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# Elderly nulliparae in midwifery care in Amsterdam

**Yvonne Smit, Sicco A. Scherjon and Pieter E. Treffers**

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**Objective:** to compare labour complications, after an uncomplicated pregnancy, of first births in women 35 years and older with women 20–30 years old.

**Design:** an explorative prospective cohort study.

**Setting:** four independent midwives' practices in Amsterdam.

**Participants:** a group of 49 elderly nulliparae was compared with a group of 99 younger nulliparae.

**Measurements and findings:** percentage of referrals and reasons for referral during pregnancy and labour, mode of delivery and obstetric outcome.

**Key conclusions:** no significant differences in referrals were found between the two compared groups. Obstetric outcome was not different between the groups, except for a lower birthweight in the elderly group. A trend is seen for a raised percentage of referrals during labour in the older group. This is almost completely explained by a failure to progress during first and second stages of labour. Related to this was a trend for an increased incidence of caesarean section in the older group of women.

**Implications for practice:** after selection, the elderly nullipara, under the care of a midwife, does not have an increased risk of fetal distress or other emergency factors compared to the younger nullipara. However, the referral rates during labour, both of younger and older women, are high.

## INTRODUCTION

The 'elderly primigravida or nullipara' was defined in 1958 by the International Federation of Obstetricians and Gynaecologists as aged 35 years or more (Tuck et al 1988). According to the literature elderly nulliparae have a higher risk of pregnancy induced hypertension, gestational diabetes, fetal growth retardation, preterm deliveries, caesarean sections, vaginal operative deliveries, breech presentations and lower Apgar scores (Spiekerman et al 1986, Brassil et al 1987, Tuck et al 1988, Berkowitz et al 1990, Jonas et al 1991, Adashek et al 1993, Vercellini et al 1993, Prysak et al 1995). In most studies perinatal mortality is not increased; this might be explained by better obstetric surveillance, although the studies lack statistical power to support this connection. In developed countries a trend for delayed childbearing raises the question of

whether women who are elderly nulliparae by choice, are at a lower risk than the elderly nulliparae during the first half of this century, who were supposed to be at a higher risk than their younger counterparts.

Obstetric care in the Netherlands differs from the care described by most authors: screening by midwives (primary care) takes place during pregnancy, which may result in a referral to secondary care. A list of risk factors devised by the Medical Insurance Board (Ziekenfondsraad) is used as a guideline for referral (van Alten et al 1989, Treffers et al 1990, Treffers 1993). The remaining selected group of healthy women is considered to be at low risk, receiving complete obstetric care by a midwife.

The question remains whether, in this group, the elderly nullipara is still at increased risk of complications during labour, or, in other words, is she (and her infant) safe during labour in primary care, under

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the responsibility of the midwife? We have tried to answer this question in a prospective study performed in midwives' practices.

## METHODS

In the years 1991 and 1992 midwives in four practices in Amsterdam were asked to participate in this study. All nulliparae of 35 years (in the 20th week of gestation) or older, were selected after their first visit to the midwife. They were matched with two younger nulliparae (from 20 up to and including 29 years in the 20th week of gestation) who 'booked' in succession to the elderly nullipara, in the same practice and from the same ethnic group. A proforma, completed by the midwife, was stapled to the records and returned after delivery. Anonymity was guaranteed, because the form did not contain the name or birth date of the woman. Only the year, practice and study registration number of all participants (study or matched-control group) was registered. Information on obstetric factors was collected prospectively. After the data were coded they were put in a computer database. No detailed information was available on socio-economic status. To standardise for socio-economic differences the matched younger nulliparae were obtained from the same practice as the elderly nulliparae. Women who were considered to be at high obstetric risk for reasons other than their age and, therefore, had to be referred to secondary care before 20 weeks' gestation, were excluded.

