smoked during early pregnancy were more likely to have higher attendance rate in individual visits.[30] Additional research is required to examine why this subgroup had low participation in CP.

Women who decided to participate in CP scored higher on stress at the prenatal intake, similar to another study.[18] It is unclear why women with more stress participate more often in CP. The difference in stress levels between participants and nonparticipants was shown to be no

TABLE 2 Crude and adjusted odds ratios (OR) with 95% confidence interval (95% CI) for participation in Centering Pregnancy (n = 1724)

	N	%n participants	Unadjusted OR (95%CI)	Adjusted OR (95%CI)
Age				
<22	28	50%	**2.33 (1.09-4.97)**	1.96 (0.78-4.97**)**
22-25	215	41%	**1.62 (1.18-2.22)**	**1.59 (1.10-2.29)**
26-30[a]	696	30%	1	1
31-35	550	30%	0.99 (0.78-1.26)	1.26 (0.95-1.66)
>36	154	29%	0.93 (0.63-1.37)	1.32 (0.86-2.03)
Ethnicity				
Dutch[a]	1424	31%	1	1
Non-Western	110	39%	1.45 (0.98-2.17)	1.40 (0.80-2.43)
Other Western	110	36%	1.30 (0.86-1.94)	1.40 (0.89-2.20)
Religion				
Christian	719	29%	**0.79 (0.64-0.98)**	0.96 (0.74-1.24**)**
Nonreligious[a]	822	34%	1	1
Other	106	31%	0.88 (0.57-1.36)	0.84 (0.43-1.66)
Marital status				
Married/ partnership[a]	995	27%	1	1
Living together	571	39%	**1.68 (1.35-2.09)**	**1.40 (1.07-1.82)**
Not living together	30	40%	1.77 (0.84-3.73)	1.33 (0.53-3.32)
Single	21	48%	**2.42 (1.02-5.75)**	—
Educational level				
Low	137	32%	1.02 (0.70-1.50)	1.16 (0.72-1.87)
Medium	588	32%	1.01 (0.81-1.26)	1.04 (0.79-1.36)
High[a]	891	32%	1	1
Paid job partner				
Yes[a]	1554	32%	1	1
No	46	26%	0.76 (0.39-1.48)	0.74 (0.34-1.58)
I don't have a partner	17	53%	2.42 (0.93-6.31)	NA
Paid job women				
Yes[a]	1441	32%	1	1
No	178	31%	0.95 (0.68-1.34)	1.24 (0.84-1.84)
Parity				
Nullipara	799	43%	**2.85 (2.30-3.54)**	**2.74 (2.08-3.60)**
Multipara[a]	848	21%	1	1
Healthy eating and exercise				
Not healthy	207	32%	1.14 (0.82-1.59)	0.98 (0.66-1.44)
Moderately healthy	690	34%	1.21 (0.96-1.51)	1.14 (0.89-1.47)
Healthy[a]	730	30%	1	1
Dental care				
Not good	164	34%	1.12 (0.79-1.58)	1.04 (0.69-1.55)
Moderate[a]	1154	32%	1	1
Good	319	30%	0.93 (0.71-1.22)	0.90 (0.67-1.22)
Smoking				

(Continues)

TABLE 2 (Continued)

	N	%n participants	Unadjusted OR (95%CI)	Adjusted OR (95%CI)
Nonsmoker[a]	1090	33%	1	1
Stopped	498	28%	**0.78 (0.61-0.98)**	**0.70 (0.54-0.91)**
Smoker	53	32%	0.95 (0.52-1.71)	0.52 (0.25-1.06)
Alcohol use				
No[a]	1620	32%	1	1
Yes	11	27%	0.76 (0.21-3.06)	0.68 (0.16-2.83)
Drug use				
Yes	8	13%	0.31 (0.04-2.50)	0.38 (0.04-3.65)
No[a]	1590	32%	1	1
Lifestyle and pregnancy knowledge				
Below average	298	31%	0.89 (0.68-1.17)	**0.56 (0.41-0.78)**
Average[a]	1064	34%	1	1
Above average	253	23%	**0.60 (0.44-0.82)**	0.84 (0.59-1.20)
Stress				
Below average[a]	949	27%	1	
Average	237	38%	**1.65 (1.22-2.22)**	**1.45 (1.04-2.02)**
Above average	447	38%	**1.67 (1.31-2.12)**	**1.42 (1.08-1.87)**
Coping				
Active coping[a]	1363	33%	1	1
Passive/negative coping	188	23%	**0.59 (0.41-0.85)**	0.76 (0.51-1.12)
No coping method used	96	23%	**0.59 (0.36-0.97)**	0.83 (0.46-1.49)
Support				
Below average	679	32%	1.03 (0.83-1.28)	1.07 (0.83-1.37)
Average	135	32%	1.03 (0.69-1.52)	1.00 (0.65-1.54)
Above average[a]	814	31%	1	1

