RESEARCH

PREVALENCE AND DETERMINANTS OF CHRONIC GENITOURINARY CONDITIONS AMONG OLDER MEN IN INDIA

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Abstract

Background: Men are usually predisposed to specific genito urinary conditions as compared to men and this increases with age. In this study, Among Indian men aged 45 years, our goal was to quantify the prevalence and identify the correlations of chronic renal failure, incontinence, and kidney stones. **Materials and Methods:** Data from the Longitudinal Ageing Study in India (LASI) wave-1, 2017–2018, were used. 33,097 men above the age of 45 were included in the sample. Prevalence was reported using descriptive statistics, and a 95% confidence interval was used to indicate the degree of uncertainty. To determine the relationship between several socio-demographic and behavioral predictors and the outcome, such as chronic renal failure, incontinence, and kidney stones, a separate multivariable regression analysis was carried out. **Result:** Incontinence was 3.02% (95% CI: 2.82-3.23), chronic renal failure was 0.82% (95% CI: 0.71-0.93), and kidney stones were 3.0% (95% CI: 2.79-3.20). According to the results of the multivariable regression analysis, incontinence was more likely to affect participants under the age of 75 [AOR: 1.91 (95% CI: 1.34-2.44)]. Among patients who had obesity, kidney stones were substantially more common [AOR: 1.88 (95% CI: 1.53-2.55)]. **Conclusion:** It is impossible to ignore the significant prevalence of chronic genitourinary diseases we found among males who are becoming older. The recently established Health and Wellness Centers (HWCs) are a potential window for prompt care that has to be strengthened.

INTRODUCTION

Ageing is frequently linked to poorer patient reported health outcomes, frequent travel to healthcare institutions, and complex care requirements. Despite having a longer life expectancy than men, the latter are more prone to certain illnesses.[1] Because of prevalent cultural and societal standards, older individuals are typically a disadvantaged segment of society. Men frequently experience a number of normal physiological changes as they age, along with chronic diseases such genitourinary disorders.[2] The genitourinary diseases are a class of conditions marked by a variety of symptoms, including incontinence, urolithiasis, and reduced renal output.[3] These illnesses may be lethal, particularly for men. While male hormones protect against kidney disease, reduced estrogen levels in men can also cause genitourinary problems. The three main genitourinary conditions are chronic renal failure, incontinence, and kidney stones.[4,5]

Regardless of the source, chronic renal failure refers to the final stage of chronic kidney disease when the eGFR is below 15 ml/min/1.73 m2. This disorder frequently has a high rate of morbidity and mortality.[6] Micturition is a voluntary activity that requires intricate synchronization of the muscles, tissues, and organs that maintain the bladder and urethra.[7] Urinary incontinence can result from any disturbance in the process. Ageing males are particularly affected by urinary incontinence, a multifactorial syndrome defined as any inadvertent urine leaking. More than 200 million people throughout the world suffer from incontinence. Men experience it more frequently than women because of the complicated physiological changes they must go through during childbirth, menstruation, and the

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menopausal transition. Since UI is a natural part of getting older and is frequently connected to stigma and guilt, patients are less likely to address it, especially as they become older. This frequently results in diminished self-esteem, social isolation, and psychological consequences like anxiety, depression, degradation of the sexual life, and a reduction in physical activity. Kidney stones are uncomfortable urologic conditions that are frequently linked to dietary factors, such as diets high in animal proteins, refined sugar, and foods high in oxalate. Gout and an overabundance of vitamin D can also be the causes. Along with severe abdominal and lower back discomfort, it can cause low urine volume, hypercalciuria, hyperuricosuria, hyperoxaluria, and hyperuricosuria.[8,9,10]

Renal diseases are more likely to develop as people age. However, there are many different factors that affect prevalence, and they need to be further investigated. As a result, this study was carried out to evaluate the correlates of chronic renal failure, incontinence, and kidney stones among males aged 45 years in India and to estimate their prevalence.[11]

