

*Full Length Research Paper*

# The comparison of low-risk women's birth outcomes and experiences in different sized midwifery practices in The Netherlands

Yvonne Fontein

Midwifery, School of Health Studies, Glasgow Caledonian University, Govan Mbeki, room A306  
Cowcaddens Road, Glasgow G4 0BA, Scotland, United Kingdom. E-mail: [yvonne.fontein@gcal.ac.uk](mailto:yvonne.fontein@gcal.ac.uk). Tel:  
+44 (0)141 331 8376.

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To examine maternal birth outcomes and birth experiences of low-risk women in the Netherlands in different sized midwifery practices. Descriptive study was using postal questionnaires six weeks after the estimated due date. Women were recruited from urban, semi-rural and rural areas from small-sized practices (1-2 midwives), medium-sized practices (3-4 midwives) or large-sized practices (5 or more). 718 Dutch speaking women with uncomplicated pregnancies, a representative sample of women in 143 midwifery practices in the Netherlands who had given birth in the period between 20 April and 20 May 2007. Distribution of place of birth categories and intervention categories, birth experience, woman-midwife relationship and presence of own midwife after referral. Data were analyzed with Statistical Package for Social Sciences (SPSS). Women in practices with a maximum of two midwives were significantly more likely to experience lower rates of referral, interventions in general and specifically pain relief by means of pethidine, CTG registration and unplanned caesarean sections. Women with a maximum of two midwives were significantly more likely to know their midwife or midwives and were more frequently supported by their own midwife after referral in comparison to women in practices with more than two midwives. The presence of the woman's own midwife added value to the birth experience. Women with a maximum of two midwives had higher levels of a positive birth experience than women in practices with more than two midwives. Midwifery practices with a maximum of two midwives contribute to non-interventionist birth and a positive birth experience. Awareness of the study results and further study is recommended to discuss re-organisation of care in order to achieve significant reductions on referral and interventions during childbirth and positive maternal birth experiences.

**Key words:** Midwifery, birth interventions, referral, practice size.

## INTRODUCTION

Dutch midwifery is known for preserving and advocacy of normality of childbirth. Within the Dutch vision of midwifery care, pregnancy and birth are regarded as normal psychological life events which can take place without intervention (Smeenk and Ten-Have, 2003; Benoit et al., 2005). The Dutch midwife is the main provider of midwifery care in the Netherlands and works independently. The midwife works at primary care level and carries a caseload that consists of low-risk women providing care throughout the antenatal, intra partum and postnatal period. An average caseload consist 110 women per midwife per year (Mulder, 2009). Low-risk

women in the Netherlands enter the maternity system at primary care level and have the option to choose their own midwifery practice in their local area and can express the wish to have a home birth or to give birth in a local hospital (poli-clinic birth), which are both facilitated by the independent midwife. In keeping with the gatekeeper's responsibility of the primary care, the midwife screens for deviations in the physiological process of childbirth. Consultation or referral to secondary or tertiary level occurs when complications arise or threaten to arise at any point during childbirth (Brinkman, 2008). When referral occurs, care is handed

**Table 1.** Registered birth outcomes 2007.

	<b>N</b>	<b>Percentage (%)</b>
Total birth rate	181.000	100
Low-risk women	138.272	76
Start labour with primary care midwife	93.365	67.5
Referrals during birth	32.841	35.2
Birth centre/ poli-clinic	5.392	5.
Home birth	27.449	29.4
Instrumental births	19.233	20.6
Caesarean sections	10.923	11.7
Epidural anaesthesia	8.589	9.2
Augmented labour	33.798	36.2

(CBS, 2007; Tieto Enator, 2007).

over to the obstetrician and homebirth is no longer an option. The midwife withdraws care and financial rewarding ends simultaneously as referral takes place, regardless if the midwife remains involved with the woman. According to national guidelines (CVZ, 2003) women are being referred to mainframe services in hospital settings. The organization of maternity care in the Netherlands is based on the division between physiology, which is the midwife's domain, and pathology being the obstetrician's authority.

