HPV Detection by Self-Sampling in Nunavik, Quebec: Inuit Women's Sampling Method Preferences

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ABSTRACT

There is a higher incidence of cervical cancer and prevalence of genital human papillomavirus (HPV) infection among the Inuit in Canada than the general population. Self-sampling of cervicovaginal cells for HPV testing has the potential to increase cervical cancer screening coverage in this population, but only if it is acceptable to women. We sought to determine acceptance of and preference for self-collection of cervicovaginal samples for HPV testing in comparison with provider-collection, and to explore demographic characteristics of preference for self-collection among a sample of Inuit women from Nunavik, Quebec. Women aged 18–69 years were recruited from a previously formed cohort on the natural history of HPV in Nunavik. Both self-collected and provider-collected specimens were collected with polyester-tipped swabs, and women completed a short written questionnaire immediately after specimen collection. Logistic regression was used to estimate predictors of preference. Of the 109 eligible women who were approached to participate, 93 (85%) accepted. Self-sampling was preferred by 56% of the women over provider-sampling. Education was the only predictor of preference for self-sampling, where having at least a grade 9 education was inversely associated with preference for self-sampling (*OR* = 0.29, 95% CI [0.09, 0.92]). Self-sampling has the potential to increase cervical cancer screening coverage, but any implementation of self-sampling should be concurrent with an education campaign on the importance of cervical cancer screening, the relationship between HPV virus and cervical cancer, and the accuracy of self-sampling.

KEYWORDS

Human papillomavirus, self-sampling, Nunavik, preference, acceptance, cervical cancer screening

INTRODUCTION

Inuit in Canada face a three-fold higher cervical cancer incidence rate than the general population of Canada (Gaudette, 1991; Kelly et al., 2008). About one fifth of the Inuit population in Canada lives in Nunavik, the subarctic and arctic region of Northern Quebec. Nunavik's population of 11,000 is distributed among 14 communities on the coasts of Hudson Bay, Hudson Strait, and Ungava Bay (Statistics Canada, 2007). Consistent with the high rate of cervical cancer among Inuit populations throughout Canada, Inuit living in Quebec experience a higher cervical cancer incidence and mortality rate than the general population of the province (Louchini & Beaupré, 2008). Additionally, Inuit in Quebec are at high risk of human papillomavirus (HPV) infection, a necessary cause of cervical cancer (Bennett, Coutlee, Roger, Franco, & Brassard, 2010; Hamlin-Douglas et al., 2008; Hamlin-Douglas et al., 2010; Walboomers et al., 1999). The Papanicolaou (Pap) smear, a method of cervical cancer screening using cervical cytology, has been used for over 50 years and has greatly reduced cervical cancer mortality. In the 2004 Nunavik Inuit Health Survey, 82% of respondents self-reported having a Pap smear in the previous two years, although estimates from a chart review conducted between 2002 and 2007 suggest that coverage of cervical cancer screening was more likely in the range of 70% (Dodin & Blanchet, 2007; Hamlin-Douglas et al., 2008).

HPV DNA testing on self-collected specimens of cervicovaginal samples has been suggested as a way to increase the screening coverage among women who have traditionally avoided Pap smears. Self-sampling has been shown to be comparable to provider-directed sampling for the detection of virological (Petignat et al., 2007) and disease endpoints (Sellors et al., 2000; Seo et al., 2006; Szarewski et al., 2007), although self-sampling has a somewhat lower sensitivity to detect cervical disease than provider-sampling. However, for a self-sampling-based program to increase screening coverage and therefore reduce cervical cancer mortality, it is important that women find it acceptable.

