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Home birth or short-stay hospital birth in a low risk population in The Netherlands.

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ABSTRACT

In the Netherlands women with low risk pregnancies can choose whether they want to give birth at home or in hospital, under the care of their own primary caregiver. The majority of these women prefer to give birth at home, but over the last few decades an increasing number of low risk women have chosen a hospital birth, leaving hospital with their baby shortly after delivery. As both this trend and its Effects have not been extensively investigated, a study was designed to examine the determinants of the choice for home or hospital birth. It was hypothesized that the choice would be determined by a combination of personal and social factors. Structural equation modelling indicated that social factors, especially the confidence of significant others in home birth and the expectations of hospital care during childbirth, were by far the strongest predictors of choice. Personal factors, measured as perceived health status before and during pregnancy, the existence of minor symptoms and fear of pain or complications during birth, were found to play an indirect role. Demographic variables such as age, education and urbanization showed no Effect. These findings indicate that emphasizing the good results and excellent quality of Dutch maternity care at home is likely to support and strengthen the general acceptance of home birth.

INTRODUCTION

The Netherlands is one of the few industrialized countries where planned home birth is not virtually extinct, although home birth rates have rapidly declined in the past thirty years from 68.5% in 1965 to 31.5% in 1992 (CBS, 1995). One of the important features of Dutch maternity care is risk-selection: women with increased risk of complications during pregnancy or childbirth are referred to a specialist obstetrician and will give birth in hospital,

while women who stay at low risk throughout their pregnancy -- approximately 60% of all pregnant women in 1991 (Bonsel and Van der Maas, 1994) -- receive care from a primary care practitioner, a midwife or a family physician. These women can also freely choose to give birth at home or in a hospital from which they are discharged to postpartum home care within 24 h. In 1991, 45% of all births required no referral, either before or during labor, to a specialist obstetrician, 31% were home and 14% were hospital births (Bonsel and Van der Maas, 1994; CBS, 1995). In Dutch these births are referred to as "poliklinische bevallingen" (polyclinic births, i.e. births in hospital without being a "hospital patient") to indicate that, while they occur in hospital, they do not involve formal hospitalization or referral to hospital-based care and caregivers. The freedom of choice for women with low risk pregnancies to give birth at home or in hospital, introduced in the seventies, has inadvertently led to a strong increase in the "poliklinische", or shortstay hospital births. This, in turn, led to a growing concern among caregivers and policy makers about unwarranted medicalization of childbirth, as witnessed by higher referral rates to specialist care and higher intervention rates among women choosing short-stay hospital birth (Damstra-Wijmenga, 1984; Berghs and Spanjaards, 1988) compared with women choosing home birth. To abate this process of unwarranted medicalization without restricting the freedom of choice for women with low risk pregnancies it is necessary to gain more insight in the determinants of their choice.

The Dutch maternity care system is based on primary caregivers, midwives and general practitioners, who are responsible for the care of women with low risk pregnancies, and on specialist obstetricians who provide care for high risk pregnancies. Women with low risk pregnancies can choose where to give birth, at home or in hospital, assisted by independent midwives or general practitioners. Those with high risk pregnancies give birth in hospital under supervision of obstetricians.

In this paper we present one of the central issues of an extensive research project about midwifeassisted births after normal pregnancies, to explain why some women with low risk pregnancies want to give birth at home, while others, with similarly low risk pregnancies, prefer a short-stay hospital birth.

In another Dutch study, conducted among 170 nulliparous working women living in a large urban area (Kleiverda, 1990; Kleiverda et al., 1990), educational level was found to be predictive of the preferred place of birth: higher levels being associated with a higher preference for home birth. The other major factor was how women expected that the environment would influence their feelings, attitudes and behavior. Women choosing a home birth expected to feel more at ease and to be able to relax better at home than in hospital, while those choosing to give birth in hospital emphasized the perceived safety of the hospital and the availability of expert knowledge (Kleiverda et al., 1990). Hingstman et al. (1993) reported on the preference for home or hospital birth among the general population and found a relation with age, education and income, with younger women and women of higher social-economic status more often than others preferring home birth.

