Reproductive Assistance, Emotional Health, Obesity, and Time to Pregnancy Among Women Under 35 Years of Age

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Abstract

Objective: The primary objective of this analysis was to describe demographic, physical, lifestyle, and psychosocial factors related to becoming pregnant in six months or less among women under 35 years of age who delivered a live-born infant. We also wished to determine the relative impact of these factors on time to pregnancy, regardless of use of fertility treatment.

Methods: Between July 2002 and September 2003, we conducted a survey by telephone interview of 1044 randomly selected women who had recently delivered their first live-born infant in Calgary or Edmonton, Alberta.

Results: Among 575 women who were less than 35 years of age when they began trying to conceive and who ultimately delivered a live-born infant, the most significant predictors of taking more than six months to conceive included being overweight or obese (hazard ratio [HR] 1.34; 95% CI 1.05 to 1.72), having a history of pregnancy complications (HR 1.42; 95% CI 1.02 to 1.99), and having fair or poor self-rated emotional health six months prior to pregnancy (HR 2.02; 95% CI 1.27 to 3.22). The influence of BMI and emotional health on time to conception did not change substantially when women who had assistance with conception (16% of the sample) were excluded from the analysis.

Conclusion: Among those who ultimately carry a pregnancy to delivery, the relationship between high BMI or poor emotional health and delays in conception was evident among women who conceived with or without assistance. Public health strategies that help women to achieve optimal body weight and address issues of emotional health may reduce the need for assisted reproduction.

Key Words: Fertility, pregnancy, live birth, emotional health, body mass index, BMI, fertility treatment

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Résumé

Objectif : Le principal objectif de cette analyse était de décrire les facteurs démographiques, physiques, psychosociaux et liés au mode de vie qui sont associés au fait de devenir enceinte dans six ois ou moins chez les femmes de moins de 35 ans qui ont accouché d'un enfant vivant. Nous souhaitions également déterminer l'effet relatif de ces facteurs sur le délai avant la grossesse, sans égard au recours à un traitement de fertilité.

Méthodes : Entre juillet 2002 et septembre 2003, nous avons mené un sondage au moyen d'entrevues téléphoniques auprès d'un échantillon aléatoire de 1 044 femmes ayant récemment accouché de leur premier enfant vivant à Calgary ou à Edmonton, en Alberta.

Résultats : Chez les 575 femmes qui avaient moins de 35 ans au moment où elles ont commencé à tenter de devenir enceintes et qui, en bout de ligne, ont accouché d'un enfant vivant, on trouvait, parmi les facteurs prédictifs les plus importants du fait de prendre plus de six mois pour obtenir une grossesse, la surcharge pondérale ou l'obésité (densité de l'incidence [DI], 1,34; IC à 95 %, 1,05 – 1,72), la présence d'antécédents de complications de la grossesse (DI, 1,42; IC à 95 %, 1,02 – 1,99) et le fait d'avoir présenté une santé émotionnelle moyenne ou faible (d'après les résultats d'une autoévaluation) six mois avant la grossesse (DI, 2,02; IC à 95 %, 1,27 – 3,22). L'influence de l'IMC et de la santé émotionnelle sur le délai avant la grossesse n'a pas connu de modification substantielle lorsque les femmes ayant bénéficié d'une aide à la conception (16 % de l'échantillon) ont été exclues de l'analyse.

Conclusion : Chez les femmes (étant devenues enceintes avec ou sans aide) qui, en bout de ligne, ont mené une grossesse jusqu'à l'accouchement, la relation entre un IMC élevé ou une faible santé émotionnelle et le délai avant la grossesse était évidente. La mise en œuvre de stratégies de santé publique aidant les femmes à atteindre un poids corporel optimal et à faire face à leurs problèmes de santé émotionnelle pourrait atténuer la nécessité d'avoir recours à la procréation assistée.