Although studies suggest that women generally report a high acceptance of self-sampling, preference for self-sampling has been shown to range from 27% to 94% in different populations (Anhang, Nelson, Telerant, Chiasson, & Wright, 2005; Barbee et al., 2010; Dzuba et al., 2002; Hillemanns, Kimmig, Huttemann, Dannecker, & Thaler, 1999; Kahn et al., 2005; Khanna et al., 2007). Given the variability of women's attitudes toward self-sampling and their ability to collect adequate samples (Anhang et al., 2005; Barbee et al., 2010; De Alba et al., 2008; Kahn et al., 2005; Khanna et al., 2007; Tisci et al., 2003; Waller et al., 2006), it is important that the comparability and acceptability of self-sampling be assessed in a population before it is integrated into their cervical cancer screening program. Despite numerous reports on self-sampling, there are currently no published studies on its feasibility, comparability, or acceptability among Inuit in Canada. This paper aims to evaluate the socio-demographic and behavioural predictors of preference and examine reasons for sampling method preference among Inuit women from Nunavik, Quebec. This analysis is part of a larger study on self-sampling, where we examine the comparability of self-collected specimens for HPV testing to provider-collected specimens among the same sample of women; the comparability analysis, however, will be presented elsewhere.

METHODS

Women were recruited to this study from an ongoing cohort formed between 2002 and 2008, comprised of 554 Inuit women between the ages of 15 and 69 living in Nunavik, Quebec (Hamlin-Douglas et al., 2010). Women were originally recruited to this cohort to examine the natural history of HPV in Nunavik (Bennett et al., 2010; Hamlin-Douglas et al., 2008; Hamlin-Douglas et al., 2010). Women aged 18-69 years were recruited for this self-sampling sub-study between December 2007 and June 2010 in two communities of Ungava Bay, Nunavik. When cohort participants, who were not already a part of this sub-study, came to a health clinic for visits requiring a Pap test, nurse practitioners systematically asked them if they would like to enrol.

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Participants were asked to collect a sample of cervicovaginal cells with a polyester (Dacron®)-tipped swab, unsupervised, in the examination room just before the nurse practitioner conducted a pelvic examination that included direct cervical cell sampling. Women were asked to squat or put one foot up on a chair and insert a sterile 15-cm dry polyester-tipped swab (Copan™ 159C) into the vagina as far as it would go and rotate it three times. Participants completed a short standardized questionnaire after both methods of specimen collection were finished. Women were asked which sampling method they preferred, with an open-ended question asking about the reasons for their preference. Socio-demographic characteristics, reproductive and sexual history, medical history, and lifestyle factors for participants were obtained from a questionnaire administered at cohort entry and a baseline medical chart review. Details on questionnaire validation and translation are available elsewhere (Bennett et al., 2010; Hamlin-Douglas et al., 2008).

The covariates used in this study were age, marital status, employment status, education level, smoking status, alcohol use, number of lifetime deliveries, use of birth control, history of Pap smear testing in the previous three years, self-reported history of sexually transmitted infections, age at first sexual intercourse, and number of lifetime sexual partners. Educational level attainment was originally categorized on the baseline questionnaire as less than grade 9, at least grade 9, or graduated high school. As few women (*n* = 9) reported that they had graduated from high school, they were grouped with those who had at least a grade 9 education.

Logistic regression was used to estimate the odds ratio (*OR*) and 95% confidence intervals (95% CIs) for the association between preference for self-collection and each covariate. Each variable that was found to be significant after adjusting for age, as well as other variables that have been previously shown to have an effect on preference—such as age (De Alba et al., 2008; Dzuba et al., 2002), education (Anhang et al., 2005; De Alba et al., 2008; Tisci et al., 2003), and marital status (Waller et al., 2006) —were included in a final multivariate analysis. History of Pap smear testing in the previous three years was also included because it was found to be potentially important in one study (Anhang et al., 2005) and has been shown to be associated with acceptance of HPV testing (De Alba et al., 2008). A multivariate logistic regression was performed using all variables selected for inclusion in the final model. The presence of effect-measure modification was investigated by including an interaction term in the multivariable model and examining the effects on regression estimates and CIs.