### Changes in Dutch midwifery care

Despite the vision and aim of Dutch midwives to achieve a physiological, non-interventionist (home) birth, the intra partum intervention rate in the Netherlands has been increasing since the late 90's, in particular medical interventions such as augmentation and instrumental deliveries as a result of referrals because of dystocia in first and second stage of labour (Smeenk and Ten-Have 2003; Reuwer and Bruinse, 2002; Bais, 2004; Elferink, 2005; Putten van, 2005; KNOV, 2006; TietoEnator, 2007). Dutch national figures in relation to birth outcomes are shown in Table 1. While medical interventions increased, simultaneously Dutch midwifery was faced with a range of employment difficulties caused by a shortage of midwives and an increased workload (Janssen and Wiegers, 2005; Waelpuut and Becker, 2005). Midwives favour part-time jobs in group practices and currently from the total number of midwifery practices 15% are solo practices, 18.9% are duo practices and 66.1% are group practices (Muysken et al., 2006). With a majority of group practices with four or more midwives, solo and duo practices tend to become a minority in Dutch midwifery (Janssen and Wiegers, 2005; Muysken et al., 2006; Wiegers, 2005). Evidence suggests that the higher the number of practising midwives per practice, the higher the percentages of referrals during birth (Elferink, 2005; Hulst van der and Hulst van der, 1999;

Wiegers et al., 2000) as well as the number of interventions (Lavender and Chapple, 2004). It is known that a large practice size adversely affects the relationship between the woman and her midwife (Tinkler and Quinney, 1998; Warren, 2003). The above is illustrated through anecdotal evidence suggesting a significant decrease in maternal satisfaction among Dutch women in relation to the experience of an instrumental birth, loss of control during the birth process and the perceived lack of quality of the midwife-woman relationship (Tuijl van, 2006; Vrielink 2006). Rijnders et al. (2008) reported in their study that in the Netherlands one in five women have a negative childbirth experience as a result of these issues.

### Needs of Dutch women

There are records that home birth, a non-interventionist birth, a small amount of midwives per practice, a personal approach and continuity of care are identified as important aspects to women (Wiegers, 2005; Rijnders et al., 2008; Timmermans et al., 2002; Broeders, 2004; Linschoten et al., 2004; Zeeman, 2004; Smit and Friele, 2005; Offerhaus et al., 2006; Wiegers and Janssen, 2006). Although Dutch women are in general reasonably happy and satisfied with their midwifery care, women however have also indicated that current Dutch midwifery provided by independent midwifery practices is not responsive to individual women's needs and wishes and women often do not agree how midwives approach them as individuals (Wiegers, 2005; Zeeman, 2004; Broeders, 2004; Wiegers and Janssen, 2006; Tyler, 2002; Luyben and Fleming, 2005). Earlier studies have focussed on maternal satisfaction, experiences, wishes and expectations, they however did not look at the organization of Dutch independent midwifery practices and how this related to women's birth experiences.

As the midwife in the Netherlands has been identified as the main provider in childbirth, it can be assumed that the midwife plays a profuse role in women's care and that

this can possibly affect woman's experiences of child-birth. Changes of independent practices sizes can have a possible influence on birth outcomes and consequent on maternal satisfaction with the birth experience. These are however assumptions and currently lack evidence.

## THE STUDY

Women are voicing their dissonance for various reasons as well as there is the evidence of current changes in midwifery, knowing increase of interventionist birth and growth of group practices, which possibly adversely affect the midwife's care. Therefore it is of great importance to examine if there is a possible relationship between practice sizes and respectively maternal birth outcomes and the birth experience. This may provide valuable information for Dutch midwives and for midwifery in general. This paper describes part of a wider study which examined women's views about their personal experiences with aspects of Dutch antenatal, intra partum and postnatal care, the woman-midwife relationship and satisfaction with care in relation to practice size. This paper focuses on the study's findings in relation to maternal birth outcomes and birth experiences of low-risk women who have started their labour within the care of an independent midwife in the Netherlands and the possible differences between small sized midwifery practices (1-2 midwives), with medium sized practices (3-4 midwives) and large-sized practices (5 or more midwives).

## MATERIALS AND METHODS

There are 466 midwifery practices in the Netherlands (Muysken et al., 2006) and a total of 273 practices were approached using cluster-stratified sampling. This sampling method was used to effect three proportionate strata (practices with 1 - 2 midwives, 3 - 4 midwives, and  $\geq 5$  midwives) which covered all levels of urbanization and were divided as: urban (at least 1,500 households/km<sup>2</sup>), semi-rural (1,000 - 1,499 households/km<sup>2</sup>) and rural (< 1,000 households/km<sup>2</sup>) (Muysken et al., 2006). Midwives or practice-assistants provided written information and a consent form to pregnant women who were predominantly in the third trimester of pregnancy. A total of 1900 women were invited to participate. It is unclear how many invitation letters were distributed, however 1020 women (53.6%) consented to participate. After consent was given confidentiality and anonymity were guaranteed; midwives had no access to women's responds. Through coding and the involvement of an independent assistant, who wrote out the participant's addresses, the researcher was not aware of the exact geographical location of participating women and/or their midwifery practices. The researcher was informed if perinatal death took place whereas these women were removed from the study to avoid unnecessary affliction. Women were included in the study when they had given birth between 20 April and 20 May 2007. No reminders were sent to acquire data from non-responders due to time and financial constraints. The study involved a cohort of women with uncomplicated pregnancies with a gestational age between 37 and 42 weeks of a single child presented by the vertex who all had received midwifery care in various sized practices in the primary care

setting; at least until the onset of labour. The onset of labour was defined as regular and painful contractions or a spontaneous rupture of the membranes. The study was approved by a university's ethics committee.