Recent research in New Zealand (Abel and Kearns, 1990) has indicated that the choice of home as a birth place was related to control, continuity and the familiarity of the home. Studies from Canada have shown that women interested in a birth place other than the usual labor ward (alternatives were birthing room, birth centre or home birth) were more likely than others to be older, married, well-educated, interested in midwifery services and to have had a low-intervention vaginal birth (Soderstrom et al., 1990). Women who had planned their birth at home were also more likely than those with unplanned home births or hospital births to be primiparous, to have attended prenatal classes and to have obtained regular prenatal care (Abernathy and Lentjes, 1989). A Swedish study comparing alternative maternity care to conventional (hospital) care has shown that women preferring alternative care are older, better educated, in better physical health, and less anxious of the approaching birth and have more positive expectations (Walderstrom and Nilsson, 1993).

In all these studies, except for the two Dutch ones, the Kleiverda study and the Hingstman study (Kleiverda, 1990; Hingstman et al., 1993), hospital birth is what is expected, however. Anything else is considered as "alternative" care, which is unusual, exceptional, and often conducted within a project recruiting those women who are drawn to it. This is unlike home birth in the Netherlands, which is still considered standard maternity care and remains the most common choice made by women with low risk pregnancies. For these women there is no medical or other compelling reason to go to the hospital. Therefore, their choice of where to give birth is a highly individual choice, based on their own personal and psychological backgrounds and expectations.

These studies reveal a variety of factors, demographic, medical and psychological, that are related to the choice of place of birth. In the present study we have also considered psychosocial factors. Our hypothesis was that the choice between giving birth at home or in hospital not only depends on medical and personal/psychological influences but is also largely influenced by social considerations. Indeed, birth is also, to a large extent, socially and culturally determined and the influence of significant others in such processes is well documented (Ajzen and Fishbein, 1980). The attitudes and opinions of partner, parents, and friends, or the number of home births among family and friends may well be a strong determinant of where a woman chooses to give birth. Admittedly, the categorization of variables into personal/psychological and social is inevitably somewhat arbitrary, but the first refers predominantly to the woman's own feelings and perceptions while the second refers to more objective and verifiable data.

DATA AND METHODS

The study was conducted prospectively in two periods between 1990 and 1993 in one province in the Netherlands (Gelderland) among women with low risk pregnancies receiving midwifery care. Only women still under the care of a midwife at the onset of labor were eligible. Ninety-seven midwives in 54 practices participated in the study, enlisting a total of 2,301 women who agreed to participate by signing an informed consent form. These women received a postal questionnaire with return envelope, approximately four weeks before the expected date of birth, asking about their social background, their health status, their preferences for the place of birth, and their family and friends' opinions. A single reminder was sent if necessary. A copy of the birth registration form including medical and obstetric background and details on the delivery was added to the completed questionnaires. No birth record was available for 171 births and 294 birth records related to non-eligible women who had been referred to an obstetrician before the onset of labor. This reduced the number of participants to 1,836 women, aged between 17 and 44 with a mean age of 30. Of them, 1,720 (93.7%), 785 primiparae and 935 multiparae, returned the questionnaire. The variables used to explain the choice of these women for home birth or short-stay hospital birth are:

Demographic variables

- age in years.
- educational level (low, medium, high).

Medical variables

- perceived health status before and during pregnancy, the experience of the pregnancy and perceived problems during the pregnancy, measured with a 5-point Likert-type scale with 4 items (Cronbach's α 0.76), ranging from "very positive" to "very negative".
- minor (physical) symptoms before and during pregnancy, measured with a standard list of complaints used in earlier research (Foets and Van der Velden, 1990; Foets and Sixma, 1991). The list consists of minor complaints or symptoms that do not alter the risk status.
- obstetric history, optimal or not (only applicable to multiparous women).

