



# Obstetric outcomes and uptake of care among 149 non-Swedish speaking migrant women attending a birth preparation visit during pregnancy – An observational study from Sweden

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## ABSTRACT

**Introduction:** In Sweden almost one third of the population is born in another country and a large number of the women who do not speak Swedish are of reproductive age. Women migrating from low-income countries have higher risks for poor obstetric outcomes than receiving country-born citizens. INFOR (a Swedish word for “before” or “ahead of”) is an intervention offering language-assisted, individual birth preparation for non-Swedish speaking pregnant women unfamiliar with the maternity care system. The aim of this study was to describe the uptake of care and obstetric outcomes among non-Swedish speaking migrant women attending INFOR.

**Methods:** A descriptive study of the obstetric outcomes and uptake of care was conducted of the 149 non-Swedish speaking pregnant women who participated in INFOR between 2016 and 2020. The data were accessed retrospectively from the medical record system Obstetrix and the population-based Swedish Pregnancy Registry and analysed descriptively.

**Results:** Women participating in INFOR originated from 44 countries and spoke 35 different languages. During late pregnancy, 20 percent of the women sought care for decreased fetal movements and 80 percent of the women attended the postpartum visit. While the majority of the participants were offered professional language support during pregnancy, almost none had a professional interpreter present during labour and birth. After birth, 80 percent of the primiparous women were asked to rate their birth experience, but only half of the multiparous women were asked. Further, only half of the primiparous women attending the postpartum visit were asked about their self-rated health.

**Conclusion:** INFOR may increase uptake of some important aspects of care during pregnancy, birth and postpartum among migrants of diverse backgrounds. The findings raise concerns however about communication support for migrant women, especially during labour and birth. The offer of professional interpreting as part of standard maternity care for women who need it is essential and must be improved in order to provide equitable care for all.

## 1. Introduction

As one percent of humanity are now forcedly displaced by conflict, a total that has never been higher (UNHCR, 2019), the number of migrant women giving birth in receiving countries is on the rise. In Sweden, 30

percent of the women giving birth are foreign born and two thirds of them originate from Africa or Asia (The National Board of Health and Welfare, 2020). Although there are no exact numbers on how many of the women who give birth in Sweden do not speak Swedish, the increasing number of migrants during the last five years in Sweden

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(Statistics Sweden, 2021), would indicate that a considerable proportion do not speak Swedish well or at all.

In Sweden, the maternity care system is tax-funded and thereby free of charge. Nearly all women (99 %) attend antenatal care which is community-based and run by midwives. Obstetricians and specialised antenatal care services are available if complications arise during pregnancy. The first antenatal care visit usually takes place around gestational week 9 (The Swedish Pregnancy Register, 2020) and on average pregnant women have eight to eleven check-ups during pregnancy and one check-up nine to ten weeks postpartum (The Swedish Pregnancy Register, 2020). All asylum seekers and refugee women with a residence permit are entitled to use the maternity care services in Sweden free of charge. In addition, patients in the Swedish healthcare system have the right to be provided with information they understand, which means that an interpreter should be used when the patient does not speak the same language as the health care provider (Riksdagsförvaltningen, 2017; Riksdagsförvaltningen, 2021). To respond to some of the needs of migrant women in maternity care, bilingual community-based doulas are available at some hospitals in Sweden.

Ensuring equal opportunity and reducing inequalities by promoting appropriate legislation, policies and action are part of the United Nations' Agenda 2030 (United Nations Department of Economic and Social Affairs, 2021). Women who have migrated from low-income settings to high-income settings have a significantly higher risk of maternal morbidity and mortality in comparison to the populations born in the high-income receiving countries (van den Akker and van Roosmalen, 2016). These increased risks for migrants, however, are not evenly distributed between different groups of migrants. Particularly Sub-Saharan African women have been identified with higher risks of both severe maternal morbidity and mortality (Adane et al., 2020; Knight et al., 2009; Urquia et al., 2017). These adverse outcomes can be partially explained by migrant women's higher risk of receiving sub-optimal maternity care when they give birth in a new country (Leppälä et al., 2020; Liu et al., 2019; Small et al., 2014).

