

# **Investigating the Masturbatory Behaviours of Canadian Midlife Adults**

by

**Katarina Kovacevic**

**A Thesis  
presented to  
The University of Guelph**

**In partial fulfillment of requirements  
for the degree of  
Master of Science  
in  
Family Relations & Applied Nutrition  
(Couple & Family Therapy)**

**Guelph, Ontario, Canada**

**© Katarina Kovacevic, September 2017**

## ABSTRACT

### INVESTIGATING THE MASTURBATORY BEHAVIOURS OF CANADIAN ADULTS IN MIDLIFE

**Katarina Kovacevic**  
**University of Guelph, 2016**

**Advisors: Dr. Robin R. Milhausen**  
**Dr. John Beaton & Dr. Tuuli Kukkonen**

Previous research indicates that masturbation is a common and pleasurable activity related to sexual satisfaction and sexual health outcomes (Herbenick, Reece, Sanders, Dodge, Ghassemi & Fortenberry, 2009; Phillippsohn & Hartmann, 2009; Hulburt & Whittaker, 1991; Pinkerton, Bogart, Cecil & Abramson, 2003; Shulman & Horne, 2003). This study examined masturbatory frequency, pleasure and approaches and potential impact for sexual health and satisfaction in a national sample of Canadian men (N= 1111) and women (N= 1010) aged 40-59. Gender differences in masturbation frequency and pleasure were robust: men were almost 7 times more likely than women to report masturbating 4+ times per week and women almost 2.5 times more likely than men to report no masturbation in the last year. Further, women were more likely than men to report vibrator use and report that masturbation was very pleasurable. Men who reported more frequent masturbation reported lower levels of sexual satisfaction in their relationship, whereas women's masturbation frequency was not related to their sexual satisfaction in relationships. Men and women's masturbation frequency was not related to sexual health. The limitations and implications of the results are discussed.

## Acknowledgements

To my advisors and committee members, words cannot express my eternal gratitude. To Robin Milhausen, you have been my rock, my compass and my cheerleader throughout a challenging and wonderful academic journey over the last two years. You have supported me in ways that extend your role as my advisor that will never be forgotten. With your loving words and support, you have given me the confidence to rise above my perceived limitations and discover my hidden potential. You have reinforced the importance of values such as positivity, hard work and integrity, which you demonstrate in each and every project you are involved in, of which there are a countless many. Thank you now and always.

To John Beaton, thank you for your endless supply of kindness and encouragement, and for bringing my confidence back. To Kevin, Lynda, Ruthie and Olga, thank you for sharing all that you know and for enduring my growing pains – it was an honour to learn and walk alongside with you. To Tuuli Kukkonen, thank you for modelling the art of balancing academic integrity with great care and compassion for students.

To my loving family, where do I even begin? Thank you for your unconditional support, understanding, patience and love. Thank you for teaching me the importance of hard work, tolerance and compassion. I am so inspired by the great resilience you have demonstrated over the last two years, which have allowed me to overcome my difficulties and reconnect with joy. To Mama and Tata, thank you for blessing me with the gift of life and for your endless support and encouragement. To Baka, thank you for your warmth and kindness. To Emma, thank you for understanding me like no one else does and for always making me laugh. To Bella and Crni, thank you for all the cuddles and for never eating my homework.

## Table of Contents

Acknowledgments	iii
Table of Contents	iv
List of Tables	v
List of Figures	vi
Literature Review	1
Introduction	1
Background	1
Masturbatory Prevalence and Frequency	2
Gender Similarities and Differences	3
Contextual Influences on Masturbation	5
Masturbatory Pleasure	7
Masturbatory Approaches	9
Masturbation and Overall Health and Well-being	10
Sexual Health	10
Mental Health	11
Physical Health	12
Masturbation and Sexual Satisfaction in Relationships	12
Limitations of Existing Literature	14
Objectives	17
Methods	18
Sample	18
Procedure	18
Measures	19
Masturbation Frequency	19
Masturbation Pleasure	20
Masturbatory Approaches	20
Sexual Satisfaction	20
Overall Happiness with Sexual Life	20
Sexual Health	20
Demographic Variables	21
Analysis	21
Results	22
Analytic Sample Demographics	23
Research Question 1	27
Research Question 2	30
Research Question 3	36
Research Question 4	39
Research Question 5	42
Discussion	44
Masturbatory Behaviours	46
Masturbation Frequency	46
Masturbation Pleasure	49
Masturbation Approaches	53

Factors Associated with Masturbation	54
Marital Status	54
Age	54
Masturbation Frequency Outcomes	55
Sexual Satisfaction	55
Overall Happiness with Sexual Life	58
Sexual Health	59
Strengths and Limitations	60
Implications and Future Research	62
References	64
Appendix A: Trojan/SIECAN Sexual Health at Midlife Questionnaire	73

## List of Tables

<i>Table # 1 Demographic Characteristics by Racial/Ethnic Group, Religion and Geographical Location</i> .....	23
<i>Table #2 Demographic Characteristics by Gender (Age, Martial Status, Relationship Status and Sexual Orientation)</i> .....	24
<i>Table #3 Demographic Characteristics by Gender (Sexual Health, Sexual Happiness, Sexual Satisfaction and Relationship Satisfaction)</i> .....	24
<i>Table #4 Masturbation Frequency by Gender</i> .....	27
<i>Table #5 Masturbation Pleasure by Gender</i> .....	28
<i>Table #6 Approaches to Masturbation by Gender</i> .....	29
<i>Table #7 Masturbation Frequency by Age and Gender</i> .....	30
<i>Table #8 Masturbation Pleasure by Gender and Age</i> .....	31
<i>Table #9 Masturbation Pleasure by Age and Gender</i> .....	32
<i>Table #10 Masturbation Approaches by Age Category and Gender</i> .....	33
<i>Table #11 Masturbation Frequency by Gender and Marital Status</i> .....	34
<i>Table #12 Masturbation Pleasure by Gender and Marital Status</i> .....	35
<i>Table #13 Sexual Satisfaction by Frequency of Masturbation for Men</i> .....	36
<i>Table #14 Sexual Satisfaction by Frequency of Masturbation for Women</i> .....	37
<i>Table #15 Sexual Satisfaction of Men in Current Relationship Predicted by Masturbation Frequency. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis</i> .....	37
<i>Table #16 Sexual Satisfaction of Women in Current Relationship Predicted by Masturbation Frequency. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis</i> .....	37
<i>Table #17 Sexual Satisfaction of Men in Current Relationship Predicted by Masturbation Frequency. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis</i> .....	38
<i>Table #18 Sexual Satisfaction of Women in Current Relationship Predicted by Masturbation Frequency. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis</i> .....	38
<i>Table #19 Masturbation Frequency as a Predictor of Happiness with Sexual Life for Men. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis</i> .....	39
<i>Table #20 Masturbation Frequency as a Predictor of Happiness with Sexual Life for Women. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis</i> .....	41
<i>Table #21 Masturbation Frequency as a Predictor of Happiness with Sexual Life for Men. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis</i> .....	41
<i>Table #22 Masturbation Frequency as a Predictor of Happiness with Sexual Life for Women. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis</i> .....	42
<i>Table #23 Masturbation Frequency as a Predictor of Sexual Health for Men. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis</i> .....	43
<i>Table #24 Masturbation Frequency as a Predictor of Sexual Health for Women. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis</i> .....	43
<i>Table #25 Masturbation Frequency as a Predictor of Sexual Health for Men. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis</i> .....	44
<i>Table #26 Masturbation Frequency as a Predictor of Sexual Health for Women. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis</i> .....	44

## List of Figures

Figure 1. Gender Differences in Masturbation Frequency .....	28
Figure 2. Gender Differences in Masturbation Pleasure .....	29

## **Literature Review**

### **Introduction**

The purpose of the current study is twofold. First, I aim to describe the masturbatory experience (frequency, pleasure, approach, i.e., with a lubricant or a vibrator) among midlife adults, considering gender differences and differences which may occur by age category (40-44; 45-49; 50-54; 55-59). Secondly, I aim to investigate the relationship between masturbation frequency (defined as how often one participated in solitary masturbation on average in the past year) and (1) sexual satisfaction; (2) happiness with sexual life; and (3) sexual health (defined as physical, emotional and mental well-being related to sexuality) in Canadian men and women ages 40-59 using secondary data analysis on information collected through the Trojan Midlife Sexual Health Questionnaire. The existing literature on the topic of masturbation focuses largely on behaviours, attitudes and outcomes in adolescents and young adults from a variety of international contexts. However, there is virtually no research investigating the masturbation behaviours, and associated factors, of Canadian adults in midlife.

### **Background**

Solitary masturbation was rarely investigated by sexuality researchers prior to and during the early period of the rising medical authority in the Western world (Coleman, 2003; Dekker & Schmidt, 2003; Patton, 1986; Pinkerton et al., 2003). Historically, religious condemnation of masturbation manifested a generally negative societal view of and discomfort with the subject. Religious influence was subsequently replaced by the rising medical authority of the late 18<sup>th</sup> Century, which through evidentiary claims, helped reinforce public fear of the negative mental and physical health outcomes of masturbation and generated further discomfort with its discourse



(Arafat & Cotton, 1974; Bullough, 2003; Hodges, 2005; Patton, 1986; Studd & Schwenkhagen, 2009;).

Sex research has mainly focused on the negative feelings and outcomes associated with masturbatory behaviours (Abramson & Mosher, 1975; Patton, 1986). However, contemporary researchers have begun to investigate how demographic characteristics such as religion and gender influence the extent to which masturbation is associated with negative feelings, such as guilt (Higgins, Trussell, Moore & Davidson, 2010). In recent years, a growing body of literature suggests that positive health outcomes related to masturbation exist and warrant further investigation (Herbenick et al., 2009; Pinkerton et al., 2003). Some authors have purported that important psychological health benefits related to masturbation may also exist, e.g., such as greater self-awareness, sexual self-efficacy and feelings of sexual empowerment (Bowman, 2013). Relationships between masturbation and positive health outcomes have been reported (Masters & Johnson, 1966; Pinkerton et al., 2003; Robbins et al., 2011). For example, an association between greater masturbation frequency and increased male condom use during penile-vaginal intercourse was reported in a college-aged population (Pinkerton et al., 2003) and in males 14-17 years of age (Robbins et al., 2011). Many have advocated for masturbation as a means of achieving sexual health and improved quality of life (Coleman, 2003; Higgins, et al., 2010; Teifer, 1999;).

### **Masturbatory Prevalence and Frequency**

Most men and women have had some experience with solitary masturbation (Arafat & Cotton, 1974; Fahs & Frank, 2014; Gerressu, Mercer, Graham, Wellings & Johnson, 2008; Kinsey, Pomeroy, Martin & Sloan, 1948; Kinsey, Pomeroy, Martin & Gebhard, 1953; Petersen & Hyde, 2011; Pinkerton et al., 2003; Schmidt, Klusman, Dekker & Matthiesen, 1998). It was

first reported in the late 1940s and early 1950s that 92% of men and 60% of women from an age-diverse sample had masturbated during the life course (Kinsey et al., 1948; Kinsey et al., 1953). In the 1970s, 89% of men and 61% of women reported actively masturbating during the time of the survey (Arafat & Cotton; 1974). The majority of these participants were college students in their early 20s studying at an American university in the midst of the American sexual revolution.

In more recent decades, women's reported rates of masturbation have generally increased, despite a few exceptions. In 1996, 94% of male students and 74% of female students from a number of West German universities reported having masturbated in the past 12 months (Schmidt et al., 1998). Ninety-eight percent of male students and 64% of female students in an undergraduate sexuality course offered at an American university reported having ever masturbated (Pinkerton et al, 2003). Furthermore, a small qualitative survey of 20 American women found that all participants had reported prevalence of lifetime masturbation, and that most women (13 out of 20) reported masturbating at least once a week (Fahs and Frank, 2014).

Of the aforementioned studies documenting the masturbatory frequency of men and women, only Kinsey's mid-20<sup>th</sup> Century works have included large, age-diverse samples from North America. The existing literature largely focuses on exploring relationships between masturbation and a variety of related health outcomes in youth and young adults from a variety of international contexts. There is a scarcity of research exploring related outcomes of masturbation in midlife adults and particularly so within a Canadian context. Results from the existing literature are not generalizable to midlife populations or to adults living in Canada.

**Gender Similarities and Differences.** Masturbation has been documented as one of the few remaining human behaviours where large gender differences still exist (Hyde, 2014).

Significant gender differences in masturbation frequency were reported in a large stratified probability sample survey of the British general population aged 16-44 (Gerressu et al., 2008). Ninety-five percent of men and 71.2% of women reported masturbating at least once in their lives, 73% of men and 36.8% of women reported masturbating in the past 4 weeks prior to interviewing, and 51.7% of men and only 17.8% of women reported masturbating in the past week (Gerressu et al., 2008). Large gender differences in average monthly masturbation rates have also been reported: college-aged men reportedly masturbated 12 times a month on average compared to an average of 4.7 times a month reported by college-aged women (Pinkerton et al., 2003). Interestingly, although more men than women tend to report a lifetime prevalence of masturbation, similar masturbation rates have been reported for both men and women that masturbate. Roughly one-third of both men *and* women said that they masturbated anywhere from a few times a week to a few times a month on average (Arafat & Cotton, 1974). In a sample of youth aged 14-17, female participants had masturbated an average of two times per week compared to males who masturbated an average of three times per week (Higgins et al., 2010). However, female participants were significantly less likely than males to have ever masturbated (48% versus 92%).

Reported gender differences may be partially explained by external factors that impact responding, such as social desirability bias (Alexander & Fisher, 2003; Petersen & Hyde, 2011). Alexander & Fisher (2003) found that women significantly underreported their masturbatory behaviours. Women's responses fluctuated depending on the modality in which they were tested, i.e., women reported more experience with masturbation when surveyed anonymously. The authors concluded that women are susceptible to social desirability bias in responding, in part, because women experience greater negative consequences for sexual expression (Alexander &

Fisher, 2003). This is an important implication, considering that face-to-face interviewing regarding masturbatory experiences has often been used (Gerressu et al., 2008; Kinsey et al., 1948; Kinsey et al., 1953; Kontula & Haavio-Mannila, 2003), potentially skewing results.

It has been theorized that gender differences may exist because of anatomical differences, i.e., that because one's erect penis signals arousal to one's self, the human male may be more likely to be aware of his arousal and fulfill his sexual needs through masturbation. Further, for the human female, signs of arousal or desire may be more obscure, perhaps even to one's own self (Petersen & Hyde, 2011). Others have theorized that because of the relative invisibility of public discourse on women's masturbatory experiences, women are often left without masturbation scripts that would otherwise guide women in how to "talk about, think about, and engage in masturbation" (Fahs & Frank, 2014, pp. 241).

Though reported gender differences in masturbatory prevalence and frequency have been documented, cultural considerations, social desirability bias, flaws in methodology and an absence of masturbation scripts could be contributing to an inaccurate account of men and women's lived masturbatory experiences. Thus, to gain a more complete understanding, it is useful to consider the contextual factors that may be influencing masturbatory experiences and reporting in human participants.

**Contextual Influences on Masturbation.** A number of contextual factors have been found to impact masturbatory frequency and age of first masturbation both within and between genders (Clement, Schmidt & Kruse, 1984; Dekker & Schmidt, 2003; Kontula & Haavio-Mannila, 2003), which challenge the idea of an inherent sex drive based on gender and point instead to sociocultural determinants of sexual behaviours.

An investigation of masturbatory behaviours in German students at three different time periods separated by 15-year intervals was conducted in 1966, 1981 and 1996 (Dekker & Schmidt, 2003). Age at first masturbation for both men and women was lower in 1996 than it was in 1981, and markedly so than in 1966. In 1966, first masturbation preceded first intercourse for only 40% of the women studied. Yet, in 1981, the majority of women (~60%) had masturbatory experiences that preceded first intercourse, and that percentage further increased in the following 15-year interval. By 1981, women were much more likely to report having masturbated prior to getting married (Dekker & Schmidt, 2003).

Generational differences in masturbatory frequencies have also been documented in several other European countries and major cities, specifically, in Finland, Estonia, Sweden, and in St. Petersburg, Russia (Kontula & Haavio-Mannila, 2003). In Finland, three surveys investigating the masturbatory behaviours of a nationally representative sample were conducted at three different time periods (1971, 1992, 1999) using a mixed methods design that combined face-to-face interviewing and a self-administered questionnaire. The results indicated that masturbation frequency had increased with each birth cohort (cohorts were categorized by 4-year intervals). Rates of masturbation during adolescence – a time when attitudes towards masturbation are first formed – were predictive of masturbatory frequency throughout the life course (Kontula & Haavio-Mannila, 2003). Recently, smaller gender differences were observed in a sample of Swedish students ages 18-22, with 98.9% of men and 85.5% of women reporting masturbating at least once (Driemeyer, Janssen, Wiltfang & Elmerstig, 2017), suggesting perhaps that gender differences may be narrowing over time, and be smaller among younger men and women than among older persons.

Smaller gender differences in masturbation frequency have also been reported in more egalitarian countries than in less egalitarian countries (Driemeyer et al., 2017; Petersen & Hyde, 2011). Large gender differences were documented in a study investigating the sexual behaviours of Turkish students: almost all men (93.9%) reported some experience with masturbation, whereas only 19.8% of women reported ever masturbating (Aras, Orcin, Ozan & Semin, 2007). In a study of Egyptian men and women, a significantly greater proportion of men (82.1%) than women (18.9%) reported masturbating (Kasemy, Desouky & Abdelrasoul, 2016). Surprisingly, 19.8% (N= 142) of women in this sample said that they did not know what masturbation was. In comparison, none of the male participants reported unfamiliarity with the term masturbation. Further, between-country comparisons revealed that in 1996, women living in St. Petersburg, Russia reported having lower masturbation rates than did Finnish women nearly 25 years prior (Kontula & Haavio-Mannila, 2003). And Finnish women reported masturbating twice as often as women from the U.S. during the past week (Laumann, Gagnon, Michael & Michaels, 1994).

### **Masturbatory Pleasure**

Few contemporary researchers have focused on masturbation pleasure as a point of investigation (Arafat & Cotton, 1974; Driemeyer, Janssen, Wiltfang & Elmerstig, 2017; Pinkerton et al, 2003), with some reporting on pleasure similarities between men and women, and others documenting important gender differences (Arafat & Cotton, 1974; Driemeyer et al., 2017).

