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Outcome of planned home and planned hospital births in low risk pregnancies: prospective study in midwifery practices in the Netherlands

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Abstract

Objective—To investigate the relation between the intended place of birth (home or hospital) and perinatal outcome in women with low risk pregnancies after controlling for parity and social, medical, and obstetric background.

Design—Analysis of prospective data from midwives and their clients.

Setting—54 midwifery practices in the province of Gelderland, Netherlands.

Subjects—97 midwives and 1836 women with low risk pregnancies who had planned to give birth at home or in hospital.

Main outcome measure—Perinatal outcome index based on "maximal result with minimal intervention" and incorporating 22 items on childbirth, 9 on the condition of the newborn, and 5 on the mother after the birth.

Results—There was no relation between the planned place of birth and perinatal outcome in primiparous women when controlling for a favourable or less favourable background. In multiparous women, perinatal outcome was significantly better for planned home births than for planned hospital births, with or without control for background variables.

Conclusions—The outcome of planned home births is at least as good as that of planned hospital births in women at low risk receiving midwifery care in the Netherlands.

Introduction

In the Dutch maternity care system midwives are qualified to provide independent care for women with uncomplicated pregnancies.^{1,2} They also identify and select the women who, because of existing or anticipated problems, require care from an obstetrician.^{1,3} Twenty five years ago, women receiving primary care all gave birth at home, but since the 1970s they have been able to choose between home birth and hospital birth under the care of a midwife or general practitioner. This has led to a substantial reduction in home births (from 69% of all births in 1965 to 31% in 1991)⁴ and an increase in the proportion of births attended by midwives (from 35% in 1965 to 46% in 1992). About half of births attended by midwives now occur in hospital, with women and their babies generally being discharged within a few hours after birth.

There is growing concern among primary care givers that these short-stay hospital births (termed "poliklinische bevallingen") enhance the risk of medicalisation and may ultimately eliminate the home birth option. Indeed, referral to an obstetrician occurs more frequently for women with a planned hospital birth than for those choosing home birth.⁵ The reasons for this difference are unclear. Self selection may be an important confounder, with the healthiest and most affluent women choosing home birth. Also the choice of home or hospital may influence referral to specialist care, as resources are more likely to be used if they are closer at hand.



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Table 1—Non-optimal characteristics in perinatal outcome index among planned home and planned hospital births in primiparous and multiparous women