To overcome disparities in care, a recent systematic review including studies from 14 European countries urged the need to build a trusting relationship between the health care personnel and the woman (Fair et al., 2020). Just like non-migrant women, migrant women need to feel understood and respected (Small et al., 2014), and where language barriers exist, this can only be achieved by providing professional interpreting at each care encounter (Fair et al., 2020). Further, in order to meet migrant women's needs, Fair et al. suggest focusing on the development of tailored maternal care interventions for this particular group of women (Fair et al., 2020).

There are only a few intervention studies focused on migrant women during pregnancy, childbirth and the postpartum period. These intervention studies have primarily focused on group antenatal care and community-based doula support to improve migrant's reproductive health and experiences of maternity care (Byrskog et al., 2019; Darwin et al., 2017; Riggs et al., 2017; Schytt et al., 2020). Another intervention, focusing on reducing adverse pregnancy outcomes among non-Western immigrant women, called "MAMA ACT", was developed in Denmark. The intervention consisted of a leaflet and a mobile application (both available in several languages), recommending how to respond to warning signs of complications during pregnancy (Johnsen et al., 2021). Although the published qualitative results from these studies seem promising (Darwin et al., 2017; Riggs et al., 2017; Johnsen et al., 2021), their effectiveness in improving the migrant women's obstetric outcomes have not yet been evaluated.

INFOR (a Swedish word for "before" or "ahead of", here used to signify "before the birth") is an intervention offering language-assisted, individual birth preparation visits to the labour ward for non-Swedish speaking pregnant women unfamiliar with the maternity care system in Sweden. INFOR was initiated to improve women's experiences of care and empower their sense of safety and confidence in giving birth by increasing familiarity with how maternity care is provided. When

interviewing INFOR- participants, they confirmed that they felt better informed after attending the visit. They also felt that the caring approach during INFOR and access to professional interpreting allowed their specific needs to be seen, listened to, and met (Ternström et al., 2023).

This study forms part of the larger project evaluation of INFOR. The migrant women's experiences of the visit and the staff's experiences of INFOR have been published or submitted elsewhere (Ternström et al., 2023; Akselsson et al., 2022). The aim of the present study was to describe the uptake of care and obstetric outcomes among non-Swedish speaking migrant women attending INFOR at Södertälje hospital, Sweden.

## 2. Methods

Södertälje hospital, where this study was based, is situated in a multi-ethnic municipality in Sweden where about 50 percent of the female population of reproductive age (15–49 years) are foreign born (Statistics Sweden, 2021). The hospital does not have a neonatal intensive care unit and women are confirmed to birth there from gestational week 36+0. Around 2200 births occur annually at the hospital.

The project commenced at Södertälje hospital in 2016. INFOR was developed through collaborative discussions between hospital staff, community-based antenatal care midwives, migrant women and the research team. These discussions identified shortcomings in care which the project attempted to address. These included migrant women being unfamiliar with how care would be provided at the hospital before they arrived in labour. This lack of understanding was further exacerbated by less-than-optimal use of interpreters to assist with communication during labour and birth. In addition, community midwives were particularly concerned that migrant women were less likely to attend the postpartum check-up than were Swedish-born women.

The antenatal care midwives caring for pregnant women in the community identify migrant women not fluent in Swedish and refer them to INFOR at the hospital. A group of midwives and nurse assistants employed at the labour ward (the INFOR-group) invites the migrant woman and her partner to an individual visit at the hospital. The INFOR-visit usually consists of a consultation and a guided tour of the labour and postpartum ward. The visit lasts for about two hours and a professional interpreter is present for the whole visit.