Men reported more frequent masturbation and more frequent orgasms during masturbation than women in study investigating masturbatory experiences of students aged 18-22 (Driemeyer et al., 2017). However, more women stated they experienced their most pleasant orgasms during masturbation than men (Driemeyer et al., 2017). Further, more women (33.33%)

than men (9.27%) report a higher intensity orgasm from masturbation than from intercourse (Arafat & Cotton, 1974). One's experience of masturbatory pleasure has been correlated with one's motivation to masturbate (Ramanathan et al., 2014). Although masturbation pleasure has been observed to predict masturbatory frequency for both young men and women (Pinkerton et al., 2003), the higher incidence of orgasm during masturbation in young males may offer an additional incentive to masturbate more frequently (Driemeyer et al., 2017), providing some explanation for why we consistently observe gender differences in masturbation frequency.

Sexual pleasure is listed as the main reason for masturbating among men (Ramanathan et al., 2014; Yule, Brotto & Gorzalka, 2017) and women (Yule et al., 2017). Comparable proportions of men and women reported sexual tension relief and fun as reasons for masturbating, but more men (15%) than women (5%) cited feeling like they *had* to masturbate as a reason for masturbating (Yule et al., 2017). In addition, some men cited the following reasons for masturbation: having an uninterested or unavailable partner, loneliness, and 'needing to practice' (Yule et al., 2017) and some women describe masturbation as a source of joy (Fahs & Frank, 2014).

Gender differences in masturbatory pleasure were not reported in a sample of undergraduate students ages 19-40 that were enrolled in a human sexuality course at an American university (Pinkerton et al., 2003). Responding to a questionnaire administered by their instructor, both male and female students who rated masturbation as more pleasurable reported masturbating more frequently, which suggested a direct relationship between masturbatory frequency and pleasure (Pinkerton et al., 2003).

Important differences between men and women related to masturbatory pleasure have been reported (Arafat & Cotton, 1974; Driemeyer et al., 2017;). The existing literature suggests

that both men and women derive pleasure from masturbation (Pinkerton, 2003; Ramanathan et al., 2014) and that they list both similar (Yule et al., 2017) and unique (Fahs & Frank, 2014; Yule et al., 2017) reasons for masturbating. The research suggests that men and women are motivated to masturbate based on previously satisfying masturbatory experiences and masturbate more frequently if the overall pleasure derived from masturbation is greater (Pinkerton, 2003; Ramanathan et al., 2014).

### **Masturbatory Approaches**

A small qualitative study investigating the masturbatory experiences of 20 woman-identified participants yielded some interesting findings (Fahs & Frank, 2014). Among the most notable, it was documented that most women in the study assumed that most other women self-penetrated during masturbation, even though most participants reported primarily using clitoral stimulation themselves. This particular finding echoed Kinsey's seminal work, in which he found that only 20% of women used vaginal insertion during masturbation (Fahs & Frank, 2014).

It has been reported that approximately half to nearly two-thirds of American women use vibrators during both masturbation and partnered sex (Herbenick et al., 2009). When American women were asked about their use of vibrators during masturbation, the majority of participants reported that they used vibrators (primarily on the clitoris) for enhanced sexual pleasure during masturbation (Davis, Blank, Lin & Bonillas, 1996). Many women reported an approach to masturbation that included the use of fingers and clitoral stimulation (Fahs & Frank, 2014). Almost two-thirds of women report using lubricant during solo or partnered sex; it was reported that solo and partnered sexual activities that included lubricant were associated with higher ratings of sexual pleasure and satisfaction compared to solo and partnered sexual activities



during which no lubricant was used (Jozkowski, Herbenick, Schick, Reece, Sanders & Fortenberry, 2013).

When men were asked about their approaches to masturbation, 95% reported use of hand(s) as their primary mode of masturbation and 91% reported sexually explicit material from the Internet as their main source of stimuli during masturbation (Ramanathan et al., 2014). A small percentage (16.6%) of men reported using a vibrator during masturbation (Reece, Herbenick, Sanders, Dodge, Ghassemi & Fortenberry, 2009). However, in a study investigating women's vibrator use, nearly one-third of women reported that their male partner used her vibrator to pleasure himself during masturbation (Davis et al., 1996). It has also been documented that more men, particularly those in couple relationships, are now using vibrators to enhance their sexual pleasure (Watson, Séguin, Milhausen & Murray, 2016).

### **Masturbation and Overall Health and Well-being**

The existing literature regarding the role and impact of masturbation on sexual health is quite varied and documents both the health risks and benefits of masturbation. Though some links have been found between masturbation and increased sexual risk-taking (Gerressu, 2008; Robinson, Bockting, & Harrell, 2003), more emphasis is given to the fact that masturbation offers a safer alternative to partnered sex and is related to improvements in sexual, physical and mental health.

**Sexual Health.** Contemporary literature on masturbation suggests that masturbating may be related to positive sexual health outcomes (Coleman, 2003; Herbenick et al., 2010). Though it was reported that masturbation was unrelated to perceived health status in women ages 18-92 that had recently masturbated (Herbenick et al., 2010), masturbation has been linked to a wide range of improvements in sexual health such as sexual risk-taking reduction (Pinkerton et al.,

2003; Robbins et al., 2011; Schuster, Bell, & Kanou, 1996), gaining familiarity with one's own body and sexual responsiveness (Coleman, 2003) and better sexual functioning (Herbenick et al., 2009; Herbenick, Reece, et al., 2011; Kelly, Strassberg & Kircher, 1990; Kinsey, Pomeroy, Martin & Gephard, 1953). Women who had experience masturbating prior to marriage had more frequent orgasms during partnered sex in their marriage (Kinsey, Pomeroy, Martin & Gephard, 1953). Women who masturbate report higher orgasmic capacity (Kelly, Strassberg & Kircher, 1990), more satisfying sex lives (Hulburt & Whittaker, 1991; Phillippsohn & Hartmann, 2009) and greater sexual pleasure (Shulman & Horne, 2003) than non-masturbators. Women who use vibrators experience greater sexual desire, arousal, lubrication, more orgasms, have better overall sexual functioning and experience less pain during sex (Herbenick et al., 2009; Herbenick, Reece, et al., 2011). Among women who use vibrators, regular gynecological exams and genital self-examinations are also more common (Herbenick et al., 2009). Frequent masturbation has been correlated with a tendency to have more partners as well as engage in more sexual risk-taking behaviour (Gerressu, 2008; Robinson, Bockting, & Harrell, 2003), however, sexual risk-reduction behaviours are also reported among individuals who enjoy more frequent masturbation (Robbins et al., 2011; Pinkerton et al., 2003). For example, men who masturbated more frequently reported increased condom use (Pinkerton et al., 2003; Robbins et al., 2011). It has been documented that masturbation can play an important role in overcoming sexual dysfunction in both men (Kunelaki, 2017) and women (Andersen, 1981).

**Mental Health.** Masturbation has also been linked to better mental health outcomes, such as improved self-esteem (Dodson 1987; Hurlbert & Whittaker, 1991), more positive body image (Herbenick et al., 2009), better genital self-image (Herbenick et al., 2011) and emotional health (Robbins et al., 2011). In therapy and popular press books directed at women's sexual self-

actualization, masturbation is said to relate to greater comfort with one's body (Dodson, 1987), which has been said to reduce anxiety during partnered sexual activities (Barbach, 1976). Others have reported that women's masturbation is associated with elevations in mood (Escajadillo-Vargas et al., 2011) and more positive attitudes towards sexuality (Kelly, Strassberg & Kircher, 1990). Unfortunately, masturbation can also induce feelings such as guilt (Coleman, 2003) or shame and disgust with one's self (Kaestle & Allen, 2011). However, it is likely that the negative mental health consequences of masturbation are mostly influenced by the social contexts and masturbation narratives that one is exposed to (Coleman, 2003; Kaestle & Allen, 2011).

**Physical Health.** Perhaps to a lesser degree, researchers have also documented some of the physical health benefits correlated with masturbation. The act of engaging in masturbation is free from risk of sexually transmitted infection or unwanted pregnancy (Robbins et al., 2011). It has also been documented that masturbation can reduce pain in menstruating women (Masters & Johnson, 1966) and that women who masturbate report reductions in menopausal symptoms as well (Avis et al., 2009). Both men and women also report that they experience masturbation as way to relieve stress, to induce relaxation, and to aid sleep (Fahs & Frank, 2014; Yule et al., 2017). Masturbation is believed to be associated with men's risk for prostate cancer (Aboul-Enein, Bernstein & Ross, 2016).

Though researchers have reported many sexual, mental and physical health benefits of masturbation, an investigation of the relationship between masturbation and sexual health in Canadian men and women ages 40-59 is still missing from the literature. Investigating the potential health benefits of masturbation within the Canadian context may reveal similar or even more beneficial outcomes.

### **Masturbation and Sexual Satisfaction in Relationships**

A line of inquiry that researchers have pursued in less depth is investigating the role that masturbation plays in sexual satisfaction. The existing literature suggests that masturbation frequency is related sexual satisfaction, but the nature of this relationship remains unclear.

Support for a unidirectional relationship between sexual satisfaction and masturbation frequency is not substantial. In one population, it was documented that sexual satisfaction decreased as masturbation frequency increased (Klapilová, Brody, Krejčová, Husárová & Binter, 2015). For women ranging in age from 19-80+, an inverse relationship between masturbation frequency and sexual satisfaction with a partner has been reported (Bridges, Lease & Ellison, 2004). However, it has also been documented that for women, greater frequency of masturbation is associated with greater intercourse frequency (Fahs & Frank, 2014; Pinkerton, 2003), which is predictive of high sexual satisfaction in both men and women (Klapilová et al., 2015).

There is some support for the hypothesis that masturbation is an alternative or replacement for partnered sex, either in the absence of an available partner or to compensate for an unfulfilling sexual experience. Masturbation frequency was higher among men who found sex with their current partner less enjoyable (Fahs & Frank, 2014). In a small study of 20 women, participants frequently mentioned that they used masturbation to pleasure themselves after a partner's failed attempt to bring them orgasm (Fahs & Frank, 2014).

Though research suggests that women's masturbation and orgasms during masturbation are associated with overall sexual satisfaction (Fahs and Frank, 2014; Hurlbert & Whittaker, 1991; Phillippsohn & Hartmann, 2009), women ages 31-35 report that masturbation is less important than other sexual behaviours with regards to overall sexual satisfaction (Philipsson & Hartmann, 2009). However, female masturbators tend to be more satisfied with their sex lives than female non-masturbators (Hurlbert & Whittaker, 1991).

According to Coleman (2003), masturbation teaches one about how they prefer to be touched and how they respond sexually. Sex therapists routinely instruct their clients to experiment with solitary masturbation for the purposes of learning about one's body and preferences to improve sexual functioning (Meston, Hull, Levin & Sipski, 2004). Self-discovery of genital preference and enjoyment may be particularly important for women, as it is estimated that only between 26-30% of women are capable of achieving an orgasm through intercourse alone, i.e., without any direct clitoral stimulation (Hite, 1976). Kinsey et al. (1953) discovered that women were more likely to orgasm during partnered sex with their husbands if they had masturbated to orgasm before marriage than women who did not. In a nationwide study of female sexuality, published as *The Hite Report* (1976) it was stated that 95% of women could achieve orgasm during intercourse *if* there is stimulation of the clitoris (Hite, 1976). This is important, considering that Wade, Kremer & Brown (2005) found that a large percentage of men (32%) incorrectly assumed that most women could orgasm from penile-vaginal intercourse alone and 37% of men believed that (penile-vaginal) intercourse provided direct stimulation to the clitoris.

### **Limitations of Existing Literature**

There are several limitations in the existing literature on the topic of masturbation, largely related to sampling and other methodological issues. Additionally, because masturbation has been studied in many contexts but in very little depth, generalizability from one context to another is not possible.

Most researchers have relied on convenience sampling using adolescents and university students in their early 20s (often enrolled in human sexuality courses) to study the phenomenon of masturbation, which is particularly important given that masturbation frequency is

significantly associated with age (Gerressu et al., 2008). Though a handful of studies have investigated masturbatory prevalence, frequency and behaviours in adult samples, we know very little about the interactions between masturbation frequency and pleasure, sexual health, sexual satisfaction, and relationship satisfaction in adults. Although masturbation is sometimes thought of as a much more prominent feature in one's adolescent sexual life than in one's adult sexual life (Arafat & Cotton, 1974), several age-diverse samples (Fahs & Frank, 2014; Kinsey et al., 1948; Kinsey et al., 1953; Gerressu et al., 2008) document the prevalence of masturbation throughout the lifespan in both men and women. Furthermore, adult self-report of masturbatory behaviours has been found to be much more honest and accurate than adolescent self-report (Halpern et al., 2000). Thus, studying the masturbatory behaviours of adults ages 40-59 would fill an important gap in the research and yield more accurate results.

Methodologies that increase social desirability bias in responding, such as face-to-face interviewing, have been frequently used in masturbation research (Kinsey et al., 1948; Kinsey et al., 1953; Gerressu et al., 2008; Kontula & Haavio-Mannila, 2003). Given that participants, particularly young ones, report high discomfort with discussing personal experience with masturbation with others (Laumann et al., 1994; Kaestle & Allen, 2015), it is likely that results do not accurately reflect experience. This is particularly true for female participants, who are more prone to the social desirability bias in responding (Alexander & Fisher, 2003; Petersen & Hyde, 2011). Self-report methodology may lead to more accuracy in responding, perhaps yielding smaller gender differences in reported masturbatory frequencies in particular. Self-report methodology has been primarily used with adolescents, who are likely to be more dishonest when reporting their masturbatory behaviours (Halpern et al., 2000). Thus, a study

investigating the masturbatory behaviours of Canadian adults using self-report methodology would yield high-quality research that is currently missing from the literature.

It has been documented that sociocultural and socio-historical contexts shape how people think about, feel about, and engage in masturbation (Aras, Orcin, Ozan & Semin, 2007; Clement, Schmidt & Kruse, 1984; Dekker & Schmidt, 2003; Kontula & Haavio-Mannila, 2003; Laumann, Gagnon, Michael & Michaels, 1994; Petersen & Hyde, 2011; ). Though a number of international investigations into adult masturbatory behaviours have been conducted, including a few from the United States, not a single investigation has specifically targeted the masturbatory behaviours of Canadians. While it may be tempting to generalize results from studies conducted in the U.S. to the Canadian population, research on masturbation from the U.S. is scarce, lacking variety in sample age, and has been spread out over many decades. It is possible that differences from one North American culture to another are large and significant. Thus, the current investigation into the masturbatory behaviours of the Canadian population aged 40-59 is needed.

The ostensibly incomplete picture of human masturbatory experience leaves no room to generalize from one age category or cultural context to the next. Furthermore, the existing literature has relied on methodology that has often is vulnerable to social desirability biases. Both historical and more contemporary literature on the topic points to the sexual, mental, and physical health benefits of masturbation (Avis et al., 2009; Barbach, 1976; Dodson 1987; Herbenick et al., 2010; Hurlbert & Whittaker, 1991; Kelly et al., 1990; Kinsey et al., 1953; Masters & Johnson, 1966; Pinkerton et al., 2003; Reece, et al., 2011; Robbins et al., 2011; Schuster et al., 1996; ). It is suggested that masturbation is associated with sexual and relationship satisfaction as well (Hurlbert & Whittaker, 1991; Klapilová et al., 2015). Researchers have yet to investigate the masturbatory behaviours of Canadian adults ages 40-59,

or inquire about the relationships between masturbation and sexual health, sexual satisfaction and relationship satisfaction for this population. Lack of attention to this particular population has led to the current investigation.

### **Objectives**

The purpose of the current study is to describe the masturbatory experience (frequency, pleasure, approach, i.e., with a lubricant or a vibrator) among midlife adults, considering gender differences and differences which may occur by age category (40-44; 45-49; 50-54; 55-59). I aim to investigate the relationship between masturbation frequency (defined as how often one participated in solitary masturbation on average in the past year) and (1) sexual satisfaction; (2) relationship satisfaction; and (3) sexual health (defined as physical, emotional and mental well-being related to sexuality) in Canadian men and women ages 40-59 using secondary data analysis on information collected through the Trojan Midlife Sexual Health Questionnaire. The following research questions will guide the study:

1. Are there gender differences between Canadian women and men aged 40 to 59 with regard to masturbatory frequency, pleasure, and approaches?
2. Does masturbatory frequency, pleasure, and approach among midlife Canadians vary by age category (i.e., 40-44, 45-50, 50-54, 55-59)?
3. Does masturbation frequency predict sexual satisfaction in Canadian men and women aged 40 to 59, after controlling for age, presence of a health diagnoses, presence of a sexual problem and frequency, of penile-vaginal intercourse?
4. Does masturbation frequency predict overall happiness with sexual life in Canadian men and women aged 40 to 59, after controlling for age, presence of a health diagnoses, presence of a sexual problem and frequency, of penile-vaginal intercourse?



5. Does masturbation frequency predict sexual health in Canadian men and women aged 40 to 59, after controlling for age, presence of a health diagnoses, presence of a sexual problem and frequency, of penile-vaginal intercourse?

## **Methods**

### **Sample**

The overall sample comprised 2,400 mid-life Canadian men (N = 1,200) and women (N = 1,200) between the ages of 40 and 59 who met all eligibility criteria and provided complete data. Half of the participants were single, the other half cohabiting or married. The sample was divided equally into four age categories: 40-44, 45-49, 50-54 and 55-59 and the majority of the sample reported a heterosexual sexual orientation (91.5%).

### **Procedure**

The study was designed with the Trojan Sexual Health Division of Church & Dwight Canada to better understand the sexual health needs of mid-life adult Canadians. Data were collected between September 17, 2015 and October 12, 2015, by Leger, a professional marketing company. Participants were LegerWeb research panelists. The Leger panel was created using a random telephone recruiting method and is comprised of approximately 460,000 members representative of the Canadian population.

Eligible panelists were invited to participate via an email from Leger and a single email reminder was sent to those who did not respond to the initial message. The participant clicked on a link, which led to the study portal in order to complete the survey. Survey responses were transmitted over a secure, encrypted SSL connection and stored on a secure server. Participants received \$1 for completing the questionnaire, and the opportunity to enter into a draw to win a

\$100 prize, two \$1,000 prizes, one prize of 1,000 air miles reward miles or one iPad®. Once 2,400 completed questionnaires were obtained, the survey was terminated.

The aim was to recruit approximately 1,200 male and 1,200 female participants between the ages of 40 and 59 with representation from all provinces and territories. A total of 32,354 email invitations were sent to panelists that met the age criterion. Of these, 5615 respondents clicked on the survey link that led to the study portal. Approximately one-third (N = 143) were disqualified, 141 because they did not fit the age range, and 2 indicated they would not respond to the survey truthfully. A further 2642 were disqualified because quotas for gender, province of study, and age had been met.

## **Measures**

Participants were asked to complete the Trojan Midlife Sexual Health Questionnaire. Masturbatory experiences were assessed with three items. Participants' masturbatory frequency, approaches to masturbation and masturbation pleasure were assessed using one item, respectively. Participants' perceived sexual satisfaction, overall happiness with sexual life, and sexual health were also assessed, each using one item. Participants were also asked to answer a number of demographic questions.

