WHEN THE "OOHS" ARE PAINFUL, NOT PLEASURABLE: AN INVESTIGATION OF ANODYSPAREUNIA AMONG GAY, BISEXUAL, AND QUEER MEN

by

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AUTHOR'S DECLARATION

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Abstract

When The “Oohs” Are Painful, Not Pleasurable: An Investigation Of Anodyspareunia Among Gay, Bisexual, And Queer Men

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Recurrent and severe pain during receptive anal penetration, also known as anodyspareunia, is common among gay and bisexual men with prevalence rates ranging from 12.5% to 18%. Despite high prevalence, this is the first study to assess diagnostic criteria for Genito-Pelvic Pain/Penetration Disorder (GPPPD) among gay, bisexual, and queer (GBQ) men, and the first to systematically explore symptom and biopsychosocial profiles, test a cognitive-behavioural (CBT) model of maintaining factors, and explore the treatment barriers among GBM with anodyspaurenia. Overall, 369 Canadian GBM (M_{age} = 31.26, SD_{age} = 10.85) with and without recurrent and severe pain during receptive anal penetration completed an online self-report questionnaire package. Study hypotheses were examined using descriptive statistics, Kruskal-Wallis H tests, analyses of variances, latent class analyses, structural equation modelling, and chi goodness of fit tests. Almost half of the sample (47.2%) met full criteria for GPPPD, 31.0% met no criteria, and 21.8% met criteria, but reported no distress or interference. Pain at the entrance of the anus, experienced at the moment of penetration, and persisting for five minutes or less was common across groups, whereas pain located inside the anal canal and rectum, experiencing pain during thrusting, and pain persisting for more than five minutes differentiated between GBM with and without a GPPPD diagnosis. GBM with GPPPD reported significantly greater pain

catastrophizing, pain-related cognitive and somatic anxiety, pain-related fear, prostate and rectal conditions, and heterosexist harassment, rejection, and discrimination than the other two groups. The fear-avoidance model of sexual pain was partially among GBM with GPPPD. Commonly reported barriers by GBM with GPPPD who did not consult with a health care professional included unhelpful beliefs, shame, and embarrassment. GBM with GPPPD who sought treatment most often reported consulting with a general practitioner. The high proportion of GBM who met full criteria for GPPPD highlights the need for effective interventions and further research regarding anodyspareunia among this population. Implications of the study findings for assessment, diagnosis, treatment, and knowledge transfer and exchange are discussed.

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Table of Contents

List of Tables

List of Figures

List of Appendices

General Introduction

The way in which gay and bisexual men (GBM) experience and express themselves as sexual beings is an important aspect of their identities and differentiates GBM from their heterosexual counterparts (Sandfort & de Keizer, 2001). Understanding sexual dysfunction among GBM, that is, significant disturbances at any phase of the human sexual response (i.e., desire, arousal, and orgasm) or when pain is present during sexual activity (American Psychiatric Association [APA], 2013; Masters and Johnson, 1966), is particularly important given that, compared to heterosexual men, GBM are at an increased risk of adverse mental (e.g., Herek, Gillis, & Cogan, 2009; King et al., 2008) and sexual outcomes (e.g., Štulhofer, Šević, & Doyle, 2014; Wolitski & Fenton, 2011). Researchers and clinicians working with GBM stress the importance of studying sexual dysfunction among this population from a non-heterosexual perspective because GBM differ from heterosexual men on biological (e.g., rates of STIs; anatomical ability to interchangeably engage in receptive and insertive anal intercourse), psychological (e.g., depression; anxiety; internalized homophobia), and sociocultural (e.g., anti-gay stigma; community norms; legal and other types of discrimination) factors (e.g., Bhugra & Wright, 1995; Cove & Boyle, 2002; Hart & Schwartz, 2010; Sandfort & de Keizer, 2001).

This dissertation will begin by reviewing the prevalence and impact of sexual dysfunction broadly defined among GBM. Subsequently, this dissertation will describe the literature regarding anodyspareunia specifically (i.e., pain during receptive anal intercourse/penetration) and the factors involved in the development and maintenance of anodyspareunia, as well as propose an adaptation of the fear-avoidance model of sexual pain for GBM. Moderators specific to GBM, specifically anal sex role labels, will be discussed. Finally, barriers to seeking treatment for anodyspareunia will be considered.

Prevalence of Sexual Dysfunction

Large-scale surveys reveal that experiencing current or past sexual dysfunction is common. According to the National Health and Social Life Survey (NHSLS), 31% of American men between the ages of 18 and 59 years old experienced some type of sexual dysfunction (Laumann, Paik, & Rosen, 1999). Similarly, the Global Study of Sexual Attitudes and Behaviours (GSSAB) found that, on average across five countries, 28% of men between the ages of 40 and 80 years old reported experiencing at least one sexual dysfunction (Nicolosi et al., 2006). However, prevalence rates vary across each male sexual dysfunction (i.e., low sexual desire, erectile dysfunction, premature and delayed ejaculation) and differ between GBM and heterosexual men.

GBM are more likely to report low sexual desire and erectile difficulties than heterosexual men. One study examining the prevalence of sexual dysfunctions among American heterosexual and GBM found that 49% of GBM reported experiencing low sexual desire in their lifetime compared to 39% of heterosexual men (Rosser, Metz, Bockting, & Buroker, 1997). Similarly, Chinese men who have sex with men were more likely to report low sexual desire than their heterosexual counterparts (20% versus 10.7%, respectively; Lau, Kim, & Tsui, 2006). Approximately 6% of Portuguese GBM, compared to 4.2% of heterosexual men, reported low sexual desire and significant distress related to this difficulty (Peixoto & Nobre, 2015). American GBM reliably experience a higher prevalence of erectile dysfunction than American heterosexual men, with prevalence rates ranging from 3.6% to 46% for GBM compared to 3.3% to 29% among heterosexual men (Bancroft, Carnes, Janssen, Goodrich, & Long, 2005; Breyer et al., 2010; Cove & Boyle, 2002; Hirshfield et al., 2010; Rosser et al., 1997). One more recent study,

however, found similar prevalence rates of erectile dysfunction between Portuguese GBM and heterosexual men (4.8% and 5.1%, respectively; Peixoto & Nobre, 2015).

The prevalence of orgasm disorders among GBM differs depending on the type of dysfunction. GBM are consistently less likely to report problems with premature ejaculation than heterosexual men, with prevalence rates ranging from 3% to 44% among GBM versus 7.1% to 65% for heterosexual men (Bancroft et al., 2005; Ivanković, Šević, & Štulhofer, 2015; Lau et al., 2006; Peixoto & Nobre, 2015; Rosser et al., 1997). GBM, however, are more likely to report difficulties with delayed ejaculation compared to heterosexual men (5.3% versus 4.2%, respectively; Peixoto & Nobre, 2015; 39% versus 10%, respectively Rosser et al., 1997).

Recurrent and severe pain during receptive anal intercourse, known as anodyspareunia, is prevalent among GBM. Of those GBM who reported lifetime or current painful receptive anal intercourse, 12.5% described experiencing severe and frequent pain (Rosser, Short, Thurmes, & Coleman, 1998). A follow-up study found that 14% of American GBM reported severe and frequent pain during receptive anal intercourse (Damon & Rosser, 2005). Approximately 18% of Portuguese GBM endorsed experiencing moderate to severe and frequent painful receptive anal intercourse as well as significant distress related to this difficulty (Peixoto & Nobre, 2015). Among Belgian GBM, 17% reported mild to moderate, 4% reported moderate, and 2% reported severe pain during receptive anal intercourse (Vansintejan, Vandevoorde, & Devroey, 2013). Two additional studies showed similar prevalence rates, with 14% of American GBM and Chinese MSM reporting pain during anal intercourse over the past year; however, neither study specified whether the pain was severe, recurrent, or specific to receptive anal intercourse (Hirshfield et al., 2010; Lau, Kim, & Tsui, 2008). A study of Australian GBM also failed to specify whether pain experienced during anal intercourse for a minimum duration of one month

over the past year was specific to receptive anal intercourse, yet found prevalence rates of 6.8% among HIV-negative and 7.8% among HIV-positive GBM (Mao et al., 2009). Given that most heterosexual men do not typically engage in receptive anal intercourse (e.g., Laumann, Gagnon, Michael, & Michaels, 1994; McBride & Fortenberry, 2010), this clinical problem is likely to be more prevalent among GBM than among heterosexual men. Consequently, the prevalence of anodyspareunia for heterosexual men is not documented. The rates of anodyspareunia reported by GBM, however, are similar to those of dyspareunia (i.e., painful vaginal intercourse) among heterosexual women (7-14%; Laumann et al., 1999; Meana, 2009).

In sum, GBM commonly experience sexual dysfunction and may be more likely than heterosexual men to report low sexual desire, erectile dysfunction, delayed ejaculation, and anodyspareunia. There are a number of possible explanations for the higher prevalence rates of sexual dysfunction among GBM than heterosexual men. GBM are more likely to report discriminating and stigmatizing events (Meyer, 1995, 2003), depression and anxiety symptoms (King et al., 2008; Marshall et al., 2011; Plöderl & Tremblay, 2015), alcohol and substance abuse problems (King et al., 2008; Plöderl & Tremblay, 2015), and HIV-positive serostatus (Public Health Agency of Canada [PHAC], 2015) than heterosexual men, which are factors that contribute to sexual dysfunction (e.g., Hart et al., 2015; McCabe et al., 2015; Pinzone et al., 2015). The effects of additive stress due to discrimination and/or stigmatization related to one's minority status, also known as minority stress, may be a reason for the elevated prevalence of sexual dysfunction among GBM (e.g., Meyer, 1995). At the same time, the differences in prevalence rates across studies are sizeable and likely due to varying assessment methods (for review, see Dunn, Jordon, Croft, & Assendelft, 2002; Štulhofer et al., 2014). Studies using a single item (e.g., yes/no) to assess sexual dysfunction yielded higher prevalence rates compared

to those administering validated multiple-item measures. In addition, the assessment time period differed across studies, ranging from "over the past week" to "in your lifetime." Similarly, studies that did not account for whether the participant experienced distress and interference related to the sexual dysfunction likely resulted in inflated prevalence rates compared to those that assesses distress and interference (Peixoto & Nobre, 2015).

Impact of Sexual Dysfunction

Sexual dysfunction is associated with adverse physical, psychological, and interpersonal outcomes. The physical correlates associated with sexual dysfunction among GBM are reviewed. Due to the paucity of research investigating the psychological and interpersonal impact of sexual dysfunction among GBM, the literature examining heterosexual populations is also discussed.

Physical correlates. Sexual dysfunction is associated with poor physical health. American GBM with multiple sexual problems reported more physical health conditions (i.e., hypertension, heart disease, diabetes, high cholesterol) than participants without sexual problems (Hirshfield et al., 2010). Among HIV-negative and HIV-positive Australian GBM, endorsing multiple sexual problems was also associated with poorer general physical health (Mao et al., 2009). HIV-positive Australian GBM reported higher prevalence of low sexual desire (59.9% versus 40%), erectile dysfunction (51.6% versus 38.5%), premature ejaculation (20.7% versus 17%), and delayed ejaculation (31.3% versus 21.8%) than their HIV-negative counterparts (Mao et al., 2009). Erectile dysfunction was associated with lack of physical activity and health conditions, such as diabetes and cardiovascular disease, in a national study of American men (Selvin, Burnett, & Platz, 2007). Similarly, erectile dysfunction was associated with prostate difficulties, diabetes, and hypertension in a national study in England (Dunn, Croft, & Hackett, 1999). Subsamples of men with chronic pelvic pain experience prostate infection and

inflammation as well as urinary symptoms (Davis, Binik, Amsel, & Carrier, 2013; Tripp et al., 2004). Men with chronic pelvic pain also report experiencing other sexual dysfunction, including erectile and ejaculatory difficulties (Anderson, Wise, Sawyer, & Chan, 2006; Davis, Binik, & Carrier, 2009) and low sexual desire (Anderson et al., 2006).

Sexual dysfunction may also be a risk factor for the transmission of STIs. Both heterosexual and GBM who experience condom related erectile difficulties are more likely to remove a condom before the completion of sexual activity or engage in condomless anal sex (Cove & Petrak, 2004; Graham et al., 2006; Yarber et al., 2007). Sexual dysfunction was associated with greater likeliness of being diagnosed with an STI among an Internet sample of American GBM (Hirshfield et al., 2010). Furthermore, in a study of heterosexual and gay HIV-positive Italian men, participants reporting moderate and severe sexual dysfunction were more likely to be non-adherent to combination active antiretroviral therapy (cART), the set of common medications that reduces the amount of HIV in the body of people living with HIV (Trotta et al., 2008).

Psychological correlates. Sexual dysfunction, in general, is associated with poorer psychological function and quality of life. For instance, research investigating the relationship between sexual dysfunction and depression and anxiety demonstrates a strong bidirectional association (for a review, see Laurent & Simons, 2009). In a predominantly heterosexual sample of Danish men (i.e., 98.1% heterosexual; 1.0% bisexual; 0.9% gay), sexual dysfunction (i.e., erectile difficulties, low sexual desire, pain during intercourse, premature ejaculation, anorgasmia) was associated with lower overall quality of life (Ventegodt, 1998). A similar pattern of findings is observed among GBM. In a study of American GBM, participants experiencing a current sexual problem (i.e., lack of sexual desire, erectile or orgasmic

difficulties, painful anal intercourse) reported lower sexual satisfaction compared to GBM without a current sexual difficulty (Rosser et al., 1997). Similarly, in an Internet study, American GBM with multiple sexual problems reported more lifetime mental health diagnoses (i.e., depression, anxiety, bipolar disorder) than participants without sexual problems (Hirshfield et al., 2010). Among HIV-negative and HIV-positive Australian GBM, endorsing multiple sexual problems was associated with greater symptoms of major depression (Mao et al., 2009). Chinese GBM who reported at least one sexual problem indicated that they were "very bothered" as a result (Lau et al., 2006).

Low sexual desire was associated with low general happiness and low physical, but not emotional, satisfaction among American men (Laumann et al., 1999). Greater shame, sadness, restricted attitudes toward sexual activity, and concerns regarding erections, as well as fewer erotic thoughts were associated with lower sexual desire among Portuguese heterosexual men (Carvalho & Nobre, 2011). Low sexual desire was also correlated with higher anger and anxiety in men (Meuleman & van Lankveld, 2005). In addition, men with past or current depression are more likely to report low sexual desire than healthy controls (Brotto, 2010).

Regarding erectile dysfunction, 54.5% of men across multiple countries (i.e., France, Germany, Italy, Spain, United Kingdom, United States) reported that their erectile dysfunction caused them "great sadness" (Perelman, Shabsigh, Seftel, Althof, & Lockhart, 2005). Among American heterosexual men with erectile dysfunction, increased severity of erectile dysfunction was associated with greater state anxiety and depression following sexual activity, lower sexual self-efficacy, and greater negative impact on the man's emotional life (i.e., "I am more irritable than I used to be") and sexual experiences (i.e., "I avoid sexual opportunities;" Latini et al., 2002). In a national study that did not report on the sexual orientation of the sample, American

men who reported experiencing erectile difficulties over the past year were more likely to endorse low general happiness as well as low emotional and physical satisfaction (Laumann et al., 1999). Similarly, in a Swedish study that also did not report on the sexual orientation of the sample, men with erectile dysfunction rated their sexual satisfaction as lower than their counterparts without erectile dysfunction (Fugl-Meyer, Lodnert, Bränholm, & Fugl-Meyer, 1997). More specifically, Swedish men with psychogenic erectile dysfunction (i.e., due to a psychological origin, rather than a physical one) reported lower satisfaction with life in general, relationships, and family life than healthy men (Fugl-Meyer et al., 1997).

Regarding premature ejaculation, two studies using predominantly heterosexual samples found that premature ejaculation was associated with increased anxiety (Bancroft et al., 2005; Dunn et al., 1999). Similarly, premature ejaculation was associated with increased anxiety and depression among Malaysian men (Quek, Sallam, Ng, & Chua, 2008). The majority of American men with premature ejaculation reported that the sexual dysfunction reduced their self-esteem and self-confidence (68%; Symonds, Roblin, Hart, & Althof, 2003). In an Internet study of American GBM, premature ejaculation was associated with greater sexual life dissatisfaction (Shindel, Vittinghoff, & Breyer, 2012). Compared to heterosexual American men without premature ejaculation, those diagnosed with premature ejaculation were more likely to report lower overall quality of life (Rowland, Patrick, Rothman, & Gagnon, 2007). In contrast, Laumann and colleagues (1999) found that premature ejaculation was not related to negative quality of life outcomes among American men. Few studies have investigated the psychological impact of delayed ejaculation, likely due to the lower prevalence rate of this male orgasm disorder (e.g., Perelman & Rowland, 2006). In contrast to men without sexual dysfunction, men with delayed ejaculation report greater anxiety (Perelman & Rowland, 2006), distress (Rowland,

van Diest, Incrocci, & Slob, 2005), and sexual dissatisfaction (Perelman & Rowland, 2006) as well as lower subjective sexual arousal despite displaying a strong physiological penile response (Rowland, Keeney, & Slob, 2004; Rowland et al., 2005).

As previously mentioned, because heterosexual men seldom report painful receptive anal intercourse, the literature on sexual pain disorders has focused on heterosexual women's experiences with painful vaginal intercourse and heterosexual men's experiences with chronic pelvic pain. Heterosexual women with dyspareunia reported more depression symptoms, higher trait anxiety, and greater sexual distress than pain-free women (Pazmany, Bergeron, Verhaeghe, Van Oudenhove, & Enzlin, 2014). Heterosexual men with chronic pelvic pain commonly report depressive symptoms (Davis et al., 2009; Tripp et al., 2004) as well as higher anxiety symptoms and perceived stress than men without pelvic pain (Anderson, Orenberg, Morey, Chavez, & Chan, 2009). Only one study has examined the psychological impact of anodyspareunia among GBM. More severe and frequent pain was associated with higher anxiety and higher social internalized homophobia (i.e., social discomfort with other gay men) among GBM with anodyspareunia (Rosser et al., 1998). However, anxiety and social internalized homophobia did not significantly differ between GBM with and without anodyspareunia (Damon & Rosser, 2005).

Interpersonal correlates. In a study of partnered heterosexual men, participants experiencing erectile difficulties, lack of desire, or premature ejaculation reported lower intimacy across multiple relationship domains (i.e., emotional, social, sexual, recreational, and intellectual) than men without sexual difficulties (McCabe, 1997). American GBM experiencing a current sexual difficulty (i.e., lack of sexual desire, erectile or orgasmic difficulties, painful anal intercourse) reported lower relationship satisfaction compared to GBM without a current

sexual difficulty (Rosser et al., 1997). Similarly, in a study comparing Portuguese heterosexual and GBM, participants experiencing a current sexual difficulty reported lower dyadic adjustment, regardless of their sexual orientation (Peixoto & Nobre, 2016). Furthermore, HIV-negative and HIV-positive Australian GBM endorsing multiple sexual problems reported greater interpersonal isolation (Mao et al., 2009).

Researchers have also examined the interpersonal effects of sexual pain disorders among heterosexual couples and GBM. Among Belgian heterosexual couples, women with dyspareunia reported poorer dyadic sexual communication (i.e., ability and willingness to discuss sexual issues with one's intimate partner) than pain-free controls (Pazmany et al., 2014). In addition, the partners of the women with dyspareunia reported greater erectile dysfunction as well as lower overall sexual satisfaction and intercourse satisfaction than the partners of the pain-free controls (Pazmany et al., 2014). One Canadian study found that pain severity predicted overall sexual functioning, which subsequently predicted sexual satisfaction and relationship adjustment among men with chronic pelvic pain and their female partners (Smith, Tripp, Pukall, & Nickel, 2007). The majority of GBM with anodyspareunia (62%) indicated a moderate to high degree of interpersonal difficulties due to painful receptive anal intercourse (Damon & Rosser, 2015). In addition, 31% of GBM with anodyspareunia reported that this difficulty disrupted a sexual relationship and 15% stated that anodyspareunia prevented them from seeking a new relationship (Damon & Rosser, 2005).

The current literature shows a strong relationship between sexual dysfunction and negative physical, psychological, and interpersonal factors. At the same time, more research is needed to investigate the impact of sexual dysfunction on GBM. Due to the fact that GBM and heterosexual men differ on various biological, psychological, and sociocultural factors (e.g.,

Bhugra & Wright, 1995; Cove & Boyle, 2002; Hart & Schwartz, 2010), sexual dysfunction may affect GBM and heterosexual men differently (e.g., Hollows, 2007; Sandfort & de Keizer, 2001). Anodyspareunia, for instance, is almost certainly more commonly reported by GBM than heterosexual men and likely impacts GBM more negatively than heterosexual men due to the fact that heterosexual men rarely report engaging in receptive anal intercourse (e.g., Laumann et al., 1994; McBride & Fortenberry, 2010). Further understanding the biopsychosocial outcomes unique to GBM with sexual dysfunction is important for the development of non-heteronormative clinical interventions. The remainder of this dissertation focuses primarily on anodyspareunia among GBM.

Anodyspareunia among GBM

Pain during receptive anal intercourse is largely neglected within the sexual health literature. To date, only four studies have investigated anodyspareunia among GBM (Damon & Rosser, 2005; Rosser et al., 1997, 1998; Vansintejan et al., 2013). The paucity of research investigating anodyspareunia among GBM is likely due to the common misconception that receptive anal intercourse is supposed to be painful (e.g., Carter, Henry-Moss, Hock-Long, Bergdall, & Andes, 2010; Štulhofer & Ajduković, 2011), stigma toward male anal sex (Branfman & Stiritz, 2012), and the heterosexual lens adopted by most sexual dysfunction research (Sandfort & de Keizer, 2001). Furthermore, existing research on anal intercourse primarily addresses infection prevention, and pays little attention to the pleasure of anal intercourse (McBride & Fortenberry, 2010). Contrary to popular belief, receptive anal intercourse should not be painful, if properly performed (e.g., Hollows, 2007). The majority of GBM engage in anal intercourse (e.g., 74.1%, Hart et al., 2003; 68%, Vansintejan et al., 2013) and describe receptive anal intercourse as pleasurable (e.g., Laumann et al., 1994). As previously

mentioned, prevalence rates of anodyspareunia range from 12.5% to 18% among GBM (Damon & Rosser, 2005; Peixoto & Nobre, 2015; Rosser et al., 1998; Vansintejan et al., 2013) and anodyspareunia is associated with adverse psychosocial outcomes (Rosser et al., 1998). Despite significant prevalence rates, little is known about the symptom and biopsychosocial profiles of GBM with anodyspareunia. In addition, more research is needed examining the impact of anodyspareunia on the quality of life of GBM. Furthermore, there is currently no theoretical model regarding the etiology and maintenance of anodyspareunia among GBM. This dissertation will address these current gaps in the literature.

Clinical Description of Anodyspareunia

Currently, there are no known published studies that provide a systematic description of anodyspareunia. Obtaining a systematic description of the pain onset, frequency, intensity, type, location, temporal presentation in relation to penetration, and duration as well as whether the pain is generalized or situational is critical to understanding and developing treatment for anodyspareunia. The literature depicting female sexual pain disorders and male chronic pelvic pain illustrates the heterogeneity of the symptom and biopsychosocial profiles present within these sexual pain disorders and highlights the importance of acknowledging these differences in treatment formulation (e.g., Davis et al., 2013; van Lankveld et al., 2010).

Onset. To date, only Damon and Rosser (2005) have assessed the onset of anodyspareunia among GBM. Most participants (60%) indicated that the pain was life-long, followed by 11% who stated the pain was situational, and 2% who identified the pain as acquired. Interestingly, 15% of participants reported that none of the aforementioned labels described their pain experience.

Frequency and intensity. Two studies of anodyspareunia show that pain frequency and intensity are highly correlated (r = .76, Damon & Rosser, 2005; r = .73, Rosser et al., 1998). In a study of GBM, 12.5% reported experiencing severe and frequent pain during receptive anal intercourse (Rosser et al., 1998). Among GBM who reported experiencing pain during receptive anal intercourse, 28.6% reported experiencing extremely severe and recurrent pain, while the remaining men described their pain as mild to moderately severe and occasionally to fairly frequent (Damon & Rosser, 2005). In an internet study of Belgian GBM experiencing pain during or after receptive anal intercourse, 32% rated their pain as mild, 17% as mild to moderate, 4% as moderate, and 2% as severe (Vansintejan et al., 2013).

Situational factors. Three studies assessed situational factors associated with anodyspareunia among GBM (Damon & Rosser, 2005; Rosser et al., 1998; Vansintejan et al., 2013). American GBM rated inadequate lubrication as the most important predictor of experiencing pain during receptive anal intercourse, followed by psychological factors (this predictor is not defined by the authors), lack of oral or digital massage of the anal sphincter prior to penetration, the size of the insertive partner's penis, depth and rate of thrusting, and degree of sexual arousal (Rosser et al., 1998). Similarly, in an Internet-based study, Belgian GBM most commonly reported inadequate lubrication and lack of oral or digital massage of the anal sphincter prior to penetration as predictors of experiencing pain during or after receptive anal intercourse (Vansintejan et al., 2013). Being in a relationship (open or closed) and knowing the preferred anal sex role of one's partner also decreased the prevalence and severity of anodyspareunia (Vansintejan et al., 2013). When examining reported causes of pain among American GBM with anodyspareunia, similar factors were found as in Rosser et al. (1998): psychological factors (again, this predictor is not defined by the authors), the size of the insertive

partner's penis, lack of oral or digital massage of the anal sphincter prior to penetration were rated as the most likely causes of pain during receptive anal intercourse (Damon & Rosser, 2005). Inadequate lubrication and anal health problems were also listed as likely causes of pain during receptive anal intercourse (Damon & Rosser, 2005).

Type, location, temporal presentation, and duration. No study has assessed the type, location, temporal presentation, and duration of pain experienced by GBM with anodyspareunia. However, within the literature discussing female sexual pain disorders and male chronic pelvic pain, differences across these variables helped to identify specific classes of sexual pain disorders, each with unique etiological and maintaining factors (e.g., Meana, Binik, Khalifé, & Cohen, 1997; Davis et al., 2013). Assessing the type of pain (e.g., aching, burning, throbbing, sharp, cramping) and location of the pain (e.g., vaginal entrance only versus inside vagina only versus pelvic area only versus a combination, Meana et al., 1997; testes, perineum, anus, penile shaft, Davis et al., 2013) discriminated between sexual pain disorders and had important treatment implications. Furthermore, the temporal presentation (i.e., before penetration, at the moment of penetration, once the penis is fully penetrated, after penis withdrawals; Meana et al., 1997) and duration of the pain (i.e., before, during, after exit; penile thrusting only; during and after penile thrusting; Meana et al., 1997) also distinguished between female sexual pain disorders (i.e., vulvodynia and vulvar vestibulitis syndrome).

Infection, inflammation, and atrophy. Past and/or current infections and inflammation within the genitourinary system differentiate between subtypes of female sexual pain disorders and male chronic pelvic pain (Meana et al. 1997; Davis et al., 2013; Van Lankveld et al., 2010). Urinary symptoms and prostate infections and inflammation were specific to a subset of men with chronic pelvic pain (Davis et al., 2013). Regarding female sexual pain disorders, some

women uniquely experience vulvar and vaginal atrophy (i.e., degeneration of the vulvovaginal tissue), while vulvar vestibulitis (i.e., excessive sensitivity of the vestibule area) characterizes another group of women (e.g., Kao et al., 2012; Meana et al., 1997). Past and/or current STIs may precipitate or aggravate pain severity due to possible hyperactivity of the immune system and the inflammatory response (e.g., Graziottin, Giovannini, Bertolasi, & Bottanelli, 2004).

Clinical diagnostic criteria. A systematic description is also important for establishing appropriate diagnostic criteria of anodyspareunia. Damon and Rosser (2005) examined whether the *DSM, 4th Edition, Text Revision* (DSM-IV-TR; APA, 2000) diagnostic criteria for female dyspareunia were valid among GBM who reported experiencing pain during receptive anal intercourse (N = 230). In order to meet criteria for anodyspareunia, the men were required to a) experience pain during receptive anal intercourse more often than not; b) experience significant distress or interpersonal difficulty due to the pain; and c) the pain must not be exclusively due to involuntary tensing of the anus, lack of lubrication, substance or medication use, or a general medical condition. The majority of these participants did not report experiencing frequent and severe pain during receptive anal intercourse (n = 175; 76%). Of the participants who reported experiencing frequent and severe pain during receptive anal intercourse (n = 55; 14%), 40 GBM (10%) met the aforementioned diagnostic criteria. Of those GBM who met criterion A, but did not meet full diagnostic criteria, the majority (n = 22; 60%) did not report experiencing significant distress or interpersonal difficulty due to the pain.

The diagnostic criteria for sexual pain disorders, however, have since been updated in the DSM-5 (APA, 2013) in an attempt to address the limitations of the previous classification system. The DSM-IV divided the female sexual pain disorders into two categories, dyspareunia and vaginismus, and largely overlooked male sexual pain disorders (Binik, 2010a, 2010b). The

DSM-5 diagnostic criteria for Genito-Pelvic Pain/Penetration Disorder, in contrast, highlight genital pain as occurring on various continua and are applicable to men and women (e.g., Binik, 2010b). Nevertheless, the criteria continue to focus on vaginal penetration.

In sum, few studies have investigated the clinical presentation of anodyspareunia among GBM and the existing studies possess numerous limitations. First, the study samples have predominantly consisted of White, highly educated men, limiting the studies' generalizability. Second, although Rosser and colleagues (1998) found that GBM attribute "psychological factors" to their experience of pain during receptive anal intercourse, the authors failed to further identify the specific psychological factors that play a role. Gaining a better understanding of the specific psychological factors that impact pain during receptive anal intercourse is critical to development effective psychological interventions. Third, no study has assessed the type, location, temporal presentation, and duration of pain experienced by GBM with anodyspareunia. Further exploring these characteristics of anodyspareunia may provide important information about the etiology and maintaining factors of this sexual dysfunction. Fourth, no study has investigated the impact of infections and medical conditions on anodyspareunia, an etiological and maintaining factor that the female sexual pain literature has demonstrated plays an important role. Lastly, no study has examined the validity of the diagnostic criteria for Genito-Pelvic Pain/Penetration Disorder among GBM who experience pain during receptive anal intercourse.

Biopsychosocial Model of Anodyspareunia

The development of prevention and treatment interventions requires a better understanding of the etiological and maintaining factors pertaining to anodyspareunia. A number of models were considered based on their existing empirical support and potential applicability to GBM with anodyspareunia. First, de Jong, van Overveld, Schultz, Peters, and Buwalda (2009)

proposed that disgust and fear of contamination may trigger involuntary contraction of the pelvic floor muscles during vaginal penetration and that women experiencing sexual pain would report higher disgust propensity to sexual stimuli than pain-free controls. Only a subset of women, however, reported a higher disgust propensity to sexual stimuli (de Jong, van Overveld, Schultz, Peters, & Buwalda, 2009) and a minority of women experiencing sexual pain exhibit vaginal and pelvic spasm (Binik, 2010). In addition, only one research team, to date, has investigated the association between disgust and female sexual pain disorders, which limits the theory's empirical support and generalizability. Second, health behaviour models, such as the Information-Motivation-Behaviour-Skills Model (IMB; Fisher & Fisher, 1992), were considered. However, health behaviour models focus on strategies to reduce health risk behaviour rather than address the etiology and maintenance of health conditions. Third, Melzack's (1999) neuromatrix model of chronic pain asserts that pain results from the parallel processing of sensory (e.g., injury, visual stimuli), affective-motivational (e.g., hypothalamic-pituitary-adrenal system, immune system), and cognitive-evaluative (e.g., attention, expectation, anxiety, personality, learning) inputs and outputs. The neuromatrix model is generalizable across multiple chronic pain conditions and has gained strong empirical support (for review, see Melzack, 1999). Due to the fact that this dissertation was interested primarily in identifying psychological factors related to the development and maintenance of anodyspareunia, the cognitive-evaluative component of the neuromatrix model, also referred to as the fear-avoidance model, was selected.

The fear-avoidance model combines theories of chronic pain and sexual dysfunction and as a result is likely relevant to anodyspareunia. The fear-avoidance model is a widely cited and empirically supported cognitive behavioural model of chronic pain (e.g., Cook, Brawer, & Vowles, 2006; Vlaeyen & Linton, 2000, 2012) and is gaining empirical support in relation to

sexual pain disorders among heterosexual women (for review, see Thomtén & Linton, 2013). No study has investigated the fear-avoidance model in regards to the development and maintenance of anodyspareunia among GBM. In brief, the fear-avoidance model of sexual pain posits that individuals with sexual pain disorders previously experienced pain during penetration and thoughts of re-experiencing pain, subsequently, trigger the fear and avoidance cycle (Thomtén & Linton, 2013). The fear and avoidance cycle involves catastrophic pain-related thoughts, fear of pain, hypervigilance to pain-related stimuli, muscle tension, lack of sexual arousal, avoidance of penetration, distress and sexual dysfunction (see Figure 1; Thomtén & Linton, 2013). Each component of this model is reviewed and discussed in relation to the development and maintenance of anodyspareunia among GBM.

Etiology of Anodyspareunia

As previously mentioned, the fear-avoidance model of sexual pain asserts that individuals with sexual pain disorders experienced pain during penetration prior to the development of the sexual pain disorder (see Figure 1, "Injury/Penetration;" Thomtén & Linton, 2013). In the literature investigating the etiology of female sexual pain disorders, the initial painful penetration event may be due to: 1) biological factors, including infections or hypertonic pelvic floor muscles; 2) situational factors, such as painful first intercourse or lack of lubrication; or 3) childhood or lifetime sexual or physical abuse (for a review, see Bergeron, Corsini-Munt, Aerts, Rancourt, & Rosen, 2015). These factors also may be relevant in the development of anodyspareunia among GBM. Specific to GBM, high internalized homophobia, which is associated with increased likeliness of experiencing sexual dysfunction (e.g., Kuyper &

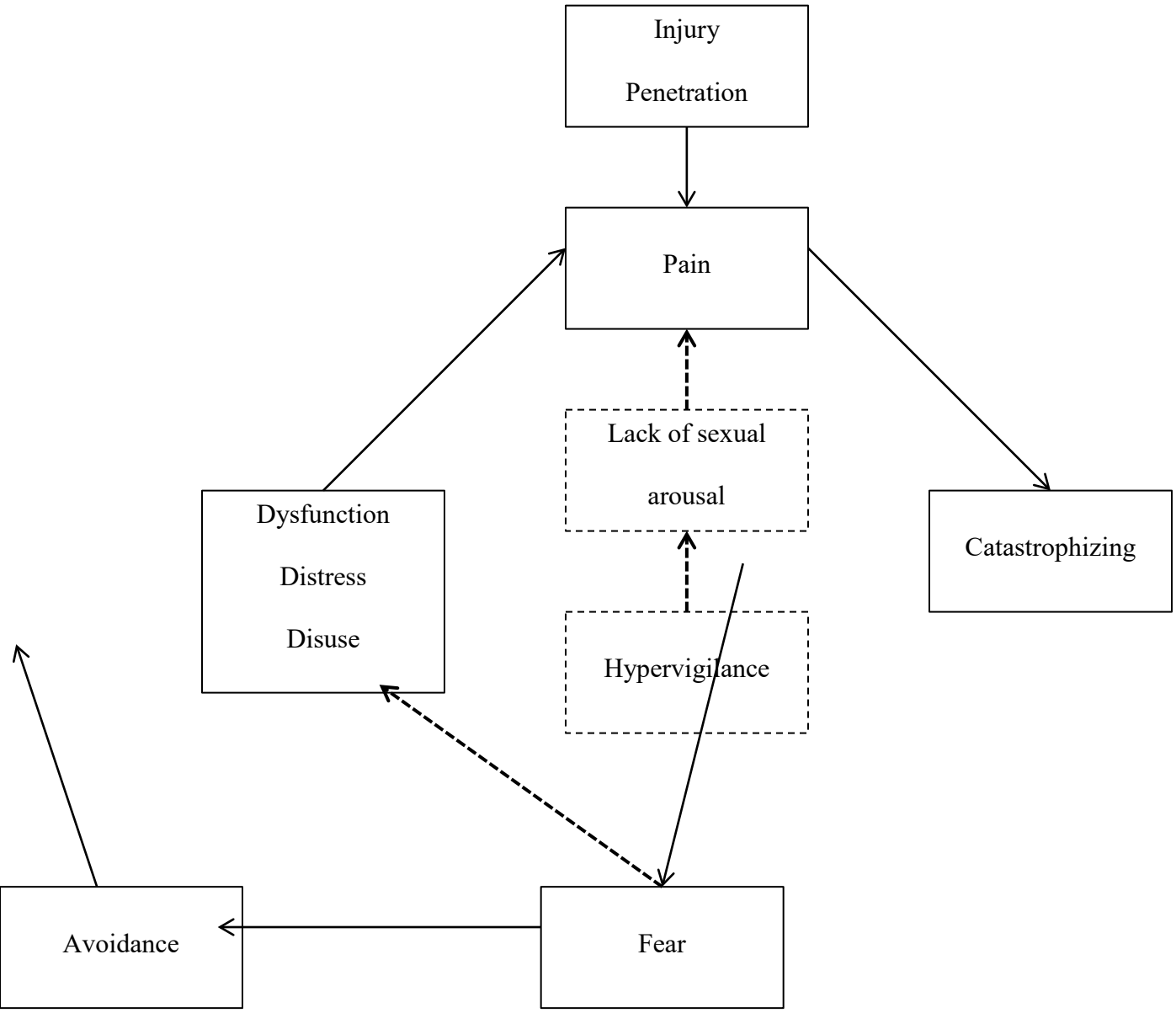

Figure 1. The fear-avoidance model of sexual pain. Reproduced from "A psychological view of sexual pain among women: Applying the fear-avoidance model." by J. Thomtén and S. J. Linton, 2013, *Women's Health*, *9*, p. 259. Variables depicted by solid lines represent mechanisms shared by chronic pain and sexual pain disorders. Variables depicted by dashed lines represent mechanisms specific to sexual pain disorders.

Vanwesenbeeck, 2011; Meyer, 1995; Meyer & Dean, 1998), may be an important factor associated with the onset of anodyspareunia. Each of these factors is described in detail below.

Biological factors. Inflammation caused by recurrent infections, such as candidiasis or genital herpes, is associated with the development of female sexual pain disorders (for a review, see Bergeron et al., 2015). Similarly, a predominantly heterosexual sample of men with chronic pelvic pain (85.1%) reported inflammation and infections of the prostate (Davis et al., 2013). Yet, no study has examined the relationship between infections and anodyspareunia among GBM. This is surprising because GBM are more likely to report current and/or past STIs, specifically HIV, syphilis, gonorrhea, and human papillomavirus (HPV) than heterosexual men (for review, see Wolitski & Fenton, 2011). In Canada, HIV incidence continues to be high, especially among GBM and other MSM, who comprised almost half (48.8%) of all reported HIV diagnoses in 2014 (PHAC, 2015). In a study comparing HIV-positive and HIV-negative women, HIV-positive women more commonly reported dyspareunia (41.4% versus 34.8%), and dyspareunia was associated with vaginal dryness and urinary incontinence (Valadares et al., 2014). Furthermore, anal health problems, such as anal fissures or haemorrhoids, may play a role in chronic or acquired anodyspareunia (e.g., Hollows, 2007). GBM treated for prostate cancer may also experience pain during anal penetration (Rosser, Capistrant, et al., 2016; Rosser, Merengwa, et al., 2016). Therefore, understanding the role of infections and other medical conditions in the development of anodyspareunia is particularly relevant for GBM.

The hypertonicity (i.e., overly toned resting muscle tissue) of the pelvic floor muscles is another biological factor related with the development of female sexual pain disorders (for a review, see Bergeron et al., 2015). Women who experience pain during penetration tense their pelvic floor muscles in an attempt to protect against pain, which increases the resting tone of

these muscles over time (e.g., Morin, Bergeron, Khalifé, Mayrand, & Binik, 2014; Reissing, Binik, Khalifé, Cohen, & Amsel, 2004; Reissing, Brown, Lord, Binik, & Khalifé, 2005). As a result, these women tend to demonstrate low control of their pelvic floor muscles as indicated by their difficulty voluntarily relaxing and contracting the pelvic floor muscles (e.g., Morin et al., 2014) and lower pelvic floor muscle strength (e.g., Reissing et al., 2004, 2005). For GBM, it is possible that hypertonic sphincter muscles around the anus and the involuntary tightening of or difficulty relaxing these muscles may play a role in the development of anodyspareunia.

Situational factors. Pain during an individual's first-attempt to engage in intercourse may also generate thoughts of re-experiencing pain during subsequent sexual encounters (Thomtén & Linton, 2013). Pain experienced during first penetration may be due to lack of skill and knowledge, inhibited sexual desire and arousal, or insufficient lubrication (Thomtén & Linton, 2013). Due to stigma toward sex in general, and gay sex more specifically, there is a lack of accessible information about the anatomy of the anus and how to achieve pleasurable anal intercourse (e.g., Buston & Hart, 2001; Hollows, 2007; Temple, 2005). It is known, however, that the anatomy of the anus necessitates relaxation, sexual arousal, proper stimulation, sufficient lubrication, and gradual penetration in order to minimize pain (Hollows, 2007). Consequently, painful first time experiences of receptive anal intercourse are likely common (e.g., Štulhofer & Ajduković, 2013). In an online study of heterosexual Croatian women's experiences of anal intercourse, the majority of women reported experiencing pain during their first attempt to engage in anal intercourse (79.1%) and that pain decreased as their and their partner's level of experience with the activity increased (Štulhofer & Ajduković, 2011; 2013).

Abuse and harassment. Women experiencing sexual pain disorders are more likely to report childhood or lifetime sexual or physical abuse (e.g., Bergeron et al., 2015; Desrochers,

Bergeron, Landry, & Jodoin, 2008; Landry & Bergeron, 2011; Reissing et al., 2004). Rates of childhood sexual and physical abuse (e.g., Friedman et al., 2011) as well as harassment during childhood and adulthood for being gay or bisexual (e.g., D'Augelli, Pilkington, & Hershberger, 2002; Friedman et al., 2011; Meyer, 2003) are substantially greater among GBM compared to sexual non-minority individuals. As a result, this may be an important factor in the development of anodyspareunia in GBM, especially those GBM who are survivors of sexual and physical abuse.

Internalized homophobia. GBM may experience an internal conflict between their sexual preference for men and social pressures to maintain a heterosexual identity, a phenomenon known as internalized homophobia (Meyer, 1995). High internalized homophobia is associated with sexual dysfunction (Kuyper & Vanwesenbeeck, 2011; Meyer, 1995; Meyer & Dean, 1998) and may be an important factor in the development of anodyspareunia. A meta-analysis found a positive correlation between internalized homophobia and depression and anxiety symptoms among GBM (Newcomb & Mustanksi, 2010), which are risk factors of sexual dysfunction. GBM with high internalized homophobia report greater sexual guilt and lower sexual satisfaction than GBM with low internalized homophobia (Kuyper & Vanwesenbeeck, 2011; Rowen & Malcolm, 2003). Internalized homophobia may interfere with GBM's ability to relax and experience pleasure during receptive anal intercourse due to the activation of negative thoughts and emotions (e.g., low mood, anxiety, guilt) regarding one's sexual identity.

