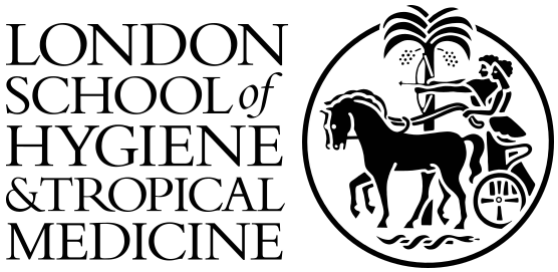

Non-use of Contraception by Canadian Youth Aged 15 to 24: Findings From the 2009–2010 Canadian Community Health Survey

S. Dunn

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Abstract

Objectives: Non-use of contraception is an important contributor to unintended pregnancy. This study assessed non-use of contraception and its determinants among Canadian youth aged 15 to 24.

Methods: Data from the 2009–2010 Canadian Community Health Survey respondents aged 15 to 24 were used to identify non-users of contraception among heterosexual youth who had had intercourse within the previous 12 months, were not pregnant or sterilized, and felt it was important to avoid pregnancy. Sociodemographic, behavioural, and geographic factors were compared for non-users and users of contraception.

Results: Among youth at risk for unintended pregnancy, 15.5% were non-users of contraception. There were no differences between sexes. Across regions of Canada, Quebéc had the highest proportion of at-risk youth, but at-risk Quebéc youth were the least likely to be non-users (7.4%; CI 5.7%–9.0%) compared with at-risk youth in the Territories (28.3%; CI 21.6%–35.0%). In the multivariable analysis, aside from residence outside of Quebéc, younger age, lower income, Aboriginal identification (adjusted OR [aOR] 1.67; CI 1.18–2.37), and smoking (aOR 1.55; CI 1.24–1.92) were associated with non-use. Canadian-born youth (aOR 0.61; CI 0.39–0.96) and those enrolled in school (aOR 0.63; CI 0.50–0.81) were less likely to be non-users.

Conclusion: The 15.5% of Canadian youth at risk for unintended pregnancy who were non-users of contraception represent an estimated 300 000 Canadian youth. Policies and programs to promote and support access to sexual health services and effective contraception with specific attention to supporting the needs of younger teens, Aboriginal youth, newcomers, low-income youth, and youth who are not in school are needed.

Key Words: Contraception, contraception non-use, youth, unintended pregnancy, socioeconomic factors, Canadian Community Health Survey

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Résumé

Objectifs : Le non-recours aux moyens de contraception est un facteur majeur de grossesse imprévue. Cette étude évaluait la non-utilisation de contraceptifs et ses déterminants chez les jeunes canadiens âgés de 15 à 24 ans.

Méthodologie : Nous avons utilisé les données de l'Enquête sur la santé dans les collectivités canadiennes 2009-2010 relatives aux jeunes de 15 à 24 ans pour recenser les jeunes hétérosexuels qui n'utilisaient pas de moyens de contraception et qui avaient eu des relations sexuelles dans les 12 mois précédents, qui n'étaient pas enceintes ou stérilisés et qui croyaient qu'il était important d'éviter une grossesse. Nous avons comparé les facteurs sociodémographiques, comportementaux et géographiques des utilisateurs et des non-utilisateurs de moyens de contraception.

Résultats : Chez les jeunes à risque de grossesse imprévue, 15,5 % n'utilisaient pas de moyens de contraception. Il n'y avait pas de différence entre les sexes. De toutes les régions du Canada, le Québec avait la proportion de jeunes à risque la plus élevée, mais ces jeunes étaient moins susceptibles de ne pas utiliser de contraceptifs (7,4 %; IC : 5,7 %–9,0 %) que les jeunes à risque des territoires (28,3 %; IC : 21,6 %–35,0 %). Selon l'analyse multivariée, en plus du fait d'habiter hors du Québec, le jeune âge, le faible revenu, l'identité autochtone (RC ajusté [RCA] : 1,67; IC : 1,18–2,37) et le tabagisme (RCA : 1,55; IC : 1,24–1,92) étaient associés à la non-utilisation. Les jeunes nés au Canada (RCA : 0,61; IC : 0,39–0,96) et ceux qui fréquentaient l'école (RCA : 0,63; IC : 0,50–0,81) étaient moins susceptibles de ne pas utiliser de contraceptifs.

Conclusion : La proportion de 15,5 % des jeunes canadiens à risque de grossesse imprévue qui n'utilisaient pas de moyens de contraception représente environ 300 000 jeunes. Il sera nécessaire de mettre en place des politiques et des programmes visant à promouvoir et à faciliter l'accès aux services de santé sexuelle et à la contraception efficace axés particulièrement sur les besoins des jeunes adolescents, des Autochtones, des nouveaux arrivants, des jeunes à faible revenu et des jeunes qui ne fréquentent pas l'école.

