

Prevalence of and Risk Factors for Genito-Pelvic Pain/Penetration Disorder: A Population-Based Study of Iranian Women



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ABSTRACT

Introduction: To date, few studies have investigated the prevalence of sexual pain in the context of the new diagnostic concept of genito-pelvic pain/penetration disorder (GPPPD).

Aim: To evaluate the prevalence of GPPPD and its associated factors.

Methods: This was a population-based, cross-sectional study of 590 healthy married women age 18–70 years conducted between May and October 2017 in Tehran, Iran.

Main Outcome Measures: Research tools included demographic characteristics checklist, factors affecting GPPPD, sexual distress and self-reporting of pain during intercourse, 2 standard questionnaires on depression (Patient Health Questionnaire 9) and Binik's guideline for the diagnosis of GPPPD.

Results: 196 women (33%) reported pain or fear in answer to self-report questions. Administration of Binik's guideline yielded a GPPPD prevalence of 16% (n = 94 women); however, this number decreased to 62 women (10.5%) when sexual distress was taken into account; thus, the final prevalence of GPPPD was considered to be 10.5%. However, if the threshold in Binik's guideline was lowered to also include those reporting "somewhat" pain in addition to the group reporting "moderate" and "quite a bit or always," then the prevalence of GPPPD increased to 25.8%. The results of backward logistic regression identified a strong aversion to looking at or touching the genitalia (odd ratio [OR] = 4.3), low sexual satisfaction (OR = 3.1), and severe depression (OR = 6.6) as independent risk factors for a diagnosis of GPPPD and secure financial status (OR = 0.3) and a high level of marital satisfaction (OR = 0.2) as protective factors against a diagnosis of GPPPD.

Clinical Implications: Reliable diagnosis of GPPPD is crucial. Application of validated tools may mitigate the overestimation of GPPPD prevalence. Simultaneously, clinicians' judgment is essential in assessing a reasonable threshold and preventing underestimation that leads to the exclusion of women suffering from pain.

Strengths & Limitations: The present study is one of the few evaluating the prevalence of GPPPD according to the *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition (DSM-5) definition and Binik's guideline. The study also aims to point out some new perspectives on merging the 2 concepts of vaginismus and dyspareunia. Study limitations include the evaluation of factors affecting GPPPD based on self-reporting and possible recall bias.

Conclusion: Further research is needed to determine the appropriate threshold for a diagnosis of GPPPD. We suggest that a woman with mild to moderate pain or fear of vaginal penetration is under sexual distress and cannot be neglected. In addition, problems may arise following the DSM-5 merging of the 2 disorders of vaginismus and dyspareunia, owing to the significant prevalence and distress of lifelong vaginismus in some cultures. **Alizadeh A, Farnam F, Raisi F, et al. Prevalence of and Risk Factors for Genito-Pelvic Pain/Penetration Disorder: A Population-Based Study of Iranian Women. J Sex Med 2019;16:1068–1077.**

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Key Words: Genito-Pelvic Pain/Penetration Disorder; Dyspareunia; Vaginismus; Female Sexual Disorders; Prevalence; Risk Factors; Iran

Received June 19, 2018. Accepted April 23, 2019.

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<https://doi.org/10.1016/j.jsxm.2019.04.019>

INTRODUCTION

Based on research data,^{1,2} in 2013 the *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition (DSM-5) merged the disorders vaginismus and dyspareunia disorders under the umbrella designation of genito-pelvic pain/penetration disorder (GPPPD).³ GPPPD causes physical pain, depression, as well as feelings of inadequacy and sexual frustration, which may gradually trigger problems with sexual desire in the majority of diagnosed women.^{4,5}

The majority of previous studies on the prevalence and factors related to GPPPD were conducted according to the previous DSM classification of vaginismus and dyspareunia as 2 separate disorders.^{6–8} In 2010, Lewis et al⁷ reported a prevalence of dyspareunia of 14%–27%. Laumann et al⁶ maintained that the prevalence of dyspareunia in Asia, including 29% in the Middle East, is greater than that in other continents. In line with these findings, another study conducted in Turkey indicated that 42.9% of women suffered from dyspareunia.⁹ Cultural and religious differences may account for these high prevalences in Middle Eastern countries and Islamic communities.¹⁰

Studies of dyspareunia in Iran have reported varying prevalence rates of the disorder. In 2017, a review conducted by Nasehi et al¹¹ reported a prevalence distribution of 9%–95.9% for dyspareunia and 8% for vaginismus. Such inconsistency in the results obtained by these studies may be due to the lack of a standard questionnaire, the nonevaluation of sexual distress and duration and severity of pain, faulty study design, nonreliance on the general population in favor of clinic populations, and non-randomized sampling.¹¹ In another meta-analytic study of the prevalence of dyspareunia, Ramezani et al¹² reported a prevalence of 35.2% in clinics and 20.1% in the general population. Identification of factors associated with GPPPD is another important aspect. Such identification is vital for prevention and intervention purposes, which can differ across communities based on cultural and religious mores. New amendments to the definition of the disorder, recommendations of previous studies on the execution of a standard population-based study,^{11,12} and the need to identify the factors linked with the disorder are the essential reasons for designing the present study.