**Masturbation Frequency.** The survey indicated that for the purposes of this study, masturbation would be defined as "self-stimulation of your genitals for sexual pleasure". The first question asked: "On average, in the past year, how often have you masturbated?" To answer this item, participants had to choose one of the following eight responses: I did not masturbate in the last year, a few times in the last year (i.e., less than once a month), once per month, 2 to 3 times per month, once per week, 2 to 3 times per week, 4 or more times per week or I don't know/prefer not to answer.

**Masturbation Pleasure.** Participants were asked to choose one of five responses to the second question: “Thinking about the last time you masturbated, how pleasurable was it for you?” Participants indicated whether their experience was very pleasurable, somewhat pleasurable, not very pleasurable or not at all pleasurable, or chose to respond with I don’t know/prefer not to answer.

**Masturbation Approaches.** Participants were asked: “Did you use any of the following to increase pleasure?” This question allowed multiple responses to be selected from the following: personal lubricant (described as a liquid or gel used during sexual activity to increase sexual pleasure), vibrator (described as a battery or electrically powered vibrating device used to increase sexual pleasure), none of the above, or I don’t know/prefer not to answer.

**Sexual Satisfaction.** Partnered participants were also asked the following question to assess for sexual satisfaction in their current primary relationship: “How sexually satisfying do you find your current primary relationship to be?” Participants chose one of five available responses: very satisfying, somewhat satisfying, not very satisfying, not at all satisfying or I don’t know/prefer not to answer.

**Overall Happiness with Sexual Life.** All participants were asked to answer the following question to assess for overall happiness with sexual life: “How happy are you with the sexual part of your life?” Participants chose one of four available responses: very happy, happy, not very happy, and not happy at all.

**Sexual Health.** Participants were informed that for the purposes of this survey, sexual health would refer to physical, emotional, and mental well-being related to sexuality. Participants were asked to choose one of six possible responses to the question: “Overall, would you say your

sexual health is...?” Participants indicated whether their sexual health was excellent, very good, good, fair, poor or chose I don’t know/prefer not to answer.

**Demographic Variables.** Participants were asked to indicate which province or territory they live in. They were also asked to indicate their gender, sexual orientation, which age category they belong to (less than 18 years of age, 18 to 29, 30 to 39, 40 to 49, 50 to 59, 60 years of age or older), and their exact age. Participants were then asked to describe their marital status and current relationship status from a number of predetermined responses.

### **Analysis**

Descriptive statistics (means, standard deviations) were computed to obtain information on the demographic variables such as gender, age, sexual orientation and relationship status of the sample. Descriptive statistics were also computed to obtain information on the masturbatory experiences, i.e., frequencies, pleasure and approaches of our participants. Chi-square analyses were used to assess whether gender differences and differences between age categories and marital status were indicated by the data. Logistic regression analyses were conducted to investigate the relationships of masturbation frequency and pleasure with three outcome measures: perceived sexual satisfaction, relationship satisfaction and sexual health for both men and women. In the regression models, we controlled for age, presence of a health diagnoses, presence of a sexual problem and frequency of penile-vaginal intercourse. Sexual satisfaction was added as a control variables for logistic regression models predicting overall happiness with sexual life and sexual health. Descriptive statistics were used to support the normality of the data. The data met the assumptions for logistic regression analysis, i.e., the assumption of independent observations and homogeneity of variance and covariance.

Sexual satisfaction, sexual health and overall happiness with sexual life variables were dichotomized to contrast those reporting the highest level of satisfaction, sexual health and happiness, respectively, with all other respondents. Most participants (74.8% of women and 71.7% of men) reported being at least somewhat sexually satisfied in their current relationship, being as least happy with the sexual part of their lives (72.8% of women and 68.4% of men), and over half of all participants reported that their perceived sexual health was very good or excellent (50.2%). Thus, a higher cut point was required to determine meaningful associations between these variables and masturbation frequency. Further, because a strong positive relationship between relationship satisfaction and sexual satisfaction has been well documented (Byers, 2005), we left out relationship satisfaction as a control variable in the regression models to allow us to observe whether a relationship between masturbation frequency and sexual satisfaction existed.

The midpoint of frequency distribution for men and women favoured roughly half of men masturbating twice or more per week and half of women masturbating a few times a year or less. Thus, women's masturbation frequency was dichotomized to contrast those reporting masturbating a few times per year or less with those reporting masturbating at least once per month; men's masturbation frequency was dichotomized to contrast those reporting masturbating at least twice per week with those reporting masturbating once a week or less. Masturbation pleasure was dichotomized to contrast those reporting the highest level of pleasure with all other respondents. Most participants (94.4% of women and 91.9% of men) reported that masturbation was at least somewhat pleasurable so a higher cut point was required to determine meaningful associations with age and marital status.

## **Results**

## Analytic Sample Demographics

2400 participants completed the Trojan/SIECCAN Sexual Health at Midlife Questionnaire. The analytic sample was comprised of 2121 Canadian men and women between the ages of 40-59 (92.6% of male participants (N = 1111) and 84.2% of female participants (N = 1010) that provided a response to the survey question: “On average, in the past year, how often have you masturbated?” Chi-square analysis indicated that men were significantly more likely to answer the question than women,  $X^2(1, N = 2400) = 41.37, p < .001$ .

Table # 1

### *Demographic Characteristics by Racial/Ethnic Group, Religion and Geographical Location*

<i>Demographic Variable</i>	
Racial/ethnic group	(N= 2121)
White	90.0% (1908)
Chinese	2.8% (60)
South Asian	1.8% (38)
Black	2.2% (46)
Filipino	0.4% (9)
Latin American	0.5% (10)
Southeast Asian	0.4% (8)
West Asian	0.2% (5)
Arab	0.7% (14)
Japanese	0.4% (9)
Korean	0.1% (2)
Aboriginal	1.7% (36)
Other	2.0% (42)
I don't know/prefer not to answer	0.5% (10)
Religion (observed)	(N= 2121)
Catholic	33.6% (713)
Protestant	16.9% (358)
Eastern Orthodox	1.5% (32)
Jewish	1.3% (27)
Muslim	1.2% (25)
Hindu	0.5% (11)
Sikh	0.1% (3)
Other	5.8% (122)
No religion	37.3% (792)
I don't know/prefer not to answer	1.8% (38)

How important is your religion to you?	(N= 1291)
Very important	23.2% (299)
Somewhat important	34.2% (442)
Not very important	28.0% (361)
Not at all important	14.1% (182)
I don't know/prefer not to answer	0.5% (7)
Geographical location	(N= 2121)
Ontario	36.6% (777)
Quebec	28.1% (596)
BC	10.7% (226)
Prairies	18.2% (386)
Atlantic Coast	6.3% (134)
Northern Canada	0.1% (2)

Almost all participants were White (90%). The remaining participants reported that they belonged to the following racial or ethnic group: Chinese (2.8%), South Asian (1.8%), Black (2.2%), Filipino (0.4%), Latin American (0.5%), Southeast Asian (0.4%), Arab (0.7%), West Asian (0.2%), Japanese (0.4%), Korean (0.1%), or Aboriginal (1.7%). Others answered that they belonged to another group (2.0%) or did not know/preferred not to answer (0.5%). Most participants said they followed Catholicism (33.6%) or Protestantism (16.9%) or said they did not follow any religion (37.3%). Most participants said they resided in either Ontario (36.6%) or Quebec (28.1%), with smaller percentages stating they resided in British Columbia (10.7%), the Prairies (18.2), Atlantic Coast (6.3%) or Northern Canada (0.1%).

Table # 2

*Demographic Characteristics by Gender (Age, Marital Status, Relationship Status and Sexual Orientation)*

Demographic Variable	Women (N = 1010)	Men (N = 1111)	Chi-square or t-value	P value
Age (mean years)	49.49, SD = 5.76	49.53, SD = 5.76		
Marital Status				
Married/Cohabiting	48.6% (491)	50.0% (556)	.434	.51
Single	51.4% (519)	50.0% (555)		

Relationship Status				
Single and Not Dating	48.4% (251)	48.8% (271)		
Single and Dating	51.6% (268)	51.2% (284)	.023	.878
Sexual Orientation				
Heterosexual	93.1% (940)	86.3% (959)		
Gay	0.7% (7)	9.8% (109)		
Lesbian	1.8% (18)	0.0% (0)		
Bisexual	1.9% (19)	2.1% (23)		
Other	0.8% (8)	0.5% (6)		
I prefer not to answer	1.8% (18)	1.3% (14)	104.474	.000*

\*  $p < .05$

The mean age was 49.51 (SD = 5.76), with a range of 40-59. Participants were split relatively evenly into four age groups (25.4% were between 40-44 years of age, 24.4% 45-49, 24.9% 50-54, and 25.3% 55-59). One-half of the men reported being married or cohabiting and half of the men reported being single. The women in the study were almost evenly split with regard to marital status (48.6% married/cohabiting and 51.4% single). Of the single participants, approximately one-half reported they were dating and the other half not dating. The sample was almost entirely comprised of heterosexual participants (93.1% of women and 86.3% of men). A minority of male participants reported they were gay (9.8%).

Table # 3

*Demographic Characteristics by Gender (Sexual Health, Sexual Happiness, Sexual Satisfaction and Relationship Satisfaction)*

Variable	Women	Men	Chi-square or t-value	P value
Overall, would you say your sexual health is...?	(N = 986)	(N = 1104)		
Excellent	17.6% (174)	18.1% (200)		
Very Good	32.6% (321)	32.1% (354)		
Good	27.7% (273)	30.3% (335)		
Fair	12.6% (124)	11.9% (131)		
Poor	9.5% (94)	7.6% (84)	3.847	.427
How happy are you with the sexual part of your life?	(N = 995)	(N = 1102)		



Very Happy	20.8% (207)	16.1% (177)*		
Happy	52.0% (517)	52.3% (576)		
Not Very Happy	20.4% (203)	24.2% (267)*		
Not Happy At All	6.8% (68)	7.4% (82)	10.117	.018*
How sexually satisfying do you find your current primary relationship to be?				
	(N = 627)	(N = 661)		
Very Satisfying	35.2% (221)	27.8% (184)*		
Somewhat Satisfying	39.6% (248)	43.9% (290)		
Not Very Satisfying	15.3% (96)	20.6% (136)*		
Not At All Satisfying	9.9% (62)	7.7% (51)	13.738	.003*

\*  $p < .05$

Table 3 presents the results of chi-square analysis comparing sexual health, sexual happiness, and emotional and sexual satisfaction in relationships by gender. Men and women did not differ in their reported level of perceived sexual health. Most men and women described their sexual health as good or better (80.5% of men and 77.9% of women).

In response to the question: “How happy are you with the sexual part of your life?” 72.8% of women and 68.4% of men said they were happy or very happy with the sexual part of their life. However, men and women differed significantly in their response to this question, ( $X^2(3, N = 2097) = 10.117, p = .018$ ). Specifically, women reported being very happy with the sexual part of their lives in significantly greater proportion to men ( $p < .05$ ). Men reported that they were not very happy with the sexual part of their life in significantly greater proportion to women ( $p < .05$ ).

Men and women differed significantly in terms of their responses to the question about their sexual satisfaction with their current primary relationship,  $X^2(3, N = 1288) = 13.738, p = .003$ . Specifically, women reported they were very sexually satisfied with their current primary relationship in significantly greater proportion to men who reported the same ( $p < .05$ ). The majority of men and women reported being only somewhat sexually satisfied in their current

primary relationship (39.6% of women and 43.9% of men). Men reported that they were not very sexually satisfied in their current primary relationship in greater proportion to women ( $p < .05$ ). About one in five male participants (20.6%) and 15.3% of female participants reported that they were not very sexually satisfied in their current primary relationship. Almost one out of 10 men (9.9%) and 7.7% of women reported that they were not at all sexually satisfied in their current primary relationship.

### Research Question 1

Are there gender differences between Canadian women and men aged 40 to 59 with regards to masturbatory frequency, pleasure and approaches? Results from chi-square analyses that compare these aspects of masturbatory behaviour by gender are presented in the following tables. Figures 1 and 2 offer visual representation of these data.

Table # 4

#### *Masturbation Frequency by Gender*

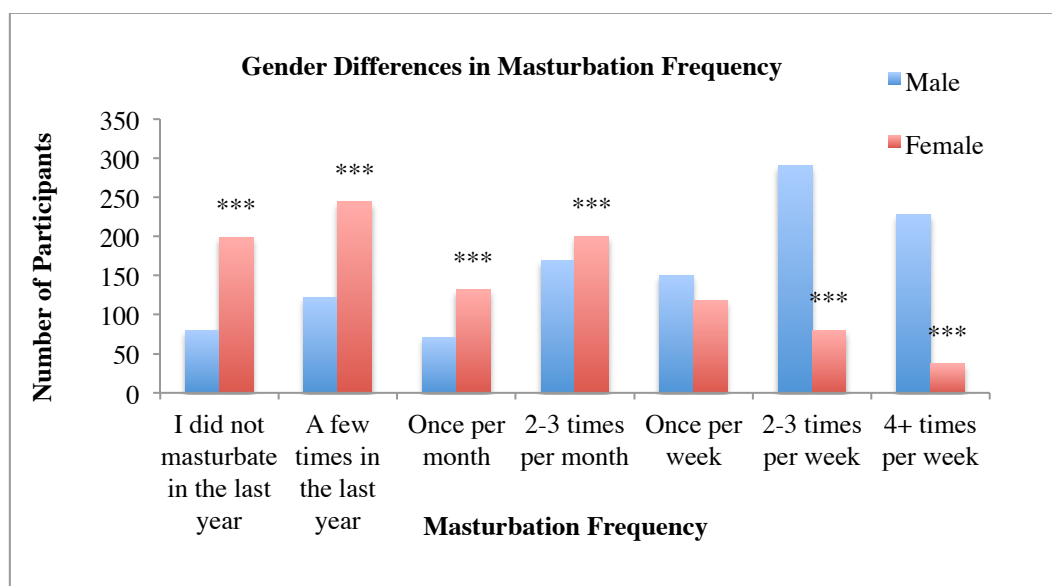
On average, in the past year, how often have you masturbated?	Women (N = 1010)	Men (N = 1111)
I did not masturbate in the past year	19.7% (199)	7.2% (80)*
A few times in the last year (i.e., less than once a month)	24.2% (244)	11.0% (122)*
Once per month	13.1% (132)	6.4% (71)*
2 to 3 times per month	19.8% (200)	15.2% (169)*
Once per week	11.7% (118)	13.5% (150)
2 to 3 times per week	7.9% (80)	26.2% (291)*
4 or more times per week	3.7% (37)	20.5% (228)*

\*  $p < .05$

Table 4 presents the results of chi-square analysis comparing masturbation frequency by gender. The gender difference in masturbation frequency was statistically significant ( $X^2(6, N = 2121) = 369.874, p < .001$ ). At almost every level of masturbation frequency, there was a significant gender difference whereby men reported masturbating more often and women reported masturbating less often. Women reported that they did not masturbate in the past year

or masturbated only a few times in the last year in significantly greater proportion to men ( $p < .05$ ). Men reported masturbating two or more times per week in significantly greater proportion to women ( $p < .05$ ). Almost half of the men in the sample (46.7%) reported masturbating two to three times or more per week whereas almost half of the women in the sample (43.9%) reported masturbating a few times in the last year or less.

Figure 2. Gender Differences in Masturbation Frequency



\*\*\*  $p < .05$

Table # 5

#### Masturbation Pleasure by Gender

Thinking about the last time you masturbated, how pleasurable was it for you?	Women (N = 807)	Men (N = 1027)
Very Pleasurable	48.3% (390)	29.7% (305)*
Somewhat Pleasurable	46.1% (372)	62.2% (639)*
Not Very Pleasurable	4.8% (39)	7.3% (75)*
Not At All Pleasurable	0.7% (6)	0.8% (8)

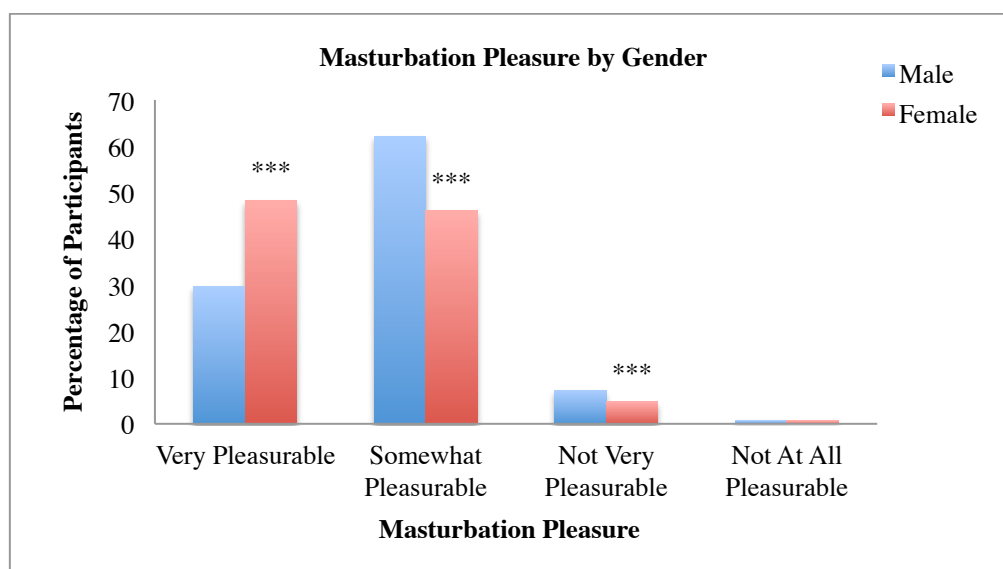
\*  $p < .05$

Table 5 presents the results from chi-square analysis comparing masturbation pleasure by gender. Gender differences in response to the following question were statistically significant:

“Thinking about the last time you masturbated, how pleasurable was it for you?” ( $X^2(3, N =$

1834) = 67.139,  $p < .001$ ). Almost half of the women in the sample (48.3%) reported masturbation to be very pleasurable, whereas only 29.7% of the men described the last time they masturbated as very pleasurable ( $p < .05$ ). A significantly greater proportion of men (62.2%) than women (46.1%) reported that masturbation was only somewhat pleasurable ( $p < .05$ ). Significantly more men (7.3%) than women (4.8%) reported that masturbation was not very pleasurable ( $p < .05$ ).