## Questionnaire

The questionnaire addressed four areas: (1) Demographic and personal information, (2) antenatal care, (3) labour and birth and (4) postnatal care. Items within these four areas included maternal satisfaction, personal experiences and emotions, and the midwife's care. Personal and demographic characteristics and information were obtained including age, education, relation, family size, date of birth baby, attendance antenatal education, reason for choosing practice, size of midwifery practice, amount of midwives met during antenatal visits, main professional person of support during labour and birth, amount of professional careers during labour and birth, and birth outcomes. The perceived experiences of women were recorded on a Numerical Descriptor Scale with responsive scales from 0 (very negative) to 10 (very positive) categories. The construction of the questionnaire was predominantly based on existing questionnaires from Winters et al. (2004) the Mason Survey (Johnson et al., 2002), van Teijlingen et al. (2003), PLDS (Bailham et al., 2004), W-DEQ (Wijma et al., 1998), CWS (Öhman et al., 2003) and EPDS (Cox et al. 2009). Questions in relation to neonatal birth outcomes were not included in the questionnaire. Although it has been understood that this can influence the maternal experience (Rijnders et al., 2008), this is not mentioned by Dutch women as a contributing reason for decreased maternal satisfaction in regard to care of independent midwives (Rijnders et al., 2008; Beentjes et al., 2008). The questionnaire was field-tested to demonstrate validity through a process of cognitive interviewing and test-retesting. A pilot study among 88 women was undertaken. As a result content, structure, wording and lay-out were refined. One repetitive question was removed and one question was added. The questionnaire was sent out six weeks after the estimated due date.

## Analysis

Power calculation in relation to the sample size required for correlation analysis assumed a medium effect with statistical significance set at  $p < 0.05$ . This showed that a minimum of 592 women were required to be representative of the target population to allow reliable statistical analysis. To ensure reasonably good precision within strata, variable sampling fraction showed that a sample size of 197 women was required from each stratum that had to be equally distributed between urban, semi-rural and rural settings. Variable sampling fraction was chosen opposed to fixed sampling fraction as the strata otherwise would be too small making it likely that the results of the statistical tests would be less valid and reliable.

Exclusion of the study was documented. The data were entered into SPSS 14.0 for Windows and analysis occurred by means of cross tabulation to assess possible correlations between variables and Kruskal-Wallis was used to test significance.

## FINDINGS

Of the 273 approached practices, 141 practices (52.4%) consented to participate and recruited the participants which resulted in three equal proportions of women in relation to practice size represented in urban, semi-rural and rural settings (Table 2). A natural division of women

**Table 2.** Number and percentage of women represented by practice size (1-2, 3-4 and 5 midwives or more) and level of urbanization (urban, semi-rural and rural).

Level of urbanization	Practice size (number and percentage of midwives)			
	1-2	3-4	5 or more	Total
Urban (%)	89/31.8	90/32.1	101/36.1	280/39
Semi-rural (%)	69/32.7	69/32.7	73/34.6	211/29.4
Rural (%)	79/34.8	84/37	64/28.2	227/31.6
Total (%)	234/32.6	248/34.5	236/32.9	718/100

over three equal groups in relation to practice size spontaneously occurred. The division of level of urbanization shows less equality as there are slightly more women in the urban group as well as there is more variation in the urban grouping itself in regard to practice size. This variation in urbanization is representative for the Dutch population of childbearing women (Muysken et al., 2006; CBS Statline, 2007) of the number of 1020 women who had consented to participate, a total of 870 women responded (85.3%) to reach an amount of 718 (70.4%) participants which could be included in the study. A number of 152 (14.9%) women could not enter the study. A number of 100 women did not give birth within the period of study and 52 participants were excluded from the study because of post term gestation after the 42<sup>nd</sup> week of pregnancy (CVZ, 2003) premature birth before the 37<sup>th</sup> week of pregnancy (Benoit et al., 2005) twin pregnancy (Smeenk and Ten-Have, 2003), referral to obstetrician after 37 weeks gestation but before labour (Bais, 2004), perinatal death (Smeenk and Ten-Have, 2003) and induction of labour between 37 and 42 weeks for medical reasons (Brinkman, 2008). Two women could not enter the study as a result of loss of address and 30 women were excluded as their questionnaires were received after the closing date.

