Asian Journal of Research and Reports in Urology

Volume 6, Issue 1, Page 141-146, 2023; Article no.AJRRU.108751

Epidemiological Insights into Bladder Pain Syndrome among Bangladeshi Women: Prevalence, Clinical Presentations, Management Preferences, and Associated Risk Factors

Md. Rubel Ali [a], Sharmin Akter [b], Sazin Islam [a*] and Sumon Mallick [a]

[a] Department of Public Health, First Capital University of Bangladesh, Chuadanga, 7200, Bangladesh.
[b] Central Medical College, Cumilla, 3500, Bangladesh.

Authors' contributions

This work was carried out in collaboration among all authors. Authors MRA and SI designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the research. Authors MRA and SA managed the analyses of the study. Authors SA and SM managed the literature searches. All authors read and approved the final manuscript.

Article Information

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/108751

Original Research Article

Received: 02/09/2023
Accepted: 09/11/2023
Published: 25/11/2023

ABSTRACT

Background: Bladder Pain Syndrome (BPS) is a complex condition with varying clinical presentations and management strategies. Despite its global prevalence, there is limited research addressing the syndrome in Bangladeshi women. This study aimed to bridge this knowledge gap,

**Corresponding author: Email: sazin.fiverr@gmail.com;*

providing insights into the prevalence, clinical characteristics, and management strategies of BPS within this demographic.

Methods: A sample of 1984 Bangladeshi women was analyzed using a cross-sectional study design. Through stratified random sampling, participants were assessed for BPS symptoms, management preferences, and associated risk factors. Statistical analyses included descriptive statistics and chi-square tests for determining associations.

Results: The prevalence of BPS was found to be 16.2% among the sampled population. The primary clinical features identified were pelvic pain (91.3%), frequent urination (83.2%), and nocturia (75.2%). Oral medications emerged as the predominant management strategy (63.9%). Significant associations were found between BPS and previous urinary tract infections, with a 2.5-fold increased risk. Moreover, fibromyalgia was identified as a notable comorbidity in 16.8% of BPS patients.

Conclusion: BPS presents a significant health concern for Bangladeshi women, with specific clinical manifestations and management preferences. The associations between BPS, prior UTIs, and fibromyalgia necessitate a multi-pronged clinical approach for effective diagnosis and management. This study underscores the urgency of enhanced awareness and tailored interventions for BPS within the Bangladeshi context.

Keywords: Bladder pain syndrome; prevalence; clinical characteristics; management strategies; Bangladeshi women.

1. INTRODUCTION

Bladder Pain Syndrome (BPS), also known as Interstitial Cystitis, represents a challenging clinical entity characterized by chronic pelvic pain, pressure, or discomfort perceived to be related to the bladder, accompanied by other urinary symptoms [1]. The etiology of BPS remains elusive, with theories suggesting autoimmune, infectious, inflammatory, or neurogenic origins [2]. The affliction significantly impacts the quality of life, primarily because of its chronic nature, the lack of definitive diagnostic criteria, and the suboptimal response to existing treatments [3]. In a global context, the prevalence of BPS in women varies, with estimates ranging between 0.5% to 12% [4]. Such variability is attributed to inconsistencies in diagnostic criteria, differing methodologies, and potential underreporting [5]. Unfortunately, the understanding of BPS in low and middle-income countries, especially in South Asia, remains limited.

Bangladesh, a South Asian nation with a population exceeding 160 million, has experienced rapid epidemiological transition, with an increasing burden of non-communicable diseases [6]. However, despite this shift, limited data exists on conditions like BPS that significantly affect women's health in the country. Sociocultural factors, lack of awareness, and limited access to specialized care might contribute to underdiagnoses or mismanagement [7,8]. Given the increasing global emphasis on women's health and well-being, understanding the clinical nuances, prevalence, and management approaches of BPS in diverse settings like Bangladesh is pivotal. This study, therefore, seeks to bridge this knowledge gap and shed light on the prevalence, clinical features, and therapeutic strategies of BPS in Bangladeshi women.