Figure 2. Gender Differences in Masturbation Pleasure



\*\*\*  $p < .05$

Table # 6

*Approaches to Masturbation by Gender*

Did you use any of the following to enhance your pleasure?	Women (N =489)	Men (N = 247)	Chi-square or t-value	P value
Yes to Personal Lubricant	20.1% (163)	19.0% (196)	.342	.558
Yes to Vibrator	40.2% (326)	4.9% (51)	346.517	.000*

\*  $p < .05$

Table 6 presents the results from chi-square analysis comparing masturbation approaches by gender. Women reported usage of vibrators to enhance their pleasure during masturbation in

significantly greater proportion to men ( $X^2(1, N = 377) = 346.517, p < .001$ ). However, men and women did not differ in their reported rates of personal lubricant use during masturbation.

## Research Question 2

Do Canadian adults differ in masturbatory frequency, pleasure and approaches across midlife age categories (i.e., 40-44, 45-50, 50-54, 55-59) by gender and marital status? Results from chi-square analyses that compare these aspects of masturbatory behaviour by gender, age and marital status are presented in the following tables.

Table # 7

### *Masturbation Frequency by Age and Gender*

Age Category	Response	Men (N = 1111)	Women (N = 1010)	Chi-square or t-value	P Value
40-44	I did not masturbate in the past year	5.7% (16)	17.1% (44)*	96.469	.000*
	A few times in the last year (i.e., less than once a month)	7.5% (21)	16.0% (41)*		
	Once per month	4.6% (13)	12.5% (32)*		
	2-3 times per month	13.2% (37)	22.2% (57)*		
	Once a week	14.2% (40)	14.8% (38)		
	2-3 times per week	25.6% (72)	12.5% (32)*		
	4 or more times per week	29.2% (82)	5.1% (13)*		
44-49	I did not masturbate in the past year	6.2% (17)	16.1% (39)*	104.909	.000*
	A few times in the last year (i.e., less than once a month)	8.0% (22)	28.1% (68)*		
	Once per month	4.7% (13)	13.2% (32)*		
	2-3 times per month	17.0% (47)	18.6% (45)		
	Once a week	15.9% (44)	10.7% (26)		
	2-3 times per week	29.3% (81)	7.9% (19)*		
	4 or more times per week	18.8% (52)	5.4% (13)*		
50-54	I did not masturbate in the past year	8.4% (23)	19.4% (49)*		
	A few times in the last year (i.e., less than once a month)	11.3% (31)	28.9% (73)*		
	Once per month	8.0% (22)	14.2% (36)*		
	2-3 times per month	14.2% (39)	17.4% (44)		
	Once a week	13.8% (38)	10.7% (27)		

	2-3 times per week	24.7% (68)	6.3% (16)*		
	4 or more times per week	19.6% (54)	3.2% (8)*	97.465	.000*
55-59	I did not masturbate in the past year	8.6% (24)	26.0% (67)*		
	A few times in the last year (i.e., less than once a month)	17.2% (48)	24.0% (62)		
	Once per month	8.2% (23)	12.4% (32)		
	2-3 times per month	16.5% (46)	20.9% (54)		
	Once a week	10.0% (28)	10.5% (27)		
	2-3 times per week	25.1% (70)	5.0% (13)*		
	4 or more times per week	14.3% (40)	1.2% (3)*	94.537	.000*

\*  $p < .05$

Table 7 presents the results from chi-square analysis comparing masturbation frequency by age and gender. Gender differences were statistically significant within each age group (ages 40-44:  $X^2(6, N = 538) = 96.469, p < .001$ ; ages 45-49:  $X^2(6, N = 518) = 104.909, p < .001$ ; ages 50-54:  $X^2(6, N = 528) = 17.287, p < .001$ ; and ages 55-59:  $X^2(6, N = 537) = 16.971, p < .001$ ). In every age category except for the oldest, there were more significant differences than similarities in masturbatory frequency between genders. In every case, these differences favoured men masturbating more often and women masturbating less often. These differences were particularly pronounced related to participants reporting not masturbating over the past year; a significant gender difference was indicated at every age category with women being significantly more likely to report this than were men ( $p < .05$ ). Similarly, at every age category, men were proportionally more likely to report masturbating four or more times a week than were women ( $p < .05$ ).

Table # 8

*Masturbation Pleasure by Gender and Age*

Age Category	Response	Men (N = 1027)	Women (N = 807)	Chi-square or t-value	P Value
40-44 (N= 475)	Very pleasurable	32.7% (86)	49.1% (104)*		
	Somewhat pleasurable	59.7% (157)	46.2% (98)*		
	Not very pleasurable	6.5% (17)	4.7% (10)		

	Not at all pleasurable	1.1% (3)	0.0% (0)	14.867	.000*
44-49 (N= 461)	Very pleasurable	23.6% (61)	44.8% (91)*		
	Somewhat pleasurable	66.3% (171)	50.2% (102)*		
	Not very pleasurable	9.3% (24)	3.9% (8)*		
	Not at all pleasurable	0.8% (2)	1.0% (2)	25.157	.000*
50-54 (N= 452)	Very pleasurable	31.9% (80)	49.8% (100)*		
	Somewhat pleasurable	61.4% (154)	43.8% (88)*		
	Not very pleasurable	6.4% (16)	5.0% (10)		
	Not at all pleasurable	0.4% (1)	1.5% (3)	17.287	.000*
55-59 (N= 446)	Very pleasurable	30.6% (78)	49.7% (95)*		
	Somewhat pleasurable	61.6% (157)	44.0% (84)*		
	Not very pleasurable	7.1% (18)	5.8% (11)		
	Not at all pleasurable	0.8% (2)	0.5% (1)	16.971	.000*

\*  $p < .05$

Table 8 presents the results from chi-square analysis comparing masturbation pleasure by age and gender. Men and women reported significant differences in masturbation pleasure overall and within each age category: ages 40-44:  $X^2(3, N = 475) = 14.867, p = .002$ ; ages 45-49:  $X^2(3, N = 461) = 25.157, p < .001$ ; ages 50-54:  $X^2(3, N = 452) = 17.287, p = .001$ ; and ages 55-59:  $X^2(3, N = 446) = 16.971, p = .001$ . Specifically, women reported that masturbation was very pleasurable in significantly greater proportion to men across all age categories ( $p < .05$ ). Men reported that masturbation was only somewhat pleasurable in significantly greater proportion to women across all age categories ( $p < .05$ ). In the age group 45-49, men reported that masturbation was not very pleasurable in significantly greater proportion to women ( $X^2(3, N = 461) = 25.157, p < .001$ ).

Table # 9

*Masturbation Pleasure by Age and Gender*

Gender	Age Category			
	40-44	45-49	50-54	55-59
Men				
Very Pleasurable (N = 305)	32.7% (86)a	23.6% (61)a, b	31.9% (80)b	30.6% (78)
Less Than Very Pleasurable				

(N = 722)	67.3% (177)a	76.4% (197)a, b	68.1% (171)b	69.4% (177)
Women				
Very pleasurable (N = 390)	49.1% (104)	44.8% (91)	49.8% (100)	49.7% (95)
Less Than Very Pleasurable (N = 417)	50.9% (108)	55.2% (112)	50.2% (101)	50.3% (96)

Each subscript letter denotes a subset of age categories whose column proportions differ significantly from each other at the  $p < .05$  level.

Table 9 also presents results from chi-square analysis comparing masturbation pleasure by age and gender. Women did not report significant differences in masturbation pleasure across age categories. Men reported significant differences in masturbation pleasure across age categories. Men aged 45-49 were significantly more likely than men ages 40-49 or men ages 50-54 to report that masturbation was less than very pleasurable. Men ages 45-49 and ages 55-59 did not differ significantly in masturbation pleasure.

Table # 10

*Masturbation Approaches by Age Category and Gender*

Did you use any of the following to enhance your pleasure?	Age Category			
	40-44	45-49	50-54	55-59
<b>Men</b>				
Yes to Personal Lubricant (N=196)	19.2% (51)	19.3% (50)	15.9% (40)	21.6% (55)
Yes to Vibrator (N = 51)	4.2% (11)	4.2% (11)	4.8% (12)	6.7% (17)
<b>Women</b>				
Yes to Personal Lubricant (N = 163)	16.4% (35)a	14.3% (29)b, c	23.0% (47)b	27.2% (52)a, c
Yes to Vibrator (N = 326)	48.4% (103)a, b	36.5% (74)a	39.2% (80)	36.1% (69)b

Each subscript letter denotes a subset of age categories whose column proportions differ significantly from each other at the  $p < .05$  level.

Table 10 presents the results from chi-square analysis comparing masturbation approaches by age and gender. Women reported significant differences in masturbation approaches across age categories at the  $p < .05$  level. Women aged 55-59 were significantly more likely to report using personal lubricant during masturbation than women aged 40-44 and



45-49. Women aged 45-49 were significantly less likely to report using personal lubricant during masturbation than women aged 50-54. Women aged 40-44 were significantly more likely than women aged 45-49 and 55-59 to report using a vibrator during masturbation, but did not differ significantly from women aged 50-54. There were no significant differences in men's reported approaches to masturbation (i.e., use of personal lubricant or vibrators during masturbation) across age groups at the  $p < .05$  level.

Table # 11

*Masturbation Frequency by Gender and Marital Status*

	On average, in the past year, how often have you masturbated?	Married/ Cohabiting	Single	Chi-square or t-value	P value
Men		(N = 556)	(N = 555)		
	I did not masturbate in the past year	9.9% (55)	4.5% (25)*		
	A few times in the last year (i.e., less than once a month)	13.7% (76)	8.3% (46)*		
	Once per month	5.8% (32)	7.0% (39)		
	2 to 3 times per month	17.8% (99)	12.6% (70)*		
	Once per week	14.2% (79)	12.8% (71)		
	2 to 3 times per week	25.0% (139)	27.4% (152)	50.633	.000*
	4 or more times per week	13.7% (76)	27.4% (152)*		
Women		(N = 491)	(N = 519)		
	I did not masturbate in the past year	25.9% (127)	13.9% (72)*		
	A few times in the last year (i.e., less than once a month)	28.7% (141)	19.8% (103)*		
	Once per month	14.5% (71)	11.8% (61)		
	2 to 3 times per month	16.3% (80)	23.1% (120)*		
	Once per week	8.8% (43)	14.5% (75)*		
	2 to 3 times per week	4.3% (21)	11.4% (59)*		
	4 or more times per week	1.6% (8)	5.6% (29)*	67.799	.000*

\*  $p < .05$ 

Table 11 presents the results from chi-square analysis comparing masturbation frequency by gender and marital status. The chi-square test indicated significant differences related to masturbation frequency among married/cohabitating men versus single men ( $X^2(6, N = 1111) =$

50.633,  $p < .001$ ). Overall, married and/or cohabiting men reported masturbating in significantly lesser proportion to single men. Married or cohabiting reported that they did not masturbate in the past year in significantly greater proportion to single men (9.9% and 4.5%, respectively;  $p < .05$ ). Single men reported masturbating four or more times per week in significantly greater proportion to married or cohabiting men (27.4% and 13.7%, respectively,  $p < .05$ ). Over half of the single men (54.8%) reported masturbating two or more times per week, whereas just over a third (38.7%) of married or cohabiting men reported masturbating as often ( $p < .05$ ).

A similar pattern was demonstrated among women. The chi square test indicated proportional differences in masturbation frequency for married and/or cohabiting versus single women ( $X^2(6, N = 1010) = 67.799, p < .001$ ). Overall, married and/or cohabiting women reported masturbating in significantly lesser proportion to single women. Single women reported masturbating two or more times per month in significantly greater proportion to married and/or cohabiting women and reported masturbating a few times or less in the past year in significantly lesser proportion to married and/or cohabiting women ( $p < .05$ ). Married and/or cohabiting women reported not masturbating in the past year in significantly greater proportion to single women (25.9% and 13.9%, respectively,  $p < .05$ ). Single reported masturbating four or more times per week in significantly greater proportion to married and/or cohabiting women (5.6% and 1.6%, respectively,  $p < .05$ ). More than half of married and/or cohabiting women (54.6%) reported masturbating a few times per year or less, whereas only one third (33.7%) of single women reported masturbating a few times per year or less ( $p < .05$ ). Single women reported masturbating once per week or more in significantly greater proportion to married and/or cohabiting women (31.5% and 14.7%, respectively,  $p < .05$ ).

Table # 12

*Masturbation Pleasure by Gender and Marital Status*

Thinking about the last time you masturbated, how pleasurable was it for you?	Married/Cohabiting	Single	Chi-square or t-value	P value
Male	(N = 499)	(N = 528)		
Very pleasurable	27.5% (137)	31.8% (168)		
Somewhat pleasurable	64.1% (320)	60.4% (319)		
Not very pleasurable	7.8% (39)	6.8% (36)		
Not at all pleasurable	0.6% (3)	0.9% (5)	2.956	.398
Female	(N = 362)	(N = 445)		
Very pleasurable	51.4% (186)	45.8% (204)		
Somewhat pleasurable	43.4% (157)	48.3% (215)		
Not very pleasurable	4.7% (17)	4.9% (22)		
Not at all pleasurable	0.6% (2)	0.9% (4)	2.673	.445

\*  $p < .05$

Table 12 presents the results from chi-square analysis comparing masturbation pleasure by gender and marital status. Marital status was not associated with masturbation pleasure for either men or women at the  $p < .05$  level.

**Research Question 3**

Is there a relationship between masturbation frequency and sexual satisfaction in current relationship in Canadian men and women aged 40 to 59? Furthermore, is there a relationship between masturbation frequency and sexual satisfaction after controlling for age, presence of a health diagnoses, presence of a sexual problem and penile-vaginal intercourse frequency?

Table # 13

*Sexual Satisfaction by Frequency of Masturbation for Men*

How sexually satisfying do you find your current primary relationship to be?	Masturbating once a week or less	Masturbating 2 to 3 or more times per week
Less than very satisfying	68.0% (N= 266)a	78.1% (211)a
Very satisfying	32.0% (N= 125)a	21.9% (N= 59)a

Each subscript letter denotes a subset of age categories whose column proportions differ significantly from each other at the  $p < .05$  level.

Table 13 presents the results from chi-square analysis comparing men's sexual satisfaction by masturbation frequency. Men who masturbated more often (2 to 3 times a week or

more often) were less likely to indicate that they were very sexually satisfied, compared to men who reported masturbating less often ( $p < .05$ ).

Table # 14

*Sexual Satisfaction by Frequency of Masturbation for Women*

How sexually satisfying do you find your current primary relationship to be?	Masturbating a few times a year or less	Masturbating at least once a month
Less than very satisfying	62.5% (N= 192)	66.9% (N= 214)
Very satisfying	37.5% (N= 115)	33.1% (N= 106)

Each subscript letter denotes a subset of age categories whose column proportions differ significantly from each other at the  $p < .05$  level.

Table 14 presents the results from chi-square analysis comparing women's sexual satisfaction by masturbation frequency. Women's masturbation frequency was not related to their sexual satisfaction in their current relationship at the  $p < .05$  level.

Table # 15

*Sexual Satisfaction of Men in Current Relationship Predicted by Masturbation Frequency. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis*

Variable	OR	95% CI	P value
Masturbation frequency	.595	.416-.852	.005*

\*  $p < .05$

The model predicting men's sexual satisfaction by masturbation frequency (dichotomized to compare 2 times a week or more versus less than 2 times per week) was statistically significant,  $X^2(1, N= 1111) = 8.290, p = .004, R^2 = .018$ , correctly classifying 72.2% of men. Men who reported masturbating two to three times a week or more 40.5% less likely to report that they were very sexually satisfied in their current relationship (95% CI, .416-.852).

Table # 16

*Sexual Satisfaction of Women in Current Relationship Predicted by Masturbation Frequency. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis*

Variable	OR	95% CI	P value
----------	----	--------	---------

Masturbation frequency	.827	.596-1.148	.256
------------------------	------	------------	------

\*  $p < .05$

The model predicting women's sexual satisfaction by masturbation frequency (dichotomized to compare once a week or more versus less than once a week) was not statistically significant.

Table # 17

*Sexual Satisfaction of Men in Current Relationship Predicted by Masturbation Frequency. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis*

Variable	AOR	95% CI	P value
Age	1.021	.986-1.056	.247
Presence of health diagnosis	.868	.568-1.325	.511
Presence of sexual problem	.467	.300-.728	.001*
Penile-vaginal intercourse frequency	1.675	1.460-1.922	.000*
Masturbation frequency	.733	.487-1.103	.136

\*  $p < .05$

The model predicting men's sexual satisfaction was statistically significant,  $X^2(5, N=1111) = 92.443, p < .001, R^2 = .21$ , correctly classifying 73.9% of men. Masturbation frequency was not a significant predictor of sexual satisfaction for men after controlling for age, presence of a health diagnosis, presence of a sexual problem and frequency of penile-vaginal intercourse. Presence of a sexual problem and frequency of penile-vaginal intercourse were significant predictors of sexual satisfaction for men. Men who reported at least one sexual problem were 53.3% less likely to report being very sexually satisfied than men who did not report having a sexual problem (95% CI, .300-.728). For each categorical increase in penile-vaginal intercourse frequency, men were 1.6 times more likely to report that they were very sexually satisfied (95% CI, 1.460-1.922).

Table # 18

*Sexual Satisfaction of Women in Current Relationship Predicted by Masturbation Frequency. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis*

Variable	AOR	95% CI	P value
Age	1.038	.999-1.079	.057
Presence of health diagnosis	1.470	.924-2.341	.104
Presence of sexual problem	.188	.118-.300	.000*
Penile-vaginal intercourse frequency	1.802	1.561-2.080	.000*
Masturbation frequency	.810	.534-1.227	.319

\*  $p < .05$

The model predicting women's sexual satisfaction was statistically significant,  $X^2(5, N=1010) = 144.392, p < .001, R^2 = .326$ , correctly classifying 75.2% of women. Masturbation frequency was not a significant predictor of sexual satisfaction for women after controlling for age, presence of a health diagnosis, presence of a sexual problem and frequency of penile-vaginal intercourse. Women who reported at least one sexual problem were 81.2% less likely to report being very sexually satisfied than women who did not report a sexual problem (95% CI, .118-.300). For each categorical increase in penile-vaginal intercourse frequency, women were 1.8 times more likely to report that they were very sexually satisfied (95% CI, 1.561-2.080).

#### Research Question 4

Is there a relationship between masturbation frequency and happiness with overall sexual life in Canadian men and women aged 40-59, after controlling for age, presence of a health diagnoses, presence of a sexual problem and frequency, of penile-vaginal intercourse?

Table # 19

*Masturbation Frequency as a Predictor of Happiness with Sexual Life for Men. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis*

Variable	OR	95% CI	P value
Masturbation frequency	.527	.377-.739	.000*

\*  $p < .05$

Without controlling for other variables, masturbation frequency was a significant predictor of men's overall sexual happiness,  $X^2(1, N= 1111) = 14.420, p < .001, R^2 = .022$ ,

correctly classifying 83.9% of men. Men who reported masturbating at least two to three times per week were 47.3% less likely to report they were very happy with the sexual part of their lives (95% CI, .377-.739).