Aim

The present study aimed to assess the prevalence of GPPPD according to the DSM-5 definition and to determine the potential risk factors for a diagnosis of GPPPD in married women.

MATERIALS AND METHODS

This population-based cross-sectional study was conducted with a 2-stage cluster sampling design in Tehran, Iran. First, the necessary scientific permissions were obtained from the Tehran University of Medical Sciences. Subsequently, approval was obtained from the Ethics Committee of Tehran University of

Medical Sciences (IR.TUMS.FNM.REC.1396.2087, dated April 17, 2017).

Setting

As the most populous city in Iran (approximately 8 million), Tehran can be considered representative of the entirety of Iran because of its large heterogeneous population.¹³ Tehran University is the oldest and highest-ranked medical university in Iran. With 30 main health centers and 73 subcenters located in central, western, and southern areas of Tehran, Tehran University of Medical Sciences caters to nearly 2 million people in 6 out of Tehran's 22 districts. The Integrated Health System (HIS) was launched at the university in 2015. The HIS is an electronic register of all information pertaining to individuals' health in medical and therapeutic clinics. It can be claimed that the inhabiting population is equivalent to the population registered in this system, and thus any random selection from this population represents the general population in the region.

For most people in Iran, sexual consummation occurs after marriage, most often on the wedding night. In this context, the perception of virginity and misconceptions about pain and bleeding during first intercourse can lead to GPPPD.¹⁴ Furthermore, GPPPD is a serious cause for anxiety in an androcentric community in which sexual penetration is deemed as the sole accepted form of sexual activity.¹⁵

Sampling

The research was conducted with a 2-stage cluster sampling design. In the first stage, all 30 main health centers were included in the study, as maximum heterogeneity was attained. In the second stage, married women were selected at random from each center. The sample in each center was determined considering the probability of selection in proportion to population size (or estimated population size). Because a complete listing of all inhabitant women was available, systematic sampling was used. In each center, a random starting point and a fixed sampling interval were selected. The interval was attained by dividing the population size by the desired sample size. Then the individuals were contacted and invited to participate in the study. Owing to the sensitive nature of the study subject, those who had refused to participate in the study were not called back. The sampling stage lasted for 19 weeks because of the large area under study (65 km²).

Participants

A total of 590 healthy married women from 30 Tehran University health centers participated in the study, conducted between May and October 2017. These individuals were selected at random from a list of 344,243 families who lived in the region. The study population was apprised of the nature of the survey, and their verbal and written informed consent was obtained. Four trained female researchers performed data gathering. The participants completed the questionnaires at the health centers, and each participant was attended by a trained researcher.

Inclusion criteria were age 18–70 years, married, and cohabitation with spouse for at least 1 year. The exclusion criterion was a report of drug abuse on the demographic questionnaire. The tenets of the current version of the Declaration of Helsinki were followed.

Outcome Measurements

Our research tools included a checklist and 2 questionnaires. The checklist included 37 questions in 4 sections covering demographic data (8 questions), risk factors linked with GPPPD (26 questions), presence of sexual distress (2 questions), and self-reporting of pain or fear during intercourse (1 question). GPPPD risk factors were reviewed in 2 main areas of personal (physiological-psychological) (18 questions) and interpersonal and social factors (8 questions). All risk factors were evaluated by a single question except for depression, which was assessed using the Patient Health Questionnaire (PHQ-9), the first questionnaire used in this study. This questionnaire comprised 9 multiple choice questions, with a minimum total score of 0 and a maximum score of 27. A score >5 was considered to indicate depression.¹⁶ The validity of the test in Iran was confirmed by scores obtained for specificity (76.20%) and sensitivity (73.80%), and its reliability was confirmed by a Cronbach's α of 0.87.¹⁷

The valuable guideline of Binik,² which was designed for the assessment of GPPPD, served as the second questionnaire in our study. It is one of the first questionnaires recommended for the merged diagnosis of vaginismus and dyspareunia. This questionnaire comprises 19 questions in 5 dimensions: percent success of vaginal penetration, pain with vaginal penetration, fear of vaginal penetration, pelvic muscle dysfunction during vaginal penetration; and medical comorbidity. Should a subject's answer exceed the minimum threshold for at least 1 of the first 4 dimensions, she is diagnosed with GPPPD. In the first dimension, attempting vaginal intercourse at least 10 times in the previous 6 months and failing at least 50% of the time is considered the minimum threshold for the diagnosis of GPPPD. In the second, third, and fourth dimensions, the minimum threshold is defined as pain, fear, or muscle dysfunction on a scale of 3 (moderately) or 4 (quite a bit or always). Most answer sets were rated on a 5-point Likert scale (0 = not at all, 1 = a little, 2 = somewhat, 3 = moderately, and 4 = quite a bit or always).² The content validity of GPPPD was confirmed by 8 faculty members of the Tehran University of Medical Sciences. To confirm the reliability of the questionnaire, the questionnaire was administered in 2 iterations with an interval of 2 weeks to 35 women qualified for participation in the study, which yielded a Cronbach's α of 0.90 and an internal consistency of 80%.

