Received: 19 June 2020 | Revised: 21 August 2020 | Accepted: 31 August 2020

DOI: 10.1111/andr.12899

ORIGINAL ARTICLE

ANDROLOGY WILEY

Defining the impact of Peyronie's disease on the psychosocial status of gay men

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Abstract

Background: Little sexual health research has been conducted in gay men. Anecdotally, this population seems to experience more bother related to Peyronie's disease (PD).

Objectives: To examine the impact of PD on psychosocial factors in gay vs straight men.

Materials and Methods: All PD patients who were seen in the sexual medicine clinic were included. They completed three instruments: the PD questionnaire (PDQ), Self-Esteem and Relationship (SEAR) questionnaire, and a depression questionnaire (CES-D). We described demographics and sexual variables by sexual orientation. We then compared PDQ items and summary scores by sexual orientation, using a series of independent samples *t* tests.

Results: 34 consecutive gay and 464 straight men were included. Age and baseline characteristics were similar between the two cohorts, with the exception that fewer gay men were partnered (56% vs 87%, $P < .01$), and those with a partner had a shorter relationship duration: 109 ± 9 months vs 262 ± 175 months, $P < .01$. For the SEAR questionnaire, gay men demonstrated a more significant psychosocial impact of PD overall with lower SEAR sums (41 vs 57, $P = .01$) and a lower sexual relationship sub-domain score (28 vs 47, $P < .01$). 41% of gay men vs 26% of straight men had CES-D scores consistent with depression as defined by a score of ≥16 ($P = .09$). In the PDQ domains, gay men scored less favorably with regard to bother scores (7 vs 5, $P = .03$) and pain scores (8 vs 4, $P = .04$).

Discussion: Gay men with PD experience significantly more psychosocial impact as evidenced by less favorable SEAR sum and sexual relationship scores, CES-D scores, and PDQ pain and bother domain scores.

Conclusion: The psychosocial impact of PD is significant in all men, but it appears to be greater in gay men.

KEYWORDS

bother, depression, peyronie's disease, psychosocial impact, sexual orientation

1 | INTRODUCTION

Peyronie's disease (PD) is a wound-healing disorder of the penis characterized by formation of a fibrous scar in the tunica albuginea. Men can present with penile pain, erectile dysfunction, or penile deformity. The prevalence varies in the literature but can be as high as 9% of the general male population and the incidence increases with age.[1] An evaluation of over 530 men who underwent screening for prostate cancer but who lacked specific genitourinary complaints demonstrated an 8.9% prevalence of PD using the definition of a penile plaque noted on physical examination by a urologist.[2] When evaluating PD rates as a function of age, this was as low as 2.8% in men in their 40's and as high as 13% in men ≥80 years old.[2]

PD can have a significant psychosocial impact on men. An analysis of the psychosexual factors associated with PD included several elements of emotional distress in these patients. This included feelings of shame, inadequacy and reduced self-worth, body image dysmorphia, isolation and avoidance of intimacy, fear of rejection, anger, and depression.[3] While clinically this psychosocial impact can be apparent, with regard to research this has not been studied extensively.[4] A review paper on the psychological impact on PD noted that about 50% of men endorse depressive symptoms and roughly 80% of patients experience distress related to their PD.[5] Overall, factors associated with depressive symptoms in these men include penile shortening, penile deformity, relationship problems, and being single.[5] A study on 482 men evaluated delayed presentation in men with PD symptoms, defined as a delay of >12 months between symptoms and presentation to a physician. Results showed that heterosexual men were more likely to have a delayed presentation (OR 2.0, $P = .02$) and thus gay men are likely to present earlier.[6] This suggests that gay men are more bothered by their symptoms and thus seek care earlier.

The prevalence of gay men in the United States varies greatly depending on the region. Data from the American Community Survey estimated the prevalence of gay men by evaluating households with adult males living together. The results estimated that 1.5%-6% of men in the United States are gay depending on the state, with rates of 13.8% of men in New York County, the highest in the United States.[7]

In general, gay men suffer from health disparities and this includes an under-representation in research. A major cause for the lack of research in gay men is failure to recruit.[8] This failure to recruit is likely related to the heteronormative nature of validated questionnaires combined with the lack of willingness in patients and clinicians to discuss gay sexual practices.[9] The International Index of Erectile Function (IIEF) includes multiple questions that assume the patient is the one penetrating his partner.[10] Furthermore, the Peyronie's Disease Questionnaire (PDQ) specifies that patients who have not had vaginal intercourse without the past 3 months should not complete the questionnaire.[11] Thus, both of these commonly used questionnaires are not designed to study sexual function in gay men.