Table # 20

*Masturbation Frequency as a Predictor of Happiness with Sexual Life for Women. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis*

Variable	OR	95% CI	P value
Masturbation frequency	.710	.522-.965	.029*

\*  $p < .05$

Without controlling for other variables, masturbation frequency was a significant predictor of women's overall sexual happiness,  $X^2(1, N= 1010) = 4.778, p = .029, R^2 = .007$ , correctly classifying 79.2% of women. Women who reported masturbating at least once a week were 29.0% less likely to report being very happy with the sexual part of their lives (95% CI, .522-.965).

Table # 21

*Masturbation Frequency as a Predictor of Happiness with Sexual Life for Men. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis*

Variable	AOR	95% CI	P value
Age	1.000	.957-1.044	.998
Presence of health diagnosis	.463	.264-.810	.007*
Presence of sexual problem	.564	.316-1.006	.053
Sexual satisfaction	14.782	8.782-24.881	.000*
Penile-vaginal intercourse frequency	1.278	1.077-1.516	.005*
Masturbation frequency	.737	.438-1.240	.250

\*  $p < .05$

The model predicting men's happiness with their sexual life by masturbation frequency was statistically significant,  $X^2(6, N= 1111) = 202.101, p < .001, R^2 = .451$ , correctly classifying 85.1% of men. Masturbation frequency was not predictive of men's overall sexual happiness after controlling for age, presence of a health diagnosis, presence of a sexual problem, sexual

satisfaction and frequency of penile-vaginal intercourse. Similarly, age and the presence of a sexual problem were not predictive of overall sexual happiness. Presence of a health diagnosis, sexual satisfaction and penile-vaginal intercourse frequency were all significant predictors of men's overall sexual happiness. Men who reported having a health diagnosis were 57% less likely to report that they were very happy with their sexual life (95% CI, .264-.810). Men who reported they were very sexually satisfied were 14.8 times more likely to say that they were very happy with their sexual life (95% CI, 8.782-24.881). Finally, with each categorical increase in penile-vaginal intercourse frequency, men were 1.3 times more likely to report they were very happy with their sexual life (95% CI, 1.077-1.516).

Table # 22

*Masturbation Frequency as a Predictor of Happiness with Sexual Life for Women. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis*

Variable	AOR	95% CI	P value
Age	1.034	.985-1.085	.177
Presence of health diagnosis	1.355	.744-2.466	.321
Presence of sexual problem	.347	.198-.608	.000*
Sexual satisfaction	16.130	8.980-28.971	.000*
Penile-vaginal intercourse frequency	1.372	1.146-1.642	.001*
Masturbation frequency	.891	.531-1.497	.664

\*  $p < .05$

The model predicting women's happiness with their sexual life by masturbation frequency was statistically significant,  $X^2(6, N= 1010) = 235.214, p < .001, R^2 = .524$ , correctly classifying 83.3% of women. Masturbation frequency was not predictive of women's overall sexual happiness after controlling for age, presence of a health diagnosis, presence of a sexual problem, sexual satisfaction and frequency of penile-vaginal intercourse. Similarly, age and presence of a health diagnosis were not predictive of overall sexual happiness. Presence of a sexual problem, sexual satisfaction and penile-vaginal intercourse frequency were all significant



predictors of women's overall sexual happiness. Women who reported having a sexual problem were 65% less likely to report that they were very happy with their sexual life (95% CI, .198-.608). Women who reported they were very sexually satisfied were 16.1 times more likely to report that they were very happy with their sexual life (95% CI, 8.980-28.971). With each categorical increase in penile-vaginal intercourse frequency, women were 1.4 times more likely to say they were very happy with their sexual life.

### Research Question 5

Is there a relationship between masturbation frequency and sexual health in Canadian men and women aged 40 to 59, after controlling for age, presence of a health diagnoses, presence of a sexual problem and frequency of penile-vaginal intercourse?

Table # 23

*Masturbation Frequency as a Predictor of Sexual Health for Men. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis*

Variable	OR	95% CI	P value
Masturbation frequency	1.064	.783-1.445	.693

\*  $p < .05$

Without controlling for other variables, masturbation frequency was not a significant predictor of men's sexual health.

Table # 24

*Masturbation Frequency as a Predictor of Sexual Health for Women. Odds Ratio (OR) with 95% CI from Bivariate Logistic Regression Analysis*

Variable	OR	95% CI	P value
Masturbation frequency	1.349	.963-1.889	.082

\*  $p < .05$

Without controlling for other variables, masturbation frequency was not a significant predictor of women's sexual health.

Table # 25

*Masturbation Frequency as a Predictor of Sexual Health for Men. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis*

Variable	AOR	95% CI	P value
Age	.914	.877-.951	.000*
Presence of health diagnosis	.572	.344-.950	.031*
Presence of sexual problem	.294	.166-.520	.000*
Sexual satisfaction	2.834	1.763-4.557	.000*
Penile-vaginal intercourse frequency	1.204	1.035-1.400	.016*
Masturbation frequency	1.347	.857-2.117	.197

\*  $p < .05$

The model predicting men's sexual health by masturbation frequency was statistically significant,  $X^2(6, N= 1010) = 96.607, p < .001, R^2 = .238$ , correctly classifying 80.3% of men. Masturbation frequency was not a significant predictor of men's sexual health after controlling for age, presence of a health diagnosis, presence of a sexual problem, sexual satisfaction and frequency of penile-vaginal intercourse. Age, presence of a health diagnosis, presence of a sexual problem, sexual satisfaction and penile-vaginal intercourse frequency were all significant predictors of sexual health for men. Men were 8.6% less likely to report that their sexual health was excellent with each one-year increase in age (95% CI, .877-.951). Men who reported having a health diagnosis were 42.8% less likely to report they were in excellent sexual health (95% CI, .344-.950). Men who reported having a sexual problem were 70.6% less likely to report they were in excellent sexual health (95% CI, .166-.520). Men who stated they were very sexually satisfied were 2.8 times more likely to say they were in excellent sexual health (95% CI, 1.763-4.557). With every categorical increase in penile-vaginal intercourse frequency, men were 1.3 times more likely to say they were in excellent sexual health (95% CI, 1.035-1.400).

Table # 26

*Masturbation Frequency as a Predictor of Sexual Health for Women. Adjusted Odds Ratios (AOR) with 95% CI from Logistic Regression Analysis*

Variable	AOR	95% CI	P value
Age	.976	.932-1.022	.305
Presence of health diagnosis	1.444	.815-2.557	.208
Presence of sexual problem	.482	.279-.832	.009*
Sexual satisfaction	3.499	1.987-6.162	.000*
Penile-vaginal intercourse frequency	1.374	1.146-1.647	.001*
Masturbation frequency	1.360	.822-2.251	.231

\*  $p < .05$

The model predicting women's sexual health by masturbation frequency was statistically significant,  $X^2(6, N= 1010) = 80.808, p < .001, R^2 = .234$ , correctly classifying 82.2% of women. Masturbation frequency was not a significant predictor of women's sexual health after controlling for age, presence of a health diagnosis, presence of a sexual problem, sexual satisfaction and frequency of penile-vaginal intercourse. Presence of a sexual problem, sexual satisfaction and penile-vaginal intercourse frequency were all significant predictors of sexual health for women. Women who reported having a sexual problem were 51.8% less likely to say they were in excellent sexual health (95% CI, .279-.832). Women who reported they were very sexually satisfied were 3.5 times more likely to say they were excellent sexual health (95% CI, 1.987-6.162). With each categorical increase in penile-vaginal intercourse frequency, women were 1.4 times more likely to report being in excellent sexual health (95% CI, 1.146-1.647). Age and presence of a health diagnosis were not significant predictors of women's sexual health.

### **Discussion**

The purpose of the current study was to investigate masturbatory behaviors and factors related to masturbation frequency among Canadian men and women in midlife. We aimed to describe masturbatory experience (frequency, pleasure, approach, i.e., with a lubricant or a vibrator), considering gender differences and differences that occurred by age category (40-44;

45-49; 50-54; 55-59). We also aimed to investigate the relationship between masturbation frequency (defined as how often one participated in solitary masturbation on average in the past year) and (1) sexual satisfaction; (2) happiness with sexual life; and (3) sexual health (defined as physical, emotional and mental wellbeing related to sexuality). A national sample of Canadians, 40-59 years of age, completed The Trojan/SIECCAN Sexual Health at Midlife Questionnaire. The analytic sample (1111 men and 1010 women) reported on their masturbatory behaviours. Descriptive statistics were used to summarize demographic variables and masturbatory frequencies, pleasure, and approaches. Logistic regression analyses were conducted to investigate relationships between masturbation frequency and sexual satisfaction in current relationship, happiness with overall sexual life, and sexual health.

Gender differences in masturbation frequency, pleasure, approaches and sexual satisfaction predicted by masturbation frequency were robust. Men were almost 7 times more likely than women to report masturbating 4 or more times per week and women were almost 2.5 times more likely than men to report that they did not masturbate in the last year. Further, women were more likely than men to report that masturbation was very pleasurable. Women were much more likely than men to report using a vibrator during masturbation. In the logistic regression models, masturbatory frequency was not associated with the outcomes, despite some significant bivariate relationships. Men who reported higher rates of masturbation reported lower levels of sexual satisfaction in their relationship and lower overall happiness with their sexual lives (in both bivariate and logistic regression models). Women's masturbation frequency was not related to their sexual satisfaction in relationships (in both models). Men and women with higher rates of masturbation indicated lower overall happiness with their sexual lives at the bivariate level, which included both non-partnered and partnered participants. Masturbation

frequency was not predictive of sexual happiness in the logistic regression models, which only included partnered participants. Surprisingly, perceived sexual health was not related to masturbation frequency for males or females. Variance accounted for by masturbatory frequency in models predicting sexual satisfaction was low, with more variance accounted for by PVI frequency and the experience of sexual problems. Contrary to our expectations, masturbatory frequency was generally not related to our outcomes once control variables were added into the regression models.

Our results suggest that PVI frequency and the presence of sexual problems are more important to men and women's sexual satisfaction in relationship than other factors, such as masturbation frequency. Our results suggest that masturbation frequency is predictive of less overall sexual happiness for single, but not partnered, Canadian men and women, suggesting that more frequent masturbation may indicate a desire for but inaccessibility to an available sexual partner. Our results indicated that PVI frequency, sexual problems and health problems were related to sexual health, whereas surprisingly, masturbation frequency was not.

PVI frequency, sexual problems and health problems may contribute greatly to men and women's perceived sexual health particularly during the midlife period where implications of these variables for sexual functioning increase, placing masturbation frequency further into periphery. Sexual problems may impact men's perceptions of their sexual health to a greater extent because of the onset of erectile dysfunction in midlife and the parallel pressure for male's to continue to perform sexually.

### **Masturbatory Behaviours**

**Masturbation Frequency.** Masturbation has been documented as one of the few remaining human behaviours where large gender differences still exist (Hyde, 2014). As

expected, this study revealed striking gender differences between men and women with regard to masturbation frequency. Consistent with the existing literature (Geressu et al., 2008; Pinkerton et al., 2003), significant differences favoured men's more frequent masturbation. This trend was observed throughout the midlife period. However, older men and women were more similar in terms of frequency than younger men and women. Although men generally reported higher masturbation frequency in our study, there was a great range of variability for both men and women. Some men reported that they did not masturbate at all in the past year, and some women reported that they masturbated 4 or more times per week.

Interestingly, our male participants were significantly more likely than our female participants to respond to the question about masturbation frequency. It has been hypothesized that women may be more susceptible to social desirability bias related to questions of a sexual nature than men (Alexander & Fisher, 2003). It was cleverly documented that women's reported masturbation frequency fluctuated based on the modality that they were questioned (i.e., face-to-face, anonymous survey) (Alexander & Fisher, 2003). Some women may hesitate to discuss or answer dishonestly about their masturbatory behaviours even via anonymous survey, leading to exaggerating gender differences in the results. Men's answers may be influenced by their perceived norms about the rate at which other men masturbate; Pinkerton et al. (2003) documented that greater frequency of masturbation for men was predicted by perceived social norms supporting this behaviour. It is possible that men's reported frequency may partially reflect their ideas about what constitutes as a "normal" frequency for men in general, rather than accurately describe their masturbation behaviours.

Masturbation guilt may determine how frequently individuals masturbate or how they report on their masturbatory behaviours. Female students from a university in Wisconsin and a

university in Texas were significantly more likely than male students to report guilt during masturbation (Higgins et al., 2010). A lack of media representation of female masturbation may also influence the extent to which women engage in or report on their masturbation. Media representations of masturbation contain far fewer scenes of female masturbation than male masturbation (Fahs & Frank, 2014; Madanikia, Bartholomew & Cytrynbaum, 2013). The lack of media representation may be perpetuating the message that masturbation is not a normal part of a woman's life (Fahs & Frank, 2014), thereby preventing women from exploring their bodies, developing their sensual preferences and seeing themselves as sexual beings.

It has been documented that reported lifetime incidence of masturbation has grown for women over the decades (Schmidt et al., 1998), providing evidence for socio-historical influence on sexual behaviour. Although it may be tempting to explain the observed gender differences in masturbation frequency in simple terms, i.e., by purporting that men must naturally have stronger sexual urges than women, a myriad sociocultural factors likely determine the gender difference we observe to a great extent. Early research on sexual double standards indicated support for men's sexual freedom before marriage, but not for women (Milhausen & Herold, 2002). In part, this history may help to explain why women experience greater susceptibility to social desirability bias in responding to questions about questions of a sexual nature (Alexander & Fisher, 2003), i.e., for fear of negative social consequences. Men may also experience bias in their responding based on their ideas about what is "normal" for other men with regards to sexual behaviours. It was documented that most young men believed their male peers masturbated more frequently than they did (Pinkerton et al., 2003), which may have influenced how they responded to questions about their own masturbation behaviours. As such, reported gender differences in masturbation frequency may reflect desire to be viewed favourably by others based on ideas

about what is “normal” or “appropriate” based on social norms rather than actual behaviours, and may not completely or accurately represent men and women’s lived experiences.

**Masturbation Pleasure.** Previous findings indicate that greater masturbation pleasure is associated with greater motivation to masturbate and greater masturbation frequency in both men and women (Pinkerton et al., 2003; Ramanathan et al., 2014). Since it has been consistently documented that men report frequent masturbation in greater proportion to women, we hypothesized that men might also report greater masturbation pleasure. However, we also considered women might find masturbation to be more pleasurable because it offers greater privacy, and potentially, a more acute focus on their own versus other-pleasure. We also hypothesized that pleasure might decrease with age for both men and women, with the onset of sexual problems and menopause more common in the older age cohorts.

Female participants in our study were significantly more likely than male participants to report that the last time they masturbated was very pleasurable. This trend continued throughout the midlife period, with women reporting significantly more masturbation pleasure than men in every single age category. Women’s pleasure ratings remained consistent from one age category to the next whereas it was difficult to discern a clear trend in men’s masturbation pleasure over time. The finding that women report high masturbation pleasure in greater proportion to men is not consistent with a recent study on masturbation pleasure in a younger sample, which found no significant gender differences in masturbation pleasure (Pinkerton et al., 2003).

In interpreting our findings, we considered that indeed masturbation might offer unique benefits for women related to their experience of greater masturbation pleasure, i.e., greater privacy and a focus on the self as compared to partnered sexual activity. A sizable number of adult women (12% to 21%) experience dyspareunia, i.e., painful sexual intercourse (Landry &



Bergeron, 2009), and that the majority of women prefer clitoral stimulation or stimulation of the external parts of their genitalia (i.e., clitoral region, mons, labia minora) (Fahs & Frank, 2014) over penetration. For some women, masturbation may be perceived as highly pleasurable because it offers a satisfying alternative to painful sexual intercourse, when pain is not located in the vestibule. Furthermore, past research has demonstrated that women are more likely to report orgasm during masturbation than during vaginal sex. Masturbation is found to reliably lead to orgasm for women (de Sutter, Day & Adam, 2014), whereas the majority of women (70%) report that they usually do not orgasm during heterosexual intercourse (Salisbury and Fisher, 2014). Furthermore, in one study, though the majority of both men and women reported a higher intensity of orgasm during sex, a substantially higher percentage of females (33.33%) than males (9.27%) said they experience a higher intensity of orgasm during masturbation than during activity with a partner (Arafat & Cotton, 1974). In part, this may be due to men's lack of sexual information about the importance of clitoral stimulation to woman's orgasm. One-third of men inaccurately believe that clitoris is directly stimulated during penile-vaginal intercourse and about one-third of men inaccurately believe that that most women can orgasm from penile-vaginal intercourse alone. In fact, only 26-30% of women are reliably orgasmic through penile-vaginal intercourse alone (de Sutter et al., 2014). Interestingly, the majority of women believe that other women self-penetrate during masturbation even though most women report using only clitoral stimulation during masturbation (Fahs & Frank, 2014). This finding suggests that women may honestly believe that other women can achieve orgasm through penetration alone, which may impede them from seeking or providing themselves with clitoral stimulation during partnered sexual intercourse. In fact, it has been documented that many women believe that self-stimulatory behaviours are separate from partnered sex (Fahs & Frank, 2014).

We interpreted the observed gender difference in masturbation pleasure with broader sociocultural and socio-political considerations in mind. Given the social limitations placed on women to freely explore their sexuality (Alexander & Fisher, 2003), masturbation may provide a site of safety for women to let their fantasies run wild, explore different bodily sensations and engage in sexual acts that may not be desirable or permissible during partnered sex. Similarly, it may be a time where women are solely focused on tending to one's own needs. It is hypothesized that women are socialized to think about pleasing others, focusing less on their own needs and desires (Fahs & Frank, 2014). In terms of partnered sex, this general trend in socialization may translate into women focusing more on a partner's sexual needs, desires and pleasure over their own. Women may engage in male ego maintenance during partnered sex as a result, which may distract from their own pleasure or present itself as faking orgasms and furthermore, women may feel significant concern for a partner's feelings when they are unable to orgasm (Fahs & Frank, 2014; Salisbury & Fisher, 2014). In fact, young women express more concern for a male partner's feelings and perceptions with regard to their inability to orgasm during sex than they do for their own sexual satisfaction and physical pleasure (Salisbury & Fisher, 2014). And perhaps, young women with indifferent or negative attitudes about masturbation more often mentioned their partner's sexual needs and pleasure than they spoke of their own desire or pleasure in their narratives (Fahs & Frank, 2014).