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INTRODUCTION

More than 95% of young Canadian men and women plan to have at least one child.[1] Among urban Canadian men and women, the most frequently cited factors that influence when they begin to have children are being in a secure relationship, having financial security, the suitability of the partner to parent, and the desire of both partners for children.[2,3] More than 75% of Canadian men and women believe that the ideal time to begin parenting is before the age of 35, and almost 90% of first births in Canada are to women less than 35 years of age.[2,4]

When couples start trying to conceive, many factors influence how quickly pregnancy occurs. Some evidence suggests that time to pregnancy is influenced by chemical and environmental exposures, as well as smoking and alcohol.[5–15] The following have also been suggested as influencing time to pregnancy: long working hours, parity, BMI, menstrual cycle, contraception history, and psychosocial factors.[11,16–23] Research to date has often considered the impact of demographic, physical (BMI) and lifestyle (smoking and alcohol consumption) factors on time to pregnancy.[18,24–26] Most studies to date, however, have not considered psychosocial factors in conjunction with these other factors.[18,24–26] An exception to this is a comprehensive study that found distress was related to infertility in women with longer menstrual cycles when demographic, physical, and lifestyle factors were controlled for.[27] However, the relative impact of these factors was not reported.

The effect of psychosocial factors on conception difficulties cannot be overlooked. In the past couple of decades we have seen great changes in the composition of the workforce, new technologies that have changed how people work, and changing family patterns. During the same period , there has been a rise in reported work–life stress among Canadians.[1,28] Within this context there is an opportunity to understand the additive impact of risk factors, including psychosocial factors, and threats and barriers to a successful pregnancy outcome among those most likely to be starting families.

Knowledge of the relative impact of demographic, physical, lifestyle, and psychosocial factors that influence reproductive success from conception to delivery would allow couples to make decisions informed by evidence and may reduce the stress and anxiety associated with failure to begin, or delays in beginning, a family. Equally importantly, this information would provide couples with an opportunity to address modifiable factors before proceeding to more invasive and expensive assisted reproductive technologies.[29] The Canadian Fertility and Andrology Society maintains a database related to use of invasive reproductive fertility procedures,[30] but there is currently no data source that captures information on the use of fertility medication.

The primary objectives of this analysis were to describe factors related to becoming pregnant in six months or less of trying among women less than 35 years of age who delivered a live-born infant, and to determine the effect of these factors on time to pregnancy, regardless of assistance with conception. A secondary objective was to describe the proportion of urban women under age 35 who had assistance with conception.

METHODS

Women were randomly selected from regional notice of birth databases and contacted to complete a telephone interview related to knowledge and risks of delayed childbearing. Women who were over the age of 18, without previous children, and who had delivered in one of two large urban health regions (Calgary and Edmonton, Alberta) within the preceding three months were eligible to participate. The interviews were conducted by two female telephone interviewers over a 15-month period between July 2002 and September 2003. All women provided verbal informed consent to participate.

The survey was developed using focus groups[31] and with input from content and clinical experts in reproductive medicine, epidemiology, statistics, population health, and nursing. The questionnaire was pilot tested and revised for clarity. The survey was assessed for face and content validity through re-review with content experts, and a second pilot testing was conducted by experienced interviewers at the Population Research Laboratory at the University of Alberta. The questionnaire contained items related to the following:

1. sociodemographic characteristics of the woman and her partner, including education, employment, and income;
2. lifestyle factors, including smoking, alcohol, and drug use;
3. medical and reproductive history from the current and past pregnancies;
4. factors women considered prior to starting their family, such as financial stability and achievement of career goals;
5. knowledge of factors related to reproduction and reproductive outcomes, such as increasing maternal age and alcohol use;
6. self-esteem, measured by the Rosenberg Self-Esteem Scale[32]; and
7. self-reported emotional health.

Women were categorized as planning to become pregnant if they reported planning to conceive and were not using contraception when they became pregnant.

The primary outcome measure for this analysis was self-reported time to pregnancy. The specific question asked was "In summary, including all miscarriages, abortions, terminated pregnancies, stillbirths, ectopic pregnancies and other pregnancy complications, as well as including fertility treatments you may have tried, how long did it take you to get pregnant with this baby?" Conception alone is not considered a reproductive success by patients, as the desired outcome is a live-born infant. Thus, this question allowed us to measure the time it took for a woman to achieve the optimal outcome (i.e., a pregnancy resulting in a live birth) from the time she began trying to achieve that outcome. In addition, this definition of time to pregnancy does not assume that subfertility and pregnancy losses are independent events, as some epidemiologists have suggested subfertility and pregnancy losses may have a shared underlying etiology.[33] Self-reported time to pregnancy is thought to yield a fairly accurate representation of the time to pregnancy distribution, and about 80% of couples conceive within six months of beginning attempts.[34,35] Because we were interested in factors related to the ability to conceive and deliver a live-born infant, we examined differences between women who took six months or less to become pregnant and deliver a live-born infant and those who took longer. Although 12 months is the standard censoring point, six months is also considered to be a reasonable point at which to censor attempts.[36]