The mean age of the participants was between 30 and 34 years of age (range younger than 20 - older than 40). The educational level of the participating women showed that 36.2% highest educational qualification was on a Dutch medium level (MAVO/ MBO/ VMBO) and 35.9% was on higher professional level (HBO). Almost all women were in a relationship. For 54.2% of the women this had been their first birth experience and 45.8% had a subsequent childbirth experience. Table 3 shows the demographic details of the women from each separate group, which shows no significance in variation between the groups.

### Birth experience

Women were asked to assign a grade to how they had experienced the birth process from very negative (0) to very positive (10). The score was analysed in relation to occurrence of interventions (Figure 1) and practice size

(Figure 2). Of the women who had an interventionist birth 34.5% reported this experience as negative (score  $\leq 2$ ) and 29.6% as positive (score  $\geq 8$ ). Of the non-interventionist group 3.8% of the women had a negative experience and 73.1% of the women viewed the birth as a positive experience ( $p = 0.001$ ). Of the women in small-sized practices 60.3% had experienced the birth as positive (score  $\geq 8$ ) and 13.2% as negative (score  $\leq 2$ ). In medium-sized practices 47.2% of the women reported the experience of the birth as positive and 22.9% as negative. In large-sized practices these percentages were respectively 36 and 27.1% ( $p = 0.003$ ).

The participants were representative for the Dutch population of childbearing women with regard to age, marital status, education and parity (CBS Statline, 2007) and all women were equally distributed.

### Maternal birth outcomes

Table 4 shows the results in relation to maternal birth outcomes: place of birth and interventions. Home birth occurred more often in small-sized practices and referral during the birth process transpired less frequently in practices with one or two midwives compared to practices with more than two midwives. Births in small-sized practices were less likely to require administration of pethidine, CTG monitoring or an unplanned caesarean section.

### Woman- midwife relationship

The participants were asked if they knew the midwives joined with the practice and if they had met the practice's midwife who attended the birth previously to this (Figure 3). Women in practices with 1-2 midwives more frequently knew the midwife who attended the birth in comparison to women in practices with more than 2 midwives ( $p = 0.003$ ). Women were also asked if they experienced a relationship with the midwives in their practices by allocating a score of very negative (0) to very positive (10) (Figure 4).

Women in small-sized practices more often experienced a relationship with their midwives compared to women in practices with more than two midwives ( $p = 0.001$ ).

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

	1-2 midwives	3-4 midwives	5 or more midwives	Total (%)
<b>Age</b>				
Younger than 20	1	1	1	3 /0.4
20-24	12	15	16	43/ 6
25-29	72	70	70	212/ 29.6
30-34	105	108	109	322/ 44.8
35-40	43	46	41	130/ 18.1
Older than 40	3	3	2	8/ 1.1
<b>Education</b>				
LBO	5	6	4	15/2.1
MAVO/MBO/VMBO	86	84	90	260/ 36.2
HAVO/WO	22	17	19	58/8
HBO	81	85	92	258/36
University	37	50	37	124/ 17.3
None	0	2	1	3/0.4
<b>Marital status</b>				
Married	168	178	158	504/ 70.2
Cohabiting	67	60	77	204/ 28.4
L.A.T.	0	2	2	4/0.6
Single	1	2	3	6/0.8
<b>Parity</b>				
Primiparous	131	126	132	389/ 54.2
Multiparous	103	120	106	329/ 45.8
<b>Number of children</b>				
1	131	126	132	389/ 54.2
2	70	76	71	217/ 30.2
3	26	33	28	87/12.1
4	6	8	6	20/ 2.8
5 or more	1	3	1	5/0.7

(Age df=2,  $p=0.99$ ; Education df=2,  $p=0.99$ ; Marital status df=2,  $p=1.00$ ; Parity df=2,  $p=0.99$ ).