Given the small amount of missing data for many covariates, multiple imputation was used to assign values for missing data. Imputation is the practice of "filling in" missing data with probable values to create a complete data set to analyze. Multiple imputation fills in each missing value with a set of probable values that represent the uncertainty about the true value. Twenty data sets were created by allowing information from all covariates included in the complete case analysis to predict the values for each missing variable. All regression analyses were carried out on both the complete and imputed datasets. As there were no substantial differences between the complete case analysis and the multiple imputation analysis, however, only the pooled results of the multiple imputation analysis are presented here.

Multiple imputation and subsequent analysis with the multiple imputed datasets were conducted in R version 2.11.1 with the MICE package (van Buuren & Oudshoorn, 2000). Data management was performed with SAS version 9.2 and all statistical analyses were conducted in R version 2.11.1. Statistical significance for regressions was set at 5%. Written informed consent was obtained from all study participants and ethical approval for this study was obtained from the McGill University Institutional Review Board.

RESULTS

A total of 111 women were approached to participate in the self-sampling study, with 16 women (14.4%) declining to participate. Two woman approached did not meet study eligibility criteria and were therefore excluded: one was younger than 18 years and one was not part of the original cohort. Of the 109 women who were eligible, 93 women (85.3%) agreed to participate. The women in this study had been part of the cohort study for an average of 4.9 years (*SD* = 1.7) prior to study entry, ranging up to 8.2 years. During this time, the women returned an average of 3.6 times (range: 0–8) before entering the self-sampling study. At the time of cohort entry, all participants reported that they had previously had sexual intercourse.

The sampling-method preference questionnaire was completed by 86 of the 93 study participants (92.5%). Self-sampling was preferred by 48 (55.8%; 95% CI [44.7%, 66.5%]) of these respondents while the other 38 (44.2%; 95% CI [33.4%, 55.3%]) women preferred provider-collection. Table 1 presents the socio-demographic, lifestyle, reproductive, and sexual history characteristics of study

participants by sampling method preference. The most striking difference was educational attainment. There was a higher proportion of women who had at least a grade 9 education among women who preferred provider-sampling (78.9%) compared to the women who preferred self-sampling (56.3%), although the difference was not significant.

No socio-demographic or lifestyle characteristics were found to be significantly associated with preference for self-sampling in the univariate analysis of the multiple imputed datasets (Table 2). The age-adjusted (data not shown) and complete case analysis, however, suggests that there is an association between education and sampling method preference. In the final, fully adjusted model using the imputed data, educational attainment showed an inverse association with preference for self-sampling (*OR* = 0.29, 95% *CI* [0.09, 0.92]) (comparable to complete case analysis; data not shown). The respective associations between preference and age, marital status, and history of Pap smear testing were of large magnitude in this model, but remained insignificant.

Table 3 displays women's reasons for sampling method preference, grouped into themes based on responses to the open-ended section of the post-sampling questionnaire. The most common reason for preferring self-sampling was that it was faster and more convenient than provider-sampling (25%). Grouped into this dimension of "convenience" were three responses by women who noted the convenience of performing the self-sampling at home. The privacy aspect of self-sampling was the most important reason for preferring self-collection for 11 (23%) women. The dimension of "more comfortable" was the primary reason for preference of self-sampling for nine women (18.8%), and it included the responses of self-sampling being "less embarrassing" and "less painful" than provider-sampling. Seven women (14.6%) preferred self-sampling because it was easy to do and nine women (18.8%) did not give a reason for their preference.

The most common reason for preferring provider-sampling was the fear of collecting a sample incorrectly and the belief that a provider does it more accurately (31.6%). Eight women (21.1%) stated that their reason for preferring provider-sampling was that it was easier to have a provider to collect the sample. Five women (13.2%) gave responses that fit into the dimension of "uncomfortable with self-sampling" as their reason for preference for provider-collection. This dimension included responses like "it feels weird doing it," "don't like to do it," and "afraid to hurt myself." Two women (5.3%) found provider-sampling more convenient, because they had other reasons to visit the clinic and could have multiple tests done at one time. A large proportion (29%) did not give a reason for their preference for provider-collection.

