

# Intendedness of pregnancies and preconception contraceptive use in women of Swedish and non-European origins seeking emergency care in early pregnancy

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## ABSTRACT

**Introduction** Unintended pregnancies in Europe have been estimated to constitute 43% of all pregnancies, with the proportion in Sweden being unknown. In striving for equitable healthcare, increased knowledge about unintended pregnancies among women born outside Europe is needed. We aimed to estimate the proportion of unintended pregnancies in women born in Sweden compared with women born outside Europe in an unselected population seeking gynaecological emergency care in early pregnancy. Our secondary aim was to compare contraceptive use at the time of conception in unplanned pregnancies between women born in Sweden and women born outside Europe.

**Methods** Pregnant women seeking gynaecological emergency care in early pregnancy at a tertiary hospital were asked to fill out a questionnaire in their native language. The questionnaire contained questions from the London Measure of Unplanned Pregnancy (LMUP) and questions regarding sociodemographic data, gynaecological health and previous contraception.

**Results** Of 180 pregnancies, 66 were unintended (36.7%) according to the LMUP. Among patients born in Sweden, 49/129 (38.0%) of the pregnancies were unintended compared with 17/51 (33.3%) among patients born outside Europe ( $p=0.56$ ). 86% of participants with unintended pregnancy did not use any form of contraception during the month of conception, with no difference between women born in Sweden and those born outside Europe.

**Conclusions** Among women seeking gynaecological emergency care in early pregnancy, unintended pregnancies are common. Women with unintended pregnancies

## Key message

- ▶ Unintended pregnancies in the emergency room are common and preconception use is low in women with unintended pregnancies.
- ▶ Unintended pregnancies in Sweden are equally common among women born in Sweden and those born outside Europe.
- ▶ Efforts are needed to improve history taking on intendedness of pregnancy and provision of contraceptive counselling in women seeking care in early pregnancy.

had low use of preconception contraceptives, which highlights a need for further interventions aimed at avoiding unintended pregnancies.

## INTRODUCTION

Worldwide, between 2010 and 2014 an estimated 44% of pregnancies were unintended. This number varies across geographical areas from 43% in Europe to 73% in the Caribbean. The reasons for such variation is multifactorial and include differences in family planning programmes, range, efficacy and costs of available contraception in addition to access to legal abortion.<sup>1</sup>

An unintended pregnancy (UP) is defined as a pregnancy that is mistimed or unwanted.<sup>2</sup> This definition is not consistently used in studies as women and healthcare staff interpret the term differently. In an attempt to develop an objective, reliable and appropriate measure of UP in the contemporary context of



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demographic and social trends, the London Measure of Unplanned Pregnancy (LMUP)<sup>3</sup> has been used and psychometrically validated as a measure of the degree of intention of a current or recent pregnancy for use in several countries.

The proportion of UPs in Sweden has been estimated at 24.8% in a study from 2011 and at 31% in a recently published study where women in antenatal clinics were asked about intendedness of pregnancy.<sup>4,5</sup> Since pregnancies that end in miscarriage, abortion or ectopic pregnancy normally do not present in antenatal clinics, such study design suffers from significant selection bias. Rates of UP in Scotland have been shown to vary from 89.7% in women seeking abortion to 34.4% in women choosing to continue with their pregnancy.<sup>6</sup> In a Swedish national survey from 2017, 22.3% of women reported at least one UP.<sup>7</sup> However, the study only included Swedish speaking women and may have been affected by recall bias as women were asked about previous pregnancies with known outcomes.

In 2019 approximately 36 000 abortions were performed in Sweden, corresponding to 19 abortions per 1000 women.<sup>8</sup> It has been estimated that 92% of all induced abortions are due to UP.<sup>9</sup> There were 114 523 births in Sweden in 2019.<sup>10</sup> It is not known how many of these births are the result of UP, but it is most likely that the proportion of UP in Sweden is underestimated.