### Presence of midwife at referral during birth

Of the total of all referrals during the birth process in the study at a third of the referrals a midwife from the woman's own practice remained with the woman in hospital and was present at the birth, although the midwife was no longer the lead career. In small-sized, medium -sized and large-sized practices at 51.9, 36.6 and 18% respectively of referrals midwife continued to stay with the woman and was present at the birth ( $p=0.001$ ; 1-2 midwives in relation to  $\geq 2$  midwives per practice). When a woman's own midwife was present at a referred birth most women expressed (mean 9.02) (with a

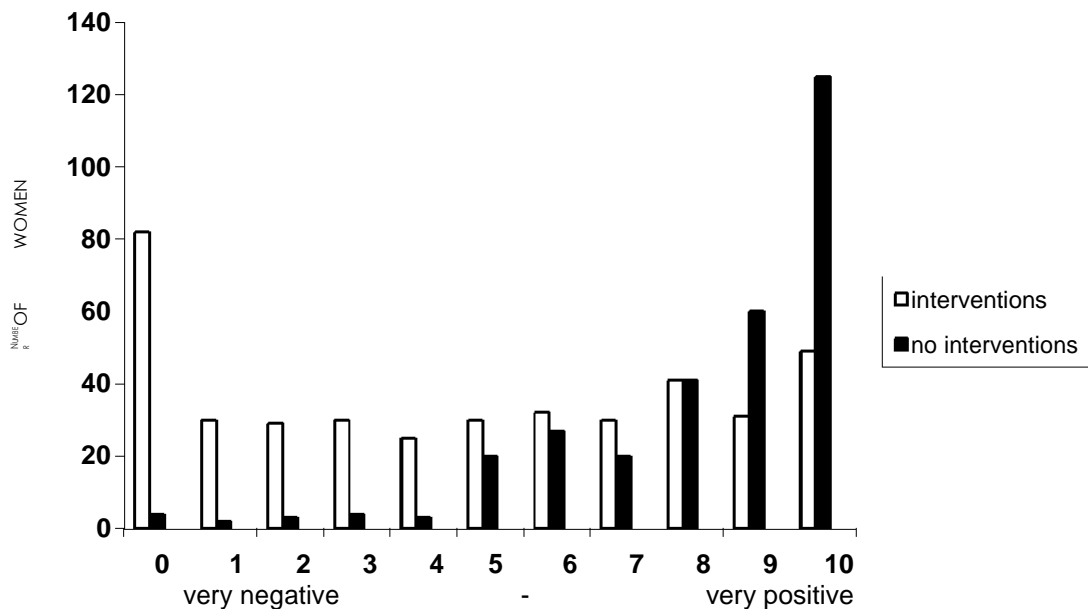
score from 0 to 10) that this gave extra value to their birth experience. The majority of women (mean 9.34) answered the hypothetical question if the presence of their own midwife would have given extra value, if he or she would have been present. This shows the preference of women to have a known midwife present at the birth process ( $p = 0.0001$ ).

### DISCUSSION

The women participating in the study are representative of ethnic Dutch women who use midwifery services in the

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

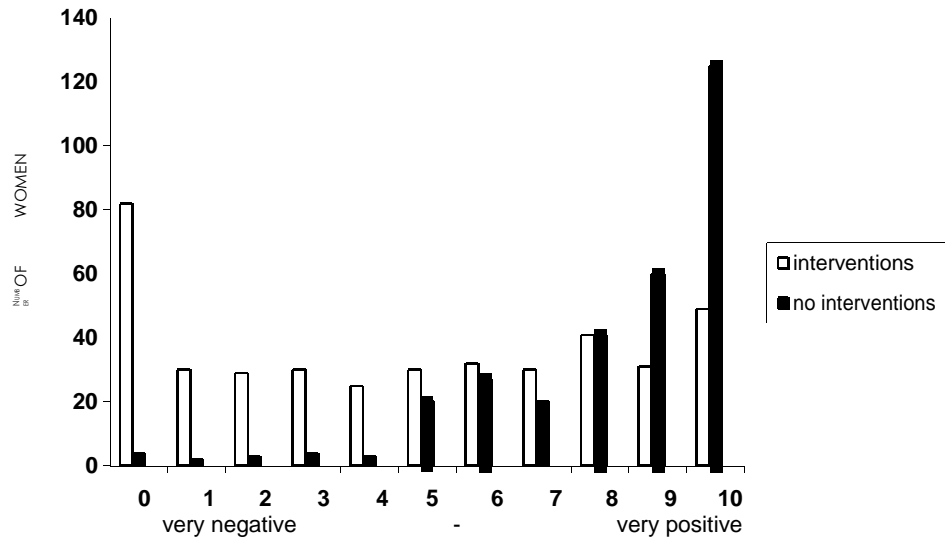
Maternal birth outcomes	Small N=234, N (%)	Medium N=248, N (%)	Large N=236, N (%)	p-value small practices compared to medium- sized and large-sized practices together
Homebirth (midwife-led)	126 (53.8)	86 (34.7)	56 (23.7)	0.016
Poli-clinic birth (midwife-led)	31 (13.2)	35 (14.1)	30 (12.7)	0.06
Referral to obstetrician during birth (Consultant-led)	77 (32.9)	127 (51.2)	150 (63.6)	0.0006
Pethidine administration	22 (9.4)	29 (11.7)	43 (18.2)	0.044
Epidural	10 (4.3)	23 (9.3)	43 (18.2)	0.106
Acceleration of birth by means of IV syntocinon	36 (15.4)	69 (27.8)	72 (30.5)	0.51
CTG	61 (26.1)	108 (43.5)	129 (54.7)	0.015
Instrumental delivery	21 (9)	31 (12.5)	44 (18.6)	0.62
Unplanned caesarean section	8 (3.4)	14 (5.6)	25 (10.6)	0.046
Episiotomy	47 (20.1)	81 (32.7)	96 (40.7)	0.067