To understand the association between education and sampling method preference, reasons for preference were stratified by level of education (Table 4). The most common reason for women with at least a grade 9 education to prefer provider-sampling (n = 30) was that they worried about their ability to do the self-sample correctly, whereas the top reason for these women to prefer self-sampling (n = 27) was that it was faster and more convenient. Women who had less than a grade 9 education stated that their main reason for preference for provider-sampling (n = 7) was that they were uncomfortable with the self-sampling method, but women who had less than a grade 9 education and preferred self-sampling (n = 17) did so because it was more private than provider-sampling.

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TABLE 1. BASELINE CHARACTERISTICS OF ALL STUDY PARTICIPANTS AND CHARACTERISTICS BY SAMPLING METHOD PREFERENCE

Characteristics	All Women (N = 93) n = (%)*	Sampling Method Preference: Self-sampling (n = 48) n = (%)*	Sampling Method Preference: Provider-sampling (n = 38) n = (%)*
Age (mean *SD*)) †	33.57 (11.4)[a]	33. 94 (12.1)	33.63 (11.3)
Marital Status			
Single/divorced	44 (47.30	19 (39.6)	18 (47.4)
Married/living with partner	46 (49.5)	27 (56.3)	19 (50.0)
Missing	3 (3.2)	2 (4.2)	1 (2.6)
Educational attainment			
< Grade 9	24 (2.5)	17 (35.4)	7 (18.4)
≥ Grade 9	64 (68.8)	27 (56.3)	30 (78.9)
Missing	5 (5.4)	4 (8.3)	1 (2.6)
Employed			
No	23 (24.7)	12 (25.0)	9 (23.7)
Yes	65 (69.9)	32 (66.7)	28 (73.7)
Missing	5 (5.4)	4 (8.3)	1 (2.6)
Current smoking			
No	20 (21.5)	13 (27.1)	6 (15.8)
Yes	70 (75.3)	33 (68.8)	31 (81.6)
Missing	3 (3.2)	2 (4.2)	1 (2.6)
Alcohol use			
No	30 (32.3)	16 (33.3)	13 (34.2)
Yes	60 (64.5)	30 (62.5)	24 (63.2)
Missing	3 (3.2)	2 (4.2)	1 (2.6)
Previously given birth			
No	24 (25.8)	10 (20.8)	11 (29.0)
Yes	67 (72.0)[b]	37 (77.1)	26 (68.4)
Missing	2 (2.2)	1 (2.1)	1 (2.6)
Current use of any birth control			
No	52 (55.9)	26 (54.2)	21 (55.3)
Yes	37 (39.8)	19 (39.6)	16 (42.1)
Missing	4 (4.30)	3 (6.3)	1 (2.6)
History of Pap test in previous three years			
No	31 (33.3)	13 (27.1)	15 (39.5)
Yes	61 (65.6)	34 (70.8)	23 (60.5)
Missing	1 (1.1)	1 (2.1)	0 (0.0)
Self-reported history of STI			
No	28 (30.1)	14 (29.2)	11 (28.9)
Yes	61 (65.6)	31 (64.6)	26 (68.4)
Missing	4 (4.3)	3 (6.3)	1 (2.6)
Age at first sexual intercourse (mean *SD*))	14.61 (1.8)[c]	14.76 (1.7)	14.62 (1.9)
Lifetime # of sexual partners			
< 10	51 (54.8)	29 (60.4)	19 (50.0)
≥ 10	27 (29.0)	13 (27.1)	11 (28.9)
Missing	15 (16.1)	6 (12.5)	8 (21.1)

[a] Median: 1.7, range: 18-62
[b] Mean (*SD*): 2.0 (1.9), median: 2, range: 0-8
[c] Median: 14, range: 11-20, n =84
* Unless otherwise specified under Characteristic
† At time of self-sampling studey entry