The proportion of foreign born residents has recently increased substantially in Sweden from 11.3% in 2000 to 19.6% in 2019.<sup>11</sup> A Swedish study from 2003 of women seeking an abortion found that the number of immigrant women requesting induced abortion was larger than expected and that this over-representation was due to socioeconomic factors.<sup>12</sup> Another study found that migrants were less likely to have received any sex education or contraceptive counselling. In addition, any use of contraceptives, use of contraceptives at the time of conception and planned use of contraceptives after an induced abortion were lower among first- and second-generation migrants.<sup>13</sup> These factors correlate well with risk for UP.<sup>1</sup>

To reduce disparities in healthcare and meet the individual needs of women with different backgrounds, it is important to investigate the occurrence of UP and use of contraceptives in women born in and outside Sweden. This cross-sectional study used the LMUP questionnaire with the aim to estimate the proportion of UPs and contraceptive use at the time of conception in women born in Sweden and women born outside Europe seeking emergency gynaecological care in early pregnancy before the outcome of the pregnancy was known.

## METHODS

### Recruitment

Data were collected between July 2017 and October 2018. For the study, an investigator was present in the

Gynaecological Emergency Room (ER) at Danderyd's Hospital Department of Obstetrics and Gynaecology at various days and time of day including weekends. Participants were individually recruited in the ER by an investigator after triage by a midwife who reported that they sought emergency care in early pregnancy with complaints such as abdominal pain, bleeding and nausea. Data collectors aimed to cover different hours of the days when most women seek care at the gynaecological ER. All participants were informed about the study in a private environment and signed informed consent was obtained after written and oral information. The study has ethical permit number 2017/980-31/2 granted by the local ethical review board in Stockholm. Amendment 2018/67-32 includes translations.

### Inclusion and exclusion criteria

Inclusion criteria were: (1) patients in early pregnancy defined as  $\leq 21$  weeks and 6 days gestation according to last menstrual period; (2) 18 years of age or above; (3) seeking care at the ER for the first time during the present pregnancy. Exclusion criteria were: (1) patients in need of immediate urgent care or in severe distress; and (2) patients who could not understand any of the languages available in the questionnaire.

For the final analyses we excluded women with unknown country of birth ( $n=1$ ) and women born outside Sweden in Europe ( $n=25$ ) as these women were too few for meaningful analyses to be conducted.

### Data collected

Translations were performed by an authorised translator into English, Arabic, Somali, Persian/Farsi, Tigrinya and Mongolian. The translated languages were chosen based on statistics of the need for interpreter assistance in the ER. As a further measure to ensure correct use of the target language, the questionnaires in Arabic, Somali, Persian/Farsi, Tigrinya and Mongolian were translated back to Swedish by a native speaker of each language with medical knowledge. Answers from these paper questionnaires were then entered manually into the database. An online questionnaire was available in Swedish.

The women were grouped as being born in Sweden, in Europe or outside Europe.

The questionnaire was filled out in a private environment and concerned the present pregnancy, preconception behaviour, medical history and demographic characteristics. Part of the questionnaire consisted of the validated questions of intendedness of pregnancy, according to LMUP. LMUP is a psychometrically validated measure that can be used with any pregnancy regardless of outcome.<sup>3</sup> It comprises six questions regarding contraceptive use, timing, intention, desire to have a baby, partner discussion and preconceptional preparations. The answers are scored 0–2 points per question with a total sum of 0–12. Higher scores indicate a higher degree of pregnancy intention. When