Personal/psychological variables

- feelings towards birth, ranging from fear of pain and of complications to confidence and trust, measured on a 5-point Likert-type scale with 16 items (Cronbach's α 0.73).
- previous birth experience, (only applicable to multiparous women) measured with a 5-point Likert item, ranging from "very positive" to "very negative".
- experience of hospital care, direct or indirect (through admission in hospital of a close relative), measured with 5-point Likert items, ranging from "very pleasant" to "not pleasant at all".
- expectations of hospital care in relation to childbirth, ranging from negative feelings and low expectations to positive feelings and high expectations, measured with a 5-point Likert-type scale with 20 items (Cronbach's α 0.90).
- perceived suitability of own house, measured with a 5-point Likert item, ranging from "very well suited" to "not suited at all".

Social variables

- previous place of birth, at home or in hospital (only applicable to multiparous women).
- social confidence/trust in home birth, respondent's opinion and perception of the opinion of significant others concerning the place of birth, measured by balancing the number of people preferring hospital birth with the number of people preferring home birth (with a maximum of nine answers).
- home births among family members and friends, measured by balancing the number of significant others who gave birth at home with the number of significant others who gave birth in hospital (with a maximum of seven answers).
- urbanization (rural, small town, larger town).
- distance to the nearest hospital, measured in estimated minutes to reach the hospital by car.

To test our hypothesis analyses were conducted with a LISREL-VI-program, with the above mentioned variables as independent variables, hypothetical personal/medical and social factors as intervening latent variables, and the choice for home birth or short-stay hospital birth as dependent variable. LISREL is a general computer program for estimating the unknown coefficients in a set of linear structural equations. The variables in the equation system may be either directly observed variables or unmeasured latent variables (hypothetical construct variables) which are not observed but related to observed variables. The latent variables appear as underlying causes of the observed variables, but they can also be treated as caused by observed variables or as intervening variables in a causal chain (Jöreskog and Sörbom, 1986). An R^2 value indicates the percentage of the variance in the dependent variable that is explained by the model. The fit of the model with the data is assessed by an goodness-of-fit index, adjusted for degrees of freedom (adjusted goodness-of-fit index: AGFI). This measure lies in principle between 0 and 1 where 0 indicates a very bad fit and 1 a very good fit.

Each analysis is carried out for nulliparous and multiparous women separately.

RESULTS

The study population consisted of 1,720 women, of whom 1,076 (62.6%) planned to give birth at home, and 631 (36.7%) planned to give birth in hospital, while 13 (0.8%) had not decided yet when completing the questionnaire. For these 13 women the information on the birth record about the planned birth place was used. Table 1 shows the summary statistics of all variables used in the analyses, with range, mean, standard deviation and number of cases, for nulliparae and multiparae. Among the women expecting their first child 43% prefer to give birth in hospital. For multiparae this percentage is 31%.

Table 2 shows the bivariate analyses of the relation between the preferred birth place and the independent variables. Demographic variables show no direct relation with the preferred birth location. The mean age of the nulliparous women is 28.3 years both for women

choosing a home birth and for those preferring a hospital birth. The mean age of the multiparous women is 31.0 years in both groups. Educational level in itself is also unrelated to the preferred birth place. This factor is only of influence when urbanization is taken into account: in the larger cities women with higher education more often prefer a home birth than those with lesser education (data not in the table).

Medical variables are related to the preferred birth location for multiparous women only. Women with an optimal obstetric history, in good health and with few obstetric or health related symptoms prefer to give birth at home. Personal/psychological variables are equally important for both groups: negative experiences with hospital care, low expectations of hospital care during childbirth, and positive feelings towards the coming birth, a suitable house and, for multiparae, positive memories of a previous birth, are all related to the choice for home birth.

Of the social variables urbanization is not related to the choice for home or hospital birth for both groups and the distance to the nearest hospital is of no importance for nulliparous women.