### 2.1. Research questions and sample size

Our overall aim in this study was to describe uptake of care and obstetric outcomes in the cohort of women who had attended INFOR between 2016 and 2020, to document impacts of participation. We were able to investigate specific issues of concern raised by previous research and by the participating hospital and community midwives, such as lower proportions seeking care for decreased fetal movements (Akselsson et al., 2019) and lower attendance at the postpartum visit among migrant women (The Swedish Pregnancy Register, 2017).

Our main research question therefore was: Is there any evidence of impact from participation in INFOR on uptake of care and obstetric outcomes? Two specific research questions explored were: Does attendance at INFOR have an impact on a) care seeking for decreased fetal movements and b) attendance at the postpartum visit.

For this descriptive cohort study sample size calculations indicated that to detect an increase from 9 % seeking care for decreased fetal movements, as in previous published research (Akselsson et al., 2019) to 20 % in our study a sample size of 67 is needed, with alpha of 0.05 and 80 % power; and for detecting an increase from 66 % (The Swedish Pregnancy Register, 2017) to 80 % in attendance at the postpartum visit, a required sample size of 82, with alpha of 0.05 and 80 % power is required.

## 2.2. Participants and data collection

Inclusion criteria for this study were pregnant women who had taken part in the INFOR-visit and had given birth at Södertälje hospital, Sweden between 2016 and 2020. The original plan of this study was to match participants in INFOR with controls. Migrant non-Swedish speaking women not attending INFOR, were supposed to receive a code in the hospital record in order to act as controls. Unfortunately, this coding failed due to the high workload on the labour ward. Later, the ambition was to identify a control group from the hospital records. However, the Covid-19 pandemic hindered the hospital from prioritising this. Our third option was to turn to the national registries in Sweden, but as they request ethical consent from the participants, finding suitable controls proved an impossible task. Hence, only data from the INFOR-participants could be retrospectively accessed from the medical record system Obstetrix and the population-based Swedish Pregnancy Register (The Swedish Pregnancy Register), both completed by midwives and obstetricians during pregnancy, birth and postpartum. From the Swedish Pregnancy Register we extracted the following data: country of birth, educational level, employment status, participation in childbirth and parenting education, extra support due to fear of birth, medical or psychological treatment for mental illness, use of a professional interpreter in antenatal care, asked about domestic violence, attendance at the postpartum visit and self-rated health. The remaining data were extracted from Obstetrix. The study was approved by the Research Ethics committee in Stockholm, Sweden (Dnr: 2017/1312–31/5).

## 2.3. Measures

The variables from Obstetrix and the Swedish Pregnancy Register were categorised prior to analysis. The outcome “Sought care for decreased fetal movements” was based on the diagnostic coding “Examination of decreased fetal movements”. Birth experience was measured using a visual analogue scale where the woman rates her overall birth experience from 1 (Very bad) to 10 (Very good). The rating is performed postpartum sometime during the hospital stay. According to Swedish praxis, scores ranging from 1 to 4 were defined as poor birth experiences, 5 to 7 were defined as good birth experiences and scores ranging from 8 to 10 were defined as very good birth experiences. If the woman had had a professional interpreter (by phone or on site) at any time in antenatal care, this was defined as Yes and if the woman had had a professional interpreter (by phone or on site) at any time during birth, this was defined as Yes. Self-rated health before pregnancy was reported by the women at the first antenatal care visit, while self-rated health during and after pregnancy was reported at the community midwife visit nine to ten weeks postpartum. The women reported their self-rated health on a 5-point Likert scale, ranging from very poor to very good.

## 2.4. Analysis

Data were de-identified prior to analysis and then stratified according to parity. Prevalence, means and ranges were calculated using IBM SPSS Statistics 27.