**Table 1** Sample population characteristics of patients with unintended pregnancy (UP)

Characteristics	Born in Sweden(n=49)		Born outside Europe(n=17)		P value
	Mean (median)	Min–Max (IQR)	Mean (median)	Min–Max (IQR)	
Age (years)	31 (30)	20–45 (27–34.5)	30.2 (31)	21–36 (27.5–33.5)	0.924
BMI 1 month preconception	23 (21.9)	18.1–37.2 (20.7–24.8)	27 (28.4)	14.4–35.6 (23.7–30.4)	0.003*
Gestational age (days)	71.3 (63)	11–161 (49–87)	84.7 (86)	34–130 (68–107.3)	0.050
	n (%)		n (%)		
Civil status					0.252
Single	1 (2)		2 (11.8)		
Married/cohabiting	45 (91.8)		14 (82.4)		
Living apart	3 (6.1)		1 (5.9)		
Education					0.484
University/college	25 (51)		7 (41.2)		
No university/college	24 (49)		10 (58.8)		
Income/month (SEK)					0.168
<20 000	15 (30.6)		9 (56.3)		
20 000–39 999	27 (55.1)		5 (31.3)		
>40 000	7 (14.3)		2 (12.5)		
Household income/month (SEK)					0.161
<40 000	14 (28.6)		9 (52.9)		
40 000–79 999	26 (53.1)		5 (29.4)		
>80 000	9 (18.4)		3 (17.6)		
Previous pregnancy					0.651
Yes	41 (83.7)		15 (88.2)		
No	8 (16.3)		2 (11.8)		
Previous birth					0.461
Yes	36 (73.5)		14 (82.4)		
No	13 (26.5)		3 (17.6)		
Previous abortion					0.137
Yes	33 (67.3)		8 (47.1)		
No	16 (32.7)		9 (52.9)		

\*p&lt;0.05.

BMI, body mass index; SEK, Swedish crowns.

dichotomising the scale into UP or intended pregnancies (IP), a cut-off is recommended where a score of  $\geq 10$  indicates IP.<sup>3 14</sup> We followed the dichotomisation recommendations. LMUP has not been validated in a Swedish setting but we followed the translation process described above for the questionnaires. In addition to the six LMUP questions, we added options to include common Swedish preconception issues such as use of artificial reproductive technologies, nicotine use and coffee drinking habits.

### Statistical analysis

Data were recorded in an online questionnaire, exported to Microsoft Excel and then analysed by a professional medical statistician using IBM Statistical Package for Social Sciences version 25.0 (IBM Corporation, Armonk, New York, USA). Differences between groups in categorical data were analysed using a  $\chi^2$  test

or Fisher's exact test as appropriate. A Mann–Whitney U test was used to analyse non-normally distributed numerical and ordinal variables. P values <0.05 were considered statistically significant.

## RESULTS

### Unintended pregnancies

A total of 206 participants were recruited, of which 129 (63.0%) were born in Sweden and 51 (24.8%) were born outside Europe. In addition, there was one woman (0.5%) with unknown country of birth and 25 women (12.1%) were born outside Sweden but within Europe. A total of 14 questionnaires in languages other than Swedish were filled out (7 in Arabic, 4 in English, 2 in Persian and 1 in Tigrinya).

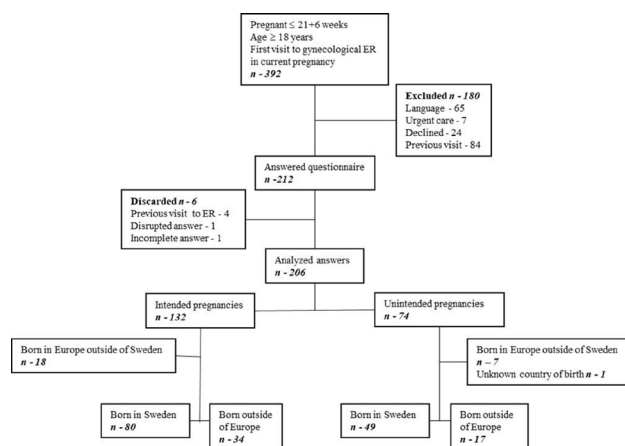
The baseline characteristics of all 66 women with UP born in Sweden or outside Europe are shown in [table 1](#). Women born outside Europe had a higher mean body