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INTRODUCTION

By the age of 24, 86% of Canadians have had sexual intercourse and are vulnerable to unintended pregnancy.[1] Approximately 40% of all pregnancies in Canada are unintended.[2] Although teen pregnancy rates have fallen in recent years, 2.9% of Canadian women aged 15 to 19 become pregnant each year, with 51% of these pregnancies resulting in abortion.[3–5] Teen pregnancies that continue have an increased risk of low birth weight and adverse neonatal outcomes.[6] Unintended pregnancy has a profound impact on youths' physical and emotional health, educational attainment, and career aspirations.[7]

Non-use of contraception among sexually active youth aged 15 to 24 is an important cause of unintended pregnancy and is understandably a major health concern in this age group. According to a study of 24 countries in Europe and North America, on average 13.2% of sexually active 15 year olds used no contraception at last intercourse.[8] Among U.S. women with an unintended pregnancy, 52% did not use contraception in the month of conception,[9] and U.S. and Canadian studies of women having abortions found about one half were not using contraception at the time of conception.[10,11] In a 2006 Canadian national cross-sectional survey, 14.9% of sexually active reproductive age women who were not trying to conceive never used contraception, and only 65.2% reported that they "always used" contraception.[12]

Non-use of contraception among youth comes with high personal and societal costs. International population-based studies have found that teens, immigrant and ethnic minorities, and people with less education have higher rates of non-use of contraception,[13,14] but factors associated with non-use among Canadian youth remain unknown. This study aimed to assess determinants of non-use of contraception among 15- to 24-year-old Canadians at risk for unintended pregnancy, to provide evidence to inform development of health policies and services to better address the sexual health needs of this population and provide baseline data for examination of trends over time.

METHODS

We conducted a secondary analysis of cross-sectional data from the 2009–2010 Canadian Community Health Survey (CCHS) to assess the relationship of demographic, geographic and behavioural characteristics with non-use of contraception among youth at risk for unintended pregnancy. We also assessed factors associated with risk for unintended pregnancy.

Data Source

The CCHS is a national household survey that collects information about health status, health care use, and health determinants for the Canadian population.[15] The survey targets individuals ≥12 years of age living in private dwellings and spans the 10 provinces and three territories. It uses a multistage, cross-sectional design allocating proportionally to populations within each health region and in 2009–2010 covered 98% of the population. The survey excludes individuals living on First Nations reserves and some very remote communities, institutionalized individuals, and full-time members of the armed services. The 2009–2010 CCHS data were collected from January 2009 through December 2010, with a 72% response rate. Additional details regarding CCHS sampling and survey methodology have been published elsewhere.[1,15]

Questions from the CCHS Sexual Behaviours Module that were the source of much of the study data were administered to youth aged 15 to 24.[15] The survey sample for this age group numbered 15 966 respondents weighted to represent a population of 4.4 million.[1]

Study Population and Measures

We defined individuals aged 15 to 24 as "at risk" for unintended pregnancy if they indicated that they had been sexually active in the past 12 months, were heterosexual (only reported for those aged 18 and above), were not currently pregnant or sterilized, and agreed or strongly agreed that it was important for them or their partner to avoid getting pregnant right now. We defined non-users of contraception according to the following criteria: (1) they indicated they did not usually use contraception; or (2) in response to the question "What kind of birth control did you and your partner use the last time you had sex?" they indicated that they did not use contraception or did not select a contraceptive method from the options provided. Response options were condoms (male or female), birth control pill, diaphragm, spermicide, birth control injection, and other.[15]

Sociodemographic characteristics included in the analyses were sex, age, income quintile, self-identified Aboriginal status, born in Canada, Canadian region of residence (Atlantic, Quebéc, Ontario, Prairies, Alberta, British Columbia, Territories), urban or rural residence, current

school enrolment, and whether or not they had a regular doctor. Behavioural characteristics included alcohol use (less than two times per week, two or more times per week), current smoking status (non-smoker, daily or occasional smoker), number of sexual partners in the past 12 months (none, one, two or more), and history of sexually transmitted infections (STIs).

Data Analysis

Statistical analysis was conducted using SAS version 9.3 (SAS Institute, Cary, NC). Descriptive statistics were tabulated for the overall population and for those at risk and not at risk for unintended pregnancy. Characteristics of those at risk and not at risk were compared using chi-square statistics. Bivariate analysis of individuals at risk of unintended pregnancy compared non-users and users of contraception for the following independent variables: age, sex, neighbourhood income quintile, identification as Aboriginal, birthplace (Canada, other), geographic region, urban or rural residence, having a regular medical doctor, current school enrolment, alcohol consumption, smoking, number of sexual partners in the previous year, and history of STI. Subsequently we performed a full multivariable logistic regression using the same variables, as well as a limited logistic model using only variables that were significant in the bivariate analysis. Age and sex were included a priori. Statistical significance was set as alpha of 0.05. We used weighted estimates and bootstrap variances to account for the complex survey design.[16] The study was approved by the University of British Columbia, BC Children's and Women's Hospital Research Ethics Board, approval #H11-03471.

