

## SHORT REPORT

## Pregnancy planning in Sweden – a pilot study among 270 women attending antenatal clinics

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### Key words

Pregnancy planning, ovulation test, lifestyle change, folic acid, abortion

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### Abstract

**Objective.** Health status and lifestyle before and at the time of conception could affect the health of both mother and child, but there is a lack of knowledge about the degree to which pregnancies are planned. The aim of this pilot study was to investigate whether and how women plan their pregnancies. **Material and methods.** The main outcome measures were use of timetables, ovulation tests and lifestyle changes. Women ( $n = 322$ ) visiting four antenatal clinics were asked to fill out a questionnaire (participation rate = 83.9%,  $n = 270$ ). **Results.** Three of four pregnancies ( $n = 202$ ) were very or rather well planned, whereas 4.4% ( $n = 12$ ) were totally unplanned. During the planning period, 37.1% ( $n = 100$ ) made up a timetable for getting pregnant, 23% ( $n = 62$ ) used ovulation tests, 20.7% ( $n = 56$ ) took folic acid and 10.4% ( $n = 28$ ) changed alcohol consumption. **Conclusion.** Although a majority of these women had planned pregnancies, only one in five had taken folic acid during the planning period.

## Introduction

Human reproduction is a central question for both the individual and society. Highly educated women postpone their pregnancies without reflecting over the impact of age on fertility (1,2). Pregnancy planning seems also to increase with age (3). In Sweden, 111 801 children were born in 2009 (4), and one in four pregnancies was terminated with a legal abortion (5). The mean age of primiparas was 28.9 years.

Preconception care is more established in the USA than Europe, where it is a component of healthcare for women of reproductive age (6). Almost half of the patients of obstetrician-gynecologists have actively asked for healthcare guidance and advice before, or in connection with pregnancy (7). Responsibility for preconception care in Sweden lies within antenatal services, but the extent of this is small.

Maternal nutrition strongly affects the fetus, and a well-balanced diet prior to and during pregnancy is important. To reduce the number of neural tube defects, Nordic authorities recommend consumption of 400  $\mu\text{g}$  folate per day to women planning a pregnancy. Women are advised to ab-

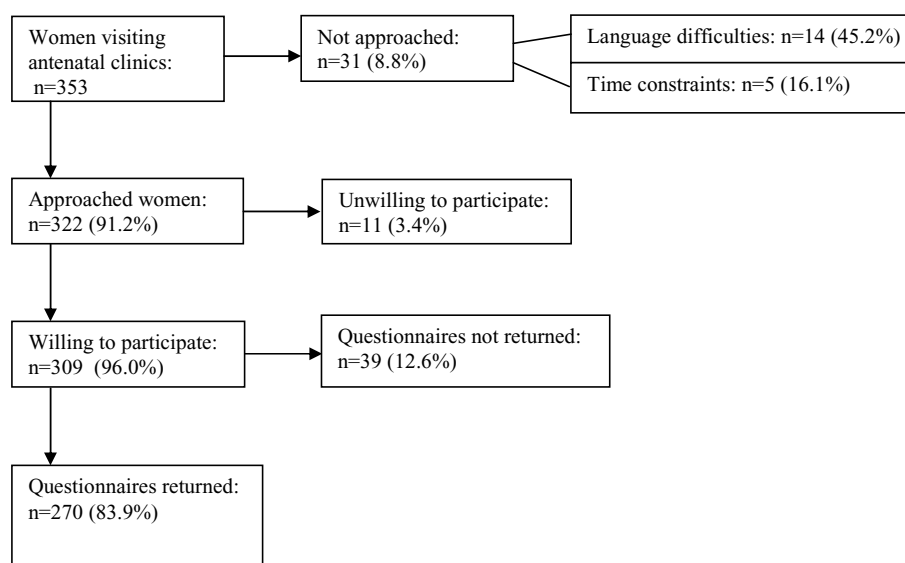
stain from tobacco and alcohol during pregnancy (8). Studies have shown that knowledge about fertility is relatively good among young people, and many can identify risk factors, such as overweight, use of tobacco and alcohol (1).

The Swedish Medical Birth Register (SMBR) (9) keeps information about childbirths and abortions, but little is known about how many of the pregnancies ending in childbirth were planned.

