

# Sexuality and HIV/AIDS: An Exploration of Older Heterosexual Women's Knowledge Levels

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#### Abstract

Sexuality research tends to ignore older populations, and little is known about older women's sexual health knowledge. To fill this research gap, 186 Canadian heterosexual women 50 years and older were surveyed about their knowledge regarding sexuality and HIV/AIDS. Respondents had moderate levels of overall knowledge of sexual health and aging, correctly answering, on average, 60% of the 35 questions. They had lower levels of HIV/AIDS knowledge, correctly answering just over 50% of the 25 questions. Results indicate the need for social awareness and education in this group regarding both general sexual health later in life and HIV/AIDS.

**Keywords:** AIDS, Canada, HIV, knowledge, older women, sexuality, STI

**Sexuality and HIV/AIDS:  
An Exploration of Older Heterosexual Women's Knowledge Levels**

Little research exists on older women and sexuality (Fraser, Maticka-Tyndale, & Smylie, 2004) and in particular on HIV/AIDS (Hillman, 2007; Zablotsky, 1998), yet many reasons exist for studying sexuality in this group. Physiological changes associated with menopause may contribute to increased sexually transmitted infections (STIs) and play a role in negative reactions to antiviral medications. The changing nature of both women's and men's reproductive systems can reshape the way in which sexual relationships are experienced. Moreover, with many women becoming divorced or widowed in mid- to later-life (Jacobs & Thomlison, 2009), the dating scene may be quite different from decades earlier due to increased STIs rates (Cooney & Dunne, 2001; Swartz et al., 2011). As younger, partnered women, they may not have paid attention to HIV/AIDS education (Jacobs & Thomlison, 2009), and sexuality education now ignores them as older women (Sherman, Harvey, & Noelle, 2005). Thus, as a result of developmental and societal changes and an intersection of ageism and sexism, they may be at risk of negative outcomes ranging from uncomfortable/dissatisfying sexual relations to STIs.

Researchers have called for age-appropriate sexuality education for older individuals, particularly around HIV/AIDS (e.g., Savasta, 2004; Sherman et al., 2005). Before education can proceed in Canada, however, it is important to establish baselines of what older women in this country actually know. As a starting point, this study examined what older Canadian heterosexual women in the province of Nova Scotia know about (a) sexual changes in women's and men's bodies as they age, and (b) HIV/AIDS. We also examine the relationship between general sexual knowledge and HIV/AIDS knowledge.

*Literature Review*

An estimated 65,000 Canadians were living with the HIV/AIDS virus at the end of 2008

(Public Health Agency of Canada, 2010). Although HIV/AIDS infections have declined since 1995, the proportion of women infected with HIV/AIDS has increased (Canadian AIDS Society, 2009b; Public Health Agency of Canada, 2010). New HIV cases involving women increased from 12% before 1998 to 26% by 2008. The largest risk factor for women is heterosexual contact. Increasing numbers of heterosexual individuals have tested positive for this virus—16% of HIV/AIDS cases in 2001 to 35% of cases in 2009 (Canadian AIDS Society, 2009b).

Older individuals are affected by HIV/AIDS. Approximately 10% of North Americans with HIV/AIDS are over the age of 50 (Emlet, Tangenberg, & Siverson, 2002; Genke, 2000; Goodroad, 2003; Strombeck & Levy, 1998), and 12% of HIV-positive Canadians are over age 50 (Canadian AIDS Society, 2009a). From 1991 to 1996, the number of new American HIV/AIDS cases rose 22% for those over 50 but only increased 9% for individuals aged 13 to 49 (Genke, 2000). Those over 50 years of age are the fastest rising cases of HIV/AIDS (Zablotsky, 1998), although some research has suggested that infections peaked by the early 2000s (Public Health Agency of Canada, 2005). Nevertheless, the percentage of HIV-positive Canadians over age 50 may increase by up to 20% in the next 10 years (Canadian AIDS Society, 2009a).

This percentage may increase because of HIV-positive individuals in younger age groups continuing to live longer periods of time due to anti-retroviral therapies. However, new infections will also play a role, and heterosexual contact is a key risk factor for women over age 50 (Savasta, 2004). The Centre for Disease Control (2007, as cited in Jacobs & Kane, 2009) notes that most HIV/AIDS cases in older women are the result of new infections. HIV/AIDS infection rates from heterosexual contact for women over age 50 increased over 100% between 1991 and 1996 in the United States (Zablotsky & Kennedy, 2003). Undiagnosed HIV infections—about 26% of all cases—represent a “hidden epidemic”, and a higher percentage of heterosexual individuals compared to men who have sex with other men or individuals who use

intravenous drugs are unaware of their HIV status (Public Health Agency of Canada, 2010).