The secondary objective was assessed by asking women if they used anything to help them achieve this successful pregnancy, including monitoring vaginal temperature or vaginal mucus and using any prescription medication, artificial insemination, IVF, or intracytoplasmic sperm injection (ICSI). The questions asked were:

"Many women try different things to help them get pregnant. Please answer 'yes' or 'no' to the following questions.

- For THIS pregnancy, did you:
    - monitor your vaginal temperature to know the time of ovulation?
    - monitor your vaginal mucus to know the time of ovulation?
    - use ANY prescription medication to help you get pregnant?
- Did you use artificial insemination to help you get pregnant with this baby?
- Did you use in vitro fertilization (IVF)?
- Did you use ICSI (intra cytoplasmic sperm injection)?"

All women planning to get pregnant, not using contraception, and under the age of 35 when they began trying to get pregnant were included in the analysis.[35] We restricted the analysis to women under the age of 35 because they represent the majority of women having a first live birth, and because infertility, the risk of pregnancy complications, miscarriage, and poor birth outcome increase with advanced maternal age.[37–44] Older women are therefore more likely to be unable to achieve a successful pregnancy and may even be less persistent in trying to become pregnant.[36,45,46] These women then are not included in pregnancy-based samples, and this, in turn, may bias the results with regard to time to pregnancy.[36,45,46] We chose to exclude women aged 35 and over to avoid this bias and to preserve the ability to generalize our results to the majority of women having a first live birth. We also excluded 23 women with "accidental" pregnancies, (i.e., those who were not planning to become pregnant or were using contraception). Because these women were not trying or planning to become pregnant, they do not have an eligible time to pregnancy value.[34]

Data were analyzed using Stata/SE version 10.0 (Stata Corporation, College Station, TX). Frequencies of responses to selected questions were determined. Sociodemographic characteristics, life events, physical and emotional well-being, previous pregnancy experiences, and fertility methods of women who reported conceiving within six months were compared with those of women who reported taking longer than six months to conceive. The log-rank test was used to determine univariate prognostic significance of study variables, and $P < 0.05$ was considered to be statistically significant. Cox proportional hazards modelling was used to examine simultaneously the effects of multiple covariates on time to pregnancy. These techniques have been previously described.[47] A backward deletion approach was used so that all variables found to be significant at the bivariate level were included in the model, and the least significant variable deleted. Successive refitting of the reduced model was continued, and the same rule was applied until all remaining variables were statistically significant. Interactions were also considered. We also performed analyses excluding women who used fertility medications or fertility treatment. The proportionality assumption was tested graphically using log-log plots and using the global test based on the scaled Schoenfeld residuals. The assumption that the hazard ratio is constant over time was met. Sensitivity analyses were conducted censoring at five months and seven months to verify the robustness of our results. We also compared this sample (women who were planning to get pregnant, not using contraception, and under the age of 35 when they started trying to conceive) with women who were not planning to get pregnant and were under the age of 35 at conception using logistic regression.

We used maternal age at the start of trying to conceive in selecting participants for the analyses because this is thought to be the most valid way to consider maternal age in time to pregnancy studies.[34,48,49] This is the only interpretable measure, because age at conception or delivery is dependent on time

to pregnancy (i.e., the longer a woman takes to become pregnant, the older she will be at conception) and not the reverse.[49] Maternal age at the start of trying to conceive was calculated by subtracting time to pregnancy from maternal age at conception. Women reported time to pregnancy up to one year in months, so the number of months was subtracted from maternal age at conception in these cases. If time to pregnancy was longer than one year, women reported it in years. In these cases, the midpoint of a year was used to calculate maternal age at the start of trying to conceive.[49] Thus, 18 months were subtracted from the age at conception if time to pregnancy was reported as two years, 30 months were subtracted from the age at conception if time to pregnancy was reported as three years, and so on.