Data were collected on 51 elderly and 102 younger women. In the beginning of pregnancy two women from the elderly group were excluded; one had a twin pregnancy and the other's pregnancy was terminated because of trisomy 21. Two other women were referred to secondary care during pregnancy and delivered preterm babies with serious congenital malformations (one with hydrocephalus and the other with transposition of the great vessels). They were not included in the calculation of obstetric outcome variables. In the younger group three women were excluded; one because of a twin pregnancy and two women moved to another country. After exclusion 49 elderly nulliparae and 99 younger nulliparae

remained in the study. During prenatal care a further selection took place based on complications and risk factors observed, resulting in a healthy group, with uncomplicated pregnancies, hereafter called 'the selected low-risk group (74 in the younger group and 36 in the older group). Data on this selection procedure were collected and analysed.

Deliveries of the selected low-risk group took place, under the responsibility of the midwife, in hospital or at home, depending on the preference of the woman, irrespective of age. We studied the referrals during labour, the mode of delivery and the obstetric outcome.

## Analysis

Group means were compared using the *t*-test, while differences in outcome between the groups were analysed using  $\chi^2$  (Mantel-Haenszel) and Fisher Exact if the cell number was less than five. The level of significance was chosen at 0.05 (two sided).

## FINDINGS

### Age

Distribution of the ages of the nulliparae is shown in Figure 1.

### Referral during pregnancy

During pregnancy 25 women (25%) in the younger group and 13 (26%) in the elderly group were referred to secondary care for the reasons shown in Table 1. There was no difference between the groups in the proportion of women who were referred. The incidence of pre-eclampsia did not differ between the groups.

### Referral during labour

Of the remaining 74 younger women, 34 (46%) were referred to secondary care during labour. Of the remaining 36 elderly women, 22 (61%) were referred to secondary care during labour (Table 2), but this difference was not significant ( $\chi^2=3.37$ ,  $df=1$ ,  $p=0.14$ ). The reasons for referral are shown in Table 2.

The main reason for referral during labour was failure to progress during the first or second stage, (24 % of the younger group and 42 % of the older) ( $\chi^2=3.47$ ,  $df=1$ ,  $p=0.07$ ). The second and third most frequent reasons for referral were meconium in the amniotic fluid and prelabour rupture of the membranes of more than 24 hours, but the differences between the groups were not significant (Table 2). Seven per cent of the younger women were referred because of signs of fetal distress. None of those in the elderly group were referred for this reason, but the difference was not significant (Table 2).

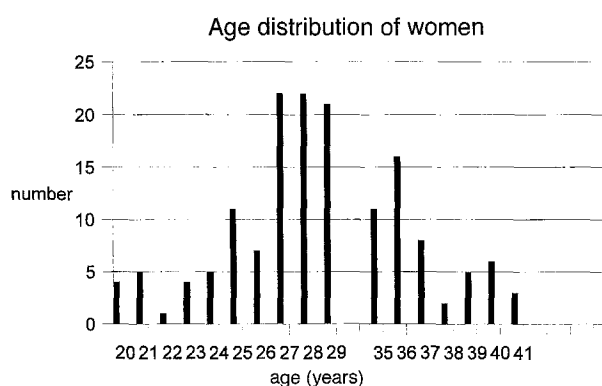


Figure 1 Age distribution of women.

Table 1 Reasons for referral during pregnancy							
	20–30 years (n=99)		35+ years (n=49)		$\chi^2$	df	p
	n	%	n	%			
No referral	74	75	36	73	0.03	1	0.87
Post-term pregnancy	8	8	1	2	FE	–	0.27
Pre-eclampsia	6	6	3	6	FE	–	1
Pre-term labour	3	3	3	6	FE	–	0.4
Fetal growth retardation (GR)	1	1	3	6	FE	–	0.11
Breech presentation	5	5	2	4	FE	–	1
No engagement of fetal head	1	1	0		FE	–	1
Irregular fetal heartbeat	1	1	0		FE	–	1
Placenta praevia	0		1	2	FE	–	0.33

FE = Fisher Exact test

Table 2 Reasons for referral in labour							
	20–30 years (n=74)		35+ years (n=36)		$\chi^2$	df	p
	n	%	n	%			
No referral	40	54	14	39	2.21	1	0.14
Failure to progress in 1st stage	7	9	8	22	3.32	1	0.06
Failure to progress in 2nd stage	11	15	7	19	0.37	1	0.54
Meconium	4	5	3	8	FE	–	0.68
Prelabour rupture of the membranes (PROM)	3	4	3	8	FE	–	0.39
Signs of fetal distress	5	7	0		FE	–	0.17
Post partum mother	3	4	1	3	FE	–	1
Post partum baby	1	1	0		FE	–	1

FE = Fisher Exact test

Four women were referred because of complications postpartum. One woman in each group was referred with retained placenta and two women in the younger group were referred because of postpartum haemorrhage. One baby of a younger mother was referred, suspected of having meconium aspiration. After one day of observation in a neonatal intensive care unit the baby was discharged and went home with his mother.

