Contraception Among Young Women Attending High School in Rural Nova Scotia

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ABSTRACT

Objective: To examine contraceptive methods used by rural adolescent women and socio-demographic factors associated with not using effective contraception.

Methods: Students in three Nova Scotia high schools participated in a survey concerning sexual activity, behaviours, and contraception used at last intercourse. Proportions using no effective contraception were examined with respect to socio-demographic variables.

Results: The overall response rate was 80%; 46% of 922 young women aged 15-19 had had intercourse in the previous year. Of these, 87% used effective contraception at last intercourse. Average school mark <80%, and having a father with less than high school education were associated with not using effective contraception. Mother's education and employment, family structure, age of first intercourse and importance of religion were not associated with lack of contraception.

Interpretation: Using no, or ineffective, contraception at last intercourse was seen in fewer young women than has been seen in other Canadian studies. In addition to examining use of contraception in rural Canadian adolescents, the study provides evidence concerning factors for consideration in targeted interventions.

La traduction du résumé se trouve à la fin de l'article.

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Adolescent pregnancy, unintended in 75% of cases,¹ can result in low birthweight, preterm delivery,² higher infant mortality³ and poorer cognitive development and health.⁴ Adolescent mothers have decreased educational and economic opportunities,⁵ both of which are associated with negative population health effects.^{6,7} Reported Canadian pregnancy rates in women aged 15-19 fell from 53.7/1000 in 1974 to 42.7/1000 in 1997.⁸ In Nova Scotia, reported rates fell from 45.4/1000 in 1992 to 39.3/1000 in 1998.⁹

Implants/injectables are the most effective contraceptives (2-3% one-year failure rate), followed by oral contraceptives (OCPs, 8%), diaphragm/cervical cap (12%), condoms (14%), withdrawal (24%) and spermicides (26%). The highest failure rates occur in unmarried adolescents,¹⁰ and there is a strong relationship with low family income.¹¹ Condoms and OCPs are the methods most used by Canadian adolescents, with injectable medroxyprogesterone acetate becoming more accepted.^{12,13} Socioeconomic status,^{14,15} religiosity,¹⁶⁻¹⁸ school performance^{19,20} and early onset of sexual activity²¹ are associated with adolescent sexual risk-taking.

In this study, which was part of an assessment of adolescent health at three schools in rural Nova Scotia, we examined the types of contraception used at last intercourse by women aged 15-19, and associations of not using effective contraception (i.e., using no method, or withdrawal/spermicide alone) with socio-demographic factors. Two schools, also serving county areas, were in towns of ~10,000 population. One school served an exclusively county area. All were at least one hour's drive from the province's only major urban area.

METHODS

All students in grades 10-12 were invited to participate in an anonymous self-report survey asking about health behaviours. Questions related to sexual health and demographic factors were formulated by the investigators. Face and content validity for these questions were established by a national expert panel. Test-retest reliability was established through repeat administration of the questionnaire at a one-week

interval to students at a high school uninvolved in the study. Ethical approval was obtained from the Dalhousie Health Sciences Human Research Ethics Board.

Surveys were administered by trained teachers, with research team members present to provide assistance. Completed surveys were sealed in envelopes, then collected by team members. Proportions of female students using various types of, and lacking contraception at last intercourse were calculated, and lack of use of an effective method was examined for association with socio-demographic characteristics. Tests of means were performed using Student's *t*-test and tests of proportions using the χ^2 distribution.

RESULTS

Of a total of 2,304 registered students, 30 were not allowed to participate: 26 were considered ineligible by the schools, and 4 were not allowed by their parents. Of the remaining 2,274 students, 1,829 (80%; 49% males, 51% females) participated. Females aged 15-19 (*n*=922) are included in this analysis.

Of these 922 women, 424 (46%) had had intercourse in the previous year. Of these, 109 (26%) were from grade 10, 157 (37%) from grade 11 and 158 (37%) from grade 12 (Table I). Most (73%) lived with either both natural parents or one parent and his/her partner. Seventy-five percent were from towns or villages; the remainder resided in other county areas. Twenty-four percent of these sexually experienced young women had their first experience of vaginal intercourse before age 15, and, as expected, this was significantly different for those in grade 10.

Overall proportions using different types of contraception at last intercourse are shown in Table II. Since overall use of contraception is considered, column totals exceed 100%. Condom use at last intercourse did not differ by grade. We also examined condom use by specific age category. Use at age 15 was 56% and remained stable to age 18, at 51%. Use decreased to 36% by age 19, though only 25 young women were this age (not shown). Older women used OCPs more often, and younger women used injectable contraception more. Overall, considering withdrawal as a form of contraception, 50 (12%) used no contraception whatsoever.