**Table 2** Sample population characteristics of patients with intended pregnancy (IP)

Characteristics	Born in Sweden (n=80)		Born outside Europe (n=34)		P value
	Mean (median)	Min–Max (IQR)	Mean (median)	Min–Max (IQR)	
Age (years)	30.7 (29)	19–46 (27–34)	33.3 (33)	24–43 (28–39)	0.045
BMI 1 month preconception	24.4 (23)	18.2–52.6 (20.6–26.1)	24.1 (23.6)	17.6–32.2 (21.8–26.8)	0.458
Gestational age (days)	64.9 (60)	7–152 (42–83)	61.9 (59.5)	10–137 (45.8–73.3)	1.000
	n (%)		n (%)		
Civil status					0.007
Single	0 (0.0)		3 (8.8)		
Married/cohabiting	75 (96.2)		27 (79.4)		
Living apart	3 (3.8)		4 (11.8)		
Education					0.513
University/college	43 (53.8)		16 (47.1)		
No university/college	37 (46.3)		18 (52.9)		
Income/month (SEK)					0.283
<20 000	15 (19)		10 (29.4)		
20 000–39 999	53 (67.1)		22 (64.7)		
>40 000	11 (13.9)		2 (5.9)		
Household income/month (SEK)					0.002
<40 000	11 (13.8)		15 (44.1)		
40 000–79 999	51 (63.7)		13 (38.2)		
>80 000	18 (22.5)		6 (17.6)		
Previous pregnancy					0.463
Yes	58 (72.5)		22 (64.7)		
No	22 (27.5)		12 (35.3)		
Previous birth					0.067
Yes	58 (72.5)		30 (88.2)		
No	22 (27.5)		4 (11.8)		
Previous abortion					0.712
Yes	50 (62.5)		20 (58.8)		
No	30 (37.5)		14 (41.2)		

BMI, body mass index; SEK, Swedish crowns.

mass index (BMI) based on self-reported height and weight than those born in Sweden ( $p=0.03$ ). The baseline characteristics of all 114 women with IP born in Sweden and outside Europe are shown in table 2.



**Figure 1** Flow of patients

The flow of patients is shown in figure 1. Of all participants, irrespective of country of birth, we found an overall proportion of 74/206 (35.9%) UP and 132/206 (64.1%) IP. Among the 129 patients born in Sweden, 49 (38.0%) of the pregnancies were unintended compared with 17 (33.3%) among the 51 patients born outside Europe ( $p=0.56$ ). The range of LMUP scores is shown in online supplemental figure 1 and the distribution of LMUP scores is shown in table 3.

A total of 56/66 participants (84.8%) with UP did not use any form of contraception during the month of conception. There was no difference in the use of contraception during the month of conception between women born in Sweden (7/49, 14.3%) and those born outside Europe (2/16, 12.5%  $p=1.0$ )

## DISCUSSION

We analysed the proportion of UPs and preconception behaviour in a population presenting to emergency gynaecological care in an attempt to minimise recall

**Table 3** Distribution of LMUP scores in women born in Sweden and those born outside Europe

	Born in Sweden	Born outside Europe
Minimum–maximum score	2–12	0–12
Mean (SD)	9.4 (2.7)	9.4 (2.9)
Median (IQR)	11 (8–12)	10 (8–11)
n (%) scoring <10 = unintended pregnancy	49 (38)	17 (33.3)
n (%) scoring >9 = intended pregnancy	80 (62)	34 (66.7)

LMUP, London Measure of Unplanned Pregnancy.

bias on pregnancy intendedness. We found an overall proportion of 36.7% UPs among all participants. Among patients born in Sweden, 38.0% of the pregnancies were unintended with a corresponding proportion of 33.3% among women born outside Europe. No significant differences between women born in Sweden or outside Europe were found regarding contraceptive use at the time of conception of UPs. The study indicates that the proportion of UPs in Sweden could be higher than previously reported.

Previous studies have used methodology which has most likely led to an underestimation of the proportion of UPs in Sweden. Tyden *et al* found that 24.8% of pregnancies in four antenatal clinics in Sweden were unplanned, using the Swedish Pregnancy Planning Scale.<sup>4</sup> Women who did not speak Swedish were excluded, which limits generalisability in the diverse Swedish population. In the larger and more recent study by Hultstrand *et al*, a higher rate closer to that found in our study was identified using LMUP in 10 different antenatal clinics.<sup>5</sup> Recruiting participants at antenatal clinics, however, entails a risk of selection bias by including participants who have decided to keep the pregnancy. Women in Sweden usually receive an appointment for the first visit in antenatal care in gestational week 8. In Sweden in 2018, 85% of abortions were performed before gestational week 9.<sup>15</sup> In addition, pregnancies ending in miscarriage and ectopic pregnancy may not reach the gestational age at which the first antenatal visit takes place. There is evidence that reported intendedness increases over time both during pregnancy and after birth due to recall bias, a tendency for people to rationalise earlier decisions leading to certain outcomes as well as reluctance by women to describe their child as being unintended out of fear of social desirability.<sup>16</sup> This supports recruitment of women as early in pregnancy as possible, and the recruitment of women in an environment which is not designated to women who have already made an active choice of keeping or terminating the pregnancy.