## 3. Results

In the records of the 189 women marked as being part of INFOR, the reviewers found 40 women who had not attended the INFOR-visit. Reasons mentioned were lack of INFOR staff due to summer holidays and receiving the referral too close to the woman's due date. These women were therefore excluded from the analysis. The remaining 149 INFOR-participants originated from 44 different countries, about 20 percent were born in Syria, ten percent in Iraq and five percent were born in Afghanistan. The most frequently spoken language was Arabic ( $n = 56, 37,6\%$ ), with 35 languages spoken in all. One in seven spoke some

English in addition to another language and a minority of the participants spoke some Swedish in addition to another language. Ten participants had been to two INFOR visits, and one had been to three, the remaining 138 participants attended one visit. A third of the participants attended their first (or only) visit after gestational week (gw) 37+0, one third between gw 34+0–36+6 and the remaining third between gw 24+0–33+6.

Participant characteristics are presented in Table 1. The participants' ages ranged from 17 to 46 years and the median age was 29 years. Two thirds were expecting their first child and one third had given birth before. Almost a third of the participants had their first visit to their antenatal care midwife after gw 14. A third of the participants were studying, almost a fifth were working and almost a tenth were unemployed. Two in five ( $n = 37, 38.5\%$ ) of the primiparous women and one in five ( $n = 10, 18.9\%$ ) of the multiparous women had received some

**Table 1**  
Participant characteristics.

	All $n = 149$ $n$ (%)	Primiparas $n = 96$ $n$ (%)	Multiparas $n = 53$ $n$ (%)
Continent of birth <sup>a</sup>			
Africa	18 (12.1)	7 (7.3)	11 (20.8)
Asia	26 (17.4)	9 (9.4)	17 (32.1)
Europe	43 (28.9)	27 (28.1)	16 (30.2)
Middle East	47 (31.5)	47 (49)	0 (0)
South America	9 (6)	3 (3.1)	6 (11.3)
Age <sup>b</sup>			
≤24	28 (18.8)	26 (27.1)	2 (3.8)
25–29	47 (31.5)	35 (36.5)	12 (22.6)
30–34	44 (29.5)	23 (24)	21 (39.6)
≥35	29 (19.5)	12 (12.5)	17 (32.1)
Gestational age at first antenatal care visit			
Before 14 weeks of gestation	107 (71.8)	77 (80.2)	30 (56.6)
14–21 weeks of gestation	26 (17.4)	11 (11.5)	15 (28.3)
After 22 weeks of gestation	15 (10.1)	8 (8.3)	7 (13.2)
Educational level <sup>c</sup>			
<9 years	4 (2.7)	2 (2.1)	2 (3.8)
Elementary school	23 (15.4)	16 (16.7)	7 (13.2)
High school	23 (15.4)	14 (14.6)	9 (17)
University	40 (26.8)	26 (27.1)	14 (26.4)
Don't know	29 (19.5)	23 (24)	6 (11.3)
Employment status <sup>d</sup>			
Studying	49 (32.9)	41 (42.7)	8 (15.1)
Employed	26 (17.4)	13 (13.5)	13 (24.5)
Unemployed	11 (7.4)	8 (8.3)	3 (5.7)
Other	49 (32.9)	26 (27.1)	23 (43.4)
Civil status <sup>e</sup>			
Living with partner	131 (87.9)	86 (89.6)	45 (84.9)
Single	3 (2)	1 (1)	2 (3.8)
Other status	14 (9.4)	8 (8.3)	6 (11.3)
Body mass index <sup>e</sup>			
<18.5	4 (2.7)	3 (3.1)	1 (1.9)
18.5–24.9	83 (55.7)	61 (63.5)	22 (41.5)
25.0–29.9	45 (30.2)	26 (27.1)	19 (35.8)
30.0–34.9	11 (7.4)	3 (3.1)	8 (15.1)
≥35	3 (2)	2 (2)	1 (1.9)
Smoking <sup>b</sup>	4 (2.7)	3 (3.1)	1 (1.9)
Maternal diseases <sup>b</sup>			
Diabetes mellitus	0	0	0
Chronic kidney disease	0	0	0
Lung disease/asthma	3 (2)	1 (1)	2 (3.8)
Ulcerative colitis/crohn's disease	0	0	0
Epilepsy	1 (0.5)	1 (1)	0
Chronic hypertension	0	0	0
Psychiatric care	5 (3.4)	3 (3.1)	2 (3.8)
Previous stillbirth		NA	2 (3.8)
Previous caesarean section		NA	8 (15.1)

<sup>a</sup> Missing:  $n = 6$  (4 %).