RESULTS

Overall 47.9% (CI 46.7%–49.1%) of youth aged 15 to 24 met the criteria for being at risk for unintended pregnancy, specifically 47.7% (CI 46.0%–49.4%) of male youth and 48.1% (46.4%–49.8%) of female youth. As expected, the age-specific proportion of those at risk increased as age increased because of the increasing proportions of youth who were sexually active (Figure 1, Table 1). Demographic and behavioural characteristics of all youth and of youth at risk for unintended pregnancy are described in Table 1 and are compared across risk categories in Table 2. Across regions of Canada, there was considerable variation in the proportion of youth at risk, ranging from 55.5% (CI 52.8%–58.3%) in Quebéc to 43.2% (CI 39.9%–46.4%) in British Columbia (Figure 2). Youths at risk were more likely to be Canadian-born and to live in higher-income neighbourhoods, smoke, and use alcohol than those not at risk. Aboriginal status and urban or rural residence were not associated with being at risk for unintended pregnancy.

Non-use of Contraception Among Youth at Risk for Unintended Pregnancy

We found overall that 15.5% of at-risk youth did not use contraception at most recent intercourse, and this did not vary by sex. Although less likely to be at risk for unintended pregnancy, younger at-risk teens were significantly more likely to be non-users than their older counterparts; 21.3% (CI 18.5%–24.1%) of at-risk 15 to 17 year olds were non-users compared with 14.3% (CI 12.6%–16.1%) of 20 to 24 year olds ($P = 0.0017$) (Figure 1). As with population rates of risk

Figure 1. Risk for unintended pregnancy and non-use of contraception among youth aged 15 to 24, Canadian Community Health Survey 2009–2010.

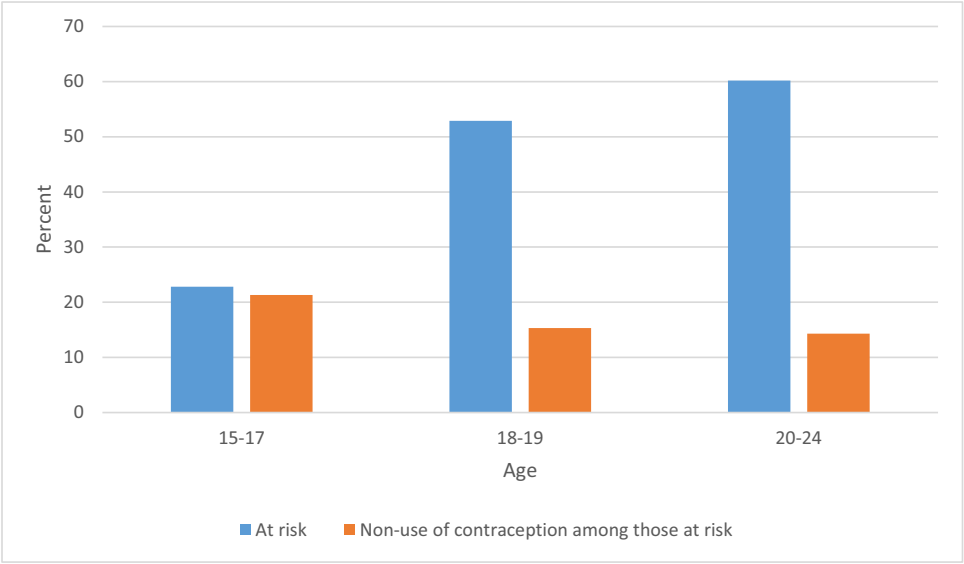


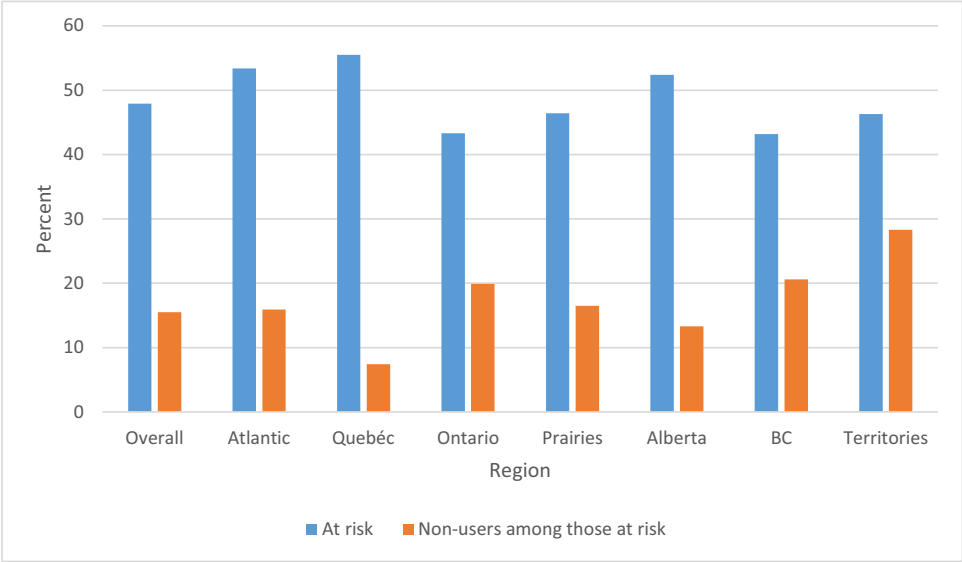
Table 1. Characteristics of all youth aged 15 to 24 and of youth at risk for unintended pregnancy: Canadian Community Health Survey 2009–2010