Note: Bold = $P < 0.05$.

[a]Reference group.

longer significant after 4 months postpartum in a study by Benediktsson and colleagues, suggesting that CP participation contributes to reducing stress, and therefore, also might reduce adverse pregnancy outcomes.[18,31] CP participants, however, also scored higher on lifestyle and pregnancy knowledge and more often did not smoke before pregnancy. This may indicate that women who decided to participate were more conscious about their health.

The reasons mentioned by women to participate or not were mostly in line with other studies, for example, participating to gain more knowledge, or declining because of a dislike of groups.[11,12,32,33] Many comments were directed at organizational obstacles to participation in CP, such as groups that were too small to start or continue, and unclear explanations about the content of CP resulting in regrets about the decision to decline participation. One reason for these logistic obstacles may be the lack of experience of health care professionals. The training and start-up of CP was part of this study, and thus, health care professionals were inexperienced in facilitating CP groups at the start of our work. A previous study identified three phases in scaling-up Centering in a health care facility: start-up, expansion, and institutionalization.[34] Although midwives received intensive training, additional supervision, and consultation, the study period might have been too short to move beyond the start-up phase in some practices. Implementing and sustaining CP appears to be challenging because of new demands on health care facilities as they shift from traditional, individual prenatal care visits to group prenatal care.[6,29] Challenges reported in previous studies include difficulties with finding appropriate spaces for group sessions, scheduling, recruitment, and staffing.[29,34]

Participation rates differed between health care facilities. Though we excluded sites that did not follow study protocols, nonetheless, among the remaining midwifery practices, there were still significant differences in participation rates, suggesting that a wide variety of conditions

TABLE 3 Characteristics of study population stratified for adherence rate in Centering Pregnancy (n = 424)

	n	Low attendance (<4) N = 34	Medium attendance (4-6) N = 20	High attendance (>7) N = 370	*P*
Age					
<22	7	14%	14%	71%	0.277
22-25	59	7%	2%	92%	
26-30	166	5%	4%	92%	
31-35	151	11%	6%	83%	
36+	41	10%	7%	83%	
Ethnicity					
Dutch	361	8%	5%	87%	0.616
Non-Western	26	4%	4%	92%	
Other Western	36	14%	3%	83%	
Religion					
Christian	170	9%	5%	86%	0.934
Nonreligious	237	7%	5%	88%	
Other	17	6%	6%	88%	
Marital status					
Married/registered partnership	229	8%	5%	87%	0.395
Living together	181	8%	4%	88%	
Not living together	6	33%	0%	67%	
Single	5	0%	0%	100%	
Educational level					
Low	31	10%	10%	81%	0.204
Medium	131	7%	2%	92%	
High	259	9%	6%	86%	
Paid job partner					
Yes	407	8%	5%	88%	0.696
No	8	13%	13%	75%	
I don't have a partner	6	17%	0%	83%	
Paid job women					
Yes	382	8%	5%	87%	0.435
No	39	13%	3%	85%	
Parity					
Nullipara	149	10%	6%	84%	0.308
Multipara	275	7%	4%	89%	
Healthy eating and exercise					
Not healthy	43	5%	5%	91%	0.670
Moderately healthy	185	9%	6%	85%	
Healthy	192	7%	4%	89%	
Dental care					
Not good	45	11%	7%	82%	0.594
Moderate	290	7%	4%	89%	
Good	83	10%	6%	84%	
Smoking					