Although no study has examined the relationship between internalized homophobia and anodyspareunia, greater discomfort with other gay men (i.e., social internalized homophobia) was associated with higher pain severity during anal penetration (Rosser et al., 1998). Furthermore, more advanced stage of coming out, as per Cass's (1984) stages of homosexual

identity formation, was associated with lower frequency of pain (Rosser et al., 1998). It is unclear why the association between stage of coming out and frequency of pain was found. For instance, pain may be less frequent due to increased experience with receptive anal intercourse, decreases in internalized homophobia, or both.

Maintaining Factors of Anodyspareunia

Pain catastrophizing. According to the fear-avoidance model, appraising pain and its consequences negatively, as is the case in pain catastrophizing, precedes pain-related fear in the development and maintenance of chronic pain (Vlaeyen & Linton, 2000). Conceptualizations of pain catastrophizing typically include three components: rumination, magnification, and helplessness (Sullivan, Bishop, & Pivik, 1995). Rumination involves compulsively experiencing pain-related worry thoughts and the inability to restrain pain-related thoughts (Sullivan et al., 1995). Magnification refers to the tendency to exaggerate the unpleasantness of the pain and over-estimate the likeliness of negative outcomes (Sullivan et al., 1995). The final component, helplessness, refers to one's inability to effectively cope with the pain (Sullivan et al., 1995). Women experiencing sexual pain disorders consistently report greater pain catastrophizing than women without sexual pain disorders (Cherner & Reissing, 2013; Pukall, Binik, Khalifé, Amsel, & Abbott, 2002; Payne, Binik, Amsel, & Khalife, 2005; Payne et al., 2007; Sutton, Pukall, & Chamberlain, 2009; Thomtén & Karlsson, 2014; Thomtén, Lundahl, Stigenberg, & Linton, 2014). Higher pain catastrophizing is also associated with greater pain severity among women experiencing sexual pain disorders (Kao et al., 2012; Sutton et al., 2009; Thomtén et al., 2014) and heterosexual men with chronic pelvic pain (Tripp et al., 2006).

Fear of pain. The fear-avoidance model postulates that interpreting pain as catastrophic elicits fear of pain and pain-inducing situations (Vlaeyen & Linton, 2000). In the case of female

sexual pain disorders, vaginal penetration becomes a fear-inducing situation. Across studies exploring female sexual pain disorders and chronic pain, conceptualizations and measurement of pain-related fear vary between cognitive (e.g., racing thoughts, difficulty concentrating, catastrophizing; McCracken, Zayfert, & Gross, 1992), behavioural (e.g., grimacing, closing legs, gasps; Lahaie et al. 2015), and physiological components (e.g., racing heart, sweatiness; McCracken et al., 1992), all of which are highly correlated.

Women experiencing sexual pain disorders reported greater physiological symptoms of fear (Payne et al., 2007), anxiety related to a range of sexual activities (Cherner & Reissing, 2013), and interfering, delaying, or terminating behaviours during a gynecological exam (Lahaie et al., 2015) compared to pain-free women. However, to the author's knowledge, no study has investigated whether pain catastrophizing predicts pain-related fear among individuals with sexual pain disorders. In the general chronic pain literature, pain catastrophizing significantly predicts fear of movement and re-injury (e.g., Vlaeyen, Kole-Snijders, Boeren, & van Eek, 1995; Vlaeyen, Kole-Snijders, Rotteveel, Ruesink, & Heuts, 1995). Similarly, a study of pain-free students found that participants who reported high frequency of pain catastrophizing experienced greater pain-related fear than those who reported low frequency of pain catastrophizing after being threatened with the possibility of receiving a painful stimulus (Crombez, Eccleston, Baeyens, & Eelen, 1998). Interestingly, fear of movement and re-injury, but not pain catastrophizing, significantly predicted disability status among chronic lower back pain patients (Vlaeyen, Kole-Snijders, Rotteveel, et al., 1995). Greater fear of movement and re-injury was also associated with lower likeliness of completing a behavioural task (i.e., lift a weighted bag) among this population (Vlaeyen, Kole-Snijders, Boeren, et al., 1995).

Hypervigilance. According to cognitive theorists, attentional processes play an important role in the development and maintenance of anxiety disorders (e.g., Beck, Emery, & Greenberg, 2005). More specifically, individuals with pathological anxiety are more likely to appraise certain situations or sensations as dangerous and continuously search for potentially threatening stimuli, which is also known as hypervigilance (e.g., Bögels & Mansell, 2004; Crombez, Van Damme, & Eccleston, 2005). Hypervigilance is an automatic, or unintentional, response when a stimulus is appraised as highly threatening and the fear system is activated (Crombez et al., 2005). The fear-avoidance model proposes that individuals with sexual pain disorders are hypervigilant to pain-related stimuli, as a result of elevated pain catastrophizing and pain-related fear (Vlaeyen & Linton, 2000; Thomtén & Linton, 2013). Among women with dyspareunia, greater pain catastrophizing, pain-related fear, and hypervigilance were associated with higher pain severity (Desrochers, Bergeron, Khalifé, Dupuis, & Jodoin, 2009). Compared to women without sexual dysfunction, women with sexual pain self-reported greater hypervigilance to pain during intercourse and demonstrated greater Stroop interference to pain-related words, suggesting greater attentional bias toward pain-related stimuli (Payne et al., 2005). In addition, pain-related fear and state and trait anxiety accounted for the differences in hypervigilance between women with and without sexual pain (Payne et al., 2005).

Lack of sexual arousal. Masters and Johnson (1966) observed numerous physiological responses to sexual arousal in women that facilitate pleasurable vaginal penetration, including vaginal lubrication, enlargement of the vaginal canal, and elevation of the uterus and cervix. Therefore, in women, lack of physiological sexual arousal may exacerbate pain during penetration due to increased friction and impact (Payne et al., 2007). Similarly, in GBM, lack of

sexual arousal may inhibit one's ability to relax the anal sphincter muscles, resulting in painful receptive anal intercourse.

Barlow (1986) proposed that the interaction between cognitive interference and anxiety inhibits sexual arousal in men. In line with Barlow's theory, the fear-avoidance model of sexual pain asserts that pain catastrophizing, fear of anticipated pain, and hypervigilance to pain-related thoughts and stimuli impede physiological and subjective sexual arousal (Thomtén & Linton, 2013). Women with dyspareunia and women without sexual complaints demonstrated reductions in physiological and subjective sexual arousal after being informed that they would likely receive a painful stimuli while watching erotic film clips; however, there were no differences in genital response between these groups (Brauer, ter Kuile, Janssen, & Laan, 2007). Based on these preliminary findings, the impact of an anticipated painful stimulus on physiological and subjective sexual arousal should be investigated among GBM with anodyspareunia.

Avoidance. According to the fear-avoidance model, individuals with chronic pain tend to escape or avoid anticipated pain-inducing situations (Vlaeyen & Linton, 2000). The findings regarding whether individuals with sexual pain avoid sexual penetration are mixed. Women with sexual pain disorders tend to report lower frequencies of vaginal intercourse than pain-free controls (e.g., Cherner & Reissing, 2013; Masheb, Lozano-Blanco, Kohorn, Minkin, & Kerns, 2004; Meana et al., 1997; Reed et al., 2012). The majority of GBM with anodyspareunia reported avoiding anal intercourse for "a period of time" due to pain (82%; Damon & Rosser, 2005). In contrast, only 22% of women with sexual pain disorders reported no longer engaging in vaginal intercourse due to pain in an Internet-based study (Gordon, Panahian-Jand, McComb, Melegari, & Sharp, 2003). Furthermore, pain catastrophizing was positively associated with fear and avoidance beliefs about pain during vaginal intercourse, but was not significantly associated with

frequency of sexual intercourse among women with sexual pain (Thomtén et al., 2014). In sum, although GBM and women experiencing sexual pain disorders do at times avoid sexual penetration, they do not avoid engaging in sexual penetration permanently.

The literature regarding female sexual pain disorders lists various reasons why women continue to engage in vaginal intercourse despite experiencing pain. Within the aforementioned Internet-based study, among the women who continued to engage in vaginal intercourse, 27.3% indicated that they felt obligated in order to please their partner and 19.2% stated that the emotional and physical pleasure of vaginal intercourse outweighed the pain (Gordon et al., 2003). However, according to the fear-avoidance model, continuing to engage in painful intercourse likely maintains the sexual pain disorder due to recurrent pain catastrophizing and lack of physiological and subjective sexual arousal (Thomtén & Linton, 2013).

Dysfunction and distress. The fear-avoidance model proposes three possible consequences of repeated avoidance that contribute to the maintenance of chronic pain disorders. First, individuals with chronic pain fail to gain corrective information regarding pain-related expectations and beliefs (Vlaeyen & Linton, 2000). Second, avoidance may lead to impaired functioning (Vlaeyen & Linton, 2000). In the case of sexual pain disorders, avoidance may impair sexual functioning and negatively affect relationship satisfaction (Thomtén & Linton, 2013). Finally, avoidance may lead to depression due to the absence of positive reinforcers associated with sexual intercourse (Thomtén & Linton, 2013).

As proposed by the fear-avoidance model, sexual pain is associated with adverse mental and sexual health outcomes among heterosexual women (for review, see Desrochers et al., 2008) and their partners (e.g., Pazmany et al., 2014), heterosexual men with chronic pelvic pain (e.g., Anderson et al., 2006, 2009; Davis et al., 2009; Tripp et al., 2004), as well as among GBM (e.g.,

Damon & Rosser, 2005; Rosser et al., 1998). To review, heterosexual women with sexual pain disorders report greater sexual distress (Pazmany et al., 2014), sexual dysfunction (Cherner & Reissing, 2013; Payne et al., 2007; Sutton et al., 2009), depression symptoms (Pazmany et al., 2014), and anxiety (Payne et al., 2005; Pazmany et al., 2014; Thomtén et al., 2014), as well as worse dyadic sexual communication (Pazmany et al., 2014) than women without sexual pain. Heterosexual men with chronic pelvic pain reported experiencing symptoms of depression (Davis et al., 2009; Tripp et al., 2004) and anxiety (Anderson et al., 2009) as well as sexual dysfunction (Anderson et al., 2006; Davis et al., 2009). Similarly, anodyspareunia was associated with high anxiety among GBM (Rosser et al., 1998). The majority of GBM with anodyspareunia rated their level of distress regarding the pain during receptive anal intercourse as moderate to extreme (79%; Damon & Rosser, 2005) and indicated a moderate to high degree of interpersonal difficulties due to painful receptive anal intercourse (62%; Damon & Rosser, 2015). In addition, many GBM with anodyspareunia reported that this difficulty disrupted a sexual relationship and prevented them from seeking a new relationship (Damon & Rosser, 2005).

At present, there is no theoretical model describing the etiology and maintenance of anodyspareunia. Furthermore, studies investigating the etiological and maintaining factors associated with anodyspareunia among GBM are lacking. Examining the components of the fear-avoidance model of sexual pain among GBM with anodyspareunia will help elucidate biological, psychological, and sociocultural mechanisms. Gaining a better understanding of the etiology and maintenance of anodyspareunia is essential for the development of proper assessment measures and appropriate medical and psychological treatments.

Anodyspareunia and Anal Sex Role Labels

Although the fear-avoidance model of sexual pain does not specify for whom this cycle may be most relevant (i.e., potential moderators), among GBM anal sex role labels are important to consider. This section begins by describing anal sex role labels, their association with sexual behaviour, and their relevance to sexual dysfunction. Subsequently, the importance of considering the differences in the impact of anodyspareunia between anal sex role labels is discussed.

Anal Sex Role Labels

Sexual identities are complex and bound within biological, psychological, and socio-cultural contexts (De Cecco & Shively, 1984; Shively & De Cecco, 1977; van Anders, 2015). Within the gay community, the use of secondary self-labels to describe specific components of one's sexual identity is common (e.g., Prestage et al., 2015). Secondary self-labels may reflect physical attributes (e.g., bear, cub, twink; Hennen, 2005; Lyons & Hosking, 2014; Moskowitz, Turrubiates, Lozano, & Hajek, 2013) or sexual preferences (e.g., leather; barebacking; Parsons & Bimbi, 2007), as well as refer to frequent participation in certain scenes or attendance at particular venues, known as circuits (e.g., party and play; Adam, Husbands, Murray, & Maxwell, 2008). Of particular relevance to anodyspareunia are the labels used to describe GBM's sex role preferences, primarily during anal intercourse.

In English-speaking countries, GBM who self-identify as Tops prefer to penetrate their partner, or assume an insertive role during anal intercourse, whereas those who identify as Bottoms prefer to be penetrated or assume a receptive role during anal intercourse (e.g., Gil, 2007; Hart et al., 2003; Moskowitz, Rieger, & Roloff, 2008; Wegesin & Meyer-Bahlburg, 2000). Versatiles, relatively, equally prefer either to be penetrated by or to penetrate their partner (e.g.,

Gil, 2007; Hart et al., 2003; Moskowitz et al., 2008). The plurality of GBM identify as Versatile, while relatively equal percentages of GBM identify as exclusively Tops or Bottoms (Hart et al., 2003; Lou, Wu, Chen, Ruan, & Shao, 2009; Moskowitz et al., 2008; Wei & Raymond, 2011; Zheng, Hart, & Zheng, 2012; Zhou et al., 2013). Although the terms may vary by language, there is evidence that these categories are similar across several cultural groups, such as Latin American (e.g., Carballo-Dieguez et al., 2004) and Chinese GBM (e.g., Zheng, Hart, & Zheng, 2013).

Self-identified sex roles provide useful information, not only about GBM's sexual behaviour (e.g., Hart et al., 2003), but also GBM's physical attributes (e.g., height, penis size, skin colour, physical attractiveness, and masculinity versus femininity; Carballo-Dieguez et al., 2004; Moskowitz & Hart, 2011; Zheng et al., 2013), cultural background (e.g., Lick & Johnson, 2015), psychological well-being (Hart et al., 2003), self-identified sexual orientation (e.g., Hart et al., 2003; Johns, Pingel, Eisenberg, Santana, & Bauermeister, 2012; Zhou et al., 2013), and sexual health (e.g., Wegesin & Meyer-Bahlburg, 2000; Wei & Raymond , 2011; Zhou et al., 2013). No study to date, however, has investigated the relationship between self-identified sex roles and sexual functioning. Sexual dysfunction may influence whether GBM enact their ideal sex role and changes in sexual functioning may influence the stability of GBM's preferred sex role across the lifespan. Furthermore, self-identified sex roles may be an important moderating factor in the development and maintenance of sexual dysfunction, specifically anodyspareunia. As well, sexual dysfunction may impact GBM differently depending upon their self-identified sex role.

Preferred versus enacted sex role. Self-identified sex role labels are highly concordant with GBM's enacted position during sexual behaviour. In a study of HIV-positive and HIV-

negative GBM, Tops engaged in more insertive anal intercourse than Bottoms and Bottoms engaged in more receptive anal intercourse than Tops (Wegesin & Meyer-Bahlburg, 2000). Similarly, among HIV-positive GBM, Tops and Versatiles were more likely to engage in insertive anal intercourse than Bottoms (Hart et al., 2003). In contrast, Bottoms and Versatiles were more likely to engage in receptive anal intercourse than Tops (Hart et al., 2003). Two studies found that only a minority of Tops reported willingness to enact the receptive role during anal intercourse whereas all Bottoms reported willingness to assume the receptive role (Hart et al., 2003; Moskowitz et al., 2008). The inverse was also true, where few Bottoms reported willingness to engage in the insertive role during anal intercourse (Hart et al., 2003; Moskowitz et al., 2008). Versatiles, however, reported willingness to take either the insertive or receptive role during anal intercourse (Hart et al., 2003; Moskowitz et al., 2008). In addition, Tops reported fantasizing about being the insertive partner during anal intercourse more frequently than did Bottoms (Damon, 2000). It is, therefore, not surprising that Tops rate insertive anal intercourse as more pleasurable than Bottoms, while Bottoms rate receptive anal intercourse as more pleasurable than Tops (Damon, 2000; Wegesin & Meyer-Bahlburg, 2000).

Self-identified sex role labels appear to also reflect GBM's preferred role during non-intercourse sexual behaviours. Regarding oral sex, two studies found no differences in the likeliness to engage in insertive oral sex between Tops, Bottoms, and Versatiles (Hart et al., 2003; Moskowitz et al., 2008). However, Tops were less likely to engage in receptive oral sex than Bottoms and Versatiles (Hart et al., 2003; Moskowitz et al., 2008). In a separate study, GBM who identified as Tops were more likely to enact the insertive role during oral sex than those who identified as Bottoms whereas the opposite pattern was found regarding receptive oral sex (Damon, 2000). A similar pattern emerges regarding other sexual behaviours, specifically

fisting, sex-toy play, and penetrative role-playing. Tops were more willing to perform the insertive than receptive role during these sexual behaviours while the converse was found regarding Bottoms (Moskowitz et al., 2008). The preferences of Versatiles did not differ from Tops and Bottoms (Moskowitz et al., 2008).

Although self-identified sex role labels generally match the enacted role during sexual behavior, at times, men may assume their non-preferred role. Among HIV-positive GBM, 41% of Tops engaged in receptive anal intercourse and 39% of Bottoms engaged in insertive anal intercourse at least once during the previous three months (Hart et al., 2003). Sexual dysfunction may be one possible factor that influences whether GBM enact their preferred sex role; however, this association has yet to be explored. Carballo-Dieguez and colleagues (2004) posit that erectile difficulties may lead GBM to enact the receptive role during anal intercourse, regardless of their preferred sex role. Among HIV-positive GBM, those who reported experiencing erectile difficulties when using a condom were more likely to engage in receptive anal intercourse than GBM without condom-related erectile difficulties (Cove & Petrak, 2004). After completing prostate cancer treatment, GBM who experienced erectile dysfunction reported shifting from engaging in insertive anal intercourse to receptive anal intercourse (Dowsett, Lyons, Duncan, & Wassersug, 2014; Hart et al., 2014; Rosser, Capistrant, et al., 2016; Rosser, Merengwa, et al., 2016). Furthermore, Moskowitz and Hart (2011) speculate that anodyspareunia may lead GBM to enact the insertive role during anal intercourse, regardless of their preferred sex role, and that differences in pain during receptive anal intercourse may, in fact, differentiate preferred sex roles. In a study of American GBM with anodyspareunia, 49% reported only engaging in insertive anal intercourse due to the pain experienced during receptive anal intercourse (Damon

& Rosser, 2005). However, these studies did not assess whether these changes in behaviour reflected changes in self-identified anal sex role.

Stability of sex role labels. In spite of the aforementioned research on the predictive nature of sex role labels, sex roles may not be fixed, and instead, may change throughout the lifespan. Pachankis, Buttenwieser, Bernstein, and Bayles (2013) followed young GBM, ages 18 to 25 years, over two years in order to examine possible changes in sex roles across time. Participants were asked to indicate with which sex role they identified from the following options: "exclusively top," "mostly top," "versatile," "mostly bottom," "exclusively bottom," "I have never used these labels," and "I used these labels for myself in the past but not anymore." Interestingly, 51.6% of participants changed their sex role within the two years. However, most changes were within one category of differentiation in either direction (e.g., exclusively bottom to mostly bottom, or mostly top to versatile). More than half (53.3%) of men who said they did not identify with a label initially identified with a label at follow-up. When the researchers collapsed the categories to top, bottom, versatile, and no label, 38.7% of participants changed their sex role identity over the two years. Participants provided a number of reasons for the shift in their sex role label. Common themes included personal and sexual growth (e.g., increased self-awareness and/or self-confidence), relationship factors (e.g., power dynamics, trust, partner's preferred anal sex position), physical comfort (e.g., medical issues, partner's penis size), and sociocultural issues (e.g., differences in social policies and acceptance of the lifestyles of GBM between geographical locations, greater exposure to gay community; Pachankis, Buttenwieser, Bernstein, & Bayles, 2013).

Sexual functioning likely plays an important role in the stability of one's preferred sex role label and the congruence between preferred and enacted sex roles across the lifespan.

Pachankis and colleagues (2013) only included young GBM between ages 18 and 25 years and did not assess whether altering one's preferred sex role label affected participants' sexual and relationship satisfaction. However, older GBM are at a higher risk of sexual dysfunction (e.g., McKinlay, 2000; Nicolosi et al., 2006) and developing medical conditions that negatively affect sexual functioning, such as prostate cancer (Dowsett et al., 2014; Hart et al., 2014), which may result in changes to one's preferred sex role and, in turn, possible adverse mental and sexual outcomes. Therefore, the association between sexual functioning and sex roles should be examined among GBM of various ages.

Sexual dysfunction, sex role labels, and sexual satisfaction. Theories of sexual satisfaction may help to explain the impact of sexual dysfunction on sexual satisfaction across self-identified sex roles. Two empirically supported theories of sexual satisfaction, the Interpersonal Exchange Model of Sexual Satisfaction (IEMSS; Lawrance & Byers, 1995) and script theory (Gagnon, 1990), are relevant to the study of sex role labels and sexual functioning. First, the IEMSS posits that sexual satisfaction is dependent on the exchange of rewards (i.e., pleasurable physical or mental outcomes) and costs (i.e., negative physical or mental outcomes) between partners (Lawrance & Byers, 1995). Gender as well as cultural and social factors influence what one considers a sexual reward and cost (e.g., Cohen, Byers, & Walsh, 2008; Lawrance & Byers, 1995). In general, examples of sexual rewards include sexual pleasure and the expression of love, whereas sexual dysfunction is a common sexual cost (Lawrance & Byers, 1995). Among Canadian gay men, sexual rewards included emotional and physical intimacy, feeling accepted, safe, and supported by one's sexual partner, and open sexual communication (Cohen et al., 2008). In contrast, gay men listed fear of being rejected, fear of contracting an STI, loss of freedom, communication problems, concerns about physical appearance, and lack of

social or cultural acceptance as examples of sexual costs (Cohen et al., 2008). The IEMSS also considers the impact of an individual's expectations and perceived equality of rewards and costs on sexual satisfaction. For example, the IEMSS proposes that an individual would report high sexual satisfaction if rewards outweigh costs, rewards and costs are similar to what one expects to receive in a sexual relationship, and rewards and costs are perceived as equal between partners.

Script theory (Gagnon, 1990) asserts that individuals follow socially-constructed scripts within sexual situations that define one's appropriate role and which behaviours are acceptable. According to script theory, high sexual satisfaction results when partners possess similar sexual scripts and each partner correctly enacts this shared sexual script. Heteronormative sexual scripts as well as hegemonic masculinity, which dictate that men are dominant and women are submissive, may influence the sexual scripts of Tops and Bottoms (Hoppe, 2011; Kippax & Smith, 2001). Preliminary evidence indicates that sexual scripts may differ between sex role labels, in that Tops are expected and more willing to enact an active, dominant role and Bottoms a passive, submissive role (Damon, 2000; Moskowitz et al., 2008). Tops also reported the desire to exert power over their sexual partner, whereas Bottoms reported the desire to be overpowered by sexual partner (Damon, 2000). At the same time, this pattern of behaviour is not always the case. GBM who self-identify as "power bottoms" assert that they enact the more dominant role during sexual activity, by directing their partner, for example (e.g., Johns et al., 2012).

Considering these theories of sexual satisfaction, the impact of anodyspareunia may differ across self-identified sex roles. According to the IEMSS, sexual dysfunction that interferes with one's ability to perform their preferred sex role will likely lead to lower sexual satisfaction due to a decrease in sexual reward. For instance, as previously discussed, Tops rate insertive anal

intercourse as more pleasurable than Bottoms, whereas Bottoms describe receptive anal intercourse as more pleasurable than Tops (Damon, 2000; Wegesin & Meyer-Bahlburg, 2000). Furthermore, in relation to script theory, the inability to perform one's preferred sex role may also reduce one's sexual satisfaction if the partner with sexual dysfunction is no longer able to perform according to the agreed upon sexual script (e.g., expected to "top"). Qualitative studies of GBM treated for prostate cancer provide preliminary evidence that erectile dysfunction more negatively affects Tops than Bottoms (Hartman et al., 2014; Hoyt et al., 2017; Rosser, Capistrant, et al., 2016; Rosser, Merengwa, et al., 2016). This dissertation was the first to examine the effects of anodyspareunia on GBM's self-identified anal sex role and sexual satisfaction.

Barriers to Help-Seeking Behaviours among GBM with Anodyspareunia

Prior to developing effective medical and psychological treatments for anodyspareunia, identifying potential barriers to help-seeking behaviours among GBM with anodyspareunia is needed. Among individuals with chronic pain, failure to obtain treatment is associated with greater pain severity and adverse psychosocial outcomes (e.g., Glajchen, 2001). Regarding sexual pain disorders, not seeking treatment perpetuates the fear-avoidance cycle (e.g., Thomtén & Linton, 2013), resulting in worse biological, psychological, and social consequences (e.g., Meana, 2009). Nevertheless, a large proportion of women experiencing sexual pain disorders fail to seek treatment (e.g., Donaldson & Meana, 2011; Nicolosi et al., 2006; Shifren et al., 2009). Possible treatment barriers relevant to GBM with anodyspareunia are discussed.

Barriers to seeking treatment for sexual dysfunctions have been examined among heterosexual populations. Young American heterosexual women with dyspareunia reported not seeking treatment due to 1) the belief that the pain would spontaneously remit; 2) the lack of

confidence in the availability of a medical solution; 3) fear of stigma associated with sexual problems; and 4) fear that the pain was due to a more severe condition (Donaldson & Meana, 2011). Similar barriers were identified among heterosexual men with erectile dysfunction from six countries (USA, France, Germany, Italy, Spain, and the UK; Shabsigh, Perelman, Laumann, & Lockhart, 2004). Specifically, these men reported not seeking treatment due to 1) the belief that their erectile difficulties would spontaneously resolve; 2) the belief that erectile difficulties are a normal part of ageing; 3) fear that the underlying problem may be serious; and 4) embarrassment associated with discussing their erectile difficulties. In fact, men with more severe erectile difficulties reported greater embarrassment to discuss their problems than men with less severe erectile difficulties. Researchers would benefit from evaluating the relevance of these treatment barriers among GBM with anodyspareunia.

Members of sexual minority groups may experience specific obstacles to seeking treatment for sexual dysfunction above and beyond the aforementioned barriers. First, sexual minorities may avoid seeking treatment due to fear of discrimination regarding their sexual minority status. Many sexual minority individuals do not disclose their sexual orientation to their health care professional due to fear of discrimination (e.g., Brotman, Ryan, Jalbert, & Rowe, 2002; Clover, 2006; Durso & Meyer, 2013; Hoyt et al., 2017; Ponce, Cochran, Pizer, & Mays, 2010; Rosser, Merengwa, et al., 2016; van Dam, Koh, & Dibble, 2001). Armstrong and Reissing (2012) found that 22% of sexual minority women with sexual pain reported experiencing discrimination from their health care providers. Among GBM recovering from prostate cancer, the rate of satisfaction with their prostate cancer treatment was lower compared to heterosexual samples, which may be a reflection of homophobia and discrimination on the part of the health care professionals (Hart et al., 2014). Second, GBM with high internalized homophobia may be

less likely to access treatment for sexual pain due to fear of being negatively evaluated due to their sexual preferences (e.g., Addis & Mahalik, 2003; Hoyt et al., 2017; Santos et al., 2013). Coleman and colleagues (2017) found that internalized homophobia was associated with GBM's avoidance of discussing gay-related issues with their health care provider. Third, the misconception that receptive anal intercourse is supposed to be painful may interfere with GBM's likeliness to seek treatment.

Overall Purpose

Recurrent and severe pain during receptive anal intercourse/penetration, also known as anodyspareunia, is prevalent among GBM, with prevalence rates ranging from 12.5% to 18% (Damon & Rosser, 2005; Peixoto & Nobre, 2015; Rosser et al., 1998; Vansintejan et al., 2013). Despite its prevalence, anodyspareunia among GBM is largely neglected within the sexual dysfunction literature. Little is known about the symptom and biopsychosocial profiles of GBM with anodyspareunia, the etiology of anodyspareunia, and the impact of anodyspareunia on the quality of life of GBM. Furthermore, there is currently no theoretical model regarding the maintenance of anodyspareunia among GBM.

Both researchers and clinicians working with GBM have argued that existing theory and psychological treatments for sexual dysfunction and intimate relationships are largely based on heteronormative assumptions and research (e.g., Bhugra & Wright, 1995; Campbell & Whiteley, 2006; Cohen et al., 2008; Cove & Boyle, 2002; Hart & Schwartz, 2010; Sandfort & de Keizer, 2001), despite the fact that GBM differ from their heterosexual counterparts on many aspects, including psychosocial risk and maintaining factors (e.g., Kuyper & Vanwesenbeeck, 2011; Meyer, 1995; Rowen & Malcolm, 2003; Shires & Miller, 1998), conceptualization of relationships (e.g., Bhugra & Wright, 1995; LaSala, 2004), and sexual behaviour (e.g., Davies et

al., 1992). Many sexual functioning theorists and researchers highlight the importance of considering psychological, social, cultural, and economic factors in addition to medical factors (e.g. Basson, 2000; Lawrance & Byers, 1995; Tiefer, 1996). Gaining a better understanding of the biopsychosocial factors involved in the development and maintenance of anodyspareunia will further contribute to theories of sexual functioning and GBM's sexual identities and is important for the development of effective clinical assessment measures and appropriate medical and psychological treatments for GBM with anodyspareunia. Using an online questionnaire consisting of a series of self-report measures, this dissertation recruited a diverse sample of GBM in order to improve upon the limited generalizability of previous studies investigating anodyspareunia.

This dissertation consisted of six principle aims. A summary of the relevant literature, objectives and hypotheses, study method, and results are presented separately for each aim. Aim 1 evaluated the diagnostic criteria for Genito-Pelvic Pain/Penetration Disorder among GBM with and without pain. Aim 2 provided a systematic description of the symptom and biopsychosocial profiles of GBM with pain versus GBM without pain using latent class analysis. Aim 3 examined possible correlates of GPPPD by comparing GBM with no pain, GBM who met full criteria for GPPPD, and GBM who met partial criteria for GPPPD. Aim 4 tests a theoretical model of maintaining factors of anodyspareunia among GBM with GPPPD using structural equation modelling. Aim 5 assessed the proportion of GBM with and without pain who sought treatment in the past for anodyspareunia and identified barriers to seeking treatment among GBM with GPPPD specifically. Aim 6 investigated the affects of GPPPD on GBM's self-identified anal sex role.

General Method

Participants

Gay, bisexual, and queer men (GBM) with anodyspareunia and GBM who experience pain-free receptive anal intercourse were recruited through community posters in Toronto, Ontario, Canadian-wide online advertisements, and flyers distributed to health practitioners serving GBM across Canada (see Appendix A). In general, participants were eligible if they: 1) identified as male; 2) reported having a penis and being assigned male sex at birth 3) identified as gay, bisexual, or queer; 4) reported engaging in any type of sexual activity with another male during the past six months; 5) were over the age of 18 years old; 6) were able to speak and read in English; and 7) currently resided in Canada and/or held a Canadian bank account. Participants with anodyspareunia were required to report recurrent and frequent (i.e., "more than half the time" or "always or almost always") pain before, during, or after engaging in receptive anal intercourse/penetration for a minimum duration of six months. Participants in the control group were eligible if they reported pain-free (i.e., "almost never or never," "less than half the time," or "about half the time") receptive anal intercourse/penetration during most sexual encounters in their lifetime.

Figure 2 depicts the flow of inclusion and exclusion for the final sample. A total of 452 participants consented to complete the online study survey package. Data belonging to 29 (6.4%) participants were removed due to fraud, duplication, or ballot stuffing (i.e., respondents completing the survey multiple times) and 15 (3.3%) participants because they did not complete the survey. A total of 39 (8.6%) participants were ineligible. Of the ineligible participants, 9 (2.0%) identified as transmen, 11 (2.4%) identified as two-spirited, 6 (1.3%) indicated that they were not born with a penis and assigned male at birth, 1 (0.2%) endorsed a heterosexual sexual

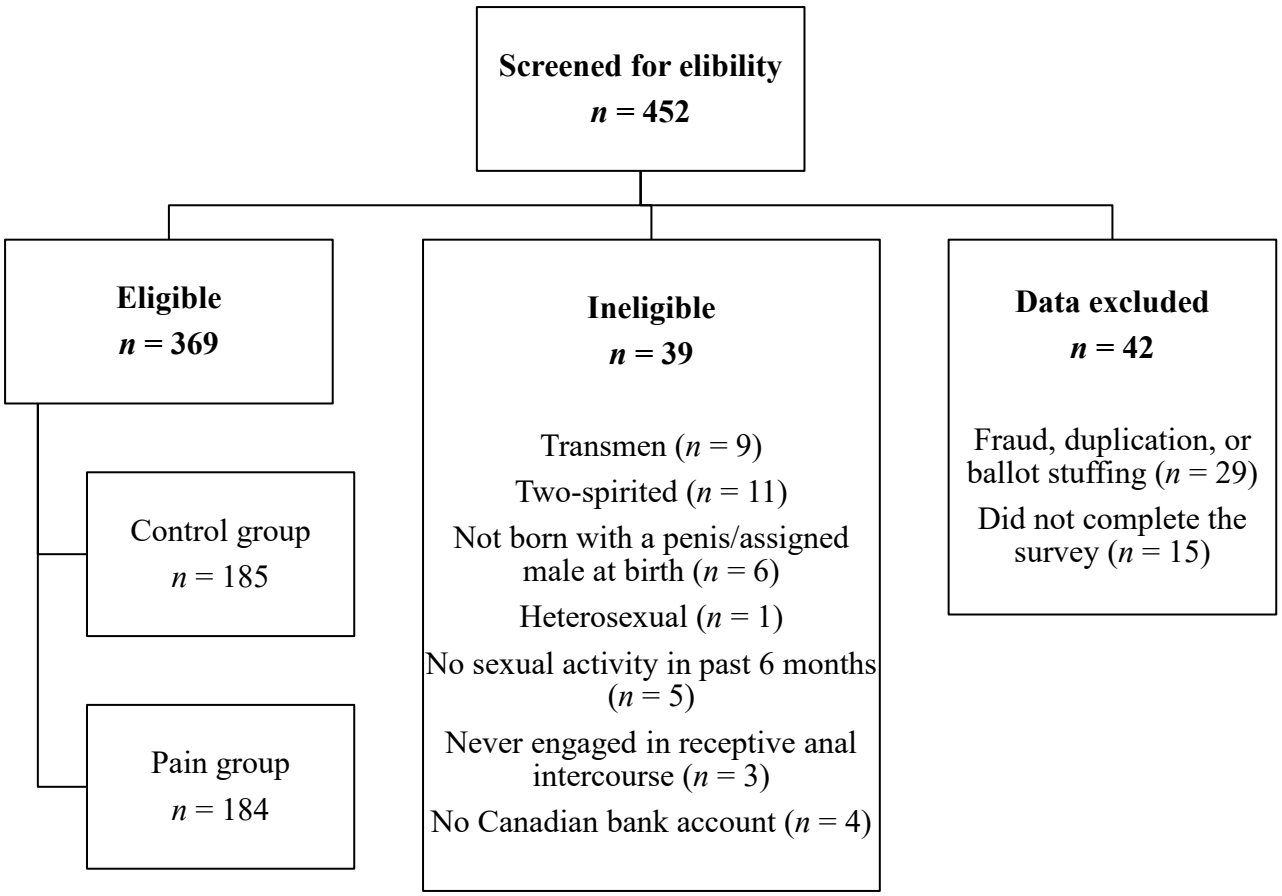

Figure 2. Flow of participants screened for the study.

orientation, 5 (1.1%) reported that they had not engaged in sexual activity in the past 6 months, 3 (0.6%) reported that they had never engaged in receptive anal intercourse, and 4 (0.9%) indicated that they did not hold a Canadian bank account. In order to control for possible anatomical differences between individuals born with and without a penis, individuals who indicated that they were not born with a penis and assigned male at birth were excluded. Similarly, transmen and two-spirited individuals were ineligible in an effort to control for possible differences in anatomy, hormones, and psychosocial determinants of health. Participants who indicated that they wished to receive compensation for their participation and did not hold a Canadian bank account were informed that they were ineligible due to the author's inability to send money to non-Canadian financial institutions and the participant's inability to receive compensation in-person. Comparisons between eligible participants and those who were removed were not possible due to the fact that survey directed ineligible participants to the end of the survey. A stratified sample of pain-free controls and GBM with recurrent pain was recruited. The final sample included 369 GBM (ranging from 18 to 74 years old), of which 185 reported experiencing pain-free receptive anal intercourse/penetration at least half of the time (i.e., "almost never or never," "less than half the time," or "about half the time") and 184 reported recurrent and frequent pain during receptive anal intercourse/penetration (i.e., "more than half the time" or "always or almost always").

Procedure

Interested participants were directed to the study's Facebook page, where they were provided a link to the study's online self-report questionnaire package (see Appendix B). Before completing the survey package, participants were provided a digital informed consent form (see Appendix C). Participants who provided their consent, subsequently, completed a brief screening

questionnaire to determine eligibility and assess pain frequency. Participants who did not meet eligibility criteria or who belonged to the group that was already fully recruited (e.g., pain-free control or anodyspareunia group) were thanked, informed that they were not eligible, and directed to the end of the survey. Completion of the survey took approximately an hour. Participants who completed the survey package were compensated $10 for their participation. Following the completion of the study, participants were provided a list of community resources, including mental health counseling services (see Appendix D and E). This study was reviewed and approved by Ryerson University's Research Ethics Board.

Measures

Sociodemographic characteristics. Participants completed a demographic questionnaire where they indicated their age, gender identity, sexual orientation, relationship status, employment status, highest level of education, annual income, religion, and ethnic background. Because this is an Internet-based study, participants were also asked to indicate the geographical location in which they currently reside. Table 1 provides the final sample's sociodemographic characteristics.

Aim 1: Applicability of DSM-5 GPPPD Criteria for GBM with Anodyspareunia

Aim 1: Objectives and Hypotheses

In an attempt to address the limitations of the previous classification system, the diagnostic criteria for sexual pain disorders were updated in the DSM-5 (APA, 2013). The new criteria for GPPPD are better able to apply to men and conceptualize genital pain as occurring on various continua. However, the validity of the diagnostic criteria for GPPPD has not been examined among GBM who experience pain during receptive anal intercourse/penetration.

Table 1

Sociodemographic Characteristics of the Final Sample

Variable	N = 369 *n (%)*
Gender	
Male	333 (89.8)
Queer	38 (10.2)
Sexual Orientation	
Gay	316 (85.3)
Bisexual	32 (8.6)
Queer	22 (5.9)
Pansexual	1 (0.3)
Ethnicity	
White	209 (56.3)
Black	10 (2.7)
Latin American	23 (6.2)
South Asian	14 (3.8)
East/Southeast Asian	33 (8.9)
Middle Eastern	8 (2.2)
Aboriginal/Métis/Inuit	6 (1.6)
Two or more ethnicities	66 (17.8)
Highest Education	
Some high school	7 (1.9)

Completed high school	32 (8.6)
Some secondary education	98 (26.4)
Completed secondary education	141 (38.0)
Some graduate or professional school	28 (7.5)
Completed graduate or professional school	63 (17.0)
Annual Income	
Under $20 000	107 (28.8)
$20 000 - $39 999	97 (26.1)
$40 000 - $59 999	70 (18.9)
$60 000 - $79 999	37 (10.0)
Over $80 000	39 (10.5)
Prefer not to answer	21 (5.7)
Relationship status	
Single	204 (55.0)
Partnered	166 (44.7)
	M (SD)
Age	31.26 (10.85)

Aim 1 assessed the validity of the diagnostic criteria for GPPPD among GBM with and without anodyspareunia. Similar to the findings of Damon and Rosser (2005), it was hypothesized that the DSM-5 diagnostic criteria for GPPPD would be a good fit for a large proportion of GBM experiencing pain during receptive anal intercourse and would not be a good fit for GBM without anodyspareunia.

Aim 1: Method

Participants

All GBM in the final sample (N=369) were included.

Measures

Pain frequency. Based on the other self-report measures of sexual functioning (e.g., Coyne et al., 2010; Symonds et al., 2007), participants indicated how often over the past six months and during their lifetime they experienced pain during receptive anal intercourse on a 5-point Likert-type scale (ranging from 0 = *almost never or neve*r to 4 = *almost always or always*).

Pain severity. The short form of the McGill Pain Questionnaire (SF-MPQ: Melzack, 1987) includes three measures of pain intensity. First, participants rated the intensity of 15 pain descriptors, which includes 11 sensory (e.g., throbbing) and four affective (e.g., tiring/exhausting) descriptors, on a 4-point Likert-type scale (ranging from 0 = *none*, 3 = *severe*). Pain intensity can be determined based on total sensory intensity scores, total affective intensity scores, and overall total intensity scores. Higher scores represent higher pain intensity. Second, the Present Pain Intensity asked participants to indicate the intensity of their pain right now on a 6-point Likert-type scale (ranging from 0 = *no pain*, 5 = *excruciating*). Because participants were not likely to experience pain at the time of assessment, the item wording was amended to ask participants to rate the intensity of the pain during receptive anal intercourse when at it is: a)

worst (Worst Pain Intensity [WPI]) and b) best (Best Pain Intensity [BPI]) based on the long form of the MPQ (Melzack, 1975). Third, participants rated their average pain intensity during receptive anal intercourse using a 10-point Visual Analogue Scale. The SF-MPQ exhibited high internal consistency among rheumatoid arthritis and fibromyalgia patients (α = .73 to .89; Burckhardt & Bjelle, 1994; Hawker, Mian, Kendzerska, & French, 2011). Similarly, the SF-MPQ demonstrated high internal consistency in the current sample of GBM (α = .87). The total, sensory, and affective subscales demonstrated strong test- retest reliability over a five day period among osteoarthritis patients (r = .96, r = .95, r = .88, respectively; Grafton, Foster, & Wright, 2005).

Pain catastrophizing. The Pain Catastrophizing Scale (PCS; Sullivan et al., 1995) contains 13-items to assess thoughts and feelings experienced during pain. The PCS consists of three subscales: rumination, magnification, and helplessness. The rumination subscale includes 4-items measuring ruminative thoughts, worry, and the inability to inhibit pain-related thoughts. Exaggeration of the unpleasantness of pain situations and expectancies for negative outcomes are assessed using the 3-item magnification subscale. The helplessness subscale consists of 6-items to assess catastrophic thinking in relation to pain and the inability to deal with painful situations. Items were rated on a 5-point Likert-type scale (ranging from 0 = *not at all*, 4 = *all the time*). Higher scores indicate higher rumination, magnification, helplessness, and overall pain catastrophizing. A clinically significant cut-off score on the PCS has not yet been identified in the literature. Wideman, Adams, and Sullivan (2009) employed a total cut-off score of 20 in their pain prevention study. Two studies found mean total scores of 22 among pain outpatients (Osman et al., 2000; Scott, Wideman, & Sullivan, 2014). Scott, Wideman, and Sullivan (2014)

demonstrated that a total score of 24 was associated with high pain intensity following the completion of a treatment program.

Among a university student sample, all three subscales (rumination, α = .87; magnification, α = .60; helplessness, α = .79) and the total score of the entire measure (α = .87) demonstrated high internal consistency (Sullivan et al., 1995). Similarly, in an adult community sample and pain outpatient sample, all three subscales (rumination, α = .95; magnification, α = .88; helplessness, α = .91 and rumination, α = .85; magnification, α = .75; helplessness, α = .86, respectively) and the total score of the entire measure (α = .95 and α = .92, respectively) demonstrated high internal consistency (Osman et al., 2000). In the present sample, the total score of the PCS (α = .96) as well as all three subscales exhibited high internal consistency (rumination, α = .93; magnification, α = .78; helplessness, α = .93). The PCS demonstrated good criterion validity, as it was able to distinguish between community adults and pain outpatients (Osman et al., 2000). The PCS also demonstrated good construct validity among a university student sample and patients with nerve entrapment and radiculopathy (Sullivan et al., 1995). In addition, the PCS demonstrated good discriminant validity, as it was conceptually distinct from measures of depression, trait anxiety, and negative affectivity (Sullivan et al., 1995).