This study seeks to help contribute to the minimal data on PD and gay men by examining the impact of PD on psychosocial factors to include bother, depression, and self-esteem and relationships as measured by validated questionnaires in gay vs straight men. We hypothesized that gay men experience a greater psychosocial impact of PD compared to straight man, as measured using the PDQ, a depression screening questionnaire (CES-D), and the Self-Esteem and Relationship questionnaire (SEAR).

2 | MATERIALS AND METHODS

2.1 | Study population

PD patients seen in the sexual medicine clinic at our institution complete standardized validated questionnaires as outlined below. This current study includes all PD patients presenting to our clinic from 2014 to 2019 and who completed both the questionnaires and the curvature assessment and duplex Doppler ultrasound (CA/DUS). All patients were either self-referred or referred by other healthcare providers. Men were excluded if they did not complete the questionnaires or undergo a CA/DUS. Patients' PD diagnosis is based on the palpation of a tunical plaque by an experienced sexual medicine physician with over 2 decades of PD experience. Comorbidity and demographic data were recorded. Men self-identified their sexual orientation on our intake form. They provided information on their relationship status and on relationship duration for those who were partnered. This study was approved by our Institutional Review Board (Protocol 16-405).

2.2 | Deformity assessment

All PD patients are evaluated with a CA/DUS. A physician performs all of the measurements, which include ascertaining the nature, degree, and location of penile deformity, defining plaque calcification status, and measuring penile girth at the base, at the point of maximum curvature, and in the distal shaft. Stretched flaccid length is recorded but erect length is not, given the methodological challenges inherent in measuring erect length in an angulated penis. We do not routinely measure plaque size. All measurements with the exception of stretched flaccid length are performed when the penis is erect. We typically performed intracavernosal injections (ICI) using trimix (papaverine 30 mg/mL, prostaglandin 10 mcg/mL, and phentolamine 1 mg/mL). However, patients with previous prostaglandin pain associated with trimix are given bimix (papaverine 30 mg/mL and phentolamine 1 mg/mL). Patients are given a maximum of three injections and no more than 100 units of medication. The exact initial dosage is based on patient history and prior ICI dose if applicable and titrated to achieve an erection of at least 8 on a 10-point rigidity scale. Instability is assessed with manual axial loading of the penis. The duplex Doppler ultrasound evaluates the peak-systolic and end-diastolic velocities. Lastly, the penile plaque is evaluated by ultrasound for calcification.

2.3 | Questionnaire completion

The men completed three validated instruments: the PD questionnaire (PDQ), the Self-Esteem and Relationship (SEAR) questionnaire, and a depression questionnaire (CES-D). This is part of our standard assessment for PD patients, and these questionnaires are completed by all men seen in the sexual medicine clinic for PD concerns.

The Center of Epidemiological Studies-Depression Scale (CES-D) is a 20-item questionnaire to screen for depression. This survey is scored from 0 to 60 with a higher score equating to more symptoms.[12] The standard score consistent with depression is ≥16.[13] This comes from earlier validation studies, which demonstrated that a threshold of ≥16 resulted in no false-positive results.[14] Thus, this was the cutoff that was used for the diagnosis of depression in the current study.

The Self-Esteem and Relationship (SEAR) questionnaire was originally developed to quantify the psychosocial impact of erectile dysfunction (ED). This questionnaire has 14 questions with domains for sexual relationship and confidence; the latter is split into sub-domains of overall relationship and self-esteem. A higher score indicates a more favorable response.[15] The SEAR sum and subdomain scores are scored in such a way that the score needs to be converted to a 100-point scale despite the 14 questions each having responses ranging from 1 to 5. Additionally, questions 8 and 11 undergo inverse scoring so that a higher score is always a more favorable response.[15]

The Peyronie's Disease Questionnaire (PDQ) has 15 questions and 3 domains: psychological/physical symptoms, penile pain, and bother. These domains are scored separately, and there is no sum score. A higher score indicates worse symptoms.[11] Prior research at our institution has demonstrated that a PDQ bother domain score of ≥9 is consistent with clinically significant bother[16] so this was the threshold used in the current study. While all 3 of these questionnaires are validated, the SEAR and PDQ questionnaires have not been specifically validated in gay men.

For men without a partner, questions 13 and 14 (which ask about patient and partner satisfaction with their relationship in general) on SEAR were left unanswered and scores were imputed using the mean scores on questions 1-12. We evaluated the baseline questionnaires taken at the initial evaluation of PD. Libido (sex drive) was graded on 10-point scale with 1 = "I never think about sex" and 10 = "I always think about sex."

