



# Assessing the Impact of Urinary Calculi on Patients' Quality of Life (Including Physical Symptoms, Psychosocial Distress, Healthcare Utilization, and Economic Burden)

Anwar Rashed Ahmed Ahmed <sup>a++\*</sup>

<sup>a</sup> *Specialized Medical Care Hospital, Bangladesh.*

**Author's contribution**

*The sole author designed, analysed, interpreted and prepared the 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/115232>

**Review Article**

**Received: 16/02/2024**

**Accepted: 22/04/2024**

**Published: 24/04/2024**

## ABSTRACT

Globally, both prostate and kidney stones are among the most prevalent and important health problems that affect men. There is no denying that such circumstances will have detrimental effects on patients' possible dimensions of quality of life. Pain, urinary dysfunction, and discomfort are the main factors responsible for worsening the quality of life. This psychosocial stress, which includes anxiety, depression, and impaired social relationships, intensifies the patient's ordeal. Healthcare consumption patterns like routine and frequent medical visits, diagnostic procedures, and therapeutic interventions depict the enormous need for the healthcare systems and the patients. Furthermore, the economic consequences, including direct medical costs, indirect productivity losses and socioeconomic unbalance, point out that kidney stones have multiple effects. People with these conditions are highly prone to anxiety, depression, and emotional distress as a result of constant fear of the coming recurrence and progressive nature of the disease. Relationships may

<sup>++</sup> *Specialist Urology;*

<sup>\*</sup>*Corresponding author: Email: [dranwarrashedahmedahmed@gmail.com](mailto:dranwarrashedahmedahmed@gmail.com);*

become strained and individuals may have to fight loneliness and weak self-esteem, adding to the load from the illness. During their journey in the healthcare system, patients with kidney stones go through the processes of diagnostic tests, therapeutic interventions, and follow-up consultations. Patterns of usage demonstrate the complexity of treating these conditions, justifying reasons for reconsidering provisions of healthcare resources, services, and patient-provider communication. The complex interaction between disease pathology, patient experience, and healthcare outcomes is the focus of this review, drawing upon the current literature to serve this purpose. It is necessary to know all the mechanisms in the body to help in the development of better clinical management strategies, and patient support interventions, and to reduce the socioeconomic implications of prostate and kidney stones. This review shall focus on the implications that people, particularly men, experience when dealing with conditions such as kidney and renal stones. It will deeply reflect on their quality of life and how it is negatively impacted by the burden of diseases during their lifetime.

*Keywords: Kidney stones; renal stones; quality of life; benign prostate hyperplasia (BPH); psychosocial distress; economic burdens.*

## 1. INTRODUCTION

The incidence of stones in the kidney continues to be the most common, from available figures indicating a prevalence of 2 to 3 % among the general population [1]. The main underlying factor that regularly leads to emergency hospital admissions in England which was recorded at over 30,800 cases per year and the US in 2009 with 550,000 cases of emergency room visits, alone [2]. Besides that, the periods of maximum risk are in the age range of 35 to 55 years, and recent data reveal that there are more and more cases in Western countries that could be treated as nearly male and female issues [3].

The risk for the recurrence of stone in the next 5 years after the initial episode is estimated to stay highest at 50% [4] Seeing the nature of the age of the stone patients who are major productive members of the community the possible days taken sick leave from work could lead to economic disasters not only to the individual and his family but also to the society as a whole [5].

In patients with urinary stones, presentations include a range of stages from acute ureteric colic, the worst pain ever, to asymptomatic disease, without any complaints [1] With the proper ministrations directed at infections, acute renal failure, and pain management, it is time to construct a treatment regimen [6]. This path of treatment is usually very complex and multi-stage requiring many visits and admissions to the hospitals to be administrative. On the other hand, a considerable portion of patients face the problem of stone recurrence or bladder stones, thereby necessitating timely and regular treatment [7].

These stones typically manifest as multiple small formations, ranging from 0.5 to 5.0 mm, and are predominantly associated with the aging process, notably prevalent after the age of 50 years. Moore and Kirby et al, in their respective investigations, postulated that chronic inflammation induced by prostatic hypertrophy contributes to the genesis of extrinsic prostatic stones [8,9].

The onset of extrinsic calculi is variable and often associated with neurogenic bladder dysfunction or chronic urinary tract infections, rather than being solely age-related. In severe instances, prostate enlargement may culminate in urethral obstruction [10].

## 2. THE IMPACT OF KIDNEY STONES ON THE QUALITY OF LIFE OF THE PATIENTS

Urolithiasis, normally known as kidney stone infection, is a critical and repeating medical problem influencing millions every year, with a potential repeat rate approaching 100 percent in no less than 25 years [11] It is responsible for up to two million emergency department visits each year in the United States alone, highlighting its prevalence and the acute care often required for management [12]. Beyond the physical symptoms and healthcare burdens, urolithiasis has profound implications on the psychological well-being of affected individuals [13].

The ongoing idea of urolithiasis frequently prompts numerous suggestive episodes, each adding to the mental pain experienced by patients [14] Research has recognized a connection between the recurrence of stone

episodes and expanded degrees of stress and nervousness. For instance, Miyaoka et al. found that patients encountering numerous stone episodes each year or those giving side effects of renal colic report fundamentally higher feelings of anxiety. This affiliation recommends that repetitive aggravation and the flightiness of episodes can prompt impressive mental strain [15].

Financial status and life stressors further intensify the mental effect of urolithiasis. Patients who face testing life conditions, for example, low pay or home loan issues are bound to report suggestive stone episodes, demonstrating a connection between financial stressors and the seriousness of the infection [16]. These discoveries feature the significance of considering social determinants of wellbeing while overseeing patients with urolithiasis, as these elements might impact both the recurrence of episodes and their mental effect [17].