In this pilot study, we investigated whether and how women plan their pregnancies. The hypothesis was that older women plan their pregnancies to a greater extent than younger women. A further objective was to test the feasibility of the instrument and procedure.

## Material and methods

Four antenatal clinics of various sizes and in different cities participated. All Swedish-speaking women attending these antenatal clinics during a period of 1 month were asked to participate by filling out a questionnaire at the clinic and placing it in a sealed envelope, or to fill it out at home and



**Figure 1.** Flowchart of selection procedure.

mail it in a prepaid envelope. The midwives kept a log of all visits. The selection procedure is presented in Figure 1.

The topic of the study is sensitive, but participation was voluntary, confidential and not considered to harm the respondents, who were informed that they could withdraw at any time. Approval was obtained from the local ethical committee.

The questionnaire was study specific and developed on the basis of earlier research (10) and the experience of the project team. Of 60 questions, 13 were designed as five-step ranking scales with a neutral centre. The questionnaire covered sociodemographic and health background, lifestyle and pregnancy planning. Main outcome measures were use of timetables, ovulation tests and lifestyle changes. A cover letter was distributed together with the questionnaire. A pre-test was conducted and the questionnaire evaluated. Only results regarding pregnancy planning are presented in the present report.

Associations between categorical variables were analysed using Pearson's  $\chi^2$ -test, while correlations were computed using Spearman's rank correlation ( $r_s$ ) for ordinal data and Pearson's correlation ( $r$ ) for continuous data. All statistical analyses were performed in SPSS version 18. A  $p$ -value  $< 0.05$  was considered significant. The open-ended questions were analysed using qualitative content analysis and categorized.

## Results

The mean age of the women was 30.8 years (SD 4.7; range 15–43). A demographic description is presented in Table 1. The majority of questionnaires were carefully filled out. The lowest response rate (73%) was for an open-ended question regard-

ing important factors for pregnancy planning or continuing an unplanned pregnancy.

Frequencies and percentages for questions about pregnancy planning are presented in Table 2. The degree of pregnancy planning showed no significant association with either level of education ( $p = 0.451$ ) or income level ( $p = 0.298$ ). Older women did not plan their pregnancies to a greater extent ( $r_s = -0.093$ ,  $p = 0.129$ ), nor did they set longer timetables ( $r = 0.015$ ,  $p = 0.892$ ). However, women  $> 35$  years old ( $n = 43$ ) were more likely to be highly educated ( $p = 0.18$ ), high income earners ( $p < 0.001$ ) and to have reported that they used ovulation tests ( $p = 0.03$ ).

Categorization of the open-ended question showed that the most important factors for pregnancy planning or continuing an unplanned pregnancy were stable and/or high income ( $n = 73$ ; 27%), a good relationship ( $n = 67$ ; 24.8%), right time in one's career ( $n = 48$ ; 17.4%) and both partners wanting a child ( $n = 47$ ; 17.4%).

No significant association was found between level of education and lifestyle changes ( $p = 0.129$ ). The most common lifestyle change during the pregnancy planning period was folic acid intake. Highly educated women took folic acid to a higher degree, both before ( $p = 0.003$ ) and during the current pregnancy ( $p = 0.003$ ). Of the women who reported having used nicotine products prior to the current pregnancy, 21% ( $n = 14$ ) reported a reduction in use of nicotine products during pregnancy planning. The most common lifestyle change on the part of the partner during pregnancy planning was changes in alcohol consumption (2.6%).

The mean age of women with unplanned pregnancies and with neither planned nor unplanned pregnancies ( $n = 67$ ) was the same as that of women with planned pregnancies.

**Table 1.** Demographic description of the women.

Studied variables	Study population <i>n</i> = 270	Percentage
Age		
<25 years	24	8.9
25–35 years	203	75.2
>35 years	43	15.9
Level of education		
Elementary school	4	1.5
High school	83	30.7
College or university	157	58.1
Other form of education	26	9.6
Immigrant background		
Born in Sweden	244	90.4
Born in other Nordic countries	6	2.2
Born in other European countries	11	4.1
Born in other countries	9	3.3
One or both parents born outside Sweden	44	16.3
Alcohol consumption before the pregnancy		
4 times/week or more often	2	0.7
2–3 times/week	31	11.5
2–4 times/month	130	48.1
1 time/month or more rarely	87	32.2
Never	17	6.3
Mean number of standard glasses on each occasion	2.6	–
Use of nicotine products before the pregnancy	62	23.0

Fewer in this group reported having taken folic acid during the current pregnancy ( $p = 0.045$ ).