The variables were also considered in a multivariate framework. First a confirmatory analysis was conducted of the hypothesized structural equation model. This analysis included for nulliparae all 12 and for multiparae all 15 independent variables, two intervening "latent" variables: "personal/medical orientation" and "social orientation" and as dependent variable the choice for home or hospital birth. This was followed by exploratory analyses to improve the model. Because the different scales of the variables hamper interpretation of the estimated coefficients, all independent variables except urbanization, previous place of birth, and obstetric history, were standardized (mean 0, sd 1). The variables age, education, urbanization and, for multiparae, the obstetric history, were found to be of no influence in the models and they were, therefore, removed. The LISREL-program is equipped with the ability to suggest improvements of the model (by means of modification indices) and the useful suggestions were incorporated in the final analysis. The resulting models are shown in Figs 1 and 2, where the observed variables are enclosed in rectangles and the latent variables are encircled. Because the independent variables (except "previous birth place" for multiparae) are standardized, the coefficients in the left hand of the models and the coefficient between the two latent variables can be interpreted as correlations. Those between the latent variables and the dependent variable are regression coefficients.

As expected, the existence of minor symptoms and the perceived health status appear to be strong determinants of the personal/medical orientation. The feelings towards birth and experience with hospital care were expected to be related to the personal/medical orientation only, but they are shown to influence also the social orientation. The expectations of hospital care and the suitability of the house, expected to be related to both latent variables, are shown to be much more strongly related to the social orientation than to the personal/medical orientation. Trust in home birth, home births among significant others, previous birth place (for multiparae) and to a lesser degree, distance to the hospital, are found, as expected, to be related to the social orientation. For multiparae the variable "previous birth experience" was expected to be related to the personal/medical orientation, but it appears to be related to both latent variables.

For the nulliparae-model in Fig. 1 the explained variance is 0.79 with a AGFI of 0.90. For the multiparae-model in Fig. 2 the explained variance is 0.73 with a AGFI of 0.82. Of the two latent variables the social orientation is shown to be the best indicator of the choice for home or hospital birth for both nulliparous and multiparous women, with trust of significant others in home birth and low expectations of hospital care during childbirth as most important determinants. The stronger the social orientation the smaller the chance that the hospital will be the preferred place of birth. A strong medical orientation was expected to increase the likelihood of choosing a hospital birth. However, a small negative Effect is found. But for both nulliparae and multiparae, a stronger medical orientation is associated

with a weaker social orientation, thereby indirectly increasing the chance that the hospital will be the preferred place to give birth.

[TABLE 1], [TABLE 2],[FIGURE 1] AND [FIGURE 2]

DISCUSSION

The Dutch system of maternity care, with its high proportion of planned home births, receives much attention from other industrialized countries, where home births are often depicted in a negative light. It is, therefore, important to stress that one of the key issues in the Dutch maternity care is the selection by risk status (Kloosterman, 1978; Keirse, 1982). For women who are at low risk of obstetric complications according to widely accepted criteria, the place of birth, whether at home or in hospital under the care of their own primary caregiver, is considered irrelevant to the birth outcome (Kloosterman, 1978). The choice for home birth or short-stay hospital birth is regarded as a highly individual choice, based on the assumption that psychological factors, such as feeling at ease, safe, and in control can have a profound influence on the birth process.

In societies where virtually total hospitalization of childbirth is the rule, the choice to give birth at home is not merely a choice for comfort and privacy. It is often a statement; a rejection of the technocratic model of birth (Davis-Floyd, 1994). This makes it difficult to compare our results with those of other studies. There has been some research on the choice of hospital for birth (Phibbs et al., 1993), and on the preferred caregiver in combination with a preferred place of birth (Chamberlain et al., 1991). When home and hospital births are compared, the comparison usually focuses on outcome measures, such as length of labor, interventions, and complications (Campbell and MacFarlane, 1986; Fedrick and Butler, 1987; Woodcock et al., 1994; Wiegers et al., 1996), but little on the motives and background variables of the women that explain the different choices and may well affect their outcomes.