Pain-related distress. Participants indicated how much distress the pain during receptive anal intercourse has caused over the past six months on a 7-point Likert-type scale (ranging from 1 = *not at all* to 7 = *extremely*).

Pain-related interpersonal difficulties. Participants indicated how much difficulty the pain during receptive anal intercourse has caused them in their romantic, sexual, or interpersonal relationships over the past six months on a 7-point Likert-type scale (ranging from 1 = *none* to 7 = *severe*).

Pain onset. As per the procedures developed by Damon and Rosser (2005), participants reported whether pain during receptive anal intercourse was life-long ("I have had pain during receptive anal intercourse since I first tried anal sex"), acquired ("There was a time when I enjoyed receptive anal sex before it became painful"), or situational ("Receptive anal intercourse is only painful with certain partners or in certain situations"). Participants also indicated at what age the pain symptoms began (Gordon et al., 2003).

Data Analyses

The diagnostic criteria of GPPPD, as per the DSM-5 (APA, 2013), are: A) persistent and recurrent difficulties with one or more of the following – vaginal penetration during intercourse; marked vulvovaginal or pelvic pain during vaginal intercourse or penetration attempts; marked fear or anxiety about vulvovaginal or pelvic pain in anticipation of, during, or as a result of vaginal penetration; marked tensing or tightening of the pelvic floor muscles during attempted vaginal penetration; B) symptoms must have persisted for a minimum duration of approximately six months; C) symptoms cause clinically significant distress in the individual; D) symptoms are not better explained by a nonsexual mental disorder, severe relationship distress, significant stressors, or the effects of a substance/medication or medical condition. Specifiers include lifelong (i.e., symptoms present since the individual became sexually active) and acquired (i.e., symptoms began after a period of relatively normal sexual function). Severity ratings range from mild, to moderate, to severe distress over the symptoms.

In order to assess the relevance of the aforementioned diagnostic criteria among GBM with anodyspareunia, all references to vaginal intercourse, penetration, and pain were replaced with anal intercourse, penetration, and pain. Frequency and descriptive statistics were examined for each criterion. Participants met criterion A if they: 1) indicated that they experience frequent

(i.e., “more than half the time [75%]” or “almost always or always [100%]”) and moderate to severe (i.e., scores ≥ 3 on the Present Pain Intensity subscale of the SF-MPQ) pain during anal penetration or penetration attempts; and/or 2) reported severe fear and anxiety about anal, rectal, or pelvic pain in anticipation of, during, or as a result of anal penetration (i.e., scores ≥ 22 on the PCS). If participants indicated that these symptoms have persisted for more than six months, criterion B was met. In order to meet criterion C, participants must have indicated that the pain during anal penetration has caused significant personal and interpersonal distress (i.e., “a lot” or “severe”). Participants received the specifier “lifelong” if they indicated that the pain during anal penetration has been present since they first tried anal sex (Damon & Rosser, 2005). The specifier “acquired” was assigned if the participant indicated that there was a time when they enjoyed receptive anal sex before it became painful (Damon & Rosser, 2005).

Aim 1: Results

Table 2 presents the proportion of the sample who endorsed each criterion and whose symptoms met full or partial criteria for GPPPD. Among those within the control group (i.e., reported pain “about half of the time” or less) who met criterion A (*n* = 74), 45 (60.8%) endorsed either A2 or A3 and 29 (39.2%) endorsed both A2 and A3. Regarding the frequency of pain experienced during anal penetration over the past six months among the control group, 55 (29.7%) men indicated “almost never or never,” 58 (31.4%) indicated “less than half the time,” and 72 (38.9%) indicated “about half the time.” Within the subsample of men who reported experiencing pain “about half the time” during anal penetration over the past six months (*n* = 72), 24 (33.3%) met full criteria for GPPPD, 16 (22.2%) met criteria A, but reported no distress or interference, and 32 (44.4%) met no criteria. Within the subsample of men who endorsed experiencing pain “less than half the time” during anal penetration over the past six months (*n* =

Table 2

Genito-Pelvic Pain/Penetration Disorder Criteria between Groups

	Controls (n = 185)	Anodyspareunia (n = 184)
Diagnostic Criteria	Endorsed n (%)	Endorsed n (%)
Criterion A: Persistent or recurrent difficulties with one or more of the following…		
A1 Anal penetration during sexual activity	0 (0)	184 (100)
A2 Marked pain during receptive anal intercourse	68 (36.8)	151 (82.1)
A3 Marked fear or anxiety about pain in anticipation of, during, or as a result of anal penetration	35 (18.9)	124 (67.4)
Criterion C: Symptoms in Criterion A cause…		
C1 Clinically significant distress	40 (21.6)	123 (66.8)

C2 Clinically significant interference	31 (16.8)	100 (54.3)
Met no criteria	111 (60.0)	0 (0)
Met full criteria	36 (19.5)	139 (75.5)
Lifelong	13 (36.1)	83 (59.7)
Acquired	23 (55.6)	56 (40.3)
Criterion A, no distress/interference	38 (20.5)	43 (23.4)

Note. Criterion B states that symptoms reported in Criterion A must have been present for a minimum of six months. Criteria A and C were assessed by asking specifically about symptoms, distress, and interference over the past six months.

58), 10 (17.2%) met full criteria for GPPPD, 14 (24.1%) met criteria A, but reported no distress or interference, and 34 (58.6%) met no criteria. Within the subsample of men who indicated experiencing pain "almost never or never" during anal penetration over the past six months (*n* = 55), two (3.6%) met full criteria for GPPPD, eight (14.5%) met criteria A, but reported no distress or interference, and 45 (81.8%) met no criteria.

Among the GBM with anodyspareunia (i.e., report pain "more than half the time" or "almost always or always) who met criterion A (*n* = 184), 22 (12.0%) only endorsed A1, 49 (26.6%) endorsed A1 and either A2 or A3, and 113 (61.4%) endorsed all three criteria. Regarding the frequency of pain experienced during anal penetration over the past six months, 78 (42.4%) men reported "more than half the time" and 106 (57.6%) reported "almost always or always."

Aim 2: Systematic Description and Subtypes of Anodyspareunia

Aim 2: Objectives and Hypotheses

Sexual pain disorders are heterogeneous in their symptom and biopsychosocial profiles (e.g., Davis et al., 2013; Meana et al., 1997; van Lankveld et al., 2010). Obtaining a systematic description of the frequency, intensity, temporal presentation in relation to penetration, locations, situations, distress, and interference related to anodyspareunia is necessary and currently lacking within the literature. Pain location and the temporal presentation of pain during penetration distinguished between female sexual pain disorders and male chronic pelvic pain (e.g., Davis et al., 2013; Meana et al., 1997). Assessing past and current STIs and prostate and rectal conditions is also important based on subtypes identified among a male chronic pelvic pain population (e.g., Davis et al., 2013).

Aim 2 provided a systematic description of the symptom and biopsychosocial profiles of GBM with and without anodyspareunia. It was hypothesized that pain location and when pain is experienced during receptive anal intercourse would differentiate between groups. In addition, greater pain severity and past and current STIs and prostate and rectal conditions were predicted to differentiate groups. Due to the lack of research regarding anodyspareunia among GBM, pain frequency, distress, interference, and situational factors impacting pain were also explored.

Aim 2: Method

Participants

Similar to Aim 1, the full sample (N = 369) was included.

Measures

Pain frequency, pain severity, and pain-related distress and interference were assessed as described in Aim 1.

Pain temporal presentation. To assess when pain is experienced during receptive anal intercourse, participants indicated whether they experience pain 1) before penetration; 2) at the moment of penetration; 3) once the penis or phallus is fully penetrated; and/or 4) after the penis or phallus withdrawals (Gordon et al., 2003; Meana et al., 1997; Štulhofer & Ajduković, 2011).

Pain location. Participants indicated where they experience pain when they engage or attempt to engage in receptive anal intercourse from the following list of locations: entrance of the anus, inside the anal canal, perineum, prostate, pelvic area, bladder, testes, buttocks, and/or other location(s). Each location was depicted on a diagram (see Figure 3).

Pain situations. Participants were provided a list of sexual (i.e., insufficient lubrication; lack of or inadequate anal foreplay/stimulation; partner's penis is too long; partner's penis is too wide; partner thrusts too fast; partner thrusts too deep; when my partner uses a condom; when I

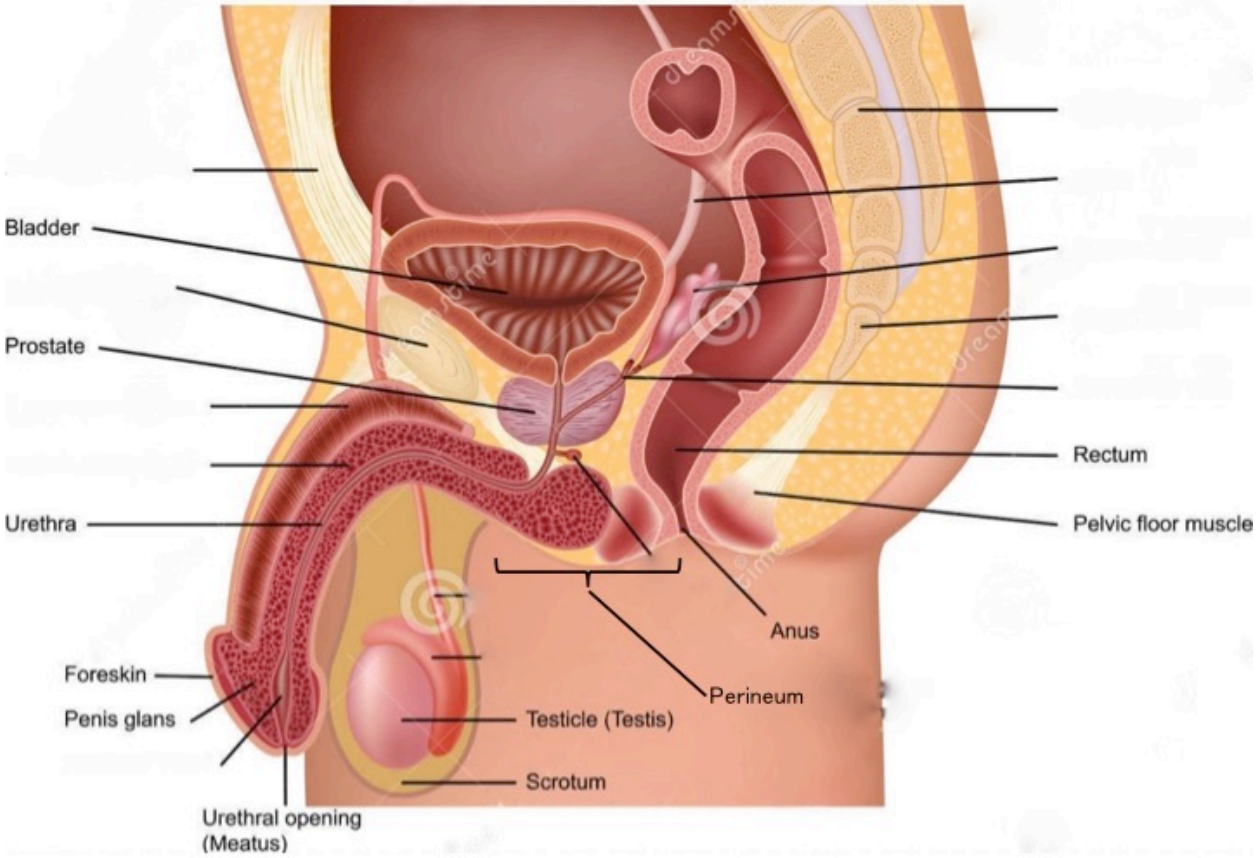

Figure 3. Diagram of the anatomy of the male pelvis and genital region

am not sexually "turned on"; when I do not use "poppers"/muscle relaxants; when I am drunk; when I have used illicit substances; when I am very nervous; when I am unable to relax; when I am tired; when I am stressed) and non-sexual (i.e., during or after defecation; during or after urination; during or after exercising; during or after riding a bicycle; sitting; after eating; during or after medical examinations of the anus, rectum, or prostate; during or after inserting a suppository) situations and asked to indicate how often they experience pain in each situation on a 5-Likert-type scale (ranging from 0 = *almost never or neve*r to 4 = *almost always or always*).

Sexually transmitted infections. Participants were provided a list of common STIs (e.g., chlamydia, gonorrhea, HIV) and asked to indicate whether they have or have ever been diagnosed with each STI by selecting one of the following options: "No, never"; "Yes, in the past"; "Yes, currently"; "I do not know/Never been tested."

Prostate and rectal conditions. Participants were provided a list of common prostate (e.g., enlarged prostate, prostatitis) and rectal problems (e.g., anal fissures, hemorrhoids) and asked to indicate whether they have or have ever been diagnosed with each prostate or rectal condition by selecting one of the following options: "No, never"; "Yes, in the past"; "Yes, currently"; "I do not know/Never been tested."

Data Analyses

Latent class analysis (LCA) was used in order to identify possible distinct pain subtypes. LCA generates a statistical model in order to classify similar symptom and biopsychosocial profiles into distinct subtypes (e.g., Magidson & Vermunt, 2002; Vermunt & Magidson, 2002). This approach aims to minimize variance within groups while maximizing variance between groups (e.g., Magidson & Vermunt, 2002; Vermunt & Magidson, 2002).

LCA possesses numerous advantages compared to other clustering approaches, such as k-means cluster analysis. First, because LCA employs advanced statistical tests, group criterion is less arbitrary, thus reducing biases and misclassification (Magidson & Vermunt, 2002; Vermunt & Magidson, 2002). Second, LCA determines the ideal number of groups based on the data (Magidson & Vermunt, 2002; Vermunt & Magidson, 2002). Finally, in contrast to other clustering approaches, LCA does not require that variables be standardized (Magidson & Vermunt, 2002; Vermunt & Magidson, 2002). LCA also allows for the inclusion of mixed variable types (i.e., continuous and/or categorical variables) as well as covariates (Magidson & Vermunt, 2002; Vermunt & Magidson, 2002).

LCA models were estimated based on the maximum likelihood (ML) method using Mplus statistical modelling software (Version 7; Muthen & Muthen, 2012). Mplus aims to identify the largest log likelihood value, which measures the probability of the observed data in relation to the model (Geiser, 2012). In order to increase the likeliness that the LCA identifies the optimal solution with the largest log likelihood value, it is recommended to specify a higher number of starting value sets (Geiser, 2012). In accordance with these suggestions, 500 sets of random starting values were specified for the initial stage and 50 starting value sets based on the largest log likelihood values found in the first stage were used for the final stage of optimization (Geiser, 2012).

In order to identify the optimal model and number of classes, a series of preliminary LCA models were estimated. The chi-square (χ^2) was examined to assess model fit (Geiser, 2012). However, the χ^2 test uses the chi-square distribution only when the number of parameters is small and the sample size is large (Geiser, 2012). In contrast, the Lo-Mendell-Rubin-likelihood ratio (LMR-LR) uses an approximation of the distribution of the difference between two log

likelihoods, and is therefore, recommended over the χ^2 test (Lo, Mendell, & Rubin, 2001; Nylund, Aapaouhov, & Muthén, 2007). In addition, the LMR-LR test evaluates whether the K-class model fits the data better than the K-1 class model, where a statistically significant *p*-value indicates that the K-1 class model should be rejected in favor of the K-class model (Lo et al., 2001). The Akaike information criteria (AIC), Bayesian information criteria (BIC), and adjusted Bayesian information criteria (aBIC) were examined to compare model fit. The model producing the smallest AIC, BIC, and aBIC as well as statistically significant LMR-LR test was selected (Geiser, 2012; Nylund et al., 2007). The entropy index was also examined to assess the quality of the classification in the selected model (Geiser, 2012). Values close to 1 indicate good classification accuracy (Geiser, 2012).

Selected variables were based on the literature examining female sexual pain disorders (e.g., Meana et al., 1997; van Lankveld et al., 2010) and male chronic pelvic pain (Davis et al., 2013). Categorical variables included pain location and temporal presentation of pain. Continuous variables included pain intensity at its worst, best, and on average (i.e., SF-MPQ-WPI, SF-MPQ-BPI SF-MPQ-VAS), pain frequency, pain-related distress and interference, the frequency of experiencing pain during various sexual and non-sexual situations, and the total number of current or past STIs and prostate and/or rectal conditions. All continuous variables were standardized in order to ease of comparison between scales. Positive values (i.e., above the standardized mean of 0) indicate higher scores, whereas negative values (i.e., below the standardized mean of 0) indicate lower scores.

Aim 2: Results

Model Selection

Table 3 provides the AIC, BIC, aBIC values, the LMR-LR test and *p*-value, and entropy

Table 3

Model Fit Indices of LCA With Increasing Number of Classes for Subgroups of Anodyspareunia

Criteria	2-Class	3-Class	4-Class	5-Class
AIC	35031.09	34183.99	33658.90	33430.62
BIC	35606.77	34978.98	34673.20	34664.23
aBIC	35140.39	34334.93	33851.48	33664.83
LMR-LR test	2705.45	956.10	635.17	338.96
p value for LMR-LR test	0.0001	0.009	0.65	0.71
Entropy	0.94	0.94	0.95	0.93

Note. AIC = Akaike information criteria; BIC = Bayesian information criteria; aBIC = adjusted Bayesian information criteria; LMR-LR = Lo-Mendell-Rubin-likelihood ratio

for the preliminary models. Although the 4-class and 5-class models reached the lowest aBIC values, the larger non-significant LMR-LR test *p*-values indicate that the 3-class model should not be rejected. Furthermore, the lower aBIC and significant LMR-LR test *p*-value suggest that the 2-class model should be rejected in favour of the 3-class model. The entropy value for the 3-class model indicates that the model provides good classification. As a result, the 3-class model was selected.

Latent Class Probability and Class Description

According to the unconditioned probability of each latent class, Class I included 27%, Class II included 45%, and Class III included 28% of the sample (see Table 4). Participants in Class I had a lower probability of reporting pain at any point during the sexual experience (i.e., temporal presentation) and in any location compared to participants in Class II and III (see Table 4). In addition, participants in Class I reported lower pain intensity, pain-related distress and interference, pain frequency, and total number of current and past STIs and prostate and/or rectal conditions than the participants in Class II and III (see Table 5). Participants in Class I also reported lower frequency of experiencing pain in all sexual and non-sexual situations, with the exception of during or after exercising (see Table 6). Therefore, we labeled Class I as the "No/low pain group."

Participants in Class III had the highest probability of reporting pain at any point during the sexual experience (i.e., temporal presentation) and in all locations, with the exception of the prostate and bladder, compared to participants in Class I and II (see Table 4). In addition, participants in Class III reported higher pain intensity, pain-related distress and interference, and pain frequency, as well as total number of current and past STIs and prostate and/or rectal conditions than the participants in Class I and II (see Table 5). Participants in Class III also

Table 4

Sample Prevalence, Latent Class Probability, and Conditional Probability for the 3-Class Model

Indicator	Sample endorsed "Yes" *n* (%)	Latent class I "No/low pain" (*n* = 101)	Latent class II "Moderate pain" (*n* = 166)	Latent class III "High pain" (*n* = 104)
Unconditional probability of each class		0.27	0.45	0.28
Conditional probability of endorsing each item				
Pain temporal presentation				
Before penetration/insertion	12 (3.2)	0.01	0.03	0.06
At the moment of penetration/ insertion	304 (81.9)	**0.69**	**0.85**	**0.90**
Once penis is fully penetrated	137 (36.9)	0.18	0.44	0.44
Once the object is fully penetrated	78 (21.0)	0.07	0.25	0.28
During penile thrusting	160 (43.0)	0.21	0.48	**0.57**
When the object is being thrusted	78 (21.0)	0.06	0.23	0.32
After the penis withdraws	63 (17.0)	0.06	0.17	0.27
After the object withdraws	35 (9.4)	0.03	0.08	0.18
Pain locations				
At the entrance of the anus	266 (71.9)	**0.59**	**0.75**	**0.79**
Inside the anal canal/rectum	197 (53.2)	0.32	**0.61**	**0.62**

Perineum	17 (4.6)	0.01	0.04	0.09
Prostate	28 (7.6)	0.04	0.11	0.06
Pelvic area	30 (8.1)	0.03	0.10	0.10
Bladder	29 (7.8)	0.03	0.10	0.09
Testes	6 (1.6)	0.00	0.02	0.02
Buttocks	4 (1.1)	0.00	0.01	0.02
Other (i.e., abdomen & sigmoid colon)	3 (0.8)	0.00	0.01	0.02

Note. Conditional probabilities higher than 0.50 are boldfaced.

Table 5

Sample Means and Conditional Probability for Pain-Related Factors for the 3-Class Model

Indicator	Overall M (SD)	Latent class I "No/low pain" (n = 101)	Latent class II "Moderate pain" (n = 166)	Latent class III "High pain" (n = 104)
Pain intensity at its worst	2.81 (1.26)	-0.77	0.09	0.61
Pain intensity at its best	0.99 (1.16)	-0.50	-0.12	0.68
Pain intensity on average	4.90 (2.36)	-0.92	0.002	0.81
Pain-related distress	2.40 (1.09)	-0.80	0.04	0.71
Pain-related interference	2.32 (1.15)	-0.69	-0.02	0.69
Pain frequency	3.33 (1.42)	-0.85	0.05	0.75
Total Number of Prostate/ Rectal Conditions	0.98 (1.08)	-0.16	-0.14	0.25
Total Number of STIs	1.45 (1.83)	0.25	0.34	0.52

Note. All variables were continuous and standardized in order to more easily compare between measures. Positive values (i.e., above the standardized mean of 0) indicate higher scores and negative values (i.e., below the standardized mean of 0) indicate lower scores. STIs = sexually transmitted infections.

Table 6

Sample Means and Conditional Probability for Sexual and Non-Sexual Situations for the 3-Class Model

Indicator	Overall M (SD)	Latent class I "No/low pain" (n = 101)	Latent class II "Moderate pain" (n = 166)	Latent class III "High pain" (n = 104)
Sexual situations				
Insufficient lubrication	2.75 (1.35)	-0.70	0.002	0.63
Lack of or inadequate anal foreplay/stimulation	2.54 (1.31)	-0.77	0.01	0.63
Partner's penis is too long	1.83 (1.49)	-0.58	-0.22	0.86
Partner's penis is too wide	2.37 (1.41)	-0.78	-0.06	0.76
Partner thrusts too fast	1.97 (1.41)	-0.80	-0.12	0.88
Partner thrusts too deep	2.22 (1.43)	-0.79	-0.09	0.82
Partner uses a condom	1.51 (1.59)	-0.63	-0.20	0.82
When I am not sexually "turned on"	2.18 (1.51)	-0.82	-0.03	0.77
When I do not use "poppers"/muscle relaxants	1.58 (1.52)	-0.87	-0.09	0.99
When I am drunk	1.05 (1.18)	-0.80	-0.21	1.06
When I am high/use illicit substances	1.00 (1.31)	-0.73	-0.16	1.11

When I am very nervous	2.48 (1.41)	-1.17	0.09	0.79
When I am unable to relax	2.64 (1.32)	-1.25	0.12	0.81
When I am tired	1.70 (1.57)	-0.98	-0.07	0.99
When I am stressed	2.04 (1.53)	-1.10	-0.02	1.01
The object (e.g., sex toy) is too long	1.70 (1.57)	-0.73	-0.28	1.04
The object (e.g., sex toy) is too wide	2.26 (1.53)	-0.83	-0.08	0.81
One finger is inserted into my anus	1.20 (1.37)	-0.64	-0.13	0.70
Two fingers are inserted into my anus	1.53 (1.40)	-0.82	-0.10	0.84
Three fingers are inserted into my anus	2.08 (1.45)	-0.99	-0.04	0.91
Four fingers are inserted into my anus	2.52 (1.55)	-1.10	0.15	0.77
Five fingers are inserted into my anus	2.79 (1.53)	-1.04	0.17	0.71
Non-sexual situations				
During/after defecation	0.88 (1.11)	-0.40	0.09	0.18
During/after urination	0.14 (0.52)	-0.06	-0.002	0.06
During/after exercising	0.19 (0.60)	-0.07	-0.10	0.22

During/after riding a bicycle	0.34 (0.75)	-0.23	-0.004	0.20
During/after medical examinations of the anus, rectum, or prostate	0.87 (1.23)	-0.48	-0.06	0.52
During /after inserting a suppository	0.56 (1.04)	-0.40	0.05	0.31
Sitting	0.33 (0.72)	-0.26	-0.01	0.23
After eating	0.10 (0.38)	-0.10	-0.07	0.20

Note. All variables were continuous and standardized in order to more easily compare between measures. Positive values (i.e., above the standardized mean of 0) indicate higher scores and negative values (i.e., below the standardized mean of 0) indicate lower scores. For the above situations, participants were asked to indicate how often they experience pain in each situation on a 5-Likert-type scale (ranging from 0 = *almost never or neve*r to 4 = *almost always or always*).

reported higher frequency of experiencing pain in all sexual and non-sexual situations (see Table 6). We labeled Class III as the "High pain group."

Participants in Class II are best placed between participants in Class I and III. The probability of participants in Class II reporting pain at any point during the sexual experience (i.e., temporal presentation) and in all locations was higher than Class I and lower than Class III, with the exception of the prostate and bladder, which were highest in Class II (see Table 4). Similarly, participants in Class II reported higher pain intensity, pain-related distress and interference, and pain frequency, as well as total number of current and past STIs and prostate and/or rectal conditions than Class I and lower than Class III (see Table 5). Participants in Class II also reported lower frequency of experiencing pain in all sexual and non-sexual situations than Class III and higher frequencies that Class I (see Table 6). We described Class II as the "Moderate pain group."

Comparison of GPPPD Diagnostic Criteria and Latent Class Membership

For the most part, the latent class membership aligned with the GPPPD diagnostic criteria (see Table 7). According to the LCA model, four (3.6%) participants who met no diagnostic criteria for GPPPD were classified into the high pain group and 10 (5.7%) men who met full criteria were classified into the low pain group. Among the four GBM who met no diagnostic criteria for GPPPD and were classified into the high pain group, two reported an HIV-positive serostatus, one reported more than six past and current STIs, and one reported anal fissures, hemorrhoids, and irritable bowel syndrome. Upon manual examination of the data, the 10 men who met full criteria and were classified in the low pain group endorsed frequent and severe pain during anal penetration as well as distress and interference as a result of the pain. However, these GBM reported experiencing low depressive, cognitive anxiety, and somatic anxiety symptoms,

Table 7

Comparison of GPPPD Diagnostic Criteria to Latent Class Membership

Class Membership	No criteria (*n* = 111) *n (%)*	Full criteria (*n* = 176) *n (%)*	Full criteria, no distress/ interference (*n* = 81) *n (%)*
No/low pain	70 (63.0)	10 (5.7)	19 (23.5)
Moderate pain	37 (33.3)	85 (48.3)	43 (53.1)
High pain	4 (3.6)	81 (46.0)	19 (23.5)

as well as low pain catastrophizing, pain-related fear, and average and worst pain intensity, similar to GBM who met no criteria and GBM classified in the Low pain class. Regarding the GBM who met full criteria and reported no distress or interference, the majority (53.1%) was assigned to the moderate pain class and the remainder was equally distributed between the low and high pain classes.

Aim 3: Correlates of Anodyspareunia Between Diagnostic Groups and Latent Classes

Aim 3: Objectives and Hypotheses

According to the fear-avoidance model of sexual pain, previously experienced pain during penetration elicits thoughts of re-experiencing pain, and subsequently, activates the fear and avoidance cycle (Thomtén & Linton, 2013). Etiological factors associated with female sexual pain disorders include biological factors (e.g., infections or hypertonic pelvic floor muscles), situational factors (e.g., painful first intercourse or lack of lubrication), and childhood or lifetime sexual or physical abuse (Bergeron et al., 2015). Many of these etiological factors may also be relevant to the development of anodyspareunia among GBM. Compared to heterosexual men, GBM are more likely to report current and/or past STIs (Wolitski & Fenton, 2011), childhood sexual and physical abuse (e.g., Friedman et al., 2011) and harassment during childhood and adulthood for being gay or bisexual (e.g., D'Augelli et al., 2002). For GBM, it is possible that hypertonic sphincter muscles around the anus and the involuntary tightening of or difficulty relaxing these muscles may play a role in the development of anodyspareunia. However, because this dissertation was constrained to a specific timeframe and by limited resources, it was, unfortunately, not feasible to collect longitudinal data and adequately assess participants' anal sphincter muscle tonicity. Therefore, the remaining etiological factors were examined cross-sectionally through self-report questionnaires.

The fear-avoidance model also describes numerous pain-related maintaining factors that likely differ between those with and without anodyspareunia. Pain catastrophizing is experienced to a greater degree among women with sexual pain disorders than those without (Cherner & Reissing, 2013; Pukall et al., 2002; Payne et al., 2005, 2007; Sutton et al., 2009; Thomtén & Karlsson, 2014; Thomtén et al., 2014), and is positively associated with pain severity (Kao et al., 2012; Sutton et al., 2009; Thomtén et al., 2014) and pain-related fear (Crombez et al., 1998). Experiencing pain during vaginal and anal penetration is also associated with lower frequencies of intercourse among women and GBM with sexual pain (e.g., Cherner & Reissing, 2013; Damon & Rosser, 2005; Masheb et al., 2004; Meana et al., 1997; Reed et al., 2012).

Sexual pain disorders are also reliably associated with various negative psychological and interpersonal difficulties (e.g., Bergeron et al., 2015; Meana, 2009; van Lankveld et al., 2010). Greater pain frequency and severity was associated with higher anxiety and social internalized homophobia in a sample of GBM with anodyspareunia (Rosser et al., 1998), although there were no differences in anxiety and social internalized homophobia between GBM men with and without anodyspareunia (Damon & Rosser, 2005). Furthermore, heterosexual men with chronic pelvic pain reported higher depressive symptoms and sexual dysfunction than pain-free controls (e.g., Smith, Pukall, Tripp, & Nickel, 2007). Experiencing a sexual difficulty was also associated with lower sexual and relationship satisfaction among American GBM (Rosser et al., 1997). Currently, there is a paucity of research examining the psychosocial impact of anodyspareunia on GBM. Understanding the effects of anodyspareunia on GBM is critical to the development of psychosocial interventions.

Aim 3 sought to identify possible correlates of anodyspareunia among GBM based on research examining the etiological factors identified in the female sexual pain literature and the

psychosocial impact of sexual pain disorders. In addition, Aim 3 explored differences in pain-related factors across GPPPD diagnostic groups and latent classes. First, it was expected that compared to pain-free controls, GBM with anodyspareunia would report more current and past STIs and prostate and rectal conditions as well as greater childhood sexual and physical abuse, sexual coercion, homophobic harassment and discrimination, and internalized homophobia. Second, it was hypothesized that GPPPD diagnostic groups would differ on pain catastrophizing, pain-related fear, pain-related escape and avoidance behaviours, pain duration as well as cognitive and somatic anxiety symptoms related to the pain. Third, it was hypothesized that GBM with anodyspareunia would report higher depressive and trait anxiety symptoms and greater sexual dysfunction than GBM without anodyspareunia.

Aim 3: Method

Participants

Differences in possible correlates of anodyspareunia were examined between GBM who met no criteria for GPPPD (n = 111), GBM who met full GPPPD criteria (n = 175), and GBM who reported pain, but no distress (n = 81).

Measures

Etiological correlates. Past and current STIs and prostate and rectal conditions were assessed as described in Aim 2.

Childhood sexual and physical abuse. The short form of the Childhood Trauma Questionnaire (CTQ-SF; Bernstein et al., 2003) assesses a broad range of maltreatment experienced during childhood and adolescence. The CTQ-SF includes five subscales (i.e., physical, sexual, and emotional abuse and emotional and physical neglect), each consisting of 5-items, as well as three minimization/denial items used to detect underreporting of childhood and

adolescent maltreatment. For the purpose of this dissertation, only the physical abuse and sexual abuse subscales were examined, since a history of physical and sexual abuse is correlated with the development of female sexual pain disorders (e.g., Bergeron et al., 2015). According to the scale developers, physical abuse was defined as "bodily assaults on a child by an adult or older person that posed a risk of or resulted in injury." Sexual abuse was defined as "sexual contact or conduct between a child younger than 18 years of age and an adult or older person." Participants rated on a 5-point Likert-type scale (ranging from 1 = *never true*, 5 = *very often true*) the accuracy of each statement. Total scores on each subscale range from 5 to 25, with higher scores representing greater maltreatment.

The physical abuse subscale of the CTQ-SF demonstrated high internal consistencies across a variety of populations (adolescent psychiatric inpatients, $\alpha = .86$; Canadian gay and bisexual men, $\alpha = .89$, Hart et al., 2017; normative community adult sample, $\alpha = .83$, Bernstein et al., 2003; White, African American, Latina/o American, and Asian American gay, lesbian, and bisexual adults, $\alpha = .86$, Balsam, Lehavot, Beadnell, & Circo, 2010). The sexual abuse subscale also demonstrated high internal consistencies across a variety of populations (adolescent psychiatric inpatients, $\alpha = .95$; Canadian gay and bisexual men, $\alpha = .92$, Hart et al., 2017; normative community adult sample, $\alpha = .92$, Bernstein et al., 2003; White, African American, Latina/o American, and Asian American gay, lesbian, and bisexual adults, $\alpha = .94$, Balsam et al., 2010). In the current sample, the internal consistencies were high for both subscales ($\alpha = .86$ and $\alpha = .94$, respectively). As well, both subscales demonstrated good criterion, convergent, and divergent validity (Bernstein et al., 2003).

Sexual coercion. An adapted version of the Sexual Experiences Survey – Short Form Victimization (SES-SFV; Koss et al., 2007) was used to measure the frequency of unwanted

sexual experiences a) over the past 12 months, and b) since the age of 18 years. The SES-SFV includes 7-items assessing unwanted sexual contact (e.g., "fondled, kissed, or rubbed up against"), oral-genital contact (e.g., "oral sex with me or made me have oral sex with them"), and anal penetrative behaviours (e.g., "penis into my anus or inserted fingers or objects"). Different methods of coercion (e.g., physical force, verbal aggression, alcohol or drug use) were assessed for each type of unwanted sexual experience. Participants indicated on a 4-point Likert-type scale (ranging from 0 = *0 times*, 3 = *3 or more times*) how often each method of coercion occurred for each unwanted sexual experience. Participants also reported the sex of person or persons who perpetrated these unwanted sexual acts (i.e., "female only," "male only," "both male(s) and female(s)," "I reported no experiences"). Both scales demonstrated high internal consistency (past year, $\alpha = .96$; adulthood, $\alpha = .97$) in the present sample.

Harassment and discrimination. To assess experiences of harassment, rejection, and discrimination due to one's sexual minority status, the Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS; Szymanski, 2006) was administered. The HHRDS contains 14-items to measure the frequency of discriminatory events experienced over the past year. Participants indicated the frequency of each event on a 5-point Likert-type scale (ranging from 1 = *never*, 5 = *almost always*). Total scores range from 14 to 70, with higher scores representing greater heterosexist harassment, rejection, and discrimination experiences. Among a sample of GBM, the HHRDS demonstrated high internal consistency ($\alpha = .91$; Szymanski, 2009), as it did within the present sample, $\alpha = .92$. In addition, the HHRDS demonstrated good convergent and discriminant validity among sexual minority samples, as it was associated with a range psychological distress measures and shown to be conceptually distinct from internalized homophobia (Szymanski, 2006, 2009).

Internalized homophobia. The Short Internalized Homonegativity Scale (SIHS; Currie, Cunningham, & Findlay, 2004) is a 13-item self-report measure to assess covert and contemporary attitudes toward homosexuality. More specifically, the SIHS assesses one's public identification as gay (i.e., "I am comfortable about people finding out that I am gay"), comfort with gay men (i.e., "Gay men tend to flaunt their sexuality inappropriately"), and social comfort with gay men (i.e., "I feel comfortable in gay bars"). Participants indicated on a 7-point Likert scale (ranging from 1 = *strongly disagree* to 7 = *strongly agree*) the extent to which they agree with each statement. Total scores range from 13 to 91, where higher scores reflect greater internalized homophobia. The SIHS exhibited adequate internal consistency for the full scale ($\alpha = .78$; Currie et al., 2004), as it did within the present sample, $\alpha = .77$.

Pain-related factors. Pain catastrophizing and pain-related descriptors were assessed as described in Aim 1.

Pain-related fear and avoidance. To assess fear and avoidance responses to pain, the short version Pain Anxiety Symptom Scale (PASS-20; McCracken & Dhingra, 2002) was administered. The PASS-20 contains four subscales (i.e., fear of pain, cognitive anxiety, somatic anxiety, escape and avoidance), each consisting of 5-items. According to the developers, the fear of pain subscale measures "fearful thoughts related to the experience of pain or anticipated negative consequence of pain" (McCracken et al., 1992). The cognitive anxiety subscale assesses "cognitive symptoms related to the experience pain, such as racing thoughts or impaired concentration" whereas the somatic anxiety subscale assesses "physiological arousal symptoms related to the experience of pain" (McCracken et al., 1992). The escape and avoidance subscale measures "overt behavioural responses to pain" (McCracken et al., 1992). Items were rated on a 5-point Likert-type scale (ranging from 0 = *never*, 5 = *always*). Higher scores indicate higher fear

of pain, cognitive and somatic anxiety, and escape and avoidance behaviours. Among chronic pain outpatients, all subscales (fear of pain, α = .82; cognitive anxiety, α = .86; somatic anxiety, α = .81, escape and avoidance, α = .75) and the total score of the entire measure (α = .91) demonstrated high internal consistency (McCracken & Dhingra, 2002). In the present sample, the total score of the PASS-20 (α = .92) as well as all three subscales exhibited high internal consistency (fear of pain, α = .86; cognitive anxiety, α = .90; somatic anxiety, α = .86; escape and avoidance, α = .77). The PASS-20 also demonstrated good convergent, criterion, and discriminant validity (McCracken & Dhingra, 2002).

Pain duration. Participants were asked to indicate in minutes, how long the pain following anal penetration persists.

Sexual functioning.

Erectile dysfunction. The erectile function subscale of the International Index of Erectile Function for Men Who Have Sex With Men (IIEF-MSM-EF; Coyne et al., 2010) consists of 11-items to assess self-reported erectile function over the past four weeks. Participants rated their erection frequency, firmness, maintenance frequency, maintenance ability, and confidence as well as penetration ability. Erection maintenance frequency and ability were assessed separately for receptive and insertive anal intercourse, and non-penetrative sexual activity. Items were rated using a 6-point Likert-type scale (ranging from 0 = *never*, 5 = *always/almost always*). Total cutoff scores of erectile dysfunction severity are based on the six items that performed the highest (r = .57 to .68; Coyne et al., 2010). Total scores range from 0 to 30, where a score of 10 or less is indicative of severe erectile dysfunction, 11-15 of moderate erectile dysfunction, 16-24 of mild/moderate erectile dysfunction, and 25-30 of no erectile dysfunction (Coyne et al., 2010; Shindel et al., 2012). The IIEF-MSM-EF demonstrated high internal consistency (α = .82; Coyne

et al., 2010). When only considering the six items that performed the highest, the standardized Cronbach's alpha increased to 0.85 (Coyne et al., 2010). In the current sample, the internal consistency was acceptable (α = .76).

Sexual desire. To assess sexual desire, the Sexual Desire Inventory-2 (SDI-2; Spector, Carey, & Steinberg, 1996) was administered. The SDI-2 consists of 14-items assessing interest in dyadic and individual sexual behaviour, sexual thoughts, and distress associated with lack of sexual activity. Dyadic and individual sexual desire are scored as separate subscales. The dyadic sexual desire subscale includes 8-items and refers to interest in engaging in sexual activity with another person. The individual sexual desire subscale contains 3-items and measures interest in engaging in sexual behaviour by oneself. The dyadic and individual sexual desire subscales demonstrated high internal consistency (α = .86 and α = .96, respectively; Spector et al., 1996). In the present sample, the dyadic sexual desire subscale demonstrated good internal consistency (dyadic, α = .82) and the individual sexual desire subscale demonstrated acceptable internal consistency (α = .76).

Premature ejaculation. The Premature Ejaculation Diagnostic Tool (PEDT; Symonds et al., 2007) is a 5-item self-report measure of premature ejaculation and its impact on the individual and their partner(s). Total scores range from 0 to 20, with higher scores representing worse ejaculatory control. A score of 9 or 10 indicated "high risk of premature ejaculation" and a score of 11 or greater indicated premature ejaculation disorder (Symonds et al., 2007). The PEDT demonstrated acceptable internal consistency (α = .71) and good test-retest reliability (r = .73; Symonds et al., 2007). The PEDT demonstrated good criterion validity, as it was able to distinguish between men with premature ejaculation disorder and men without self-reported

premature ejaculation (Symonds et al., 2007). The PEDT demonstrated high internal consistency (α = .85) in the present sample.

Delayed ejaculation. To assess delayed ejaculation, the Male Sexual Health Questionnaire-Ejaculatory Dysfunction (MSHQ-EjD; Rosen et al., 2007) was administered. The MSHQ-EjD includes 5-items measuring frequency, delay, volume, strength, and dry ejaculation. Items were rated on a 6-point Likert-type scale (e.g., ranging from 0 = *none of the time*, 5 = *all of the time*). The MSHQ-EjD demonstrated high internal consistency (α = .79) and good test-retest reliability (*r* = .74; Rosen et al., 2007). The MSHQ-EjD demonstrated questionable internal consistency (α = .66) in the present sample, and was, therefore, not included in the analyses.

Sexual-esteem and depression. The Sexuality Scale – Short Form (Snell & Papini, 1989) is a self-report measure to assess sexual-esteem, sexual-depression, and sexual-preoccupation. For the purpose of this study, only the sexual-esteem and sexual-depression subscales were administered. The 5-item sexual-esteem subscale assesses confidence in one's ability to relate sexually to another individual (e.g., "I am a good sexual partner"). The 5-item sexual-depression subscale assesses one's propensity to feel disappointed and discouraged about one's ability to relate sexually to another person (e.g., "I am disappointed about the quality of my sex life"). Participants indicated on a 5-point Likert-type scale (ranging from 0 = *strongly disagree* to 4 = *strongly agree*) the extent to which they agree with each statement. Subscale total scores range from 0 to 20, where higher scores reflect higher positive scores sexual-esteem or sexual-depression. The sexual-esteem (α = .91-.93) and sexual-depression (α = .85-.94) subscales demonstrated high internal consistency and adequate 4-week test-retest reliability (*r* = .69-.76) among heterosexual men (Snell & Papini, 1989; Snell, Fisher, & Schuh, 1992). Both scales

demonstrated high internal consistency (sexual esteem, α = .92; sexual depression, α = .88) in the present sample.