Ethics approval was obtained from the University of Alberta and the Conjoint Ethics Board at the University of Calgary and the Calgary Health Region.

RESULTS

Of 1456 eligible women, 1044 completed the survey (a 72% response rate). Respondents included 575 women who were planning to conceive, not using contraception, and less than 35 years of age at the start of trying to conceive. In general, the majority of participants were Caucasian, married, had a post-secondary education, and earned $40 000 or more per year (Table 1). Approximately 30% were overweight or obese, 20% reported smoking, and 80% reported drinking alcohol within six months prior to pregnancy (Table 1). The reported times to pregnancy ranged from less than one month to more than 10 years; the median time to pregnancy was four months (95% CI 3 to 5), and 61% of the sample became pregnant within six months of starting attempts (Figure).

Women who conceived in six months or less of trying to conceive were significantly more likely to have a healthy body weight than women who took longer than six months to conceive (Table 1). Women who conceived within six months were also more likely to have experienced life events and/or have had personal goals in the last two years that influenced the timing of this pregnancy, to report good emotional health in the six months prior to pregnancy, and to have no history of miscarriage or pregnancy complications (Table 1). Overall, 16% of women used one or more fertility treatments to assist with conception, including prescription medication (15%), artificial insemination (6%), IVF (6%) or ICSI (4%) (Table 2). Women who took longer than six months to conceive were more likely to have monitored vaginal temperature and mucus and to have used fertility medications or treatments (Table 2).

Multivariate analysis indicated that the most significant predictors of taking more than six months to conceive included being overweight or obese, having a history of pregnancy complications, and having poor self-rated emotional health six months prior to conception (Table 3). Excluding women who reported using fertility treatments or medications changed the effect sizes only slightly (Table 3). Women who were obese and suffered poor emotional health (multiplying together the hazard ratios for obesity [1.34] and poor emotional health [2.02]) were almost three times as likely as women of normal body mass and in good emotional health to take more than six months to conceive. There was no significant interaction between a history of pregnancy complications and BMI, or between a history of pregnancy complications and emotional health six months prior to conception. Examination of model fit indicated that the proportional hazards assumption was met. To ascertain the stability of the findings and to determine the impact of potential error in self-reported time to pregnancy, the survival analysis was censored at five months and at seven months. When the survival analysis was censored at five months or seven months, being overweight or obese and having poor self-rated emotional health six months prior to pregnancy remained as significant predictors of a longer time to conception (data not shown). For all models, the proportional hazard remained constant over time.

DISCUSSION

Failure to conceive quickly (within six months) among women who started trying to conceive when they were less than 35 years of age was associated with being overweight or obese, having poor emotional health, and having a history of pregnancy complications. Importantly, these risk factors, and the magnitude of their impact, persisted regardless of the inclusion or exclusion of women who were using assisted reproductive technology. Fertility declines with advanced maternal age,[38] and assisted reproductive technologies (artificial insemination, IVF, ICSI) are more commonly used among women aged 35 years and over.[50] Among younger women in the current study, the use of assisted reproduction technologies, fertility medication, and other fertility methods (i.e., monitoring vaginal temperature and mucus) increased among those who did not become pregnant within six months. When women did not conceive within six months, they were motivated to investigate ways to improve their chances of becoming pregnant.

The data in this study, however, suggest that younger women may improve their chance of pregnancy and live birth and reduce the likelihood of requiring fertility treatment if optimal body weight could be achieved prior to conception. Optimal body weight prior to pregnancy has been associated with improved health during pregnancy (e.g., reduced incidence of gestational diabetes, preeclampsia, hypertension, and miscarriage), better birth outcomes (e.g., reduced