Individuals often assume that HIV/AIDS affects only younger people despite rising infections in an aging population, which points to a need to understand sexual health issues better in older adults. Moreover, sexuality issues unique to older women as a result of the intersection of age, gender, and social and biological development highlight a need for research in this area. For example, age-related changes in women (e.g., thinning of the vaginal wall) can make it easier for secretions to reach the blood system (Hillman, 2007; Jacobs & Thomlison, 2009), thus placing them at a higher risk than men for infection. Sexism and ageism can influence older women's knowledge levels, behaviors, and attitudes. Heterosexual romance ideologies dictate that women should never question the monogamy of their partners, and women in long-term spousal relationships may be less likely to engage in such questioning (Zablotsky, 1998). Many older women come from a more conservative era in which there was little open communication about sexual health (Genke, 2000), which may impact their willingness and comfort in seeking out sexual knowledge later in life. Yet older women who came of age during the feminist movement may have very different sexual views and experiences, thus age cohorts can be a confounding factor when studying older women as a group (Fraser et al., 2004).

Older women are subjected to discrimination based on both their age and gender, and societal perceptions can be internalized and incorporated in their lives, leaving them with negative feelings that can lead to unsafe or unsatisfying sexual behavior. For example, believing that HIV is only a risk for younger people could result in an older woman not using a condom during sexual intercourse. Similarly, the internalization of such beliefs may make it difficult for her to communicate openly and assertively about her changing sexual needs in a relationship (e.g., exploring ways to make intercourse comfortable if it has become painful for her). The internalization of such sexist and ageist attitudes may also hinder older women's opportunities or

initiatives to increase their knowledge regarding healthy and satisfying sexual relations.

There are few studies on the topic of older women and HIV/AIDS (Hillman, 2007) or on women's sexuality knowledge levels. Fraser et al. (2004) presented an important review of research on midlife women and reported on the few sexuality-related items available from Canada's 1996/97 National Population Health Survey, but results focused on sexual behaviors. No items were available regarding HIV/AIDS and no discussion was made about this topic. Sexual knowledge levels appeared to not have been studied in older Canadian women.

Some American research has focused on risky sexual behaviors (e.g., Jacobs & Thomlison, 2009) or older women's sexual behaviors (e.g., DeLamater & Moorman, 2007). Research on HIV/AIDS knowledge notes that older women have little knowledge regarding STIs or will believe various social and gender myths (Hillman, 2007; Zablotsky, 1998). Zablotsky (1998) explored older women's HIV/AIDS knowledge and found almost half (47%) over the age of 65 reported knowing little or nothing about HIV/AIDS. For example, many believed that HIV/AIDS could be contracted by being coughed on by someone who had HIV/AIDS. These women also had low levels of knowledge about condom usage, which may reflect the common assumption that condoms are only important for pregnancy prevention and therefore unnecessary after menopause. Many of these women often responded with "don't know" or "no answer" to the fact-based questions regarding HIV/AIDS (Zablotsky, 1998).

A few American studies on older individuals' sexual knowledge exist (e.g., Johnson, 1998; Steinke, 1994). Steinke (1994) found that women and men showed "satisfactory" knowledge levels. Her sample, however, consisted of individuals who were associated with a local health and wellness group, and no information was given about the percentage of correctly answered questions. Female AARP (American Association of Retired Persons) members completed a survey in Johnson's (1998) research, scoring an average of 66% regarding sexuality

later in life. Neither study reported specifically on individual knowledge items. In summary, researchers have identified the need to study women's sexual health knowledge (e.g., Sherman et al., 2005) and for more research on older individuals and HIV/AIDS (e.g., Savasta, 2004), but no research to date has looked at Canadian women's knowledge levels.

### *Method*

#### *Procedure*

After obtaining ethics approval, a survey was distributed in 2007 to women 50 years of age and older throughout Nova Scotia in two ways. First, 450 surveys were distributed to various "Red Hatter Society" groups, an internationally known women's social organization whose members are 50 years of age and older (see [www.redhattersociety.com](http://www.redhattersociety.com)). Local Red Hatter groups provided a convenient way to locate older women, and because they had to be at least 50 years of age to join, we used this as our minimum age. Initial interest in the survey was assessed during a provincial leaders' meeting, and group leaders who expressed interest were later sent surveys for their group members. Women completed the survey on their own and returned it in a pre-paid, stamped envelope. Approximately 50 copies were also provided at the Halifax Sexual Health Centre, where nurses were asked to invite women over age 50 to participate. A minimum age of 50 was used to be consistent with the age requirement for the Red Hatter groups. Women who answered affirmatively were given the questionnaire to complete at home and return in the mail.

In total, 202 questionnaires were returned, for a return rate of 40%. The majority were received from the Red Hatters. Because we do not know if questionnaires were distributed to 500 women, we cannot say definitively that this represents a response rate of 40%. Our return rate of 40% was considerably higher than similar research such as Steinke (1994), who had return rates of only 16% and 24% in her studies. Questionnaires with 25% or more unanswered questions ( $n = 16$ ) were removed for a final sample size of 186 (37% of the total number distributed).