TABLE 2. UNIVARIATE AND FULLY ADJUSTED ESTIMATES OF THE ASSOCIATION BETWEEN PREFERENCE FOR SELF-SAMPLING AND SAMPLE CHARACTERISTICS (*n* = 86)

	OR (95% CI)	
Variable	**Univariate**	**Fully Adjusted**
Age (per 10 years)	**1.02 (0.71, 1.49)**	**0.75 (0.46, 1.22)**
Marital status at baseline		
Married or living with partner	**1.00 (Ref)**	**1.00 (Ref)**
Single/divorced	0.79 (0.33, 1.91)	0.65 (0.23, 1.84)
Educational attainment at baseline		
< Grade 9	**1.00 (Ref)**	**1.00 (Ref)**
≥ Grade 9	0.39 (0.14, 1.08)	0.29 (0.09, 0.92)
Baseline employed		
No	**1.00 (Ref)**	
Yes	0.86 (0.30, 2.39)	
Current smoking at baseline		
No	**1.00 (Ref)**	
Yes	0.49 (0.16, 1.47)	
Alcohol use at baseline		
No	**1.00 (Ref)**	
Yes	0.97 (0.39, 2.44)	
Self-reported history of STI		
No	**1.00 (Ref)**	
Yes	0.96 (0.37, 2.51)	
Age at first sexual intercourse (per year)	**1.04 (0.81, 1.34)**	
Lifetime # of sexual partners		
< 10	**1.00 (Ref)**	
≥ 10	0.80 (0.30, 2.12)	
Previously given birth		
No	**1.00 (Ref)**	
Yes	1.55 (0.58, 4.17)	
Current use of any birth control		
No	**1.00 (Ref)**	
Yes	0.93 (0.38, 2.26)	
History of Pap test in previous three years		
No	**1.00 (Ref)**	**1.00 (Ref)**
Yes	1.71 (0.68, 4.32)	2.11 (0.73, 6.11)

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TABLE 3. REASONS FOR SAMPLE METHOD PREFERENCE GROUPED BY RESPONSE THEME (*n* = 86)

Response theme	***n* (%)**
Preference for self-sampling (*n* = 48)	
Self-sampling was faster and more convenient	12 (25.0)
Self-sampling was more private	11 (22.9)
Self-sampling was more comfortable	9 (18.8)
Self-sampling was easy to do	7 (14.6)
Did not respond	9 (18.8)
Preference for provider-sampling (*n* = 38)	
Worried about ability to do self-sample	12 (31.6)
Provider-collection is easier to do	8 (21.1)
Uncomfortable with self-sample method	5 (13.2)
Move convenient	2 (5.3)
Did not respond	11 (28.9)

TABLE 4. REASONS FOR SAMPLING METHOD PREFERENCE STRATIFIED BY EDUCATION LEVEL (*n* = 79)

		Sampling Method Preference	
		Self-Sampling	**Provider-Sampling**
Educational Attainment	**< Grade 9**	• More private (35.3%) • More comfortable (23.5%) • Faster and more convenient (17.6%) • Easy to do (11.8%) • Did not respond (11.8%) (*n* = 17)	• Uncomfortable with self-sample method (42.9%) • Worried about ability to self-sample (14.3%) • Easier to do (14.3%) • Did not respond (28.6%) (*n* = 7)
	≥ Grade 9	• Faster and more convenient (25.9%) • Easy to do (18.5%) • More private (14.8%) • More comfortable (14.8%) • Did not respond (25.9%) (*n* = 27)	• Worried about ability to do self-sample (36.7%) • Easier to do (20.0%) • Uncomfortable with self-sample method (6.7%) • More convenient (6.7%) • Did not respond (30.0%) (*n* = 30)

DISCUSSION

We found that among a sample of Inuit women from Nunavik, 56% preferred self-sampling to provider-sampling of cervicovaginal cells. Our study population is comprised of women who are generally dedicated to cervical cancer screening, given that they are part of an ongoing cohort on the natural history of HPV infection. The previous research on sampling method preference has also focused on populations of women who have a history of cervical cancer screening. These studies have found preferences for self-sampling to range from 27% to 94% (Anhang et al., 2005; Barbee et al., 2010; Dzuba et al., 2002; Hillemanns et al., 1999; Kahn et al., 2005; Khanna et al., 2007). Differences in study protocols, target populations, and reporting of sample characteristics make them hard to compare with the results of this study.