Sexual Satisfaction. The New Sexual Satisfaction Scale (NSSS; Štulhofer, Buško, & Brouillard, 2010) is a 20-item self-report measure of sexual satisfaction. The NSSS contains two subscales (i.e., ego focused; partner and sexual activity centered) based on five domains: sexual sensations (i.e., presence of pleasurable sensations during sexual activity), sexual presence/awareness (i.e., one's ability to attend to the sexual encounter); sexual exchange (i.e., reciprocity in sexual encounters); emotional connection/closeness (i.e., emotional bonds and intimacy in sexual encounters); sexual activity (i.e., frequency, duration, variety, and intensity of sexual activities). The ego focused subscale assesses personal experiences and sensations felt during sexual activity. The partner and sexual activity centered subscale measures sexual activity, in general, and partners' behaviours. Items were rated on a 5-point Likert-type scale (ranging from 1 = *not at all satisfied* to 5 = *extremely satisfied*). Total scores range from 20 to 100, where higher scores reflect greater sexual satisfaction.

In contrast to the many measures of sexual satisfaction, the NSSS is not limited to assessing sexual satisfaction among coupled individuals and has been validated among a sexual minority sample. The NSSS demonstrated high internal consistency among community samples in Croatia (α = .92-95) and the United States of America (α = .92-94) as well as among a Croatian sexual minority sample (α = .92-95; Štulhofer et al., 2010). In the present sample, the NSSS exhibited high internal consistency (α = .94). In addition, the NSSS exhibited good test-retest reliability over a 1-month period (*r* = .74-.78; Štulhofer et al., 2010). The NSSS also demonstrated good convergent and discriminant validity, as it is highly correlated with other

measures of sexual satisfaction, and discriminates between individuals with sexual dysfunction and non-clinical samples (Štulhofer et al., 2010).

Mental health correlates.

Depressive symptoms. The Center for Epidemiologic Studies - Depression Scale (CES-D; Radloff, 1977) was administered to assess symptoms of depression. The CES-D consists of 20-items assessing the frequency of depressive symptoms experienced within the past week. Items were rated on a 4-point Likert-type scale (ranging from 0 = *rarely or none of the time* to 3 = *most or all of the time*). Total scores range from 0 to 60, with higher scores representing higher depressive symptomology. The CES-D exhibited high internal consistency in community samples (α = .84-85; Radloff, 1977), clinical samples (α = .90; Radloff, 1977), and samples of GBM (α = .94, Herek, Gillis, Cogan, & Glunt, 1997; α = .93, Duggan & McCreary, 2004) and adequate 4-week test-retest reliability (*r* = .67; Radloff, 1977). In the present sample, the CES-D demonstrated excellent internal consistency (α = .93). As well, the CES-D demonstrated good convergent and discriminant validity, as it is highly correlated with other measures of depression and general psychopathology, and discriminates between psychiatric inpatient and general population samples (Radloff, 1977).

Anxiety symptoms. The State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA; Ree, French, MacLeod, & Locke, 2008) is a 21-item self-report measure assessing trait and state cognitive and somatic anxiety. For the purpose of this study, only trait anxiety was assessed. The STICSA contains two subscales: cognitive anxiety and somatic anxiety. The cognitive anxiety subscale includes 10-items assessing anxiety symptoms related to thought processes, such as worry, intrusive thoughts, and concentration. The somatic anxiety subscale contains 11-items assessing physical symptoms associated with anxiety, such as sweating and

trembling. Participants rated on a 4-point Likert scale (ranging from 1 = *not at all* to 4 = *very much so*) how true, in general, each statement is for them. Total cognitive anxiety scores range from 10 to 40, where higher scores reflect greater cognitive anxiety symptoms. Total somatic anxiety scores range from 11 to 44, where higher scores reflect greater somatic anxiety symptoms. The STICSA trait scale exhibited high internal consistencies for the full scale (α = .91), cognitive subscale (α = .87), and somatic subscale (α = .87; Grös, Antony, Simms, & McCabe, 2007). Similarly, the cognitive subscale (α = .91) and somatic subscale (α = .86) demonstrated high internal consistency in the present sample. The STICSA trait scale also demonstrated good convergent validity (Grös et al., 2007). In fact, the STICSA demonstrated better convergent validity with measures of somatic anxiety and better divergent validity with measures of depression than the State-Trait Anxiety Index (Roberts, Hart, & Eastwood, 2016).

Data Analyses

Due to the non-normal distribution of numerous outcome variables, unequal group sizes, and the violation of the Levene's test of equality of error variances, Kruskal-Wallis H tests were used to compare differences between groups on etiological correlates (i.e., childhood sexual and physical abuse, harassment and discrimination, internalized homophobia, total number of past and current STIs, total number of past and current prostate and rectal conditions, and sexual coercion during adulthood and over the past year), pain-related factors (i.e., pain catastrophizing, pain-related cognitive anxiety, pain-related fear, pain-related somatic anxiety, pain-related avoidance and escape behaviours, and pain descriptors), sexual functioning (i.e., erectile function, sexual desire, premature ejaculation, and sexual satisfaction), and mental health (i.e., depression and trait anxiety symptoms). The Kruskal-Wallis H test is the non-parametric version of an ANOVA and does not assume normal distribution of the residuals (Field, 2013). Chi-

square goodness of fit tests were used to examine differences between groups in pain duration and each STI and prostate and rectal condition.

Aim 3: Results

Table 8 provides the sociodemographic characteristics across the GPPPD diagnostic groups. Skewness and kurtosis for each of the correlates are reported in Table 9. Boxplots and histograms were examined. Table 10 and 11 include the descriptive statistics for each of the variables examined as possible correlates across diagnostic groups.

Group Differences on Etiological Correlates

There were no significant differences between GBM who met no criteria for GPPPD, GBM who met full diagnostic criteria for GPPPD, and GBM who reported pain and no distress on childhood sexual abuse, $H(2) = 1.78$, $p = .41$, adulthood sexual coercion, $H(2) = 2.97$, $p = .23$, sexual coercion over the past year, $H(2) = 1.91$, $p = .39$, and internalized homophobia, $H(2) = 5.68$, $p = .06$. Although the Kruskal-Wallis H Test was significant for childhood physicalabuse $H(2) = 7.56$, $p = .02$, pairwise comparisons with Bonferroni adjusted *p*-values revealed no significant differences between groups. GPPPD groups significantly differed on the degree of heterosexist harassment, rejection, and discrimination, $H(2) = 9.84$, $p = .007$. Pairwise comparisons with Bonferroni adjusted *p*-values indicated that GBM who met full diagnostic criteria for GPPPD reported significantly higher heterosexist harassment, rejection, and discrimination compared to GBM who met no criteria for GPPPD ($p = .007$, $r = .18$). There were no significant differences between GBM who reported pain and no distress and GBM who met no criteria for GPPPD ($p = 1.00$, $r = .06$) as well as GBM who met full criteria for GPPPD ($p = .20$, $r = .11$) on heterosexist harassment, rejection, and discrimination. When exploring differences on these variables between latent classes, the exact same pattern of results was found.

Table 8

Sociodemographic Characteristics across GPPPD Diagnostic Groups

Variable	No criteria (*n* = 111) *n (%)*	Full criteria (*n* = 176) *n (%)*	No distress (*n* = 81) *n (%)*	Test Statistic
Gender				$\chi^2(2) = 1.85$
Male	101 (91.0)	154 (87.5)	75 (92.6)	
Queer	10 (9.0)	22 (12.5)	6 (7.4)	
Sexual Orientation				$\chi^2(6) = 8.49$
Gay	90 (81.1)	156 (88.6)	67 (82.7)	
Bisexual	14 (12.6)	8 (4.5)	10 (12.3)	
Queer	7 (6.3)	11 (6.3)	4 (4.9)	
Pansexual	0 (0)	1 (0.6)	0 (0)	
Ethnicity				$\chi^2(14) = 8.79$
White	67 (60.9)	92 (52.3)	48 (59.3)	
Black	3 (2.7)	6 (3.4)	1 (1.2)	
Latin American	7 (6.4)	10 (5.7)	6 (7.4)	
South Asian	3 (2.7)	7 (4.0)	4 (4.9)	
East/Southeast Asian	9 (8.2)	19 (10.8)	5 (6.2)	
Middle Eastern	1 (0.9)	6 (3.4)	1 (1.2)	
Aboriginal/Métis/Inuit	2 (1.8)	4 (2.3)	0 (0)	
Two or more ethnicities	18 (16.4)	32 (18.2)	16 (19.8)	
Highest Education				$\chi^2(10) = 11.57$

Some high school	1 (20.9)	4 (2.3)	2 (2.5)	
Completed high school	10 (9.1)	11 (6.3)	11 (13.6)	
Some secondary education	35 (31.8)	46 (26.3)	16 (19.8)	
Completed secondary education	40 (36.4)	74 (42.3)	26 (32.1)	
Some graduate or professional school	9 (8.2)	12 (6.9)	7 (8.6)	
Completed graduate or professional school	15 (13.6)	28 (16.0)	19 (23.5)	
Annual Income				$\chi^2(10) = 22.66^*$
Under $20 000	26 (23.4)	58 (33.0)	23 (28.4)	
$20 000 - $39 999	37 (33.3)	36 (20.5)	23 (28.4)	
$40 000 - $59 999	14 (12.6)	42 (23.9)	13 (16.0)	
$60 000 - $79 999	14 (12.6)	20 (11.4)	3 (3.7)	
Over $80 000	11 (9.9)	14 (8.0)	13 (16.0)	
Prefer not to answer	9 (8.1)	6 (3.4)	6 (7.4)	
Relationship status				$\chi^2(2) = 4.55$
Single	56 (50.5)	95 (54.0)	53 (65.4)	
Partnered	55 (49.5)	81 (46.0)	28 (34.6)	
Anal Sex Role Label				$\chi^2(10) = 25.91^{**}$
Top	3 (2.7)	19 (11.3)	13 (16.3)	
Top/Versatile	18 (16.2)	38 (22.6)	8 (10.0)	
Versatile	13 (11.7)	34 (20.2)	14 (17.5)	

Bottom/Versatile	45 (40.5)	42 (25.0)	25 (31.3)	
Bottom	32 (28.8)	34 (20.2)	20 (25.0)	
	M (SD)	*M (SD)*		
Age	32.07 (12.39)	30.64 (9.75)	30.60 (9.84)	$F(2, 367) = 0.72$

Note. $^{*}p < .05$; $^{**}p < .01$

Table 9

Skewness and Kurtosis for the Correlates of Anodyspareunia

	Skewness			Kurtosis		
Variables	Statistic	*SE*	*z*	Statistic	*SE*	*z*
Childhood Physical Abuse	2.20	.13	16.92***	4.92	.25	19.68***
Childhood Sexual Abuse	2.54	.13	19.54***	6.81	.25	27.24***
Heterosexist Harassment, Rejection, & Discrimination	1.38	.13	10.61***	1.67	.25	6.68***
Internalized Homophobia	0.23	.13	1.77	-0.14	.25	0.56
Sexual Coercion – Adulthood	2.51	.13	19.31***	6.09	.25	24.36***
Sexual Coercion – Past Year	4.28	.13	32.92***	22.39	.25	89.56***
Total Number of Prostate/ Rectal Conditions	1.04	.13	8.00***	0.67	.25	2.68**
Total Number of STIs	1.49	.13	11.46***	2.24	.25	8.96***
Pain Catastrophizing	0.16	.13	1.23	-1.02	.25	4.08***
Pain-Related Cognitive Anxiety	0.47	.13	3.62**	-0.51	.25	2.04*
Pain-Related Fear	1.29	.13	9.92***	1.33	.25	5.32***
Pain-Related Somatic Anxiety	1.44	.13	11.08***	2.19	.25	8.76***
Pain-Related Escape/ Avoidance Behaviours	0.80	.13	6.15***	0.13	.25	0.52

Erectile Function	-0.89	.16	5.56***	0.03	.32	0.09
Sexual Desire - Dyadic	-1.03	.13	7.92***	1.41	.25	5.64***
Sexual Desire - Individual	-0.89	.13	3.87***	0.79	.25	3.16**
Premature Ejaculation	1.05	.13	8.08***	0.67	.25	2.68**
Sexual Satisfaction	-0.22	.13	1.69	0.01	.25	0.04
Depressive Symptoms	0.63	.13	4.85***	-0.40	.25	1.60
Sexual-Esteem	-0.76	.13	5.84***	0.84	.25	3.36***
Sexual Depression	0.23	.13	1.76	-0.67	.25	2.68**
Cognitive Anxiety	0.44	.13	3.38***	-0.65	.25	2.60**
Somatic Anxiety	1.06	.13	8.15***	1.45	.25	5.80***

Note. SE = standard error; STIs = sexually transmitted infections

* $p < .05$. ** $p < .01$. ***$p < .001$

Table 10

Descriptive Statistics for Study Variables Between GPPPD Diagnostic Groups

Variable	No criteria (n = 111) M (SD)	Full criteria (n = 176) M (SD)	No distress (n = 81) M (SD)
Childhood Physical Abuse	7.28 (4.06)	7.70 (3.63)	6.53 (2.49)
Childhood Sexual Abuse	7.11 (4.36)	7.23 (3.82)	6.87 (3.63)
Heterosexist Harassment, Rejection, & Discrimination	[a]24.00 (11.22)	[a]27.50 (11.76)	24.68 (10.57)
Internalized Homophobia	42.71 (12.05)	46.44 (12.87)	44.34 (11.23)
Sexual Coercion - Adulthood	7.63 (15.08)	9.09 (17.44)	8.31 (13.80)
Sexual Coercion – Past year	3.24 (10.08)	4.94 (10.62)	2.58 (5.21)
Total Number of Prostate/Rectal Conditions	[a]0.76 (0.96)	[ab]1.20 (1.14)	[b]0.77 (0.91)
Total Number of STIs	[a]1.57 (1.81)	[b]1.69 (1.97)	[ab]0.79 (1.40)
Pain catastrophizing	[ac]6.06 (6.82)	[ab]27.45 (10.84)	[bc]17.63 (11.40)
Pain-related cognitive anxiety	[ac]2.82 (3.34)	[ab]11.93 (5.90)	[bc]8.07 (4.73)
Pain-related fear	[ac]1.41 (2.36)	[ab]6.59 (5.19)	[bc]4.06 (4.40)
Pain-related somatic anxiety	[ac]1.68 (3.04)	[ab]5.80 (5.06)	[bc]4.16 (4.43)
Pain-related escape/avoidance behaviours	[ab]2.49 (3.33)	[a]7.89 (4.96)	[b]6.23 (4.58)
Pain descriptors			
Throbbing	[a]0.78 (0.75)	[ab]1.34 (0.96)	[b]0.96 (0.84)
Shooting	[ac]0.49 (0.74)	[ab]1.49 (1.08)	[bc]1.03 (1.06)
Stabbing	[ab]0.66 (0.84)	[a]1.61 (1.13)	[b]1.28 (1.04)

Sharp	[ac]0.78 (0.80)	[ab]1.89 (1.03)	[bc]1.54 (0.91)
Cramping	[a]0.45 (0.67)	[a]0.90 (0.96)	0.72 (0.95)
Gnawing	[a]0.07 (0.25)	[a]0.38 (0.71)	0.28 (0.60)
Hot/burning	[ab]0.68 (0.71)	[a]1.34 (1.10)	[b]1.36 (1.00)
Aching	[ab]0.64 (0.71)	[a]1.17 (1.02)	[b]1.14 (0.92)
Heavy	[a]0.19 (0.50)	[a]0.72 (0.95)	0.44 (0.68)
Tender	[a]0.67 (0.84)	[a]1.20 (1.15)	0.93 (0.84)
Splitting	[ab]0.36 (0.57)	[a]1.21 (1.12)	[b]0.95 (1.07)
Tiring/exhausting	[a]0.20 (0.48)	[ab]0.75 (0.89)	[b]0.50 (0.80)
Sickening	[a]0.10 (0.34)	[a]0.53 (0.79)	0.37 (0.77)
Fearful	[ac]0.15 (0.41)	[ab]0.89 (0.94)	[bc]0.46 (0.75)
Punishing/cruel	[ac]0.10 (0.37)	[ab]0.70 (0.94)	[bc]0.47 (0.89)
Erectile Function	24.43 (5.41)	23.41 (5.81)	24.85 (5.14)
Sexual Desire - Dyadic	46.10 (10.50)	45.36 (9.96)	44.90 (10.87)
Sexual Desire - Individual	16.55 (5.02)	17.07 (4.48)	16.93 (4.00)
Premature Ejaculation	4.45 (4.08)	4.99 (4.75)	4.21 (3.90)
Sexual Satisfaction	[a]72.45 (14.13)	[ab]62.93 (15.07)	[b]67.70 (14.62)
Sexual-Esteem	[a]14.93 (2.97)	[a]13.14 (4.47)	13.63 (4.06)
Sexual Depression	[a]6.05 (4.17)	[a]8.79 (4.71)	7.72 (4.62)
Depressive Symptoms	[ab]15.99 (11.95)	[a]21.12 (13.51)	[b]20.06 (11.96)
Cognitive Anxiety	[ab]18.63 (7.27)	[a]22.28 (7.33)	[b]21.72 (7.12)
Somatic Anxiety	[a]16.84 (5.39)	[a]18.74 (5.69)	18.21 (4.99)

Note. Numbers with the same superscript differ significantly. The *p*-level and effect size for significant comparisons are listed in the text. STIs = sexually transmitted infections.

Table 11

Descriptive Statistics for Pain Duration Between GPPPD Diagnostic Groups

Variable	No criteria (n = 111) n (%)	Full criteria (n = 176) n (%)	No distress (n = 81) n (%)
Pain Duration (minutes)			
2 or less	70 (56.5)	29 (23.4)	25 (20.2)
3 to 5	26 (27.7)	37 (39.4)	31 (33.0)
6 to 10	8 (15.4)	35 (67.3)	9 (17.3)
11 to 15	1 (4.8)	17 (81.0)	3 (14.3)
16 to 30	4 (11.1)	27 (75.0)	5 (13.9)
More than 30	1 (3.3)	26 (86.7)	3 (10.0)

GPPPD groups significantly differed on the total number of current and past prostate and rectal conditions, $H(2) = 15.16$, $p = .001$, as well as the total number of current and past STIs, $H(2) = 17.03$, $p < .001$. Pairwise comparisons with Bonferroni adjusted p-values indicated that GBM who met full diagnostic criteria for GPPPD reported significantly greater current and past prostate and rectal conditions compared to GBM who met no criteria for GPPPD ($p = .002$, $r = .20$) and GBM who reported pain and no distress ($p = .01$, $r = .18$). There were no significant differences between GBM who met no criteria for GPPPD and GBM who reported pain and no distress on the total number of current and past prostate and rectal conditions ($p = 1.00$, $r = .01$). Pairwise comparisons with Bonferroni adjusted p-values indicated that GBM who reported pain and no distress reported significantly fewer current and past STIs compared to GBM who met no criteria for GPPPD ($p = .004$, $r = .23$) and GBM who met full diagnostic criteria for GPPPD ($p < .001$, $r = .25$). There were no significant differences between GBM who met no criteria and full criteria for GPPPD on the total number of current and past STIs ($p = 1.00$, $r = .03$). Tables 12 and 13 show the number of participants who endorsed experiencing each STI and prostate and rectal condition at present or in the past. Significant associations between GPPPD groups and gonorrhea, $\chi^2(2) = 8.52$, $p = .014$, $\eta^2 = .15$, pubic lice, $\chi^2(2) = 8.89$, $p = .012$, $\eta^2 = .16$, and syphilis, $\chi^2(2) = 17.35$, $p < .001$, $\eta^2 = .22$, were found. Compared to GBM with pain and no distress, GBM with GPPPD and GBM with no pain were 2.67 and 2.72 times more likely to endorse contracting gonorrhea, 3.16 and 2.07 times more likely to endorse contracting pubic lice, and 12.11 and 22.33 times more likely to endorse contracting syphilis. Regarding prostate and rectal conditions, significant associations were found between GPPPD groups and rectal cancer, $\chi^2(2) = 7.05$, $p = .03$, $\eta^2 = .14$, anal fissures, $\chi^2(2) = 19.91$, $p < .001$, $\eta^2 = .23$, and hemorrhoids, $\chi^2(2) = 6.60$, $p = .04$, $\eta^2 = .13$. GBM with GPPPD were 2.98 and 3.02 times more likely to

Table 12

Reported Current or Past STIs Between GPPPD Diagnostic Groups

Variable	No criteria (n = 111) n (%)	Full criteria (n = 176) n (%)	No distress (n = 81) n (%)	Test Statistic $\chi^2(2)$	Effect Size η^2
Chancroid	3 (2.7)	5 (2.9)	0 (0)	2.30	.08
Chlamydia	31 (28.2)	55 (31.6)	15 (18.5)	4.75	.11
Gonorrhea	33 (30.0)	52 (26.5)	11 (13.6)	8.52**	.15
Genital/anal herpes	12 (10.8)	18 (10.3)	4 (4.9)	2.36	.08
Hepatitis B	3 (2.8)	5 (2.9)	0 (0)	2.35	.08
Hepatitis C	3 (2.7)	1 (0.6)	1 (1.2)	2.31	.08
HIV/AIDS	18 (16.5)	19 (10.9)	5 (6.3)	4.92	.12
HPV	13 (12.0)	33 (19.0)	7 (8.8)	5.41	.12
Pubic lice	20 (18.5)	45 (25.7)	8 (9.9)	8.89**	.16
Scabies	9 (8.3)	19 (10.9)	8 (9.9)	0.50	.04
Syphilis	24 (21.8)	23 (13.1)	1 (1.2)	17.35***	.22
Trichomoniasis	1 (0.9)	3 (1.7)	1 (1.2)	0.32	.03
LGV	1 (0.9)	5 (2.8)	1 (1.2)	1.62	.07
Molluscum contagiosum	3 (2.7)	12 (6.9)	2 (2.5)	3.77	.10

Note. HPV = Human Papillomavirus; LGV = Lymphogranuloma venereum

** $p < .01$. ***$p < .001$

Table 13

Reported Current or Past Prostate and Rectal Conditions Between GPPPD Diagnostic Groups

Variable	No criteria (n = 111) n (%)	Full criteria (n = 176) n (%)	No distress (n = 81) n (%)	Test Statistic $\chi^2(2)$	Effect Size η^2
Enlarged prostate	4 (3.6)	11 (6.3)	3 (3.8)	1.32	.06
Prostatitis	3 (2.7)	14 (8.0)	2 (2.5)	5.27	.12
Prostate cancer	2 (1.8)	0 (0)	0 (0)	4.68	.11
Testicular cancer	2 (1.8)	1 (0.6)	1 (1.2)	1.00	.61
Bladder cancer	1 (0.9)	1 (0.6)	0 (0)	0.72	.04
Rectal cancer	0 (0)	0 (0)	2 (2.5)	7.05*	.14
Anal fissures	18 (16.2)	64 (36.6)	13 (16.0)	19.91***	.23
Hemorrhoids	44 (39.6)	85 (48.3)	26 (32.1)	6.60*	.13
Rectal prolapse	0 (0)	2 (1.1)	0 (0)	2.74	.04
Crohn's disease	1 (0.9)	1 (0.6)	0 (0)	0.72	.04
Tuberculosis	0 (0)	3 (1.7)	0 (0)	3.27	.09
Proctalgia fugax	1 (0.9)	3 (1.7)	2 (2.5)	0.74	.05
Levator ani syndrome	0 (0)	1 (0.6)	0 (0)	1.08	.06
Irritable bowel syndrome	8 (7.2)	22 (12.5)	11 (13.5)	2.37	.08

Note. * $p < .05$. ** $p < .01$. ***$p < .001$

experience anal fissures and 1.44 and 2.00 times more likely to experience haemorrhoids than GBM with no pain and GBM with pain and no distress, respectively.

Group Differences on Pain-Related Factors

Significant differences in pain catastrophizing, $H(2) = 176.56$, $p < .001$, pain-related cognitive anxiety, $H(2) = 105.85$, $p < .001$, pain-related fear, $H(2) = 99.25$, $p < .001$, pain-related somatic anxiety, $H(2) = 75.82$, $p < .001$, and pain-related escape and avoidance behaviours, $H(2) = 94.74$, $p < .001$, were found between GPPPD diagnostic groups. Pairwise comparisons were conducted between GBM who met no criteria (i.e., subscript "none"), GBM who met full criteria (i.e., subscript "full"), and GBM who reported pain and no distress (i.e., subscript "partial). Pairwise comparisons with Bonferroni adjusted *p*-values indicated that GBM with GPPPD endorsed significantly greater pain catastrophizing ($p < .001$, $r_{none\text{-}full} = .69$, $r_{partial\text{-}full} = .28$), pain-related cognitive anxiety ($p < .001$, $r_{none\text{-}full} = .64$, $r_{partial\text{-}full} = .22$), pain-related fear ($p < .001$, $r_{none\text{-}full} = .52$, $r_{partial\text{-}full} = .19$), and pain-related somatic anxiety ($p < .001$, $r_{none\text{-}full} = .45$, $r_{partial\text{-}full} = .14$) than both the GBM with no pain and the GBM with pain and no distress. GBM with GPPPD and GBM with pain and no distress did not significantly differ on pain-related escape and avoidance behaviours ($p = .63$). Similarly, pairwise comparisons with Bonferroni adjusted *p*-values indicated that GBM with pain and no distress endorsed significantly greater pain catastrophizing ($p < .001$, $r = .32$), pain-related cognitive anxiety ($p < .001$, $r = .33$), pain-related fear ($p < .001$, $r = .25$), pain-related somatic anxiety ($p = .03$, $r = .25$), and pain-related escape and avoidance behaviours ($p < .001$, $r = .12$) than GBM with no pain.

For each of the pain descriptors, significant differences in intensity ratings were found between GPPPD diagnostic categories: throbbing, $H(2) = 23.38$, $p < .001$, shooting, $H(2) = 52.09$, $p < .001$, stabbing, $H(2) = 43.47$, $p < .001$, sharp, $H(2) = 66.62$, $p < .001$, cramping, $H(2)$

= 13.09, $p < .001$, gnawing, $H(2) = 15.87$, $p < .001$, hot/burning, $H(2) = 26.38$, $p < .001$, aching, $H(2) = 19.36$, $p < .001$, heavy, $H(2) = 24.75$, $p < .001$, tender, $H(2) = 13.03$, $p < .001$, splitting, $H(2) = 36.13$, $p < .001$, tiring/exhausting, $H(2) = 28.93$, $p < .001$, sickening, $H(2) = 24.28$, $p < .001$, fearful, $H(2) = 51.71$, $p < .001$, punishing/cruel, $H(2) = 34.72$, $p < .001$. Pairwise comparisons with Bonferroni adjusted *p*-values indicated that GBM with GPPPD reported significantly greater intensity on all pain descriptors compared to GBM with no pain and many descriptors compared to GBM with pain and no distress: throbbing ($p < .001$, $r_{none\text{-}full} = .25$; $p = .01$, $r_{partial\text{-}full} = .16$), shooting ($p < .001$, $r_{none\text{-}full} = .39$; $p = .01$, $r_{partial\text{-}full} = .17$), stabbing ($p < .001$, $r_{none\text{-}full} = .35$;), sharp ($p < .001$, $r_{none\text{-}full} = .44$; $p = .04$, $r_{partial\text{-}full} = .14$), cramping ($p < .001$, $r_{none\text{-}full} = .19$), gnawing ($p < .001$, $r_{none\text{-}full} = .22$), hot/burning ($p < .001$, $r_{none\text{-}full} = .25$), aching ($p < .001$, $r_{none\text{-}full} = .22$), heavy ($p < .001$, $r_{none\text{-}full} = .27$), tender ($p < .001$, $r_{none\text{-}full} = .19$), splitting ($p < .001$, $r_{none\text{-}full} = .32$), tiring/exhausting ($p < .001$, $r_{none\text{-}full} = .29$; $p = .04$, $r_{partial\text{-}full} = .13$), sickening ($p < .001$, $r_{none\text{-}full} = .26$), fearful ($p < .001$, $r_{none\text{-}full} = .38$; $p < .001$, $r_{partial\text{-}full} = .20$), punishing/cruel ($p < .001$, $r_{none\text{-}full} = .32$; $p = .046$, $r_{partial\text{-}full} = .13$). There were no significant differences in pain intensity on the following descriptors between GBM with GPPPD and GBM with pain and no distress: stabbing ($p = .09$), cramping ($p = .33$), gnawing ($p = .67$), hot/burning ($p = .1.00$), aching ($p = .1.00$), heavy ($p = .12$), tender ($p = .56$), splitting ($p = .24$), and sickening ($p = .11$). Similarly, pairwise comparisons with Bonferroni adjusted *p*-values indicated that GBM with pain and no distress endorsed significantly greater intensity on the following pain descriptors than GBM with no pain: shooting ($p = .004$, $r = .17$), stabbing ($p < .001$, $r = .20$), sharp ($p < .001$, $r = .25$), hot/burning ($p < .001$, $r = .23$), aching ($p < .001$, $r = .19$), splitting ($p < .001$, $r = .19$), fearful ($p = .02$, $r = .14$), and punishing/cruel ($p = .02$, $r = .15$). There were no significant differences in pain intensity on the following descriptors between GBM with pain and

no distress and GBM with : throbbing (p = .53), cramping (p = .32), gnawing (p = .07), heavy (p = .06), tender (p = .18), tiring/exhausting (p = .06), and sickening (p = .07).

There was a significant association between GPPPD diagnostic groups and pain duration, $\chi^2(10) = 97.79$, $p < .001$, $\eta^2 = .27$. The majority of GBM with no pain (86%) and GBM with pain and no distress (69%) indicated that the pain lasted five minutes or less (see Table 11). GBM with GPPPD were relatively equally dispersed across duration categories (see Table 11). Compared to GBM with GPPPD, GBM with no pain were 8.50 times more likely to report that the pain typically lasts for less than two minutes. Conversely, GBM with GPPPD were 19.22 times more likely to report that the pain persists for more than 30 minutes compared to GBM with no pain.

Group Differences on Sexual Function

Even though GPPPD groups did not significantly differ on premature ejaculation, $H(2) = 0.98$, $p = .61$, erectile function, $H(2) = 2.63$, $p = .27$, dyadic sexual desire, $H(2) = 1.07$, $p = .59$, and individual sexual desire, $H(2) = 0.58$, $p = .75$, there were significant difference between groups on sexual satisfaction, $H(2) = 32.45$, $p < .001$, sexual-esteem, $H(2) = 10.72$, $p = .005$, and sexual-depression, $H(2) = 22.57$, $p < .001$. Pairwise comparisons with Bonferroni adjusted p-values indicated that GBM with GPPPD reported significantly lower sexual satisfaction than GBM with no pain ($p < .001$, $r = .30$) and GBM with pain and no distress ($p = .03$, $r = .14$). There were no significant differences in sexual satisfaction between GBM with no pain and GBM with pain and no distress ($p = .07$, $r = .12$). GBM with GPPPD reported significantly lower sexual-esteem and significantly higher sexual depression than GBM with no pain ($p = .003$, $r = .17$; $p < .001$, $r = .25$). There were no significant differences in sexual-esteem and sexual depression between GBM with no pain and GBM with pain and no distress ($p = .17$, $r = .10$; $p =$

.06, $r = .12$) as well as between GBM with GPPPD and GBM with pain and no distress ($p = 1.00$, $r = .04$; $p = .25$, $r = .09$).

Group Differences on Mental Health Correlates

Kruskal-Wallis H tests revealed significant differences between GPPPD groups on depression, $H(2) = 11.28$, $p = .004$, cognitive anxiety, $H(2) = 19.79$, $p < .001$, and somatic anxiety symptoms, $H(2) = 11.85$, $p = .003$. Pairwise comparisons with Bonferroni adjusted *p*-values indicated that GBM with no pain reported significantly lower depressive symptoms and cognitive anxiety than GBM with GPPPD ($p = .004$, $r = .17$; $p < .001$, $r = .23$) and GBM who reported pain and no distress ($p = .05$, $r = .13$; $p = .007$, $r = .16$). There were no significant differences between GBM with GPPPD and those who reported pain and no distress in depressive symptoms ($p = 1.00$, $r = .01$) and cognitive anxiety ($p = 1.00$, $r = .03$). GBM with no pain reported significantly lower somatic anxiety than GBM with GPPPD ($p = .002$, $r = .18$). However, there were no significant differences in somatic anxiety between GBM with no pain and GBM with pain and no distress ($p = .06$, $r = .12$) as well as between GBM with GPPPD and GBM with pain and no distress ($p = 1.00$, $r = .03$).

In sum, GBM with GPPPD reported significantly greater pain catastrophizing, pain-related cognitive anxiety, pain-related fear, pain-related somatic anxiety, pain duration (i.e., more than five minutes), pain intensity, and current and past prostate and rectal conditions (i.e., anal fissures and hemorrhoids) as well as lower sexual satisfaction than both GBM who met no criteria for GPPPD and GBM who reported pain and no distress. Compared to GBM who met no criteria, GBM with GPPPD reported significantly higher heterosexist harassment, rejection, and discrimination, sexual depression, depressive symptoms, and cognitive anxiety as well as lower sexual esteem. GBM who reported pain and no distress endorsed significantly fewer current and

past STIs (i.e., gonorrhea, pubic lice, syphilis) compared to GBM with and without GPPPD and significantly greater pain catastrophizing, pain-related cognitive anxiety, pain-related fear, pain-related somatic anxiety, pain-related escape and avoidance behaviours, pain intensity, depressive symptoms, and cognitive anxiety than GBM who met no criteria for GPPPD.

Aim 4: Fear-Avoidance Model for Sexual Pain Among GBM Who Met Full Criteria For GPPPD

Aim 4: Objectives and Hypotheses

The fear-avoidance model for sexual pain posits that recurrent and severe pain during sexual penetration is maintained by catastrophic pain-related thoughts, fear of pain, hypervigilance to pain-related stimuli, muscle tension, lack of sexual arousal, avoidance of penetration, distress and sexual dysfunction (Thomtén & Linton, 2013). However, no study has examined the role of these maintaining factors among GBM with anodyspareunia. This dissertation examined the mechanisms shared by chronic pain and sexual pain disorders (see Figure 1). In order to ensure that this dissertation was feasible, self-report data were collected. Therefore, without undergoing a physical exam, muscle tension could not be assessed. This dissertation also could not investigate hypervigilance to pain-related stimuli, sexual arousal, and the relationship between these two mechanisms, as these factors are best examined using experimental methodology and a physiological measure of sexual arousal.

Aim 4 tested an adapted version of the fear-avoidance model for GBM with anodyspareunia. It was hypothesized that the adapted fear-avoidance model for GBM with anodyspareunia would be a strong fit to the data (see Figure 4). More specifically, it was expected that the relationship between pain severity and pain catastrophizing and pain-related avoidance would mediated by distress and sexual dysfunction.

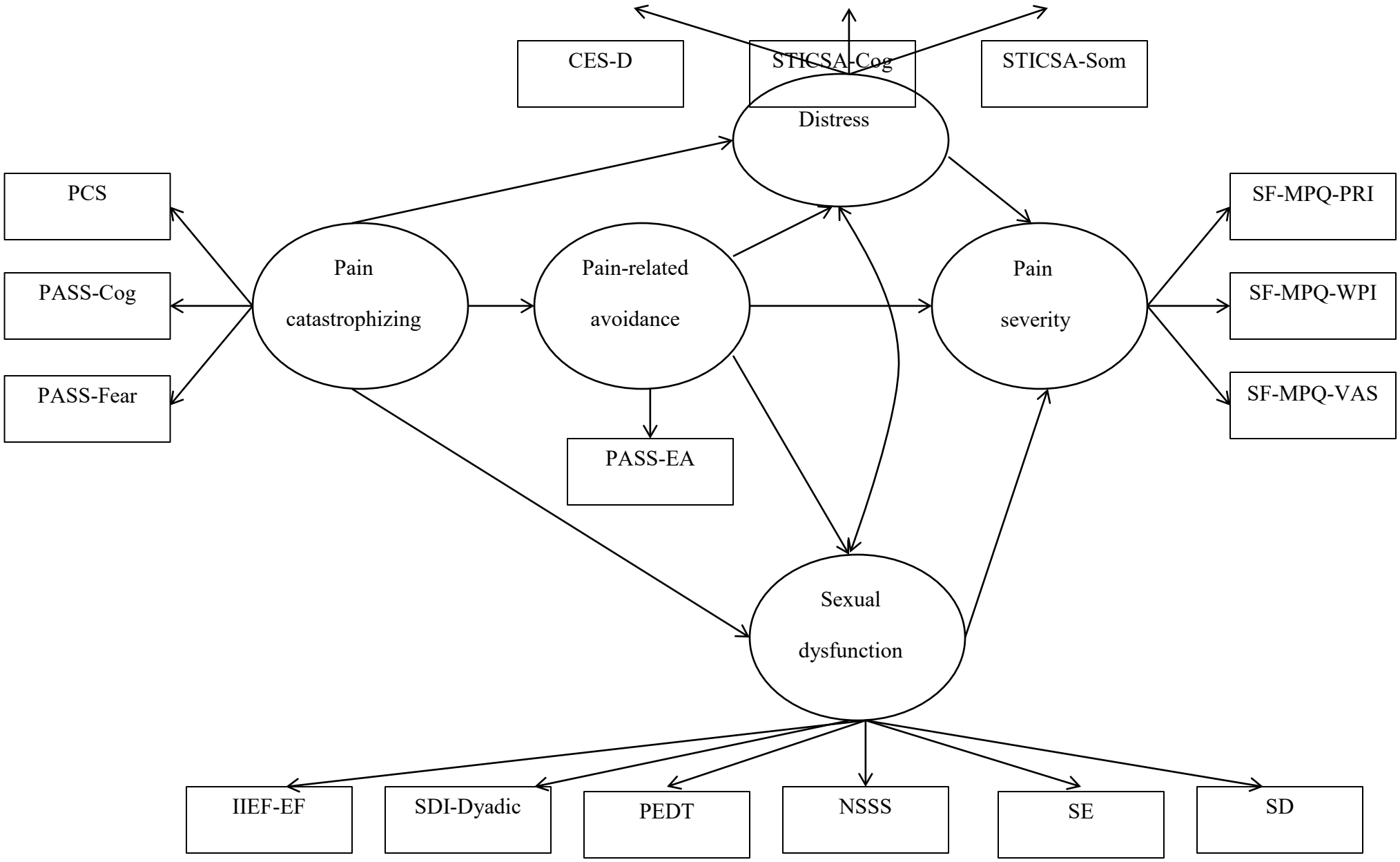
CES-D
STICSA-Cog
STICSA-Som
Distress
PCS
PASS-Cog
PASS-Fear
Pain catastrophizing
Pain-related avoidance
Pain severity
SF-MPQ-PRI
SF-MPQ-WPI
SF-MPQ-VAS
PASS-EA
Sexual dysfunction
IIEF-EF
SDI-Dyadic
PEDT
NSSS
SE
SD

Figure 4. Structural equation model of fear-avoidance for anodyspareunia. Standardized path coefficients are presented. Solid lines represent significant paths and dashed lines represent non-significant associations. Straight lines represent direct regression pathways and curved lines represent covariance associations. PCS = Pain Catastrophizing Scale; PASS-Cog = Cognitive anxiety subscale of the Short version Pain Anxiety Symptom Scale; PASS-Fear = Fear of pain subscale of the Short version Pain Anxiety Symptom Scale; PASS-EA = Escape and avoidance subscale of the Short version Pain Anxiety Symptom Scale; CES-D = Center for Epidemiologic Studies - Depression Scale; STICSA-Cog = Cognitive anxiety subscale of the State-Trait Inventory for Cognitive and Somatic Anxiety; STICSA-Som = Somatic anxiety subscale of the State-Trait Inventory for Cognitive and Somatic Anxiety; IIEF-EF = Erectile function subscale of the International Index of Erectile Function for Men Who Have Sex With Men; SDI-Dyadic = Dyadic sexual desire subscale of the Sexual Desire Inventory-2; PEDT = Premature Ejaculation Diagnostic Tool; NSSS = New Sexual Satisfaction Scale; SD = Sexual-depression subscale of the Sexuality Scale; SE = Sexual-esteem subscale of the Sexuality Scale; SF-MPQ-PRI = Pain rating index of the Short form of the McGill Pain Questionnaire; SF-MPQ-WPI = Worst pain index of the Short form of the McGill Pain Questionnaire; SF-MPQ-VAS = Visual analogue scale of the Short form of the McGill Pain Questionnaire.

Aim 4: Method

Participants

Because the fear-avoidance model for sexual pain pertains to the experience of individuals experiencing recurrent and severe pain, only GBM who met full criteria for GPPPD (n = 175) were included.

Measures

All measures included in the model are described in previous sections. Reliabilities were re-run for each measure, however, since the model was examined among only GBM who met full criteria for GPPPD.

Pain severity. Total pain intensity (i.e., SF-MPQ-PRI), average pain intensity (i.e., SF-MPQ-VAS), and pain intensity at its worst (i.e., SF-MPQ-WPI) were assessed using the short form of the McGill Pain Questionnaire (SF-MPQ: Melzack, 1987). Among GBM with full criteria for GPPPD, the SF-MPQ-PRI demonstrated good internal consistency (α = .83).

Pain catastrophizing. The total score of the Pain Catastrophizing Scale (PCS; Sullivan et al., 1995) was used to assess thoughts and feelings experienced during pain. In the present subsample, the total score of the PCS demonstrated high internal consistency (α = .92).

Pain-related fear and avoidance. To assess fear and avoidance responses to pain, the fear of pain subscale, cognitive anxiety subscale, and the escape and avoidance subscale of the short version Pain Anxiety Symptom Scale (PASS-20; McCracken & Dhingra, 2002) was administered. Among GBM who met full critieria for GPPPD, all three subscales exhibited adequate to high internal consistency (fear of pain, α = .86; cognitive anxiety, α = .90; escape and avoidance, α = .77).

Dysfunction. The following self-report measures were administered to assess erectile function, sexual desire, premature ejaculation, and sexual satisfaction, respectively: the erectile function subscale of the International Index of Erectile Function for Men Who Have Sex With Men (IIEF-MSM-EF; Coyne et al., 2010), the dyadic subscale of the Sexual Desire Inventory-2 (SDI-2; Spector et al., 1996), the Premature Ejaculation Diagnostic Tool (PEDT; Symonds et al., 2007), the New Sexual Satisfaction Scale (NSSS; Štulhofer et al., 2010), and the sexual-esteem and sexual depression subscales of the Sexuality Scale (Snell & Papini, 1989). All scales demonstrated adequate to adequate to high internal consistency among GBM with GPPPD (IIEF-EF, α = .77; dyadic subscale of SDI-2, α = .83; PEDT, α = .87; NSSS, α = .93; SE, α = .92; SD, α = .88).

Distress. The Center for Epidemiologic Studies - Depression Scale (CES-D; Radloff, 1977) and the cognitive and somatic subscales of the State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA; Ree, French, MacLeod, & Locke, 2008) were administered to assess symptoms of depression and anxiety. The CES-D (α = .94), the STICSA cognitive subscale (α = .91), and the STICSA somatic subscale (α = .85) demonstrated good to high internal consistency among GBM with full GPPPD.

Data Analyses

To test the adapted version of the fear-avoidance model of sexual pain among GBM with anodyspareunia, structural equation modelling (SEM) was conducted using Mplus statistical modelling software (Version 7; Muthén & Muthén, 2012). SEM is able to simultaneously examine complex relationships between multiple latent and observed variables as well as assess direct and indirect effects among multiple independent, mediator, and dependent variables (e.g., Kelloway, 2014; Kline, 2015; Ullman, 2013; Wang & Wang, 2012).