### *HIV/AIDS Knowledge*

To measure HIV/AIDS knowledge, 25 items from Leblanc's (1993) *HIV-Related Knowledge Scale* was used. This scale was developed by the U.S. National Center for Health Statistics as part of a 1987 National Health Interview Survey. Eleven items, such as "You can tell if people have the AIDS virus just by looking at them" were responded to on a 4-point Likert scale ranging from *definitely false* (1) to *definitely true* (4). Fourteen items, such as "How likely do you think it is that a person will get the AIDS virus from being coughed or sneezed on by someone who has AIDS?" were answered on a 5-point scale ranging from *definitely not possible* to (1) *very likely* (5). We replicated Leblanc's procedure, in which questions were recoded with scores of 1 for correct responses, with all other responses recoded as 0 for being incorrect (correct answers are specific in Leblanc's measure. Table 2 identifies the correct response(s) for each item). This conversion results in scores ranging from 0 to 100, allowing for an examination of the percentage of correct responses. The Cronbach's alpha coefficient was not recorded for the original NHIS scale; however, in this study it was 0.83, indicating strong internal consistency.

### *Sexual Knowledge*

The knowledge subscale from White's (1982) *Ageing Sexual Knowledge and Attitudes Scale* (ASKAS) was used to measure knowledge regarding sexual health in older women and men. This 35-question subscale asked participants whether or not they agreed on items such as "Sexual behavior in older people increases the risk of heart attack" or "Females, after menopause, have a physiologically induced need for sexual activity". Response options were changed from the original *true/false/don't know* categories to a 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) to measure both participants' correct and incorrect responses and the level of certainty in their responses. Knowledge responses were recoded with a score of 1 and incorrect knowledge scores (including the middle category of "4") recoded as 0

for the index. The percentage of correct questions was then calculated, ranging from 0 to 100.

The knowledge scale has strong reliability, with alpha coefficients between .90 to .93, test-retest coefficients between .90 to .97, and split-half coefficients between .90 to .91 (White, 1998). In this study, the Cronbach's alpha for the knowledge subscale was 0.74. This alpha was calculated using 116 cases; 70 cases were excluded because they were missing a response to at least one of the 35 items. The drop in the Cronbach's alpha was not considered problematic because above 0.70 is still considered an acceptable level of reliability (Nunnally, 1978).

### *Demographics and Sexual Activity*

Participant demographics were obtained through categorical, closed-ended questions. Demographic questions asked about marital status, sexual orientation, education, religious affiliation, retirement, employment, health status, and lifetime occupation. Unfortunately, a question asking about age was accidentally left off the questionnaire.

We also included a brief measure of sexual activity as an additional descriptor for the sample. Sexual activity and behavior measures have been created by other researchers, but we chose not to use their full measures for several reasons. First, sexual behaviors were not a central focus of the study and we felt a shorter measure focusing solely on frequency of sexual activity could be created and would suffice. Second, we determined that some of the questions (e.g., what kind of sexual activity produces arousal) were irrelevant for our research goals. Third, we had concerns about the length of what was already a very personally focused survey.

We took one question (which consisted of seven items) from the *Brief Index of Sexual Functioning for Women* (BISFW) (Rosen, Taylor, & Leiblum, 1994) to create a short measure of sexual behavior. The BISFW evaluates women's awareness, performance, and fulfillment concerning sexuality, fantasies, and responses. The question asked about the frequency of seven sexual activities in the past month: (a) kissing, (b) masturbation, (c) mutual masturbation, (d)

petting and foreplay, (e) oral sex, (f) vaginal penetration or intercourse, and (g) anal sex. These items were responded on a 7-point Likert scale ranging from *not at all* (0) to *more than once a day* (6). No participants indicated that they had engaged in anal sex, so this was removed before creating our measure. Responses on each of the other 6 items were added up and divided by 7, for a final measure with values ranging from 0 to 6. The Cronbach alpha for this measure was 0.78, indicating good internal consistency. Internal consistency for the original BISFW subscale, which consisted of more items than we included, was 0.83 (Rosen et al., 1994). Two additional questions from the BISFW asked participants if they had a current sex partner and if they had been sexually active within the past month; both required a *yes* or *no* response.

### *Sample Description*

Most of the women were heterosexual (99%), married or cohabitating (71%), Roman Catholic (37%), fully retired (58%), and unemployed (73%). These women considered themselves to be in good health and indicated a variety of lifetime occupations and educational levels. Participants were similar to Canadian women between the ages of 55 – 64 (Statistics Canada, 2006) in terms of marital status (widowhood: 13% this sample, 10% of Canadian women; married/common-law: both 71%), but had much higher levels of education (over 75% had completed at least some post-secondary education, including 18% who had graduate or professional degrees) compared with Canadian women (20% with a university or college degree). Additionally, a higher percentage of women in this study reported their health as good (66%) compared to the Statistics Canada data (33%).