Women's reasons for their sampling method preference helped explain why self-sampling preference was not higher. Women's lack of confidence in their ability to collect their own sample was found to be an important reason for preferring provider-sampling in this population, as almost a third of the women who preferred provider-sampling felt this way. Despite this fear, over 97% of participants collected adequate specimens and detection of HPV in self-samples was high (Cerigo, Coutlee, Roger, Franco, & Brassard, 2010), suggesting that this population can accurately collect their own samples. Women's fear that self-collected samples will not adequately detect the risk of cancer has been consistently observed in a variety of populations (Anhang et al., 2005; Barbee et al., 2010; Dzuba et al., 2002; Kahn et al., 2005; Forrest et al., 2004; Waller et al., 2006). Women in our study also felt that it was easier to have a clinician perform the test (22%) and it was more convenient to go to the clinic to address all health concerns at once (5%). This indicates that although these women do not necessarily prefer self-sampling, they might not object to performing self-sampling if necessary. This is not the case for all women, as 14% of women preferred provider-sampling because they were uncomfortable with the self-sampling method.

Women in this study reported that they preferred to collect their own specimens because it was more convenient (25%), private (23%), and comfortable (19%) than when sampling was performed by a clinician. These sentiments toward self-sampling are consistently found in the literature (Anhang et al., 2005; De Alba et al., 2008; Dzuba et al., 2002; Kahn et al., 2005). Some women reported that they preferred self-sampling because it was easy to do (15%), which was also reported by the majority of women in previous studies (Barbee et al., 2010; Anhang et al., 2005; Kahn et al., 2005; Waller et al., 2006; De Alba et al., 2008; Dannecker et al., 2004).

The only socio-demographic or lifestyle characteristic found to be a significant predictor of preference for self-sampling in this population was educational attainment. Having at least a grade 9 education was associated with a lower preference for self-sampling compared to having less than a grade 9 education. In a previous study, women with more education were more likely to prefer self-sampling than those with less education (Anhang et al., 2005). Furthermore, higher education has been found to be associated with overall satisfaction with self-sampling experience (De Alba et al., 2008) and comfort while performing self-sampling (Tisci et al., 2003). To understand our unexpected results, reasons for preference were stratified by education level. It seems that among more educated women, there is a stronger concern that self-sampling is not as accurate as provider-sampling, whereas among less educated women comfort during specimen collection (i.e., no embarrassment or pain) was the driving force behind their preferences. Our sample size did not allow for the assessment of statistical differences in these responses, and so the results of this stratification should be considered preliminary and a starting point for future research. A sensitivity analysis was performed for the relationship between preference and education to confirm the validity of the categorizations made to education. The association between preference and education was similar for those who graduated high school and those that had at least some high school education. Because so few women in our study graduated high school, however, this association was not significant and so the binary categorization was reported.

We did not replicate previous findings suggesting that marital status (Waller et al., 2006) and age (De Alba et al., 2008; Dzuba et al., 2002) are associated with preference for self-sampling, although these associations have not been found consistently in the literature (Anhang et al., 2005; De Alba et al., 2008; Karwalajtys, Howard, Sellors, & Kaczorowski, 2006; Khanna et al., 2007). While not a significant association, the association between history of Pap smear within three years and preference for self-sampling was large in magnitude. This trend was also found in a population of American women who had a history of cervical cancer screening (Anhang et al., 2005). It is possible that if self-sampling was instituted in Nunavik, the women who were already regular attendees of cervical cancer screening would be most the likely to switch to

self-sampling. In this situation, the opportunity for health education by the clinician would be lost. In fact, this concern has been predicted by women themselves in a study of American women. Although 94% of women in the study were willing to accept self-sampling for their yearly screen, they would continue with speculum examination if self-sampling meant that they would not have access to a physician (Harper, Noll, Belloni, & Cole, 2002).