Regarding sample size requirements for adequate power in SEM analyses, Kline (2015) recommends following the *N:q* rule. According to the *N:q* rule, the minimum ratio between the number of cases (*N*) to the number of model parameters (*q*) should be 10:1, and ideally be 20:1 (Kline, 2015). The hypothesized model included five latent variables (depicted by circles in Figure 4) and 15 observed variables (depicted by rectangles in Figure 4), with a total of 20 parameters, necessitating a sample size of 200 (20 parameters x 10 cases) based on the minimum ratio suggestions. Weston and Gore (2006) also recommend a minimum sample size of 200 participants when conducting SEM. Therefore, this dissertation recruited 200 GBM with anodyspareunia.

SEM consists of a measurement model and a structural model (e.g., Kelloway, 2014; Kline, 2015; Ullman, 2013; Wang & Wang, 2012). The measurement model examines how well the latent variables, which are by definition unobserved, are represented by their observed indicator variables (e.g., Kelloway, 2014; Kline, 2015; Ullman, 2013; Wang & Wang, 2012). The structural model examines the direct and indirect relationships between the variables (e.g., Kelloway, 2014; Kline, 2015; Ullman, 2013; Wang & Wang, 2012). The two-phase approach is considered best practice, where the measurement model is examined in the first phase followed by the structural model in the second phase (Mueller & Hancock, 2008).

The measurement model was estimated using confirmatory factor analysis (e.g., Kelloway, 2014; Kline, 2015; Ullman, 2013; Wang & Wang, 2012). First, the total scores of two positively valenced variables (i.e., sexual satisfaction, sexual-esteem) were multiplied by -1 in order to ease interpretation of the findings. As a result, higher scores on all variables indicate worse functioning. Because avoidance was measured by single indicator (i.e., escape and avoidance subscale of the PASS-20), the measurement error was corrected using respective

variances and reliabilities [$\Theta_\varepsilon = Var(y)\ (1 - \rho_y)$] (Wang & Wang, 2012). Once the measurement model was considered to be a strong fit, the complete structural model was tested.

Although the fear-avoidance model is cyclical in nature, SEM requires that a beginning and endpoint be specified in order to test the structural model. Based on assertions that emotions and cognitions affect perceptions of pain (e.g., Vlaeyen & Linton, 2000) and the methods employed by Cook and colleagues (2006), pain severity was selected as the endpoint for this model. Age was entered as a covariate.

To assess model fit, chi-square (χ^2), the normed chi-square (χ^2 / *df*), the comparative fit index (CFI), the Tucker-Lewis Index (TLI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR) were examined. Although the chi-square and normed chi-square are very sensitive to sample size, it is recommended to report these fit statistics (Kline, 2015; Mueller & Hancock, 2008). Guidelines for evaluating the model fit vary in degree of conservativeness (Kline, 2015). First, the model is a good fit if the chi square value is non-significant and the normed chi-square value is > 2.0 (Ullman, 2013). Second, Hu and Bentler's (1999) combination rule states that the model is considered to be a close fit to the data if CFI and TLI > .95, SRMR < .08-.10. Finally, RMSEA < .06 indicates acceptable fit (Ullman, 2013). In order to determine effect size, R^2 was used to determine the total amount of variance of the dependent variable accounted for by the model (e.g., Ullman, 2013). Modification indices were reviewed in the event of model specification errors. Model respecifications adhered to the theoretical model.

Bootstrapping analyses were conducted to examine indirect effects. Based on recommendations (Hayes, 2013), 10,000 bootstrap samples were conducted in order to reduce

sampling variation and achieve maximal statistical precision. Indirect effects were deemed statistically significant if the 95% bias-corrected confidence interval did not contain zero.

Aim 4: Results

Skewness and kurtosis for each of the observed variables are reported in Table 14. Boxplots and histograms were examined. Descriptive statistics (see Table 15) and bivariate correlations (see Table 16) were examined for each of the model variables. All bivariate correlations < 0.90, indicating no extreme multivariate collinearity (Kline, 2015).

Measurement model.

Latent variables were formed for pain catastrophizing, distress, sexual dysfunction, and pain severity. Due to the conceptual overlap and intercorrelation between pain catastrophizing, the cognitive subscale of pain-related fear, and the pain-related fear subscale, this dissertation conceptualized these as three components of the pain catastrophizing latent variable. The measurement model demonstrated strong fit to the data, $\chi^2(0) = 0.00$, $p < .001$, $(\chi^2/df) = 0.00$, CFI = 1.00, *TLI* = 1.00, *SRMR* = .00, *RMSEA* = .00 (90% CI [.00, .00]). Distress included depression, cognitive anxiety, and somatic anxiety symptoms. The measurement model also demonstrated strong fit to the data, $\chi^2(0) = 0.00$, $p < .001$, $(\chi^2/df) = 0.00$, CFI = 1.00, *TLI* = 1.00, *SRMR* = .00, *RMSEA* = .00 (90% CI [.00, .00]). Sexual dysfunction included erectile function, sexual desire, premature ejaculation, sexual satisfaction, sexual-esteem, and sexual depression. The measurement model was not a strong fit to the data, $\chi^2(9) = 34.26$, $p < .001$, $(\chi^2/df) = 3.81$, CFI = 0.81, *TLI* = 0.68, *SRMR* = .09, *RMSEA* = .13 (90% CI [.08, .17]). The modification indices suggested accounting for the covariance of erectile dysfunction and sexual-esteem. However, these modification indices did not make theoretical sense, considering that the remaining variables are also known to correlate in the literature. Therefore, the sexual dysfunction latent variable was re-conceptualized. It was hypothesized that this latent variable may actually be

Table 14

Skewness and Kurtosis of the Variables in the Fear-Avoidance Model of Sexual Pain

	Skewness			Kurtosis		
Variables	Statistic	*SE*	*z*	Statistic	*SE*	*z*
Pain Intensity Descriptors	0.74	.18	4.11***	0.18	.37	0.49
Worst Pain Intensity	-0.13	.18	0.72	-0.26	.37	0.70
Average Pain Intensity	-0.52	.18	2.89**	-0.38	.36	1.06
Pain Catastrophizing	-0.29	.18	1.61	-0.27	.36	0.75
Pain-Related Cognitive Anxiety	0.13	.18	0.72	-0.43	.36	1.19
Pain-Related Fear	0.83	.18	4.61***	0.28	.36	0.78
Pain-Related Escape/ Avoidance Behaviours	0.56	.18	3.11**	-0.25	.36	0.69
Erectile Function	-0.86	.23	3.74***	0.05	.45	0.11
Dyadic Sexual Desire	-0.76	.18	4.22***	0.23	.36	0.64
Premature Ejaculation	1.02	.18	5.67***	0.23	.36	0.64
Sexual-Esteem	-0.59	.18	3.28**	0.29	.36	0.81
Sexual Depression	0.03	.18	0.17	-0.72	.36	2.00*
Sexual Satisfaction	0.13	.19	0.68	0.02	.37	0.05
Depressive Symptoms	0.58	.18	3.22**	-0.49	.36	1.36
Cognitive Anxiety	0.27	.18	1.50	-0.67	.37	1.81

Somatic Anxiety	1.13	.18	6.28***	1.65	.37	4.46***

Note. SE = standard error;

* $p < .05$. ** $p < .01$. ***$p < .001$

Table 15

Descriptive Statistics for the Variables in the Fear-Avoidance Model of Sexual Pain

Variables	Full criteria (N = 176) M (SD)
Pain Intensity Descriptors	16.09 (8.06)
Worst Pain Intensity	3.49 (0.93)
Average Pain Intensity	6.24 (1.80)
Pain Catastrophizing	27.45 (10.84)
Pain-Related Cognitive Anxiety	11.93 (5.90)
Pain-Related Fear	6.59 (5.19)
Pain-Related Escape/Avoidance Behaviours	7.89 (4.96)
Erectile Function	23.41 (5.81)
Dyadic Sexual Desire	45.36 (9.96)
Premature Ejaculation	4.99 (4.75)
Sexual-Esteem	13.14 (4.47)
Sexual Depression	8.79 (4.71)
Sexual Satisfaction	62.93 (15.07)
Depressive Symptoms	21.12 (13.51)
Cognitive Anxiety	22.28 (7.33)
Somatic Anxiety	18.74 (5.69)

Table 16.

Intercorrelations of the Variables in the Fear-Avoidance Model of Sexual Pain

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Pain Intensity Descriptors	-															
2. Worst Pain Intensity	.40***	-														
3. Average Pain Intensity	.47***	.36***	-													
4. Pain Catastrophizing	.47***	.36***	.49***	-												
5. Pain-Related Cognitive Anxiety	.48***	.41***	.44***	.69***	-											
6. Pain-Related Fear	.46***	.38***	.35***	.55***	.56***	-										
7. Pain-Related Escape/	.38***	.30***	.31***	.49***	.54***	.59***	-									

Avoidance Behaviours																
8. Erectile Functioning	-.12	.06	.11	-.001	-.13	-.12	-.07	-								
9. Dyadic Sexual Desire	.10	.05	.20*	.09	-.01	.002	-.19*	.14	-							
10. Premature Ejaculation	-.05	-.11	-.10	-.02	.002	.08	.19*	.14	-.08	-						
11. Sexual-Esteem	-.04	-.06	.02	-.14	-.10	-.03	-.10	.26**	.34***	-.19*	-					
12. Sexual Depression	.21	.09	.09	.29***	.24***	.21**	.20	-.39***	-.15*	.11	-.60***	-				
13. Sexual Satisfaction	-.04	.002	.06	.02	-.02	.05	.02	.33***	.19*	.04	.50***	-.57***	-			
14. Depressive Symptoms	.22**	.16*	.09	.24***	.28***	.31***	.26***	-.14	-.11	.02	-.18*	.45***	-.28***	-		
15. Cognitive Anxiety	.22**	.18*	.15	.27***	.32***	.31***	.22***	-.10	-.09	-.03	-.15*	.40***	-.22**	.78***	-	
16. Somatic Anxiety	.25***	.14	.14	.25***	.25***	.39***	.29***	-.07	-.07	.16*	-.14	.35***	-.06	.55***	.58***	-

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

conceptualized as two separate constructs: 1. Sexual functioning, consisting of erectile function, sexual desire, and premature ejaculation; and 2. Sexual nonfulfillment, consisting of sexual satisfaction, sexual-esteem, and sexual depression. The model was not identified for the sexual functioning latent variable, and as a result, no chi-square was available. In regards to the sexual nonfulfillment latent variable, the measurement model was a strong fit to the data, $\chi^2(0) = 0.00$, $p < .001$, $(\chi^2/df) = 0.00$, CFI = 1.00, *TLI* = 1.00, *SRMR* = .00, *RMSEA* = .00 (90% CI [.00, .00]).

Pain severity included pain intensity ratings, pain severity at its worst, and average pain intensity. The measurement model demonstrated strong fit to the data, $\chi^2(0) = 0.00$, $p < .001$, $(\chi^2/df) = 0.00$, CFI = 1.00, *TLI* = 1.00, *SRMR* = .00, *RMSEA* = .00 (90% CI [.00, .00]).

Structural model.

Figure 5 depicts the final model. The structural regression model was a strong fit to the data, $\chi^2(55) = 69.41$, $p = .09$, $(\chi^2/df) = 1.26$, *CFI* = .98, *TLI* = .98, *SRMR* = .05, *RMSEA* = .04 (90% CI [.00, .06). The model demonstrated that greater pain catastrophizing was significantly associated with greater pain-related avoidance, distress, sexual nonfulfillment, and pain severity. Pain-related avoidance was not significantly associated with distress, sexual nonfulfillment, and pain severity. In addition, neither distress nor sexual nonfulfillment were significantly associated with pain severity.

Indirect effects of pain catastrophizing on pain severity via pain-related avoidance, distress, and sexual nonfulfillment were examined and non-significant (see Table 17). Bias-corrected bootstrap confidence intervals for the indirect effect based on 10,000 bootstrap samples crossed zero, indicating that it was not possible to reject the null hypothesis.

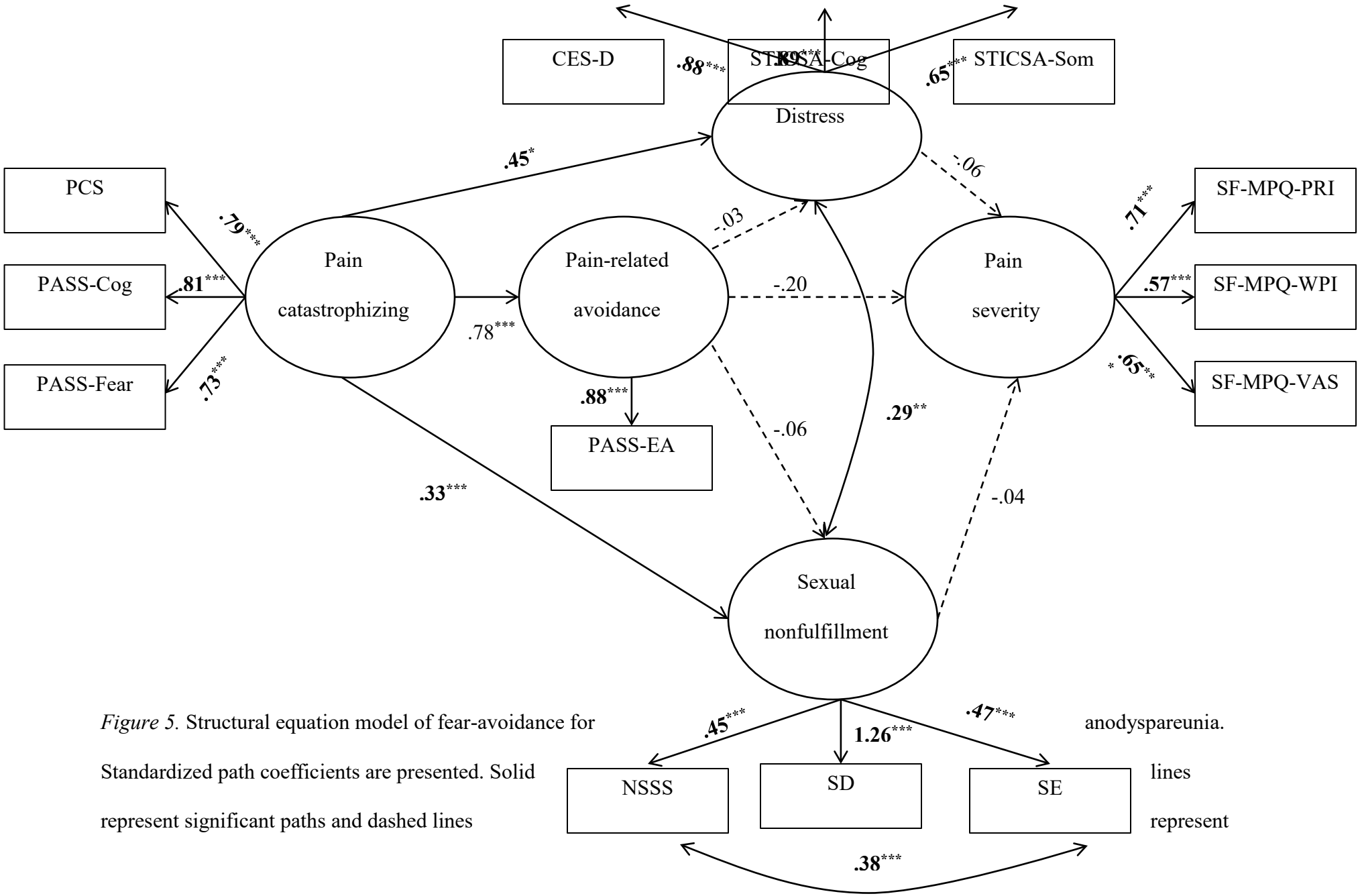

Figure 5. Structural equation model of fear-avoidance for anodyspareunia. Standardized path coefficients are presented. Solid lines represent significant paths and dashed lines represent

non-significant associations. Straight lines represent direct regression pathways and curved lines represent covariance associations. PCS = Pain Catastrophizing Scale; PASS-Cog = Cognitive anxiety subscale of the Short version Pain Anxiety Symptom Scale; PASS-Fear = Fear of pain subscale of the Short version Pain Anxiety Symptom Scale; PASS-EA = Escape and avoidance subscale of the Short version Pain Anxiety Symptom Scale; CES-D = Center for Epidemiologic Studies - Depression Scale; STICSA-Cog = Cognitive anxiety subscale of the State-Trait Inventory for Cognitive and Somatic Anxiety; STICSA-Som = Somatic anxiety subscale of the State-Trait Inventory for Cognitive and Somatic Anxiety; NSSS = New Sexual Satisfaction Scale; SD = Sexual-depression subscale of the Sexuality Scale; SE = Sexual-esteem subscale of the Sexuality Scale; SF-MPQ-PRI = Pain rating index of the Short form of the McGill Pain Questionnaire; SF-MPQ-WPI = Worst pain index of the Short form of the McGill Pain Questionnaire; SF-MPQ-VAS = Visual analogue scale of the Short form of the McGill Pain Questionnaire. Age was entered as a covariate.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 17.

Indirect Effects of Pain Catastrophizing on Pain Severity

Indirect pathway	β	*SE*	*p*	BC Bootstrap 95% CI Lower	BC Bootstrap 95% CI Upper
Indirect Effect of Pain Catastrophizing on Pain Severity					
Total indirect effect	-.20	.19	.30	-.35	.09
Indirect effect via pain-related avoidance	-.16	.17	.36	-.29	.08
Indirect effect via distress	-.03	.05	.58	-.08	.05
Indirect effect via sexual nonfulfillment	-.01	.02	.50	-.03	.01

Note. β = standardized estimate; SE = standard error; BC = bias-corrected; CI = confidence interval

Aim 5: Treatment Barriers Among GBM Who Met Full Criteria For GPPPD

Aim 5: Objectives and Hypotheses

In order to develop medical and psychological interventions that GBM with anodyspareunia will utilize, it is important to identify barriers to treatment seeking among this population. Based on research among heterosexual populations experiencing sexual dysfunction, barriers to help-seeking behaviours included beliefs that the difficulty would spontaneously remit or that no medical solution existed as well as fear of stigma or of discovering a more serious medical condition (e.g., Donaldson & Meana, 2011; Shabsigh et al., 2004). Possible gay specific barriers include fear of discrimination from health care practitioners (e.g., Armstrong & Reissing, 2012; Brotman et al., 2002), internalized homophobia (e.g., Santos et al., 2013), and beliefs that pain during receptive anal intercourse is normal.

Aim 5 identified barriers to help-seeking behaviours among GBM with GPPPD. It was expected that compared to treatment-seekers, GBM with GPPPD who have not sought treatment would report greater fear of homophobic discrimination, fear of stigma toward sex and anal sex, internalized homophobia, shame, embarrassment, belief that painful receptive anal intercourse is normal, belief that the pain will spontaneously remit, and fear of a more serious underlying problem, as well as lower confidence in the availability of a medical solution.

Aim 5: Method

Participants

Descriptive statistics regarding treatment-seeking behaviours were examined using the full sample ($N = 369$). To examine barriers of seeking treatment for anodyspareunia, GBM who met full criteria for GPPPD ($n = 176$) were divided into two groups (i.e., treatment-seeker or

non-treatment seeker) based on whether they indicated they have or have not sought out treatment for pain during receptive anal intercourse/penetration.

Measures

The following potential barriers to seeking treatment for anodyspareunia were assessed: fear of discrimination by a health care professional regarding one's sexual minority status; internalized homophobia; and unhelpful beliefs and misconceptions related to anodyspareunia. Internalized homophobia was assessed using the SIHS (Currie et al., 2004), as described in Aim 3.

Treatment-seeking behaviours. Participants were provided a list of health care professionals and asked to indicate which health care professionals they have consulted regarding the pain they experience during receptive anal intercourse.

Stigma. The Stigma Consciousness Questionnaire (SCQ; Pinel, 1999) is a 10-item self-report measure assessing expectations of being stereotyped due to one's minority status (e.g., biological sex, ethnicity, sexual orientation). An adapted version of the SCQ was administered to assess the extent to which participants expect to be stereotyped due to their sexual minority status by health care professionals (e.g., "When interacting with health care professionals, I feel like they interpret all my behaviours in terms of the fact that I am a gay/bisexual man"). Participants indicated on a 7-point Likert scale (ranging from 0 = *strongly disagree* to 6 = *strongly agree*) the extent to which they agree with each statement. Total scores range from 0 to 60, where higher scores reflect greater expectations of being stereotyped due to one's minority status. The SCQ exhibited adequate to good internal consistency among women ($\alpha = .72$), sexual minority populations ($\alpha = .81$), and ethnic minority populations ($\alpha = .77$; Pinel, 1999). In the present sample, the adapted SCQ demonstrated good internal consistency ($\alpha = .80$). The SCQ

also demonstrated adequate test-retest reliability (r = .76) after a 1-month period (Pinel, 1999). As well, the SCQ demonstrated good construct, convergent, and discriminant validity (Pinel, 1999).

Other barriers. To assess other common barriers to seeking treatment listed in the literature on sexual dysfunction (e.g., Donaldson & Meana, 2011; Shabsigh et al., 2004), participants indicated the extent to which they agree with the following statements on a 7-point Likert scale (ranging from 0 = *strongly disagree* to 6 = *strongly agree*): 1) Receptive anal sex is supposed to be painful; 2) Most men experience pain during receptive anal sex; 3) The pain I experience during receptive anal sex will go away on its own; 4) The pain I experience during receptive anal sex is likely due to a more serious health problem; 5) There is no medical solution available for pain during receptive anal sex; 6) Health care professionals will not be able to help me with the pain I experience during receptive anal sex; 7) I am too embarrassed; 8) I am too ashamed.

Data Analyses

Frequency and descriptive statistics were used to examine treatment-seeking behaviour between GPPPD diagnostic categories. Due to the unequal group sizes, differences in treatment barriers were examined using Kruskal-Wallis H tests for the following continuous variables: perceived stigma, internalized homophobia, beliefs regarding anal intercourse, and beliefs regarding available treatments. A chi-square goodness of fit test was used to examine differences between diagnostic groups and treatment seeking behaviour.

Aim 5: Results

Treatment-Seeking Behaviours

Table 18 provides descriptive statistics regarding treatment-seeking behaviour between

Table 18

Descriptive Statistics for Treatment-Seeking Behaviour between GPPPD Diagnostic Groups

Treatment-seeking behaviour	No criteria (*n* = 111) *n (%)*	Full criteria (*n* = 176) *n (%)*	Full criteria, no distress/ interference (*n* = 81) *n (%)*
Never sought treatment	88 (79.3)	112 (63.6)	63 (77.8)
Sought treatment	23 (20.7)	64 (36.4)	18 (22.2)

GPPPD diagnostic categories. When considering the entire sample, regardless of their GPPPD diagnostic status, 105 GBM reported consulting a health care professional compared to 263 GBM who reported never consulting a health care professional regarding pain when bottoming. There was a significant association between diagnostic group and treatment seeking behaviour, $\chi^2(2) = 10.20$, $p = .006$, $\eta^2 = .17$. GBM with GPPPD were 2.19 and 2.00 times more likely to seek treatment than GBM with no pain and GBM with pain and no distress, respectively. Overall, GBM who sought treatment for anodyspareunia most commonly reported consulting with a family doctor or general practitioner (23.4%). Table 19 provides a list of the health care professionals with whom participants reported seeking treatment.

Treatment Barriers Among GBM with GPPPD

Skewness and kurtosis for each of the barriers are reported in Table 20. Boxplots and histograms were examined. Table 21 provides descriptive statistics for each treatment barrier. Among GBM with GPPPD, Kruskal-Wallis tests indicated that age, $H(1) = 3.08$, $p = .08$, perceived stigma from health care professionals, $H(1) = 0.34$, $p = .56$, and internalized homophobia, $H(1) = 0.90$, $p = .34$, did not significantly differ between non-treatment seekers and treatment seekers. Non-treatment seeking GBM with GPPPD did, however, report significantly greater unhelpful beliefs overall regarding anodyspareunia than treatment seeking GBM with GPPPD, $H(1) = 24.17$, $p < .001$, $r = 1.82$. As a result, additional Kruskal-Wallis tests were conducted to examine differences between treatment and non-treatment seeking GBM with GPPPD on each unhelpful belief. Non-treatment seekers reported greater agreement with the following statements than treatment seekers: "Bottoming is supposed to be painful," $H(1) = 10.71$, $p < .001$, $r = 0.81$; "Most men experience pain when bottoming," $H(1) = 6.32$, $p = .01$, $r = .48$; "The pain I experience when bottoming will go away on its own," $H(1) = 15.93$, $p < .001$, r

Table 19

Health Care Professionals Consulted Regarding Pain During Anal Penetration by GBM

Health care professional	No criteria (*n* = 111) *n (%)*	Full criteria (*n* = 176) *n (%)*	Full criteria, no distress/ interference (*n* = 81) *n (%)*
Family doctor/General practitioner	18 (16.2)	51 (29.0)	17 (21.0)
Mental health professional	0 (0)	19 (10.8)	0 (0)
Gastroenterologist	4 (3.6)	12 (6.8)	1 (1.2)
Proctologist	1 (0.9)	9 (5.1)	1 (1.2)
Sexual health clinic	0 (0)	6 (3.4)	1 (1.2)
Urologist	1 (0.9)	3 (1.7)	2 (2.5)
Naturopath	1 (0.9)	3 (1.7)	0 (0)
Acupuncturist	0 (0)	3 (1.7)	0 (0)
Chiropractor	0 (0)	2 (1.1)	0 (0)
Physiotherapist	0 (0)	1 (0.6)	0 (0)
Other	2 (1.8)	6 (3.4)	0 (0)

Table 20

Skewness and Kurtosis for the Potential Barriers to Treatment Seeking Behaviours Among GBM With GPPPD (n = 176)

	Skewness			Kurtosis		
Variables	Statistic	*SE*	*z*	Statistic	*SE*	*z*
Perceived Stigma from Health Care Professionals	.20	.19	1.05	-.54	.37	1.46
Internalized Homophobia	.22	.18	1.22	-.02	.37	0.05
Unhelpful Beliefs	-.11	.18	0.61	-.19	.36	0.53

Note. SE = standard error

Table 21

Descriptive Statistics for Treatment Barriers Among GBM With GPPPD

Variable	Treatment Seekers (n = 64) *M* (SD)	Non-Treatment Seekers (n = 112) *M* (SD)
Perceived Stigma	29.75 (9.53)	30.94 (10.68)
Internalized Homophobia	45.53 (13.45)	46.96(12.58)
Unhelpful Beliefs Total Score	**28.83 (6.79)**	**33.98 (6.27)**
Bottoming is supposed to be painful.	**2.50 (1.85)**	**3.41 (1.84)**
Most men experience pain when bottoming.	**4.02 (1.71)**	**4.63 (1.44)**
The pain I experience when bottoming will go away on its own.	**3.31 (1.73)**	**4.41 (1.72)**
The pain I experience when bottoming is likely due to a more serious health problem.	**3.44 (1.81)**	**2.67 (1.35)**
There is no medical solution available for pain when bottoming.	4.11 (1.87)	4.23 (1.57)
Health care professionals will not be able to help me with the pain I experience when bottoming.	4.42 (1.75)	4.78 (1.64)

I am too embarrassed to seek help from a health professional for the pain I experience when bottoming.	**3.79 (2.02)**	**5.65 (1.64)**
I am too ashamed to seek help from a health professional for the pain I experience when bottoming.	**3.41 (2.06)**	**4.68 (2.00)**

Note. Significant comparisons are boldfaced.

= 1.20; “I am too embarrassed to seek help from a health professional for the pain I experience when bottoming,” $H(1) = 37.00$, $p < .001$, $r = 2.80$; “I am too ashamed to seek help from a health professional for the pain I experience when bottoming,” $H(1) = 15.38$, $p < .001$, $r = 1.17$. Treatment seekers reported greater agreement that “The pain I experience when bottoming is likely due to a more serious health problem,” $H(1) = 7.04$, $p = .01$, $r = .53$, than non-treatment seekers.

Aim 6: Anal Sex Role Labels and Anodyspareunia

Aim 6: Objectives and Hypotheses

Self-identified anal sex role labels are an important part of GBM’s sexual identity (e.g., Moskowitz et al., 2008). Self-identified anal sex roles correspond with GBM’s preferred sexual behaviours, with Tops preferring insertive roles, Bottoms preferring receptive roles, and Versatiles preferring both roles relatively equally (e.g., Damon, 2000; Hart et al., 2003; Moskowitz et al., 2008; Wegesin & Meyer-Bahlburg, 2000). Anodyspareunia may impact whether GBM enact their preferred anal sex role (e.g., Moskowitz & Hart, 2011), the stability of their preferred anal sex role label (e.g., Pachankis et al., 2013), and their sexual satisfaction (Lawrance & Byers, 1995; Gagnon, 1990).

Aim 6 examined whether pain when bottoming was associated with changes in one’s sexual behaviour and preferred anal sex role label. Among GBM with GPPPD, it was hypothesized that due to pain during anal penetration, 1) Top/Versatiles, Versatiles, and Bottom/Versatiles with GPPPD would be more likely to report topping when wanting to bottom than Bottoms with GPPPD; and 2) Bottoms with GPPPD would be more likely to change their self-identified anal sex role than Versatiles and Tops with GPPPD. According to the IEMSS and script theory, the inability to perform one’s preferred sex role may reduce one’s sexual

satisfaction. It was hypothesized that Bottoms with GPPPD would report lower sexual satisfaction than Versatiles and Tops with GPPPD.

Aim 6: Method

Participants

Descriptives related to anal sex role labels were examined between GBM who met no criteria for GPPPD (*n* = 111), GBM who met full GPPPD criteria (*n* = 175), and GBM who reported pain, but no distress (*n* = 81). Changes in sexual behaviour and self-identified anal sex role as well as sexual satisfaction were examined across anal sex role labels among GBM with GPPPD.

Measures

Sexual satisfaction was assessed as per the description in Aim 3.

Anal sex role label. Participants reported their preferred self-identified anal sex role from the following categories: Top, Top/Versatile, Versatile, Bottom/Versatile, and Bottom. To assess the impact of anodyspareunia on their preferred self-identified anal sex role, participants were asked to indicate on a 5-point Likert-type scale (ranging from 0 = *almost never or neve*r to 4 = *almost always or always*) how often pain experienced when being penetrated by a sexual partner has caused them to Top (i.e., penetrate your sexual partner), even though they preferred to Bottom and/or their partner preferred that they Bottom (i.e., be penetrated by your partner). In addition, participants were asked whether their preferred anal sex role changed since they started to experience pain during receptive anal intercourse, and if yes, indicated their previously preferred anal sex role label.

Data Analyses

Chi-square goodness of fit tests were used to examine differences between anal sex role labels across GPPPD diagnostic categories and changes in self-identified anal sex role label among GBM with GPPPD. Differences in sexual behaviour and sexual satisfaction across anal sex role labels among GBM with GPPPD were examined using ANOVA.

Aim 6: Results

Anal Sex Role Labels across GPPPD Groups

Table 22 provides the frequencies for each anal sex role label across GPPPD categories. A significant association between self-identified anal sex role label and GPPPD group, $\chi^2(8) = 24.63$, $p = .002$, $\eta^2 = .19$, was found.

Stability of Preferred Anal Sex Role Label among GBM With GPPPD

Among GBM with GPPPD, 91 (52%) men indicated that their preferred anal sex role label changed since the onset of pain during bottoming whereas 84 (48%) men indicated no change in their preferred anal sex role label (see Table 23). There was a significant association between current self-identified anal sex role label and whether their preferred anal role label changed, $\chi^2(4) = 32.32$, $p < .001$, $\eta^2 = .43$. Tops were 1.5 times, Top/Versatiles were 2.3 times, and Versatiles were 2.6 times more likely to report that their preferred anal sex role label changed since experiencing pain when bottoming than remained the same. Bottoms were 6.2 times more likely to report that their preferred anal sex role label stayed the same since experiencing pain when bottoming than changed. Table 24 shows the frequencies for each direction in which the anal sex role labels changed. Among GBM who indicated, “Yes” their preferred anal sex role label changed following the onset of anodyspareunia, 23 (13%) selected the same past preferred anal sex role label as their current label, reflecting no change (e.g., Top from Top).

Table 22

Self-Identified Anal Sex Role Label across GPPPD Diagnostic Categories

Anal Sex Role Label	No criteria (*n* = 111) *n (%)*	Full criteria (*n* = 176) *n (%)*	Full criteria, no distress/ interference (*n* = 81) *n (%)*
Top	3 (2.7)	20 (11.4)	13 (16.0)
Top/Versatile	18 (16.2)	39 (22.2)	8 (9.9)
Versatile	13 (11.7)	36 (20.5)	14 (17.3)
Bottom/Versatile	45 (40.5)	44 (25.0)	26 (32.1)
Bottom	32 (28.8)	36 (20.5)	20 (24.5)

Table 23

Change in Self-Identified Anal Sex Role Label in GBM With GPPPD

	"Yes" Change	"No" Change
Current Anal Sex Role	(*n* = 91)	(*n* = 84)
Label	*n (%)*	*n (%)*
Top	12 (13.2)	8 (9.5)
Top/Versatile	27 (29.7)	12 (14.3)
Versatile	26 (28.6)	10 (11.9)
Bottom/Versatile	21 (23.1)	23 (27.4)
Bottom	5 (5.5)	31 (36.9)

Table 24

Current and Past Self-Identified Anal Sex Role Label Since the Onset of Anodyspareunia Among GBM With GPPPD

Current vs Past ASRL	n = 91 *n (%)*
Top from Top/Versatile	2 (1.1)
Top from Versatile	4 (2.3)
Top from Bottom/Versatile	2 (1.1)
Top from Bottom	1 (0.6)
Top/Versatile from Top	4 (2.3)
Top/Versatile from Versatile	10 (5.7)
Top/Versatile from Bottom/Versatile	5 (2.8)
Top/Versatile from Bottom	3 (1.7)
Versatile from Top	1 (0.6)
Versatile from Top/Versatile	1 (0.6)
Versatile from Bottom/Versatile	6 (3.4)
Versatile from Bottom	6 (3.4)
Bottom/Versatile from Top	1 (0.6)
Bottom/Versatile from Top/Versatile	1 (0.6)
Bottom/Versatile from Versatile	3 (1.7)
Bottom/Versatile from Bottom	11 (6.3)
Bottom from Top	0 (0)
Bottom from Top/Versatile	1 (0.6)

Bottom from Versatile	0 (0)
Bottom from Bottom/Versatile	0 (0)

Sexual Behaviour, Sexual Satisfaction, and Anal Sex Role Labels among GBM With GPPPD

Skewness and kurtosis for sexual satisfaction (see Table 14) and sexual behaviour were examined. The Levene's tests of equality of error variances were non-significant. Table 25 provides the descriptive statistics and significant differences for sexual behaviour and sexual satisfaction across anal sex role labels. Differences in sexual behaviour and sexual satisfaction are described below.

Significant differences in sexual behaviour, $F(4, 170) = 23.85$, $p < .001$, $\eta 2 = .36$, and sexual satisfaction, $F(4, 171) = 3.64$, $p = .007$, $\eta 2 = .08$, were found across anal sex role labels among GBM with GPPPD. Tukey HSD post hoc tests revealed that Bottoms were significantly less likely to top due to anodyspareunia when they preferred to Bottom and/or their partner preferred that they Bottom compared to Tops (mean difference = -2.32, *SE* = 0.31, $p < .001$, 95% CI = [-3.17, -1.47], Cohen's $d = 1.91$), Top/Versatiles (mean difference = -2.21, *SE* = 0.26, $p < .001$, 95% CI = [-2.92, -1.51], Cohen's $d = 2.02$), Versatiles (mean difference = -1.33, *SE* = 0.26, $p < .001$, 95% CI = [-2.05, -0.61], Cohen's $d = 1.21$), and Bottom/Versatiles (mean difference = -1.05, *SE* = 0.25, $p < .001$, 95% CI = [-1.74, -0.37], Cohen's $d = 1.02$). Bottoms/Versatiles were significantly less likely to top due to anodyspareunia when they preferred to Bottom and/or their partner preferred that they Bottom than Tops (mean difference = -1.26, *SE* = 0.30, $p < .001$, 95% CI = [-2.09, -0.44], Cohen's $d = 1.07$) and Top/Versatiles (mean difference = -1.16, *SE* = 0.24, $p < .001$, 95% CI = [-1.83, -0.49], Cohen's $d = 1.10$). Similarly, Versatiles were significantly less likely to top due to anodyspareunia when they preferred to Bottom and/or their partner preferred that they Bottom than Tops (mean difference = -0.98, *SE* = 0.31, $p = .014$, 95% CI = [-1.83, -0.13], Cohen's $d = 0.79$) and Top/Versatiles (mean difference = -0.88, *SE* = 0.26, $p = .007$, 95%

Table 25

Sexual Behaviour and Satisfaction across Self-Identified Anal Sex Role Label Among GBM with GPPPD

Anal Sex Role Label	Frequency Topped When Wanted to Bottom *M (SD)*	Sexual Satisfaction *M (SD)*
Top	[aeg]3.90 (1.33)	[a]72.24 (13.90)
Top/Versatile	[bfh]3.79 (1.11)	66.30 (15.90)
Versatile	[cgh]2.92 (1.13)	61.35 (11.94)
Bottom/Versatile	[def]2.64 (0.99)	61.50 (14.98)
Bottom	[abcd]1.58 (1.08)	[a]58.08 (15.50)

Note. Numbers with the same superscript differ significantly. The *p*-level and effect size for significant comparisons are listed in the text.

CI = [-1.58, -0.17], Cohen's *d* = 0.78). Tukey HSD post hoc tests revealed that Bottoms reported significantly lower sexual satisfaction than Tops (mean difference = 14.15, *SE* = 4.15, *p* = .007, 95% CI = [2.72, 25.58], Cohen's *d* = 0.96).

Discussion

This was the first study to assess the applicability of the diagnostic criteria for Genito-Pelvic Pain/Penetration Disorder (GPPPD) among GBM and systematically explore the symptom and biopsychosocial profiles of these men. In addition, this study tested a cognitive-behavioural model of sexual pain among GBM with GPPPD. Finally, this study identified treatment barriers reported by GBM with GPPPD.

Applicability of DSM-5 GPPPD Criteria for GBM with Anodyspareunia

The hypothesis that the DSM-5 diagnostic criteria for GPPPD would be a good fit for a large proportion of GBM experiencing pain during anal penetration was supported. Approximately half of the sample (47.2%) met full criteria for GPPPD. The study findings suggest that the frequency of pain during anal penetration may not be the defining diagnostic criterion of GPPPD among GBM. The DSM-5 diagnostic criteria for sexual dysfunctions list the frequency of sexual difficulties (i.e., more than 75% of the time) as a primary criterion. Therefore, frequency of pain during anal penetration was used to recruit and, initially, differentiate between GBM with anodyspareunia and pain-free controls. However, 36 (19.5%) GBM who reported experiencing pain during anal penetration about half the time or less met criteria for GPPPD. Damon and Rosser (2005) and Vansintejan and colleagues (2013) created a composite frequency and severity score. As a result, it is not possible to compare this dissertation's findings regarding the importance of assessing frequency with previous literature on anodyspareunia in GBM. Within a heterosexual sample of men and women reporting low

sexual desire and/or arousal, Sarin et al. (2013) found that experiencing sexual desire and/or arousal difficulties less than 75% of the time was the second most common reason for participants to not meet diagnostic criteria for a sexual desire/arousal disorder. In his critiques of the diagnostic criteria for sexual pain disorders, Binik (2010a, 2010b) highlights the lack of research regarding how frequent genital pelvic pain needs to be present in order to meet diagnostic criteria. Although frequency ratings may be important in distinguishing transient sexual difficulties from sexual dysfunction (Sungur & Gunduz, 2014), more research is needed to identify clinically significant pain frequency cut-offs (Binik 2010a, 2010b; Segraves, Balon, & Clayton, 2007), especially among GBM.

In the current sample, 81 (21.8%) GBM met criteria A and B, and did not report "a lot" or "severe" distress as a result. Similarly, Damon and Rosser (2005) found that 60% of GBM who reported frequent and severe pain did not report that the pain caused significant distress or interference. Diagnostically, this finding re-emphasizes the importance of not pathologizing a behaviour and/or symptom on its own (e.g., Moser & Kleinplatz, 2006; Wakefield, 1992). Essential to Wakefield's (1992) conceptualization of a mental disorder as "harmful dysfunction" is the consideration of the consequences of the dysfunctional behaviour or symptom. Wakefield (1992) asserts that the consequences must be perceived as negative and that these perceptions are largely impacted by sociocultural standards and values. Furthermore, Melzack (1975, 1999) asserts that pain involves sensory, affective, and evaluative experiences, which are separate interacting processes. Based on Melzack's theory, it is possible that mild pain is extremely distressing to some and severe pain is not distressing to others. It is, therefore, important to assess pain severity and distress separately when diagnosing GPPPD. More information regarding the pain prognosis and coping strategies of this subsample of GBM is needed in order

to better identify clinical implications. Future research would benefit from investigating how this subsample copes with frequent and/or severe pain during anal penetration, in order to reveal possible effective psychosocial treatment strategies. Future research would also benefit from monitoring this group over time to identify possible risk and resilience factors related to the pain progressing into a distressing sexual dysfunction.

Systematic Description of Anodyspareunia Among GBM

Using LCA, GBM were empirically classified into three distinct groups based on pain intensity, frequency, distress, interference, temporal pattern, and location, as well as biological and situational factors. Overall, 27% of GBM were assigned to the No/low pain class, 45% to the Moderate pain class, and 28% to the High pain class. The No/low pain class scored the lowest, the High pain class scored the highest, and the Moderate pain class scored between the two classes on the aforementioned indicators.

Pain intensity, pain frequency, as well as pain-related distress and interference differentiated the pain classes. The High pain class reported the highest pain intensity, pain frequency, pain-related distress, and pain-related interference followed by the Moderate, and subsequently, the Low pain classes. Based on these findings, it is likely that the High pain class is comprised of GBM with GPPPD, the Moderate pain class is comprised of both GBM with GPPPD and GBM with pain and no distress, and the Low pain class is comprised of the GBM with no pain. When the pain classes were compared to the GPPPD diagnostic groups, the majority of GBM with GPPPD was classified in the High and Moderate pain classes (94.3%) and the majority of GBM with no pain was classified in the Low pain and Moderate pain classes (96.3%). GBM with pain and no distress were mostly classified in the Moderate pain class (53.1%) and equally distributed between the Low and High pain classes (23.5% in each class).

Four men (3.6%) were classified in the High pain class despite meeting no GPPPD diagnostic criteria. These men are likely experiencing pain due to another medical condition, and not GPPPD, as they endorsed an HIV-positive serostatus, and/or experiencing anal fissures, hemorrhoids, irritable bowel syndrome, genital herpes, and multiple past STIs. Ten men (5.7%) were classified in the Low pain class who met full diagnostic criteria for GPPPD. Although these men reported frequent and severe pain as well as pain-related distress and interference during anal penetration, they reported similarly low depressive, cognitive anxiety, and somatic anxiety symptoms to GBM who met no criteria and GBM classified in the Low pain class. It is unclear based on the research to date whether depressive and anxiety symptoms are etiological and/or maintaining factors of anodyspareunia. Future studies may benefit from not including depressive and anxiety symptoms as classification indicators, and instead examine these symptoms as outcomes of anodyspareunia.