Statistical Methods

A review of the studies conducted on dyspareunia indicated that considering a 26% prevalence could lead to an appropriate estimation of the sample size.⁸ Considering a 2-sided 95% CI with a width equal to 0.08 (margin of error 0.04), a design effect

of 1.2, and a nonresponse rate of 10%, a sample size of 615 women was obtained. For data analysis, the distribution, mean, and SD values were initially obtained using descriptive statistics. The demographic, personal, interpersonal and social factors linked to GPPPD were then obtained using the χ^2 test ($P < .05$). Multiple logistic regression analysis was conducted, using a backward method, to estimate the strength of associations. The collected data were then captured in SPSS version 22 (IBM, Armonk, NY, USA) for further analysis.

RESULTS

After exclusion of 1 woman from the study for a history of drug abuse, and 590 women were included in our final analysis. The mean \pm SD values for age and duration of marriage were 35.57 ± 8.19 years and 13.81 ± 9.60 years, respectively. The majority of women in the study were housewives (89.3%), of adequate financial status (66.8%), with at least a high school diploma level education (75%), and had 2 children (43.5%). In 89.5% of cases, the marriage was of their own volition and with their family's consent (Table 1).

In response to the single self-report question in the checklist, 196 of the 590 participants (33%) reported that they experienced pain during intercourse or were afraid of intercourse. However, applying Binik's GPPPD diagnosis threshold, the prevalence dropped to 16% ($n = 94$). Only 62 out of these 94 women (10.5%) reported sexual distress; thus, the absolute prevalence of the disorder was determined to be 10.5%. Close analysis revealed that 8.8% of the women experienced pain, 5.1% experienced fear or anxiety, and 6% experienced vaginal muscle contraction "moderately" or "quite a bit or always" during intercourse. Our results also showed that the highest level of disorder was experienced in women age 30–39 years and those married for less than 10 years. Moreover, 58.5% of the women with GPPPD had not undergone any gynecologic examination in the previous year and had not talked to their physician about their problems. In general, 54.7% of women regarded the improvement of marital relations as the main reason for penetration. The highest level of pain during penetration was experienced at the "thrusting" stage by 36.9% of the women and at vaginal entry by 43.5% of the women; 48.1% of the women described the pain as a feeling of burning and scorching. Interestingly, a fairly similar frequency of vaginal intercourse was reported in both groups; 36% of the healthy women and 32% of the women with GPPPD reported more than 30 instances of sexual intercourse in the previous 6 months, and 11.4% of the healthy women and 8% of those with GPPPD reported more than 60 instances of sexual intercourse in this period.

Regarding the factors impacting GPPPD, univariate analysis identified financial status ($P < .001$) as the sole significant demographic factor (Table 1). Moreover, among the personal factors, a feeling of pain while touching one's own genitalia ($P < .05$), general health status ($P < .05$), aversion to looking at or touching the genitalia ($P < .05$), satisfaction with one's own