2.4 | Statistics

We described age, duration of relationship, and sexual variables (duration of PD, libido, and presence of pain), by sexual orientation (gay or straight). We then compared SEAR, CES-D, and PDQ items and summary scores by sexual orientation, using a series of independent samples *t* tests. PDQ bother score was categorized as 9 or above vs below 9, and CES-D score was categorized as 16 or above vs below 16. The proportion of men meeting these thresholds was compared between gay and straight men, via chi-square tests.

TABLE 1 Patient demographics

	Gay Mean (SD)	Straight Mean (SD)	*P*-value
Age (y)	53 (9)	57 (11)	.09
Duration of PD (mo)	13 (19)	20 (35)	.30
In relationship (yes)	19 (56%)	401 (87%)	**<.001**
Duration of relationship (mo)	109 (100)	262 (175)	**<.001**
Sexual desire (1-10)	6.0 (3.0)	6.4 (2.6)	.46
Penile pain (yes)	4 (24%)	37 (22%)	.88

Note: Bolded values denote statistical significance.

Statistical calculations were performed using SAS 9.4 software (SAS Institute, INC.).

3 | RESULTS

3.1 | Study population

Out of 523 consecutive inventory completers, 34 (7%) were gay and 464 (89%) were straight (2 were bisexual and 23 did not respond to the sexual orientation question and were excluded from further analysis). Mean age was 53 ± 9 years in gay men compared to 57 ± 11 years in straight men, $P = .09$. Baseline characteristics in terms of demographics, comorbidities, PD duration, sex drive, and the presence of pain were similar between the two cohorts, except that fewer gay men were partnered (56% vs 87%, $P < .01$) and those with a partner had a shorter relationship duration: 109 ± 99 months vs 262 ± 175 months ($P < .01$) (Table 1).

3.2 | SEAR

For the SEAR questionnaire, note that higher scores are more favorable and questions 8 and 11 are inverted per standard scoring. Gay men demonstrated a more significant psychosocial impact of PD overall with lower SEAR sums (41.3 vs 57, $P = .01$) and a lower sexual relationship subdomain scores (27.5 vs 46.6, $P < .01$) (Table 2). With regard to individual questions, gay men scored less favorably with regard to confidence in erections (Q2), spontaneity of sex (Q4), likelihood to initiate sex (Q5), confidence in sexual performance (Q6), patient and partner satisfaction with sex life (Q7, Q8), and self-esteem (Q9), $P < .05$ for each.

3.3 | CES-D

Gay men had higher scores on the CES-D (14.7 vs 10.7, $P = .03$), indicating more depressive symptoms. Note that questions 4, 8, 12, and 16 are inverted per standard scoring (Table 2). Gay men also had statistically significantly worse symptoms on several individual questions such as depressed mood (Q6), feeling like a failure (Q9),

TABLE 2 SEAR and CES-D results

	Gay Mean (SD)	Straight Mean (SD)	*P*-value
SEAR sum (0-100)	41.3 (15.5)	57 (24)	**.01**
SEAR self-esteem (0-100)	58.70 (29.2)	68.2 (26.1)	.09
SEAR confidence (0-100)	62.9 (27.2)	68.6 (24.8)	.30
SEAR sexual relationship (0-100)	27.5 (16.8)	46.6 (28.3)	**.008**
SEAR overall relationship (0-100)	84.4 (27.6)	71.8 (30)	.1
CES-D sum (0-60)	14.7 (12.3)	10.7 (9.2)	**.03**
CES-D sum ≥16 (% patients)	41%	26%	.09

Note: Bolded values denote statistical significance.

TABLE 3 PDQ results

	Gay Mean (SD)	Straight Mean (SD)	*P*-value
Physical/psychological symptoms (0-24)	11.0 (7.4)	8.9 (6.0)	.21
Pain (0-30)	8.0 (7.8)	4.8 (5.5)	**.04**
Bother (0-20)	7.1 (3.7)	5.2 (3.3)	**.03**
Bother score ≥9 (% patients)	25%	19%	.56

Note: Bolded values denote statistical significance.

feeling lonely (Q14), experiencing crying spells (Q17), and being unable to "get 'going'" (Q20), $P < .05$ for each. However, with regard to CES-D scores of ≥16, which is consistent with depression, this was similar in gay vs straight men (41% vs 26%, $P = .09$).

3.4 | PDQ

On the PDQ bother domain, gay men were more bothered (7.1 vs 5.2, $P = .03$) and complained of more pain with higher pain scores (8 vs 4.8, $P = .04$) (Table 3). They also scored less favorably on individual questions pertaining to concern for damaging the penis (Q1), pain and bother with their last erection (Q8, Q10), and bother related to less frequent intercourse (Q15), $P < .05$ for each. Clinically significant bother as defined by bother domain sum of ≥9 was present in 25% of gay and 19% of straight men ($P = .56$).