In general, these women were somewhat sexually active. Seventy percent had a current sex partner, and approximately 1 in 2 answered “no” to being sexually active in the past month. Only 20% of the women, however, were sexually inactive in the last 30 days according to our sexual behavior index, which may have included a broader scope of sexual behavior than the

women initially considered. Over half had kissed, one-quarter had participated in some type of petting and/or foreplay, and just under one in five had participated in oral sex. Scores ( $n = 164$ ) ranged between 0 to 3.86, with an average of 1.03 ( $SD = .90$ ). Marital status was related to sexual activity,  $F(2, 159) = 17.48, p < .001$ . Not surprisingly, a post-hoc test (Bonferroni) showed that married women ( $M = 1.28$ ) had significantly higher levels of sexual activity than single, divorced, or separated women ( $M = .43$ ) or widowed women ( $M = .47$ ).

### *Results*

Respondents had moderate levels of knowledge pertaining to general sexual health issues. The average score ( $n = 186$ ) was 62% ( $SD = 14.32$ ), indicating that the typical woman in this study correctly answered just less than two-thirds of the knowledge questions. However, scores ranged from 17% to 94%, reflecting considerable variation in knowledge levels.

Table 1 provides details for the 35 questions, which are organized from highest to lowest percent of correct responses (first column in the table). An examination of the first column and second column (the mean score on the scale of 1 to 7) shows that questions more likely to be answered correctly were also responded to with more certainty than incorrectly answered questions. For example, 84% of the women correctly knew that prescription drugs can alter a person's sex drive, and the average response on that question was 5.92. Conversely, only 27% of the women knew that there is a greater decrease in men's sexuality than women's as they age, and the average response was 3.65, indicating less certainty about this question.

[Insert Table 1 about here]

Several items are of particular notice. First, many of the questions in this section related to sexual health in men reflected incorrect answers. Six of the 10 questions that were incorrectly answered by 50% or more of the women related to men's sexual functioning. For example, only 17% correctly agreed that older men typically experience a reduced need to ejaculate and thus

maintain an erection longer than younger men. In addition, only about one quarter correctly knew that there is a greater decrease in male sexuality with age compared to women.

Low knowledge was reflected on some aspects of older women's sexual development. For example, one out of every four respondents did not know that older women have a reduction in lubrication that results in a longer time needed to achieve lubrication compared to younger women. Nevertheless, they had high levels of knowledge on some items related to sexuality in general or women's sexuality. For example, nine out of ten women correctly disagreed that older men and women need younger partners for sexual stimulation. Moreover, 88% correctly identified that sexual activity is not dangerous to one's health as they age. In general, these results indicated that the women felt sexual activity did not end with increased age.

Similar to general sexual knowledge, HIV/AIDS knowledge scores ( $n = 186$ ) varied widely, with scores ranging from 8% to 96%. The average score was 56% ( $SD = 20.01$ ), which indicated an average of 14 correctly answered questions out of a possible 25. An examination of the HIV/AIDS scale revealed low levels of knowledge on some individual items (see Table 2).

[Insert Table 2 about here]

Only one in five women correctly answered that it is not possible to get the AIDS virus from eating in a restaurant where the cook has AIDS or transmit AIDS through kissing (with the exchange of saliva), and less than a third correctly understood whether HIV/AIDS could be contracted through blood transfusions. About half of the respondents believed that AIDS could be contracted through kissing cheeks or shaking hands with someone who is infected with HIV/AIDS. Almost all the women (96%) correctly knew that a person is "Likely to get AIDS by having sex with a person who has AIDS", yet only 83% correctly knew the answer to a similarly worded item (item 3 in Table 2). One in five women incorrectly thought that a person with AIDS would look "ill". Overall, women realized AIDS could be obtained from sexual activity but they

believed many myths about other ways in which the HIV virus could be transmitted. These results suggest a lack of understanding of how the virus can be spread.

Bivariate statistics explored the relationships between the variables. HIV/AIDS knowledge was moderately correlated with sexual knowledge,  $r = .25$ ,  $n = 186$ ,  $p < .01$  (two-tailed). HIV/AIDS knowledge, but not general sexual knowledge, also correlated with sexual behavior,  $r = .17$ ,  $n = 164$ ,  $p < .05$  (two-tailed). These were significant but weak relationships.

One-way ANOVAs and Bonferroni post-hoc tests were also conducted to see if any demographic variables were associated with sexual or HIV/AIDS knowledge. Only lifetime occupation was significantly related to sexual knowledge,  $F(4, 148) = 2.72$ ,  $p < .05$ . The post-hoc test indicated a difference in one's average knowledge score between those with a lifetime occupation in the healthcare field ( $M = 68.57$ ) and those with an occupation as administrator, manager, or professional ( $M = 57.24$ ). No differences were found with any other demographic variables. Unlike Steinke (1994), marital status was not related to sexual knowledge levels.