| Non-optimal outcome | % (No) of primiparous women (n = 840) | | % (No) of multiparous women (n = 996) | |
|--|---------------------------------------|---------------------------|---------------------------------------|---------------------------|
| | Home births (n = 471) | Hospital births (n = 369) | Home births (n = 669) | Hospital births (n = 327) |
| Labour and delivery | | | | |
| Medication in first stage labour | 21.2 (100) | 23.6 (87) | 6.1 (41) | 8.9 (29) |
| Ruptured membranes for >12 hours | 13.4 (63) | 19.0 (70)* | 6.4 (43) | 7.3 (24) |
| Amniotic fluid not clear | 14.2 (67) | 16.5 (61) | 12.7 (85) | 14.1 (46) |
| Duration first stage >10 hours | 24.6 (116) | 22.8 (84) | 3.7 (25) | 6.4 (21) |
| Duration second stage >60 minutes | 28.9 (136) | 28.7 (106) | 1.3 (9) | 1.8 (6) |
| Non-cephalic presentation at birth | 3.2 (15) | 5.1 (19) | 1.9 (13) | 1.8 (6) |
| Assisted delivery | 29.5 (139) | 29.8 (110) | 4.3 (29) | 6.1 (20) |
| Perineal laceration | 78.3 (369) | 74.8 (276) | 52.0 (348) | 63.0 (206)** |
| Episiotomy | 52.4 (247) | 52.8 (195) | 15.8 (106) | 25.1 (82)*** |
| Referral to specialist care in labour | 36.7 (173) | 40.7 (150) | 8.7 (58) | 12.8 (42)*** |
| Insufficient cervical dilatation | 8.9 (42) | 9.2 (34) | 0.9 (6) | 2.8 (9)* |
| Inadequate progress in second stage | 12.1 (57) | 9.5 (35) | 0.4 (3) | 1.2 (4) |
| Fetal distress | 4.5 (21) | 4.9 (18) | 0.6 (4) | 0.9 (3) |
| Induction or augmentation of labour | 3.6 (17) | 5.1 (19) | 1.9 (13) | 2.1 (7) |
| Instrumental vaginal delivery | 13.8 (65) | 15.7 (58) | 1.2 (8) | 1.2 (4) |
| Caesarean section | 3.0 (14) | 4.1 (15) | 0.1 (1) | 0.6 (2) |
| Suturing third degree perineal tear | 1.5 (7) | 1.4 (5) | 0.6 (4) | 0.6 (2) |
| Medication in third stage labour | 60.5 (285) | 65.9 (243) | 37.2 (259) | 59.3 (194)*** |
| Placental retention | 0.4 (2) | 0.8 (3) | 0.7 (5) | 2.8 (9)* |
| Blood loss ≥1000 ml | 1.9 (9) | 4.1 (15) | 0.6 (4) | 3.7 (12)*** |
| Blood transfusion | 0.8 (4) | 1.1 (4) | 0 | 1.8 (6)** |
| Other problems (including need for sedation) | 10.4 (49) | 19.0 (70)*** | 5.2 (35) | 9.8 (32)* |
| Neonatal condition | | | | |
| Non-optimal birth weight | 17.4 (82) | 17.3 (64) | 16.6 (111) | 19.0 (62) |
| <10th centile | 4.9 (23) | 8.9 (33) | 6.1 (41) | 5.2 (17) |
| >90th centile | 12.5 (59) | 8.4 (31) | 10.5 (70) | 13.8 (45) |
| Apgar score <9 at 5 minutes | 7.0 (33) | 9.2 (34) | 4.5 (30) | 3.7 (12) |
| Perinatal death | 0 | 0.5 (2) | 0.6 (4) | 0 |
| Transfer to neonatal ward | 11.7 (55) | 16.5 (61) | 4.5 (30) | 7.0 (23) |
| Congenital anomalies | 1.5 (7) | 2.4 (9) | 1.3 (9) | 3.1 (10) |
| Birth trauma | 0.6 (3) | 0.5 (2) | 0.6 (4) | 0.9 (3) |
| Problems in first 24 hours | 16.6 (78) | 25.7 (95)** | 4.5 (30) | 11.0 (36)*** |
| Problems in first week | 7.0 (23) | 6.8 (25) | 2.7 (18) | 3.1 (10) |
| Non-optimal gestational age | 4.9 (23) | 5.1 (19) | 5.0 (33) | 2.8 (9) |
| <37 weeks | 2.1 (10) | 2.7 (10) | 1.1 (7) | 1.3 (4) |
| ≥42 weeks | 2.8 (13) | 2.4 (9) | 3.9 (26) | 15. (5) |
| Condition of the mother after birth | | | | |
| Mastitis | 0 | 0 | 0 | 0.3 (1) |
| Endometritis | 0 | 0.5 (2) | 0.1 (1) | 0 |
| Cystitis | 0 | 0 | 0.1 (1) | 0.3 (1) |
| Medication in puerperium | 0 | 0 | 0.3 (2) | 0.3 (1) |
| Other problems | 0.4 (2) | 0.3 (1) | 0 | 0.6 (2) |

* P<0.05; ** P<0.01; *** P<0.001.

We prospectively studied results of planned home births and planned hospital births in women with low risk pregnancies receiving care from midwives. We wished to assess whether the planned place of birth would lead to differences in perinatal outcome after the confounding effects of obstetric, medical, and social background were controlled for.

Patients and methods

STUDY DESIGN

The study was conducted prospectively in two periods between 1990 and 1993 among women with low risk pregnancies receiving midwifery care in the province of Gelderland. A total of 97 midwives in 54 practices enlisted 2301 women, who signed an informed consent form and received a questionnaire about their social background and their preference for birth at home or in hospital. The midwives also received questionnaires about their clients, one to complete before delivery and one afterwards. A copy of the birth notification form (a voluntary registration system used by most midwives and obstetricians) with data on medical and obstetric background, labour, and delivery was added to the completed questionnaires.

For 294 women (13.8%) the birth notifications indicated obstetric referral before the onset of labour,

which was an exclusion criterion, and for another 171 (8.0%) information from the midwives could not be checked against birth notifications because they were not available. The study population thus consisted of 1836 women, 840 primiparae and 996 multiparae, of whom 1140 had chosen home birth and 696 hospital birth. For 116 (6.3%) women, information was confined to what had been received from their midwife and the birth notification form; these women were excluded only from the subanalyses relating social background to outcome.