Table 1. Correlation of demographic factors with GPPPD

| Factor | With GPPPD (N = 62), n (%) | Without GPPPD (N = 528), n (%) | OR (95% CI) | P value |
|--------------------------------|-------------------------------|-----------------------------------|--------------------|---------|
| Age, yr | | | | .87 |
| <30 | 17 (27.4) | 129 (24.4) | 1 | |
| 30–39 | 29 (46.8) | 254 (48.1) | 0.86 (0.45–1.63) | |
| ≥40 | 16 (25.8) | 145 (27.5) | 0.83 (0.40–1.72) | |
| Duration of marriage, yr | | | | .97 |
| 1–9 | 25 (40.3) | 212 (40.2) | 1 | |
| 10–19 | 22 (35.5) | 194 (36.7) | 0.96 (0.52–1.76) | |
| ≥20 | 15 (24.2) | 122 (23.1) | 1.04 (0.52–2.05) | |
| Number of children | | | | .95 |
| 0 | 4 (6.5) | 33 (6.3) | 1 | |
| 1 | 21 (33.9) | 162 (30.7) | 1.06 (0.34–3.32) | |
| 2 | 26 (41.9) | 229 (43.3) | 0.937 (0.30–2.85) | |
| ≥3 | 11 (17.7) | 104 (19.7) | 0.87 (0.26–2.92) | |
| Consent of marriage | | | | .83 |
| Complete satisfaction | 55 (88.7) | 473 (89.6) | 1 | |
| Some degree of satisfaction | 7 (11.3) | 55 (10.4) | 1.09 (0.475–2.52) | |
| Women's education | | | | .32 |
| Primary/secondary school | 18 (29.0) | 130 (24.6) | 1 | |
| High school | 29 (46.8) | 299 (56.6) | 0.70 (0.37–1.30) | |
| Undergraduate/postgraduate | 15 (24.2) | 99 (18.8) | 1.09 (0.52–2.27) | |
| Husband's education | | | | .64 |
| Primary/secondary school | 25 (40.3) | 183 (34.7) | 1 | |
| High school | 21 (33.9) | 205 (38.8) | 0.75 (0.40–1.38) | |
| Undergraduate/postgraduate | 16 (25.8) | 140 (26.5) | 0.83 (0.43–1.62) | |
| Women occupation | | | | .74 |
| Household | 54 (87.1) | 473 (89.6) | 1 | |
| Governmental job (office jobs) | 4 (6.5) | 32 (6.1) | 1.09 (0.37–3.21) | |
| Nongovernmental job | 4 (6.5) | 23 (4.4) | 1.52 (0.50–4.56) | |
| Financial situation | | | | .00** |
| Very unfavorable | 6 (9.7) | 18 (3.4) | 1 | |
| Somewhat unfavorable | 23 (37.1) | 141 (26.7) | 0.48 (0.17–1.36) | |
| Appropriate | 33 (53.2) | 369 (69.9) | 0.26 (0.10–0.72)** | |

* $P < .05$, ** $P < .01$, *** $P < .001$. CI = confidence interval; GPPPD = genito-pelvic pain/penetration disorder; OR = odds ratio.

body image ($P < .05$), self-confidence ($P < .05$), acrophobia ($P < .05$), and depression ($P < .001$) were significantly correlated with GPPPD. Of the women with GPPPD, 30.6% had “severe” depression (Table 2). Among the interpersonal and social factors, orgasm ($P < .05$), privacy during sex ($P < .05$), trust in husband ($P < .001$), intimacy with husband ($P < .05$), sexual satisfaction ($P < .001$), and marital satisfaction ($P < .001$) were significantly correlated with GPPPD (Table 3).

Backward multiple regression was used to predict the probability of GPPPD with independent variables known to be associated with GPPPD. Our results suggest that the odds of GPPPD are 70% lower in women with a favorable financial status (OR = 0.3; 95% CI = 0.1–0.7). The indicator for financial status was a self-report question on the adequacy of the family's financial resources. The odds of a GPPPD diagnosis were 4.3 times higher among those with a strong aversion to looking or touching the genitalia than those not having such an aversion

(OR = 4.3; 95% CI = 1.3–14.4). The odds of reporting GPPPD are approximately 7 times higher in women suffering from severe depression compared with women without depression (OR = 6.7; 95% CI = 3.0–14.7).

Among the interpersonal and social factors, high levels of marital satisfaction were associated with lower levels of GPPPD (OR = 0.3; 95% CI = 0.1–0.5), and women with lower sexual satisfaction were at 3-fold greater risk for GPPPD compared with women reporting high levels of satisfaction (OR = 3.1; 95% CI = 0.9–9.5) (Table 4). Among the meaningful factors that effect GPPPD, we emphasize on marital satisfaction and depression has shown the most significant relationship ($P < .001$).

DISCUSSION

The present study was conducted to determine the prevalence of GPPPD and related factors according to the standard criteria