### Obstetric outcome

Gestational duration at delivery, the length of the second stage, birthweight and blood loss were examined for differences between the two groups. The only difference was in birthweight where babies born to women in the total elderly group had a lower mean birthweight (3253 gm) when compared with babies born to women in the younger group (3489 gm) (Table 3). The incidence of small for gestational age (SGA) babies (<5<sup>th</sup> centile, Kloosterman 1970) was four in the elderly group; three of these women had been referred for intra-uterine growth retardation during pregnancy. In the younger group there were two SGA babies; one of these had been detected during pregnancy and referred to secondary care.

### Mode of delivery

There was no difference in spontaneous or assisted vaginal delivery between the two groups whether for the whole group or the selected low-risk groups (Table 4). There was no difference in the caesarean section rates between the groups for the total group, but there was a trend for an increased rate in the older group of women in the selected low-risk group (Table 4).

### Paediatric outcome

There were no differences in Apgar (Table 5). Four babies born to women in the older group and eight in the younger group had an Apgar score lower than 7 at one minute. Two babies born, by caesarean section, to women in the elderly group still had a low Apgar score at five minutes after delivery.

### DISCUSSION

The participating midwives' practices are situated in different neighbourhoods in Amsterdam, representing high and middle socio-economic levels. Because there are indications that delayed childbearing is influenced by educational level and participation in the labour market (Bonsel & Van der Maas 1994),

**Table 3 Obstetric Outcome**

	Total group					Selected low-risk group				
	20–30 years (n=99)	35+ years (n=47)	t-test	df	p	20–30 years (n=74)	35+ years (n=36)	t-test	df	p
Gestational age (days)	278 SD 22	279 SD 12	0.46	144	>0.6	277 SD 23	281 SD 8	1.64	108	>0.05
Duration of second stage (minutes) (CS excluded)	53 SD 33 (n=10)*	67 SD 44 (n=9)*	2.05	125	>0.05	52 SD 34 (n=5)*	70 SD 42 (n=7)*	1.46	96	>0.3
Birthweight (gm)	3489 SD 542	3253 SD 626	2.38	144	<0.05	3500 SD 506	3368 SD 520	0.862	108	>0.3
Blood loss (ml)	410 SD 324	408 SD 449	0.04	144	>0.9	381 SD 223	325 SD 220	0.86	108	>0.5

\*Women who underwent caesarean section were excluded from the calculation of duration of second stage. Excluded numbers are given in brackets.

**Table 4 Mode of delivery**

	Total group				Selected low-risk group			
	20–30 years (n = 99)		35+ years (n = 47)		20–30 years (n = 74)		35+ years (n = 36)	
	n	%	n	%	n	%	n	%
Spontaneous	71	72	28	60	54	73	22	61
Assisted vaginal delivery	18	18	10	21	15	20	7	19
Caesarean section	10	10	9	19	5	7	7	19

Differences between abdominal and vaginal deliveries are not significant;  $\chi^2 = 2.29$ ,  $df = 2$ ,  $p = 0.13$  in the total group and in the selected low-risk group  $p = 0.06$  (Fisher Exact). Differences between spontaneous and assisted deliveries are not significant;  $\chi^2 = 2.14$ ,  $df = 2$ ,  $p = 0.14$  in the total group and in the selected low-risk group  $\chi^2 = 1.58$ ,  $df = 2$ ,  $p = 0.21$ .