DATA ANALYSIS

Data variables were divided into background and outcome variables according to whether the variable was or could be known before the onset of labour. A value of 1 or 0 was awarded to each, based on the optimality concept originally developed by Precht⁶ and Touwen *et al.*,⁷ in which optimality indicates "the best possible"; it avoids judgments on what is normal or abnormal when defining, for example, "no episiotomy" as optimal. The items were then summed into separate indexes for perinatal background and perinatal outcome,⁸ reflecting the number of optimal items in each index.

The perinatal background index,⁸ consisting of 31 items, considers as "best possible" the absence of any

Table 2—Percentage non-optimal characteristics in the perinatal background index among planned home and planned hospital births in primiparous and multiparous women

| Non-optimal background | % (No) of primiparous women (n = 840) | | % (No) of multiparous women (n = 996) | |
|--|---------------------------------------|--------------------------|---------------------------------------|--------------------------|
| | Home birth (n = 471) | Hospital birth (n = 369) | Home birth (n = 669) | Hospital birth (n = 327) |
| Social and medical background | | | | |
| Single mother† | 2.2 (10) | 2.7 (9) | 0.8 (5) | 2.4 (7) |
| Ethnic minority† | 2.1 (10) | 5.2 (19)* | 2.2 (15) | 5.6 (18)* |
| No attendance at antenatal classes† | 13.7 (61) | 20.9 (70)* | 41.8 (265) | 41.6 (119) |
| Smoking† | 25.4 (113) | 29.2 (98) | 25.8 (116) | 24.9 (72) |
| Alcohol use >2 glasses a week† | 4.3 (19) | 3.6 (12) | 5.4 (35) | 4.5 (13) |
| Drug intake† | 0.2 (1) | 0.9 (3) | 0.5 (3) | 0 |
| Non-optimal Quetelet index† | 29.0 (128) | 23.5 (77) | 27.9 (176) | 35.6 (99)* |
| <18.8 | 6.2 (27) | 5.5 (18) | 6.6 (42) | 5.4 (15) |
| >24.2 | 22.8 (101) | 18.0 (59) | 21.3 (134) | 30.2 (84) |
| Non-optimal maternal age | 18.0 (83) | 21.9 (79) | 43.8 (288) | 45.1 (145) |
| <20 years | 0.6 (2) | 1.7 (6) | 0 | 0 |
| >31 years | 17.4 (81) | 20.2 (73) | 43.8 (288) | 45.1 (145) |
| Pre-existent hypertension or diabetes | 0.4 (2) | 0 | 0 | 0 |
| Reproductive history | | | | |
| History of infertility | 0.2 (1) | 0.8 (3) | 0.1 (1) | 0.3 (1) |
| More than one abortion | 1.9 (9) | 0.8 (3) | 4.8 (32) | 4.0 (13) |
| Preterm birth <28 weeks | 0 | 0 | 0.4 (3) | 0.6 (2) |
| Preterm birth 28-36 weeks | 0 | 0 | 0.3 (2) | 1.8 (6)* |
| Intrauterine fetal death | 0 | 0 | 0 | 0.3 (1) |
| Instrumental (vaginal) delivery | 0 | 0 | 1.9 (13) | 8.0 (26)*** |
| Caesarean section | 0 | 0 | 0 | 0.6 (2) |
| Infant with low weight for gestation | 0 | 0 | 0.9 (6) | 0 |
| Pregnancy induced hypertension | 0 | 0 | 0.4 (3) | 0.6 (2) |
| Complications in pregnancy | 0 | 0 | 0.4 (3) | 3.7 (12)*** |
| Present pregnancy | | | | |
| Vaginal bleeding | 1.1 (5) | 1.9 (7) | 1.6 (11) | 2.1 (7) |
| Pre-eclampsia | 1.1 (5) | 2.2 (8) | 0.6 (4) | 1.5 (5) |
| Haemoglobin <6.8 mmol/l | 14.2 (69) | 18.4 (68) | 18.8 (126) | 23.9 (78) |
| Diastolic blood pressure >90 mm Hg | 4.9 (23) | 5.1 (19) | 3.4 (23) | 2.8 (9) |
| Uncertain dates | 4.9 (23) | 8.7 (32)* | 3.9 (26) | 5.8 (19) |
| Rhesus sensitisation | 0 | 0 | 0.1 (1) | 0 |
| Other complications | 14.2 (67) | 13.6 (50) | 10.5 (70) | 10.4 (34) |
| Specialist advice required in pregnancy† | 16.5 (76) | 18.9 (69) | 16.0 (106) | 21.0 (68) |
| Non-optimal No of antenatal visits† | 13.5 (62) | 14.1 (51) | 16.9 (112) | 10.5 (34)* |
| <10 | 11.3 (52) | 11.1 (40) | 16.2 (107) | 9.9 (32) |
| >15 | 2.2 (10) | 3.0 (11) | 0.7 (5) | 0.6 (2) |
| Amniocentesis | 0.2 (1) | 0 | 2.2 (15) | 1.8 (6) |
| Cardiotocography during pregnancy | 1.7 (8) | 2.7 (10) | 1.9 (13) | 2.4 (8) |
| Drugs prescribed or taken in pregnancy† | 78.6 (341) | 77.8 (242) | 83.1 (518) | 89.0 (242)* |

