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Original Article

Frequency of Urinary Incontinence Among Post COVID Males

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ABSTRACT

Background: Amid the global health challenges posed by the COVID-19 pandemic, an association with urinary system complications has been identified. Urinary incontinence (UI) has become a significant post-COVID sequela among males, with substantial implications for their quality of life.

Objective: The study aimed to quantify the frequency and delineate the severity of urinary incontinence in post-COVID male patients, as well as to document the prevalence of associated lower urinary tract symptoms.

Methods: A cross-sectional observational study was executed, engaging 400 male post-COVID patients aged between 45 to 64 years from three hospitals in Lahore. Participants were selected via non-probability convenience sampling and provided data through the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI SF) and Male Lower Urinary Tract Symptoms (ICIQ-MLUTS). Statistical analyses were performed using SPSS version 21.

Results: The prevalence of urinary incontinence among the participants was high, with 367 (91.75%) reporting some degree of UI. In terms of severity, moderate UI was the most common, affecting 248 (67.5%) of those with UI, followed by slight UI in 82 (22.5%), and severe UI in 37 (10%) participants. The study identified urgency (reported by 133 participants or 33.3% 'occasionally' and 132 or 33% 'most of the time') and postvoid dribbling (reported by 159 participants or 39.8% 'most of the time') as the most frequent symptoms. Notably, there were no reports of very severe urinary incontinence.

Conclusion: The study concludes a high prevalence of urinary incontinence among male patients post-COVID-19, with the majority experiencing moderate severity. These findings underscore the importance of including urinary incontinence assessments in post-COVID patient care and may inform the development of targeted interventions to improve patient outcomes.

Keywords: COVID-19, urinary incontinence, post-COVID sequelae, lower urinary tract symptoms, men's health, ICIQ-UI SF, ICIQ-MLUTS.

INTRODUCTION

Urinary incontinence (UI), characterized by involuntary urine leakage and loss of bladder control, is a prevalent condition affecting millions globally, with profound implications on both personal and social well-being [1-3]. This disorder not only undermines self-confidence and social interaction but is also associated with depression, sexual dysfunction, and reduced physical activity, collectively diminishing quality of life (QoL) [4-7]. Among men, urge urinary incontinence (UUI) is the most common form, followed by mixed urinary incontinence (MUI) and stress urinary incontinence (SUI), with the incidence of UI escalating with age due to factors such as bladder outlet obstruction and changes in pelvic structures [8, 9]. Despite its prevalence, a significant proportion of affected men do not seek medical attention, leading to continued frustration and impact on their daily lives [10, 11].

UI in men is multifactorial, with known risk factors including diabetes mellitus, fecal incontinence, prostate surgery, and lower urinary tract symptoms [11]. It is also frequently associated with other comorbidities, necessitating tailored interventions [12]. The COVID-19 pandemic, caused by the SARS-CoV-2 virus, has further complicated this landscape. Emerging evidence indicates that COVID-19 can affect the urinary system, with post-COVID males experiencing UI, significantly impacting their QoL [13]. The exact mechanisms linking COVID-19 to UI remain unclear, but potential factors include direct viral effects on the urinary system, COVID-19-related hospitalization, immobility, and specific medication uses [14, 15].

The burden of UI on post-COVID males is substantial, contributing to decreased life satisfaction, heightened anxiety and depression, and reduced social engagement [16]. Particularly, the unpredictability of UUI may exacerbate QoL issues, as opposed to SUI where lifestyle adaptations may mitigate some impacts. The interplay between UI and mental health issues like depression and anxiety, compounded by social stigma and self-image concerns, further aggravates this condition [16].

Furthermore, UI post-COVID significantly elevates the risk of disability, dependency, and care home placement, adversely affecting psychological, physical, and social well-being [17, 18]. The lack of familial support and challenges in accessing healthcare exacerbate these issues, leading to a deterioration in QoL and symptom severity [19, 20]. Despite its significance, there is a knowledge gap regarding the genitourinary consequences of COVID-19, as most studies focus primarily on respiratory symptoms and complications.

Given this backdrop, this study aims to bridge this gap by exploring the prevalence and implications of urinary incontinence among post-COVID males. This research will enhance our understanding of the long-term effects of COVID-19 on genitourinary health, potentially guiding the development of targeted interventions and rehabilitation programs for those recovering from the virus.

MATERIAL AND METHODS

The study, characterized as a descriptive cross-sectional observational design, was conducted across three hospitals in Lahore: Ghurki Trust & Teaching Hospital, National Hospital, and Fatima Memorial Hospital. Spanning from July 2021 to January 2022, this research received ethical approval from the Lahore College of Physical Therapy Ethical Board. A total of 400 participants were enlisted through a non-probability convenience sampling technique, adhering to the study's approved ethical guidelines.