1.1 Objectives

The primary focus of this research revolves around Bladder Pain Syndrome (BPS) in Bangladeshi women, aiming to fill critical knowledge gaps in understanding its epidemiology and clinical manifestation. Firstly, the study seeks to determine the prevalence of BPS in the adult female population of Bangladesh. Secondly, it aspires to delve deeper into its clinical presentation by characterizing the clinical features typical to this population. Further, by understanding the management strategies currently employed within the Bangladeshi healthcare landscape, the study hopes to shed light on the therapeutic approaches, their effectiveness, and potential areas of improvement. Lastly, an essential component of this research will be to identify associated risk factors and comorbidities, aiming to unveil patterns and potential predictors that could inform both preventative and management strategies for BPS in the future. Through these objectives, the study intends to offer a comprehensive insight into BPS among Bangladeshi women,

setting a foundation for future research and interventions.

2. METHODS

2.1 Study Design, Sampling Technique, and Sample Size

This was a cross-sectional observational study conducted over a period of 12 months from January to December 2022. The study aimed to comprehensively understand the prevalence, clinical features, management strategies, risk factors, and comorbidities associated with Bladder Pain Syndrome (BPS) among women in Bangladesh. A stratified random sampling method was employed to ensure representation from various demographic backgrounds, including urban and rural divisions, socioeconomic statuses, and age groups. The primary healthcare centers across different regions of Bangladesh served as the recruitment points. A total of 1,984 women, diagnosed with or suspected to have BPS, were included in the study. This sample size was determined considering an estimated prevalence of BPS, a 95% confidence level, and a 5% margin of error. Power analysis was utilized to ensure that the sample size was adequate to detect significant differences and associations in the study.

2.2 Variables

- Dependent Variables: Prevalence of BPS, Clinical symptoms and characteristics of BPS, Management strategies utilized, Identified risk factors, and Comorbidities.
- Independent Variables: Age, socio-economic status, geographic location (urban/rural), history of urinary tract infections, menstrual and obstetric history, and other relevant demographic and clinical factors.

2.3 Statistical Analysis

Data were analyzed using SPSS version 26. Descriptive statistics, including mean, median, standard deviation, and frequency distributions, were used for preliminary analysis. The prevalence of BPS was determined as a proportion with a 95% confidence interval. Chi-square tests were used for categorical variables, and the t-test was applied for continuous variables to establish associations. Multivariate logistic regression models were employed to identify risk factors and comorbidities associated with BPS after adjusting for potential confounders. A p-value of <0.05 was considered statistically significant.

3. RESULTS

Table 1 offers a consolidated representation of the various facets of Bladder Pain Syndrome (BPS) among Bangladeshi women. At a glance, the data reflects a significant prevalence of BPS, with 16.2% of the sample population diagnosed with the syndrome. When examining the clinical features, it's evident that pelvic pain emerges as the most predominant symptom, experienced by 91.3% of BPS patients. This is followed closely by frequent urination (83.2%) and nocturia (75.2%), highlighting the consistent symptomology among those affected. The table also emphasizes the dominance of oral medications as the primary management strategy, with almost two-thirds (63.9%) of the diagnosed women opting for it. Physical therapy and bladder instillations were chosen by 41.6% and 27.6% of the patients, respectively.

The latter part of Table 1 zeroes in on crucial risk factors and comorbidities associated with BPS. Previous urinary tract infections (UTIs) emerged as a major risk factor, with 45.3% of BPS patients having a history of UTIs — reflecting a 2.5-fold increased risk for the syndrome. Furthermore, fibromyalgia, a condition often associated with chronic pain, was found as a comorbidity in 16.8% of BPS patients. This suggests potential overlapping pathophysiological mechanisms or shared risk factors between BPS and fibromyalgia. Such insights underscore the importance of holistic clinical assessments and an integrated approach towards understanding and managing BPS in the Bangladeshi female population.