As predicted, the temporal presentation distinguished between pain classes. Pain at the moment of penetration (82%), pain during penile thrusting (43%), and pain once the penis is fully penetrated (37%) were the most commonly reported temporal presentations across pain classes. Similar to Meana and colleagues' (1997) findings among women with sexual pain, the majority of the High pain class reported experiencing pain at the moment of penetration (90%) and during penile thrusting (57%). In addition, 44% of the High pain class also reported experiencing pain once the penis is fully penetrated. In regards to the Moderate pain class, 85% reported experiencing pain at the moment of penetration, 48% during penile thrusting, and 44% once the penis is fully penetrated. Although the majority of the No/low pain class also reported experiencing pain at the moment of penetration (69%), few reported experiencing pain during penile thrusting (21%) and once the penis is fully penetrated (18%). In other words, experiencing

pain at any point other than at the moment of penetration differentiated the No/low pain class from the Moderate and High pain classes. To the author's knowledge, this was the first study to examine the temporal presentation of pain during anal penetration among GBM. Although Vansintejan and colleagues (2013) assessed the frequency of pain during and following anal penetration and Rosser and colleagues (1998) found that depth and rate of penile thrusting impact the severity of pain experienced during anal penetration, neither investigated the temporal presentation of pain. The temporal presentation of the pain differentiated between female sexual pain disorders (Meana et al., 1997b) and appears relevant to the experience of anodyspareunia among GBM. More research is needed to replicate these findings and better understand the role of temporal presentation in the etiology and maintenance of GPPPD.

Pain location also distinguished between pain classes, as was hypothesized. Although the majority of the sample reported experiencing pain at the entrance of the anus (72%), the High pain (79%) and Moderate pain (75%) classes were more likely than the No/low pain class (59%) to endorse pain in this location. Furthermore, the Moderate pain (61%) and High pain (62%) classes were twice as likely to report pain inside the anal canal and rectum than the No/low pain class (32%). Among a sample of women with sexual pain, participants who reported experiencing pain inside the vaginal canal were more likely to exhibit reduced vulvar or vaginal skin elasticity and labial fullness as well as thinning of the vaginal mucosa compared to women who reported only experiencing pain at the vaginal entrance (Kao et al., 2012; Meana et al., 1997b). Furthermore, pain at the vaginal entrance is more commonly associated with vulvodynia whereas internal pain during vaginal penetration is more commonly associated with endometriosis (Yong, Sadownik, & Brotto, 2015). A follow-up study incorporating a physical exam of the anus and rectum is necessary to establish whether GBM in the Moderate and High

pain classes differ on anal elasticity and mucosa compared to the No/low pain class. Finally, substantially fewer GBM in the No/low pain class (ranging from 0-4%) reported experiencing pain in any of the remaining locations (i.e., perineum, prostate, pelvic area, bladder, testes, and buttocks) compared to the Moderate (ranging from 1-11%) and High pain classes (ranging from 2-10%). Men with chronic pelvic pain syndrome most commonly reported experiencing pain in the testes, perineum, and penile glans and shaft (Davis et al., 2013). Within the current sample, it is possible that GBM who reported experiencing pain in these regions may be experiencing chronic pelvic pain syndrome, pain due to another medical condition, or somatization/pain disorder rather than anodyspareunia. In conclusion, assessing the pain location may be important in distinguishing between pain conditions, and subsequently, providing effective treatment recommendations, and therefore should be further investigated in future studies.

Past and/or current infections and inflammation are associated with female sexual pain disorders and male chronic pelvic pain disorder (Bergeron et al., 2015, Davis et al., 2013). In the current sample, the total number of past and/or current prostate and rectal conditions and STIs differentiated pain classes. The High pain class reported the highest number of prostate and rectal conditions and STIs compared to the Moderate and No/low pain classes. Most prostate and rectal conditions and STIs lead to the development of lesions, ulcers, and/or sores that can be painful and tender (Mears & Goldmeier, 2009; van Meegdenburg, Trzpis, Heineman, & Broens, 2016). Inflammation in the rectum and anus is also a common symptom of these conditions and is associated with increased pain (Davis & Goldstone, 2009; Mears & Goldmeier, 2009; van Meegdenburg et al., 2016). The relationship between prostate and rectal conditions, STIs and anodyspareunia is discussed further in the following section.

The High pain class reported most frequently experiencing pain during all sexual situations compared to the Moderate and No/low pain classes. Overall, participants reported most commonly experiencing pain when lubrication was insufficient, supporting the findings of previous studies of GBM with anodyspareunia (Damon & Rosser, 2005; Rosser et al., 1998; Vansintejan et al., 2013). The anal entrance and canal produces a small amount of mucus and does not lubricate in the same way as the vaginal wall (Rathus, Nevid, Fichner-Rathus, Herold, & McKenzie, 2007). Dryness can increase friction during penetration, which is often uncomfortable and may create tearing (e.g., Payne et al., 2007; Rathus et al., 2007). The study sample also reported frequently experiencing pain when anal foreplay and stimulation was lacking or inadequate, which is in line with the current literature (Damon & Rosser, 2005; Rosser et al., 1998; Vansintejan et al., 2013). The anal sphincter muscles contract at first entry and require time to relax, otherwise tearing may occur (Goldstone & Welton, 2004). Previous studies found that the size of the insertive partner's penis was a commonly reported predictor of pain (Damon & Rosser, 2005; Rosser et al., 1998). This study further clarified this relationship in that GBM, in general, indicated that larger width of the penis, object, and fingers inserted into the anus more often resulted in pain, whereas greater length was rated as less frequently causing pain. Finally, psychological factors were also listed as a predictor of pain among GBM; however, the authors failed to explain what constituted as psychological factors (Damon & Rosser, 2005; Rosser et al., 1998). GBM in the present study indicated that nervousness and the inability to relax frequently caused pain when bottoming. This finding is further discussed when evaluating the fear-avoidance model.

Regarding non-sexual penetrative situations, the High pain class reported most frequently experiencing pain during these situations compared to the Moderate and No/low pain classes. As

is the case with female sexual pain disorders, the High pain class reported more frequently experiencing pain during or after medical examinations of the anus, rectum, and prostate (i.e., similar to gynecological examinations in women) and insertion of suppositories (i.e., similar to insertion of tampons in women) (e.g., Landry & Bergeron, 2011; Meana, 2009). Pain in genital and/or pelvic regions during non-penetrative situations may also help distinguish pain conditions unrelated to anodyspareunia. For instance, Levator ani syndrome, which is characterized by dull aching pain deep in the rectum, is most painful when sitting (Rao et al., 2016) and different activities were associated with different pain locations in heterosexual men with chronic pelvic pain (Davis et al., 2013). Future research would benefit from further investigating relationship between the sexual and non-sexual situations and genito/pelvic pain conditions.

Correlates of Anodyspareunia Between Diagnostic Groups and Latent Classes

Biological factors. As predicted, GBM who met full diagnostic criteria for GPPPD reported significantly greater current and past prostate and rectal conditions compared to GBM who met no criteria for GPPPD and GBM who reported pain and no distress. Similar to a subsample of men with chronic pelvic pain who reported prostate inflammation and infections (Davis et al., 2013), 11 (6.2%) of the GBM who met full criteria for GPPPD reported current or past enlarged prostate and 14 (8.0%) reported current or past prostatitis. Within the current sample, GBM who met criteria for GPPPD more commonly reported experiencing current or past anal fissures (n = 64, 36.4%) and hemorrhoids (n = 85, 48.3%) than the remaining diagnostic groups. Anal fissures are extremely painful and caused by trauma to the anal epithelium, which typically heals on its own; however, the etiology of recurrent anal fissures remains uncertain (e.g., Farouk, Duthie, MacGregor, & Bartolo, 1994; Schouten, Briel, & Auwerda, 1994; van Meegdenburg et al., 2016). Researchers found an association between

recurrent anal fissures and increased anal resting pressure and anal sphincter hypertonia, resulting in increased tightness of the anal sphincters' muscle tone and reduced ability for these muscles to stretch (e.g., Farouk et al., 1994; van Meegdenburg et al., 2016). Similarly, hemorrhoids are associated with increased anal resting pressure (Aigner et al., 2006). In addition to the pain due to inflammation, recurrent anal fissures and/or hemorrhoids may, therefore, induce pain due to increased tightness and decreased elasticity.

The hypothesis that GBM with pain would report greater current and past STIs was partially supported. GBM who reported pain and no distress reported significantly fewer current and past STIs compared to GBM who met full and no criteria for GPPPD. More specifically, GBM with pain and no distress were less likely to endorse contracting gonorrhea, pubic lice, and syphilis than the other two diagnostic groups. It is possible that a third variable may account for the higher prevalence of these STIs among GBM with and without GPPPD than GBM with pain and no distress. Greater number of sexual partners (e.g., Bellis, Cook, Clark, Syed, & Hoskins, 2002), substance and alcohol abuse (e.g., Bellis et al., 2002; Cook & Clark, 2005), and low condom use (Holmes, Levine, & Weaver, 2008), for instance, are common predictors of STI acquisition and may differ across diagnostic groups. More research is needed to better understand the relationship between STIs and GPPPD among GBM.

Minority stress. The additive stress experienced by GBM due to frequent stigmatization and discrimination related to their sexual minority status negatively affects their mental and physical health (Meyer, 1995, 2003). There was no significant difference in internalized homophobia between GBM whose self-reported symptoms met and did not meet criteria for GPPPD. As hypothesized, GBM who met full diagnostic criteria for GPPPD reported significantly greater heterosexist harassment, rejection, and discrimination over the past year

compared to GBM who met no criteria for GPPPD. Compared to sexual non-minority individuals, GBM more often experience harassment and discrimination during childhood and adulthood (e.g., D'Augelli et al., 2002; Friedman et al., 2011; Meyer, 2003; Szymanski, 2009). Harassment and discrimination are reliably associated with negative adverse mental health outcomes among sexual minority populations (e.g., Hatzenbuehler, Nolen-Hoeksema, & Erickson, 2008; Meyer, 1995; Szymanski, 2009). According to the Psychological Mediation Framework proposed by Hatzenbuehler (2009), harassment and discrimination alter cognitive (e.g., hopelessness), affective (e.g., avoidant coping, rumination), and social (e.g., isolation) processes, which in turn lead to psychopathology (e.g., depression, anxiety). Schwartz, Stratton, and Hart (2016) found that hopelessness and low self-esteem mediated the relationship between past and current harassment and discrimination and erectile dysfunction, low sexual desire, and sexual dissatisfaction. It is, therefore, possible that these cognitive processes as well as negative pain-related cognitions explain the relationship between heterosexist harassment, rejection, and discrimination and GPPPD. Alternatively, harassment and discrimination may lead to depression and anxiety (e.g., Hatzenbuehler et al., 2008; Schwartz, Stratton, & Hart, 2016), which may inhibit sexual arousal and one's ability to relax the anal sphincter muscles, leading to increased pain when bottoming.

Contrary to the hypotheses, there were no significant differences in childhood physical and sexual abuse, and adulthood sexual coercion between GBM whose self-reported symptoms met and did not meet criteria for GPPPD. Although women experiencing sexual pain commonly report a history of physical and sexual abuse (e.g., Bergeron et al., 2015), one study found that 75% of women seeking treatment for vaginismis did not report experiencing sexual or physical abuse (ter Kuile et al., 2007). Compared to another Canadian sample of GBM ($M_{physical} = 9.44$,

$SD_{physical}$ = 5.30 and M_{sexual} = 9.30, SD_{sexual} = 5.59; Hart et al., 2017), the current sample reported lower incidence of physical (*M* = 6.53 – 7.70, *SD* = 2.49 – 4.06) and sexual abuse (*M* = 6.87 – 7.23, *SD* = 3.63 – 4.36). The low incidence rate may account for the lack of relationship between childhood physical and sexual abuse and GPPPD. Alternatively, it is possible that no direct effects were found between childhood physical and sexual abuse, and adulthood sexual coercion, and GPPPD because a mediator (e.g., anxiety, depression) explains the relationship between these variables. Once again, more research is needed to better understand the relationship between these adverse experiences and GPPPD within this population.

Pain-related catastrophizing, fear, and anxiety. GBM with GPPPD reported significantly higher pain catastrophizing, pain-related cognitive anxiety, pain-related fear, and pain-related somatic anxiety than GBM with no pain and GBM with pain and no distress. Furthermore, GBM with pain and no distress reported significantly higher pain catastrophizing, pain-related cognitive anxiety, pain-related fear, pain-related somatic anxiety and pain-related escape and avoidance behaviours than GBM with no pain. GBM with GPPPD and those with pain and no distress, however, did not differ on pain-related escape and avoidance behaviours. These findings are consistent with the female sexual pain literature showing that women with sexual pain reliably report greater pain catastrophizing than women without sexual pain disorders (Cherner & Reissing, 2013; Pukall et al., 2002; Payne et al., 2005, 2007; Sutton et al., 2009; Thomtén & Karlsson, 2014; Thomtén et al., 2014).

Pain descriptors. Overall, GBM with GPPPD reported higher intensity on each pain descriptor than GBM with no pain. GBM with GPPPD rated the following pain descriptors as the top five most intense: sharp, stabbing, shooting, throbbing, hot/burning. In fact, GBM with pain and no distress also reported higher intensity on the above descriptors (with the exception of

throbbing) than GBM with no pain. Men with chronic pelvic pain syndrome who reported pain in the anus, most commonly endorsed the descriptors aching, hot/burning, and tender (Davis et al., 2013), while women with sexual pain most commonly described the pain as burning, sore, sharp, tender, and aching (Meana et al., 1997). Pain researchers find that individuals tend to use common adjectives when describing the unique characteristics of specific pain syndromes and that pain descriptors differentiate between pain conditions (e.g., Dubuisson & Melzack, 1976; Melzack, 1975; Wagstaff, Smith, & Wood, 1985). Identifying the common descriptors used by GBM with GPPPD may facilitate assessment and diagnosis of GPPPD. The common descriptors found in this study should be replicated among GBM with GPPPD.

Pain duration. Compared to the majority of GBM with no pain and GBM with pain and no distress, GBM with GPPPD indicated that the pain related to bottoming persisted longer than five minutes. Moreover, the majority of GBM with no pain reported than pain related to bottoming lasted two minutes or less. Consequently, pain that does not persist for greater than two minutes may not warrant a GPPPD diagnosis and may actually be frequently experienced by GBM overall.

Mental health. GBM with GPPPD and GBM with pain and no distress reported higher depressive symptoms and trait cognitive anxiety than GBM with no pain. Furthermore, GBM with GPPPD reported higher trait somatic anxiety than GBM with no pain. These findings are consistent with the literature demonstrating a strong relationship between sexual dysfunction and depression and anxiety (e.g., Laurent & Simons, 2009). GBM with sexual pain reported higher anxiety than pain-free controls (Damon & Rosser, 2005) and men with chronic pelvic pain disorder frequently report elevated depressive symptoms (Davis et al., 2009; Smith et al., 2007). Similarly, women with sexual pain reported higher depressive symptoms and trait anxiety than

pain-free women (Meana et al., 1997b, Pazmany et al., 2014). At the same time, it is surprising that GBM with pain and no distress did not report significantly lower depressive and cognitive anxiety symptoms than GBM with GPPPD, considering that these GBM indicated that the pain did not cause distress or interference. It is possible that an underlying factor, such as pain catastrophizing explains the relationship between depressive and anxiety symptoms and GPPPD diagnosis. Although GBM with pain and no distress reported significantly lower pain catastrophizing than GBM with GPPPD, these GBM reported significantly higher pain catastrophizing than GBM with no pain, and pain catastrophizing was positively associated with depressive and anxiety symptoms. More research is needed to replicate and further elucidate the effects of anodyspareunia on mental health outcomes.

Sexual functioning. Sexual pain disorders are also associated with increased sexual dysfunction (e.g., Davis et al., 2013; Smith et al., 2007) and reduced sexual satisfaction among heterosexual and GBM samples (e.g., Pazmany et al., 2014; Rosser et al., 1997). There were no differences between diagnostic pain groups on erectile functioning, sexual desire, and premature ejaculation. At the same time, GBM with GPPPD reported lower sexual satisfaction and sexual-esteem as well as higher sexual depression compared to GBM with no pain and GBM with pain and no distress. These findings are consistent with GBM's reports that anodyspareunia disrupted a sexual relationship and prevented them from seeking a new relationship (Damon & Rosser, 2005). Women with sexual pain also reported reduced sexual self-esteem and sexual confidence (Desrochers et al., 2008).

Fear-Avoidance Model for Sexual Pain Among GBM With GPPPD

According to the fear-avoidance model for sexual pain, recurrent and severe pain during sexual penetration is maintained by two separate, but interrelated, pathways (see Figure 1). First,

pain during sexual penetration generates catastrophic pain-related thoughts, which induce a fear response (Thomtén & Linton, 2013). Fear of pain triggers hypervigilance to pain-related stimuli, muscle tension, and lack of sexual arousal, which in turn increase pain intensity (Thomtén & Linton, 2013). Second, fear of pain may lead to avoidance of penetration in an effort to reduce pain (Thomtén & Linton, 2013). Repeated avoidance behaviours, however, may cause or exacerbate psychological distress and sexual dysfunction, which again increase pain intensity (Thomtén & Linton, 2013). The second pathway was explored in this dissertation due to logistical limitations.

Results partially supported the second pathway of the fear-avoidance model for sexual pain. Greater pain catastrophizing was associated with greater pain-related avoidance, psychological distress, sexual nonfulfillment, and pain severity. In fact, pain catastrophizing was the only significant predictor of pain severity. As previously mentioned, these findings expand upon the sexual pain literature where men and women with sexual pain report greater pain catastrophizing, fear of pain, psychological distress, and sexual difficulties than pain-free controls (e.g., Cherner & Reissing, 2013; Sutton et al., 2009; Thomtén & Karlsson, 2014; Thomtén et al., 2014). As well, higher pain catastrophizing was associated with greater pain severity among women with sexual pain (Kao et al., 2012; Sutton et al., 2009; Thomtén et al., 2014) and men with chronic pelvic pain (Tripp et al., 2006). In sum, this dissertation provided additional evidence for the importance of pain catastrophizing on the experience of sexual pain.

In contrast to the fear-avoidance model, pain-related escape and avoidance behaviours were not significantly associated with psychological distress, sexual nonfulfillment, and pain severity. Pain-related avoidance, psychological distress, and sexual nonfulfillment did not mediate the relationship between pain catastrophizing and pain severity. Furthermore,

psychological distress and sexual nonfulfillment were not significantly associated with pain severity in the present sample. Based on the lack of findings, one possibility is that the second pathway of the fear avoidance model does not apply for sexual pain disorders. Among heterosexual women with sexual pain, the evidence regarding avoidance of penetrative sexual activity is mixed (e.g., Desrochers et al., 2008). While women with sexual pain commonly report continuing to engage in penetrative sexual activity despite the pain (Elmerstig, Wijma, & Swahnberg, 2013; Gordon et al., 2003), women with sexual pain report lower frequencies of vaginal intercourse than pain-free controls (e.g., Cherner & Reissing, 2013; Masheb et al., 2004; Meana et al., 1997; Reed et al., 2012). It is possible that pain-related escape and avoidance behaviours may not cause clinically significant distress and sexual dysfunction among GBM with anodyspareunia due to their ability to penetrate their partner and willingness to engage in non-penetrative sexual activity (e.g., oral sex; Moskowitz et al., 2008). In other words, GBM's openness to engage in alternative sexual activities may be a protective factor among those with anodyspareunia.

Alternatively, the lack of findings regarding pain-related escape and avoidance may be due to flaws in the measurement of avoidance behaviours. The escape and avoidance subscale of the PASS is a general pain measure, and is not specific to sexual behaviour. More specific questions regarding avoiding anal penetration may yield different results. Flink, Thomtén, Engman, Hedstrom, and Linton (2015) developed a self-report measure to assess coping strategies for sexual pain. Using this measure, avoidance strategies (e.g., "When my sexual partner wants to have intercourse, I make excuses to avoid it because it can be painful") mediated the relationship between pain catastrophizing and sexual pain severity at baseline and five-month follow-up among women with sexual pain (Flink, Engman, ter Kuile, Thomtén, &

Linton, 2017). Future research would benefit from further exploring the relationship between avoidance and GPPPD among GBM.

Unfortunately, the present study did not investigate the relationship between muscle tension, hypervigilance to pain-related stimuli, sexual arousal, and pain severity (i.e., the first pathway). Hypervigilance to pain stimuli was associated with pain severity among women with sexual pain (Desrochers et al., 2009) and pain-related fear accounted for the greater hypervigilance reported by women with versus without sexual pain (Payne et al., 2005). Anticipation of pain (Brauer et al., 2007) and hypervigilance to pain stimuli (Payne et al., 2005) negatively impact subjective sexual arousal, which likely increases pain severity (Barlow, 1986). This pathway may provide a better explanation for the relationship between pain catastrophizing and pain severity and should be explored in future research.

Treatment-Seeking Behaviours and Barriers Among GBM

Within the entire sample, only 28.5% (n = 105) of GBM sought treatment for pain experienced when bottoming. Among GBM with GPPPD, 64 (36.4%) men reported seeking treatment, whereas 112 (63.6%) men reported that they have not consulted with a health care professional regarding pain during anal penetration. This finding is in line with the sexual dysfunction literature showing that a majority of individuals from heterosexual samples who experience sexual dysfunction do not seek treatment (e.g., Donaldson & Meana, 2011; Shabsigh et al., 2004; Shifren et al., 2009). Similarly, a study of Canadian men and women (aged 40 to 80 years) found that 25% of those individuals experiencing a sexual dysfunction sought treatment from a health professional (Brock, Moreira, Glasser, Gingell, & the GSSAB Investigator's Group, 2006). Among men and women experiencing periodic and/or frequent sexual difficulties across five countries, 32% reported seeking treatment from a medical professional, 19% reported

seeking out information online, and 36% reported not actively seeking treatment (Nicolosi et al., 2006). Finally, 34.5% of American women with a sexual dysfunction sought treatment from a health professional (Shifren et al., 2009).

As expected, GBM with GPPPD who have not sought treatment reported significantly greater unhelpful beliefs overall. More specifically, compared to treatment seekers, non-treatment seekers reported higher belief that anal penetration is supposed to be painful, that most men experience pain when bottoming, and that the pain will remit on its own. The latter belief is a frequently reported treatment barrier among sexual dysfunction populations (e.g., Donaldson & Meana, 2011; Shabsigh et al., 2004). The beliefs that anal penetration is common and supposed to be painful are similar to the treatment barrier reported by men experiencing ED that erectile difficulties are a normal part of aging (Shabsigh et al., 2004). These misconceptions reflect a general lack of knowledge regarding the anatomy of the anus, how to achieve pleasurable anal intercourse, and the prevalence of anodyspareunia among GBM.

Shame and embarrassment are reliably the most commonly reported barriers to seeking treatment in the sexual dysfunction literature (e.g., Donaldson & Meana, 2011; Shabsigh et al., 2004; Shifren et al., 2009). In the current sample, higher shame and embarrassment among non-treatment seekers than treatment seekers yielded the largest effect sizes of all the treatment barriers. Shame is associated with depressive (e.g., Kim, Thibodeau, & Jorgensen, 2011) and anxiety symptoms (e.g., Pineles, Street, & Koenen, 2006). Failure to seek treatment for anodyspareunia due to shame may further exacerbate pain severity and negatively impact mental health.

Contrary to the study hypotheses, there were no significant differences in perceived stigma from health care professionals and internalized homophobia between GBM with GPPPD

who sought versus did not seek treatment. In the current sample, 11 (6.3%) GBM with GPPPD reported high perceived stigma from health care professionals due to their sexual orientation and six (3.4%) reported frequently (i.e., 50% to 100% of the time) being treated unfairly by health care professionals due to their sexual orientation within the past year. Stein and Bonuck (2001) found that 87% of lesbian women and gay men reported that their primary health care professional provided equal quality of care and treated patients with equal respect regardless of sexual orientation and Coleman and colleagues (2017) found that GBM rarely reported experiencing overt negative comments or refusal of care due to their sexual orientation. It is possible that discriminatory acts are less common or overt due to relatively recent changes in laws and social climate. Instead, the health care professional's attitudes and beliefs may interfere with the quality of their care in more discrete ways, such as failing to inquire about their patients' sexual orientation or sexual difficulties or presuming heterosexual orientation (e.g., Donaldson & Meana, 2011; Hoyt et al., 2017). In one study only 29% of lesbian women and gay men, for instance, reported being asked their sexual orientation by their provider (Stein & Bonuck, 2001) and in another 26.6% reported that their health care provider assumed they identified as heterosexual (Coleman et al., 2017). Health care professionals' attitudes negatively impacted treatment seeking behaviour and quality of care among older adults with sexual dysfunction (Gott & Hinchliff, 2003) and HIV+ women (Wagner et al., 2010). Future research would benefit from assessing using more objective measures of stigma (e.g., how often the health care professional inquires about opposite-sex partners), such as coding health care professionals interactions with sexual minority populations.

Consistent with the sexual dysfunction literature (e.g., Gott & Hinchliff, 2003; Shifren et al., 2009), GBM with GPPPD who sought treatment most commonly reported consulting with a

family doctor or general practitioner. Interestingly, only GBM with GPPPD reported consulting a mental health professional. More information is needed regarding the nature and effectiveness of the treatment received by this population for this difficulty.

Anal Sex Role Labels and Anodyspareunia

GBM with GPPPD were equally dispersed across anal sex role labels. Interestingly, 52% of GBM with GPPPD reported that their preferred anal sex role label changed following the onset of pain during bottoming. Pachankis and colleagues (2013) found that 51.6% of young GBM reported that their preferred anal sex role label changed over a two-year period. Tops, Top/Versatiles, and Versatiles with GPPPD were more likely to report that their preferred label changed than stayed the same, whereas Bottoms with GPPPD were more likely to report that their preferred label stayed the same than changed. The findings show that GBM with GPPPD tend to shift toward a preferred anal sex role label that includes more topping than their previous preferred anal sex role label (e.g., past Versatile → current Top/Versatile). Unfortunately, this study did not assess the reason for the change in preferred anal sex role label. It cannot be assumed that the change was only due to pain onset, since Pachankis and colleagues (2013) found numerous reasons for the shift apart from physical comfort. In addition, the current study employed a retrospective self-report method of assessing changes in anal sex roles, which are subject to memory bias. Twenty-three (13%) of men who indicated that their preferred anal sex role label changed following the onset of anodyspareunia selected the same past preferred anal sex role label as their current label, reflecting no change (e.g., Top from Top). It is possible that these participants misread the question or misremembered. Future research would benefit from assessing the impact of pain when bottoming on the change in preferred anal sex role label.

Prospective and/or qualitative studies would address these limitations and current gap in the literature.

As expected, Tops, Top/Versatiles, Versatiles, and Bottom/Versatiles with GPPPD were more likely to report topping despite preferring to bottom than Bottoms with GPPPD. Anal sex role labels predominantly match the role enacted during sexual activity (e.g., Hart et al., 2003; Moskowitz et al., 2008). Anal sex roles that already include topping in their sexual repertoire were more likely to top due to anodyspareunia than Bottoms who do not typically enact the insertive role. In line with theories of sexual satisfaction, Bottoms with GPPPD reported lower sexual satisfaction than Tops with GPPPD. According to the IEMSS, high sexual satisfaction results from rewards outweighing costs, rewards and costs being perceived as equal between partners, and rewards and costs matching one's expectations (Lawrance & Byers, 1995). Furthermore, script theory maintains that high sexual satisfaction derives from partners sharing and enacting similar sexual scripts (Gagnon, 1990). In the case of Bottoms with GPPPD, low sexual satisfaction may result from an imbalance in the reward/cost ratio and perceived reward/cost balance between partners. It is also likely that Bottoms with GPPPD are unable to sufficiently enact the bottom role due to the pain. In contrast, Tops with GPPPD are less vulnerable to experience imbalance in the reward/cost ratio and more likely to sufficiently enact their sex role despite the pain. Although preliminary, these results suggest that adapting one's sexual behaviour and shifting one's self-identified anal sex role label may be protective for GBM who experience pain during anal penetration.

Implications

Assessment and diagnosis. The study findings highlight a number of important assessment considerations and implications for the DSM-5 diagnostic criteria for GPPPD. First

and foremost, a proportion of GBM met full criteria for GPPPD (47.2%) suggesting that the female-centric language currently employed in the DSM-5 diagnostic criteria should be revised. Although the lack of research on anodyspareunia and male pelvic pain disorders may be the reason for the present DSM-5 criteria wording (e.g., Sungur & Gunduz, 2014), preliminary research, including this study, supports that pain during anal penetration is a problem for a subsample of GBM. Based on the current findings, amending the diagnostic criteria to focus instead on penetration of the anus and/or vagina as well as penetrative activities of both a sexual and non-sexual nature (e.g., tampons, suppositories, medical exams) is warranted.

Meana and colleagues (1997) found that female sexual pain disorders were better distinguished when assessing pain region (e.g., vaginal entrance), pain system (e.g., genitourinary), pain frequency and duration, and pain onset (e.g., at the moment of penetration) than the DSM-IV-TR diagnostic criteria. In the present study, pain at the entrance of the anus, experienced at the moment of penetration, and persisting for five minutes or less was frequently reported among GBM overall. However, pain located inside the anal canal and rectum, experiencing pain during thrusting, and pain persisting for more than five minutes differentiated between GBM with and without a GPPPD diagnosis.

Study findings emphasize the importance of assessing clinically significant fear and anxiety regarding anal penetration. Pain catastrophizing, pain-related cognitive anxiety, and pain-related fear were greater among GBM with GPPPD than those without and were positively associated with pain severity, pain-related escape and avoidance behaviours, sexual nonfulfillment, and psychological distress. In order to formulate a proper conceptualization, clinicians should solicit the pain-related negative thoughts that GBM with GPPPD experience

before, during, and after anal penetration. A list of pain-related escape and avoidance behaviours should also be generated.

Assessing the impact of pain during anal penetration is important for diagnosis and treatment (e.g., Meana, 2009). Psychological distress and interference due to pain experienced during anal penetration differentiated GBM who met full versus partial criteria for GPPPD. In the current sample, 31.5% of GBM who reported experiencing pain during anal penetration did not meet full criteria for GPPPD because they indicated that the pain did not cause distress or interference. This subsample of men reported better overall mental health and lower pain catastrophizing, pain-related cognitive anxiety, and pain-related fear than men who met full criteria for GPPPD. Furthermore, assessing GBM's self-identified anal sex role label is important, as their preferred role may affect sexual behaviour and sexual satisfaction.

Congruent with the literature evaluating the diagnostic criteria for other sexual dysfunctions (e.g., Binik, 2010a, 2010b; Meana et al., 1997; Sarin et al., 2013), frequency of pain during anal penetration did not reliably differentiate between GBM with and without GPPPD. Roughly 20% of the current sample reported experiencing pain half the time or less, while also rating the pain as severe and causing distress and/or interference. When assessing GPPPD among GBM, it is important to assess pain frequency in order to distinguish transient sexual pain from GPPPD. However, pain frequency should be considered in combination with pain location, duration, situations, distress, interference, and pain-related fear and anxiety.

Similar to women with sexual pain disorders (e.g., Meana, 2009), GBM should be referred to a general practitioner and/or urologist to assess the presence of STIs and/or prostate and rectal conditions. GBM with GPPPD in the current sample reported significantly greater frequency of current and/or past anal fissures and hemorrhoids than GBM with no pain and those

with pain and no distress or interference. Medical interventions would likely to be the best primary course of action for these men in order to determine whether the pain subsides once the infection and/or inflammation has been properly treated.

Treatment. Evidence based treatment for female sexual pain disorders includes medical (e.g., medications, topical agents, surgery), psychosocial (e.g., CBT, mindfulness-based CBT), physical therapy, and/or biofeedback interventions (for review, see Bergeron et al., 2015). Education-based interventions also show promise among other pain populations (for review, see Louw, Diener, Butler, & Puentedura, 2011). The current study findings provide preliminary information regarding possible avenues of treatments for GPPPD among GBM, which are discussed below.

Medical interventions. Identifying the etiology of GPPPD may be important in determining effective medical interventions. Recurrent anal fissures and hemorrhoids were associated with GPPPD diagnosis. Effective medical treatments for these conditions include various ointments and creams or minimally invasive surgical procedures (e.g., rubber band ligation, lateral internal sphincterotomy; Cataldo et al., 2005; Nelson, 2004; Nelson et al., 2017). In regards to chronic pelvic pain in men, treatment options are vast (e.g., antibiotics, hormonal agents, anti-inflammatories, and physical therapy) and selecting the most effective medical treatment depends upon the pathophysiology and symptoms present (Magistro et al., 2016). Medical treatments may be effective on their own or in combination with psychotherapeutic interventions for a subset of GBM with GPPPD.

Psychosocial interventions. CBT and mindfulness based CBT currently have the most empirical support among psychosocial interventions for female sexual pain disorders (e.g., Bergeron et al., 2001; Brotto, Basson, Smith, Driscoll, & Sadownik, 2015; Masheb, Kerns,

Lozano, Minkin, & Richman, 2009; van Lankveld et al., 2006). Adaptations of these existing protocols for GBM with GPPPD warrant investigation. Suggested modifications are described below.

CBT interventions typically begin by orienting the client to the treatment model, providing education on the presenting problem, and developing realistic treatment goals (e.g., Beck, 2011; Bergeron et al., 2015; Meana, 2009; Wincze & Weisberg, 2015). Sharing prevalence rates and common features of GPPPD among GBM may help reduce feelings of shame and normalize the men's experiences (e.g., Brotto, Basson, Carlson, & Zhu, 2013). A detailed description of the anatomy of the anus and the conditions necessary to achieve pleasurable anal penetration is essential. Based on the study findings, the importance of adequate lubrication and anal foreplay should be highlighted. In addition, explaining that a large proportion of GBM experience mild to moderate pain at the entrance of the anus, at the moment of penetration that does not persist for more than five minutes, is important for the development of realistic expectations and treatment goals.

Consistent with the existing literature examining the relationship between sexual dysfunction and negative cognitions (e.g., Nobre & Pinto-Gouveia, 2000, 2008), GBM with GPPPD reported significantly more negative cognitions during anal penetration than pain-free controls. Among GBM with GPPPD, negative thoughts included pain catastrophizing (e.g., "I keep thinking about how much it hurts;" "I feel I can't stand it anymore"), pain-related cognitive anxiety (e.g., "During painful episodes it is difficult for me to think of anything besides the pain;" "I can't think straight when in pain"), and pain-related fear (e.g., "Pain sensations are terrifying;" "I think that if my pain gets too severe, it will never decrease"). Challenging these thoughts using cognitive restructuring strategies or behavioural experiments would likely reduce

pain catastrophizing, and subsequently reduce pain severity (e.g., Thomtén & Linton, 2013). This study also found an association between heterosexist harassment, rejection, and discrimination over the past year and GPPPD. Addressing negative thoughts resulting from these adverse homophobic events is likely necessary to increase sexual-esteem (e.g., Hart & Schwartz, 2010; Schwartz et al., 2016).

GBM with GPPPD endorsed greater escape and avoidance behaviours than pain-free controls. Exposures and/or systematic desensitization should be planned in order to gain corrective feedback, reduce pain-related fear and anxiety, and increase confidence and sexual arousal (e.g., Foa, 2011; van Lankveld et al., 2006). A hierarchy of feared sexual and non-situations, as assessed in the present study, should be developed. GBM with GPPPD, for instance, indicated that greater penile width frequently resulted in pain during anal penetration, suggesting that gradual exposure for this population would likely include self and/or partnered anal penetration with objects of increasing widths until relaxation and sexual arousal are achieved.

Relaxation techniques, such as deep breathing and progressive muscle relaxation, effectively reduce anxiety symptoms (e.g., Manzoni, Pagnini, Castelnuovo, & Molinari, 2008) and manage chronic pain (e.g., Ashburn & Staats, 1999). In general, relaxation strategies aim to reduce the stress response and accompanying muscle tension, which may exacerbate pain (e.g., Ashburn & Staats, 1999; Manzoni et al., 2008). Although no study has investigated the specific impact of relaxation techniques on sexual pain, relaxation strategies are a common component of CBT for sexual pain disorders (e.g., Bergeron et al., 2001; Masheb et al., 2009; Meana, 2009; van Lankveld et al., 2006). In order to achieve pleasurable anal penetration, the anatomy of the

anus requires relaxation among other factors (Hollows, 2007), supporting the inclusion of relaxation training into interventions for GBM with GPPPD.

Mindfulness could also be incorporated into interventions targeting GBM with GPPPD. In simple terms, mindfulness entails paying attention to the present moment without judgment (e.g., Basson, 2012; Dimidjian & Linehan, 2003; Grossman, Niemann, Schmidt, & Walach, 2004; Rosenbaum, 2013). Within the chronic pain literature, high mindfulness was associated with low pain catastrophizing, pain-related fear, functional disability, depression and anxiety, and pain intensity (e.g., Cassidy, Atherton, Robertson, Walsh, & Gillett, 2012; Schutze, Rees, Preece, & Schutze, 2010). Pain catastrophizing explained the relationship between mindfulness and functional disability in a chronic lower back pain population (Cassidy et al., 2012), and mindfulness moderated the relationship between pain intensity and pain catastrophizing among chronic pain outpatients (Schutze et al., 2010). Mindfulness-based group therapy for women with sexual pain reduced pain catastrophizing, pain hypervigilance, and sex-related distress; however, there were no changes in pain severity during intercourse (Brotto et al., 2015). Pain catastrophizing was the only predictor of pain severity in the present study and was associated with sexual and mental distress. Possible reductions in pain catastrophizing as a result of mindfulness would likely positively impact pain severity, mental health, and sexual satisfaction among GBM with GPPPD.

Additional components of sex therapy include communication training, de-emphasizing intercourse/penetrative sexual pleasure and performance, and exploring one's sexual anatomy and preferences (e.g., Wincze & Weisberg, 2015). Communication training could provide GBM with skills to effectively communicate their sexual preferences and empower them to request the behaviours and conditions necessary to enhance sexual pleasure and minimize pain. Sensate

focus exercises redirect the focus on sexual performance to physical sensations experienced within the moment (e.g., van Lankveld et al., 2006; Wincze & Weisberg, 2015). GBM would likely also benefit from directed masturbation of the anus, which includes solitarily examining one's anatomy, identifying erotic zones, and stimulating those areas in order to produce pleasure (e.g., Wincze & Weisberg, 2015).

Biofeedback and physical therapy. Briefly, biofeedback and physical therapy aim to reduce pain through the rehabilitation of the pelvic floor (e.g., Bergeron et al., 2002; Rosenbaum, 2005; Bergeron & Lord, 2003; Rosenbaum & Owens, 2008). The rehabilitation process involves a) increasing awareness and proprioception of the musculature; b) learning to differentiate between muscle hypertonicity and relaxation; c) improving muscle control; and d) increasing tissue elasticity (e.g., Bergeron et al., 2002; Rosenbaum, 2005; Bergeron & Lord, 2003; Rosenbaum & Owens, 2008). Individuals with levator ani syndrome, which is characterized by recurrent and severe rectal pain, who completed biofeedback training improved their ability to relax their pelvic floor muscles (Chiarioni, Nardo, Vantini, Romito, & Whitehead, 2010). Similarly, women with sexual pain reported decreased pain severity and pain during intercourse after completing biofeedback training (Bergeron et al., 2001). Physical therapy also decreased pain during intercourse and gynecological examinations in women with sexual pain (Bergeron et al., 2002; Goldfinger, Pukall, Gentilcore-Saulnier, McLean, & Chamberlain, 2009). Regarding GBM with GPPPD, hypertonic pelvic floor muscles and sphincter muscles around the anus as well as involuntary tightening of or difficulty relaxing these muscles may play a role. Unfortunately, pelvic floor examination was not feasible within the current study, and therefore, findings do not provide information regarding physical therapy or biofeedback for the treatment of GPPPD among GBM. At the same time, GBM with GPPPD reported experiencing current and

past anal fissures and hemorrhoids, which are associated with increased anal resting pressure, increased tightness of the anal sphincters' muscle tone, and reduced ability for these muscles to stretch (e.g., Aigner et al., 2006; Farouk et al., 1994; van Meegdenburg et al., 2016). Future research should investigate the potential benefit of biofeedback and physical therapy for GBM with GPPPD.

Education-based interventions. Among numerous chronic pain populations (e.g., lower back pain, fibromyalgia, musculoskeletal pain), providing education on the neurophysiology of pain is associated with reductions in pain intensity (e.g., Louw et al., 2011). These education-based interventions focus on topics such as: how the brain interprets and processes pain rather than discuss pain in relation to tissue damage; differences between acute and chronic pain; and how acute pain progresses into chronic pain (e.g., Nijs et al., 2014). The aim of neurophysiological pain education is to reduce pain severity and functional disability by increasing knowledge of the pain condition and pain response, which in turn may challenge pain-related maladaptive beliefs (e.g., Nijs et al., 2014). Moseley, Nicholas, and Hodges (2004) found that neurophysiology education sessions significantly reduced pain catastrophizing and pain attitudes as well as improved physical performance compared to the control condition. Changes in pain catastrophizing, however, did not account for the relationship between neurophysiological pain education and reductions pain intensity in two studies of chronic pain populations (e.g., Lee et al., 2016; Malfliet et al., 2017). Despite the positive impact of education-based interventions on pain intensity, pain-related beliefs, and functional disability, effect sizes of these interventions delivered on their own tend to be small (e.g., Louw et al., 2011). A combination of neurophysiological pain education and therapeutic exercise produce large effect sizes among chronic pain populations (e.g., Pardo et al., 2018) and this combination

approach is recommended as best practice (e.g., Louw et al., 2011). Including neurophysiological pain education to GBM with GPPPD in combination with psychosocial and/or biofeedback and physical therapy may be beneficial and is an important area for future research.

Knowledge transfer and exchange. Knowledge translation and exchange (KTE) are essential components of Canadian funding agencies' mandates (e.g., Canadian Institutes of Health Research [CIHR], 2016). KTE activities include synthesizing, disseminating, exchanging, and applying research findings in order to improve the quality of health care for Canadians (CIHR, 2016). Due to the elevated percentage of GBM with GPPPD, adverse psychosocial impact of GPPPD, and low treatment-seeking behaviour among GBM with GPPPD, study findings should be used to inform a KTE intervention for GBM and health care providers.

According to the study findings, the majority of GBM with GPPPD are not seeking treatment. Failure to seek treatment for GPPPD may maintain the fear-avoidance cycle and exacerbate adverse biopsychosocial consequences (e.g., Meana, 2009; Thomtén & Linton, 2013). Free, online resources are easily accessed by lay persons (e.g., Armstrong, Waters, Crockett, & Keleher, 2007; Dobbins et al., 2009). An interactive website for GBM providing the prevalence rate and detailed description of the characteristics of GPPPD may help to normalize their experience and decrease shame and embarrassment. GBM also need access to information about how to experience anal pleasure and factors that may cause or exacerbate pain. Finally, GBM should be encouraged to complete a physical examination with medical professional and seek CBT or mindfulness-based CBT from a mental health practitioner.

Health care providers and policy makers prefer tailored, targeted messages that include clear, concise summaries of the research findings and plain language descriptions of how to apply the information in their practice (e.g., Armstrong et al., 2007; Dobbins et al., 2009).

General practitioners were most often consulted according to the current sample, and therefore, would benefit from receiving up-to-date information regarding the prevalence rates, factors associated with pain during anal penetration (e.g., inadequate lubrication and/or anal stimulation, inability to relax, width of object), and available patient-centered resources. Recommended courses of action for general practitioners would include 1) conducting an anal/rectal examination to assess for anal fissures or hemorrhoids; 2) provide a referral for a mental health practitioner in the community who is trained in CBT and/or mindfulness based CBT; and 3) direct patients to online resources that provide information regarding GPPPD. In addition, it is important to continue to advocate for general practitioners to receive greater sexual health training and increase their comfort with inquiring about patients' sexual functioning (e.g., Donaldson & Meana, 2011).