Characteristic	All youth Percent (CI)	Youth at risk Percent (CI)
Gender		
Male	52.1 (51.3–52.9)	51.9 (50.5–53.4)
Female	47.9 (47.1–48.7)	48.1 (46.6–49.5)
Age		
15–17	29.3 (28.4–30.2)	14.0 (13.1–14.9)
18–19	18.7 (18.0–19.5)	20.7 (19.4–22.0)
20–24	51.9 (51.0–52.8)	65.3 (64.0–66.7)
Income quintiles		
Lowest	25.6 (24.5–26.7)	22.3 (20.7–23.9)
Lower middle	21.3 (20.3–22.3)	19.9 (18.3–21.4)
Middle	20.6 (19.7–21.6)	21.5 (20.1–23.0)
Upper middle	17.9 (17.1–18.8)	20.2 (18.7–21.6)
Highest	14.5 (13.7–15.3)	16.1 (14.9–17.3)
Aboriginal		
Yes	5.0 (4.6–5.5)	5.3 (4.6–6.0)
No	95.0 (94.5–95.4)	94.7 (94.0–95.4)
Born in Canada		
Yes	83.8 (82.7–84.9)	87.4 (85.9–88.9)
No	16.2 (15.1–17.3)	12.6 (11.1–14.1)
Region		
Atlantic	6.4 (6.1–6.6)	7.1 (6.6–7.7)
Quebéc	21.8 (21.1–22.5)	25.3 (23.9–26.7)
Ontario	40.1 (39.4–40.9)	36.3 (34.8–37.7)
Prairies	6.4 (6.1–6.7)	6.2 (5.6–6.7)
Alberta	11.9 (11.3–12.4)	13.0 (11.9–4.0)
British Columbia	13.1 (12.5–13.6)	11.8 (10.8–12.8)
Territories	0.36 (0.33–0.38)	0.34 (0.30–0.39)
Place of residence		
Urban	84.7 (84.0–85.4)	84.4 (83.3–85.4)
Rural	15.3 (14.6–16.0)	15.6 (14.6–16.7)
Regular doctor		
Yes	78.3 (77.2–79.3)	76.1 (74.6–77.6)
No	21.7 (20.7–22.8)	23.9 (22.4–25.4)
School enrolment		
Yes	60.8 (59.7–62.0)	53.6 (51.8–55.3)
No	39.2 (38.0–40.3)	44.4 (44.7–48.2)
Alcohol use ≥2 times/week		
Yes	21.3 (20.2–22.4)	26.5 (24.9–28.1)
No	78.7 (77.6–79.8)	73.5 (71.9–75.1)
Smoking		
Yes	22.1 (21.1–23.1)	30.4 (29.5–31.2)
No	77.9 (76.9–78.9)	69.6 (68.9–0.3)

Table 2. Demographic and behavioural factors and risk for unintended pregnancy among youth aged 15 to 24

Characteristic	Not at risk Percent (CI)	At risk Percent (CI)
Gender		
Female	51.9 (50.2–53.6)	48.1 (46.4–51.0)
Male	52.3 (50.6–54.0)	47.7 (46.0–49.4)
Age		
15–17	77.2 (75.7–78.6)	22.8 (21.4–24.3)
18–19	47.1 (44.5–49.8)	52.9 (50.2–55.5)
20–24	39.8 (38.0–41.6)	60.2 (58.4–62.0)
Income quintile		
Lowest	58.3 (55.8–60.9)	41.7 (39.1–44.2)
Lower middle	55.4 (52.7–58.1)	44.6 (41.9–47.3)
Middle	50.0 (47.3–52.7)	50.0 (47.3–52.7)
Upper middle	46.2 (43.9–49.5)	53.8 (51.0–56.6)
Highest	46.7 (43.9–49.5)	53.3 (50.5–56.0)
Aboriginal		
Yes	48.7 (43.7–53.6)	51.3 (48.4–56.3)
No	51.4 (50.2–52.7)	48.5 (47.3–49.8)
Born in Canada		
Yes	49.2 (48.1–50.4)	50.8 (49.6–51.9)
No	62.0 (58.4–65.7)	38.0 (34.3–41.6)
Region		
Atlantic	46.6 (43.5–49.7)	53.4 (50.3–56.5)
Quebéc	44.5 (41.7–47.2)	55.5 (52.8–58.3)
Ontario	56.7 (54.8–58.6)	43.3 (41.4–45.2)
Prairies	53.6 (50.2–56.9)	46.4 (43.1–49.8)
Alberta	47.6 (43.9–51.3)	52.4 (48.7–56.1)
British Columbia	56.8 (53.6–60.1)	43.2 (39.9–46.4)
Territories	53.7 (48.6–58.7)	46.3 (41.3–51.4)
Residence		
Urban	52.3 (51.0–53.6)	47.7 (46.4–49.0)
Rural	51.2 (49.0–53.3)	48.8 (46.7–51.0)
School enrolment		
Yes	56.9 (55.4–58.4)	43.1 (41.6–44.6)
No	42.0 (40.0–44.0)	58.0 (56.0–60.0)
Regular doctor		
Yes	53.4 (52.2–54.6)	46.6 (45.4–47.8)
No	47.4 (44.6–50.1)	52.6 (49.9–55.4)
Smoker		
Yes	34.0 (31.8–36.3)	66.0 (63.7–68.3)
No	57.1 (55.7–58.3)	42.9 (41.5–44.3)
Alcohol use		
≥2 times/week	29.2 (26.4–32.0)	70.8 (68.0–73.6)
<2 times/week	46.8 (45.2–48.3)	53.2 (51.7–54.8)