Table 1. Participant characteristics, by time to pregnancy

	≤ 6 months n = 351 n (%)	> 6 months n = 224 n (%)	Overall n = 575 n (%)	*P*
Demographics				
Married	350 (99)	223 (99)	573 (99)	0.883
Ethnicity				0.085
Caucasian	305 (87)	184 (82)	489 (85)	
Non-Caucasian	46 (13)	40 (18)	86 (15)	
Education				0.608
< High school	5 (1)	6 (3)	11 (2)	
High school	78 (22)	57 (25)	135 (23)	
Post-secondary	232 (66)	138 (62)	370 (64)	
Post-graduate	36 (11)	23 (10)	59 (10)	
Household income per year				0.428
< $40 000	43 (13)	21 (10)	64 (12)	
≥ $40 000	297 (87)	192 (90)	489 (88)	
Working in 6 months prior to pregnancy	328 (93)	205 (92)	533 (93)	0.340
Lifestyle and life circumstances				
Any smoking in 6 months prior to pregnancy	57 (16)	48 (21)	105 (18)	0.075
Drinking behaviour				0.011
Non-drinker	178 (52)	277 (79)	316 (56)	
Drinker	132 (38)	72 (33)	204 (36)	
Binge drinker	35 (10)	10 (4)	45 (8)	
Alcohol in 6 months prior to pregnancy	277 (79)	165 (74)	442 (77)	0.103
Conditions, events, or goals in the preceding 2 years that influenced timing of this pregnancy				
Emotional health conditions	54 (15)	57 (25)	111 (19)	0.005
Life events	92 (26)	24 (11)	116 (20)	< 0.001
Personal goals	80 (23)	25 (11)	105 (18)	< 0.001
Corporate/work goals	91 (26)	34 (15)	125 (22)	< 0.001
Well-being				
Pre-pregnancy BMI				0.009
Normal/underweight	266 (76)	144 (66)	410 (72)	
Overweight/obese	83 (24)	75 (34)	158 (28)	
Physical health 6 months prior to pregnancy				0.124
Poor or fair	19 (5)	18 (8)	37 (6)	
Good	70 (20)	54 (24)	124 (22)	
Very good/excellent	262 (75)	152 (68)	414 (72)	
Emotional health 6 months prior to pregnancy				< 0.001
Good to excellent	332 (95)	187 (83)	519 (90)	
Poor or fair	19 (5)	37 (17)	56 (10)	
Self-esteem*				0.262
High	196 (56)	115 (53)	311 (55)	
Low	153 (44)	103 (47)	246 (45)	
Previous pregnancies				
First time pregnant	308 (88)	172 (77)	480 (83)	0.001
History of pregnancy complications, abortion, or miscarriage	40 (11)	48 (21)	88 (15)	0.001
Past pregnancy problems resulting in a fear of further pregnancy	8 (19)	23 (44)	31 (33)	0.009

Note: Among women planning to get pregnant, not using contraception, and under the age of 35 when they started trying to get pregnant

*Women were considered to have high self-esteem if they scored 23 or above on the Rosenberg Self-Esteem Scale.