Limitations and Future Directions

The present study recruited a large representative sample of Canadian GBM using Internet-based research methodology. Internet-based research possesses a number of advantages. First, Internet-based research tends to be more accessible for the participant than in-person survey research because the participant is able to complete the survey at their convenience and is not required to displace himself (e.g., Evans & Mathur, 2005; McInroy, 2016; Thatch, 1995). Furthermore, increased accessibility allows for opportunities to research marginalized populations, who may be more difficult to reach, such as LGBTQ individuals (McInroy, 2016). Second, marginalized populations may be more likely to participate and respond honestly due to the anonymity provided with Internet-based research (McInroy, 2016). Third, Internet-based research tends to be more cost efficient and allowed the author to recruit a larger sample than other forms of data collection (e.g., Chiasson et al., 2006; Evans & Mathur, 2005; Kraut et al.,

2004; Thatch, 1995). Fourth, Internet-based research is time-efficient, since multiple participants can complete the survey at the same time and the data is immediately accessible by the researcher (e.g., Evans & Mathur, 2005; McInroy, 2016). Finally, compared to pen and paper surveys, computer-assisted self-interviews reduce the amount of missing data (Hallfors, Khatapoush, Kadushin, Watson, & Saxe, 2000; Johnson et al., 2001) and data entry errors (Evan & Mathur, 2005; Kraut et al., 2004). At the same time, it is important to consider some disadvantages of Internet-based research.

The primary critique of Internet-based research is the argument that Internet-based samples may not be generalizable due to the fact that individuals who do not possess Internet and computer access may differ from those who do (e.g., Best, Krueger, Hubbard, & Smith, 2001; Ray & Tabor, 2003; Wilson & Laskey, 2003). However, a large proportion of the global population now has access to these resources (e.g., Bender, Begun, DePrince, Haffejee, & Kaufmann, 2014; Evan & Mathur, 2005; McInroy, 2016) and studies indicate that Internet samples can be diverse and generalizable (Best et al., 2001; Chiasson et al., 2006; McInroy, 2016). Relevant to the present dissertation, the majority of men who have sex with men report frequently using the Internet (i.e., within the past 48 hours; Chiasson et al., 2006). Moreover, the current study recruited a sample representative of Canadian sociodemographics. When comparing the ethnic backgrounds of the current sample to that of the most recent Canadian census data, our sample is mostly on par with the ethnic breakdown in Canada (Statistics Canada, 2016b). Our sample included a higher percentage of Latin American identified participants and a lower percentage of Black and Aboriginal identified participants than the Canadian population (Statistics Canada, 2016b). The lower proportion of Aboriginal identified participants is likely due to the exclusion criteria. Numerous Aboriginal identified participants

indicated that they identified as two-spirited, which lead to their exclusion from the study due to the inability to verify their biological sex. According to research examining ethnicity and anal sex role preferences, Black GBM most often identify as a top, meaning that they elect to penetrate their partner rather than be penetrated (e.g., Lick & Johnson, 2015; Wei & Raymond, 2011). Pain during anal penetration may not be as relevant for Black GBM, and therefore, explain the lower proportion of Black identified participants in the current study. The current sample is also representative of the income distribution across Canada, with only a slightly higher percentage of participants reporting an annual income above $80,000 than the Canadian population (Statistics Canada, 2016a). Furthermore, compared to two Canadian Internet-based studies of GBM, the degree of education is higher in the present sample and the mean age (M = 31.26, SD = 10.85) of the current sample falls between those of two studies (M = 37.8, SD = 13.2, Brennan et al., 2015; M = 25.7, SD = not reported, Ferlatte, Hottes, Trussler, & Marchand, 2013).

Critics of Internet-based research highlight the participant's inability to ask clarifying questions about the survey questionnaires (Ray & Tabor, 2003; McInroy, 2016). Therefore, it is important that instructions are extremely clear and key terms are defined. The current study also piloted the online survey in order to identify and correct any unclear instructions or terms. In addition, there is no way to control the setting in which the participant completes the online survey (Kraut et al., 2004; McInroy, 2016) and the state of the participant (e.g., fatigued, under the influence of an illicit substance). It is important to consider these factors when interpreting study results (Kraut et al., 2004; McInroy, 2016).

Due to the Internet-based recruitment methodology, the author was unable to assess persistent or recurrent difficulties with marked tensing or tightening of the pelvic floor muscles

during attempted anal penetration (i.e., Criterion A4; APA, 2013). Pelvic floor and/or anal muscle dysfunction may be an important factor contributing to the pain experienced during anal penetration among GBM (e.g., Anderson, Sawyer, Wise, Morey, & Nathanson, 2009). Furthermore, pressure pain thresholds are typically used in conjunction with self-report measures to assess pain intensity (e.g., Davis, Maykut, Binik, Amsel, & Carrier, 2011), which were not able to be collected in the current sample. The Internet-based recruitment method led to the inability to conduct a diagnostic interview to assess GPPPD among participants. The author was, therefore, unable to determine whether the reported symptoms were not better explained by "a nonsexual mental disorder, severe relationship distress, significant stressors, or the effects of a substance/medication or medical condition" (APA, 2013). Future research would benefit from replicating this study and incorporating a physiological measure of pelvic floor and anal muscle dysfunction as well as administering a diagnostic interview to assess GPPPD.

The inability to establish directionality and causality, as is the case with cross-sectional research, is a limitation of the present study. Without a longitudinal design, conclusions regarding the etiology of GPPPD among GBM cannot be made. Future research would benefit from following GBM over an extended period, commencing prior to their sexual debut, in order to examine the etiological factors associated with GPPPD in GBM. In addition, due to the Internet-based research methodology, this study relied upon self-report data. Consequently, the number of current and past prostate and rectal conditions and STIs reported by participants may be inaccurate. Numerous participants indicated that they had never been tested or were unsure whether they had ever had a number of the listed prostate and rectal conditions and STIs. Future research would benefit from performing a rectal examination and STI testing, as has been

conducted in the sexual pain literature (e.g., Davis et al., 2013; Kao et al., 2012; Meana et al., 1997).

The study findings also highlight a number of important future directions. First, pain experienced during bottoming may be due to lack of skill and knowledge (Thomtén & Linton, 2013). Consistent with the current literature on anodyspareunia, participants reported that inadequate anal lubrication and foreplay result in painful penetration. Future research would benefit from assessing the effects of increased knowledge regarding how to engaged in pleasurable anal sexual activity and the anatomy of the anus and rectum on pain frequency and intensity. Second, a large proportion of women experiencing sexual pain disorders continue to engage in penetrative sexual activity despite the pain (e.g., Elmerstig et al., 2013). Exploring whether this is also the case among GBM with GPPPD and identifying the reasons why one may continue to engage in receptive anal penetration is important for understanding the impact of this issue on GBM and the development of interventions that can target these motivations for intercourse. Third, this study showed low rates of treatment-seeking behaviour among GBM with GPPPD. Although perceived stigma by one's healthcare professional was not associated with treatment-seeking behaviour, health care professionals' attitudes toward and beliefs about their patients impact the quality of their care (e.g., Gott & Hinchliff, 2003; Wagner et al., 2014). Future research should investigate health care professionals' knowledge, attitudes, and beliefs regarding anodyspareunia among GBM and how these impact the quality of their care. Fourth, although anal sex role labels may play a moderating role in the maintenance of GPPPD, due to the timeframe constraints it was, unfortunately, unfeasible to collect the sample size required to examine anal sex role labels as a moderator in fear avoidance model. Finally, this dissertation focused on the fear-avoidance model of sexual pain. However, alternative models of sexual pain

may provide additional information regarding GPPPD among GBM and warrant exploration. For instance, there is growing evidence suggesting that changes in neuroplasticity within the central nervous system play an important role in the development and maintenance of chronic pain conditions (e.g., Coderre, Katz, Vaccarino, & Melzack, 1993; Boudreau, Farina, & Falla, 2010; Pelletier, Higgins, & Bourbonnais, 2015) and sexual pain disorders (e.g., Basson, 2012; van Lankveld et al., 2010). Researchers explain that changes in neuroplasticity may result in increased sensitivity to painful and innocuous stimuli (e.g., Basson, 2012; Pelletier et al., 2015; van Lankveld et al., 2010). Future research would benefit from examining differences in pain hypersensitivity and innervation in the pelvis and anal areas as well as non-genital regions between GBM with and without GPPPD. In addition, neuroimaging studies may provide important information regarding differences in activation within brain regions associated with pain modulation between GBM with GPPPD and pain-free controls.

Conclusion

In the current dissertation, a high proportion of GBM met full criteria for GPPPD. A detailed description of GPPPD among this population provided important information regarding pain location, pain duration, and pain-inducing situations. GPPPD was associated with adverse mental and physical health highlighting the importance of developing effective treatments. Pain catastrophizing, pain-related cognitive anxiety, and pain-related fear were identified as maintaining factors and important CBT treatment targets. In order to improve assessment, diagnosis, and treatment of GPPPD among GBM, future research is warranted to replicate and expand upon these study findings.

Appendix A

Recruitment Materials

Do you experience pain when bottoming?

Who: We are looking for gay, bi, & queer men to tell us about their experiences with bottoming.

What: Complete our anonymous and confidential <u>1-hour</u> online survey!

What's in it for you? Receive $10 for your time & effort

Help gay, bi, & queer men who experience pain with bottoming

To find out more about our study, visit our website or Facebook page

www.hivprevlab.ca/research/gbqsexpainstudy

www.facebook.com/gbqsexpainstudy

Ryerson University

This research study has been reviewed and approved by the Ryerson University Research Ethics Board

Gay, Bi, Queer Men's Sexual Pain Study
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www.facebook.com/gbqsexpainstudy

Blurb on www.hivprevlab.ca/research/gbqsexpainstudy website

Gay, Bi, Queer Men's Sexual Pain Study

Pain when bottoming (i.e., receptive anal intercourse; when your partner inserts their penis into your anus) is common among gay, bi, and queer men, with approximately 12.5% to 18% of gay, bi, and queer men complaining of this difficulty. Unfortunately, little is known about the symptoms and causes of pain when bottoming as well as the impact this difficulty has on the lives of gay, bi, and queer men. Gaining a better understanding of the experiences of gay, bi, and queer with pain when bottoming is important for the development of effective medical and psychosocial treatments for this population.

We are looking for:

- 200 gay, bi, or queer men *who experience pain* when bottoming AND 200 gay, bi, and queer men who *almost never* experience pain when bottoming
- Must have had any type of sexual activity with another male during the past 6 months
- Must be over 18 years old
- Must be able to speak and read in English
- Must hold a valid Canadian bank account

What do you have to do?

- Complete an anonymous and confidential 1-hour online questionnaire package

What's in it for you?

- You will receive $10 for your full participation
- You will help gay, bi, and queer men who experience pain when bottoming

How to participate:

- To participate, click the following link to the online questionnaire package: I WANT TO PARTICIPATE!

For more information, visit our Facebook page: www.facebook.com/gbqsexpainstudy

If you prefer to complete a paper-based version of the questionnaire package in-person at the HIV Prevention Lab at Ryerson University, please contact the principal investigator by email at gbqsexpainstudy@psych.ryerson.ca or by telephone at 416-979-5000, ext 1-2179. Please note, if you select this option, your identity may be known to the researcher/s. Your information will be kept confidential.

If you have any questions, please feel free to contact the principal investigator by email at gbqsexpainstudy@psych.ryerson.ca.

Dr. Trevor Hart
Natalie Stratton, MA
HIV Prevention Lab
Ryerson University
105 Bond Street
Toronto, ON
M5B 1G8

Dr. Someone
Address
Toronto, ON
Postal Code

Dear Dr. _____ (this can say "XXX Clinic Team" when there is no specific doctor)

We are a team of sexual health researchers from Ryerson University who are currently seeking gay, bisexual, and queer men to participate in our **Gay, Bi, & Queer Men's Sexual Pain Study**. Our research lab conducts rigorous basic and applied research that can be used to promote positive sexual and mental health among gay, bisexual, and queer men, as well as other men who have sex with men.

Pain during receptive anal intercourse (i.e., bottoming; when your partner inserts their penis into your anus) is common among gay, bi, and queer men, with prevalence rates ranging from 12.5% to 18% among this population. Unfortunately, little is known about the symptoms and causes of pain during receptive anal intercourse as well as the impact this difficulty has on the lives of gay, bi, and queer men.

Our goal: Gain a better understanding of the experiences of gay, bi, and queer with pain during receptive anal intercourse, which is important for the development of effective medical and psychosocial treatments for this population.

We are looking for:

- 200 gay, bi, or queer men *who experience pain* when bottoming AND 200 gay, bi, and queer men who *almost never* experience pain when bottoming
- Must have had any type of sexual activity with another male during the past 6 months
- Must be over 18 years old
- Must be able to speak and read in English
- Must hold a valid Canadian bank account (in order to compensated for their time and effort)

What do participants have to do?

- Complete an anonymous and confidential 1-hour online questionnaire package

Incentives for the participant:

- $10 for their full participation
- Help gay, bi, and queer men who experience pain when bottoming

We are reaching out to you to help us reach our goal of recruiting 400 gay, bisexual, and queer men. We have included a number of pamphlets describing our research project. We would greatly appreciate it if you could display these pamphlets in your clinic for patients to access, or if you could provide our pamphlet to eligible patients.

Please feel free to contact our research team if you have any additional questions by telephone at 416-979-5000, ext. 2179 or via email at gbqsexpainstudy@psych.ryerson.ca. You are also welcome to visit our website (www.hivprevlab.ca/research/gbqsexpainstudy) or Facebook page (www.facebook.com/gbqsexpainstudy) for more information.

Thank you in advance for your time and cooperation!

Sincerely,

Trevor Hart, PhD., C.Psych

Natalie Stratton, MA

Please note, this research study has been reviewed and approved by the Ryerson University Research Ethics Board.

Do you experience pain when bottoming?

Natalie Stratton, M.A.
Dr. Trevor Hart, C.Psych
105 Bond Street
Toronto, ON, M5B 1G8

Website:
www.hivprevlab.ca/research/gbqsexpainstudy

Facebook:
www.facebook.com/gbqsexpainstudy

Email:
gbqsexpainstudy@psych.ryerson.ca

Ryerson University

GAY, BI, QUEER MEN'S SEXUAL PAIN STUDY

WHO ARE WE?

- A sexual health psychology team located at Ryerson University.
- We conduct applied research that can be used to promote positive sexual and mental health among gay, bi, and queer men, as well as other men who have sex with men.

Gay, Bi, & Queer Men's Sexual Pain Study

GOAL:

Pain when bottoming (i.e., when your partner inserts their penis or an object into your anus) is common among gay, bi, and queer men, with approximately 12.5% to 18% of this population complaining of this difficulty. Unfortunately, little is known about the symptoms and causes of pain when bottoming as well as the impact this difficulty has on the lives of gay, bi, and queer men. Gaining a better understanding of the experiences of gay, bi, and queer men with pain when bottoming is important for the development of effective medical and psychosocial treatments for this population.

WHO CAN PARTICIPATE?

- Gay, bi, or queer men *who experience pain* when bottoming AND gay, bi, and queer men who *almost never* experience pain when bottoming
- Must have had any type of sexual activity with another male during the past 6 months
- Must be over 18 years old
- Must be able to speak and read in English
- Must hold a valid Canadian bank account

WHAT DO YOU HAVE TO DO?

- Complete an anonymous and confidential 1-hour online questionnaire package

PARTICIPATE TODAY!

For more information or if you are interested in participating in our study, please visit our website or Facebook page:

Website:

www.hivprevlab.ca/research/gbqsexpainstudy

Facebook:
www.facebook.com/gbqsexpainstudy

Email:
gbqsexpainstudy@psych.ryerson.ca

Appendix B

Survey Package

Age What is your age (in years)?

If What is your age (in years)? Is Less Than 18, Then Skip To End of Survey

DOB Please enter your date of birth in the following format: mm/dd/yyyy

Gender My gender is:

- ❍ (Cis) Male (1)
- ❍ Queer (2)
- ❍ Transman (3)
- ❍ Two spirited (4)
- ❍ Other (please specify) (5) _____

If Transman Is Selected, Then Skip To End of SurveyIf Two spirited Is Selected, Then Skip To End of Survey

Sex Were you born with a penis and assigned male at birth?

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To End of Survey

SO My sexual orientation is:

- ❍ Gay or homosexual (1)
- ❍ Bisexual (2)
- ❍ Queer (3)
- ❍ Straight or heterosexual (4)
- ❍ Two spirited (5)
- ❍ Other (please specify): (6) _____

If Straight or heterosexual Is Selected, Then Skip To End of SurveyIf Two spirited Is Selected, Then Skip To End of Survey

Bank Do you currently hold a valid Canadian bank account?

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To End of Survey

Residence In which country do you currently live?

- ❍ Canada (1)
- ❍ United States of America (2)
- ❍ Other (Please specify) (3) _____

SexAct Have you engaged in sexual activity with another male during the past 6 months?

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To End of Survey

Employ What is your employment status? Please select all that apply.

- ❑ Full time employed (1)
- ❑ Part time employed (2)
- ❑ Full time student (8)
- ❑ Part time student (9)
- ❑ Self-employed (3)
- ❑ Housewife/husband (4)
- ❑ Unemployed (5)
- ❑ Retired (6)
- ❑ Other (please specify) (7) _____

Edu What is the highest level of education that you have reached/completed?

- ❍ Did not attend high school (1)
- ❍ Some high school education (2)
- ❍ High school diploma (3)
- ❍ Some university, college or technical school education (4)
- ❍ Bachelor's degree, college diploma, or technical certificate (5)
- ❍ Some graduate or professional school (6)
- ❍ Graduated graduate or professional school (7)

Income Please indicate which of the following best represents your annual income.

- ❍ Under $20 000 (1)
- ❍ $20 000 - $39 999 (2)
- ❍ $40 000 - $59 999 (3)
- ❍ $60 000 - $79 999 (4)
- ❍ Over $80 000 (5)
- ❍ Prefer not to answer (6)

Rel Please indicate the religion you currently practice:

- ❑ Catholic (1)
- ❑ Protestant (e.g. United Church, Anglican, Baptist, Lutheran, Presbyterian) (2)
- ❑ Evangelical Protestant (e.g., Baptist, Jehovah's Witness, Pentecostal, 7th Day Adventist) (3)
- ❑ Eastern Orthodox (4)
- ❑ Christian - Other (Please Specify) (5) _____
- ❑ Jewish (6)
- ❑ Islamic (7)
- ❑ Hindu (8)
- ❑ Sikh (9)
- ❑ Buddhist (10)
- ❑ Agnostic (11)
- ❑ Spiritual (You are spiritual but do not subscribe to one particular religion) (12)
- ❑ None (13)
- ❑ Other (Please Specify) (14) _____

Ethnic What ethnicity do you identify with? (Check as many as apply to you):

- ❑ African (e.g. Nigeria, Ghana, Ethiopia) (1)
- ❑ African- Caribbean (e.g., from the Caribbean and of Black/African descent) (2)
- ❑ Indo- Caribbean (e.g., from the Caribbean and of South Asian descent) (3)
- ❑ Other Caribbean (e.g., from the Caribbean and of other ethnic descent) (4)
- ❑ South Asian (e.g., India, Pakistan, Bangladesh, Sri Lanka) (5)
- ❑ East Asian (e.g., Hong Kong, China, Japan, Korea) (6)
- ❑ Southeast Asian (e.g., Singapore, Malaysia, Thailand, Cambodia, Philippines) (7)
- ❑ Middle Eastern or North African (e.g., Iran, Israel, Egypt, Morocco) (8)
- ❑ Latin American (9)
- ❑ Aboriginal/Metis/Inuit (10)
- ❑ White - British (e.g., England, Scotland, Wales, Ireland) (11)
- ❑ White - French (12)
- ❑ White- Other European (e.g., Germany, Italy, Russia, Portugal, etc.) (13)
- ❑ Other (Please specify) (14) _____

RelStat What is your current relationship status? Please check all that apply.

- ❑ Single (1)
- ❑ Have a boyfriend(s) (2)
- ❑ Have a girlfriend(s) (3)
- ❑ Living with a male partner(s) for a year or more (4)
- ❑ Living with a female partner(s) for a year or more (5)
- ❑ Have a husband (6)
- ❑ Have a wife (7)
- ❑ Separated/Divorced/Widowed (8)

ASRL With which sex role do you most identify currently?

- ❍ Top (1)
- ❍ Top/Versatile (2)
- ❍ Versatile (3)
- ❍ Bottom/Versatile (4)
- ❍ Bottom (5)
- ❍ Other (please specify) (6) _____

Ano_Inst The following questions are to help identify men who may have a problem with recurrent pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus). Even if you do not experience pain

when bottoming, please answer all the questions. Please select the box that best represents your answer for each of the questions below. Remember there are no right or wrong answers to these questions. While your experiences may change from time to time, we are interested in your general experience with bottoming.

ANO1 How often, in your lifetime, have you experienced pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)?

- ❍ Almost never or never (~0%) (1)
- ❍ Less than half the time (~25%) (2)
- ❍ About half the time (~50%) (3)
- ❍ More than half the time (~75%) (4)
- ❍ Almost always or always (~100%) (5)

ANO2 How often, during the past 6 months, have you experienced pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)?

- ❍ Almost never or never (~0%) (1)
- ❍ Less than half the time (~25%) (2)
- ❍ About half the time (~50%) (3)
- ❍ More than half the time (~75%) (4)
- ❍ Almost always or always (~100%) (5)

ANO3 Which of the following statements best describes your experience with pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)?

- ❍ I have had pain when bottoming since I first tried anal sex/play (1)
- ❍ There was a time when I enjoyed bottoming before it became painful (2)
- ❍ Bottoming is only painful with certain partners or in certain situations (3)
- ❍ I do not experience pain when bottoming (4)
- ❍ I have never bottomed (5)

ANO4a At what age did you first experience pain symptoms related to bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)?

- ❍ Age (in years) (1) _____
- ❍ I do not experience pain when bottoming (2)

ANO4b At what age did you first experience pain symptoms in the anus, in general?

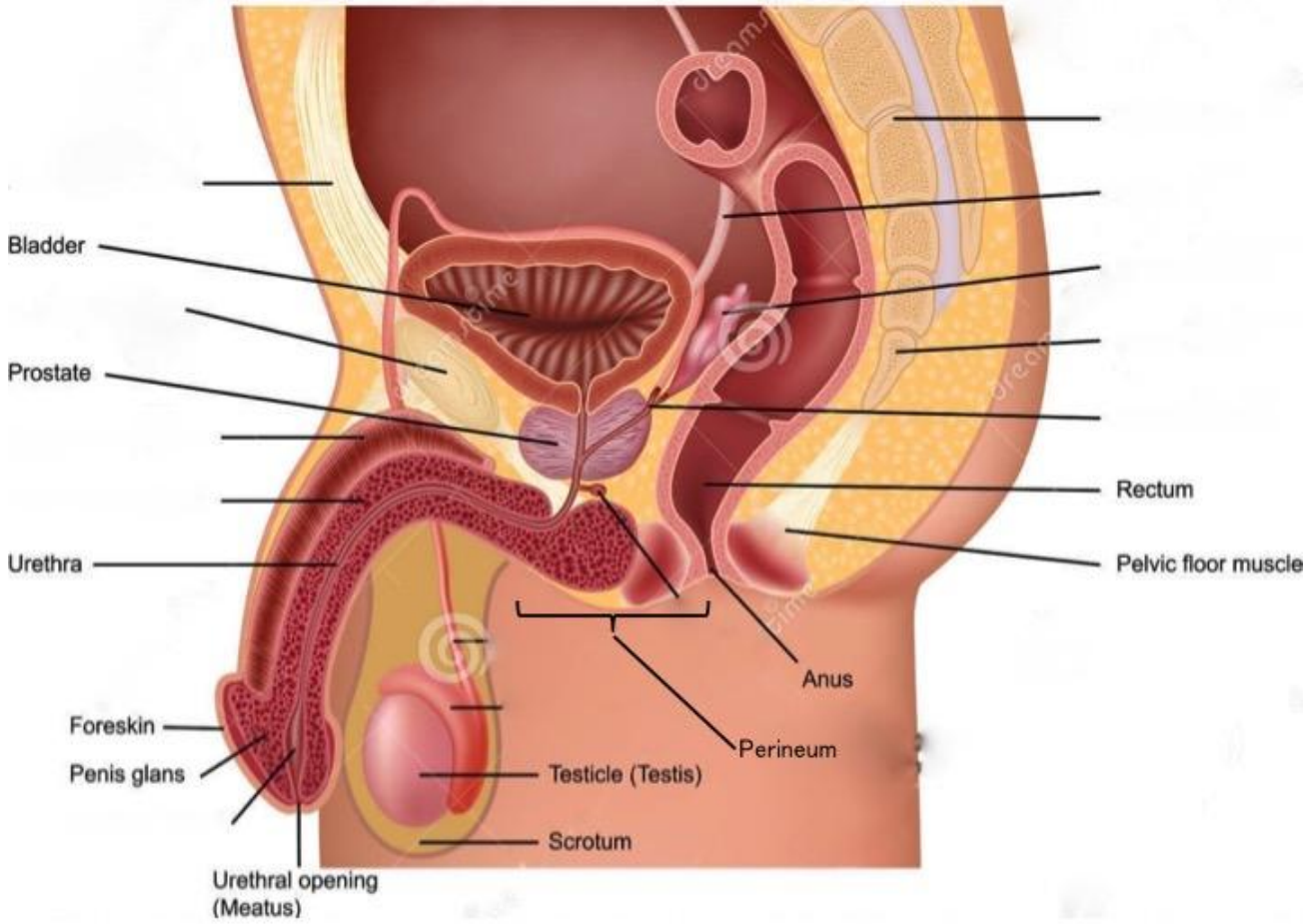
- ❍ Age (in years) (1) _____
- ❍ I do not experience anal pain (2)

ANO5 At which point do you experience pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)? Please indicate all that apply.

- ❑ Before penetration/insertion (1)
- ❑ At the moment of penetration/insertion (2)
- ❑ Once the penis is fully penetrated (7)
- ❑ Once the object (e.g., sex toy) is fully inserted (3)
- ❑ During penile thrusting (8)
- ❑ When the object is being thrusted (9)
- ❑ After the penis withdrawals (4)
- ❑ After the object withdrawals (10)
- ❑ I do not experience pain when bottoming (5)
- ❑ I have never bottomed (6)

ANO6 How long does the pain last?

- ❍ Duration (in minutes) (3) _____
- ❍ I do not experience pain when bottoming (4)
- ❍ I have never bottomed (5)



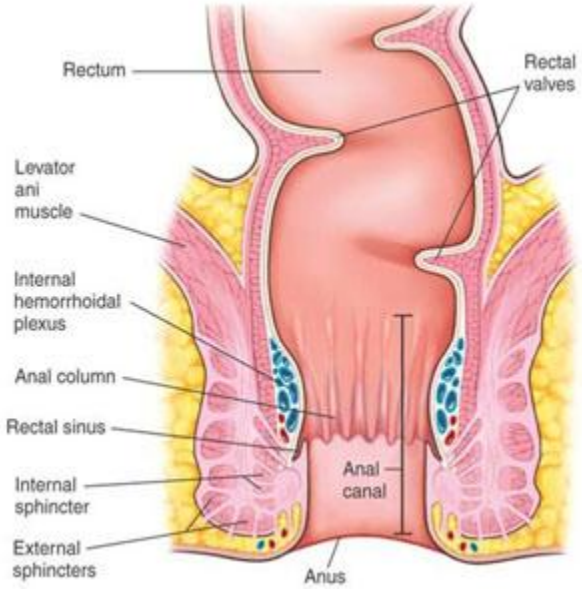
ANO7a Referring to the diagram above, where do you most often experience pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)? Please indicate all that apply.

- ❑ At the entrance to the anus (1)
- ❑ Inside the anal canal (2)
- ❑ Perineum (3)
- ❑ Prostate (4)
- ❑ Pelvic area (5)
- ❑ Bladder (6)
- ❑ Testes (7)
- ❑ Buttocks (8)
- ❑ Other (Please specify) (9) _____
- ❑ I do not experience pain when bottoming (10)
- ❑ I have never bottomed (11)

Display This Question:

If Referring to the diagram above, where do you most often experience pain when bottoming (i.e., bei... At the entrance to the anus Is Selected
Or Referring to the diagram above, where do you most often experience pain when bottoming (i.e., bei... Inside the anal canal Is Selected

ANO7b Please click on the area of the image where you feel pain.



ANO8 Over the past 6 months, how distressed have you felt about the pain you experience when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)?

- ❍ Not at all distressed (1)
- ❍ Somewhat distressed (2)
- ❍ Moderately distressed (3)
- ❍ Very distressed (4)
- ❍ Extremely distressed (5)
- ❍ I do not experience pain when bottoming (6)
- ❍ I have never bottomed (7)

ANO9 Over the past 6 months, how much difficulty has the pain you experience when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis

or an object is inserted into your anus) caused you in your romantic, sexual, or interpersonal relationships?

- ❍ No difficulty (1)
- ❍ Mild difficulty (2)
- ❍ Moderate difficulty (3)
- ❍ A lot of difficulty (4)
- ❍ Severe difficulty (5)
- ❍ I do not experience pain when bottoming (6)
- ❍ I have never bottomed (7)

ANO10 How often has the pain you experience when being penetrated by a sexual partner caused you to Top (i.e., penetrate your sexual partner), even though you preferred to Bottom or your partner preferred you to Bottom (i.e., be penetrated by your partner)?

- ❍ Almost never or never (~0%) (1)
- ❍ Less than half the time (~25%) (2)
- ❍ About half the time (~50%) (3)
- ❍ More than half the time (~75%) (4)
- ❍ Almost always or always (~100%) (5)
- ❍ I do not experience pain when bottoming (6)
- ❍ I have never bottomed (7)

ANO11a Has your preferred anal sex role changed since you started to experience pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)?

- ❍ Yes (1)
- ❍ No (2)

Display This Question:

If Has your preferred anal sex role changed since you started to experience pain when bottoming (i.e., being penetrated by a sexual partner; your partner's penis is inserted into your anus)?<o:p></o:p> Yes Is Selected

ANO11b What was your preferred anal sex role prior to experiencing pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)?

- ❍ Top (1)
- ❍ Top/Versatile (2)
- ❍ Versatile (3)
- ❍ Bottom/Versatile (4)
- ❍ Bottom (5)
- ❍ Other (Please specify) (6) _____

ANO12 How often, in the following circumstances, do you experience pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)? If you have never experienced pain when bottoming, have never

bottomed, or have never taken part in a particular activity listed (e.g., never used illicit substances), please select “Not applicable.”

	Almost never or never (~0%) (0)	Less than half the time (~25%) (1)	About half the time (~50%) (2)	More than half the time (~75%) (3)	Almost always or always (~100%) (4)	Not Applicable (5)
Insufficient lubrication (1)	❍	❍	❍	❍	❍	❍
Lack of or inadequate anus foreplay/stimulation (2)	❍	❍	❍	❍	❍	❍
Partner's penis is too long (3)	❍	❍	❍	❍	❍	❍
Partner's penis is too wide (4)	❍	❍	❍	❍	❍	❍
The object (e.g., sex toy) is too long (16)	❍	❍	❍	❍	❍	❍
The object (e.g., sex toy) is too wide (17)	❍	❍	❍	❍	❍	❍
The partner thrusts too fast (5)	❍	❍	❍	❍	❍	❍
The partner thrust too deep (6)	❍	❍	❍	❍	❍	❍
When my partner uses a condom (7)	❍	❍	❍	❍	❍	❍
When I am not sexually "turned on" (8)	❍	❍	❍	❍	❍	❍
When I do not use "poppers"/muscle relaxants (e.g., amyl nitrate) (9)	❍	❍	❍	❍	❍	❍
When I am drunk (10)	❍	❍	❍	❍	❍	❍
When I am high/used illicit substances (11)	❍	❍	❍	❍	❍	❍
When I am very nervous (12)	❍	❍	❍	❍	❍	❍
When I am unable to relax (13)	❍	❍	❍	❍	❍	❍
When I am tired (14)	❍	❍	❍	❍	❍	❍

When I am stressed (15)	❍	❍	❍	❍	❍	❍
One finger is inserted into my anus (18)	❍	❍	❍	❍	❍	❍
Two fingers are inserted into my anus (19)	❍	❍	❍	❍	❍	❍
Three fingers are inserted into my anus (20)	❍	❍	❍	❍	❍	❍
Four fingers are inserted into my anus (21)	❍	❍	❍	❍	❍	❍
Five fingers are inserted into my anus (22)	❍	❍	❍	❍	❍	❍
Other (please specify as many as apply) (23)	❍	❍	❍	❍	❍	❍

ANO13 How often, in the following non-sexual situations, do you experience pain similar to the pain you experience when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)? If you have never experienced pain when bottoming, have never bottomed, or have never taken part in a particular activity listed (e.g., never used a suppository), please select "Not applicable."

	Almost never or never (~0%) (1)	Less than half the time (~25%) (2)	About half the time (~50%) (3)	More than half the time (~75%) (4)	Almost always or always (~100%) (5)	Not Applicable (6)
During or after defecation (1)	❍	❍	❍	❍	❍	❍
During or after urination (2)	❍	❍	❍	❍	❍	❍
During or after exercising (3)	❍	❍	❍	❍	❍	❍
During or after riding a bicycle (4)	❍	❍	❍	❍	❍	❍
Sitting (5)	❍	❍	❍	❍	❍	❍
After eating (6)	❍	❍	❍	❍	❍	❍
During or after medical examinations of the anus, rectum, or prostate (7)	❍	❍	❍	❍	❍	❍
During or after inserting a suppository (8)	❍	❍	❍	❍	❍	❍
Other (please specify as many as apply) (9)	❍	❍	❍	❍	❍	❍

TX Which of the following health care professionals have you consulted regarding the pain you experience when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus)? Please indicate all that apply.

- ❑ Family doctor/General practitioner (GP) (1)
- ❑ Urologist (2)
- ❑ Proctologist (3)
- ❑ Gastroenterologist (4)
- ❑ Mental health professional (e.g., psychologist, psychiatrist, counselor, social worker) (5)
- ❑ Chiropractor (6)
- ❑ Physiotherapist (7)
- ❑ Naturopath (8)
- ❑ Acupuncturist (9)
- ❑ Other (please specify) (10) _____
- ❑ I have not consulted with a health care professional (11)
- ❑ I do not experience pain when bottoming (12)

Barriers Please indicate how much you agree with the following statements.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)	Not applicable (8)
Bottoming is supposed to be painful. (1)	❍	❍	❍	❍	❍	❍	❍	❍
Most men experience pain when bottoming. (2)	❍	❍	❍	❍	❍	❍	❍	❍
The pain I experience when bottoming will go away on its own. (3)	❍	❍	❍	❍	❍	❍	❍	❍
The pain I experience when bottoming is likely due to a more serious health problem. (4)	❍	❍	❍	❍	❍	❍	❍	❍
There is no medical solution available for pain when bottoming. (5)	❍	❍	❍	❍	❍	❍	❍	❍

Health care professionals will not be able to help me with the pain I experience when bottoming. (6)	❍	❍	❍	❍	❍	❍	❍	❍
I am too embarrassed to seek help from a health professional for the pain I experience when bottoming. (7)	❍	❍	❍	❍	❍	❍	❍	❍
I am too ashamed to seek help from a health professional for the pain I experience when bottoming. (8)	❍	❍	❍	❍	❍	❍	❍	❍

SB1 In the past 6 months, have you had sexual activity with a regular male partner (boyfriend, buddy, partner, spouse whom you have been with for over 6 months)?

❍ Yes (1)
❍ No (2)

If No Is Selected, Then Skip To In the past 3 months, have you had se...

SB2 In the past 6 months, with how many regular male partners have you had sexual activity?

SB3 In the past 6 months, I have done the following with my regular male partner(s): TO CALCULATE: Number of times per week X 4 weeks X 6 months For example: I had anal sex 3 times per week X 4 weeks X 6 months = 36

	# of times (1)
I fucked him with a condom (1)	
I fucked him without a condom (2)	
He fucked me with a condom (3)	
He fucked me without a condom (4)	
He fucked me with a sex toy (5)	
I fucked him with a sex toy (6)	
He gave me oral sex (e.g., head) (7)	
I gave him oral sex (e.g., head) (8)	
He fucked me with his fingers (9)	
I fucked him with my fingers (10)	

SB4 In the past 6 months, have you had sexual activity with a casual male partner (one-night stand, a trick or a new dating partner whom you have been with for less than 6 months)?

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To In the past 6 months, have you had se...

SB5 In the past 6 months, with how many casual male partners have you had sexual activity?

SB6 In the past 6 months, I have done the following with my casual male partner(s): TO CALCULATE: Number of times per week X 4 weeks X 6 months For example: I had anal sex 3 times per week X 4 weeks X 6 months = 72

	# of times (1)
I fucked him with a condom (1)	
I fucked him without a condom (2)	
He fucked me with a condom (3)	
He fucked me without a condom (4)	
He fucked me with a sex toy (5)	
I fucked him with a sex toy (6)	
He gave me oral sex (e.g., head) (7)	
I gave him oral sex (e.g., head) (8)	
He fucked me with his fingers (9)	
I fucked him with my fingers (10)	

SB7 In the past 6 months, have you had sexual activity with a regular female partner (girlfriend, fiancée, partner, spouse whom you have been with for over 6 months)?

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To In the past 3 months, have you had se...

SB8 In the past 6 months, with how many regular female partners have you had sexual activity?

SB9 In the past 6 months, I have done the following with my regular female partner(s): TO CALCULATE: Number of times per week X 4 weeks X 6 months For example: I had anal sex 3 times per week X 4 weeks X 6 months = 72

	# of times (1)
I fucked her (vaginally or anally) with a condom (1)	
I fucked her (vaginally or anally) without a condom (2)	
I fucked her (vaginally or anally) with a sex toy (3)	
She fucked me with a sex toy (4)	
She gave me oral sex (e.g., head) (5)	
She fucked me with her fingers (6)	

SB10 In the past 6 months, have you had sexual activity with a casual female partner (one-night stand, a trick or a new dating partner whom you have been with for less than 6 months)?

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To End of Block

SB11 In the past 6 months, with how many casual female partners have you had sexual activity?

SB12 In the past 6 months, I have done the following with my casual female partner(s): TO CALCULATE: Number of times per week X 4 weeks X 6 months For example: I had anal sex 3 times per week X 4 weeks X 6 months = 72

	# of times (1)
I fucked her (vaginally or anally) with a condom (1)	
I fucked her (vaginally or anally) without a condom (2)	
I fucked her (vaginally or anally) with a sex toy (4)	
She fucked me in the ass with a sex toy (3)	
She gave me oral sex (e.g., head) (5)	
She fucked me with her fingers (6)	

STI Sexually transmitted infections are relatively common. Below is a list of the most common sexually transmitted infections. Please indicate whether you currently have or have ever been diagnosed with each of the following sexually transmitted infections. If you are unsure or have never been tested for the particular sexually transmitted infection, please select "I do not know/Never been tested." Please remember, your answers are anonymous and confidential.

	No, never (1)	Yes, in the past (2)	Yes, currently (3)	I do not know/Never been tested (4)
Chancroid (1)	❍	❍	❍	❍
Chlamydia (2)	❍	❍	❍	❍
Gonorrhea (3)	❍	❍	❍	❍
Genital herpes (4)	❍	❍	❍	❍
Hepatitis B (5)	❍	❍	❍	❍
Hepatitis C (6)	❍	❍	❍	❍
HIV/AIDS (7)	❍	❍	❍	❍
HPV (Human Papillomavirus) (8)	❍	❍	❍	❍
Public lice (crabs) (9)	❍	❍	❍	❍
Scabies (10)	❍	❍	❍	❍
Syphillis (11)	❍	❍	❍	❍
Trichomoniasis (12)	❍	❍	❍	❍
LGV (Lymphogranuloma venereum) (13)	❍	❍	❍	❍
Molluscum contagiosum (14)	❍	❍	❍	❍
Other (Please specify) (15)	❍	❍	❍	❍

PRC Men of all ages may experience various prostate and rectal conditions. Below is a list of some common conditions related to prostate and rectal problems. Please indicate whether you currently have or have ever been diagnosed with each of the following conditions. If you are unsure or have never been tested for the particular condition, please select "I do

not know/Never been tested." Please remember, your answers are anonymous and confidential.

	No, never (1)	Yes, in the past (2)	Yes, currently (3)	I do not know/Never been tested (4)
Enlarged prostate (1)	❍	❍	❍	❍
Prostatitis (2)	❍	❍	❍	❍
Prostate cancer (3)	❍	❍	❍	❍
Testicular cancer (4)	❍	❍	❍	❍
Bladder cancer (5)	❍	❍	❍	❍
Rectal cancer (14)	❍	❍	❍	❍
Anal fissures (6)	❍	❍	❍	❍
Hemorrhoids (7)	❍	❍	❍	❍
Rectal prolapse (15)	❍	❍	❍	❍
Crohn's disease (8)	❍	❍	❍	❍
Tuberculosis (9)	❍	❍	❍	❍
Proctalgia fugax (10)	❍	❍	❍	❍
Levator ani syndrome (11)	❍	❍	❍	❍
Irritable bowel syndrome (12)	❍	❍	❍	❍
Other (Please specify) (13)	❍	❍	❍	❍

PCS Please reflect on past painful experiences bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus).
Please indicate the degree to which you experience the following thoughts and feelings

when bottoming is painful.If you do not experience pain when bottoming or have never bottomed, please select "Never."

	Never (0)	Rarely (1)	Sometimes (2)	Often (3)	All the time (4)
1. I worry all the time about whether the pain will end. (1)	❍	❍	❍	❍	❍
2. I feel I can't go on. (2)	❍	❍	❍	❍	❍
3. It's terrible and I think it's never going to get any better. (3)	❍	❍	❍	❍	❍
4. It's awful and I feel that it overwhelms me. (4)	❍	❍	❍	❍	❍
5. I feel I can't stand it any more. (5)	❍	❍	❍	❍	❍
6. I become afraid that the pain may get worse. (6)	❍	❍	❍	❍	❍
7. I think of other painful experiences. (7)	❍	❍	❍	❍	❍
8. I anxiously want the pain to go away. (8)	❍	❍	❍	❍	❍
9. I can't seem to keep it out of my mind. (9)	❍	❍	❍	❍	❍
10. I keep thinking about how much it hurts. (10)	❍	❍	❍	❍	❍

11. I keep thinking about how badly I want the pain to stop. (11)	❍	❍	❍	❍	❍
12. There is nothing I can do to reduce the intensity of the pain. (12)	❍	❍	❍	❍	❍
13. I wonder whether something serious may happen. (13)	❍	❍	❍	❍	❍

PASS Please reflect on past painful experiences bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus) and

indicate how often each of the following occurs.If you do not experience pain when bottoming or have never bottomed, please select "Never."