*P<0.05; **P<0.01; ***P<0.001. †Some missing data in this category were accounted for in the percentages.

social, medical, or obstetrical problem before and during pregnancy. Because of its expected skewness in a low risk population and the poor internal consistency expected with many unrelated items (verified by Cronbach's $\alpha = 0.29$),⁹ the index was used in a simplified, dichotomous manner. Women at or above the median were considered to have a relatively favourable background, the others as having a less favourable background.

The perinatal outcome index consists of 36 items, of which 22 relate to childbirth, nine to the condition of the newborn, and five to the condition of the mother afterwards.⁸ Optimal values were based on the principle that a maximally healthy mother and baby with minimal intervention for both of them constitutes the best possible birth.⁸⁻¹⁰ The perinatal outcome index therefore considers not only the result, but also the means by which it is achieved.

Primiparous women and multiparous women were considered separately because of well known differences in outcome. All analyses were based on the planned rather than the actual place of birth because referral to hospital during labour is usually indicative of anticipated or existing problems. Including these women among hospital births would bias the results of planned hospital births negatively and home births positively.

Power analysis, based on detecting a significant difference in the combined frequency of non-optimal

factors during and after childbirth, led us to aim for a sample size of 1600 women, with approximately half being multiparous and preferably half choosing hospital birth. Because women in Gelderland more often choose home than hospital birth, only women choosing hospital birth were recruited in the final four months of the study.

Differences in individual background and outcome items were assessed by the χ^2 test and differences in the composite indexes by Student's *t* test.

Results

Table 1 shows the various perinatal outcomes in relation to the planned place of birth. Interventions—including referral, medication, and episiotomy—were more common in primiparous than parous women, confirming the need to consider these women separately.

In primiparous women, the individual outcomes showed few differences between home and hospital. Intervals longer than 12 hours between rupture of membranes and birth, "other problems" (including the need for sedation), and neonatal problems in the first 24 hours (including benign items, such as checkup after instrumental delivery or blood glucose measurement, that cause mothers to worry) occurred more often in planned hospital births than in planned home births (table 1). In multiparous women there were more

Table 3—Perinatal outcome index in planned home births and planned hospital births controlled for background variables in low risk pregnancies

| Characteristics of women | Mean perinatal outcome index (SD) | Difference (95% confidence interval) |
|---|-----------------------------------|--------------------------------------|
| Primiparous women | | |
| Background relatively favourable (index ≥ 29) | | |
| Home birth planned (n = 223) | 31.56 (3.17) | } 0.60 (-0.10 to 1.30) |
| Hospital birth planned (n = 133) | 30.96 (3.50) | |
| Background relatively unfavourable (index <29) | | |
| Home birth planned (n = 182) | 30.63 (3.57) | } 0.24 (-0.55 to 1.03) |
| Hospital birth planned (n = 151) | 30.39 (3.75) | |
| Multiparous women | | |
| Background relatively favourable (index ≥ 28) | | |
| Home birth planned (n = 367) | 34.17 (1.85) | } 0.90 (0.52 to 1.28) |
| Hospital birth planned (n = 140) | 33.27 (2.24) | |
| Background relatively unfavourable (index <28) | | |
| Home birth planned (n = 215) | 33.69 (2.45) | } 0.73 (0.17 to 1.29) |
| Hospital birth planned (n = 111) | 32.96 (2.38) | |

differences between planned hospital births and planned home births: rates of referral during labour, inadequate progress, perineal laceration, episiotomy, medication in third stage of labour, placental retention, postpartum haemorrhage, and blood transfusion (table 1). Primiparous women ($t = 1.99$, $P < 0.05$) and multiparous women ($t = 5.56$, $P < 0.001$) with a planned home birth scored better on the perinatal outcome index than those with planned hospital birth.