The research focused on middle-aged male patients, specifically those aged between 45 and 64 years, who had recovered from COVID-19 at least two months prior to the study. Exclusion criteria were set to omit patients with a history of urinary incontinence prior to their COVID-19 infection and those who had cognitive or other impairments that could hinder their ability to comprehend or self-complete the study questionnaire.

Participants were asked to complete two key questionnaires: the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI SF) and the International Consultation on Incontinence Questionnaire Male Lower Urinary Tract Symptoms (ICIQ-MLUTS). These questionnaires were chosen for their established reliability and validity in assessing urinary incontinence and its impact on quality of life. The ICIQ-UI SF, with an intraclass correlation coefficient of 0.73 and a Cronbach's alpha of 0.87, consists of four questions and provides a score ranging from 0 to 21, where a higher score indicates more severe symptoms. This questionnaire categorizes urinary incontinence severity into four levels: slight (1-5), moderate (6-12), severe (13-18), and very severe (19-21). On the other hand, the ICIQ-MLUTS, comprising 13 items, is designed to evaluate voiding and storage symptoms along with their impact on the patient's life. Its scoring is divided into subscales for urge incontinence and voiding symptoms, with the questionnaire demonstrating strong criterion validity and good internal consistency.

The assurance of anonymity and complete data protection was a priority, and this was communicated clearly to all participants. Upon collection, the data was meticulously entered and analyzed using the Statistical Package for

Social Sciences (SPSS), version 21. The findings were then presented in a comprehensive manner utilizing frequency tables, pie charts, and bar charts, ensuring a clear and detailed understanding of the results.

RESULTS

The study's results, based on the analysis of data from 400 participants, offer insightful details about the prevalence and characteristics of urinary incontinence and lower urinary tract symptoms among middle-aged men post-COVID-19. The participant group ranged in age from 45 to 64 years, with a mean age of 51.56 years and a standard deviation of 13.3 years, indicating a broad age distribution within this demographic.

Table 1 Quantitative Statistical Measure

Statistical Measure	Mean	Standard Deviation	Range
Age	51.56 years	13.3	45- 64 years
ICIQ-UI SF Score	6.69	3.80159	0.00- 16
ICIQ-MLUTS Voiding Symptoms Score	8.33	3.65506	0.00- 19
ICIQ-MLUTS Incontinence Symptoms Score	9.54	5.24471	0.00- 23

When examining the severity of urinary incontinence as measured by the ICIQ-UI SF, the average score among participants was 6.69, with a standard deviation of 3.80159. The scores ranged from 0 (indicating no urine leakage) to a high of 16, suggesting varying degrees of urinary incontinence among the cohort.

Table 2 ICIQ-MLUTS Symptom Frequencies

Symptom	Never (f, %)	Occasionally (f, %)	Sometimes (f, %)	Most of the Time (f, %)	All of the Time (f, %)
Incontinence Symptoms					
Urgency	41 (10.3%)	133 (33.3%)	37 (9.3%)	132 (33%)	57 (14.2%)
Urge Incontinence	79 (19.8%)	119 (29.8%)	93 (23.3%)	88 (22%)	21 (5.3%)
Stress Incontinence	115 (28.7%)	108 (27%)	109 (27.3%)	28 (7%)	40 (10%)
Unexplained Incontinence	83 (20.8%)	183 (45.8%)	80 (20%)	47 (11.8%)	7 (1.8%)
Nocturnal Incontinence	133 (33.3%)	139 (34.8%)	65 (15.8%)	63 (15.8%)	0 (0%)
Postvoid Dribbling	66 (16.5%)	96 (24%)	48 (12%)	159 (39.8%)	31 (7.8%)
Voiding Symptoms					
Hesitancy	69 (17.3%)	79 (19.8%)	210 (52.5%)	37 (9.3%)	5 (1.3%)
Starting Strain	44 (11%)	146 (36.5%)	159 (39.8%)	45 (11.3%)	6 (1.5%)
Decreased Stream	70 (17.5%)	121 (30.3%)	146 (36.5%)	57 (14.2%)	6 (1.5%)
Intermittency	38 (9.5%)	87 (21.8%)	153 (38.3%)	119 (29.8%)	3 (0.8%)
Incomplete Emptying	41 (10.3%)	137 (34.3%)	97 (24.3%)	124 (31%)	1 (0.3%)

This variation points towards a spectrum of incontinence severity within the study population.