Because there was not an overwhelming preference for self-sampling, it is possible that many women would not want to participate in self-sampling if it became an option in Nunavik. There are, however, certain situations where the use of self-sampling might be appropriate. For example, women in Nunavik often prefer Pap smears done by a female clinician yet circumstances can arise where the only clinician in a community is male (Cerigo, Macdonald, Franco, & Brassard, in press). In such situations, self-sampling may be a beneficial way to increase screening coverage. Moreover, although only 56% of women in the study preferred self-sampling, 85% of eligible women agreed to collect a sample and enter the study. This indicates that more women would self-obtain a sample if required. In a population of Aboriginal women in Canada, researchers found that lack of awareness about the Pap smear and its importance was a barrier to screening (Deschamps et al., 1992). It is likely that the same barrier exists among women in Nunavik, This possibility, as well as the knowledge that many participants felt that sampling was more accurately done by a provider, suggests that implementation of self-sampling in these communities should be concurrent with an education campaign on the importance of cervical cancer screening, the relationship between HPV and cervical cancer, and the accuracy of self-sampling.

The major limitation of this study was that our study population was comprised of regular cervical cancer screening attendees. We were therefore unable to assess the preferences of previously unscreened women in the population. It is possible that more frequent experience with provider-collection during the cohort study might sensitize women who would have originally preferred self-sampling. Despite participation in the cohort, however, the majority of women still preferred self-sampling.

Although non-participation bias may have been present, study participants were similar to the general population of Nunavik for the measured demographic characteristics. Women over the age of 50 years were underrepresented in the study population, possibly because fewer women in this age category participate in cervical cancer screening (Dodin & Blanchet, 2007; Katz & Hofer, 1994; Muckle, Boucher, Laflamme, & Chevalier, 2010; Plaziac & Hamel, 2007; Statistics Canada, 2007).

Socio-demographic characteristics, reproductive and sexual history, medical history, and lifestyle factors for participants were obtained from a questionnaire administered at cohort entry. Women had been in the cohort for an average of 4.86 years and so many of these covariates would have changed over this period, but it was not feasible to re-survey study participants when they entered this study. With this in mind, the associations between baseline characteristics and preference for self-sampling should be interpreted with caution because measurement error is likely present. Baseline education level should be fairly stable throughout the study period, as women were eligible for cohort entry if they were between 15 and 69, past the standard age for entry into grade 9. The estimate for the association between education and preference may still be slightly affected by misclassification, but we can infer that there is a true association between these factors. Another limitation of our study is its small sample size and consequently low precision. We therefore cannot rule out an association between preference for self-sampling and other covariates, such as history of Pap smear testing.

The strengths of this study must be recognized in spite of its limitations. We used preference to measure women's acceptability toward self-sampling, which may give a better idea of potential uptake of self-sampling as opposed to willingness to give a sample and scores based on acceptability scales. We measured women's preferences after they had experienced both sampling methods, whereas some studies have not given women the opportunity to attempt self-sampling. Although self-sampling has been studied in a variety of other populations, this study is the first to look at the attitudes of Inuit women in Quebec toward self-sampling. These results, together with the results of the comparability analysis (which shows that self-sampling has a high recovery of HPV and is highly comparable to provider-sampling), provide valuable insight into the use of self-sampling for cervical cancer screening in this population (Cerigo et al., 2010). It is important to highlight that acceptance and preference for self-sampling does not automatically correspond to future screening behaviour. Furthermore, there is no guarantee that women who have a positive HPV test result will follow up accordingly with their health care providers, which has traditionally been a problem with cytology-based screening programs. Future studies should focus on the effect of self-sampling on cervical cancer mortality, incidence, and screening participation rates.

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