A significant relationship existed between HIV/AIDS knowledge and education,  $F(7, 171) = 2.90$ ,  $p < 0.01$ . Average knowledge scores for women with a professional degree ( $M = 65.22$ ) were significantly higher compared to those with a business school degree ( $M = 48.41$ ). A relationship was also found between one's lifetime occupation and HIV/AIDS knowledge,  $F(4, 148) = 3.53$ ,  $p < 0.01$ . AIDS knowledge scores of those in the healthcare profession ( $M = 67.17$ ) were significantly higher when compared to those who had worked in sales/clerical jobs ( $M = 52.56$ ) or had "other" jobs ( $M = 50.49$ ). Finally, employment status and HIV/AIDS knowledge were related to each other,  $F(2, 183) = 3.68$ ,  $p < 0.05$ ; however, the post-hoc test did not reveal any differences among the groups.

### *Discussion*

Having good knowledge levels about HIV/AIDS and sexual health in the older

population may contribute to STI prevention and to healthy relationships in older women. Yet this study suggests that older Canadian women may have low knowledge levels of HIV/AIDS as well as moderately low levels of general sexual health knowledge. Both types of knowledge are also correlated with each other, but only weakly, which suggests that education in both areas is needed. Education in one subject matter will not guarantee knowledge in the other area.

Despite passing grades, these women have limited understanding of how the aging process affects women's and men's sexual expression (particularly men's). The average sexual knowledge score was 62%, which was very similar to Steinke's (1994) findings from women 60 years and older. Moreover, approximately 15% of the sample may have had scores under 50%, with several women correctly knowing only 1 in 3 questions about how aging affects sexuality. Not surprisingly, questions that were answered incorrectly also reflected greater uncertainty in responses (the average means), and indicate a need for education in certain areas.

Understanding how physiological changes affect sexual response is important in maintaining positive sexual relationships. Having more knowledge about sexual development as one ages may also influence an older woman to seek knowledge about HIV/AIDS or other STIs. General sexual knowledge can assist in constructing informed decisions about sexual behaviors and establish awareness of potential issues that could arise, such as risk for HIV/AIDS infection. We note, however, that this study is correlational and thus cannot confirm a causal relationship.

Women's low HIV/AIDS knowledge scores are of concern; close to half of them had failing grades. Approximately one out of every five women correctly knew it was very unlikely that the AIDS virus could be transmitted through a blood transfusion. Yet 31% believed it was "somewhat likely" and 27% believed it was "very likely". This may be the result of their memory of the 1980s "tainted blood scandal" that occurred in Canada, in which many individuals who received blood transfusions received contaminated blood (in 1989, 1250

individuals were compensated to the amount of \$150 million CAN). Blood transfusion protocols have changed since then but these women may not be aware of those changes or knowledgeable about current safety practices carried out by Canadian Blood Services. Comparing these results with younger women's knowledge about blood transfusions could reveal a cohort effect.

Similar to Zablotsky (1998), these older women have less understanding regarding casual forms of contact (e.g., kissing) compared to sexual intercourse and needle sharing. Over one in four of these women 50 years or older falsely think that a person with the AIDS virus must look "unhealthy", compared to 28% of the women 65 years and older in Zablotsky's study. As mentioned earlier, an estimated one-quarter of HIV-positive individuals in Canada may be undiagnosed (Public Health Agency of Canada, 2010). Simply looking at a person cannot determine whether or not they are ill, and some may not even be aware of their diagnosis.

When combined with other factors related to older women's sexuality, this specific misunderstanding about how a person with AIDS looks is disconcerting for several reasons. As Canada's population ages, new relationships may occur because of deaths, divorces, or separations (Jacobs & Thomlison, 2009). Although Canadian divorce rates for long-term relationships are low (Ambert, 2009), divorce rates for individuals in mid- to late-life are rising compared to younger age groups (Kingston, 2007). Sexual activity is increasing in older cohorts as a result of sexual enhancement medications such as Viagra (Villarosa, 2003). Yet, if mid- to late-life women in the dating scene, compared to younger women, are less likely to initiate condom use for STI prevention (Schable, Chu, & Diaz, 1996), question their partner's monogamy (Zablotsky, 1998; Zablotsky & Kennedy, 2003), and believe that a person with AIDS must look unhealthy, this puts them at increased risk. Indeed, research has found that women who were diagnosed with AIDS after age 50 were more likely than women diagnosed with AIDS prior to age 50 to have had sex with an "HIV-infected man whose risk was unknown" (Schable,

et al., 1996, p. 1617). Older women with AIDS are also more likely than their younger counterparts to be widowed, separated, or divorced (Schable et al., 1996), although it is not known when they contracted the disease (i.e., before or after their marriage ended).

Low HIV/AIDS knowledge levels may reflect the internalization of sexist and ageist societal beliefs that older women are not at risk because they are either uninterested or incapable of sex, which could deter women from establishing knowledge about HIV/AIDS. Not surprisingly, a great extent of information and research on HIV/AIDS focuses on young adults, drug users, or gay men (Satcher, Durant, Hu, & Dean, 2007). Fraser et al.'s (2004) important review of midlife women's sexual health issues failed to discuss STIs as a concern. These omissions contribute to the notion that HIV/AIDS is not a threat to older women.