The study also assessed lower urinary tract symptoms using the ICIQ-MLUTS. The mean score for voiding symptoms was 8.33 (standard deviation: 3.65506, range: 0-19), while the mean score for incontinence symptoms

was slightly higher at 9.54 (standard deviation: 5.24471, range: 0-23). These scores underscore the prevalent impact of these symptoms on the studied group, with incontinence symptoms showing a relatively higher variability among participants.

Delving into the specifics of the ICIQ-MLUTS, the frequency of various symptoms was meticulously recorded. Urgency was reported 'occasionally' by 33.3% and 'most of the time' by another 33% of the participants, indicating it as a common symptom. Similarly, 29.8% experienced urge incontinence 'occasionally,' and 22% 'most of the time'. Stress incontinence was reported as 'occasionally' or 'sometimes' by over 27% in each category, highlighting its significant presence.

Notably, 45.8% of participants experienced unexplained incontinence 'occasionally', while nocturnal incontinence was reported as 'never' by 33.3% and 'occasionally' by 34.8%, showing a lesser but still notable impact. Postvoid dribbling was a prominent symptom, with 39.8% experiencing it 'most of the time'.

Voiding symptoms showed varied frequency with 52.5% of participants experiencing hesitancy 'sometimes' and 39.8% reporting starting strain 'sometimes'. Decreased stream was noted as 'sometimes' by 36.5%, and intermittency was reported in the same frequency by 38.3%. Incomplete emptying of the bladder was a notable concern, with 31% experiencing it 'most of the time'.

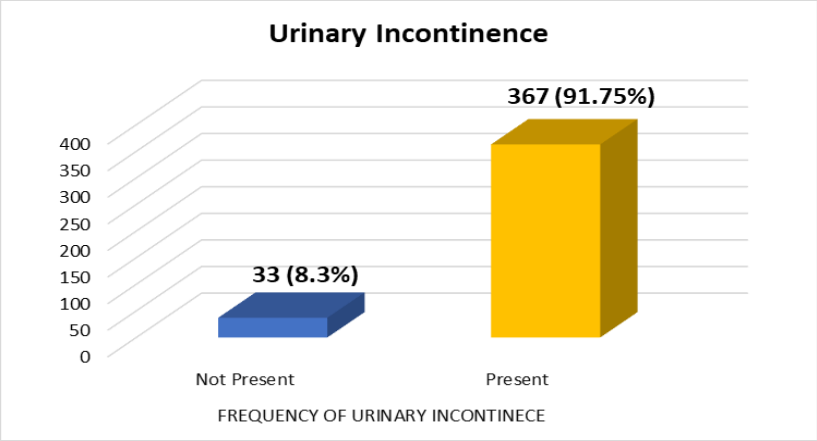

Figure 1 Frequency of Urinary Incontinence

These results provide a comprehensive overview of the urinary symptoms experienced by middle-aged men post-COVID-19, indicating a significant prevalence of both incontinence and lower urinary tract symptoms in this population. The data clearly underscores the need for targeted interventions and further research into the long-term impacts of COVID-19 on urinary health.

Figure 1, presents the prevalence of urinary incontinence in the study, indicating that 367 out of 400 participants, or 91.75%, reported experiencing urinary incontinence, while a minority of 33 participants, or 8.3%, did not.

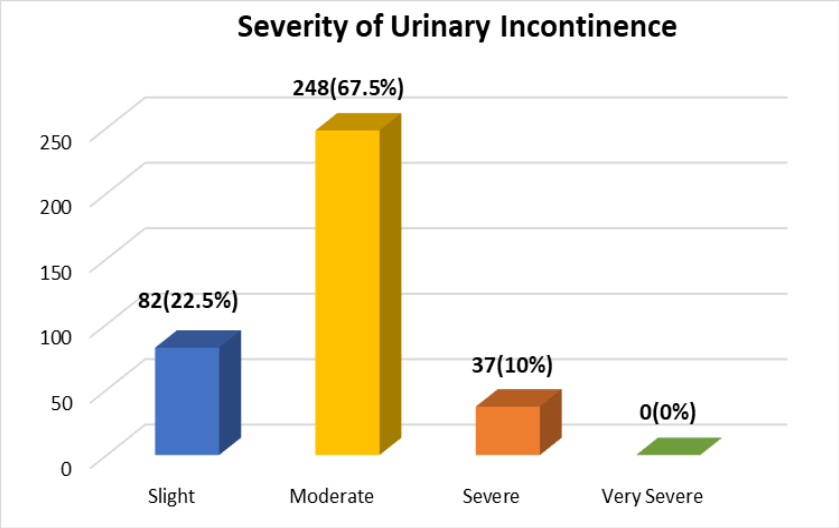

Figure 2 Severity of Urinary Incontinency

Figure 2, categorizes the severity of urinary incontinence among affected participants, showing that 248 individuals (67.5%) experienced moderate symptoms. Slight symptoms were reported by 82 participants (22.5%), and severe symptoms were noted by 37 participants (10%). Notably, there were no reports of very severe symptoms. These figures underscore the high prevalence of urinary incontinence among participants, with the majority experiencing moderate severity.