Figure 2. Percentage of youth at risk for unintended pregnancy and percentage of non-users of contraception among youth at risk by region, Canadian Community Health Survey 2009–2010.



for unintended pregnancy, rates of non-use of contraception varied by region. Although Quebéc had the highest percentage of at-risk youth, it also had the lowest percentage of non-users of contraception, whereas the Territories had the highest percentage of non-users in the country, followed by British Columbia and Ontario (Figure 2).

Table 3 presents the unadjusted ORs and adjusted ORs (aORs) of factors associated with non-use of contraception. Results for the partial and fully adjusted models were similar, and the full model findings are presented. The strongest predictor of non-use was where in Canada youth were living. Compared with Quebéc, residents of all other regions were more likely to be non-users, with the greatest difference seen for those living in the Territories, who were nearly five times more likely to be non-users. Younger age, lower income, identifying as Aboriginal (aOR 1.67; CI 1.18–2.37) and smoking (aOR 1.55; CI 1.24–1.92) were also associated with a greater likelihood of non-use. Compared with those born outside Canada, Canadian-born youth were less likely to be non-users (aOR 0.61; CI 0.39–0.96), as were youth enrolled in school compared with those not enrolled (aOR 0.63; CI 0.50–0.81). Consumption of two or more alcoholic drinks per week was protective against non-use, although this trended but was non-significant in the multivariable analysis (aOR 0.80; CI 0.63–1.00). Gender, urban or rural residence, having a regular family doctor, number of sexual partners, and a history of STI were not significantly associated with non-use.

DISCUSSION

In this population-based study, 15.5% of sexually active female and male Canadians aged 15 to 24 did not use contraception, despite a stated desire to avoid pregnancy and participation in heterosexual intercourse. This estimate is similar to findings in national surveys in the United States and Canada.[12,13] In the study by Mosher et al.[13] using data from the 2002 and 2006–2010 U.S. National Survey of Family Growth, 16.5% of women aged 15 to 44 and categorized as at risk for unintended pregnancy were non-users. Consistent with our findings, non-use was higher for teens aged 15 to 19 (20.4%) compared with women aged 20 to 24 (13.4%). Our findings are comparable to those in the 2006 Canadian survey conducted by Black et al.,[12] in which 15% of at-risk women aged 15 to 50 never used contraception. However, the 2002 Canadian Youth, Sexual Health, HIV/AIDS Study, a national school-based survey, found that only 5% to 6% of grade 11 students reported not using birth control at their last intercourse.[17] Variation in definitions of non-use and study populations likely account for this difference. On the basis of our findings that approximately 48% of 4.4 million Canadians aged 15 to 24 were sexually active, fertile, and wishing to avoid pregnancy, and that 15.5% of those youth were non-users, we estimate that over 300 000 Canadian youth at risk for unintended pregnancy do not use contraception.

Some factors associated with risk for unintended pregnancy were protective against non-use of contraception.

Table 3. Unadjusted and adjusted associations between sociodemographic or behavioural characteristics and non-use of contraception among youth at risk for unintended pregnancy