Masturbation may be a site in which women reclaim self versus other focus and rebel against patriarchal ideas about the purpose of female sexuality, providing psychological pleasure in addition to physical sensation of pleasure during masturbation. In a study designed to identify common themes from North American representations of masturbation in film, researchers identified that the majority of masturbation scenes showed male and female characters as

frustrated and unfulfilled (Madanikia, Bartholomew, & Cytrynbaum, 2013). However, the researchers also noted that representations of female masturbation tended to be more positive than those of males, perhaps “[reflecting] the societal view that female masturbation is an erotic and sexually liberating act, while male masturbation is associated with frustration and lack of a sexual partner”. Given that women spend considerable energy worrying about their partner’s feelings, masturbation may offer women a welcome relief from the emotional labour of male ego maintenance. Similarly, women may experience high levels of pleasure during masturbation because they need not be as concerned about their appearance or experience pressure to act in a sexually permissible way.

Even though women reported greater pleasurability, we wondered why a majority of women aged 40-59 were masturbating so infrequently (i.e., more than half of women were masturbating a few times per year or less). In a sample of Swedish students ages 18-22, more women than men stated they experienced their most pleasant orgasms during masturbation, however men reported more frequent orgasms during masturbation than women (Driemeyer et al., 2017). We also theorized that a lack dialogue, media representations and shared knowledge about the real or potential role of masturbation in women’s lives has hindered the formation of ‘masturbation culture’ among women. We theorized that a more fully developed culture surrounding female masturbation would impact the way women think about, talk about and engage in masturbation, perhaps changing the frequency with which women masturbate.

The majority of men state that their main reason for masturbating is to gain sexual pleasure (Ramanathan et al., 2014). Surprisingly, only one-third of men (29.7%) reported that masturbation was very pleasurable in our study and almost twice as many male participants (N= 75) than female participants (N= 39) reported that masturbation was not very pleasurable. We

wondered whether the compensatory theory might help to explain why men aged 40-59 masturbate much more frequently than their female counterparts, yet regard it as less pleasurable overall. According to the compensatory theory, it is assumed that men would rather have sex with a partner but in the absence of an available partner, will resort to masturbation as a way of meeting sexual needs. More frequent partnered sexual activity has been associated with lower masturbation rates in males (Gerressu et al., 2008), providing support for the compensatory theory (Regnerus, Price & Gordon, 2017).

**Masturbation Approaches.** As expected, significantly more women than men used a vibrator during masturbation to enhance their experience. It has been reported that approximately half to nearly two-thirds of American women use vibrators during both masturbation and partnered sex (Herbenick et al., 2009), whereas a small percentage (16.6%) of men reported using a vibrator during masturbation (Reece, Herbenick, Sanders, Dodge, Ghassemi & Fortenberry, 2009). Nearly one-third of women reported that their male partner used her vibrator to pleasure himself during masturbation (Davis et al., 1996), suggesting that men may be underreporting their actual vibrator use during masturbation. It is possible that men may perceive their own vibrator use as taboo and may not feel comfortable disclosing their use due to a fear of having their sexuality or masculinity being called into question. However, it is important to note that more men, particularly those in heterosexual relationships, are now using vibrators to enhance sexual pleasure and that the majority of men report increased physical pleasure as a result of using a vibrator (Watson et al., 2016).

There were no differences between men and women with regard to lubricant use during masturbation overall. Men's approaches to masturbation remained consistent across age categories. An upward trend in lubricant use was observed in women, which favoured older

women using lubricant in significantly greater proportion to younger women. This finding likely reflects the loss of vaginal moisture that occurs during and after menopause (Sturdee & Panay, 2010). Trends in vibrator use by age were more difficult to discern among women.

### **Factors Associated with Masturbation**

**Marital Status.** About half of men and women state that masturbation is unnecessary if they have regular sexual activity with a partner (Arafat and Cotton, 1974). In our study, single men and single women reported masturbating more frequently than their married and/or cohabitating counterparts. These results may be explained by the compensatory theory (Regnerus, Price & Gordon, 2017), which suggests that masturbation is used as a replacement for sex. However, this finding can also be explained by considering that married and/or cohabiting men and women have less privacy, and therefore have fewer chances to masturbate. Similarly, married and/or cohabiting men and women may have increased responsibility (e.g., caring for children, working to support a family), which leaves less time, energy, and perhaps less desire, to masturbate. Interestingly, masturbation pleasure did not differ based on marital status for either men or women.

**Age.** Our findings indicated that changes in male and female masturbation do occur as a result of age, but that these changes vary by gender. Women reported greater use of personal lubricant during masturbation in older midlife age categories. Age was associated with significant differences in reported masturbation pleasure for men across age categories. In the age group 45-49, men reported that masturbation was not very pleasurable in significantly greater proportion to women ( $X^2(3, N = 461) = 25.157, p < .001$ ). We theorized that men ages 45-49 may experience a greater desire for sex than their female partners, who are still likely to share the brunt of housework and caring for young children even if they are employed and may

have less time, energy or desire for intercourse (Lachance-Grzela & Bouchard, 2010). In turn, this may lead men to masturbate more frequently as a way to meet their sexual needs, which may leave them more sexually frustrated and be experienced as less pleasurable. Masturbation pleasure did not vary by age for women. We believed that masturbation might have unique benefits for women that preserve its pleurability over time, e.g., providing women with privacy and time to focus on their own, versus others' sexual needs.

### **Masturbation Frequency Outcomes**

**Sexual Satisfaction.** We investigated whether masturbation frequency was predictive of sexual satisfaction in Canadian men and women aged 40-59. Our first hypothesis was that women who had higher masturbation frequency would also report greater sexual satisfaction with a partner. We theorized that women who masturbate more frequently demonstrate greater sexual agency and may perhaps be more assertive in asking for their sexual needs to be met during partnered sexual activity, leading to greater sexual satisfaction with a partner. Our results indicated that there was no relationship between masturbation frequency and sexual satisfaction for women, which was surprising given that associations between these variables have been documented in the past. Past research indicates that women who engage in more frequent partnered sexual activity also report frequent masturbation (Wentland, Herold, Desmarais & Milhausen, 2009; Gerressu et al., 2008). Arafat & Cotton (1974) documented that more women (5.5%) than men (1.5%) stated that masturbation frequency increased with regular partnered sexual activity, which was observed to indicate a lack of sexual satisfaction with a women's sexual partner. These findings have given support to the hypothesis that frequent sexual activity with a partner complements women's increased masturbation frequency (Regnerus, Price & Gordon, 2017). More recently, it was documented that women's sexual satisfaction in a

relationship was negatively associated with masturbation frequency and positively associated with penile-vaginal intercourse frequency (Klapilová, Brody, Krejčová, Husárová, & Binter, 2015).

We did not observe a relationship between masturbation frequency and sexual satisfaction for Canadian women in midlife. We theorized that midlife men and women have likely had more sexual experiences, more time learning about their partners' bodies and their sexual likes and dislikes, and more time communicating about their preferences to their partners than younger cohorts. As a result, it is likely that PVI frequency indicates sexual satisfaction with a partner more effectively than masturbation frequency. Consistent with previous findings, we observed that PVI frequency was predictive of sexual satisfaction and so was presence of a sexual problem. Women were far less likely (81.2%) to report being very sexually satisfied if they had at least one sexual problem and women were 1.8 times more likely to say they were very sexually satisfied for every categorical increase in PVI frequency.

Though we have not assessed these relationships in a younger sample, perhaps PVI frequency in younger populations may indicate greater pressure from a partner to be sexual combined with a lack of assertive sexual communication on the part of a young woman. This, combined with more positive attitudes towards masturbation among younger persons (Driemeyer et al., 2017), may lead young women to engage in less enjoyable sex more often and masturbate more frequently to meet their sexual needs.

Our study suggests a complicated relationship between masturbatory frequency, penile-vaginal sex, and sexual satisfaction. We did not observe a relationship between masturbation frequency and sexual satisfaction for Canadian women in midlife. In a nationally representative sample of American men and women, Das (2008) observed that for masturbation seemed to

complement an active and pleasurable sex life for some men and women, while compensating for a lack of partnered sex or satisfaction in sex for others. It is likely that there are individual differences in this relationship, with some women masturbating more often as a part of an active and fulfilling sex life, leading to a positive association with sexual satisfaction; and other individuals masturbating to compensate for a less satisfying sex life, leading to a negative association. These competing relationships likely contribute to the mixed and null findings related to masturbation and sexual satisfaction. Thus, these results warrant further investigation, perhaps using qualitative measures, or creating subgroups within quantitative data, to better understand the associations between PVI, masturbation frequency and sexual satisfaction.

More frequent partnered sexual activity is associated with lower masturbation rates in males (Gerressu et al., 2008). Masturbation is often viewed as a replacement for partnered sex (Regnerus, Price & Gordon, 2017). We theorized that heterosexual men desire more frequent partnered sex than their female counterparts and masturbate more frequently to “make up” for sex that did not happen with a partner, thereby experiencing less sexual satisfaction as a result. We hypothesized that men’s more frequent masturbation would predict less sexual satisfaction with a partner, and that this relationship would be mediated by frequency of penile-vaginal intercourse. We detected a relationship between masturbation and sexual satisfaction for men. Specifically, men who masturbated two or more times per week were 40.5% less likely to report they were very sexually satisfied in their current relationship than men who masturbated less than twice per week. Consistent with our hypotheses, masturbation was mediated by penile-vaginal intercourse frequency; masturbation frequency was no longer predictive of sexual satisfaction for men after controlling for PVI frequency and other factors. Men were 1.6 times more likely to report that they were very sexually satisfied with each categorical increase in



penile-vaginal intercourse frequency. In this model, only the presence of a sexual problem and PVI frequency predicted men's sexual satisfaction in a current relationship.

**Overall Happiness with Sexual Life.** We investigated whether masturbation frequency was predictive of overall happiness with sexual life in Canadian men and women aged 40 to 59. We predicted and observed that higher levels of masturbation frequency are predictive of less overall happiness with sexual life for men. We predicted but did not observe that for women, higher levels of masturbation frequency are predictive of more overall happiness with sexual life. Men who masturbated at least two times per week were 47.3% less likely to be very happy with the sexual part of their lives and women who masturbated at least once a week were 29.0% less likely to be very happy with the sexual part of their lives. However, masturbation frequency was no longer predictive of men or women's overall happiness with sexual life after controlling for age, presence of a health diagnosis or sexual problem, sexual satisfaction and PVI frequency. Presence of a health diagnosis and PVI frequency were both predictive of overall happiness with sexual life, and not surprisingly, sexual satisfaction in a current relationship was predictive to the greatest extent. Surprisingly, presence of sexual problem was not predictive of overall happiness with sexual life. It is likely that many factors influence a person's overall happiness with their sexual life, and masturbation seems to be one small piece. It is important to note that the bivariate regression model included both non-dating and partnered participants whereas the logistic regression only included participants in a current relationship (because sexual satisfaction in a current relationship was added as a control variable). Thus, it is possible that we observe the negative relationship at the bivariate level because it includes non-dating partners who lack an available sexual partner, masturbate more frequently and are unhappy with their overall sexual life as a result.

**Sexual Health.** We hypothesized that more frequent masturbation would be predictive of better sexual health for men and women based on the previous literature on masturbation, which has suggested that masturbation might lead to gaining familiarity with one's body and better understanding of one's sexual responsiveness (Coleman, 2003). Past research has linked male masturbation frequency with greater condom use during PVI (Pinkerton et al., 2003; Robbins et al., 2011). It has also documented the relationship between masturbation and better sexual functioning (Herbenick et al., 2009; Herbenick, Reece, et al., 2011; Kelly, Strassberg & Kircher, 1990; Kinsey, Pomeroy, Martin & Gephard, 1953), e.g., that women who experience masturbating prior to marriage have more frequent orgasms during partnered sex in their marriage (Kinsey, Pomeroy, Martin & Gephard, 1953), and that women who masturbate report higher orgasmic capacity (Kelly, Strassberg & Kircher, 1990), more satisfying sex lives (Hulburt & Whittaker, 1991; Phillippsohn & Hartmann, 2009), and greater sexual pleasure (Shulman & Horne, 2003) than non-masturbators. We suspected these factors likely contribute to one's perception of their own sexual health.

We investigated whether masturbation frequency was predictive of sexual health in Canadian men and women aged 40-59. Surprisingly, we found that masturbation frequency was not a significant predictor of men and women's perceived sexual health. Age, presence of a health diagnosis or a sexual problem, sexual satisfaction and PVI frequency predicted men's sexual health. For women, presence of a sexual problem, sexual satisfaction and PVI frequency were factors predictive of perceived sexual health.

As higher PVI frequency may indicate better sexual functioning (e.g., adequate lubrication, erectile function, orgasmic capacity), this factor might be considered more important to midlife adults' perception of their overall sexual health than masturbation frequency. It is

likely that factors such as sexual problems and health problems take precedence in midlife adults' perception of their own sexual health. Negative relationships between age and sexual desire, arousal, and activity have been documented in male subjects aged 45-74 (Schiavi, Schreiner-Engel, Mandeli, Schanzer & Cohen, 1990). In a large, age-diverse sample of Turkish women, sexual dysfunction was highly prevalent for women aged 38-47 (53.5%), 48-57 (65.0%) and 58-67 (92.9%) (Çayan, Akbay, Bozlu, Canpolat, Acar & Ulusoy, 2004). In another study, age was significantly correlated with sexual problems for women (Rosen, Taylor, Leiblum & Bachmann, 1993). Interestingly, in our sample, we observed that men's perceived sexual health declined significantly with age, but that women's perceived sexual health remained the same throughout midlife. We considered that erectile dysfunction and orgasmic capacity might impact men's perceived sexual health to a greater extent than comparable female sexual dysfunctions on a women's perceived sexual health because of the greater emphasis on male sexual potency in defining masculinity.

### **Strengths and Limitations**

This study was the first to investigate the masturbatory behaviours and related sexual satisfaction and sexual health outcomes in a national sample of Canadians in midlife. This study was also the first to report that masturbation is more pleasurable among midlife women than men. And, participants were asked to report on their last masturbation experience, which enhances recall accuracy (Crosby, DiClemente, Yarber, Snow, & Troutman, 2007; Noar, Cole, & Carlyle, 2006). Although this study contributed to our knowledge of masturbatory behaviours and related factors in a novel population, our study had some notable limitations. Considering that we conducted the first in-depth study on the masturbatory behaviors of midlife men and women, it was difficult to compare and contrast our results to a comparable cohort. Further, it

was difficult to generalize our results to midlife adults outside of the Canadian context or cohorts that fall outside the range of 40-59 years of age because of a heavy focus in past research on using young convenience samples. Some regions of the country, e.g., Canadian Territories, were under-represented even though the sample drawn from the Canadian provinces was roughly in proportion to relative populations. Further, single item measures were used instead of validated scales. Moreover, participants who were willing to complete a questionnaire about masturbation and other sexual behaviours might differ from those who opt out of participating in such studies, and thus, the data cannot be considered an exact representation of all midlife Canadians. Similarly, significantly more women than men who completed the survey did not respond to the question about masturbation frequency.

This study was the first to ask midlife Canadian adults to report on their masturbation frequency, pleasure and approaches. However, we failed to ask participants some important questions about their masturbatory behaviours that had we obtained, would have substantially supplemented the data, in hindsight. Specifically, we did not ask participants about age of onset for masturbation, which we considered might be uniquely related to the outcomes that we studied. We wondered if an earlier onset of masturbation would be related to greater sexual satisfaction in a sexual partnership later on, particularly if masturbation preceded onset of sexual activity with a partner. We wondered whether earlier onset of masturbation might lead one to discover their preferences for sexual touch and greater awareness of approaches that allow for sexual needs to be met.

Further, participants were not asked to include specific details about their approaches to masturbation, i.e., whether they stimulated other parts of their bodies, such as their breasts or anus, to enhance pleasure during masturbation or other ways they may have enhanced pleasure

during masturbation, e.g., erotic films, webcams, lingerie, etc. It would be interesting to see whether participants engage in any of these behaviours during masturbation and if their pleasure is enhanced as a result. We also wondered whether participants used penetration during masturbation or whether they pleased themselves during penile-vaginal penetration.

Given that most women do not orgasm during partnered sex, prefer clitoral stimulation over penetration and reliably orgasm through masturbation (de Sutter, Day & Adam, 2014; Fahs & Frank, 2014; Salisbury and Fisher, 2014), we wished to know whether female participants used self-stimulation of their external genitalia during partnered sex. We also wondered whether self-stimulation of the external genitalia could predict more reliable orgasms for women during sex or greater sexual satisfaction in a current relationship.

### **Implications and Future Research**

Although masturbation was observed to be less important to sexual satisfaction than other factors in our study, several findings warrant further investigation, particularly within the understudied populations of midlife Canadian adults. Our finding that masturbation pleasure was particularly high and did not decrease with age for Canadian women in midlife was novel and may have important implications for the aging population of women in Canada. The finding that Canadian men in midlife experience significantly lower masturbation pleasure than women in midlife and yet masturbate much more frequently warrants further investigation regarding relationships between gender, masturbation pleasure and frequency. Drawing upon qualitative methods might help us better understand these relationships as well as men and women's motivations or inhibitions related to masturbatory experiences and behaviours. We also wondered whether frequent masturbation might indicate a desire for but inaccessibility to an available sexual partner, and suggest this point of investigation as an avenue for future research.

No study to date has explored whether pleasure or sexual satisfaction is enhanced when stimulation of women's external genitalia is incorporated into penile-vaginal penetration (whether by themselves or by a partner). It would be particularly relevant to investigate whether women enjoy, receive, perform, or feel restricted to perform clitoral stimulation during partnered sexual activity given their reported preference for clitoral stimulation over penetration during masturbation. We propose that future researchers consider investigating the relationship between self-stimulation of the external genitalia during partnered sex with orgasmic reliability during sex and sexual satisfaction in a current relationship.

Finally, we investigated the relationship between masturbation frequency and *perceived* sexual health, versus objective sexual health, observing that masturbation frequency was not at all related to perceived sexual health for both men and women. Investigations into causal relationship between masturbation and objective health outcomes warrant further investigation, as some authors have suggested potential links between masturbation and prostate cancer risk in men (Aboul-Enein, Bernstein & Ross, 2016) and masturbation as a means of overcoming sexual dysfunction in both men (Kunelaki, 2017) and women (Andersen, 1981).