Cumulative probablilty distribution of time to pregnancy

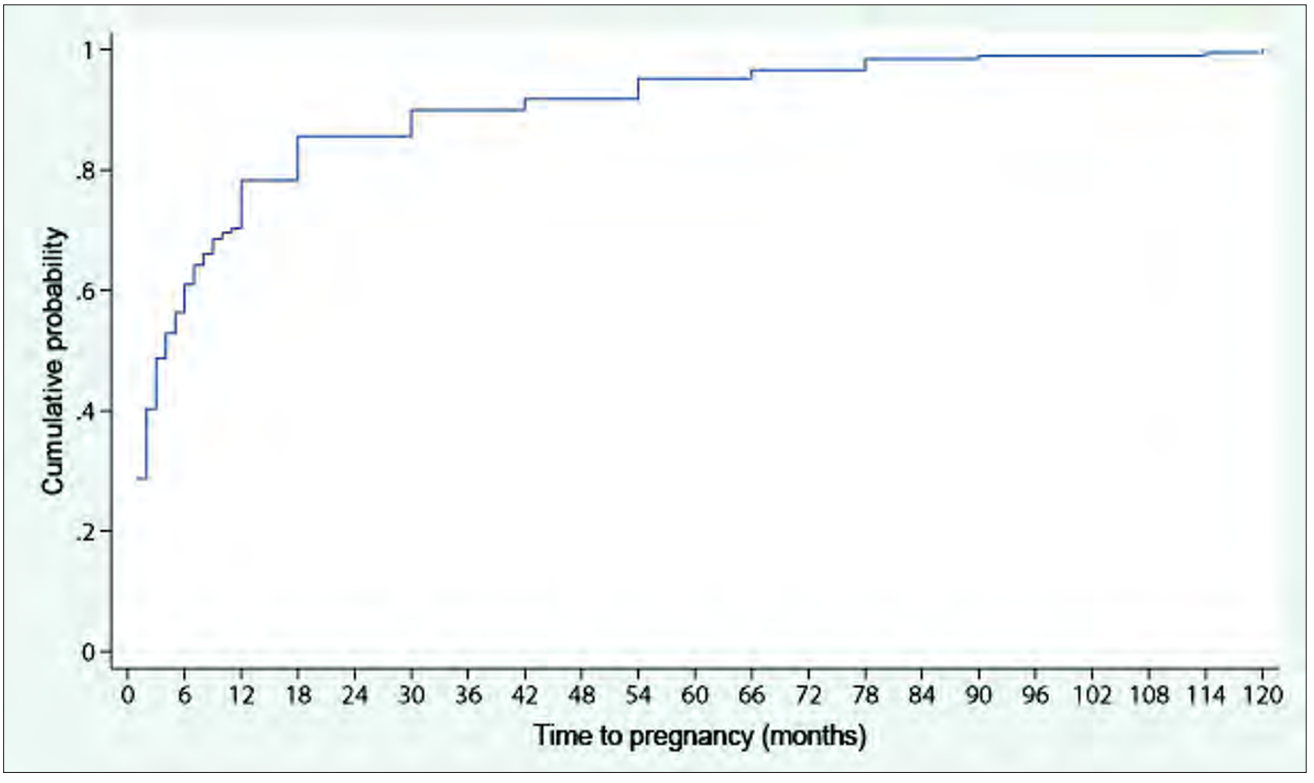

Table 2. Fertility methods, by time to pregnancy

Fertility method	≤ 6 months n = 351 n (%)	> 6 months n = 224 n (%)	Overall n = 575 n (%)	*P*
Monitored vaginal temperature	14 (4)	39 (17)	53 (9)	< 0.001
Monitored vaginal mucus	56 (16)	83 (37)	139 (24)	< 0.001
Used any prescription medication to assist conception	4 (1)	84 (38)	88 (15)	< 0.001
Used artificial insemination	1 (0)	33 (15)	34 (6)	< 0.001
IVF	1 (0)	35 (16)	36 (6)	< 0.001
ICSI	1 (0)	21 (9)	22 (4)	< 0.001
Waited to try fertility methods until fertility methods could be afforded	1 (2)	13 (11)	14 (9)	0.086

Note: Among women planning to get pregnant, not using contraception, and under the age of 35 when they started trying to get pregnant

incidence of large-for-gestational age infants, Caesarean section, and neonatal mortality), and better long-term maternal health (e.g., lower risk for future cardiovascular disease, hypertension, diabetes, osteoarthritis, and certain types of cancer).[51–55] However, recent trends indicate that there is an increased proportion of women of childbearing age who are overweight or obese.[56,57] In 2003, 32% of Canadian women aged 20 to 44 were overweight or obese, and this statistic escalated to 44% in 2008.[56,57] The impetus for supporting almost half of Canadian women in achieving healthy body weights is clear, not only in terms of pregnancy outcomes and birth outcomes but for long-term health outcomes.

Women with poor emotional health six months before they conceived were twice as likely as women with good emotional health to take longer than six months to conceive. This finding suggests women with good emotional health became pregnant more quickly, emotional health deteriorated as couples did not experience a successful conception within six months, or a reciprocal effect.[21] Ideally, the direction of this effect would have been more clearly interpretable if emotional health had been measured at the initiation of the attempt to become pregnant. However, women were asked to report on their emotional health six

Table 3. Multivariate proportional hazards model of factors determining time to pregnancy more than 6 months

	Among all women* n = 568 HR (95% CI)	Among women who were not using any fertility medications or treatments n = 480 HR (95% CI)
BMI		
Underweight/normal Overweight/obese	1.34 (1.05 to 1.72)	1.31 (1.02 to 1.68)
History of pregnancy complications, history of miscarriage, history of abortion		
No Yes	1.42 (1.02 to 1.99)	1.63 (1.17 to 2.29)
Self-rated emotional health at 6 months prior to pregnancy		
Good/very good/excellent	2.02 (1.27 to 3.22)	1.72 (1.08 to 2.75)
Fair/poor		