Characteristic	Non-use (% and C.I.)	OR (95% CI)	*P* value	Adjusted OR	*P* value
Gender					
Male (reference)	16.6 (14.4–18.7)	1	0.11	1	0.1239
Female	14.4 (12.7–16.0)	0.85 (0.68–1.05)		0.83 (0.66–1.05)	
Age[a]					
15–17	21.3 (18.5–24.1)	0.94 (0.90–0.97)	0.0017	0.88 (0.84–0.92)	<0.0001
18–19	15.3 (12.9–17.8)				
20–24	14.3 (12.6–16.1)				
Income quintile[b]					
Lowest	18.9 (16.3–21.6)	0.87 (0.82–0.96)	0.030	0.90 (0.83–0.97)	0.0077
Lower middle	15.7 (13.0–18.4)				
Middle	16.0 (13.0–19.1)				
Upper middle	13.3 (10.0–16.6)				
Highest	12.3 (9.0–15.6)				
Aboriginal					
No (reference)	14.9 (13.5–16.3)	1	<0.0001	1	0.0036
Yes	25.8 (20.4–31.2)	1.99 (1.45–2.72)		1.67 (1.18–2.37)	
Canadian born					
No (reference)	24.1 (17.6–30.6)	1	0.0004	1	0.0328
Yes	14.2 (13.1–15.4)	0.52 (0.35–0.79)		0.61 (0.39–0.96)	
Region					
Atlantic	15.9 (12.2–19.7)	2.37 (1.6–3.4)	<0.001	2.31 (1.53–3.48)	<0.0001
Quebéc (reference)	7.4 (5.7–9.0)	1		1	
Ontario	19.9 (17.1–22.8)	3.1 (2.3–4.2)		3.05 (2.23–4.18)	
Prairies	16.5 (12.8–20.2)	2.5 (1.8–3.5)		2.19 (1.49–3.22)	
Alberta	13.3 (9.9–16.7)	1.9 (1.3–2.8)		1.78 (1.15–2.74)	
British Columbia	20.6 (16.2–25.0)	3.3 (2.3–4.7)		3.08 (2.05–4.62)	
Territories	28.3 (21.6–35.0)	4.9 (3.3–7.4)		[c]	
Residence					
Urban	15.9 (14.4–17.5)	1	0.057	1	0.1172
Rural	13.1 (10.8–15.4)	0.80 (0.63–1.01)		0.80 (0.61–1.06)	
Regular doctor					
No	14.1 (11.9–16.3)	1	0.20	1	0.9708
Yes	15.9 (14.3–17.5)	1.15 (0.93–1.42)		1.00 (0.79–1.256)	
School enrolment					
No	17.7 (15.5–19.9)	1	0.0019	1	0.0002
Yes	13.6 (12.1–15.1)	0.73 (0.60–0.90)		0.63 (0.50–0.81)	
No. of partners					
1	14.7 (13.1–16.3)	1	0.11	1	0.433
≥2	17.1 (14.6–19.5)	1.20 (0.96–1.49)		1.10 (0.87–1.40)	
History of STI					
No	15.3 (13.9–16.7)	1	0.16	1	0.1285
Yes	19.3 (13.6–25.0)	1.32 (0.88–1.99)		1.40 (0.91–2.15)	
Alcohol use					
Less than 2–3 times per week	15.7 (14.1–17.3)	1	0.015	1	0.054
2–3 times per week	12.4 (10.4–14.5)	0.76 (0.61–0.95)		0.80 (0.63–1.00)	
Smoker					
No	13.9 (12.4–15.5)	1	0.0002	1	<0.0001
Yes	19.2 (16.8–21.5)	1.47 (1.20–1.80)		1.55 (1.24–1.92)	

[a]ORs calculated for unit of 1 year.

[b]ORs calculated for unit of quintile.

[c]Unable to calculate because key variable missing.

Youth living in Quebéc were far more likely to be at risk, but they were also much more likely to use contraception than their counterparts in other regions. Cultural attitudes and government policies in Quebéc to promote sexual health among youth may be responsible for these findings. In 2007, Quebéc instituted a program allowing nurses and pharmacists to provide hormonal contraception to healthy women and girls.[18] This enabled school nurses, for example, to provide contraception to high school students. In addition, Quebéc provides free contraceptives to youth under 25 who live with their parents and attend school. Another study using 2009–2010 CCHS data found regional differences in condom use, where Quebéc youth had the lowest prevalence of condom use in Canada.[1] Uptake of more effective hormonal methods, as may be happening in Quebéc, has unfortunately also been associated with lower rates of condom use.[19,20] Concurrent promotion of effective contraception and condom use for STI protection remains a public health challenge. High rates of non-use of contraception found in the Territories may reflect issues of limited access and concerns about confidentiality in northern communities, as described in a 2015 Canadian study, which advocated for multiple points of access to sexual health care for northern residents.[21]

Divergent patterns of risk and non-use also arose with age and Canadian-born status. Although less likely to be at risk, youth aged 15 to 17 and those born outside Canada who *were* at risk were significantly more likely to be non-users of contraception. Younger teens and youth born outside Canada may lack knowledge and have more difficulty accessing contraception than their older or Canadian-born counterparts. Furthermore, sexual behaviour may be seen as less acceptable for younger teens and unmarried youth in some newcomer populations, thus making it even more challenging to seek sexual health services.[22,23] Similar trends noted in surveys from other countries highlight the need for targeted outreach and culturally tailored sexual health promotion combined with easily accessible sexual health services for these populations.[3,13,23]

Our finding that youth in the lowest income quintile were more likely to be non-users than those in higher income categories was expected. An Ontario study similarly found that abortion and teen pregnancy were two and six times higher, respectively, among women and girls living in the lowest-income neighbourhoods compared with the highest-income neighbourhoods.[24] However, the positive association of risk for unintended pregnancy with income was unexpected. Although higher-income youth were more likely to report engaging in sexual activity, they seemed better equipped to protect themselves when they did. Policies that subsidize or eliminate contraceptive cost, as exist in Quebéc and more recently in Ontario, could reduce barriers that are particularly challenging for low-income youth.[21,22]

At-risk Aboriginal youth were more likely to be non-users of contraception, In a 2016 study of female university students in Maritime Canada, non-use of contraception at last intercourse was three times higher among Aboriginal compared with non-Aboriginal women.[25] A Canadian study of sexual health providers identified significant barriers to contraception for Aboriginal youth, including a lack of culturally tailored information and services.[21] Participation of Aboriginal people and organizations in the development of sexual health services that reflect the community's culture, values, and experience and improving health care providers' cultural competence have been advocated to address sexual health inequities.[26,27] Because the CCHS excludes Aboriginal youth living on reserves, our findings may not extend to all Aboriginal youth, but they do identify sexual health disparities among those living off reserves.