## References

- About-Enein, B. H., Bernstein, J., & Ross, M. W. (2016). Evidence for Masturbation and Prostate Cancer Risk: Do We Have a Verdict? *Sexual medicine reviews*, 4(3), 229-234.
- Abramson, P. R., & Mosher, D. L. (1975). Development of a measure of negative attitudes toward masturbation. *Journal of Consulting and Clinical Psychology*, 43(4), 485.
- Alexander, M. G., & Fisher, T. D. (2003). Truth and consequences: Using the bogus pipeline to examine sex differences in self-reported sexuality. *Journal of Sex Research*, 40(1), 27-35.
- Andersen, B. L. (1981). A comparison of systematic desensitization and directed masturbation in the treatment of primary orgasmic dysfunction in females. *Journal of Consulting and Clinical Psychology*, 49(4), 568.
- Arafat, I. S., & Cotton, W. L. (1974). Masturbation practices of males and females. *Journal of Sex Research*, 10(4), 293-307.
- Aras, S., Orcin, E., Ozan, S., & Semin, S. (2007). Sexual behaviours and contraception among university students in Turkey. *Journal of Biosocial Science*, 39(01), 121-135.
- Avis, N. E., Colvin, A., Bromberger, J. T., Hess, R., Matthews, K. A., Ory, M., & Schocken, M. (2009). Change in health-related quality of life over the menopausal transition in a multiethnic cohort of middle-aged women: Study of Women's Health Across the Nation (SWAN). *Menopause (New York, NY)*, 16(5), 860.
- Bačić, V., & Štulhofer, A. (2011). Masturbation among sexually active young women in Croatia: Associations with religiosity and pornography use. *International Journal of Sexual Health*, 23(4), 248-257.
- Coleman, E. (2003). *Masturbation as a means of achieving sexual health* (Vol. 14, No. 2-3). Haworth Press.

- Barbach, L. (1976). *For yourself: The fulfillment of female sexuality*. Garden City, NY: Doubleday.
- Bridges, S. K., Lease, S. H., & Ellison, C. R. (2004). Predicting sexual satisfaction in women: Implications for counselor education and training. *Journal of Counseling and Development*, 82(2), 158.
- Brody, S., & Costa, R. M. (2008). Vaginal orgasm is associated with less use of immature psychological defense mechanisms. *The Journal of Sexual Medicine*, 5(5), 1167-1176.
- Bullough, V. L. (2003). Masturbation: A historical overview. *Journal of Psychology & Human Sexuality*, 14(2-3), 17-33.
- Burri, A. V., Cherkas, L. M., & Spector, T. D. (2009). Emotional intelligence and its association with orgasmic frequency in women. *Journal of Sexual Medicine*, 6, 1930–1937.
- Byers, E. S. (2005). Relationship satisfaction and sexual satisfaction: A longitudinal study of individuals in long-term relationships. *Journal of sex research*, 42(2), 113-118.
- Carvalho, A., & Leal, I. (2013). Masturbation among women: Associated factors and sexual response in a Portuguese community sample. *Journal of Sex & Marital Therapy*, 39(4), 347-367.
- Çayan, S., Akbay, E., Bozlu, M., Canpolat, B., Acar, D., & Ulusoy, E. (2004). The prevalence of female sexual dysfunction and potential risk factors that may impair sexual function in Turkish women. *Urologia internationalis*, 72(1), 52-57.
- Clement, U., Schmidt, G., & Kruse, M. (1984). Changes in sex differences in sexual behavior: A replication of a study on West German students (1966–1981). *Archives of Sexual Behavior*, 13(2), 99-120.



- Coleman, E. (2003). Masturbation as a means of achieving sexual health. *Journal of Psychology & Human Sexuality, 14*(2-3), 5-16.
- Costa, R. M., & Brody, S. (2007). Women's relationship quality is associated with specifically penile-vaginal intercourse orgasm and frequency. *Journal of Sex & Marital Therapy, 33*(4), 319-327.
- Das, A. (2007). Masturbation in the United States. *Journal of Sex & Marital Therapy, 33*(4), 301-317.
- Das, A, Parish, W. L., & Laumann, E. O. (2009). Masturbation in urban China. *Archives of Sexual Behavior, 38*, 108–120.
- Davidson, J. K., Darling, C. A., & Norton, L. (1996). Religiosity and the sexuality of women: Sexual behavior and sexual satisfaction revisited. *Journal of Sex Research, 32*, 235-243.
- Davis, C. M., Blank, J., Lin, H., & Bonillas, C. (1996). Characteristics of vibrator use among women. *Journal of Sex Research, 33*, 313–320.
- Dekker, A., & Schmidt, G. (2003). Patterns of masturbatory behaviour: Changes between the sixties and the nineties. *Journal of Psychology & Human Sexuality, 14*(2-3), 35-48.
- de Sutter, P., Day, J., & Adam, F. (2014). Who are the orgasmic women? Exploratory study among a community sample of French-speaking women. *Sexologies, 23*(3), e51-e57.
- Driemeyer, W., Janssen, E., Wiltfang, J., & Elmerstig, E. (2017). Masturbation experiences of Swedish senior high school students: Gender differences and similarities. *The Journal of Sex Research, 54*(4-5), 631-641.
- Dodson, B. (1987). *Sex for one. The joy of self love*. Glendale, CA: Crown.
- Escajadillo-Vargas, N., Mezones-Holguín, E., Castro-Castro, J., Córdova-Marcelo, W., Blümel, J. E., Pérez-López, F. R., & Chedraui, P. (2011). Sexual dysfunction risk and associated

- factors in young Peruvian university women. *The Journal of Sexual Medicine*, 8(6), 1701-1709.
- Fahs, B., & Frank, E. (2014). Notes from the back room: Gender, power, and (in) visibility in women's experiences of masturbation. *The Journal of Sex Research*, 51(3), 241-252.
- Gerressu, M., Mercer, C. H., Graham, C. A., Wellings, K., & Johnson, A. M. (2008). Prevalence of masturbation and associated factors in a British national probability survey. *Archives of Sexual Behavior*, 37(2), 266-278.
- Halpern, C. J., Udry, J. R., Suchindran, C., & Campbell, B. (2000). Adolescent males' willingness to report masturbation. *Journal of Sex Research*, 37(4), 327-332.
- Herbenick, D. D., Reece, M., Sanders, S. A., Dodge, B. S., Ghassemi, A., & Fortenberry, J. D. (2009). Prevalence and characteristics of vibrator use by women in the United States: Results from a nationally representative study. *Journal of Sexual Medicine*, 6, 1857-1867.
- Herbenick, D., Reece, M., Schick, V., Sanders, S. A., Dodge, B., & Fortenberry, J. D. (2010). Sexual behaviors, relationships, and perceived health status among adult women in the United States: Results from a national probability sample. *The Journal of Sexual Medicine*, 7(s5), 277-290.
- Herbenick, D. D., Schick, V., Reece, M., Sanders, S. A., Dodge, B. S., & Fortenberry, J. D. (2011). The Female Genital Self-Image Scale (FGSIS): Results from a nationally representative probability sample of women in the United States. *Journal of Sexual Medicine*, 8, 158-166.
- Higgins, J.A., Trussell, J., Moore, N.B., & Davidson, J.K. (2010). Young adult sexual health: Current and prior sexual behaviours among non- Hispanic white US college students. *Sex Health*, 7:35, 43

Hodges, F. M. (2005). HISTORY OF SEXUAL MEDICINE: The Antimasturbation Crusade in Antebellum American Medicine. *The Journal of Sexual Medicine*, 2(5), 722-731.

Hurlbert, D. F., & Whittaker, K. E. (1991). The role of masturbation in marital and sexual satisfaction: A comparative study of female masturbators and nonmasturbators. *Journal of Sex Education and Therapy*, 17(4), 272-282.

Hyde, J. S. (2014). Gender similarities and differences. *Annual Review of Psychology*, 65, 373-398.

Jozkowski, K. N., Herbenick, D., Schick, V., Reece, M., Sanders, S. A., & Fortenberry, J. D. (2013). Women's perceptions about lubricant use and vaginal wetness during sexual activities. *The journal of sexual medicine*, 10(2), 484-492.

Kaestle, C. E., & Allen, K. R. (2011). The role of masturbation in healthy sexual development: Perceptions of young adults. *Archives of Sexual Behavior*, 40(5), 983-994.

Kasemy, Z., Desouky, D. E. S., & Abdelrasoul, G. (2016). Sexual Fantasy, Masturbation and Pornography Among Egyptians. *Sexuality & Culture*, 20(3), 626-638.

Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Gebhard, P. H. (1953). *Sexual behavior in the human female*. Philadelphia: W.B. Saunders.

Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Sloan, S. (1948). *Sexual behavior in the human male*.

Klapilová, K., Brody, S., Krejčová, L., Husárová, B., & Binter, J. (2015). Sexual satisfaction, sexual compatibility, and relationship adjustment in couples: the role of sexual behaviors, orgasm, and men's discernment of women's intercourse orgasm. *The Journal of Sexual Medicine*, 12(3), 667-675.

- Kontula, O., & Haavio-Mannila, E. (2003). Masturbation in a generational perspective. *Journal of Psychology & Human Sexuality*, 14(2-3), 49-83.
- Landry, T., & Bergeron, S. (2009). How young does vulvo-vaginal pain begin? Prevalence and characteristics of dyspareunia in adolescents. *The journal of sexual medicine*, 6(4), 927-935.
- Laumann E. O., Gagnon, J. H., Michael, R. T. & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. University of Chicago Press.
- Lachance-Grzela, M., & Bouchard, G. (2010). Why do women do the lion's share of housework? A decade of research. *Sex roles*, 63(11-12), 767-780.
- Madanikia, Y., Bartholomew, K., & Cytrynbaum, J. B. (2013). Depiction of masturbation in North American movies. *The Canadian Journal of Human Sexuality*, 22(2), 106-115.
- Masters, W. H., & Johnson, V. E. (1966). *Human sexual response*. New York: Bantam Books.
- Meston, C. M., Hull, E., Levin, R. J., & Sipski, M. (2004). Disorders of orgasm in women. *The Journal of Sexual Medicine*, 1(1), 66-68.
- Milhausen, R. R., & Herold, E. S. (2002). Reconceptualizing the sexual double standard. *Journal of Psychology & Human Sexuality*, 13(2), 63-83.
- Patton, M. S. (1986). Twentieth-century attitudes toward masturbation. *Journal of Religion and Health*, 25(4), 291-302.
- Petersen, J. L., & Hyde, J. S. (2011). Gender differences in sexual attitudes and behaviors: A review of meta-analytic results and large datasets. *Journal of Sex Research*, 48(2-3), 149-165.
- Philippsohn, S., & Hartmann, U. (2009). Determinants of sexual satisfaction in a sample of German women. *The Journal of Sexual Medicine*, 6(4), 1001-1010.

- Pinkerton, S. D., Bogart, L. M., Cecil, H., & Abramson, P. R. (2003). Factors associated with masturbation in a collegiate sample. *Journal of Psychology & Human Sexuality, 14*(2-3), 103-121.
- Regnerus, M., Price, J., & Gordon, D. (2017). Masturbation and Partnered Sex: Substitutes or Complements?. *Archives of Sexual Behavior, 1*-11.
- Ramanathan, V., Sitharthan, G., Pepper, K., & Wylie, K. (2014). Masturbatory behavior and feelings: an exploratory study of Indian immigrant men in Australia. *International Journal of Sexual Health, 26*(1), 25-40.
- Robbins, C. L., Schick, V., Reece, M., Herbenick, D., Sanders, S. A., Dodge, B., & Fortenberry, J. D. (2011). Prevalence, frequency, and associations of masturbation with partnered sexual behaviors among US adolescents. *Archives of Pediatrics & Adolescent Medicine, 165*(12), 1087-1093.
- Robinson, B. B. E., Bockting, W. O., & Harrell, T. (2003). Masturbation and sexual health: an exploratory study of low income African American women. *Journal of Psychology & Human Sexuality, 14*(2-3), 85-102.
- Rosen, R. C., Taylor, J. F., Leiblum, S. R., & Bachmann, G. A. (1993). Prevalence of sexual dysfunction in women: results of a survey study of 329 women in an outpatient gynecological clinic. *Journal of Sex & Marital Therapy, 19*(3), 171-188.
- Salisbury, C. M., & Fisher, W. A. (2014). "Did you come?" A qualitative exploration of gender differences in beliefs, experiences, and concerns regarding female orgasm occurrence during heterosexual sexual interactions. *The Journal of Sex Research, 51*(6), 616-631.

- Santtila, P., Wager, I., Witting, K., Harlaar, N., Jern, P., Johansson, A. D. A., ... & Sandnabba, N. K. (2007). Discrepancies between sexual desire and sexual activity: gender differences and associations with relationship satisfaction. *Journal of Sex & Marital Therapy, 34*(1), 31-44.
- Schiavi, R. C., Schreiner-Engel, P., Mandeli, J., Schanzer, H., & Cohen, E. (1990). Healthy aging and male sexual function. *Am J Psychiatry, 147*(6), 766-771.
- Schmidt, G., Klusman, D., Dekker, A., & Matthiesen, S. (1998). Changes in students' sexual behaviour: 1966-1981-1996. A first report on a longitudinal study in West Germany. *Scandinavian Journal of Sexology, 1*, 157-174.
- Shulman, J. L., & Horne, S. G. (2003). The use of self-pleasure: Masturbation and body image among African American and European American women. *Psychology of Women Quarterly, 27*, 262-269.
- Studd, J., & Schwenkhagen, A. (2009). The historical response to female sexuality. *Maturitas, 63*(2), 107-111.
- Sturdee, D. W., & Panay, N. (2010). Recommendations for the management of postmenopausal vaginal atrophy. *Climacteric, 13*(6), 509-522.
- Tiefer, L. (1998). Masturbation: beyond caution, complacency and contradiction. *Sexual and Marital Therapy, 13*(1), 9-14.
- Wade, L. D., Kremer, E. C., & Brown, J. (2005). The incidental orgasm: The presence of clitoral knowledge and the absence of orgasm for women. *Women & Health, 42*(1), 117-138.
- Watson, E. D., Séguin, L. J., Milhausen, R. R., & Murray, S. H. (2016). The Impact of a Couple's Vibrator on Men's Perceptions of Their Own and Their Partner's Sexual Pleasure and Satisfaction. *Men and Masculinities, 19*(4), 370-383.

Wentland, J. J., Herold, E. S., Desmarais, S., & Milhausen, R. R. (2009). Differentiating highly sexual women from less sexual women. *The Canadian Journal of Human Sexuality, 18*(4), 169.

Yule, M. A., Brotto, L. A., & Gorzalka, B. B. (2017). Sexual fantasy and masturbation among asexual individuals: An in-depth exploration. *Archives of sexual behavior, 46*(1), 311-328.

## Appendix A: Trojan/SIECAN Sexual Health at Midlife Questionnaire

### Introduction

**Thank you for interest in completing this survey. Please answer the next few questions so that we may properly categorize your responses with those of other respondents.**

### Screening Questions

#### **S1. In which province or territory do you live?**

[RANDOMIZE RESPONSE OPTIONS; ALLOW SINGLE RESPONSE]

- a) Newfoundland
- b) Prince Edward Island
- c) Nova Scotia
- d) New Brunswick
- e) Quebec
- f) Ontario
- g) Manitoba
- h) Saskatchewan
- i) Alberta
- j) British Columbia
- k) Nunavut
- l) Northwest Territories
- m) Yukon

#### **S2. Please indicate your gender:**

[ALLOW SINGLE RESPONSE]

- a) Male
- b) Female
- c) Transgender, Female to Male [TRACK AS MALE]
- d) Transgender, Male to Female [TRACK AS FEMALE]
- e) Other

#### **S3. In which of the following age categories do you belong?**

- a) Less than 18 years of age [TERMINATE]
- b) 18 to 29 [TERMINATE]
- c) 30 to 39 [TERMINATE]
- d) 40 to 49
- e) 50 to 59
- f) 60 years of age or older [TERMINATE]

#### **S4. What is your exact age?**

- a) 40
- b) 41
- c) 42
- d) 43



- e) 44
- f) 45
- g) 46
- h) 47
- i) 48
- j) 49
- k) 50
- l) 51
- m) 52
- n) 53
- o) 54
- p) 55
- q) 56
- r) 57
- s) 58
- t) 59

**S5. Which of the following describes your current marital status?**

[ALLOW SINGLE RESPONSE]

- a) Married [SKIP TO S7]
- b) Common-law [SKIP TO S7]
- c) Single, never married
- d) Widowed
- e) Separated
- f) Divorced
- g) I prefer not to answer [SKIP TO S7]

TRACK AS *MARRIED/*  
*COHABITING*

TRACK AS *SINGLE*

**S6. Which of the following best describes your current relationship status?**

[ALLOW SINGLE RESPONSE]

- a) Not dating [TRACK AS 'SINGLE & NOT DATING']
- b) Casually dating [TRACK AS 'SINGLE & DATING']
- c) Seriously dating [TRACK AS 'SINGLE & DATING']
- d) I prefer not to answer

MONITOR INCIDENCE AFTER  
n=250 COMPLETES TO DECIDE  
ON QUOTAS

**S7. Which of the following best describes your sexual orientation?**

[ALLOW SINGLE RESPONSE]

- a) Heterosexual
- b) Gay
- c) Lesbian
- d) Bisexual
- e) Other
- f) I prefer not to answer

**Welcome. This survey is being conducted on behalf of Sex Information and Education Council of Canada (SIECCAN). Your answers along with those of other survey participants will be used to develop sexual health information resources for Canadians.**

**Your responses to this survey will remain confidential, anonymous and only reported in aggregate with those of other Canadians answering the survey. Your responses will not be linked back to you. Please be assured that if at any point during the survey, you do not feel comfortable answering a question, there will always be an option to not answer.**

**We very much appreciate your cooperation and honesty in answering this survey.**

### **General Health Questions**

- 1. For the purposes of this survey, health refers to physical, emotional, and mental well-being, Overall, would you say your health is ...?**  
[ALLOW SINGLE RESPONSE]
  - a) Excellent
  - b) Very good
  - c) Good
  - d) Fair
  - e) Poor
  - f) I don't know/prefer not to answer
  
- 2. Have you ever been diagnosed by a health professional as having any of the following medical conditions? (Check all that apply)**  
[RANDOMIZE RESPONSE OPTIONS; ALLOW MULTIPLE RESPONSE]
  - a) Cardiovascular disease (heart disease)
  - b) Hypertension (high blood pressure)
  - c) Rheumatoid arthritis
  - d) Osteoarthritis
  - e) Diabetes
  - f) None of the above
  - g) I don't know/prefer not to answer
  
- 3. For the purposes of this survey, sexual health refers to physical, emotional, and mental well-being related to sexuality. Overall, would you say your sexual health is ...?**  
[ALLOW SINGLE RESPONSE]
  - a) Excellent
  - b) Very good
  - c) Good
  - d) Fair
  - e) Poor
  - f) I don't know/prefer not to answer

- 4. Even if you are not sexually active, how happy would you say you are overall with the sexual part of your life?**  
[ALLOW SINGLE RESPONSE]
- a) Very happy
  - b) Happy
  - c) Not very happy
  - d) Not happy at all
  - e) I don't know/prefer not to answer
- 5. How strongly do you agree or disagree with the following statement?**  
**'I feel my sexual health contributes to my overall health and well-being'**  
[ALLOW SINGLE RESPONSE]
- a) Strongly agree
  - b) Somewhat agree
  - c) Somewhat disagree
  - d) Strongly disagree
  - e) I don't know/prefer not to answer
- 6. Who do you turn to the most for information related to sexual health?**  
(RANDOMIZE RESPONSE OPTIONS, Select up to 2 different sources).
- a) Family doctor
  - b) Obstetrician/Gynaecologist (OBGYN)
  - c) Urologist
  - d) Sex therapist
  - e) Psychologist/Psychiatrist
  - f) Other Health Care Professional
  - g) Friends
  - h) Family
  - i) My partner
  - j) Internet
  - k) Magazines
  - l) Television
  - m) Radio
  - n) Other
  - o) I don't know/prefer not to answer
- 7. ONLY ASK IF 'J' SELECTED AT Q6**  
**Where on the Internet do you most often look for information related to sexual health?**  
(RANDOMIZE RESPONSE OPTIONS, Select up to 2 different sources).
- a) Blogs
  - b) Social media (e.g. Facebook, Twitter, Pinterest, TED Talks, YouTube, etc.)
  - c) Public Health websites (e.g. Public Health Agency of Canada, Health Canada)
  - d) Manufacturer websites (e.g. companies who manufacture and market sexual health products)
  - e) Medical websites (e.g. WebMD, MayoClinic, etc.)
  - f) Academic websites (e.g. Universities that conduct sexual health research)

- g) Other websites
- h) I don't know/prefer not to answer

**8. How strongly do you agree or disagree with the following statement?**

Compared to a decade ago, I am more interested now in trying new things to enhance sexual pleasure.