Background characteristics differed little between women choosing home or hospital birth (table 2). Primiparous women from ethnic minorities, those with uncertain dates, and those not attending antenatal classes more often chose hospital. Multiparous women were more likely to choose a hospital birth if they belonged to an ethnic minority; had a non-optimal body mass (Quetelet index outside the range 18.8-24.2; $P < 0.05$); had a history of obstetric complications, preterm birth, or instrumental delivery; or had received medication (including vitamins and iron) in pregnancy (table 2).

The median value of the perinatal background index (our cutoff between favourable and unfavourable) was 29 points for primiparous women and 28 points for multiparous women. A statistical difference in background between planned home births and planned hospital births was found for primiparous women ($\chi^2 = 4.21$, $P = 0.04$ compared to $\chi^2 = 3.60$, $P = 0.06$ in multiparous women).

Table 3 shows the relation between the perinatal outcome index and the planned place of birth, after control for favourable or unfavourable background. After controlling for background, we found no difference in perinatal outcome between planned home birth and planned hospital birth in primiparous women. In multiparous women, the perinatal outcome index controlled for background was significantly better with planned home birth than with planned hospital birth (table 3).

Discussion

MEASURING PERINATAL OUTCOME

Measuring the quality of maternity care has never been easy. For many years, perinatal mortality rates were used for this purpose, often with little regard for the value and validity of such data.¹¹ Now, with rates well below 10 per 1000 births, they have lost virtually all of their utility for measuring quality of care in the Western world. Other measures have yet to find acceptance, but it is unlikely that a single measure will ever be satisfactory for a process that involves mother and baby and for which the end result is not the only outcome that matters. We therefore opted for a differentiated approach that considers both the mother and the baby and that takes both the results and the way in which they are achieved into account. To this end and with a

view to obtaining a single measure for maximal outcome with minimal intervention^{8 10} we constructed a composite perinatal outcome index based on an optimality concept developed in the 1970s for identifying a cohort of infants with a flawless start in life.^{6 7}

OUTCOME IN RELATION TO BACKGROUND

Using this tool we compared the outcomes of planned home births with those of planned hospital births for primiparous and multiparous women after controlling for the confounding effects of social, medical, and obstetric background. Without control for this background, the perinatal outcome in primiparous women was significantly better for planned home births than for planned hospital births. This is mainly because nulliparous women with a less favourable background tend to prefer hospital, whereas those with a favourable background tend to choose home birth. This may be different in other countries, but it is not unexpected in the Netherlands, where home birth has been an approved option for a long time.^{1 5 12} After background variables were controlled for, the perinatal outcome for primiparous women with low risk pregnancies was similar for those who planned home births and those who planned hospital births.

For multiparous women with low risk pregnancies, the perinatal outcome of planned home birth was significantly better than that of planned hospital birth, whether or not background was controlled for. A closer look at the background characteristics shows that multiparous women with a complicated previous pregnancy, including instrumental delivery in our study, were more likely to opt for hospital birth than for home birth. Their history may put them at higher risk of encountering problems again, and this may account for some difference in outcome between home and hospital. However, the multiparous women in our study were at low risk and their history would not have prompted referral to an obstetrician. We also analysed our data after excluding women with a less than optimal obstetric history, and the perinatal outcome index remained better for planned home birth than planned hospital birth ($t = 4.75$, $P < 0.001$). Further research will be necessary to determine how much of the difference in outcome can be attributed to obstetric history and how much to the chosen place of birth. In the meantime and on the basis of our results, the place of birth seems to affect perinatal outcome in women at low risk.