<sup>b</sup> Missing:  $n = 1$  (0.7 %).

<sup>c</sup> Missing:  $n = 30$  (20.1 %).

<sup>d</sup> Missing:  $n = 14$  (9.4 %).

<sup>e</sup> Missing:  $n = 3$  (2 %).

kind of childbirth and parenting education during pregnancy. A small number of participants ( $n = 7$ , 4.7 %) had also received extra support during pregnancy due to fear of birth.

All participants had a singleton birth and in total 149 babies born were born. According to the hospital records, one in ten participants had also had a community-based bilingual doula with them for the birth.

As shown in Table 2, one fifth of all participants had sought care for decreased fetal movements during pregnancy. Three participants had received medical or psychological treatment for mental illness during pregnancy. Three out of four participants had a spontaneous onset of labour, and almost as many gave birth vaginally. Use of epidural during birth was more than four times more common among the primiparous women ( $n = 65$ , 67.7 %) compared to the multiparous women ( $n = 8$ , 15.1 %). One in ten of the primiparous women had an instrumental birth, all aided by vacuum extraction, while none of the multiparous women had an instrumental birth. The total caesarean section rates among the primiparous and multiparous women were similar (17.7% vs 15.1 %), however planned caesarean sections were more common among

**Table 2**  
Obstetric care, procedures and outcomes.

	All $n = 149$ $n (%)$	Primiparas $n = 96$ $n (%)$	Multiparas $n = 53$ $n (%)$
Sought care due to decreased fetal movements <sup>a</sup>	31 (20.8)	21 (21.9)	10 (18.9)
Medical or psychological treatment for mental illness during pregnancy <sup>a</sup>	3 (2)	1 (1)	2 (3.8)
Spontaneous onset of labour <sup>b</sup>	112 (75.2)	72 (75)	40 (75.5)
Induction of labour <sup>b</sup>	25 (16.8)	17 (17.7)	8 (15.1)
Pain relief during labour			
Epidural	73 (49)	65 (67.7)	8 (15.1)
Nitrous oxide	96 (64.4)	66 (68.8)	30 (56.6)
Bath	19 (12.8)	16 (16.7)	3 (5.7)
No pain relief	5 (3.4)	1 (1)	4 (7.5)
Gestational age at birth <sup>a,c</sup>			
<37+0	6 (4.0)	4 (4.2)	2 (3.8)
37+0–41+6	134 (89.9)	87 (90.6)	47 (88.7)
>41+6	7 (4.7)	5 (5.2)	2 (3.8)
Vaginal birth, non-instrumental <sup>d</sup>	109 (73.2)	68 (70.8)	41 (77.4)
Vaginal birth, instrumental <sup>d</sup>	10 (6.7)	10 (10.4)	0
Caesarean section (total) <sup>d</sup>	25 (16.8)	17 (17.7)	8 (15.1)
Pre-labour	7 (4.7)	6 (6.3)	1 (1.9)
In labour	18 (12.1)	11 (11.4)	7 (13.2)
Severe postpartum haemorrhage (>1000 ml) <sup>b</sup>	16 (10.7)	11 (11.5)	5 (9.4)
Retained placenta <sup>b</sup>	2 (1.3)	2 (2.1)	0
Perineal injuries <sup>b</sup>			
None	9 (6)	1 (1)	8 (15.1)
1st degree	35 (23.5)	21 (21.9)	14 (26.4)
2nd degree	72 (48.3)	54 (56.3)	18 (34.0)
3rd degree	5 (3.4)	3 (3.1)	2 (3.8)
4th degree	0	0	0
Episiotomy <sup>d</sup>	3 (2)	2 (2.1)	1 (1.9)
Mean length of hospital stay (days)	2.8 <sup>e</sup>	3.07 <sup>f</sup>	2.28 <sup>g</sup>

<sup>a</sup> Missing 2 (1.3 %): Primiparas 0 (0 %), Multiparas 2 (3.8 %).