Table 2. Correlation of personal factors with GPPPD

| Factor | With GPPPD, n (%) | Without GPPPD, n (%) | OR (95% CI) | P value |
|---|-------------------|----------------------|--------------------|---------|
| Type of last delivery | 62 (100) | 528 (100) | | .84 |
| Nulliparous | 4 (6.5) | 33 (6.2) | 1 | |
| Vaginal | 19 (30.6) | 181 (34.3) | 0.86 (0.27–2.70) | |
| Cesarean | 39 (62.9) | 314 (59.5) | 1.02 (0.34–3.04) | |
| Episiotomy in the last NVD | 19 (100) | 181 (100) | | .99 |
| No | 2 (10.5) | 25 (13.8) | 1 | |
| Yes | 17 (89.5) | 156 (86.2) | 1.36 (0.29–6.25) | |
| Current breastfeeding | 62 (100) | 528 (100) | | .81 |
| No | 47 (75.8) | 393 (74.4) | 1 | |
| Yes | 15 (24.2) | 135 (25.6) | 0.92 (0.50–1.71) | |
| Contraceptive | 62 (100) | 528 (100) | | .67 |
| None | 9 (14.5) | 95 (18) | 1 | |
| Hormonal | 3 (4.8) | 34 (6.4) | 0.93 (0.23–3.64) | |
| None hormonal | 50 (80.6) | 399 (75.6) | 1.32 (0.62–2.78) | |
| Fear of unwanted pregnancy | 62 (100) | 528 (100) | | .15 |
| No | 34 (54.8) | 338 (64.0) | 1 | |
| Yes | 28 (45.2) | 190 (36.0) | 1.46 (0.86–2.49) | |
| History of surgery | 62 (100) | 528 (100) | | .56 |
| No | 49 (79.0) | 433 (82.0) | 1 | |
| Yes | 13 (21.0) | 95 (18.0) | 1.20 (0.63–2.31) | |
| Urinary incontinence | 62 (100) | 528 (100) | | .20 |
| No | 61 (98.4) | 500 (94.7) | 1 | |
| Yes | 1 (1.6) | 28 (5.3) | 0.29 (0.03–2.19) | |
| Constipation or hemorrhoid | 62 (100) | 528 (100) | | .08 |
| No | 43 (69.4) | 417 (79.0) | 1 | |
| Yes | 19 (30.6) | 111 (21.0) | 1.66 (0.93–2.96) | |
| History of pelvic Infection | 62 (100) | 528 (100) | | .25 |
| No | 48 (77.4) | 463 (87.7) | 1 | |
| Yes | 14 (22.6) | 65 (12.3) | 2.07 (1.08–3.97) | |
| Pain while touching one's own genitalia | 62 (100) | 528 (100) | | .02* |
| No | 56 (90.3) | 509 (96.4) | 1 | |
| Yes | 6 (9.7) | 19 (3.6) | 2.87 (1.10–7.48)* | |
| Menstruation status | 62 (100) | 528 (100) | | .31 |
| Reproductive age | 60 (96.8) | 494 (93.6) | 1 | |
| Menopause | 2 (3.2) | 34 (6.4) | 0.48 (0.11–2.06) | |
| General health status | 62 (100) | 528 (100) | | .05* |
| Without problems | 34 (54.8) | 344 (65.1) | 1 | |
| Chronic disease [†] | 13 (21.0) | 78 (14.8) | 1.68 (0.85–3.34) | |
| Gynecologic disease | 2 (3.2) | 57 (10.8) | 0.35 (0.08–1.51) | |
| Anxiety and depression | 13 (21.0) | 49 (9.3) | 2.68 (1.32–5.43)* | |
| Aversion to looking or touching the genitalia | 62 (100) | 528 (100) | | .02* |
| No | 41 (66.1) | 401 (75.9) | 1 | |
| Little | 11 (17.7) | 78 (14.8) | 1.37 (0.67–2.80) | |
| Moderately | 4 (6.5) | 40 (7.6) | 0.97 (0.33–2.87) | |
| Much | 6 (9.7) | 9 (1.7) | 6.52 (2.21–19.23)* | |
| Sexual abuse during childhood or adulthood | 62 (100) | 528 (100) | | .13 |
| No | 57 (91.9) | 507 (96.0) | 1 | |
| Yes | 5 (8.1) | 21 (4.0) | 2.11 (0.76–5.83) | |
| Satisfaction with body-image | 62 (100) | 528 (100) | | .05* |
| Very little | 12 (19.4) | 59 (11.2) | 1 | |
| Little | 10 (16.1) | 47 (8.9) | 0.72 (0.27–1.90) | |
| Moderately | 24 (38.7) | 241 (45.6) | 0.50 (0.24–1.04) | |
| Much | 16 (25.8) | 181 (34.3) | 0.34 (0.15–0.76) | |

(continued)

Table 2. Continued

| Factor | With GPPPD, n (%) | Without GPPPD, n (%) | OR (95% CI) | P value |
|-------------------------|-------------------|----------------------|----------------------|---------|
| Self-confidence | 62 (100) | 526 (100) | | .01* |
| Little | 21 (33.9) | 97 (18.4) | 1 | |
| Moderately | 26 (41.9) | 247 (47.0) | 0.48 (0.26–0.90)* | |
| Much | 15 (24.2) | 182 (34.6) | 0.38 (0.18–0.77) | |
| Acrophobia | 62 (100) | 528 (100) | | .01* |
| No | 12 (19.4) | 189 (35.8) | 1 | |
| Little | 12 (19.4) | 50 (9.5) | 3.78 (1.60–8.92) | |
| Moderately | 10 (16.1) | 99 (18.8) | 1.59 (0.66–3.81) | |
| Much | 10 (16.1) | 88 (16.6) | 1.79 (0.74–4.30) | |
| Too much | 18 (29.0) | 102 (19.3) | 2.77 (1.28–5.99)* | |
| Depression [†] | 62 (100) | 527 (100) | | .00*** |
| Minimal | 17 (27.4) | 268 (50.8) | 1 | |
| Mild | 16 (25.8) | 148 (28.1) | 1.70 (0.83–3.47) | |
| Moderately | 10 (16.1) | 70 (13.3) | 2.25 (0.98–5.13)* | |
| Severe | 19 (30.6) | 41 (7.8) | 7.30 (3.51–15.19)*** | |

CI = confidence interval; GPPPD = genito-pelvic pain/penetration disorder; NVD = normal vaginal delivery; OR = odds ratio.