TABLE I

Demographic Characteristics of Young Women Who Had Vaginal Intercourse During the Past Year

	Grade 10 (<i>n</i> =109)	Grade 11 (<i>n</i> =157)	Grade 12 (<i>n</i> =158)	Total (<i>n</i> =424)
Mean Age (sd)	15.9 (0.7)	16.8 (0.7)	17.9 (0.6)	17.0 (1.0)
% With School Mark				
<80%	46.8	33.1	34.4	37.1
≥80%	53.2	63.9	65.6	62.9
% Living in Towns or Villages	75.0	78.3	72.2	75.2
% Living With a Two Parent Family	72.5	70.1	77.2	73.3
% Indicating Personal Importance of Religion				
Not at All/Not Very Important	58.3	57.1	49.4	54.5
Fairly/Very Important	41.7	42.9	50.6	45.5
% Having Had Vaginal Sex before Age 15†	40.6	18.5	15.8	23.9
% With Father/Male Guardian Employed				
Full Time*	82.5	84.8	84.7	84.2
% With Mother/Female Guardian Employed				
Full Time*	55.1	63.0	61.8	60.5
Father's Education*				
Did not Complete High School	25.5	17.6	19.6	20.3
Completed High School	39.4	33.8	38.4	36.9
Completed Post-Secondary Education	35.1	48.6	42.0	42.8
Mother's Education*				
Did not Complete High School	16.5	11.0	15.0	13.9
Completed High School	42.7	32.3	31.4	34.5
Completed Post-Secondary Education	40.8	56.8	53.6	51.6

* Analyzed for those knowing the parent/guardian's status. For mother/guardian's education, there were 13 missing responses; father/guardian's education 50; mother/guardian's employment 6; father/guardian's employment 26.

† *p*<0.001

TABLE II

Proportion of Young Women Aged 15-19 and Sexually Active in Past Year Using Contraceptive Methods at Last Intercourse, by Grade

Contraceptive Method Last Intercourse	Grade 10 (<i>N</i> =109)	% Using Birth Control Method* Grade 11 (<i>N</i> =157)	Grade 12 (<i>N</i> =158)	Total (<i>N</i> =424)
Condom	47.8	52.9	47.5	49.5
Oral Contraceptive Pill†	42.2	54.1	58.2	52.6
Withdrawal	6.4	7.6	8.2	7.5
Injection†	8.3	1.9	4.4	4.5
Spermicidal Foam/Cream	2.8	1.9	1.3	1.9
Diaphragm	0.0	0.6	0.6	0.5
No Method of Contraception	11.0	13.4	10.8	11.8

* Sum is more than 100% since some respondents used more than one method

† *p*<0.05

TABLE III

Proportion of Young Women Aged 15-19 and Sexually Active in Past Year Making Use of Specific Contraceptive Methods at Last Intercourse, by Grade

Contraceptive Method Last Intercourse	Grade 10 (<i>N</i> =97)	% Using Birth Control Method Grade 11 (<i>N</i> =136)	Grade 12 (<i>N</i> =141)	Total (<i>N</i> =374)
Condom Only	36.1	30.9	26.2	30.5
Condom + OCP†	12.4	26.4	22.0	21.1
Condom + Injection	1.0	1.5	2.1	1.6
Condom + Withdrawal	2.1	0.0	1.4	1.1
Condom + Foam/Spermicide	2.1	1.5	0.7	1.1
Condom + Diaphragm	0.0	0.7	0.7	0.5
OCP Only	32.0	28.7	35.5	32.1
OCP + Withdrawal	2.1	6.6	7.1	5.6
OCP + Foam/Spermicide	1.0	0.7	0.7	0.8
Injection Only†	8.2	0.7	2.8	3.5
Withdrawal Only	3.1	2.2	0.7	1.9

† *p*<0.05

Table III shows proportions of birth control measures used, alone or in combinations, by the 374 women using protec-

tion at last intercourse. Since specific methods are examined, column totals are 100%. Women in grades 11 and 12 were

TABLE IV
Proportions of Young Women Sexually Active in Past Year, Without Effective Contraception (Withdrawal Alone or No Protection) at Last Intercourse, by Demographic Characteristics

Demographic Characteristic	N	Used Withdrawal/ No Protection At All (%)	p-value
Grade			NS
10	109	13.8	
11	157	15.3	
12	158	11.4	
School Mark in Previous Year			<0.04
≤79%	158	8.9	
≤80%	266	16.2	
Age of First Intercourse			NS
Before Age 15	98	18.4	
Age 15 or Older	326	12.0	
Residence			NS
Town/Village	319	14.8	
County	105	9.5	
Importance of Religion			NS
None or Little	231	14.7	
Fairly or Very	193	11.5	
Family Structure			NS
Two Parent Family*	311	11.9	
Other Living Arrangement	113	17.7	
Father's Education†			<0.05
Did Not Complete High School	76	22.4	
Completed High School	138	11.6	
Completed Post-Secondary Education	160	11.3	
Mother's Education†			NS
Did Not Complete High School	57	21.1	
Completed High School	142	12.7	
Completed Post-Secondary Education	212	11.8	
Father's Employment†			NS
Employed Full Time	335	12.5	
Not Employed Full Time	63	19.0	
Mother's Employment†			NS
Employed Full Time	253	12.6	
Not Employed Full Time	165	14.5	

* Either both natural parents, or one natural parent and a step-parent.