Risky sexual behaviours such as non-use of contraception may be associated with other behavioural risks, such as alcohol use, smoking, and number of sexual partners,[17,28] but we did not find a consistent pattern. Although smokers were about 1.5 times more likely to be non-users, there was no significant association with alcohol use or number of sexual partners. Categorizing sexual partners as one, or two or more, within the previous year may have limited our ability to detect a relationship. In addition, we were unable to look at frequency of sexual intercourse, and this may relate to the number of partners and to the likelihood of using contraception.

Youth enrolled in school had a lower likelihood of non-use of contraception. Lower educational attainment is associated with poorer knowledge about contraception and higher rates of unintended pregnancy.[29,30] Schools provide opportunities for sexual health education to demystify contraception use and reduce risky sexual practices.[29] In addition, colleges and universities usually provide accessible sexual health services, and students often have access to low-cost contraceptives through parents' or school drug insurance plans. Youth transitioning out of school need policies and services to support access to and costs of contraception.[21]

Strengths of this study include the use of population-based data from a validated national survey. We were able to examine regional differences, which could relate to provincial policies or programs that could be adapted to other jurisdictions. However, this study has limitations, some of which relate to the data available in the CCHS. The 2009–2010 survey included only limited contraceptive options,

omitting the intrauterine device, contraceptive patch, and ring, which were relegated to the "other" category for contraceptive method. Nor was withdrawal included as an option, although it has been cited as a method used by 17% to 60% of teens in other surveys.[12,31] Because withdrawal users may not define it as a contraceptive, this may have increased the rate of non-use in our population. Nevertheless, with a risk of 22 pregnancies per 100 couples per year, categorizing withdrawal users as non-users is reasonable.[32] Compared with some surveys,[12,13,17] we used a broader definition of non-use that included individuals wanting to avoid pregnancy, sexually active within 12 months, and not usually using contraception or not using contraception at last intercourse. This could categorize individuals initiating a method following a period of non-use as non-users. However, we believe our definition encompassed behaviours that pose a risk of unintended pregnancy over time that more limited definitions, such as non-use at last intercourse, ignore.

CONCLUSION

Despite a desire to avoid pregnancy, 15.5% of Canadian youth aged 15 to 24 were non-users of contraception and were exposed to a substantial risk for unintended pregnancy and its sequelae. Sexually active youth who were poorer, not Canadian-born, identified as Aboriginal, and not enrolled in school were more likely to be non-users of contraception. Quebéc, which has prioritized increasing access to contraception through nurse or pharmacist provision and provincially subsidized contraception for youth, appears to have been successful in promoting contraceptive use, by having the lowest likelihood of non-use among youth at-risk. Other jurisdictions should consider similar programs. Strategies tailored to support knowledge and contraceptive use among younger teens and youth who are poorer, born outside Canada, and Aboriginal are needed to enhance equitable contraceptive practices across the population.