* $P < .05$; ** $P < .01$; *** $P < .001$.

[†]Includes hypertension, diabetes mellitus, heart disease, and arthritis.

[‡]Measured by the Patient Health Questionnaire (PHQ-9).

of the DSM-5. Because any findings on prevalence affect prevention and treatment planning, reliable design and reporting is crucial.¹⁸ To this end, we made use of the invaluable Binik diagnostic guideline for the diagnosis of GPPPD. The data obtained from 590 married women showed that according to the criteria of this guideline, only 10.5% of women were suffering from GPPPD. Similarly, more recent studies reported by Peixoto and Nobre in 2015¹⁹ and Mitchell et al in 2017²⁰ reported a dyspareunia prevalence of 9.8% and 7.5%, respectively. In contrast, the results of the present study indicate a considerably lower sexual pain prevalence than those of the previous studies in Iran^{5,21} and some other global researches that indicated a prevalence between 20–22% in Asia.²² As stated by Hayes, such a broad difference may be due to the lack of a standard design or lack of validated tools in such research studies.²³ For instance, the prevalence of dyspareunia in Iran was reported as 18.2%²⁴ and 26.7%⁸ in 2 separate studies that did not address sexual distress. Another study conducted in Turkey, which also disregarded sexual distress, yielded a prevalence of dyspareunia of 42.9%.⁹ Disregarding sexual distress in the present study also yielded a prevalence of 16%. Of note, determining the accurate prevalence of sexual dysfunction is vital, because overestimation may encourage abuse by some individuals and medical companies who may use overestimated prevalence data as a rationale to offer questionable treatments to women they would claim suffer from the condition.²⁵

On the other hand, other possible important reasons for the low prevalence of GPPPD reported by the present study should not be overlooked. Overly strict criteria and a high threshold for diagnosis may result in the exclusion of a considerable number of women suffering from pain and fear. The present study revealed

that combination of the sexual distress and the threshold recommended by Binik would yield a prevalence of 10.5% for women experiencing pain, fear, or muscle dysfunction during intercourse at a rating of 3 (“moderately”) or 4 (“quite a bit or always”). Nevertheless, a prevalence of 25.8% is yielded if the threshold is lowered to include the scale of 2 (“somewhat” pain or fear) in the criteria. Under such circumstances, the obtained prevalence (25.8%) would be closer to the prevalence reported by individuals’ self-report in the single question of the checklist (33%). We suggest that those women reporting “somewhat” pain or fear should not be simply ignored. We believe that our results demonstrate that more research is needed to evaluate the appropriate threshold for the diagnosis of GPPPD, or at the very least that the clinicians’ experience and judgment should decide whether the combination of a “somewhat” pain or fear in the self-report of some women with other factors may be deemed sufficient for the diagnosis of GPPPD in some women who may otherwise not reach the minimum threshold for diagnosis according to Binik’s guideline. In this regard, it is of note that Binik’s guideline also suggests that “these criteria are based on the available data and author judgment, and the threshold should be modified when new research is available.”²

Binik’s diagnostic guideline takes all aspects of GPPPD into consideration and offers invaluable information to the therapist which allows for a more accurate intervention. However, some of the criteria in the questionnaire relate more to penetration disorder (vaginismus) than to pain (dyspareunia). The first of these is the exclusion criterion of women who have not attempted to have intercourse at least 10 times in the previous 6 months from a GPPPD diagnosis. In the case of vaginismus, which is experienced mainly by young individuals, this