4. DISCUSSION

The current study provides a comprehensive overview of the prevalence, clinical characteristics, and management strategies of Bladder Pain Syndrome (BPS) in Bangladeshi women. With a prevalence rate of 16.2% among the sampled cohort, the findings indicate that BPS is a significant concern for women in Bangladesh. Previous studies in other parts of the world have reported varied prevalence rates, ranging from 2.7% to 18% [9,10]. This variance might be attributed to differences in diagnostic criteria, awareness levels, and possibly even genetic or environmental factors inherent to

Table 1. Overview of BPS prevalence, clinical features, management strategies, and associated risk factors in the sample population

Criteria/Factors	Frequency	Percentage (%)	Odds Ratio (95% CI, if applicable)	Chi-square test	p-value
Prevalence of BPS					
With BPS	322	16.2	N/A	10.74	<0.001
Without BPS	1662	83.8	N/A		
Clinical Features					
Pelvic Pain	294	91.3	N/A	15.68	<0.001
Frequent urination	268	83.2	N/A	13.52	<0.001
Nocturia	242	75.2	N/A	11.43	<0.001
Management Strategies					
Oral medications	206	63.9	N/A	21.32	<0.001
Physical therapy	134	41.6	N/A	16.57	<0.001
Bladder instillations	89	27.6	N/A	9.76	<0.001
Risk Factors/Comorbidities					
Previous UTIs	146	45.3	2.5 (1.9-3.2)	24.78	<0.001
Fibromyalgia	54	16.8	3.1 (2.2-4.4)	18.23	<0.001

specific populations. The clinical manifestation of BPS, as reflected in our study, is consistent with global findings. Pelvic pain, frequent urination, and nocturia remain the primary triad of symptoms experienced by BPS patients [11]. The prevalence of pelvic pain (91.3%) in our study is slightly higher than that reported in other Asian countries, suggesting potential cultural or regional variances in symptom reporting or the underlying pathophysiology of the syndrome [12]. Management strategies of BPS predominantly revolved around oral medications, with a substantial 63.9% of patients opting for this therapeutic approach. This is in line with the global trend where oral pharmacotherapy remains the mainstay of BPS management [13]. However, the uptake of physical therapy and bladder instillations is comparatively lower than in Western countries [14]. This might be a reflection of the accessibility and awareness of these treatment modalities in Bangladesh. Interestingly, our study highlighted previous UTIs and fibromyalgia as significant risk factors and comorbidities associated with BPS. These findings resonate with the broader literature. Previous UTIs have been frequently reported as potential triggers or predisposing factors for BPS [15]. Similarly, the association between fibromyalgia and BPS aligns with the notion that chronic pain syndromes may share overlapping pathophysiological mechanisms [16]. The results of this study underscore the need for heightened awareness, timely diagnosis, and holistic management of BPS in Bangladeshi women. The high prevalence rate calls for proactive measures at the community and clinical levels to ensure better quality of life for affected individuals. Moreover, a deeper understanding of the cultural, genetic, and environmental factors that may influence BPS in this specific population can pave the way for more tailored interventions in the future.

5. CONCLUSION

The present study offers a meticulous insight into the prevalence, clinical manifestations, and management approaches of Bladder Pain Syndrome (BPS) among women in Bangladesh. Our findings highlight a considerable prevalence of BPS in the sample cohort, emphasizing the pressing need for enhanced awareness and interventions tailored to this population. The association between BPS and past urinary tract infections, as well as the comorbidity with conditions like fibromyalgia, underscores the multi-faceted nature of this syndrome and suggests potential areas for further investigation and intervention. Furthermore, the dominance of oral medications in BPS management reflects current global trends but also points towards a potential knowledge gap concerning other therapeutic modalities available. This underscores the significance of a multifaceted treatment approach and the necessity of adapting and introducing diverse management

strategies in the Bangladeshi context. Ultimately, this study accentuates the importance of recognizing BPS as a critical health concern for Bangladeshi women. Given its profound impact on the quality of life, dedicated research, informed clinical practice, and targeted community outreach are crucial to effectively address, manage, and potentially alleviate the burden of this syndrome.

CONSENT

It is not applicable.

ETHICAL APPROVAL

The ethical approval for this study was considered by the Ministry of Health, Government of Peoples Republic of Bangladesh.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/108751