REFERENCES

1. Rotermann M. Sexual behaviour and condom use of 15- to 24-year-olds in 2003 and 2009/2010. Health Rep 2012;23:41–5. Available at: http://www.statcan.gc.ca/pub/82-003-x/2012001/article/11632-eng.htm. Accessed on April 5, 2017.
2. Sedgh G, Singh S, Hussain R. Intended and unintended pregnancies worldwide in 2012 and recent trends. Stud Fam Plann 2014;45:301–14.
3. Sedgh G, Finer LB, Bankole A, et al. Adolescent pregnancy, birth, and abortion rates across countries: levels and recent trends. J Adolesc Health 2015;56:223–30.
4. McKay A. Trends in Canadian national and provincial/territorial teen pregnancy rates: 2001–2010. Can J Hum Sex 2012;21:161–75.
5. McKay A, Barrett M. Trends in teen pregnancy rates from 1996–2006: a comparison of Canada, Sweden, U.S.A., and England/Wales - ProQuest. Can J Hum Sex 2010;19:43–52.
6. Orr ST, Miller CA, James SA, et al. Unintended pregnancy and preterm birth. Paediatr Perinat Epidemiol 2000;14:309–13.
7. Institute of Medicine Committee on Unintended Pregnancy. Brown SS, Eisenberg L, editors. In: The best intentions: unintended pregnancy and the well-being of children and families. Washington, DC: National Academies Press; 1995 Available at: http://www.ncbi.nlm.nih.gov/books/NBK232127/. Accessed on June 4, 2018.
8. Godeau E, Gabhainn SN, Vignes C, et al. Contraceptive use by 15-year-old students at their last sexual intercourse: results from 24 countries. Arch Pediatr Adolesc Med 2008;162:66–73.
9. Finer LB, Henshaw SK. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. Perspect Sex Reprod Health 2006;38:90–6.
10. Jones RK, Darroch JE, Henshaw SK. Contraceptive use among U.S. women having abortions in 2000–2001. Perspect Sex Reprod Health 2002;34:294–303.
11. Norman WV, Bergunder J, Eccles L. Accuracy of gestational age estimated by menstrual dating in women seeking abortion beyond nine weeks. J Obstet Gynaecol Can 2011;33:252–7.
12. Black A, Yang Q, Wen SW, et al. Contraceptive use among Canadian women of reproductive age: results of a national survey. J Obstet Gynaecol Can 2009;31:627–40.
13. Mosher W, Jones J, Abma J. Nonuse of contraception among women at risk of unintended pregnancy in the United States. Contraception 2015;92:170–6.
14. Saxena S, Copas AJ, Mercer C, et al. Ethnic variations in sexual activity and contraceptive use: national cross-sectional survey. Contraception 2006;74:224–33.
15. Government of Canada Statistics Canada. Canadian Community Health Survey - Annual Component (CCHS); 2009, 2010. Available at: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226. Accessed on September 27, 2017.
16. Government of Canada Statistics Canada. Weighted estimation and bootstrap variance estimation for analyzing survey data: how to implement in selected software; 2015. Available at: http://www.statcan.gc.ca/pub/12-002-x/2014001/article/11901-eng.htm. Accessed on September 4, 2017.
17. Boyce W, Doherty-Poirier M, MacKinnon D, et al. Sexual health of Canadian youth: findings from the Canadian Youth, Sexual Health and HIV/AIDS Study. Can J Hum Sex 2006;15:59–68.
18. Guilbert E, Robitaille J, Guilbert A, et al. Challenges of implementing task-shifting in contraceptive care - an experience in Quebec, Canada. Contraception 2013;88:587–90.
19. Sangi-Haghpeykar K, Posner SF, Poindexter AN 3rd. Consistency of condom use among low-income hormonal contraceptive users. Perspect Sex Reprod Health 2005;37:184–91.
20. Williams RL, Fortenberry JD. Dual use of long-acting reversible contraceptives and condoms among adolescents. J Adolesc Health 2013;52(4 Suppl):S29–34.
21. Hulme J, Dunn S, Guilbert E, et al. Barriers and facilitators to family planning access in Canada. Health Policy (New York) 2015;10:48–63.
22. Ontario Ministry of Health and Long-term Care. Ontario public drug programs. OHIP+: children and youth Pharmacare. Available at:

http://www.health.gov.on.ca/en/pro/programs/drugs/ohipplus Accessed on January 30, 2018.

23. Pottie K, Greenaway C, Feightner J, et al. Evidence-based clinical guidelines for immigrants and refugees. Can Med Assoc J 2011;183:E824–925.

24. Dunn S, Wise M, Johnson L, et al. Reproductive and gynaecological health. In: Bierman AS, editor. Women's health equity report, vol 2. Toronto: Project for an Ontario Women's Health Evidence-Based Report (POWER); 2011. Available at: http://powerstudy.ca/power-report/volume2/reproductive-gynaecological-health. Accessed on November 7, 2017.

25. Wilson K, Steenbeek A, Asbridge M, et al. Sexual health among female Aboriginal university students in the Maritime Provinces of Canada: risk behaviours and health services use. Sex Health 2016;13:35–42.

26. Yee J, Apale AN, Deleary M, et al. Sexual and reproductive health, rights and realities and access to services for First Nations, Inuit and Métis in Canada. J Obstet Gynaecol Can 2011;33:633–7.

27. Ontario Federation of Indigenous Friendship Centres (OFIFC). Sexual health and the urban aboriginal community: a position paper; 2016. Available at: http://www.ofifc.org/policy/policy-positions/health. Accessed on May 5, 2018.

28. Bitzer J, Abalos V, Apter D, et al. Targeting factors for change: contraceptive counselling and care of female adolescents. Eur J Contracept Reprod Health Care 2016;21:417–30.

29. Frost JJ, Lindberg LD, Finer LB. Young adults' contraceptive knowledge, norms and attitudes: associations with risk of unintended pregnancy. Perspect Sex Reprod Health 2012;44:107–16.

30. Iseyemi A, Zhao Q, McNicholas C, et al. Socioeconomic status as a risk factor for unintended pregnancy in the contraceptive CHOICE project. Obstet Gynecol 2017;130:609–15.

31. Martinez G, Abma J. Sexual activity, contraceptive use, and childbearing among teenagers aged 15–19 in the United States. NCHS Data Brief 2015;209:1. Available at: https://www.cdc.gov/nchs/products/databriefs/db209.htm. Accessed on November 7, 2017.

32. Trussell J. Contraceptive efficacy. In: Hatcher RA, Trussell J, Nelson AL, et al., editors. Contraceptive technology. 20th revised ed New York: Ardent Media; 2011.