DISCUSSION

The COVID-19 pandemic has undoubtedly expanded the scope of healthcare concerns beyond the well-documented respiratory symptoms, with emerging research suggesting its impact on the urinary system. This has led to urinary incontinence (UI) emerging as a significant issue among males post-COVID-19, with the current study revealing that a notable 91.75% of participants reported some degree of UI, signaling an urgent public health matter.

In comparison to previous studies, such as the one conducted by Osman Can et al. in 2021, the present findings align with the observed increase in lower urinary tract symptoms among older men following COVID-19 infection [21]. Can et al.'s study emphasized the role of ACE2 receptors in the pathology of COVID-19 and their higher affinity to affect organs with dense ACE2 expression, which could explain the increased incidence of urinary symptoms [21]. Our study corroborates these findings, with 67.5% of post-COVID elderly men experiencing moderate UI, and further extends the observation to younger age groups, albeit with no cases of very severe UI reported.

Athanasios Zachariou et al.'s 2022 study also resonates with our findings, reporting that 68.5% of patients with Post Acute Covid Syndrome experienced new or exacerbated urinary symptoms [22]. Our study's identification of the variety and frequency of incontinence symptoms, particularly urgency and postvoid dribbling, complements Zachariou's conclusion on the worsening of overactive bladder symptoms after COVID-19 infection. Both studies advocate for a tailored approach to managing urinary symptoms in post-COVID patients, distinct from standard treatments.

Furthermore, the cross-sectional study by J Barbosa da Silva et al. in 2022, which examined UI before and after COVID-19 infection, suggested that persistent incontinence could be attributed to factors such as weakened musculoskeletal systems impacting pelvic floor function and increased coughing causing stress-induced UI [23]. Our current study adds nuance to these findings by specifying that voiding symptoms like hesitancy and decreased urine stream strength are also prevalent, indicating a broader impact of COVID-19 on urinary functions. A systematic review by Jahanzeb Malik et al. in 2021 highlighted the long-term post-acute symptoms of COVID-19, with a focus on neuropsychiatric and general symptoms like fatigue and cough [24]. Our study, while specific to UI, aligns with the broader narrative of Malik et al.'s findings, confirming that post-COVID symptoms are diverse and can significantly impact the quality of life.

The validity and generalizability of the results of this study are potentially compromised by a small sample size and reliance on non-probability convenience sampling. Additionally, the use of self-reported data introduces an inherent bias, as there is a risk that respondents may not fully comprehend their clinical condition or may struggle to accurately interpret and respond to questionnaires. This issue may be particularly pronounced among men with lower educational levels, who might not provide accurate assessments of their symptoms. Furthermore, the study's focus on a single gender and a narrow age range, as well as the exclusion of potential confounding variables such as medication use and obesity, limits the breadth of the findings.

Future research would benefit from a broader, more diverse study population, encompassing various settings and age groups, to enrich the data on urinary incontinence prevalence in post-COVID patients. Incorporating quantitative data from urodynamic tests could offer a more objective and detailed understanding of urinary incontinence. Further studies are also recommended to explore the impact of medications and obesity on urinary incontinence in those recovering from COVID-19.

The current study emphasizes the prevalence of UI in post-COVID males and its potential to disrupt daily life. It echoes the sentiment of previous research, reinforcing the need for healthcare providers to be vigilant for such symptoms in post-COVID recovery. The high frequency of UI uncovered in our study serves as a critical reminder for the medical community to consider urinary symptoms as part of post-COVID management and to develop targeted interventions and rehabilitation programs accordingly.

CONCLUSION

The study concludes that urinary incontinence is a commonly reported issue among male post-COVID patients, with a notable frequency of mild to moderate severity symptoms being observed. The implications of these findings are significant, suggesting that post-COVID care protocols should include evaluation and management strategies for urinary incontinence to mitigate its impact on patients' quality of life. Health care professionals should be aware of this potential complication and consider it in their post-COVID rehabilitation plans, ensuring comprehensive care that addresses both the primary effects of the virus and its secondary health consequences.

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