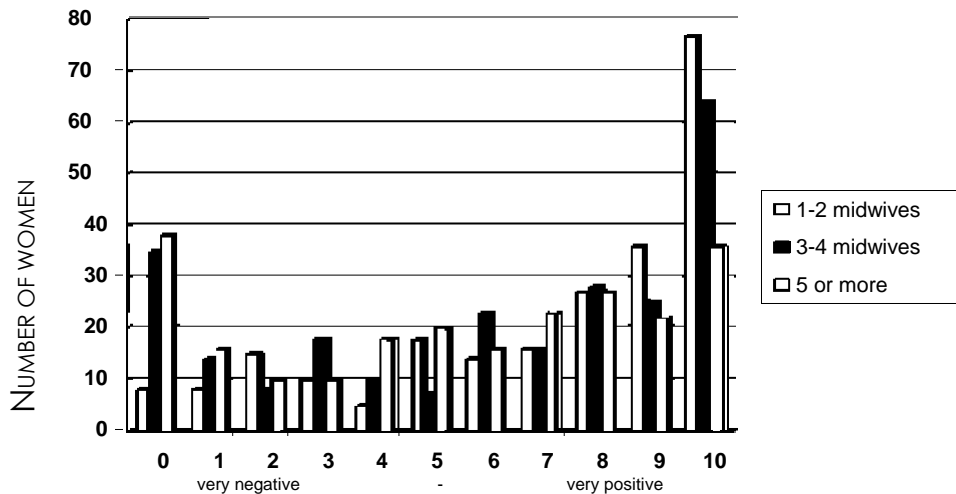
**Figure 1.** Birth experiences of women reported from very negative (0) to very positive (10) in relation to intervention.

primary care setting according to the background variables of age, parity, marital status and education, homebirth, referral, pain relief, CTG and unplanned caesarean sections (TietoEnator, 2007; CBS Statline, 2007). As speaking Dutch was one of the inclusion criteria, women in the study are not representative for ethnic minority groups in the Netherlands. In the study the number of referrals, interventions and pain relief during birth were consistent with national figures. However, women in the study had lower rates of

acceleration of the birth process and instrumental deliveries but higher rates of episiotomies in comparison with national data (TietoEnator, 2007; CBS Statline, 2007). The percentages of primiparous and multiparous women in the study were representative for the Dutch low-risk population and distribution of women in the various practices was representative for the level of urbanization and division of practices per region (Muysken et al., 2006; CBS Statline, 2007). There was no significant variation between demographic details women



**Figure 1.** Birth experiences of women reported from very negative (0) to very positive (10) in relation to intervention.

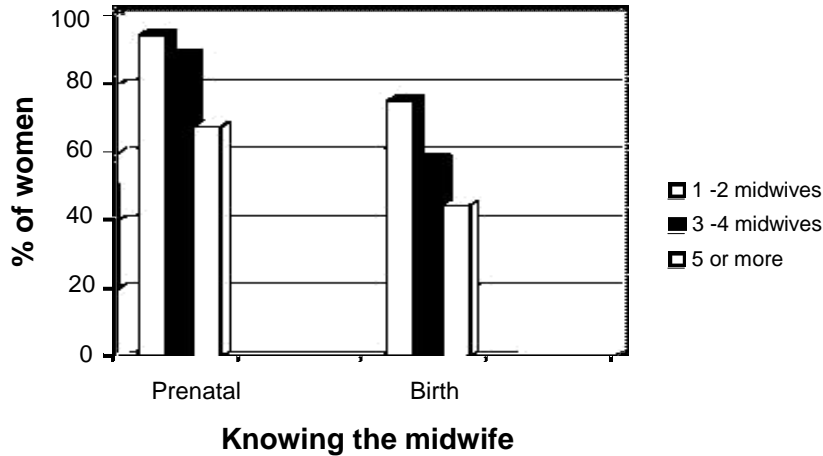


**Figure 2.** Birth experiences of women reported from very negative (0) to very positive (10) in relation to practice size.