Women with UP and IP are both likely to visit the ER due to emergent concerns in early pregnancy, thereby reducing the likelihood of both recall and selection

bias. However, as 57% of abortions in 2018 were performed before gestational week 7,<sup>15</sup> a certain recall bias is inevitable. The range of intendedness scores suggests that the studied population is not representative of the general population of women in early pregnancy. Rather, it is skewed towards women inclined to keeping the pregnancy, as LMUP distributions differ noticeably between those undergoing abortion and those continuing their pregnancies.<sup>6</sup>

A study from Australia used LMUP in an early pregnancy assessment service.<sup>17</sup> This is a similar setting to the care given at our gynaecological ER and the study design is similar to ours. In this study, 57% of women with early pregnancy complications had UP, which is a significantly higher rate than ours. They included women from 16 years of age whereas we included women from 18 years of age, potentially explaining the higher rate of UP given young age is a risk factor for UP.<sup>6</sup>

An American study found no association between country of birth and UP when adjusting for potential confounders.<sup>18</sup> Our results show no significant difference in other sociodemographic variables except BMI, and the proportion of women with UP among women born in Sweden compared with those born outside Europe did not differ. These results are similar to those of Hultstrand *et al* who found no difference in UP dependent on country of birth in multivariable analyses.<sup>5</sup>

Almost nine out of 10 women with UP did not use contraceptives during the month of conception. We found no significant difference in the use of contraceptives in women with UP between women born in Sweden and those born outside Europe. In Sweden, contraceptive counselling is free of charge whereas contraceptive prescription comes at a cost. Several studies show disparities in healthcare which affect migrant women's access to healthcare, resulting in less use of contraceptives compared with women born in Sweden.<sup>12 19</sup> Lack of awareness of availability of national health services and/or perception of obstacles in accessing reproductive healthcare were reasons given.<sup>19</sup> In contrast to these previous results, we did not find differences in the use of contraceptives in women with UP between women born in Sweden and those born outside Europe. The high proportion of UP occurring without use of contraceptives suggests an unmet need of contraception and contraceptive counselling in all women. The unmet need for contraception in Sweden in 2017 was estimated at 15.2%.<sup>7</sup> It can be concluded that the use of contraception needs to be improved in women who wish to avoid UP.

### Strengths and limitations

This was a single-centre study at the only gynaecological ER in northern Stockholm. It cannot be excluded that results would differ if the study had been conducted at another or at several gynaecological ERs in Sweden. The study sample was relatively small. We aimed to recruit at different times on different days of the week to avoid selection of women with employment to reduce selection



bias. Our result with a high proportion of women with UP suggests a reduction in selection bias compared with previous studies, but may also indicate that women with UP seek emergency care more often.

## CONCLUSION

The overall proportion of UP was higher than in previous studies but may still be underestimated. We could not establish a difference in the proportion of UP among women born in Sweden and those born outside Europe. Use of contraceptives at the time of conception of an UP was low but did not differ between women born in Sweden or outside Europe. Better knowledge about the proportion of UPs in the ER would allow clinicians to address contraceptive counselling after miscarriage and ectopic pregnancy and thus reduce the burden of future UPs.

**Contributors** HKK conceived and designed the study and applied for an ethical permit. AMG designed the questionnaires and designed the final study with HKK and participated in data collection. MB initiated the translation of questionnaires. AMG, NS, MS and MB participated in data collection. All authors participated in data analysis and interpretation, manuscript writing and approved the final manuscript.

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**Competing interests** HKK reports personal fees from pharmaceutical companies outside the submitted work (presentations and advisory boards).

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**Data availability statement** Data are available upon reasonable request. Data will be made available upon reasonable request.

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