Given the lack of public information regarding older women and HIV/AIDS, women may feel they are not at risk and the disease will never affect or harm them, thus they do not feel the need to be educated or discuss this topic (Hillman, 2007; Jacobs & Thomlison, 2009). Yet, participants' limited knowledge about sexual health and diseases, their sexual communication and decision-making, their involvement in risky sexual behaviors such as not using a condom, and their perception of AIDS myths may increase their risk (Hillman, 2007; Jacobs & Thomlison, 2009; Schable et al., 1996; Strombeck & Levy, 1998; Zablotsky, 1998; Zablotsky & Kennedy, 2003). Education about HIV/AIDS and sexuality, including how socially constructed ageism and sexism play a factor, may help reduce women's risks.

Background factors of education (postsecondary) and occupation (healthcare field) were positively related to knowledge scores. Previous research has found that women over age 50 with AIDS have lower levels of education (less than 12 years of school) (Schable et al., 1996). It is not surprising that working in the healthcare profession is related to higher levels of HIV/AIDS knowledge. These individuals are educated about health, which, for some, may include sexual

health knowledge. Being in healthcare professions may also influence them to seek out additional health knowledge or they may, at least, be exposed to such information in their workplace. Conversely, having high HIV/AIDS knowledge levels may be indicative of broader interests in health, which may have led individuals to work in various healthcare professions.

Overall, these results emphasize the need for knowledge building regarding both general sexual health and HIV/AIDS among mid- to later-life women, and educational efforts should address various groups of individuals. For example, it is essential that healthcare providers are educated, aware, and sensitive to older adults' sexual health needs (Willert & Semans, 2000). These professionals are an important part of educational outreach both as disseminators and consumers of sexual knowledge, yet previous research indicates a failure to provide older women with information about HIV/AIDS and limitations in their own HIV/AIDS knowledge. One study of gynecologists suggested they had adequate knowledge about sexual changes later in life (Langer-Most & Langer, 2010), yet another study of healthcare providers found that 75% of them did not know that older women had higher risks of contracting the HIV virus compared to younger women (Hillman, 2007; Hillman & Broderick, 2002).

#### *Limitations and Future Research*

This research only surveyed heterosexual women. Moreover, these women were primarily from local chapters of "The Red Hatters Society". Representative data regarding Red Hatters participants are not available, but it is plausible that members might be more educated, liberal minded, or health-focused than non-Red Hatter members. For example, qualitative research on Red Hatters list themes such as positive attitudes about aging, enhancing oneself, and using the organization for social support (e.g., Hutchinson, Yarnal, Staffordson, & Kerstetter, 2008; Radina, Lynch, Stalp, & Manning, 2008).

Nationally representative studies of sexuality in older Canadians have been identified as a gap (Fischtein, Herold, & Desmarais, 2007), and research on older women's sexuality is particularly lacking (Fisher et al., 1999). Future research could examine a larger sample of women 50 years and older, randomly selected so that results can be generalized to older Canadian women, and include multivariate analyses. Longitudinal designs would be better able to explore causal relationships, as this study was correlational in nature.

Age and race/ethnicity were not included as independent variables. Age was an important variable unfortunately left out in this study, and it should be included as a covariate. Women "over age 50" covers a large range of ages and also a range of age cohorts. As Fraser et al. (2004) has indicated, cohort differences may play an important role in older women's sexualities. It may be that younger women within this age group have different views and knowledge levels than older women. This survey did not ask women to identify their race or ethnicity, but given Nova Scotian demographics, it is likely that most of the women were White, with European backgrounds. Because different cultural groups have different infection rates (Public Health Agency, 2010), research including different races/ethnicities is important to obtain insight about how cultural factors influence HIV/AIDS knowledge. However, Leblanc (1993) found that education has a greater impact on HIV/AIDS knowledge than race/ethnicity, and has called for future research to explore the interaction between socioeconomic status, race/ethnicity, and HIV/AIDS knowledge.

Qualitative research is also needed to "uncover the cultural narratives, understandings, meanings, and experiences of sexuality of different groups of women" (Fraser et al., 2004, p. 186). Qualitative research gives women the opportunity to speak about their lived experiences, knowledge, and attitudes regarding sexuality and any sexual challenges they face as a result of ageism and sexism. For example, qualitative research could explore how older women negotiate

safe-sex practices and what impedes or supports them when reentering the dating scene later in life. We also note Zablotsky's (1998) work, which provides an excellent overview of potential research topics focusing on older women's sexual health and HIV/AIDS risk.

Finally, although we have focused on the importance of older women's knowledge in relation to healthy sexual heterosexual relationships, we do not mean to infer that the responsibility for healthy and satisfying heterosexual relationships lies solely with them. Heterosexual men should also know about their changing physiology and that of their female partners, and be informed about HIV/AIDS and other STI issues. Thus, future research should study older men's knowledge levels on these topics.