<sup>b</sup> Missing 3 (2 %): Primiparas 0 (0 %), Multiparas 3 (5.7 %).

<sup>c</sup> Births from gestational week 36.

<sup>d</sup> Missing 4 (2.7 %): Primiparas 1 (1 %), Multiparas 3 (5.7 %).

<sup>e</sup> Min-Max: 1–9, Range: 8.

<sup>f</sup> Min-Max: 1–8, Range: 7.

<sup>g</sup> Min-Max: 1–9, Range: 8.

the primiparous women (6.3% vs 1.9 %). Of the 149 babies, all were born alive. Two babies (1.3 %) had an Apgar score below seven at 5 min and none had an Apgar score below four at 5 min (missing  $n = 3$ , 2.0 %). The mean birthweight was 3389 gs (range 2398–4608 gs) and five babies (3.4 %) were classified as small for gestational age (missing  $n = 4$ , 2.7 %). For additional obstetric outcomes of the babies, see Suppl table.

Use of a professional interpreter during birth was rare among all participants, while use of a professional interpreter at any time during antenatal care was more frequent. About half of the multiparous women were asked to rate their birth experience during their postnatal stay at the hospital, while four out of five primiparous women were asked about their birth experience. Compared to the multiparous women, a higher percentage of the primiparous women attended the postpartum visit with the community midwife.

A third of all participants were not asked about how they perceived their health before pregnancy. Further, half of the participants were not asked to rate their own health during and after pregnancy. When asked, 60 percent of all participants rated their own pre-pregnancy health as good or very good. When asked after the pregnancy, the corresponding number was 45 percent both when asked about their health during pregnancy and after pregnancy. For further results, see Table 3.

**Table 3**  
Other aspects of care.

	All $n = 149$ $n (%)$	Primiparas $n = 96$ $n (%)$	Multiparas $n = 53$ $n (%)$
Asked about birth experience (on postpartum ward)	106 (71.1)	77 (80.2)	29 (54.7)
Birth experience (of those asked)			
Poor ( $\leq 4$ )	6 (5.7)	5 (6.5)	1 (3.4)
Good (5–7)	17 (16)	11 (14.3)	6 (20.7)
Very good (8–10)	83 (78.3)	61 (79.2)	22 (75.9)
Use of a professional interpreter at any time in antenatal care <sup>a</sup>	107 (71.8)	67 (69.8)	40 (75.5)
Use of professional interpreter during birth <sup>b</sup>	6 (4)	3 (3.1)	3 (5.7)
Attended postpartum visit (9–10 weeks pp) <sup>c</sup>	119 (79.9)	81 (84.4)	38 (71.7)
Asked about self-rated health before pregnancy	103 (69.1)	70 (72.9)	33 (62.3)
Self-rated health before pregnancy (of those asked)			
Very good	17 (16.5)	14 (20)	3 (9.1)
Good	73 (70.9)	48 (68.6)	25 (75.8)
Neither good nor bad	11 (10.7)	8 (11.4)	3 (9.1)
Poor or very poor	2 (2)	0	2 (6)
Asked about self-rated health during pregnancy (of those attending pp visit)	74 (62.2)	56 (69.1)	18 (47.4)
Self-rated health during pregnancy (of those asked)			
Very good	3 (4.1)	2 (3.6)	1 (5.6)
Good	63 (85.1)	48 (85.7)	15 (83.3)
Neither good nor bad	7 (9.5)	5 (8.9)	2 (11.1)
Poor or very poor	1 (1.4)	1 (1.8)	0
Asked about self-rated health after pregnancy (of those attending pp visit)	74 (62.2)	56 (69.1)	18 (47.4)
Self-rated health after pregnancy (of those asked)			
Very good	5 (6.8)	4 (7.1)	1 (5.6)
Good	62 (83.8)	46 (82.1)	16 (88.9)
Neither good nor bad	7 (9.5)	6 (10.7)	1 (5.6)
Poor or very poor	0	0	0
Asked about domestic violence during pregnancy <sup>c</sup>	118 (79.2)	77 (80.2)	41 (77.4)

<sup>a</sup> Missing 3 (2 %): Primiparas 1 (1 %), Multiparas 2 (3.8 %).