*Among women planning to get pregnant, not using contraception, and under the age of 35 years when they started trying to get pregnant

months prior to conception, which provides more stability to the estimate than emotional health immediately before conception. The results of this study are similar to those of a previous study that obtained prospective data on distress and found a relationship with reduced fertility.[27] Evidence of the role of emotional health, including anxiety and stress, on the ability to carry a pregnancy to term is also found in rodent models, in which stress and anxiety may influence both the ability to conceive and the ability to deliver at term.[58] Anxiety has also been associated with an increased risk of adverse birth outcomes among humans.[59,60]

Considered together, these results highlight the potential independent role of emotional health in achieving a successful pregnancy, such that improving the emotional health of women may improve the chances of conceiving and sustaining a pregnancy. Preliminary evidence among women undergoing IVF demonstrates the potential role of strategies to cope with stress in improving the chances of becoming pregnant and improving psychological outcomes for women.[21,61] The body of research to date suggests there is merit in further research regarding strategies to optimize emotional health among women who are trying to conceive.

Conception is only the first step towards a successful pregnancy, i.e., one that culminates in the delivery of a live-born infant. In this analysis, we were able to account for a history of pregnancy complications and consider factors that may affect both conception difficulties and difficulties in carrying a pregnancy to delivery of a live-born infant.[33] These results suggest that even among women who are not considered to be delaying childbearing, BMI and emotional health are related to pregnancy success. Natural fertility is believed to begin to decline after the age of 27 years,[38] and there may be an opportunity to improve public awareness that difficulties conceiving may begin earlier than 35 years of age because of factors other than age.[2,38]

Although older women were excluded from this analysis, overall 16% of urban women under the age of 35 years reported using one or more methods to assist with the index conception. Almost all of these women had used some form of prescription medication at some time, while the others used more invasive and costly forms of assisted reproductive technology including IVF, ICSI, and artificial insemination. Understanding the prevalence and outcomes associated with the use of techniques that assist in achieving pregnancy is essential to interpreting information related to changes in fertility rates and birth outcomes.

The survey was designed using focus groups and was pilot tested and revised to ensure both content and face validity.[31,62] The random digit dial process was successful in capturing a community-based sample that allowed for assessment of factors related to childbearing, and has the advantage of capturing the general population rather than a speciality clinic-based sample. A sample drawn from a speciality clinic (e.g., obstetrics) potentially would have

skewed our estimates to a higher risk population of women requiring additional prenatal or preconception services. The community-based sample of this study provides increased confidence that the estimates of lifestyle and demographics reflect the general population of couples planning families.

A single-item question was asked about emotional health in this study; however, a single-item question for health status has been found to be valid in other health domains. For instance, a single self-report question regarding mental health status has been validated to correspond with the SF-36.[63] Thus, it is probable that a single self-report question provides a reasonable measure of emotional health. There is also little reason to believe that women would report in a socially desirable manner, because responses on this survey were anonymous and not linked to medical care or other care.

This study minimized recall bias by asking women about their recent delivery and reduced bias by including only the first live birth.[34] However, because the study was pregnancy-based, there were no data derived from those who ultimately did not deliver a live-born infant, and thus the findings are best generalized to the 90% of the population who ultimately do not experience unresolved infertility.[29,34] In addition, we excluded accidental pregnancies. Thus, the results of this study can be generalized to the majority of women who plan their pregnancies and are trying to become pregnant, but not to those women who experience accidental pregnancies.

Because this was a retrospective study, we could not accurately collect detailed information on behaviour and factors at specific times during the attempt to conceive.[34] This data set also did not include information on the type of contraception used prior to pregnancy, although some types of contraception may delay conception when they are initially discontinued.[64–66] This analysis was limited to describing maternal factors related to time to pregnancy, because information on male factors or patterns of intercourse was not known.[35,36,67]

CONCLUSION

Conception may be delayed among primiparous women under the age of 35 as a consequence of the independent effects of overweight and obesity, poor emotional health, and a history of pregnancy complications. Over 15% of women under the age of 35 in this urban sample sought some assistance with conception, including medication and more invasive procedures. Public health strategies related to healthy reproduction should focus on modifiable factors, such as BMI and emotional health, that may influence the probability of conception and live birth among the majority of the childbearing population.

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