### *Conclusion*

Although using a convenience sample, this exploratory quantitative study on older heterosexual women's sexuality and HIV/AIDS knowledge fills in a gap in sexuality research about mid- to late-life women. The results indicate a need for social awareness and education in this group regarding both general sexual health later in life and HIV/AIDS. Although women's knowledge about sexuality in aging individuals is higher than their HIV/AIDS knowledge scores, there is still a great deal of information that older women do not know in both areas. Many myths about HIV/AIDS transmission, for example, are still believed.

A reduction in sexually transmitted infections across all ages is important. Given that many women do have sexual desires and needs later in life, they are susceptible to infections just like younger individuals, the group typically focused on in HIV/AIDS research. Moreover, age-related physiological changes, increasing singlehood in later-life cohorts, and an intersection between sexism and ageism may place mid- to late-life women at a different kind of risk than their younger counterparts. Finally, healthy satisfying relationships are the right of women of all ages. We look forward to seeing more research addressing these important issues.

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Table 1  
*Sexuality and Aging Knowledge*

Questions	% <sup>a</sup>	Mean	SD	N <sup>b</sup>
1. Older males and females cannot act as sex partners as both need younger partners for stimulation. (F) <sup>c</sup>	90	1.77	1.43	183
2. Sexual activity in aging people is often dangerous to their health. (F)	88	1.86	1.44	185
3. Barbiturates, tranquilizers, and alcohol may lower the sexual arousal levels of aging people and interfere with sexual responsiveness. (T) <sup>c</sup>	86	5.79	1.51	185
4. Prescription drugs may alter a person's sex drive. (T)	84	5.92	1.66	183
5. In the absence of severe physical disability males and females may maintain sexual interest and activity well into their 80s and 90s. (T)	83	5.80	1.24	184
6. Excessive masturbation may bring about an early onset of mental confusion and dementia in aging people. (F)	81	1.77	1.41	172
7. The older female (65+ years of age) has reduced vaginal lubrication secretion relative to younger females. (T)	81	5.75	1.53	179
8. Sexual activity may be psychologically beneficial to older person participants. (T)	80	5.47	1.45	185
9. There is evidence that sexual activity in older persons has beneficial physical effects on the participants. (T)	76	5.47	1.47	184
10. Fear of the inability to perform sexually may bring about an inability to perform sexually in older males. (T)	75	5.36	1.39	180
11. An aging female takes longer to achieve adequate vaginal lubrication relative to younger females. (T)	75	5.42	1.69	183

(Table 1 continues)

Questions	%	Mean	SD	n
12. Impotence in aging males may literally be effectively treated and cured in many instances. (T)	73	5.29	1.33	180
13. Most males over the age of 65 are unable to engage in sexual intercourse. (F)	73	2.47	1.55	178
14. The older female may experience painful intercourse due to reduced elasticity of the vagina and reduced vaginal lubrication. (T)	72	5.33	1.67	183
15. Sexual behavior in older people (65+) increases the risk of heart attack. (F)	67	2.70	1.78	182
16. Sexuality is typically a lifelong need. (T)	66	5.11	2.01	184
17. The sex urge typically increases with age in males over 65. (F)	65	2.86	1.57	178
18. Sexual disinterest in aging people may be a reflection of a psychological state of depression. (T)	65	4.97	1.62	181
19. Males over the age of 65 typically take longer to attain an erection of their penis than do younger males. (T)	63	5.07	1.67	180
20. Most older females are sexually unresponsive. (F)	62	3.01	1.69	182
21. Masturbation in older males and females has beneficial effects on the maintenance of sexual responsiveness. (T)	60	5.01	1.47	172
22. There is a decrease in frequency of sexual activity with older age in males. (T)	59	4.71	1.51	176
23. The firmness of erection in males 65 years and older is often less than that of younger males. (T)	57	4.94	1.77	171
24. There is an inevitable loss of sexual satisfaction in post-menopausal women. (F)	55	3.32	1.78	185

(Table 1 continues)

Questions	%	Mean	SD	n
25. Basically, changes with advanced age (65+) in sexuality involve a slowing of response time rather than reduction of interest in sex. (T)	53	4.68	1.50	180
26. An important factor in the maintenance of sexual responsiveness in the aging male is the consistency of sexual activity throughout his life. (T)	50	4.68	1.58	176
27. Males over the age of 65 usually experience a reduction of intensity of orgasm relative to younger males. (T)	50	4.55	1.64	176
28. Females, after menopause, have a physiological-induced need for sexual activity. (F)	44	3.50	1.52	177
29. Secondary impotence (or non-physiologically caused) increases in males over the age of 60 relative to young males. (T)	42	4.55	1.42	168
30. Heavy consumption of cigarettes may diminish sexual desire. (T)	45	4.55	1.80	167
31. The ending of sexual activity in old age is most likely and primarily due to social and psychological causes rather than biological and physical causes. (T)	38	3.98	1.91	182
32. The most common determinant of the frequency of sexual activity in older couples is the interest or lack of interest of the husband in a sexual relationship with his wife. (T)	33	3.66	2.00	179
33. The relatively most sexually active younger people tend to become the relatively most sexually active older people. (T)	32	4.03	1.61	172
34. There is a greater decrease in male sexuality with age than there is in female sexuality. (T)	27	3.65	1.71	179
35. Older males typically experience a reduced need to ejaculate and hence may maintain an erection of the penis for a longer time than younger males. (T)	17	3.14	1.71	166