4 | DISCUSSION

PD has previously been shown to have a significant psychosocial impact on men. A study of 245 men asked whether their PD affected their emotional status and sexual relationship.[17] 81% of men endorsed emotional problems and 54% relationship problems because of their PD. On multivariable analysis (MVA), relationship problems ($P < .001$) and loss of penile length ($P = .02$) were correlated with emotional problems whereas emotional difficulties ($P < .001$) and the inability to have intercourse ($P = .004$) were associated with relationship problems.[17] In terms of clinical depression, a single study utilized CES-D to evaluate depression in men with PD. A total of 48% of men were depressed (26% moderate and 21% severe). The degree of depression was found to correlate with being single ($P < .05$) and having penile shortening ($P < .05$).[18]

It is thought that gay men are more at risk for depression because of the "minority stress hypothesis" which suggests that as a small percentage of the population, they experience more stress. An evaluation of over 740 gay men demonstrated that minority stress is related to rejection and discrimination. Men with higher levels of minority stress endorsed 2-3 times more distress overall.[19] A study evaluated CES-D scores in gay vs straight men (who did not have PD). In this study, depression was defined as a score of ≥16. There were 527 gay and 1106 straight men. Gay men had higher rates of depression compared to straight men (36% vs 28%, $P < .001$). Gay men were also more likely to respond with more symptoms for specific questions ("I felt fearful," "I felt lonely," "I thought my life has been a failure," and "I had crying spells").[20] One article suggested that gay men may have an increase in the psychosocial impact of PD given the constant comparison between their penises and their partners' (presumably normal) penises.[3]

A prior study on the emotional impact of PD on gay vs straight men used a non-validated questionnaire on 27 gay and 200 straight men. The men were asked yes/no questions as to whether PD effected their emotional status and relationship with their sexual partner. There was no difference in the impact of PD on gay vs straight men for either question ($P > .05$). The study demonstrated that there is a high degree of distress in both patient populations with 98% of gay and 81% of straight men noting an effect on their emotional status and 45% of gay and 64% of straight men endorsing an effect on their sexual relationship. There was also a decline in sexual desire in 31% of gay men, whereas 50% noted decreased sexual activity and 93% were self-conscious about penile appearance while 93% were dissatisfied with the size of their penis.[21] This endorses the significant psychosocial impact of PD.

Our data have demonstrated a significant psychosocial impact of PD in gay and straight men. 41% of gay and 26% of straight men had CES-D scores consistent with depression and 25% of gay and 19% of straight men had clinically significant bother based on their PDQ scores. It is difficult to compare these results to prior research given the lack of use of validated questionnaires in other studies. To our knowledge, only Nelson et al (2008) evaluated PD using the CES-D. Their 48% depression rate is higher than the current study, likely because of their lower cutoff for the definition of depression.[18]

With regard to symptoms in gay vs straight men, our current study shows a greater impact on gay men, with less favorable SEAR sum and sexual relationship scores, CES-D sum, and PDQ bother and pain domains. This differs from Farrell et al (2013) which showed similar emotional and relationship impact in gay and straight men.[21] However, this study used only 2 non-validated questions compared to our 3 validated questionnaires, so this likely explains this difference. With regard to depression and clinically significant bother, these rates were similar in gay vs straight men.

The strengths of this study include the use of prospectively collected data in a large patient population of over 500 men and the application of validated questionnaires to assess patients' depression, self-esteem and relationships, and symptoms of their PD. To our knowledge, this is the first study using validated questionnaires to assess the psychosocial impact of PD on gay vs straight men. However, there are limitations, chiefly the small number of gay men in our population. Additionally, there is the important fact that the SEAR and PDQ questionnaires are not specifically validated in gay men.

The clinical implications of this research are that we can better educate and care for gay men with PD given that we have demonstrated a greater psychosocial impact in these men with regard to depressive symptoms, impact on the sexual relationship, bother, and pain. This fills a gap in the current literature, given that sexual medicine research in general is limited in gay men, and there is scant information on the effect of PD in this population.

5 | CONCLUSION

In conclusion, gay men are more likely to experience negative psychosocial impact of PD including less favorable SEAR sum and sexual relationship scores, CES-D scores, and PDQ pain and bother domain scores. However, clinically significant bother and depression are similar between gay and straight men.

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How to cite this article: Salter CA, Nascimento B, Terrier J-E, et al. Defining the impact of Peyronie's disease on the psychosocial status of gay men. *Andrology*. 2021;9:233–237. https://doi.org/10.1111/andr.12899