Table 3. Correlation of interpersonal and social factors with GPPPD

| Factor | With GPPPD, n (%) (%) | Without GPPPD, n (%) N (%) | OR (95% CI) | P value |
|------------------------------------|-----------------------|----------------------------|-------------------|---------|
| Lubrication | 61 (100) | 527 (100) | | .97 |
| Rarely | 11 (18.1) | 101 (19.2) | 1 | |
| Sometimes | 13 (21.3) | 113 (21.4) | 1.05 (0.45–2.46) | |
| Always | 37 (60.6) | 313 (59.4) | 1.08 (0.53–2.20) | |
| Orgasm | 61 (100) | 527 (100) | | .05* |
| Rarely | 17 (27.9) | 82 (15.6) | 1 | |
| Sometimes | 15 (24.6) | 156 (29.6) | 0.46 (0.22–0.97)* | |
| Always | 29 (47.5) | 289 (54.8) | 0.48 (0.25–0.92)* | |
| Privacy during sex | 61 (100) | 528 (100) | | .01** |
| No | 20 (32.8) | 102 (19.3) | 1 | |
| Yes | 41 (67.2) | 426 (80.7) | 0.49 (0.27–0.87)* | |
| Emotional relationship with mother | 62 (100) | 528 (100) | | .12 |
| Weak | 8 (12.9) | 55 (10.5) | 1 | |
| Normal | 23 (37.1) | 129 (24.4) | 1.22 (0.51–2.90) | |
| Good | 17 (27.4) | 195 (36.9) | 0.59 (0.24–1.46) | |
| Very good | 14 (22.6) | 149 (28.2) | 0.64 (0.25–1.62) | |
| Trust to husband | 62 (100) | 528 (100) | | .00*** |
| Little | 10 (16.1) | 36 (6.8) | 1 | |
| Moderately | 16 (25.8) | 98 (18.6) | 0.58 (0.24–1.41) | |
| Much | 36 (58.1) | 394 (74.6) | 0.32 (0.15–0.71)* | |
| Intimacy with husband | 62 (100) | 528 (100) | | .02* |
| Little | 16 (25.8) | 54 (10.2) | 1 | |
| Moderately | 10 (16.1) | 106 (20.1) | 0.31 (0.13–0.74) | |
| Much | 36 (58.1) | 368 (69.7) | 0.33 (0.17–0.63) | |
| Sexual satisfaction | 62 (100) | 528 (100) | | .00*** |
| Very little | 6 (9.7) | 37 (7.0) | 1 | |
| Little | 12 (19.4) | 28 (5.3) | 2.64 (0.88–7.90)* | |
| Moderately | 18 (29.0) | 136 (25.8) | 0.81 (0.30–2.20) | |
| Much | 26 (41.9) | 327 (61.9) | 0.49 (0.19–1.26) | |
| Marital satisfaction | 62 (100) | 528 (100) | | .00*** |
| Little | 16 (25.8) | 51 (9.7) | 1 | |
| Moderately | 20 (32.3) | 138 (26.2) | 0.46 (0.22–0.96) | |
| Much | 26 (41.9) | 339 (64.2) | 0.24 (0.12–0.48)* | |

CI = confidence interval; GPPPD = genito-pelvic pain/penetration disorder; OR = odds ratio.

* $P < .05$; ** $P < .01$; *** $P < .001$.

criterion seems quite reasonable. However, this requisite may prove slightly confusing for dyspareunia. Studies show that sexual activity decreases before and after menopause,²⁵ and fewer than 10 instances of penetration in the previous 6 months can be quite common in these age groups, and the women may experience sexual pain. Nevertheless, according to the current Binik guideline, this woman is not diagnosed with GPPPD. However, Binik also stressed that the therapist, and not the guideline, should determine the diagnostic criteria.² It seems that the woman's age might be one of those critical criteria that should be taken into consideration when reviewing the frequency of attempted sexual penetration.

The second criterion that seems to be more useful for the diagnosis of vaginismus than of dyspareunia is the prerequisite of "failing in at least 50% of penetration attempts." The majority of couples suffering from vaginismus are young, and because

mutual sexual satisfaction is important to this demographic, the husband may avoid penetration to alleviate any feelings of fear and pain experienced by the wife.¹⁴ Nevertheless, in the case of dyspareunia, which is experienced mainly by older women, many women experience complete penetration in more than 50% of sexual intercourse attempts while still experiencing pain. Our present results show that women who experienced sexual pain engaged in penetration in more than 50% of cases for the satisfaction of their husband or even were coerced despite experiencing pain. Even though this was pointed out by Binik,² the cultural and religious differences can be so influential in this regard that the threshold may be affected, in at least some communities.

It is worth noting that although the 2 disorders of vaginismus and dyspareunia are merged in DSM-5, at least in Iran and some other Middle East countries, lifelong vaginismus leads to

Table 4. Multiple logistic regression analysis of significant factors associated factors with GPPPD

| Factor | P value | OR (95% CI) |
|---|---------|-------------------|
| Demographic factors | | |
| Financial situation | .01** | |
| Very unfavorable | | 1 |
| Somewhat unfavorable | .17 | 0.48 (0.17–1.36) |
| Appropriate | .00 | 0.26 (0.10–0.72) |
| Individual factors | | |
| Aversion to looking or touching the genitalia | .05* | |
| No | | 1 |
| Little | .56 | 1.24 (0.59–2.61) |
| Moderate | .41 | 0.62 (0.20–1.93) |
| Much | .01 | 4.30 (1.28–14.40) |
| Depression | .00*** | |
| Minimal | | 1 |
| Mild | .16 | 1.67 (0.81–3.46) |
| Moderate | .03 | 2.48 (1.06–5.80) |
| Severe | .00 | 6.65 (3.00–14.76) |
| Interpersonal and social factors | | |
| Sexual satisfaction | .05* | |
| Very little | | 1 |
| Little | .05 | 3.02 (0.96–9.51) |
| Moderate | .62 | 1.31 (0.43–3.91) |
| Much | .70 | 1.02 (0.31–3.30) |
| Marital satisfaction | .00*** | |
| Little | | 1 |
| Moderate | .65 | 0.49 (0.23–1.04) |
| Much | .00 | 0.26 (0.12–0.52) |

CI = confidence interval; GPPPD = genito-pelvic pain/penetration disorder; OR = odds ratio.