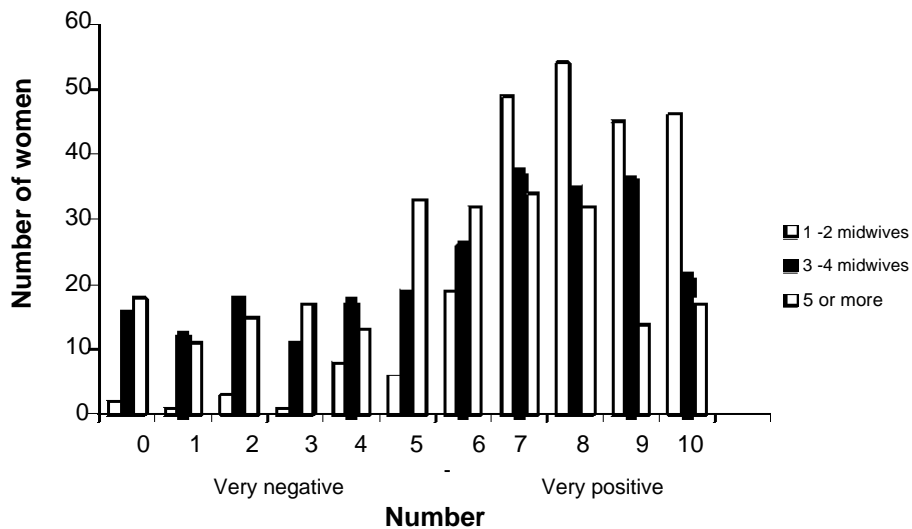
among the different practice sizes, which would have allowed to explain the differences in outcomes between women in the study and national data. The difference between national data and those in the study can possibly be explained in the disproportionate distribution from women in the practices within the study compared to the true division of various sized practices within the Netherlands. As a result of variable sampling fraction small practices were over-represented in the study compared to the existence of small practices (Muysken et al., 2006).

As women were approached by their midwives to

participate in the study selection bias could have occurred. It is unknown how many women were exactly approached and if midwives consciously and categorically asked certain women to participate which implies that socially desired answers would be given. As 53.6% of the consent forms were returned, it raises the question if selection by midwives had occurred, forms had not been handed out at all or if only women personally interested in the topic of study had decided to take part. From the consenting women 85.3% returned the questionnaires, which raises the question if more articulate women were addressed wanting either to voice



**Figure 3.** The percentage of women knowing the midwife during pregnancy and during birth in relation to practice size.



**Figure 4.** Experiencing the relationship with midwives reported from very negative (0) to very positive (10) in relation to practice size.

their satisfaction or dissatisfaction. To decrease selection bias women were approached during pregnancy to participate in the study as at that point in time women had only experienced a part of their care in pregnancy and the study intended to examine the total period of the childbirth experience, from the antenatal to postnatal period onward. Although midwives were aware of the nature of the study, they were however not familiar with the exact content of the questionnaire. Gratitude bias was reduced as questionnaires were returned directly to the researcher. The process of coding and recoding made it impossible to locate the women's practices. It was possible that over-representation of practices with definitive characteristics influenced the findings. As the

data reflects the period of one month, over-representation is very unlikely, however the sampling technique employed could be open to criticism as it may seem to give rise to an element of bias.

The questionnaire was sent out six weeks after the estimated due date which can still be a time in which women are recovering from birth and getting adjusted to their life (Teijlingen et al., 2003). Retrospective questionnaires can create potential for selectivity and inaccuracy in recall and could have influenced the reliability of the findings (CBS Statline, 2007), but as Hodnett (2002) concluded there may not be an optimum time to evaluate the process of childbirth.

The study showed that women in small-sized practices



had more often a home birth and less medical interventions as well as more positive birth experiences in comparison to women in medium and large-sized practices. Referral and interventions had a negative effect on how women experienced the birth process. These findings correlate with Rijnders et al. (2008), who concluded that women with unplanned interventionist hospital births are less satisfied with their birth experience in contrast to women with an uncomplicated homebirth. Olde (2006)) also concluded in his study that obstetrical interventions such as instrumental and operative births contribute to a negative experience of birth.