**Table 5 Apgar scores**

	Total group					Selected low-risk group				
	20–30 years (n = 99)	35+ years (n = 47)	t-test	df	p	20–30 years (n = 74)	35+ years (n = 36)	t-test	df	p
Apgar score one minute	mean 8.6 median 9	mean 8.5 median 9	0.26	144	>0.7	mean 8.9 median 9	mean 8.2 median 9	1.662	108	>0.1
Apgar score five minutes	mean 9.7 median 10	mean 9.6 median 10	0.57	144	>0.6	mean 9.9 median 10	mean 9.5 median 10	1.94	108	>0.05

the applicability of the findings of this study to nulliparae in the lower socio-economic groups, and to those in less urbanised regions, in the Netherlands or the rest of the world, remains open for discussion.

During pregnancy, the group of elderly women receiving prenatal care from the midwife showed no difference in the rate of referrals, nor in reasons for referral when compared with younger women. It is interesting that, in contrast to the literature, the percentage of women with pre-eclampsia was not raised in the group of elderly women. Possibly, this is owing to the fact that in the Netherlands selection at the beginning of pregnancy already excludes women

with chronic hypertension from care provision by the midwife.

During labour there was a high rate of referral, both in the elderly and the younger group. This was not a completely unexpected finding: nationwide the percentage of referrals for nulliparae during labour has been reported as 39% (Lems et al 1991) and a similar percentage has been reported in the UK (MacVigar et al 1993). Earlier studies in the Netherlands (Eskes 1989) showed a steady increase of referrals of nulliparous women during labour: 1969–1973 = 12%; 1974–1976 = 13%; 1977–1979 = 18%; and 1980–1983 = 25%. Since then a further

rise in referrals has apparently taken place. This is of great concern to midwives in the Netherlands, because the high referral rate during labour is a serious threat to the Dutch system of maternity care. It may be used as an argument for hospitalisation of all nulliparae during labour, or even against the independent practice of midwives. Our data show that the majority of referrals were not based on emergency factors, such as fetal distress, but on 'failure to progress'. Further investigation is necessary to determine the exact meaning of 'failure'. An explanation could be that, to an increasing extent, both the woman and the midwife do not accept the duration of normal labour without interference. As well as the high rate of referral during labour for all nulliparae, there was also a trend for an increased referral rate in the elderly group in labour.

The obstetric outcome in both groups was good; no differences were found in gestational duration, Apgar scores and post partum blood loss, however, birthweight was significantly lower in the total group of elderly nulliparae. In the selected low-risk group this difference was smaller and not significant; it did not lead to a higher incidence of fetal distress during labour. Literature which showed differences in these outcome variables (Tuck et al 1988, Vercellini et al 1993, Prysak et al 1995, Fretts et al 1995) did not adjust for the incidence of risk factors, such as pre-eclampsia, social class or having prenatal care. After correction for these factors (Berkowitz et al 1990) differences in outcome disappeared. The length of second stage of labour in the elderly group was longer, but not significantly, a finding in agreement with the increased numbers of referrals during labour in the elderly group.

The caesarean section rate was higher in the elderly group, though not significantly. If we consider the selected low-risk group, this difference almost reaches significance ( $p=0.06$ , Fisher Exact). This finding is in accordance with data from the literature (Spiekerman et al 1986, Brassil et al 1987, Tuck et al 1988, Adashek et al 1993, Vercellini et al 1993, Prysak et al 1995) where a trend for a higher rate of referrals during labour was found as well as a longer length of the second stage of labour in the group of the elderly women. This might indicate that, to a certain extent, mechanical factors hamper the progress of labour in elderly nulliparae.

In conclusion, the current 'elderly' woman, giving birth for the first time, is at no higher risk (for fetal distress or other emergency factors) than her younger counterpart, if selection at the first visit to the midwife is made to distinguish the healthy women from women with medical or obstetric pathology necessitating secondary care. The findings from this study suggest that the second stage of labour in elderly nulliparae is more complicated, possibly owing to mechanical factors. Elderly nulliparae need to be informed that they run a considerable risk of referral to secondary care during labour.

Apparently, the same holds true for younger nulliparae. To further investigate the observed trend a larger study is necessary, and is currently in progress in seven independent midwives' practices in and around Amsterdam.

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