* $P < .05$; ** $P < .01$; *** $P < .001$.

significantly different distress levels in sufferers and call for different interventions. Our findings are in line with those obtained by Reissing et al,²⁶ who maintained that the diagnosis of vaginismus is eliminated in DSM-5.

Another part of this study dealt with the evaluation of risk factors for GPPPD. It seems that women with a favorable financial status report lower levels of GPPPD (Table 4). It appears that improvement of financial status reduces GPPPD through decreasing tensions and stress in the women's lives. Bagherzadeh et al²⁷ also reported a significant correlation between economic conditions and sexual disorders. Among the personal factors, aversion to touching or looking at the genitals, as well as depression, are associated with higher levels of GPPPD (Table 4). These findings support the significant role of psychological factors in the occurrence of GPPPD, and that there is always a significant relationship between psychological issues and pain disorder.^{8,21} Of note, even though aversion to touching or looking at the genitals is considered a personal factor, the impact of cultural and social issues on the formation of this aversion and fear cannot be ignored. Farnam et al¹⁴ also reported that 60% of

women suffering from penetration disorder showed a strong aversion to touching or looking at their own genitals.¹⁴ The correlation between depression and GPPPD reemphasizes the multidisciplinary nature of the therapy required for this disorder. Such a correlation was also observed in the study reported by Mitchell et al.²⁰ Among the social interpersonal factors, the levels of general satisfaction with life and sexual satisfaction proved to be the most effective variables for predicting GPPPD. Basson et al¹ and Tehrani et al²⁸ also reported such a correlation between sexual performance and general satisfaction with life. Of note, such a correlation has been observed among all mentioned risk factors, and the nature of the study precluded any reporting on causality or reverse causality in this regard. For instance, it is not possible to say whether depression causes GPPPD or whether GPPPD can lead to depression.

The present study has some limitations, including the self-reported evaluation of the factors affecting GPPPD through a single question and recall bias. As mentioned earlier, the study cohort included women of moderate and low socioeconomic status. The scarcity of individuals of good financial status was another limitation, considering the indicated effect of financial status on these disorders.

To the best of our knowledge, this is the first extensive study based on Binik's guideline for GPPPD. Sampling of a very large population, regarding a culturally sensitive matter, and attempting to point out some new aspects of merging the 2 concepts of vaginismus and dyspareunia can be considered study strengths.

CONCLUSION

The present study shows that the accurate estimation of GPPPD prevalence can be quite complex and demanding. On the one hand, overestimation of the prevalence should be avoided, because it may encourage abuse by some individuals and commercial companies. Such overestimation can be avoided through consideration of some significant factors, such as sexual distress and duration and severity of the problem. On the other hand, application of overly strict criteria also may lead to underestimation of the prevalence and consequently the exclusion of a considerable number of patients from the results.

The present study added some new perspective to Binik's guideline. First, it seems that the current threshold considered for the diagnosis of GPPPD may lead to the exclusion of some patients with mild to moderate levels of pain. We suggest that if a woman is experiencing sexual distress with even mild to moderate levels of pain, she should be diagnosed with GPPPD. It is also possible to categorize GPPPD under 2 levels of mild and severe. This threshold also can be problematic if this guideline is used as a tool in research such as prevalence studies. In the present study, the current threshold yielded a prevalence of 10.5%, but a slight decrease in the threshold by 1 scale leads to a prevalence of 25.8%. In addition, it seems that the minimum

threshold of “attempting vaginal intercourse at least 10 times in the previous 6 months and failing in at least 50% of cases” requires the careful judgment of the clinician.

On the other hand, Binik’s guideline, which follows the DSM-5 definition of GPPPD, has merged the 2 disorders of vaginismus and dyspareunia. However, we think this merging may lead to neglecting the lifelong vaginismus that we regularly encounter in Iranian, Middle Eastern, and Islamic communities based on the cultural and religious factors unique to these communities.

ACKNOWLEDGMENTS

We thank all the women who played a key role in this study. We also thank Dr. Farshad Mamudi for improving the use of English in the manuscript.

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Conflicts of Interest: The authors report no conflicts of interest.

Funding: This work was supported by the Tehran University of Medical Sciences (Grant 34044).

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