The connection among urolithiasis and sadness has been investigated in different examinations, uncovering a disturbing connection between the two. Angell et al. led an imminent report where 30% of patients with stone sickness displayed critical burdensome side effects. This expanded study recommends that the mental impacts of urolithiasis are significant and can prompt serious emotional wellness conditions like sorrow [18].

The connection between the recurrence of stone episodes and the beginning of nervousness issues has likewise been recorded. Patients with successive episodes will generally display higher nervousness levels, which might be because of the consistent expectation of torment or the disturbance brought about by intermittent medicines and clinic visits [19]. This repetitive pressure can significantly influence one's personal satisfaction and emotional wellness, supporting the requirement for exhaustive administration methodologies that address both the physical and mental parts of the infection [16].

The current pathway of care for urinary calculi management is constantly undergoing changes, particularly in its failure to integrate patient-reported outcomes, treatment preferences, and resource efficiency considerations [7].

All the existing evidence predominantly focuses on clinical management aspects, neglecting

important insights into patient perspectives and health-related quality of life (HRQoL) impacts. Consequently, treatments are often administered on an ad hoc basis, leaving patients inadequately informed and subjected to prolonged treatment trajectories [20].

This haphazard approach not only compromises patient care but also entails economic ramifications due to potential resource misallocation. Recognizing the imperative of incorporating patient perspectives, efforts have been made to quantify HRQoL using patient-reported outcome measures (PROMs). While generic measures such as the SF-36 and EQ-5D have been utilized, they tend to offer limited insights into clinically relevant domains [21].

Recent studies have reflected and explored deeper into the impact of urinary calculi on HRQoL, employing instruments like the Wisconsin Quality of Life (WISQOL) and PROMIS questionnaires [22]. Nonetheless, a paradigm shift toward patient-centered care necessitates a more enhanced understanding of individual preferences and needs, thereby highlighting the importance of qualitative research methodologies. Qualitative inquiries offer a systematic exploration of patient viewpoints, complementing quantitative analyses by elucidating nuanced issues that may elude numerical quantification [23].

As articulated by the American Urological Association (AUA) guidelines, treatment decisions should be tailored to individual preferences, highlighting the pivotal role of patient-centric measures in optimizing care delivery. Moving forward, concerted efforts to integrate patient-reported outcomes, treatment preferences, and qualitative insights are imperative to enhance treatment efficacy, patient satisfaction, and resource utilization efficiency in urinary calculi management [24]. The impact of urinary stone disease on patients' quality of life (QoL) manifests in various domains, with distinct patterns emerging across different patient demographics and disease characteristics [9].

Work-related issues, notably the need to take time off work, emerged as a primary concern among patients with ureteric stones, followed closely by pain and other physical symptoms [25]. Conversely, patients with renal stones emphasized physical symptoms beyond pain as the most challenging aspect of their QoL, with concerns about their outlook on life ranking

second, particularly centered around fear of the unknown [26].

Interestingly, despite differences in stone location and symptomatology, both ureteric and renal stone groups reported similar domains of QoL affected, suggesting a degree of overlap in the challenges faced by patients [27]. Age emerged as a significant factor influencing QoL priorities, with younger patients (<35 years) primarily grappling with physical symptoms and work-related issues, including financial stress and job insecurity. Patients aged 36–60 echoed similar concerns, underscoring the profound impact of physical symptoms and work-related stressors on this demographic. Conversely, older patients (>61 years) highlighted pain and physical symptoms as predominant QoL challenges, indicative of age-related physiological changes and coping mechanisms [16].

Furthermore, the distinction between recurrent and first-time stone formers revealed heightened concerns among recurrent stone formers regarding the impact of their condition on their careers and financial stability. Duration of disease also played a pivotal role, with patients enduring urinary stone disease for more than 4 years expressing heightened distress related to work and outlook on life compared to those with shorter disease durations [28].

Patient communication and treatment preferences emerged as crucial factors influencing QoL outcomes, with several patients expressing dissatisfaction with the information provided before choosing treatment options. Conflicting advice from various healthcare professionals further compounded patient uncertainty, underscoring the importance of streamlined communication channels and patient education initiatives. While some patients sought information from multiple sources, including the Internet and healthcare providers, concerns remained regarding the adequacy and consistency of information received [29].

Overall, these findings underscore the multidimensional impact of urinary stone disease on patients' lives and highlight the importance of tailored interventions addressing individual patient needs, communication gaps, and treatment preferences to optimize QoL outcomes in this population [30].

### 3. CONCLUSION

A centered approach comprising healthcare service enhancements, insurance coverage

expansion, adoption of minimally invasive treatments, promotion of physical activity, and utilization of healthcare technologies is indispensable in improving the HRQOL of older patients with both, kidney stones. By addressing both medical and lifestyle factors, these interventions aim to optimize health outcomes and well-being for individuals affected by this condition.

Research indicates that higher socioeconomic status correlates with better health-related quality of life (HRQOL) outcomes among patients with kidney stones. Access to healthcare services, health insurance coverage, and continuous treatment contribute to improved HRQOL for both conditions.

Strategies to enhance HRQOL among patients with kidney stones include improving healthcare accessibility, expanding insurance coverage, adopting minimally invasive treatments, promoting physical activity, and leveraging healthcare technologies. These interventions aim to address medical and lifestyle factors to optimize health outcomes and well-being for affected individuals.

### CONSENT AND ETHICAL APPROVAL

It is not applicable.

### COMPETING INTERESTS

Author has declared that no competing interests exist.

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