The study showed that women in small-sized practices more often had non-interventionist (home)birth and experienced higher levels of satisfaction with their birth experience in comparison to women in practices with more than two midwives. Women in small-sized practices more commonly experienced a relationship with their midwife, knew their midwife more often and were more frequently supported by their own and familiar midwife during birth in contrast to women in larger sized practices. These findings conform results from earlier international studies in relation to continuity of care and carer (Tinkler and Quinney, 1998; Warren, 2003; Tyler, 2002; Hodnett, 2002; Sandall et al., 2001; Stevens and McCourt, 2001) and support the idea that a small team of midwives, who are familiar to the woman, positively contribute to a positive and an uncomplicated birth process.

However, home birth, knowing the midwife and continuity of care after referral is not only associated with the number of midwives in a practice but also with practice organization and local policies. At the time of the study there were certain areas in the Netherlands where home birth was not an option as a result of closure of local hospitals and therefore women's homes and the nearest hospital were too far distanced in order to arrive in time when an emergency would occur (VWS, 2008). This could have been a possible confounding variable out of midwives control but with profound effect on midwifery care and subsequently on women's choices. However as this was more an exception than a rule, involving a small number of women, it can be assumed that this had no effect on the study's findings. It is known that women in rural areas more frequently give birth at home in comparison to women in urban areas. It is however known that the home birth rate is influenced by the higher rates of women of ethnic minorities group within the urban areas (Anthony, 2005; Amelink-Verburg et al., 2007). The study did not look at the correlation between place of birth and level of urbanization or to local policies or organization of care in the individual practices. The under-representation of women from ethnic minorities within the short time-span of the study, makes it unlikely to have significant influence on the study's findings.

Variables such as practices' annual caseload, time-management age, workload and experience of individual midwives are known aspects to influence midwifery care (Wiegers, 2005; Simmons, 2003) could have influenced the validity of the findings. In a large practice with five midwives or more, care can be organized in such a way that women only see one or two midwives antenatally. In a small practice with only one or two midwives it does not automatically imply that these midwives spend more time and attention to women than midwives in a practice with, for example, four midwives. Midwives in a duo practice with a shared caseload of 250 women per year might have less time to spend per antenatal visit or birth in comparison to a practice existing of four midwives with a shared caseload of 350 women per annum. In small sized practices it is also very well possible that women are more often confronted with unfamiliar locum midwives as in large-sized practices, simply because they have more midwives to share the roster with. Initially it was attempted in the study to examine the relation between practice size, caseload size and the organization of care within the respective practices. A questionnaire was developed in order to do this. The responses of participating practices were however too small to use for reliable analysis.

To identify causal relationships between maternal birth outcomes and experiences and caseload size per practice might give more insight in how the factor 'time' is managed within practices and how this is associated with referrals and interventions. To provide a deeper understanding of women's individual thoughts and feelings in relation to birth experiences, future study is required to gain more insight into this issue.

Subsequently it would be interesting to further examine midwives' attitudes, motivation and views towards continuity of carer, to assess whether this is a feasible, desirable and sustainable option for midwives as a method of care or as a vision to fit in with Dutch maternity services.

Despite the limitations of the study, it can be carefully suggested that the number of midwives per practice play an important role in the care for childbearing women. Reflection and discussion of the study's results seem to be relevant for Dutch midwifery care and maternity services. The development of larger sized practices has been a result of an increasing workload as to deal with this situation. Currently there is no shortage of midwives in the Netherlands but instead a decrease in the birth rate is noticed as well as recently the average of the annual caseload has slightly been decreased from 120 to 110 women per midwife per year (Mulder, 2009). In the interest of women and women's health a situation should be created with a higher level of continuity. To address this issue there is a need of support of the Dutch government and health insurances. The support of development of small midwifery practices and financial acknowledgment for continuity of care after referral can

play a profound role in a change to less referrals and interventions during birth in Netherlands as well as to satisfaction with women's experiences of the birth of their children.

The findings of the study are relevant to Dutch midwifery care and the culture of the setting where it is conducted, it may however not necessarily reflect generically to secondary or tertiary care or other cultures.

## Conclusion

In this study women in the Netherlands in midwifery practices consisting of one or two midwives were less frequently referred and underwent less medical interventions during birth in comparison to women in practices with more than two midwives. Women in solo and duo practices had higher levels of satisfaction with the birth experience than women in larger sized practices. Knowing the midwife and presence of a known midwife after referral during birth is important to women and occurred more often in practices with a maximum of two midwives as in practices with more than two midwives. Caution in relation to transferability is advised. In order to re-organise care discussion of the study's findings which seems relevant, however, further study is required.

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