<sup>b</sup> Missing 4 (2.7 %): Primiparas 1 (1 %), Multiparas 3 (5.7 %).

<sup>c</sup> Missing 2 (1.3 %): Primiparas 0 (0 %), Multiparas 2 (3.8 %).



#### 4. Discussion

We have described the uptake of care and obstetric outcomes for women who participated in the INFOR intervention to improve care for migrant women. Obstetric outcomes were good, with most in line with outcomes for all women giving birth in Sweden. We found that one in five women who participated in INFOR sought care for decreased fetal movements and four in five attended the postpartum visit after childbirth, both improvements on earlier findings for migrant women (Akselsson et al., 2019; The Swedish Pregnancy Register, 2017; Akselsson et al., 2020; Radestad et al., 2021). We also found that a relatively low number of the women were asked about their self-rated health and very few women were offered communication support during labour and birth.

It is notable that in the present study one fifth of all participants had sought care for decreased fetal movements during pregnancy. This figure is high compared to other studies conducted in Sweden, where the prevalence is between 5 and 9 percent (Akselsson et al., 2019; Radestad et al., 2021). Women born outside Sweden have also generally been found to be less likely to seek healthcare due to decreased fetal movements than Swedish-born women (Akselsson et al., 2020; Radestad et al., 2021). Yet, it is also known that some migrants have a higher risk of negative pregnancy outcomes, such as low Apgar scores and stillbirth (Akselsson et al., 2020; Small et al., 2008). As decreased fetal movements are associated with negative pregnancy outcomes (Dutton et al., 2012; Turner et al., 2021; Tveit et al., 2009), women responding to this concern by contacting healthcare services would likely increase the possibility of identifying babies at risk. The high prevalence of women seeking care in this study might be a positive effect of INFOR and is possibly a sign that the women felt safe and informed, and knew to contact the hospital if they were concerned about the unborn baby's movements.

Our finding that 80 percent of the participants in this study attended the postpartum visit two months after birth is an improvement on attendance among migrant women in 2016, where one third of all migrant women in Sweden did not attend the postpartum check-up (The Swedish Pregnancy Register, 2017). It is possible that INFOR contributed to this level of attendance, though there has also been a national effort since 2015 to increase postpartum visit attendance, especially among those groups with low attendance (Sveriges Kommuner och Regioner, 2020).

The postpartum visit provides an important opportunity to identify and provide care for a range of maternal health problems such as incontinence, perineal discomfort or pain, issues with breastfeeding and sexual relationship (Aasheim et al., 2017; Andrews et al., 2008; Wagg et al., 2017). The INFOR visit aimed to help women become familiar with the healthcare available to them for the birth and after, and it is plausible that as a result, more women understood the value of attending the postpartum visit.

Access to a professional interpreter during labour and birth was rare, only one in 20 women had a professional interpreter at any stage during birth. According to national guidelines an interpreter should be booked "when this is needed" (Vårdgivarguiden Region Stockholm 2021) and using a partner or a relative as an interpreter is not recommended in the Swedish Patient law (Riksdagsförvaltningen, 2021). Additionally, information should be adapted to linguistic background and the information provider should, as far as possible, ensure that the recipient has understood the content and meaning of the information. Implementing the use of professional interpreters has been shown to reduce disparities, improve clinical outcomes, enhance pain control, and improve patient satisfaction (Jimenez et al., 2012; Karliner et al., 2007). In-person interpreting is an expensive resource that is unfortunately limited in many settings. The availability of remote interpreting (telephone or video) does not always justify its use as a substitute in all settings, but could be an important tool during labour and birth if an in-person interpreter is not available or needed at all times (Neveu et al., 2020).