Our study has shown that for women at low risk of obstetric complications the choice to give birth at home or in hospital is based primarily on social factors, with the confidence of family and friends in home birth and the expected influence of the hospital environment on childbirth listed as the strongest determinants. Health related factors, such as perceived health status before and during pregnancy, physical symptoms and fear of pain and complications during birth play an indirect role. They appear to weaken the social orientation through an increasing medical orientation. Education, although not of influence in our overall model, appears to play a role in highly urbanized areas, where higher educated women more often prefer a home birth (Kleiverda, 1990; Kleiverda et al., 1990). The consequence of this may well be that patient-information for urbanized areas should be different from that in rural areas.

Our findings are of importance in the light of the policy of the Dutch government to promote home birth in order to prevent unnecessary medicalization of pregnancy and childbirth (Regeringsstandpunt Adviescommissie Kloosterman, 1989). They indicate that the continuation of a general acceptance of home birth as an element of adequate and good quality maternity care may be the most important factor to preserve the home birth option in the Netherlands. Careful risk selection, interdisciplinary cooperation with good quality care, together with the availability of maternity home help services and the willingness of caregivers to provide care at home are currently the basis for the wide acceptance of home birth for low risk pregnancies in the Netherlands (Kloosterman, 1978; Keirse, 1982).

Our research indicates that this social environment of "wide acceptance" as perceived by the woman and her significant others is a precious commodity if the home birth option is to be sustained and preserved.

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TABLES AND FIGURES

Table 1. List of variables included in the analyses, with range, mean, standard deviation and number of cases, for nulliparae and multiparae separately

Variable	Min-Max	Nulliparae			Multiparae		
		mean	s.d.	N	mean	s.d.	N
preferred place of birth	0-1 (1 = hospital)	0.43	0.50	785	0.31	0.46	935
<i>Demographic variables</i>							
age in years	17-44	28.37	3.84	781	31.06	3.60	9
education	1-3 (low-high)	2.15	0.72	735	2.14	0.71	864
<i>Medical variables</i>							
health status	1-4.75 (pos-neg)	1.66	0.65	768	1.95	0.73	907
minor symptoms	0-57	17.33	9.57	785	17.11	9.17	935
obstetric history*	0-1 (1 = optimal)	-	-	-	0.89	0.32	935
<i>Personal/psychological variables</i>							
feelings towards birth	16-80 (fear-trust)	49.36	9.35	718	52.71	9.50	872
previous birth experience*	1-5 (pos-neg)	-	-	-	1.77	1.11	909
experience of hospital care	1-5 (pos-neg)	2.46	1.13	693	2.25	1.11	887
expectations of hospital care	22-100 (low-high)	61.43	16.68	712	60.92	16.46	880
house well-suited	1-5 (pos-neg)	1.76	1.15	781	1.45	0.90	932
<i>Social variables</i>							
previous place of birth*	0-1 (1 = hospital)	-	-	-	0.55	0.50	922
trust in home birth	-9- + 9	0.48	5.45	785	1.58	5.25	935
home births in family/friends	-7- + 7	1.17	3.06	785	1.60	3.14	935

Table 2. Bivariate analyses of the relation between demographic, personal, medical and obstetric, social and external variables and the preferred birth location. The test value shows a positive or negative (or no) relation to the choice for home birth (two-tailed *t*-tests or Chi-square-tests)