† Analyzed for those knowing the parent/guardian's status. For mother/guardian's education, there were 13 missing responses; father/guardian's education 50; mother/guardian's employment 6; father/guardian's employment 26.

more likely than grade 10 women to use OCPs/condoms in combination. More younger women used the injectable form alone. OCPs alone were used by 32%, with no difference by grade, and there was no grade difference in condom use alone. Seven (2%) of the young women used withdrawal alone; none used spermicide alone. Thus, 57 women (13%) used no effective contraception [withdrawal alone (7 women), and no contraception whatsoever (50 women)].

Proportions of the young women using no effective contraception are shown in Table IV in relationship to socio-demographic characteristics. Doing less well in school and having a father with less than high school education were associated with using no effective contraception.

DISCUSSION

Thirteen percent of young women in this study lacked effective contraception at last

intercourse. A large 1992 British Columbia survey found that 13% of women in grades 7-12 used no contraception at last intercourse; an additional 8% relied primarily on withdrawal.¹³ An Ontario study found that at age 17, 33% of young women reported not using contraception.²² The 1998 Canadian Contraception Study, which had few adolescent participants, found that 20% of those aged 15-17 and 26% of those aged 18-24 lacked protection. Zero and 4% respectively used withdrawal, similar to the result seen in this study.¹² In 1996, 24% of young women at another Nova Scotia high school reported using neither condom nor oral contraception at last intercourse,²³ and in 1998, 25% in a school examined in this study reported similar contraceptive behaviour.²⁴ Since little use was made of other methods by adolescents at that time,²⁵ these were not asked about in these two studies. The results seen here are encouraging with respect to young women's use of protection, though perhaps

use of other methods not examined in these earlier studies was higher than was thought.

Canadian studies have shown decreased condom use with age and grade.^{13,20,26,27} In the current study, condom use at last intercourse was about 50% for all three grades. Condom use appears relatively stable in this population until quite late in adolescence. The reasons for this are unclear, though increased attention to sexual health education may be responsible for increased condom use.²⁸

Not using effective contraception was associated with poorer school performance and lower paternal education, though not with mother's education and employment, family structure, age of first intercourse or personal importance of religion. Higher educational aspiration has been shown in a U.S. study to be protective against teenage pregnancy,²⁹ and poor school achievement is a risk factor.³⁰ Female teenagers whose mothers do not graduate from high school are twice as likely to give birth than those whose mothers complete high school.³¹ Our data indicate similar relationships with lack of contraception in this rural population, potentially providing a means of targeting intervention.

In conclusion, our results differ from other Canadian studies of adolescents' contraceptive use with respect to reported level of contraceptive use and lack of differences by grade for condom use. Increasing use of protection, seen in association with an apparent further decrease in adolescent pregnancy rates in 2000 in Nova Scotia to 31.9/1000,³² should be of encouragement to sexual health educators and service providers. This study also provides new information about contraception in a rural Canadian adolescent population, and an indication of socio-demographic factors associated with not using effective contraception.

This study was limited to an essentially rural region of Nova Scotia, and may not reflect conditions in urban areas. Only young women attending school were represented. The study's strength lies in its large sample size and high participation rate. These results probably reflect accurately the situation among young women attending school in the communities examined, and to the extent that they are similar to other rural areas in Nova Scotia, contraceptive behaviours elsewhere in the province.

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RÉSUMÉ

Objectif : Examiner les méthodes anticonceptionnelles utilisées par les adolescentes en milieu rural et les facteurs socio-démographiques associés à la non-utilisation d'une méthode de contraception efficace.

Méthode : Les élèves de trois écoles secondaires de la Nouvelle-Écosse ont participé à un sondage sur l'activité sexuelle, les comportements et la méthode de contraception employée durant leur dernier rapport sexuel. Nous avons examiné la proportion d'élèves n'utilisant pas de méthode anticonceptionnelle efficace à la lumière de variables socio-démographiques.

Résultats : Le taux de réponse global était de 80 %; 46 % des 922 jeunes femmes de 15 à 19 ans avaient eu des rapports sexuels au cours de l'année précédente. De ce chiffre, 87 % avaient utilisé une méthode anticonceptionnelle efficace durant leur dernier rapport. Des notes moyennes inférieures à 80 % à l'école et le fait d'avoir un père n'ayant pas terminé ses études secondaires étaient associés à la non-utilisation d'une méthode anticonceptionnelle efficace, mais la scolarité et l'emploi de la mère, la structure familiale, l'âge du premier rapport sexuel et l'importance de la religion n'étaient pas associés à l'absence de contraception.

Interprétation : La non-utilisation d'une méthode anticonceptionnelle ou le recours à une méthode inefficace durant le dernier rapport sexuel ont été constatés chez un moindre nombre de jeunes femmes que dans d'autres études canadiennes. En plus de décrire l'utilisation de la contraception par les adolescentes canadiennes en milieu rural, l'étude fournit quelques données sur les facteurs à considérer dans les interventions ciblées.