The limited use of interpreters in this study could have several explanations; a few women had a community-based bilingual doula supporting them and in some cases staff on the ward spoke the same language as the woman. Nevertheless, the use of interpreters is startlingly low and should be a subject for further investigation.

Although asking women to rate their birth experience is part of standard postpartum care in Sweden, in this study, 29 % of women in this study were not: almost half of the multiparous women and a fifth of primiparous women were not asked about their experience. The reasons are likely to vary; lack of interpreters or limited time are often referred to as explanations for not asking. At Södertälje hospital, in 2019, 79 percent were asked about their birth experience, but in our data only 71.1 % of the women were asked. So, although the INFOR-participants are thoroughly introduced to the care for birth and postpartum, finding out about their experience of birth did not receive the same focus of attention as most non-migrant women experience. Of those asked about their birth experience however, 78 % rated the experience highly (8 or above). This compares favourably with 74 % for all women giving birth in Sweden in 2019 (Sveriges Kommuner och Regioner, 2020). In our study, few women rated their birth experience 4 or below, considered to be a poor birth experience. We have reason to believe that the INFOR visit did help women feel more in control and "at home" on the maternity ward after the guided tour and dialogue with a midwife (Ternström et al., 2023), and that this had a positive impact on their subsequent birth experiences.

Nearly a third of all participants were not asked about their self-rated health before pregnancy at their first antenatal visit, and even fewer participants were asked to rate their own health during pregnancy and after birth at their postpartum visit with the community midwife. 79.2 percent of women in INFOR were asked if they had been exposed to domestic violence during pregnancy compared to 95.1 percent of pregnant women in general (The Swedish Pregnancy Register, Public statistics). Corresponding figures for self-rated health before pregnancy among INFOR-participants were 69.1 percent versus 93.5 percent, and educational level, 80.5 percent versus 93.1 percent (The National Board of Health and Welfare, 2020). The self-rated health measurement is a valid predictor for morbidity and mortality in the general population, and thus a strong marker for health. Poor self-rated health prior to pregnancy has been associated with poverty, obesity, lack of physical exercise and a history of alcohol dependency (Haas et al., 2005). Women born in Latin America, South Asia, North Africa, and the Middle East have been shown to have consistently higher odds of poor self-rated health before, during and after pregnancy in a Swedish cohort study (Henriksson et al., 2020). Although the pre-pregnancy self-rated health measure is routinely used in antenatal care in Sweden today, the low proportion of migrant women who were asked in this study needs to be addressed.

From our data we see clearly that women who do not speak the Swedish language are not asked about their health and experiences to the same extent as the general population.

##### 4.1. Strengths and limitations

A strength of the study is the unique population-based register that has been used for data collection. The register has more than 90 % coverage of all births in Sweden (Stephansson et al., 2018). Matching the participants in INFOR with controls would have been desirable and would probably have enabled stronger conclusions about the impact of INFOR but was not possible for the reasons already outlined. The study did, however, have sufficient power to investigate the specific research questions regarding care seeking for decreased fetal movements and postnatal visit attendance.

#### 5. Conclusion

INFOR is a unique attempt to improve preparation for birth among

migrant women, building on the experiences and suggestions from stakeholders, midwives and other health care professionals and migrant women themselves. While INFOR was not able to address some inequities in care, such as communication issues during birth and problems with less surveillance of women's birth experiences and their health, it does appear that women who were offered the INFOR visit showed greater care seeking behavior in late pregnancy than previously reported for this group and they were more likely to attend the postpartum visit. Women with low proficiency in Swedish should be offered better communication support and also be asked about their health to a greater extent as a means to achieve the Agenda 2030 goal of providing equitable and universal health care to all, leaving no one behind (United Nations Department of Economic and Social Affairs, 2021).

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## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.jmh.2024.100226](https://doi.org/10.1016/j.jmh.2024.100226).

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