	Nulliparae	Multiparae
<i>Demographic variables</i>		
age	<i>t</i> = 0.06	<i>t</i> = -0.49
education	<i>t</i> = 1.38	<i>t</i> = -0.42
<i>Medical variables</i>		
in good health before and during pregnancy	<i>t</i> = 1.16	<i>t</i> = 2.96**
minor (physical) symptoms before and during pregnancy	<i>t</i> = -1.46	<i>t</i> = -2.97**
optimal obstetric history	NA	$\chi^2 = 13.35^{***}$
<i>Personal/psychological variables</i>		
positive feelings about the coming birth	<i>t</i> = 4.73***	<i>t</i> = 4.74***
negative memory of previous childbirth	NA	<i>t</i> = -4.13***
(indirect) negative experiences with hospital care	<i>t</i> = 3.49**	<i>t</i> = 6.46***
high expectations of hospital care during childbirth	<i>t</i> = -38.78***	<i>t</i> = -29.90***
housing arrangements less suitable for childbirth	<i>t</i> = -11.09***	<i>t</i> = -9.06***
<i>Social variables</i>		
previous birth at home	NA	$\chi^2 = 271.52^{***}$
social confidence/trust of significant others in home birth	<i>t</i> = 31.08***	<i>t</i> = 29.58***
more home than hospital births among significant others	<i>t</i> = 10.42***	<i>t</i> = 8.31***
urbanization	$\chi^2 = 3.40$	$\chi^2 = 2.09$
large distance to hospital (in min.)	<i>t</i> = 0.64	<i>t</i> = 3.14**

NA = not applicable.

* = *p* < 0.05.

** = *p* < 0.01.

*** = *p* < 0.001.

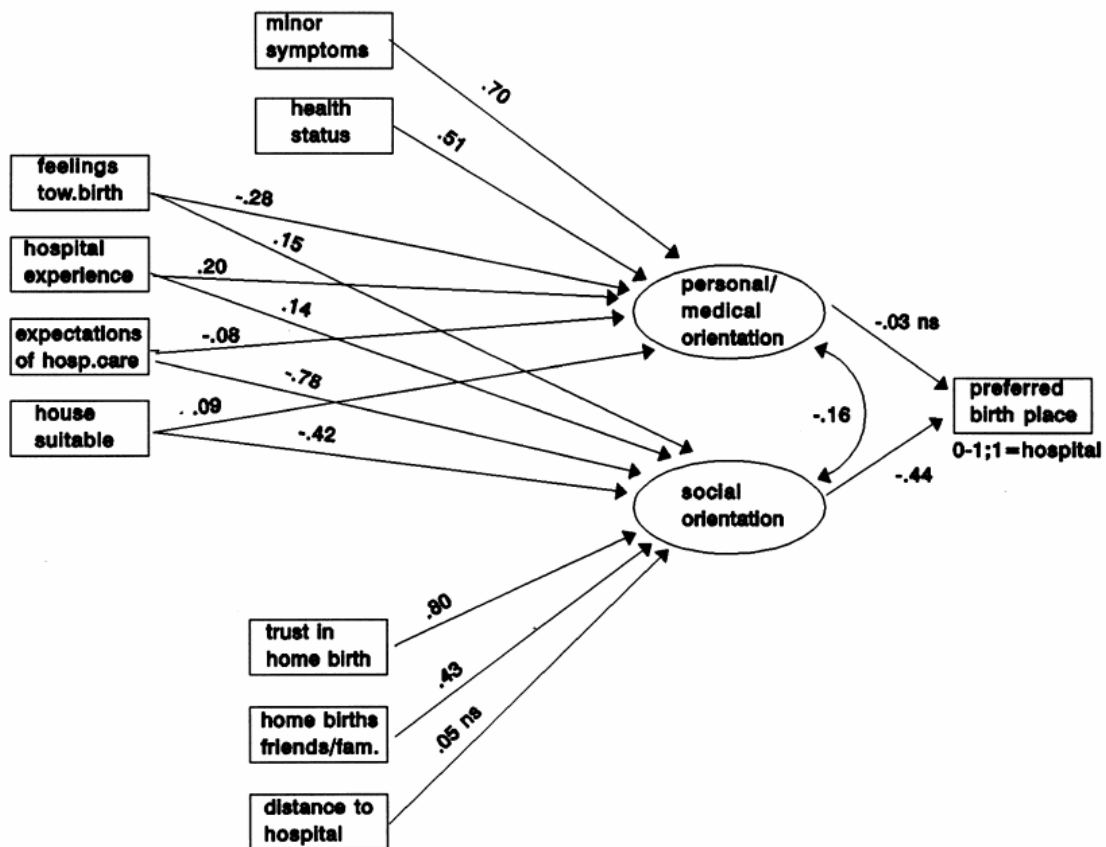


Fig. 1. Structural equation model with final estimates for primiparae (ns = not significant). $R^2=0.79$; AGFI = 0.90.