(Table 1 continues)

*Note.* <sup>a</sup>Percent of women who correctly answered question. <sup>b</sup>Responses ranged on a 7-point scale, where 1 = strongly disagree, 7 = strongly agree. <sup>c</sup>Number of responses per question.

<sup>d</sup>Correct response, T- true, F- false.

Table 2  
*HIV/AIDS Knowledge*

Item	% <sup>a</sup>	Mean	<i>SD</i>	<i>n</i> <sup>b</sup>
1. How likely do you think it is that a person will get the AIDS virus from having sex with a person with AIDS? (T- h, i) <sup>c</sup>	96	4.72	.56	184
2. How likely do you think it is that a person will get the AIDS virus from sharing needles for drug use with someone who has AIDS? (T- i)	91	4.91	.34	184
3. Any person with the AIDS virus can pass it on to someone else during sexual intercourse. (T- d)	83	3.81	.47	185
4. A pregnant woman who has the AIDS virus can give AIDS to her baby. (T- d)	80	3.77	.51	184
5. You can tell if people have the AIDS virus just by looking at them. (F- a)	78	1.27	.58	183
6. AIDS can cripples the body's natural protection against disease. (T- d)	78	3.76	.51	184
7. There is no cure for AIDS at present. (T- d)	74	3.65	.66	186
8. How likely do you think it is that a person will get the AIDS virus from being coughed or sneezed on by someone who has AIDS? (F- e, f)	70	2.11	1.10	183
9. How likely do you think it is that a person will get the AIDS virus from living near a hospital or home for AIDS patients? (F- e)	69	1.39	.72	183
10. How likely do you think it is that a person will get the AIDS virus from working near someone with AIDS? (F- e)	59	1.51	.75	185
11. How likely do you think it is that a person will get the AIDS virus from sharing plates, forks, or glasses with someone who has AIDS? (F- e, f)	59	2.41	1.17	182
12. How likely do you think it is that a person will get the AIDS virus from kissing on the cheek a person who has AIDS? (F- e)	54	1.62	.84	185

(Table 2 continues)

Item	%	Mean	<i>SD</i>	<i>n</i>
13. There is a vaccine available to the public that protects a person from getting the AIDS virus. (F- a)	53	1.56	.78	171
14. How likely do you think it is that a person will get the AIDS virus from shaking hands or touching someone who has AIDS? (F- e)	52	1.66	.87	184
15. How likely do you think it is that a person will get the AIDS virus from attending school with a child who has AIDS? (F- e)	51	1.60	.74	185
16. AIDS is a disease caused by a virus. (T- d)	50	3.21	1.03	179
17. AIDS is especially common in older people. (F- a)	50	1.54	.61	182
18. A person can be infected with the AIDS virus and not have the disease AIDS. (T- d)	48	3.20	.97	179
19. AIDS leads to death. (T- d)	46	3.26	.86	186
20. How likely do you think it is that a person will get the AIDS virus from using public toilets? (F- e)	38	1.86	.92	184
21. How likely do you think it is that a person will get the AIDS virus from donating/giving blood? (F- e)	38	2.34	1.46	184
22. How likely do you think it is that a person will get the AIDS virus from kissing—with exchange of saliva—a person who has AIDS? (F- e, f)	22	3.80	1.24	179
23. How likely do you think it is that a person will get the AIDS virus from receiving a blood transfusion? (F- f)	22	3.57	1.18	185
24. The AIDS virus can damage the brain. (T- d)	20	2.86	.81	167
25. How likely do you think it is that a person will get the AIDS virus from eating in a restaurant where the cook has AIDS? (F- e)	20	2.20	.92	180

*Note.* Questions 3 – 7, 13, 16 – 19, and 24 are scored on a scale of 1 to 4, with (a) 1 =

(Table 2 continues)

definitely false, (b) 2 = probably false, (c) 3= probably true, and (d) 4 = definitely true. Questions 1, 2, 8 – 12, 14, 15, 20 – 23, and 25 are scored on a scale of 1 to 5, with (e) 1 = definitely not possible, (f) 2 = very unlikely, (g) 3= somewhat unlikely, (h) 4= somewhat likely, and (i) 5 = very likely.

<sup>a</sup>Percent of women who correctly answered the question. <sup>b</sup>Number of responses per question.

<sup>c</sup>Correct response, T = true, F = false; the letter(s) represents the correct response(s) that was coded as 1 for the HIV/AIDS index (see Leblanc, 1993).