(Continues)

TABLE 3 (Continued)

	n	Low attendance (<4) N = 34	Medium attendance (4-6) N = 20	High attendance (>7) N = 370	*P*
Nonsmoker	307	8%	6%	87%	0.753
Stopped	106	9%	3%	89%	
Smoker	10	10%	0%	90%	
Alcohol use					
No	419	8%	5%	87%	0.261
Yes	3	33%	0%	67%	
Drug use					
Yes	3	33%	0%	67%	0.245
No	407	8%	5%	88%	
Lifestyle and pregnancy knowledge					
Below average	70	14%	4%	81%	0.278
Average	294	7%	4%	89%	
Above average	57	7%	7%	86%	
Stress					
Below average	205	7%	3%	90%	0.504
Average	72	7%	6%	88%	
Above average	145	8%	7%	85%	
Coping last month					
Active coping	377	8%	5%	88%	0.900
Passive/negative coping	32	6%	6%	88%	
No coping method used	15	13%	7%	80%	
Support					
Low	183	10%	4%	85%	0.414
Medium	32	9%	6%	84%	
High	205	5%	4%	91%	

at the organizational and professional level play a role in recruitment. Attitudes and perceptions of the professionals themselves may have hampered recruitment; for example, prior assumptions about whether a woman will participate or not, being unsure about the concept of CP, or mis-informing women about the advantages of CP are mechanisms known to influence woman's participation.[33,34] Furthermore, different styles of facilitation by care providers are known to be an important reason for women not continuing with CP once starting, for example, a very didactic style leaving little space for interactive learning and not responding to women's needs.[6]

4.1 | Strengths and limitations

The answers to the questions were self-reported and, therefore, carry the risks of recall bias and the influence of social-desirability pressures when answering. However, the questionnaire could be filled out at home and returned anonymously, which may have increased the probability of authentic answers compared with face-to-face registration by a care provider. Within both groups, the same measurement method was used, decreasing the risk of bias. Another limitation of this study is the inconsistent registration of attendance by the group facilitators, causing some missing data on attendance rate.

The study sample might also be subject to selection bias because women with insufficient Dutch language skills were excluded, and women with lower education levels were less likely to complete the questionnaire or lacked willingness to participate in the study. Women with unhealthy behaviors might have decided not to complete a questionnaire about lifestyle and psychosocial stress out of fear of being stigmatized.

This study is imperative as it is the first study in the Netherlands which looks, in detail, at the characteristics of participants in CP, their relation to attendance rate, and reasons for participating. This information will enable the Netherlands, and perhaps other similar peer nations, to

determine whether this new model of care is capable of reaching vulnerable populations. It has also helped identify possible changes required to increase participation of these women. Only 9% of the women discontinued participation in CP; however, the group was too small to fully understand the characteristics of these women. Future studies, with larger study populations, may provide more information about these women. Furthermore, research is needed to explore strategies to improve the implementation of CP and recruitment of women, especially those with less understanding of lifestyle choices and health consequences, and those women that either smoke or have smoked. As a first step, it is important to increase awareness of the existence, possibilities, and advantages of CP among women, professionals, and policymakers in the Netherlands and to insure that CP groups are spaces free of stigma and shaming so that all people who want to participate have access.

4.2 | Conclusion

CenteringPregnancy was implemented in the Netherlands to improve perinatal health outcomes. After the initial uptake, attendance rates are good, irrespective of demographic differences between women, and few women completely stop attending once beginning care with CP. However, women who have recently stopped smoking and those who score below average on lifestyle and pregnancy knowledge are less likely to start with CP at all. Participation rates between the different health care facilities varied widely. All potential inhibiting factors for the implementation of CP in each health care facility need to be carefully and completely addressed, so that the known benefits of CP on maternal and infant health outcomes can be maximized to help improve population health beginning at birth in the Netherlands.

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DATA AVAILABILITY STATEMENT

Research data are not shared.

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