## Discussion

The main finding was that four of five women stated that their pregnancy was well planned, while data from the USA indicate that half of all pregnancies are planned (12) and corresponding figures from Spain are 58.5% (3). However, there is a lack of uniformity concerning the concept of ‘planning’ and the ways it has been assessed (11), which is why a comparison may be misleading.

Given the increasing age of primiparas, our hypothesis was that older women planned their pregnancies to a greater extent than younger women, but no such association was revealed. One explanation could be that pregnancy planning is culturally conditioned, rather than being age related. The older women had higher socioeconomic status than did the younger women, a trend also seen in a French study (13). This corresponds well to our previous studies among university students, who mentioned income and career as important factors for pregnancy planning (14).

The comparatively low intake of folic acid during the planning period indicates that information about the benefits of folic acid intake has not reached the general population in Sweden, in contrast to The Netherlands, where more than half of women take folic acid prior to pregnancy as a result

of a national governmental campaign and professional interventions (15). Folic acid intake prior to pregnancy among women with pregnancy intentions has been shown to be associated with healthcare visits or family planning during the past year (16).

It was notable that only 10.4% reported having changed their alcohol consumption during pregnancy planning. This is of concern because as many as 11.5% reported consuming alcohol two or three times per week prior to pregnancy. Seven or more standard drinks per week, binge-drinking or heavy alcohol consumption, has been shown to cause adverse effects on the fetus’s physical and psychological development, and even limited consumption is associated with poor pregnancy outcomes (17).

This was a pilot study, and a limitation is the relatively small sample size. As women who did not speak Swedish were excluded, the percentage of women with an immigrant background was lower than in the general Swedish population. In a forthcoming study, questionnaires will be translated to major immigrant languages, and women at randomly sampled antenatal clinics will be asked to participate. As different cultures have different dietary food habits, it is important to investigate whether there are differences between native Swedish and immigrant women, with a particular focus on the intake of certain food items related to folic acid intake. Results from such studies should be of importance in dietary counselling for women of reproductive age. The present study did not

**Table 2.** Pregnancy planning.

Studied variables	Study population <i>n</i> = 270	Percentage
Degree of pregnancy planning		
Very well planned	120	44.4
Fairly well planned	82	30.4
Neither planned nor unplanned	40	14.8
Fairly unplanned	15	5.6
Totally unplanned	12	4.4
Women pregnant with assisted reproduction	7	2.6
Time frame		
Use of time frame	100	37.1
Mean length of time frame in months	8.9	8.9
Range of months	1–44	
Pregnant within time frame	85	85 <sup>a</sup>
Use of ovulation tests	62	23.0
How strongly abortion was considered		
Yes, very much	3	1.1
Yes, a little	9	3.3
Neither yes nor no	3	1.1
No, not really	16	5.9
No, not at all	232	85.9
Lifestyle changes during pregnancy planning		
Lifestyle changes during pregnancy planning	74	27.4
Partner's lifestyle changes during pregnancy planning	13	4.8
Categorized lifestyle changes <sup>b</sup>		
Intake of folic acid during current pregnancy	163	60.4
Intake of folic acid during pregnancy planning	56	20.7
Changes in alcohol consumption during pregnancy planning	28	10.4
Changes in use of nicotine products during pregnancy planning	14	5.2
Changes in diet during pregnancy planning	6	2.2
Changes in physical activity	2	0.7

<sup>a</sup>Percentage of women stated to have used a time frame.

<sup>b</sup>Categorized from an open-ended question about lifestyle changes (*n* = 264).

find any association between socioeconomic status and pregnancy planning, as seen in other studies (3,12), which may be related to the sample size.

Despite three in four women having planned their pregnancies, only 20% had taken folic acid prior to pregnancy. Pregnancy intention does not seem to translate into the main outcome measures used here, which highlights the need for preconception care.

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