	Never (0)	Once in awhile (1)	Sometimes (2)	A lot (3)	Most of the time (4)	Always (5)
1. I can't think straight when in pain. (1)	❍	❍	❍	❍	❍	❍
2. During painful episodes it is difficult for me to think of anything besides the pain. (2)	❍	❍	❍	❍	❍	❍
3. When I hurt I think about pain constantly. (3)	❍	❍	❍	❍	❍	❍
4. I find it hard to concentrate when I hurt. (4)	❍	❍	❍	❍	❍	❍
5. I worry when I am in pain. (5)	❍	❍	❍	❍	❍	❍
6. I go immediately to bed when I feel severe pain. (6)	❍	❍	❍	❍	❍	❍
7. I will stop any activity as soon as I sense pain coming on. (7)	❍	❍	❍	❍	❍	❍
8. As soon as pain comes on I take medication to reduce it. (8)	❍	❍	❍	❍	❍	❍

9. I avoid important activities when I hurt. (9)	❍	❍	❍	❍	❍	❍
10. I try to avoid activities that cause pain. (10)	❍	❍	❍	❍	❍	❍
11. I think that if my pain gets too severe, it will never decrease. (11)	❍	❍	❍	❍	❍	❍
12. When I feel pain I am afraid that something terrible will happen. (12)	❍	❍	❍	❍	❍	❍
13. When I feel pain I think that I might be seriously ill. (13)	❍	❍	❍	❍	❍	❍
14. Pain sensations are terrifying. (14)	❍	❍	❍	❍	❍	❍
15. When pain comes on strong I think that I might become paralysed or more disabled. (15)	❍	❍	❍	❍	❍	❍

16. I begin trembling when engaged in an activity that increases pain. (16)	❍	❍	❍	❍	❍	❍
17. Pain seems to cause my heart to pound or race. (17)	❍	❍	❍	❍	❍	❍
18. When I sense pain I feel dizzy or faint. (18)	❍	❍	❍	❍	❍	❍
19. Pain makes me nauseous. (19)	❍	❍	❍	❍	❍	❍
20. I find it difficult to calm my body down after periods of pain. (20)	❍	❍	❍	❍	❍	❍

MPQ The following list contains a set of pain descriptors. Please rate the intensity of each of the following pain descriptors in relation to when you experience pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus). If the word does not describe your pain experience,

please select "None."If you do not experience pain when bottoming or have never bottomed, please skip to the next question.

	None (0)	Mild (1)	Moderate (2)	Severe (3)
Throbbing (1)	❍	❍	❍	❍
Shooting (2)	❍	❍	❍	❍
Stabbing (3)	❍	❍	❍	❍
Sharp (4)	❍	❍	❍	❍
Cramping (5)	❍	❍	❍	❍
Gnawing (6)	❍	❍	❍	❍
Hot/Burning (7)	❍	❍	❍	❍
Aching (8)	❍	❍	❍	❍
Heavy (9)	❍	❍	❍	❍
Tender (10)	❍	❍	❍	❍
Splitting (11)	❍	❍	❍	❍
Tiring/Exhausting (12)	❍	❍	❍	❍
Sickening (13)	❍	❍	❍	❍
Fearful (14)	❍	❍	❍	❍
Punishing/Cruel (15)	❍	❍	❍	❍

PPI1 Using the following scale, please indicate how intense your pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus) is at its worst.

- ❍ No pain (0)
- ❍ Mild (1)
- ❍ Discomforting (2)
- ❍ Distressing (3)
- ❍ Horrible (4)
- ❍ Excruciating (5)

PPI2 Using the following scale, please indicate how intense your pain when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus) is at its best.

- ❍ No pain (0)
- ❍ Mild (1)
- ❍ Discomforting (2)
- ❍ Distressing (3)
- ❍ Horrible (4)
- ❍ Excruciating (5)

VAS Using the following scale, please indicate, on average, how intense your pain is when bottoming (i.e., being penetrated by a sexual partner or object; your partner's penis or an object is inserted into your anus).

_____ Intensity (1)

IIEF_Inst INSTRUCTIONS: Each of the following questions has several possible answers. Check off the answer that best describes your own situation over the past 4 weeks. Please answer the following questions as honestly and clearly as possible. Your responses will be kept completely confidential. In answering these questions, the following definitions apply: Sexual activity can include caressing, foreplay, masturbation, and intercourse. Active Anal intercourse is defined as penetrating (entry) your partner's anus. Passive Anal intercourse is defined as being penetrated (entry) by your partner(s). Sexual stimulation includes situations like foreplay with a partner(s), looking at erotic pictures, sexual fantasy, etc. Sexual desire or interest is a feeling that includes wanting to have a sexual experience, feeling receptive to a partner's sexual initiation, and thinking or fantasizing about having sex. Ejaculate is defined as the ejection of semen from the penis (or the feeling of this).

IIEF1 Over the past 4 weeks, how often were you able to get an erection during sexual activity?

- ❍ No sexual activity (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF2 Over the past 4 weeks, when you had erections with sexual stimulation, how often were your erections hard enough for penetration?

- ❍ No sexual activity (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF3 Over the past 4 weeks, have you had, or attempted to have, active anal intercourse (i.e., where you penetrated or attempted to penetrate your partner(s))?

- ❍ No (0)
- ❍ Yes (1)

If No Is Selected, Then Skip To Over the past 4 weeks, have you had, ...

IIEF4 Over the past 4 weeks, when you attempted active anal intercourse, how often were you able to penetrate (enter) your partner(s)?

- ❍ Did not attempt intercourse (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF5 During active anal intercourse over the past 4 weeks, how often were you able to maintain your erection after you had penetrated (entered) your partner(s)?

- ❍ Did not attempt intercourse (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF6 During active anal intercourse over the past 4 weeks, how difficult was it to maintain your erection to completion of intercourse?

- ❍ Did not attempt intercourse (0)
- ❍ Extremely difficult (1)
- ❍ Very difficult (2)
- ❍ Difficult (3)
- ❍ Slightly difficult (4)
- ❍ Not difficult (5)

IIEF7 Over the past 4 weeks, have you had, or attempted to have, passive anal intercourse (i.e., where you were penetrated by your partner(s))?

- ❍ No (0)
- ❍ Yes (1)

If No Is Selected, Then Skip To Over the past 4 weeks, during non-int...

IIEF8 Over the past 4 weeks, during passive anal intercourse, how often were you able to maintain your erection after you had been penetrated (entered) by your partner(s)?

- ❍ Did not attempt intercourse (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF9 Over the past 4 weeks, during passive anal intercourse, how difficult was it to maintain your erection to completion of intercourse?

- ❍ Did not attempt intercourse (0)
- ❍ Extremely difficult (1)
- ❍ Very difficult (2)
- ❍ Difficult (3)
- ❍ Slightly difficult (4)
- ❍ Not difficult (5)

IIEF10 Over the past 4 weeks, during non-intercourse sexual activity (e.g., masturbation, oral sex), how often were you able to maintain your erection until the completion of sexual activity?

- ❍ Did not attempt non-intercourse sexual activity (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF11 Over the past 4 weeks, how many times have you had or attempted to have sexual intercourse or other sexual activity?

- ❍ No attempts (0)
- ❍ One to two attempts (1)
- ❍ Three to four attempts (2)
- ❍ Five to six attempts (3)
- ❍ Seven to ten attempts (4)
- ❍ Eleven + attempts (5)

IIEF12 Over the past 4 weeks, when you had or attempted to have sexual intercourse or other sexual activity, how often was it satisfactory for you?

- ❍ Did not attempt intercourse (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF13 Over the past 4 weeks, how much have you enjoyed sexual intercourse or other sexual activity?

- ❍ No intercourse (0)
- ❍ No enjoyment (1)
- ❍ Not very enjoyable (2)
- ❍ Fairly enjoyable (3)
- ❍ Highly enjoyable (4)
- ❍ Very highly enjoyable (5)

IIEF14 Over the past 4 weeks, when you had sexual stimulation or intercourse, how often did you ejaculate?

- ❍ No sexual stimulation/intercourse (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF15 Over the past 4 weeks, when you had sexual stimulation or intercourse, how often did you have the feeling of orgasm or climax with or without ejaculation?

- ❍ No sexual stimulation/intercourse (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF16 Over the past 4 weeks, how often have you felt sexual desire?

- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF17 Over the past 4 weeks, how would you rate your level of sexual desire?

- ❍ Very low/none at all (1)
- ❍ Low (2)
- ❍ Moderate (3)
- ❍ High (4)
- ❍ Very high (5)

IIEF18 Over the past 4 weeks, how satisfied have you been with your overall sex life?

- ❍ Very dissatisfied (1)
- ❍ Moderately dissatisfied (2)
- ❍ Equally satisfied and dissatisfied (3)
- ❍ Moderately satisfied (4)
- ❍ Very satisfied (5)

IIEF19 Over the past 4 weeks, how satisfied have you been with your sexual relationship with your regular partner(s)?

- ❍ Very dissatisfied (1)
- ❍ Moderately dissatisfied (2)
- ❍ Equally satisfied and dissatisfied (3)
- ❍ Moderately satisfied (4)
- ❍ Very satisfied (5)
- ❍ I do not have a regular partner (6)

IIEF20 Over the past 4 weeks, how do you rate your confidence that you could get and keep an erection?

- ❍ Very low (1)
- ❍ Low (2)
- ❍ Moderate (3)
- ❍ High (4)
- ❍ Very high (5)

IIEF21 Over the past 4 weeks, how often do you wake up with an erection?

- ❍ None of the time (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

IIEF22 Over the past 4 weeks, when you masturbated, how often could you get an erection?

- ❍ No masturbation (0)
- ❍ Almost never/never (1)
- ❍ A few times (much less than half the time) (2)
- ❍ Sometimes (about half the time) (3)
- ❍ Most times (much more than half the time) (4)
- ❍ Almost always/always (5)

SDI This questionnaire asks about your level of sexual desire. By desire, we mean INTEREST IN or WISH FOR SEXUAL ACTIVITY. For each item, please select the response that best describes your thoughts and feelings. Your answers are confidential and anonymous.

SDI1 During the last month, how often would you have liked to engage in sexual activity with a partner (for example, touching each other's genitals, giving or receiving oral stimulation, anal intercourse, etc.)?

- ❍ Not at all (1)
- ❍ Once a month (2)
- ❍ Once every two weeks (3)
- ❍ Once a week (4)
- ❍ Twice a week (5)
- ❍ Three to four times a week (6)
- ❍ Once a day (7)
- ❍ More than once a day (8)

SDI2 During the last month, how often have you had sexual thoughts involving a partner?

- ❍ Not at all (1)
- ❍ Once or twice a month (2)
- ❍ Once a week (3)
- ❍ Twice a week (4)
- ❍ Three to four times a week (5)
- ❍ Once a day (6)
- ❍ A couple of times a day (7)
- ❍ Many times a day (8)

SDI3 When you have sexual thoughts, how strong is your desire to engage in sexual behaviour with a partner?

_____ Intensity (1)

SDI4 When you first see an attractive person, how strong is your sexual desire?

_____ Intensity (1)

SDI5 When you spend time with an attractive person (e.g., at work or school, etc.), how strong is your sexual desire?

_____ Intensity (1)

SDI6 When you are in romantic situations (e.g., candle lit dinner, walk on the beach, etc.), how strong is your sexual desire?

_____ Intensity (1)

SDI7 How strong is your desire to engage in sexual activity with a partner?

_____ Intensity (1)

SDI8 How important is it for your to fulfill your sexual desire through activity with a partner?

_____ Importance (1)

SDI9 Compared to other people of your age and sex, how would you rate your desire to behave sexually with a partner?

_____ Desire (1)

SDI10 During the last month, how often would you have liked to behave sexually by yourself (e.g., masturbating, touching your genitals, etc.)?

- ❍ Not at all (1)
- ❍ Once a month (2)
- ❍ Once every two weeks (3)
- ❍ Once a week (4)
- ❍ Twice a week (5)
- ❍ Three to four times a week (6)
- ❍ Once a day (7)
- ❍ More than once a day (8)

SDI11 How strong is your desire to engage in sexual behaviour by yourself?

_____ Intensity (1)

SDI12 How important is it for you to fulfill your desires to behave sexually by yourself?

_____ Importance (1)

SDI13 Compared to other people of your age and sex, how would you rate your desire to behave sexually by yourself?

_____ Desire (1)

SDI14 How long could you go comfortably without having sexual activity of some kind?

- ❍ Forever (1)
- ❍ A year or two (2)
- ❍ Several months (3)
- ❍ A month (4)
- ❍ A few weeks (5)
- ❍ A week (6)
- ❍ A few days (7)
- ❍ One day (8)
- ❍ Less than one day (9)

PEDT This is a questionnaire to help identify men who may have a problem with ejaculating too soon during sexual activity. Even if you do not have difficulties, please answer all the questions. Please select the box that best represents your answer for each of the questions below. Remember there are no right or wrong answers to these questions. While your experiences may change from time to time, we are interested in your general experience with oral and anal sex. Ejaculation refers to the release of semen after penetration (when your penis enters your partner's mouth or anus).

PEDT1 How difficult is it for you to delay ejacuation?

- ❍ Not at all difficult (1)
- ❍ Somewhat difficult (2)
- ❍ Moderately difficult (3)
- ❍ Very difficult (4)
- ❍ Extremely difficult (5)

PEDT2 How often do you ejaculate before you want to?

- ❍ Almost never or never (~0%) (1)
- ❍ Less than half the time (~25%) (2)
- ❍ About half the time (~50%) (3)
- ❍ More than half the time (~75%) (4)
- ❍ Almost always or always (~100%) (5)

PEDT3 How often do you ejaculate with very little stimulation?

- ❍ Almost never or never (~0%) (1)
- ❍ Less than half the time (~25%) (2)
- ❍ About half the time (~50%) (3)
- ❍ More than half the time (~75%) (4)
- ❍ Almost always or always (~100%) (5)

PEDT4 Do you feel frustrated because of ejaculating before you want to?

- ❍ Not at all (1)
- ❍ Somewhat (2)
- ❍ Moderately (3)
- ❍ Very (4)
- ❍ Extremely (5)

PEDT5 How concerned are you that your time to ejaculation leaves your partner(s) sexually unfulfilled?

- ❍ Not at all (1)
- ❍ Somewhat (2)
- ❍ Moderately (3)
- ❍ Very (4)
- ❍ Extremely (5)

MSHQ1 In the past month, how often have you been able to ejaculate or "cum" when having sexual activity?

- ❍ None of the time/Could not ejaculate (1)
- ❍ Less than half the time (2)
- ❍ About half the time (3)
- ❍ Most of the time (4)
- ❍ All of the time (5)

MSHQ2 In the past month when having sexual activity, how often did you feel that you took too long to ejaculate or "cum"?

- ❍ None of the time/Could not ejaculate (1)
- ❍ Less than half the time (2)
- ❍ About half the time (3)
- ❍ Most of the time (4)
- ❍ All of the time (5)

MSHQ3 In the past month, how would you rate the amount or volume of semen or fluid when you ejaculate?

- ❍ Could not ejaculate (1)
- ❍ Very much less than it used to be (2)
- ❍ Much less than it used to be (3)
- ❍ Somewhat less than it used to be (4)
- ❍ A little less than it used to be (5)
- ❍ As much as it always was (6)

MSHQ4 In the past month, how would you rate the strength or force of your ejaculation?

- ❍ Could not ejaculate (1)
- ❍ Very much less strong than it used to be (2)
- ❍ Much less than it used to be (3)
- ❍ Somewhat less strong than it used to be (4)
- ❍ A little less strong than it used to be (5)
- ❍ As strong as it always was (6)

MSHQ5 In the past month, when having sexual activity, how often have you felt like you were ejaculating but no fluid came out?

- ❍ None of the time/Could not ejaculate (1)
- ❍ Less than half the time (2)
- ❍ About half the time (3)
- ❍ Most of the time (4)
- ❍ All of the time (5)

MSHQ6 In the past month, if you have had any ejaculation difficulties or have been unable to ejaculate, how bothered have you been by this?

- ❍ No problem with ejaculation (1)
- ❍ Not at all bothered (2)
- ❍ A little bothered (3)
- ❍ Moderately bothered (4)
- ❍ Very bothered (5)
- ❍ Extremely bothered (6)

NSSS Thinking about your sex life during the last 6 months, please rate your satisfaction with the following aspects.

	Not at all satisfied (1)	A little satisfied (2)	Moderately satisfied (3)	Very satisfied (4)	Extremely satisfied (5)
1. The intensity of my sexual arousal. (1)	❍	❍	❍	❍	❍
2. The quality of my orgasms. (2)	❍	❍	❍	❍	❍
3. My "letting go" and surrender to sexual pleasure during sex. (3)	❍	❍	❍	❍	❍
4. My focus/concentration during sexual activity. (4)	❍	❍	❍	❍	❍
5. The way I sexually react to a partner/partners. (5)	❍	❍	❍	❍	❍
6. My body's sexual functioning. (6)	❍	❍	❍	❍	❍
7. My emotional opening up in sex. (7)	❍	❍	❍	❍	❍
8. My mood after sexual activity. (8)	❍	❍	❍	❍	❍
9. The frequency of my orgasms. (9)	❍	❍	❍	❍	❍
10. The pleasure I provided to my partner/partners. (10)	❍	❍	❍	❍	❍
11. The balance between what I give and receiving in sex. (11)	❍	❍	❍	❍	❍
12. My partner's/partners' emotional opening up during sex. (12)	❍	❍	❍	❍	❍
13. My partner's/partners' initiation of sexual activity. (13)	❍	❍	❍	❍	❍

14. My partner's/partners' ability to orgasm. (14)	❍	❍	❍	❍	❍
15. My partner's/partners' surrender ("letting go") to sexual pleasure. (15)	❍	❍	❍	❍	❍
16. The way my partner/partners takes care of my sexual needs. (16)	❍	❍	❍	❍	❍
17. My partner's/partners' sexual creativity. (17)	❍	❍	❍	❍	❍
18. My partner's/partners' sexual availability. (18)	❍	❍	❍	❍	❍
19. The variety of my sexual activities. (19)	❍	❍	❍	❍	❍
20. The frequency of my sexual activity. (20)	❍	❍	❍	❍	❍

SS Please indicate how much you agree with the following statements.

	Strongly Disagree (-2)	Disagree (-1)	Neutral (0)	Agree (1)	Strongly Agree (2)
1. I am a good sexual partner. (1)	❍	❍	❍	❍	❍
2. I would rate my sexual skill quite highly. (2)	❍	❍	❍	❍	❍
3. I think of myself as a very good sexual partner. (3)	❍	❍	❍	❍	❍
4. I would rate myself low as a sexual partner. (4)	❍	❍	❍	❍	❍
5. I am confident about myself as a sexual partner. (5)	❍	❍	❍	❍	❍
6. I am depressed about the sexual aspects of my life. (6)	❍	❍	❍	❍	❍
7. I feel good about my sexuality. (7)	❍	❍	❍	❍	❍
8. I am disappointed about the quality of my sex life. (8)	❍	❍	❍	❍	❍
9. I feel down about my sex life. (9)	❍	❍	❍	❍	❍
10. I feel pleased with my sex life. (10)	❍	❍	❍	❍	❍

HHRD Please think carefully about your life as you answer the questions below. Read each question and then check the circle that best describes how often these events happened in the PAST YEAR.

	Never (1)	Once in awhile (< 10%) (2)	Sometimes (10-25%) (3)	A lot (26-49%) (4)	Most of the time (50-70%) (5)	Almost all of the time (>70%) (6)
1. How many times have you been treated unfairly by teachers or professors because you are a gay/bisexual man? (1)	❍	❍	❍	❍	❍	❍
2. How many times have you been treated unfairly by your employer, boss, or supervisors, because you are a gay/bisexual man? (2)	❍	❍	❍	❍	❍	❍
3. How many times have you been treated unfairly by your co-workers, fellow students, or colleagues because you are a gay/bisexual man? (3)	❍	❍	❍	❍	❍	❍

4. How many times have you been treated unfairly by people in service jobs (e.g., store clerks, waiters, bartenders, waitresses, bank teller, etc) because you are a gay/bisexual man? (4)	❍	❍	❍	❍	❍	❍
5. How many times have you been treated unfairly by strangers because you are a gay/bisexual man? (5)	❍	❍	❍	❍	❍	❍
6. How many times have you been treated unfairly by people in helping jobs (e.g, doctors, nurses, psychiatrists, dentists, counsellors, etc.) because you are a gay/bisexual man? (6)	❍	❍	❍	❍	❍	❍

7. How many times were you denied a raise, a promotion, tenure, a good assignment, a job, or other such things at work because you are a gay/bisexual man? (7)	❍	❍	❍	❍	❍	❍
8. How many times have you been treated unfairly by your family because you are a gay/bisexual man? (8)	❍	❍	❍	❍	❍	❍
9. How many times have you been called a name like homo, fag, or other names in a derogatory manner? (9)	❍	❍	❍	❍	❍	❍
10. How many times have you been made fun of, picked on, pushed, shoved, hit, or threatened with harm because you are a gay/bisexual man? (10)	❍	❍	❍	❍	❍	❍

11. How many times have you been rejected by family members because you are a gay/bisexual man? (11)	❍	❍	❍	❍	❍	❍
12. How many times have you been rejected by friends because you are a gay/bisexual man? (12)	❍	❍	❍	❍	❍	❍
13. How many times have you heard anti-gay/bisexual remarks from family members? (13)	❍	❍	❍	❍	❍	❍
14. How many times have you been verbally insulted because you are a gay/bisexual man? (14)	❍	❍	❍	❍	❍	❍

15. Before age 18, how many times were you made fun of, picked on, pushed, shoved, hit, or threatened with harm because you were gay/bisexual? (15)	❍	❍	❍	❍	❍	❍

SES The following questions concern sexual experiences that you may have had that were unwanted. We know that these are personal questions. Your responses are completely confidential. Please indicate the number of times each experience has happened to you. If several experiences occurred on the same occasion, for example, if one night someone told you some lies and had sex with you when you were drunk, you would check both boxes. First, we will ask you about "the past 12 months," which refers to the past year going back from today. Then, we will ask about your experiences since the age of 18,"

which refers to your life starting on your 18th birthday and stopping one year ago from today.

SES_YR1 How many times in the past 12 months has... Someone fondled, kissed, or rubbed up against the private areas of my body (chest, crotch, or butt) or removed some of my clothes without my consent (but did not attempt sexual penetration) by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_YR2 How many times in the past 12 months has... Someone had oral sex with me or made me have oral sex with them without my consent by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_YR3 How many times in the past 12 months has... A man put his penis into my butt, or someone inserted fingers or objects without my consent by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_YR4 How many times in the past 12 months has... Even though it didn't happen, someone TRIED to have oral sex with me, or make me have oral sex with them without my consent by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_YR5 How many times in the past 12 months has... Even though it didn't happen, someone TRIED to to put his penis into my butt, or someone tried to stick in objects or fingers without my consent by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_ADT1 How many times since the age of 18 years old (not including the past 12 months) has... Someone fondled, kissed, or rubbed up against the private areas of my

body (chest, crotch, or butt) or removed some of my clothes without my consent (but did not attempt sexual penetration) by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_ADT2 How many times since the age of 18 years old (not including the past 12 months) has... Someone had oral sex with me or made me have oral sex with them without my consent by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_ADT3 How many times since the age of 18 years old (not including the past 12 months) has... A man put his penis into my butt, or someone inserted fingers or objects without my consent by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_ADT4 How many times since the age of 18 years old (not including the past 12 months) has... Even though it didn't happen, someone TRIED to have oral sex with me, or make me have oral sex with them without my consent by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

SES_ADT5 How many times since the age of 18 years old (not including the past 12 months) has... Even though it didn't happen, someone TRIED to to put his penis into my butt, or someone tried to stick in objects or fingers without my consent by:

	None (0)	1 time (1)	2 times (2)	3 or more times (3)
a) Telling lies, threatening to end the relationship, threatening to spread rumors about me, making promises I knew were untrue, or continually verbally pressuring me after I said I didn't want to. (1)	❍	❍	❍	❍
b) Showing displeasure, criticizing my sexuality or attractiveness, getting angry but not using physical force, after I said I didn't want to. (2)	❍	❍	❍	❍
c) Taking advantage of me when I was too drunk or out of it to stop what was happening. (3)	❍	❍	❍	❍
d) Threatening to physically harm me or someone close to me. (4)	❍	❍	❍	❍
e) Using force, for example holding me down with their body weight, pinning my arms, or having a weapon (5)	❍	❍	❍	❍

CESD Please click the box which best describes how often you felt or behaved this way DURING THE PAST WEEK.

	Rarely or none of the time (less than 1 day a week) (0)	Some or a little of time (1 or 2 days weeks) (1)	Occasionally or moderate amount of time (3 or 4 days a week) (2)	Most or all of the time (5 or 7 days a week) (3)
1. I was bothered by things that usually don't bother me. (1)	❍	❍	❍	❍
2. I did not feel like eating; my appetite was poor. (2)	❍	❍	❍	❍
3. I felt that I could not shake off the blues even with the help from my family or friends. (3)	❍	❍	❍	❍
4. I felt that I was just as good as other people. (4)	❍	❍	❍	❍
5. I had trouble keeping my mind on what I was doing. (5)	❍	❍	❍	❍
6. I felt depressed. (6)	❍	❍	❍	❍
7. I felt that everything I did was an effort. (7)	❍	❍	❍	❍
8. I felt hopeful about the future. (8)	❍	❍	❍	❍
9. I thought my life had been a failure. (9)	❍	❍	❍	❍
10. I felt fearful. (10)	❍	❍	❍	❍
11. My sleep was restless. (11)	❍	❍	❍	❍
12. I was happy. (12)	❍	❍	❍	❍
13. I talked less than usual. (13)	❍	❍	❍	❍

14. I felt lonely. (14)	❍	❍	❍	❍
15. People were unfriendly. (15)	❍	❍	❍	❍
16. I enjoyed life. (16)	❍	❍	❍	❍
17. I had crying spells. (17)	❍	❍	❍	❍
18. I felt sad. (18)	❍	❍	❍	❍
19. I felt that people disliked me. (19)	❍	❍	❍	❍
20. I could not get going. (20)	❍	❍	❍	❍

STICSA Below is a list of statements which can be used to describe how people feel. Beside each statement are four numbers which indicate the degree with which each statement is

self-descriptive of your mood in general. Please read each statement carefully and check the number which best indicates how often, IN GENERAL, the statement is true of you.

	Almost Never (1)	Occasionally (2)	Often (3)	Almost Always (4)
1. My heart beats fast (1)	❍	❍	❍	❍
2. My muscles are tense. (2)	❍	❍	❍	❍
3. I feel agonized over my problems. (3)	❍	❍	❍	❍
4. I think that others won't approve of me. (4)	❍	❍	❍	❍
5. I feel like I'm missing out on things because I can't make up my mind soon enough. (5)	❍	❍	❍	❍
6. I feel dizzy. (6)	❍	❍	❍	❍
7. My muscles feel weak. (7)	❍	❍	❍	❍
8. I feel trembly and shaky. (8)	❍	❍	❍	❍
9. I picture some future misfortune. (9)	❍	❍	❍	❍
10. I can't get some thought out of my mind. (10)	❍	❍	❍	❍
11. I have trouble remembering things. (11)	❍	❍	❍	❍
12. My face feels hot. (12)	❍	❍	❍	❍
13. I think that the worst will happen. (13)	❍	❍	❍	❍
14. My arms and legs feel stiff. (14)	❍	❍	❍	❍
15. My throat feels dry. (15)	❍	❍	❍	❍

16. I keep busy to avoid uncomfortable thoughts. (16)	❍	❍	❍	❍
17. I cannot concentrate without irrelevant thoughts intruding. (17)	❍	❍	❍	❍
18. My breathing is fast and shallow. (18)	❍	❍	❍	❍
19. I worry that I cannot control my thoughts as well as I would like to. (19)	❍	❍	❍	❍
20. I have butterflies in my stomach. (20)	❍	❍	❍	❍
21. My palms feel clammy. (21)	❍	❍	❍	❍

CTQ These questions ask about some of your experiences growing up as a child. Although these questions are very personal, please try to answer as honestly as you can. For each question, check the circle corresponding to the number that best describes how you feel.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Very Often (5)
I got hit so hard by someone in my family that I had to see a doctor or go to the hospital. (1)	❍	❍	❍	❍	❍
People in my family hit me so hard that it left me with bruises or marks. (2)	❍	❍	❍	❍	❍
I was punished with a belt, a board, a cord, or some other hard object. (3)	❍	❍	❍	❍	❍
I believe that I was physically abused. (4)	❍	❍	❍	❍	❍
I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor. (5)	❍	❍	❍	❍	❍
Someone tried to touch me in a sexual way, or tried to make me touch them. (6)	❍	❍	❍	❍	❍

Someone threatened to hurt me or tell lies about me unless I did something sexual with them. (7)	❍	❍	❍	❍	❍
Someone tried to make me do sexual things or watch sexual things. (8)	❍	❍	❍	❍	❍
Someone molested me. (9)	❍	❍	❍	❍	❍
I believe that I was sexually abused. (10)	❍	❍	❍	❍	❍

SIHS Please indicate how much you agree with the following statements.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
1. I am comfortable about people finding out that I am gay (1)	❍	❍	❍	❍	❍	❍	❍
2. It is important to me to control who knows about my homosexuality (2)	❍	❍	❍	❍	❍	❍	❍
3. I feel comfortable discussing homosexuality in a public situation. (3)	❍	❍	❍	❍	❍	❍	❍
4. Even if I could change my sexual orientation I wouldn't. (4)	❍	❍	❍	❍	❍	❍	❍
5. I feel comfortable being seen in public with an obviously gay person. (5)	❍	❍	❍	❍	❍	❍	❍
6. Most gay men cannot sustain long-term committed relationships. (6)	❍	❍	❍	❍	❍	❍	❍
7. Most gay men prefer anonymous sexual encounters. (7)	❍	❍	❍	❍	❍	❍	❍

8. Gay men tend to flaunt their sexuality inappropriately. (8)	❍	❍	❍	❍	❍	❍	❍
9. Gay men are generally more promiscuous than straight men. (9)	❍	❍	❍	❍	❍	❍	❍
10. I often feel intimidated while at gay venues. (10)	❍	❍	❍	❍	❍	❍	❍
11. Social situations with gay men make me feel uncomfortable. (11)	❍	❍	❍	❍	❍	❍	❍
12. I feel comfortable in gay bars. (12)	❍	❍	❍	❍	❍	❍	❍
13. Making an advance to another man is difficult to me. (13)	❍	❍	❍	❍	❍	❍	❍

SCQ Please indicate how much you agree with the following statements regarding health care professionals.

	Strongly disagree (0)	Disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Agree (5)	Strongly agree (6)
1. Stereotypes about gay/bisexual/queer men have not affected me personally. (1)	❍	❍	❍	❍	❍	❍	❍
2. I never worry that my behaviours will be viewed as stereotypical of gay/bisexual/queer men. (2)	❍	❍	❍	❍	❍	❍	❍
3. When interacting with health care professionals who know of my sexual preference, I feel like they interpret all my behaviours in terms of the fact that I am gay/bisexual/queer man. (3)	❍	❍	❍	❍	❍	❍	❍
4. Most health care professionals do not judge gay/bisexual/queer men on the basis of their sexual preference. (4)	❍	❍	❍	❍	❍	❍	❍
5. My being gay/bisexual/queer does not influence how health care professionals act with me. (5)	❍	❍	❍	❍	❍	❍	❍
6. I almost never think about the fact that I am gay/bisexual/queer when I interact with health care professionals. (6)	❍	❍	❍	❍	❍	❍	❍

7. My being gay/bisexual/queer does not influence how people act with me. (7)	❍	❍	❍	❍	❍	❍	❍
8. Most health care professionals have a lot more homophobic/biphobic thoughts than they actually express. (8)	❍	❍	❍	❍	❍	❍	❍
9. I often think that health care professionals are unfairly accused of being homophobic/biphobic. (9)	❍	❍	❍	❍	❍	❍	❍
10. Most health care professionals have a problem viewing gay/bisexual/queer men as equals. (10)	❍	❍	❍	❍	❍	❍	❍

SMS For each statement, please indicate how often in the past 12 months you personally had sex for each of the following reasons. For this questionnaire, please answer in accordance to how you personally define "sex." How often do you have sex...

	Almost never or never (1)	Some of the time (2)	About half of the time (3)	Most of the time (4)	Almost always or always (5)
To become more intimate with your partner? (1)	❍	❍	❍	❍	❍
To express love for your partner? (2)	❍	❍	❍	❍	❍
To make an emotional connection with your partner? (3)	❍	❍	❍	❍	❍
To become closer with your partner? (4)	❍	❍	❍	❍	❍
To feel emotionally close to your partner? (5)	❍	❍	❍	❍	❍
Because you feel "horny?" (6)	❍	❍	❍	❍	❍
Because it feels good? (7)	❍	❍	❍	❍	❍
Just for the excitement of it? (8)	❍	❍	❍	❍	❍
Just for the thrill of it? (9)	❍	❍	❍	❍	❍
To satisfy your sexual needs? (10)	❍	❍	❍	❍	❍
To prove to yourself that your partner thinks you're attractive? (11)	❍	❍	❍	❍	❍
To help you feel better about yourself? (12)	❍	❍	❍	❍	❍

Because it makes you feel like you're a more interesting person? (13)	❍	❍	❍	❍	❍
To reassure yourself that you are sexually desirable? (14)	❍	❍	❍	❍	❍
To cope with upset feelings? (15)	❍	❍	❍	❍	❍
To help you deal with disappointment in your life? (16)	❍	❍	❍	❍	❍
Because it helps you feel better when you're lonely? (17)	❍	❍	❍	❍	❍
Because it helps you feel better when you're feeling low? (18)	❍	❍	❍	❍	❍
To cheer yourself up? (19)	❍	❍	❍	❍	❍
Because you worry that people will talk about you if you don't have sex? (20)	❍	❍	❍	❍	❍
Because people will think less of you if you don't? (21)	❍	❍	❍	❍	❍
Because others will kid you if you don't? (22)	❍	❍	❍	❍	❍

Just because all your friends are having sex? (23)	❍	❍	❍	❍	❍
So that others won't put you down about not having sex? (24)	❍	❍	❍	❍	❍
Out of fear that your partner won't love or like you anymore if you don't? (25)	❍	❍	❍	❍	❍
Because you don't want your partner to be angry with you? (26)	❍	❍	❍	❍	❍
Because you worry that your partner won't want to be with you if you don't? (27)	❍	❍	❍	❍	❍
Because you're afraid that your partner will leave you if you don't? (28)	❍	❍	❍	❍	❍
Because it makes you feel more self-confident? (29)	❍	❍	❍	❍	❍

Q131 If you have any additional comments, please feel free to write them below. Otherwise, you can skip to the next page.

Appendix C

Informed Consent Form

Consent to Participate in Research

Gay, bi, queer men's sexual pain study: When the "Oohs" are painful, not pleasurable

You are being asked to participate in a research study. Please read this consent form so that you understand what your participation will involve. Before you consent to participate, please ask any questions to be sure you understand what your participation will involve.

Investigators: Natalie Stratton, MA (Principal Investigator, Ryerson University)
Trevor A. Hart, Ph.D., C. Psych (Supervisor, Ryerson University)
Tuuli Kukkonen, Ph.D., C. Psych (Supervisory Committee Member, University of Guelph)

Purpose of the Study: The purpose of this study is to gain a better understanding of gay, bisexual, and queer men's experiences of pain during receptive anal intercourse (i.e., bottoming). The study findings will contribute to the principal investigator's doctoral dissertation.

Description of the Study: This study aims to recruit 200 gay, bisexual, or queer men who experience pain during receptive anal intercourse and 200 pain-free gay, bisexual, or queer men.

You are eligible to participate in the study if you:

- Identify as a gay, bisexual, or queer male
- Have had sexual activity with another male during the past 6 months
- Are over the age of 18 years old
- Are able to speak and read English
- Anticipate that you will be able to complete the full online survey package

What you will be asked to do: You are being asked to voluntarily complete this online survey package. The survey package includes questions about pain during receptive anal intercourse, mental and physical health, sexual behaviours and functioning, and the experiences of men who have had sex with men. More specifically, this survey package asks questions that may be sensitive in nature pertaining to childhood sexual and physical abuse, sexual coercion, sexual dysfunction, and discrimination. The survey package should take about 1-hour to complete.

Benefits of the Research and Benefits to You: Although there is no direct benefit to you for taking part in this study, your participation in this study will help us to better understand gay, bisexual, and queer men's experiences of pain during receptive anal intercourse, and to develop effective medical and psychological treatments for gay, bisexual, and queer men experiencing pain during receptive anal intercourse.

Risks and Discomforts: There are no physical risks involved in participating in this study. It is possible that you may feel uncomfortable when answering some of the questions asked in this study. You have the option to skip or not respond to any question that makes you feel

uncomfortable. Please be advised that you can withdraw from the study at any time if you wish to do so, without any consequences.

Confidentiality: The survey is anonymous and as such will not be collecting information that will easily identify you. Your Internet Protocol (IP) address can be tracked through the survey platform and may be observed only to ensure that one individual is not completing the survey multiple times.

This survey uses Qualtrics™, which is a United States of American (USA) company. Consequently, Qualtrics™ or USA authorities may access survey data in some forms (e.g., aggregate usage information) and under strict policies. Qualtrics™ employs a variety of security features to make sure that the data collected are not accessible by outside bodies. More information on Qualtrics'™ security systems can be viewed here: https://www.qualtrics.com/security-statement/. Information regarding their protective privacy policy is available here: https://www.qualtrics.com/privacy-statement/. If you would prefer participate with a paper-based survey, please contact the primary investigator, Natalie Stratton. Please note a paper-based survey may allow your identity to be known to the researcher/s. If you select this option your information will be kept confidential.

Data Storage and Dissemination of Results: To further protect your information, data stored by the researcher will be password protected and/or encrypted. The researcher/s will keep the data for up to 7 years after the study is over. After this period, the data will be destroyed (i.e., permanently deleted from the Qualtrics™ server and password protected computer).

Only the researcher/s named in this study will have access to the data as collected. Any future publications will include collective information (i.e., aggregate data). Your individual responses (i.e. raw data) will not be shared with anyone outside of the research team.

Once the data has been collected and analyzed by the investigators, a summary of the study findings will be posted on our study's Facebook page and website. Links to peer-reviewed publications will also be provided.

Compensation: You will be compensated $10.00 for the completion of the online survey package. If any question makes you uncomfortable, you can choose not to answer and will not be penalized. However, if you exit the survey before reaching the end (i.e., closing your web-browser), we have no way to determine which survey responses belong to you and you will not be compensated. Similarly, if you skip all or the majority of questions, you will not receive compensation. At the end of the survey, you will be asked whether you would like to be compensated for your participation. If you select "Yes," you will be directed to a *separate* online questionnaire where you will be asked to enter your first and last name as well as your email address. Your name and email address will not be linked to your survey responses.

Withdrawal from the Study: Participation in this study is completely voluntary. You can choose whether or not to participate in this study. Your choice of whether or not to participate will not influence your future relations with Ryerson University or the investigators involved in this research. If any question makes you uncomfortable, you can choose not to answer. You may

choose to withdraw at any time by closing your web-browser. If you decide you would no longer like to be a part of the study, your data will not be used. However, because the survey is anonymous, once you click the submit button at the end of the survey the researchers will not be able to determine which survey answers belong to you so your information cannot be withdrawn after that point. If you do not complete all portions of the study, you will not be reimbursed for the portions you have completed.

Questions About the Study? If you have questions about the research in general or about your participation in the study, please feel free to contact:

Natalie Stratton, MA
Principal Investigator
HIV Prevention Lab, Ryerson University
416-979-5000 extension 2179
E-mail: natalie.stratton@psych.ryerson.ca

Dr. Trevor Hart
Director
HIV Prevention Lab, Ryerson University
416-979-5000 extension 2179
E-mail: trevor.hart@ryerson.ca

This research has been reviewed by the Ryerson University's Research Ethics Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have questions regarding your rights as a participant in this study please contact:

Research Ethics Board
c/o Office of the Vice President, Research and Innovation
Ryerson University
350 Victoria Street
Toronto, ON M5B 2K3
416-979-5042
rebchair@ryerson.ca

Agreement:
By clicking "Yes, I consent to participating in this study," you acknowledge that you have read the information in this agreement and have had a chance to ask any questions you have about the study. Your consent also means that you agree to participate in the study and have been told that you can change your mind at any time. Please print a copy of this page for your future reference.

☐ Yes, I consent to participating in this study.
☐ No, I do not consent to participating in this study.

Appendix D

Debriefing Form

Thank you for participating in the GAY, BI, & QUEER MEN'S SEXUAL PAIN STUDY! We greatly appreciate your time and effort in completing this study. Your participation is critical for the development of effective medical and psychological treatments for gay, bi, and queer men experiencing pain when bottoming.

Once the data has been collected and analyzed by the investigators, a summary of the study findings will be posted on our study's Facebook page and website. Links to peer-reviewed publications will also be provided.

We would also like to take this opportunity to provide you with a list of sexual and mental health resources for people who identify as LGBTQ across Canada.

Canadian Psychological Association
Find a psychologist across Canada.
www.cpa.ca

CATIE
Health information resources for gay and bisexual men.
www.catie.ca

Gay and Lesbian Medical Association
Health professionals ensuring equality in healthcare for LGBT individuals. Find a health care provider and LGBT medical information.
www.glma.org

Gay Men's Sexual Health Alliance
An information hub for gay and bisexual men's sexual health.
www.gmsh.ca

Health Initiative for Men
Physical, sexual, social, and mental health information for gay men.
www.checkhimout.ca

Lesbian, Gay, Bi, & Trans Youthline
Confidential, non-judgmental peer support
1-800-268-9688
www.youthline.ca

PFLAG Canada
www.pflagcanada.ca

Rainbow Health Ontario
www.rainbowhealthontario.ca

Your Life Counts
A list of all crisis support lines across Canada
http://www.yourlifecounts.org/need-help/crisis-lines

If you require assistance obtaining a referral for counseling or other support, please feel free to contact the study director, Dr. Trevor Hart by telephone at 416-979-5000, ext. 1-2179 or email gbqsexstudy@psych.ryerson.ca. If this is an emergency or you are risk of harming yourself or others, please present to your nearest hospital emergency room or call 911.

Appendix E

Debriefing Form for Ineligible Participaants

Thank you for participating in the GAY, BI, & QUEER MEN'S SEXUAL PAIN STUDY! Unfortunately, you are either not eligible to participate or have indicated that you do not consent to participate in this study. As noted in the consent form, only eligible participants who have completed the survey package will receive compensation. Furthermore, your data will not be retained

We would also like to take this opportunity to provide you with a list of sexual and mental health resources for people who identify as LGBTQ across Canada.

Canadian Psychological Association
Find a psychologist across Canada.
www.cpa.ca

CATIE
Health information resources for gay and bisexual men.
www.catie.ca

Gay and Lesbian Medical Association
Health professionals ensuring equality in healthcare for LGBT individuals. Find a health care provider and LGBT medical information.
www.glma.org

Gay Men's Sexual Health Alliance
An information hub for gay and bisexual men's sexual health.
www.gmsh.ca

Health Initiative for Men
Physical, sexual, social, and mental health information for gay men.
www.checkhimout.ca

Lesbian, Gay, Bi, & Trans Youthline
Confidential, non-judgmental peer support
1-800-268-9688
www.youthline.ca

PFLAG Canada
www.pflagcanada.ca

Rainbow Health Ontario
www.rainbowhealthontario.ca

Your Life Counts
A list of all crisis support lines across Canada
http://www.yourlifecounts.org/need-help/crisis-lines

If you require assistance obtaining a referral for counseling or other support, please feel free to contact the study director, Dr. Trevor Hart by telephone at 416-979-5000, ext. 1-2179 or email gbqsexstudy@psych.ryerson.ca. If this is an emergency or you are risk of harming yourself or others, please present to your nearest hospital emergency room or call 911.

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