IMPACT OF CHOICE

Ideally—and particularly when offset against virtually 100% hospital births in the rest of Europe—better evidence is needed before generalisations are made on the merits of planned home birth. Such evidence is not easy to gather. It is well known that a variety of psychological factors can influence people's health and interfere with medical treatment. In obstetrics, levels of anxiety have been found to predict obstetric complications.¹³ Choice itself (allowing women to choose home or hospital birth) may influence levels of anxiety and apprehension and thereby also the outcome of maternity care. Evidently, the elimination of choice—as would be necessary in a randomised trial—could by itself have a major impact on perinatal outcome by inducing insecurity and anxiety in women assigned to give birth in a manner that they do not prefer. In areas where the patient's choice has a profound effect on outcome, random comparisons eliminating choice will give unreliable estimates of true differences.¹⁴ Therefore, in the Netherlands, where choosing between home or hospital birth is an integral feature of the system, randomised controlled trials between home birth and hospital birth would not produce generalisable results even if it were possible to mount such trials.

Our research has shown that, for women with low risk pregnancies in the Netherlands, choosing to give birth at home is a safe choice with an outcome that is at least as good as that of planned hospital birth. We also found indications that there is some self selection among women who can decide for themselves where to have their baby, and that this preordains outcome, albeit to a limited extent. It is important, therefore, that the home birth option remains available, but especially that women at low risk are really given a free choice.

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Home versus hospital deliveries: follow up study of matched pairs for procedures and outcome

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Abstract

Objective—To assess procedures and outcomes in deliveries planned at home versus those planned in hospital among women choosing the place of delivery.

Design—Follow up study of matched pairs.

Setting—Antenatal clinics and reference hospitals in Zurich between 1989 and 1992.

Subjects—489 women opting for home delivery and 385 opting for hospital delivery; the women comprised all those attending members of the study team for antenatal care and those attending the reference hospital for antenatal care who could be matched with the women planning home confinement.

Main outcome measures—Need for medication and incidence of interventions during delivery (caesarean section, forceps, vacuum extraction, episiotomy), duration of labour, occurrence of severe perineal lesions, maternal blood loss, and perinatal morbidity and death.

Results—All women were followed up from their first antenatal visit till three months after delivery. Referrals during pregnancy (n = 37) and labour (70), changes of mind (15 home to hospital, eight hospital to home), and 17 miscarriages resulted in 369 births occurring at home and 486 in hospital. During delivery the home birth group needed significantly less medication and fewer interventions whereas no differences were found in durations of labour, occurrence of severe perineal lesions, and maternal blood loss. Perinatal death was recorded in one planned hospital delivery and one planned home delivery (overall perinatal mortality 2.3/1000). There was no difference between home and hospital delivered babies in birth weight, gestational age, or clinical condition. Apgar scores were slightly higher and umbilical cord pH lower in home births, but these differences may have been due to differences in clamping and the time of transportation.

Conclusion—Healthy low risk women who wish to deliver at home have no increased risk either to themselves or to their babies.

Introduction

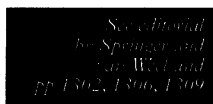
Since the 1940s hospital has been considered to be the safest place for a woman to give birth. Probably partially owing to optimal standards of hygiene in hospital and the availability of equipment perinatal and maternal death rates in Switzerland are among the lowest in the world (8.0/1000 and 0.02/1000, respectively (1990 data)). Questions about possibly increased risks to healthy mothers and their children in hospital were first raised in the 1980s.¹

In 1990, 99% of all deliveries in Switzerland took place in hospital.² As delivery has become safer, however, so there has been growing desire among women to move away from interventions and hospitals to more "natural" childbirth. A team of general practitioners and midwives in the canton of Zurich (population 1.1 million) responded to this wish by offering the possibility of home delivery to those who requested it. The Swiss health care system is private for all outpatient care, so every woman may choose where to deliver. Fees are covered by health insurance, to which everybody subscribes.

We report a quality control study of hospital versus home delivery conducted by the team, which was organised for the purpose. As only few studies had systematically compared home and hospital deliveries³⁻⁶ the team studied matched pairs. For ethical and practical reasons a randomised trial was not possible.⁷

Methods

This was a prospective cohort study with matched pairs. Doctors and midwives of the study team recruited all pregnant women at their first antenatal visit with one of them between March 1989 and March 1991 or when at a subsequent visit they first decided to have a home delivery. The entry criterion for each category was the intention to deliver at home or in hospital (recorded during the first antenatal visit or when the decision was taken) and an outcome criterion the place where delivery actually occurred. The team had no formal policy on criteria for accepting women for home delivery. Hence reasons for hospital referral were also recorded as an outcome in the home delivery group.



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