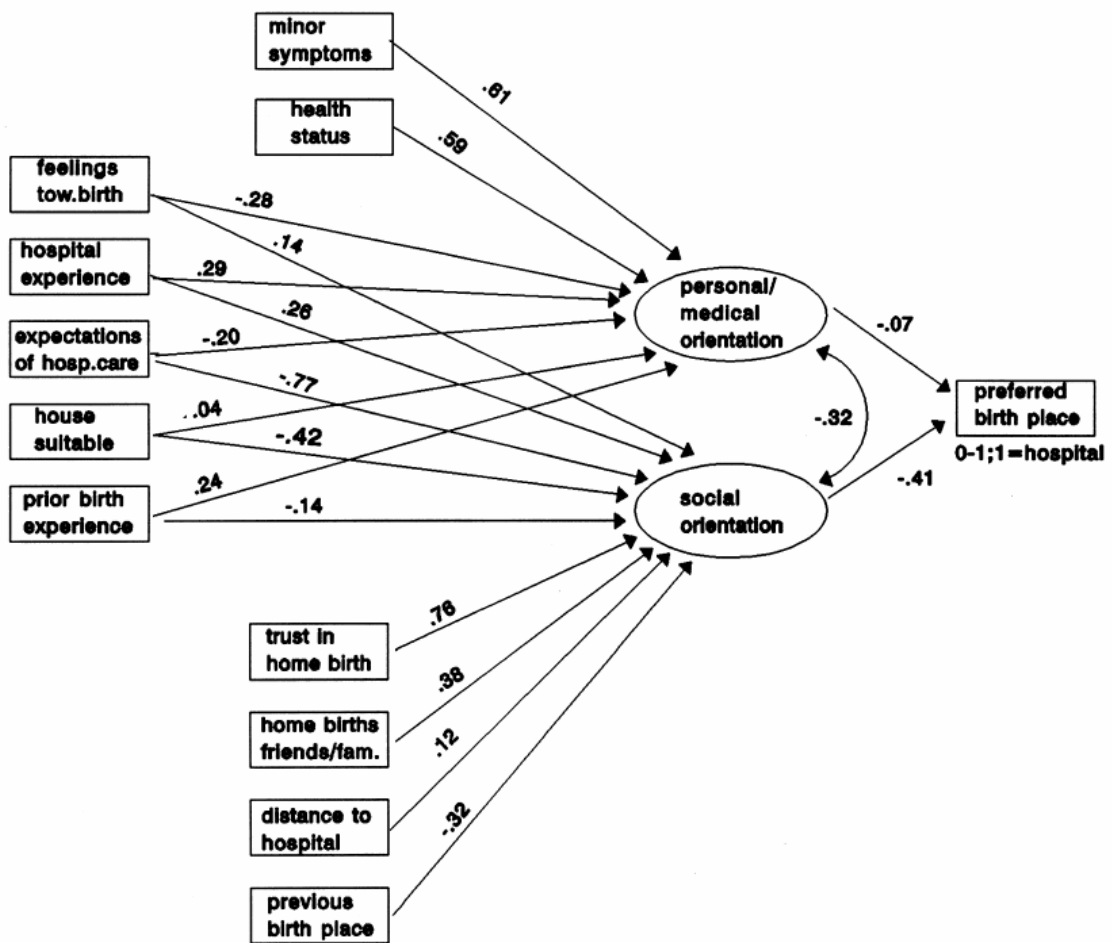


Fig. 2. Structural equation model with final estimates for multiparae. $R^2 = 0.73$; AGFI = 0.82.