[ALLOW SINGLE RESPONSE]

- a) Strongly agree
- b) Somewhat agree
- c) Somewhat disagree
- d) Strongly disagree
- e) I don't know/prefer not to answer

**9. Which sexual health issues have you ever asked a Doctor about?**

(RANDOMIZE RESPONSE OPTIONS, check all that apply)

**Female respondents:**

- a) Low sexual desire
- b) Vaginal dryness
- c) Pain in the vaginal area during sex
- d) Difficulty having an orgasm with a partner
- e) Sexually transmitted infections (STIs)
- f) Other
- g) Not applicable - I have never asked a doctor about a sexual issue
- h) I don't know/prefer not to answer

**Male respondents:**

- a) Low sexual desire
- b) Trouble getting and maintaining an erection
- c) Ejaculating too quickly
- d) Sexually transmitted infections (STIs)
- e) Other
- f) Not applicable - I have never asked a doctor about a sexual issue
- g) I don't know/prefer not to answer

**10. How concerned are you about contracting a Sexually Transmitted Infection (STI)?**

[ALLOW SINGLE RESPONSE]

- a) Very concerned
- b) Somewhat concerned
- c) Not very concerned
- d) Not at all concerned
- e) I don't know/prefer not to answer

**11. ONLY ASK FEMALES**

**How would you describe your current menstrual status? [ALLOW SINGLE RESPONSE]**

- a) Premenopausal (I have regular periods)

- b) Peri-menopausal (I have started to have fewer periods than in the past, but I have had a period in the last 12 months)
- c) Postmenopausal (I no longer have periods).
- d) Not applicable – I don't get a period because of the method of birth control I'm using
- e) I don't know/prefer not to answer

**12.** Thinking back over the past 6 months, have you experienced any of the following sexual problems on a regular basis? (RANDOMIZE RESPONSE OPTIONS; yes/no/prefer not to answer):

**Female respondents:**

- a) My level of sexual desire (interest in having sex) is lower than I would like it to be
- b) I experience vaginal dryness during sex
- c) I experience pain in the vaginal area during sex
- d) I am not able to have an orgasm with a partner

**Male respondents:**

- a) My level of sexual desire (interest in having sex) is lower than I would like it to be
- b) I have trouble getting and maintaining an erection
- c) I ejaculate more quickly than I would like

**SHOW ONLY TO FEMALES**

**The next two questions are about the use of vaginal moisturizers.** A vaginal moisturizer is a gel that is inserted into the vagina every few days to relieve vaginal dryness. A personal lubricant is a liquid or gel used during sexual activity to increase sexual pleasure.

**13. ASK ONLY TO FEMALES**

**Have you ever used a vaginal moisturizer (e.g., Replens)? (Only for female respondents)**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No [SKIP TO RELATIONSHIP QUESTIONS]
- c) I don't know/prefer not to answer [SKIP TO RELATIONSHIP QUESTIONS]

**14. ASK ONLY TO FEMALES**

**Did a doctor recommend the vaginal moisturizer?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No
- c) I don't know/prefer not to answer

**Relationship Questions [ONLY TO BE ASKED OF THOSE WHO ANSWERED A OR B AT S5 OR C AT S6]**

**The next four questions refer to your *primary relationship*, which is the *current romantic relationship in your life that is most important to you*.**

**15. For how long have you been in your primary relationship?**

[ALLOW SINGLE RESPONSE]

- a) Less than 6 months
- b) 6 months to less than 1 year
- c) 1 - 4 years
- d) 5 - 8 years
- e) 9 - 12 years
- f) 13 - 16 years
- g) 17 - 20 years
- h) 21 years or more
- i) I don't know/prefer not to answer

**16. Have you been monogamous in your current primary relationship? (That is, you do not have sexual relations with anyone outside of your primary relationship).**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No
- c) I prefer not to answer

**17. How emotionally satisfying do you find your current primary relationship to be?**

[ALLOW SINGLE RESPONSE]

- a) Very satisfying
- b) Somewhat satisfying
- c) Not very satisfying
- d) Not at all satisfying
- e) I prefer not to answer

**18. How sexually satisfying do you find your current primary relationship to be?**

[ALLOW SINGLE RESPONSE]

- a) Very satisfying
- b) Somewhat satisfying
- c) Not very satisfying
- d) Not at all satisfying
- e) I prefer not to answer

**19. In your current primary relationship, how often have you spoken directly to your partner about your sexual preferences (e.g., the ways you like to be touched, the ways you like to have oral sex, the ways you like to have intercourse)?**

[ALLOW SINGLE RESPONSE]

- a) Never
- b) Occasionally
- c) Sometimes
- d) Frequently
- e) Very frequently
- f) I prefer not to answer

### **Behavioural Questions**

The remainder of the survey will ask you to think back to your recent and/or past sexual behaviours. Due to the sensitive nature of these questions, you have the option of not answering them if you do not feel comfortable doing so. However, we reassure you that your answers will remain confidential and encourage your participation in all areas of this survey.

The next four questions are about masturbation. For the purposes of this survey, masturbation is defined as self-stimulation of your genitals for sexual pleasure.

**20. On average, in the past year, how often have you masturbated?**

[ALLOW SINGLE RESPONSE]

- a) I did not masturbate in the last year [SKIP TO Q23]
- b) A few times in the last year (i.e., less than once a month)
- c) Once per month
- d) 2 to 3 times per month
- e) Once per week
- f) 2 to 3 times per week
- g) 4 or more times per week
- h) I don't know/prefer not to answer [SKIP TO Q21]

**21. Thinking about the last time you masturbated, how pleasurable was it for you?**

[ALLOW SINGLE RESPONSE]

- a) Very pleasurable
- b) Somewhat pleasurable
- c) Not very pleasurable
- d) Not at all pleasurable
- e) I don't know/prefer not to answer

**22. Did you use any of the following to increase pleasure?**

[ALLOW MULTIPLE RESPONSE]

- a) Personal lubricant- A personal lubricant is a liquid or gel used during sexual activity to increase sexual pleasure
- b) Vibrator - A vibrator is a battery or electrically powered vibrating device used to increase sexual pleasure
- c) None of the above
- d) I don't know/prefer not to answer

The next set of questions will ask you to think back to your most recent sexual encounter with a partner. Please note that *sexual encounter* refers to engaging in sexual activity that includes touching a partner's genitals OR oral-genital contact (i.e., oral sex) OR penile-vaginal OR penile-anal intercourse.

**23. When was your most recent sexual encounter?**

[ALLOW SINGLE RESPONSE]

- a) Less than 24 hours ago
- b) Less than a week ago
- c) Less than a month ago
- d) Less than 3 months ago
- e) Less than 6 months ago
- f) Less than a year ago
- g) A year ago or longer
- h) Not applicable – I have never had a sexual encounter [SKIP TO D1]
- i) I don't know/prefer not to answer [SKIP TO D1]

**You indicated your most recent sexual encounter being [RECALL RESPONSE FROM]. Please think of this most recent sexual encounter when answering this next series of questions.**

**24. What was the gender of your most recent sexual partner?**

[ALLOW SINGLE RESPONSE]

- a) Male
- b) Female
- c) Transgender, Female to Male
- d) Transgender, Male to Female
- e) Other

**25. Which of the following best describes the relationship you had with this person?**

[ALLOW SINGLE RESPONSE]

- a) One time sexual encounter (i.e. hook up/ one night stand)
- b) Sexual partner with whom you are friends with no commitment (i.e. friends with benefits)
- c) Sexual partner with whom you occasionally meet for sex but for no other purpose (i.e. booty call)
- d) Dating but not committed
- e) Committed dating (i.e. monogamous)
- f) Living together in a monogamous committed relationship
- g) Engaged
- h) Married
- i) Other
- j) I don't know/prefer not to answer

**26. How long, approximately, was your most recent sexual encounter?**

[ALLOW SINGLE RESPONSE]

- a) 1 to 15 minutes
- b) 16 to 30 minutes
- c) 31 to 45 minutes
- d) 46 minutes to 1 hour
- e) Longer than 1 hour
- f) I don't know/prefer not to answer



**27. What was the primary reason you engaged in sexual activity?**

[RANDOMIZE RESPONSE OPTIONS; ALLOW SINGLE RESPONSE]

- a) I was turned on/sexually aroused
- b) I wanted to express my love for my partner
- c) I wanted to experience sexual pleasure
- d) I was attracted to the other person
- e) It was a special occasion
- f) It 'just happened'
- g) I felt obligated to
- h) I don't know/prefer not to answer

**28. Did you or your partner use any of the following to increase pleasure?**

[ALLOW MULTIPLE RESPONSE]

- a) Personal lubricant
- b) Vibrator
- c) None of the above
- d) I don't know/prefer not to answer

**29. How many minutes of affectionate behaviour did you experience with your partner (e.g., kissing, cuddling), before your most recent sexual encounter?**

[ALLOW SINGLE RESPONSE]

- a) None
- b) 1 to 5 minutes
- c) 6 to 10 minutes
- d) 11 to 15 minutes
- e) 16 to 20 minutes
- f) 21 minutes or more
- g) I don't know/prefer not to answer

**30. How many minutes of affectionate behaviour did you experience with your partner (e.g. kissing, cuddling), after your most recent sexual encounter?**

[ALLOW SINGLE RESPONSE]

- a) None
- b) 1 to 5 minutes
- c) 6 to 10 minutes
- d) 11 to 15 minutes
- e) 16 to 20 minutes
- f) 21 minutes or more
- g) I don't know/prefer not to answer

**31. In your most recent sexual encounter, did you touch your partner's genitals with your hands to give sexual pleasure?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- a) No [SKIP TO Q34]
- b) I prefer not to answer [SKIP TO Q34]

**32. How pleasurable was it for you?**

[ALLOW SINGLE RESPONSE]

- a) Very pleasurable
- b) Somewhat pleasurable
- c) Not very pleasurable
- d) Not at all pleasurable
- e) I don't know/prefer not to answer

**33. Was a personal lubricant used?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No
- c) I prefer not to answer

**34. In your most recent sexual encounter, did your partner touch your genitals with his or her hands to give you sexual pleasure?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No [SKIP TO Q37]
- c) I prefer not to answer [SKIP TO Q37]

**35. How pleasurable was it for you?**

[ALLOW SINGLE RESPONSE]

- a) Very pleasurable
- b) Somewhat pleasurable
- c) Not very pleasurable
- d) Not at all pleasurable
- e) I don't know/prefer not to answer

**36. Was a personal lubricant used?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No
- c) I prefer not to answer

**37. In your most recent sexual encounter, did you and your partner engage in penis-vagina intercourse?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No [SKIP TO Q42]
- c) I prefer not to answer [SKIP TO Q42]

**38. How pleasurable was it for you?**

[ALLOW SINGLE RESPONSE]

- a) Very pleasurable

- b) Somewhat pleasurable
- c) Not very pleasurable
- d) Not at all pleasurable
- e) I don't know/prefer not to answer

**39. Was a personal lubricant used?**

- a) [ALLOW SINGLE RESPONSE]
- b) Yes
- c) No
- d) I prefer not to answer

**40. ASK IF ANSWERD YES TO Q35**

**Did you use a condom for penis-vagina intercourse?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No [SKIP TO Q42)
- c) I prefer not to answer [SKIP TO Q42]

**41. What was your main reason for using a condom?**

[ALLOW SINGLE RESPONSE]

- a) Birth control
- b) Sexually Transmitted Infection (STI) prevention
- c) Birth control and Sexually Transmitted Infection (STI) prevention equally
- d) Other
- e) I don't know/prefer not to answer

**42. In your most recent sexual encounter, did you and your partner engage in penis-anal intercourse?**

[ALLOW SINGLE RESPONSE]

- b) Yes
- c) No [SKIP TO Q45]
- d) I prefer not to answer [SKIP TO Q45]

**43. How pleasurable was it for you?**

[ALLOW SINGLE RESPONSE]

- a) Very pleasurable
- b) Somewhat pleasurable
- c) Not very pleasurable
- d) Not at all pleasurable
- e) I don't know/I prefer not to answer

**44. Did you use a condom for penis-anal intercourse?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No

c) I prefer not to answer

**45. In your most recent sexual encounter, did you give oral sex to your partner?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No [SKIP TO Q47]
- c) I prefer not to answer [SKIP TO Q47]

**46. How pleasurable was it for you?**

[ALLOW SINGLE RESPONSE]

- a) Very pleasurable
- b) Somewhat pleasurable
- c) Not very pleasurable
- d) Not at all pleasurable
- e) I don't know/I prefer not to answer

**47. In your most recent sexual encounter, did you receive oral sex from your partner?**

[ALLOW SINGLE RESPONSE]

- a) Yes
- b) No [SKIP TO Q49]
- c) I prefer not to answer [SKIP TO Q49]

**48. How pleasurable was it for you?**

[ALLOW SINGLE RESPONSE]

- a) Very pleasurable
- b) Somewhat pleasurable
- c) Not very pleasurable
- d) Not at all pleasurable
- e) I don't know/I prefer not to answer

**ONLY ASK Q49 TO Q55 TO THOSE WHO ANSWERED A-F AT Q23**

**The following questions are about your sexual encounters in the past year.**

**49. On average, in the past year, how often have you had a sexual encounter with a partner?**

[ALLOW SINGLE RESPONSE]

- a) I did not have a sexual encounter in the last year [SKIP TO D1]
- b) A few times in the last year (i.e., less than once a month)
- c) Once per month
- d) 2 to 3 times per month
- e) Once per week
- f) 2 to 3 times per week
- g) 4 or more times per week
- h) I don't know/prefer not to answer [SKIP TO D1]

**50. On average, in the past year, how often have you engaged in penis-vagina intercourse?**

[ALLOW SINGLE RESPONSE]

- a) I did not engage in penis-vagina intercourse in the last year
- b) A few times in the last year (i.e., less than once a month)
- c) Once per month
- d) 2 to 3 times per month
- e) Once per week
- f) 2 to 3 times per week
- g) 4 or more times per week
- h) I don't know/prefer not to answer

**51. On average, in the past year, how often have you engaged in penis-anal intercourse?**

[ALLOW SINGLE RESPONSE]

- a) I did not engage in penis-anal intercourse in the last year
- b) A few times in the last year (i.e., less than once a month)
- c) Once per month
- d) 2 to 3 times per month
- e) Once per week
- f) 2 to 3 times per week
- g) 4 or more times per week
- h) I don't know/prefer not to answer

**52. On average, in the past year, how often have you given oral sex to a partner?**

[ALLOW SINGLE RESPONSE]

- a) I did not give oral sex to a partner in the last year
- b) A few times in the last year (i.e., less than once a month)
- c) Once per month
- d) 2 to 3 times per month
- e) Once per week
- f) 2 to 3 times per week
- g) 4 or more times per week
- h) I don't know/prefer not to answer

**53. On average, in the past year, how often have you received oral sex from a partner?**

[ALLOW SINGLE RESPONSE]

- a) I did not receive oral sex from a partner in the last year
- b) A few times in the last year (i.e., less than once a month)
- c) Once per month
- d) 2 to 3 times per month
- e) Once per week
- f) 2 to 3 times per week
- g) 4 or more times per week

h) I don't know/prefer not to answer

**54. With how many different people have you had a sexual encounter with in the past year?**

[ALLOW SINGLE RESPONSE]

a) \_\_\_\_\_ [ALLOW ENTRY OF 1 TO 365]

b) I don't know/I prefer not to answer

**55. In the last 6 months, in which of the following locations have you engaged in a sexual encounter (check all that apply)?**

a) Bed

b) Shower or Bathtub

c) Couch

d) Chair

e) Car

f) Other

g) Not applicable – I have not had a sexual encounter in the last 6 months

h) I don't know/prefer not to answer

### Demographic Questions

There are only a few more questions left to finish in the survey for classification purposes.

**D1. In which country were you born? (Add drop down box)**

[ASK QD2 IF BORN OUTSIDE OF CANADA IN D1]

**D2. In what year did you immigrate to Canada?**

**D3. In which country was your mother born? (Add drop down box)**

**D4. In which country was your father born? (Add drop down box)**

**D5. People in Canada come from many racial or ethnic groups. You may belong to more than one group on the following list. Please select the group(s) that best describes you. You may select up to 4 groups to best describe yourself.**

[ALLOW UP TO 4 RESPONSES]

a) White

b) Chinese

c) South Asian (for example, East Indian, Sri Lankan, etc.)

d) Black

e) Filipino

f) Latin American

g) Southeast Asian (for example, Vietnamese, Cambodian, etc.)

h) Arab

i) West Asian (for example, Iranian, Afghan)

j) Japanese

- k) Korean
- l) Aboriginal (that is North American Indian, Métis or Inuit)
- m) Other
- n) Don't know/Prefer not to answer

**D6. What religion do you follow the most, if any? [ALLOW SINGLE RESPONSE]**

- a) Catholic
- b) Protestant
- c) Eastern Orthodox
- d) Jewish
- e) Muslim
- f) Hindu
- g) Sikh
- h) Other
- i) No religion [SKIP TO END]
- j) Don't know/prefer not to answer [SKIP TO END]

**D7. How important is your religion to you?**

[ALLOW SINGLE RESPONSE]

- a) Very important
- b) Somewhat important
- c) Not very important
- d) Not at all important
- e) I don't know/ prefer not to answer

**END: Thank you for completing the survey.**