MATERIALS AND METHODS

On the basis of the data from the first wave of the Longitudinal Ageing Study in India (LASI), 2017–2018, a community-based cross-sectional analysis was performed. A joint effort by the University of Southern California, Harvard T. H. Chan School of Public Health, and International Institute of Population Sciences (IIPS), LASI, wave-1 is a biennial longitudinal survey of older persons aged 45 and above. Except for Sikkim, all 26 of India's states and six of its union territories were used to compile the statistics. The 72,250 participants in the multistage stratified area probability cluster sampling design were chosen as the nationally representative sample. In rural areas, a three-stage sampling design was used, while in urban areas, a four stage sampling approach. Each of the LASI eligible households received one of three survey questionnaires: community, household, and individual. Individual response rates for the LASI survey were 87.3%. The comprehensive description is available elsewhere.

Participants in the study and sample size

In order to conduct this study, we combined two datasets: the individual dataset (n = 72,250) and the biomarkers dataset (n = 65,900). After removing participants with missing data, a total of (n=65900) people were left with complete data. After excluding women and participants who were 44 years old or younger, we continued with our goal by including females who were 45 years old and older. A final sample size of 33,097 men aged 45 or older was obtained.

Variables

Independent Elements

Based on the stated age in years, we included age groups of 45–59, 60–74, and 75 years or older. Living in rural or urban areas was considered residence, and caste was divided into scheduled castes, scheduled tribes, other backward classes, and others. To determine the participants' level of education, we asked two independent questions. The first was, "Have you ever attended school?" Participants who answered "no" were categorized as having "no formal education." Participants who answered "yes" were then asked, "What is the highest level of education you completed?" Based on this information, three categories were created: "up to primary," which combined education from standards 1-4 and standards 5-7; "middle," "secondary," "higher secondary," and "diploma holders"; and "graduates, post-graduates, and professional degree holders." Additionally, two questions from the LASI individual survey schedule were used to evaluate occupation. Participants who answered "no" were categorized as having never worked. Next, participants were asked if they had ever worked for at least three months in their lives. Individuals were then divided into "currently working" and "currently not working" groups based on the question "Are you now working?" Based on monthly per capita spending, the wealth index was divided into the most impoverished, 2, 3, and most affluent categories.

The question "have you ever smoked tobacco or used smokeless tobacco?" was used to measure tobacco usage. Participants who gave a "no" response were classified as abstainers. If the answer to the previous question was "yes," those individuals were then asked, "What type of tobacco product have you ever consumed?" The options included "smoke tobacco" which was categorized as "smoking," "smokeless tobacco" which was grouped as "smokeless tobacco," and "both smoke and smokeless" which was categorized as "dual use." The question "have you ever drunk any alcoholic beverages such as beer, wine, liquor, country liquor, etc.?" was used to gauge alcohol consumption. Weight in kg/height in m2 was used to compute Body Mass Index (BMI), and a BMI of 25 or more was considered obese for the South Asian population.

Outcome Factors

Men's genitourinary conditions were the key outcome factors of interest. The following urogenital illnesses and diseases that respondents self-reported having been diagnosed with were taken into consideration. The three reported conditions were kidney stones, incontinence, and chronic renal failure.

Statistic Evaluation

For the study, we utilized STATA statistical software, version 17.0 (Stata Corp, College Station,

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TX, US). The frequency and percentage of chronic illnesses across various sociodemographic factors were described using descriptive statistics. To evaluate the relationship between outcome variables and other socio-demographic characteristics, multiple multivariable logistic regression models were used. All weighted analyses were conducted using survey weights. For all weighted proportions, we provided a 95% confidence interval as a measure of uncertainty.

Ethics-Related Matters

The data used in this study are anonymous and in the public domain. However, the Indian Council of Medical Research (ICMR), New Delhi, and IIPS, Mumbai, gave their approval for the initial LASI survey. Each participant signed a written informed consent form in advance.

RESULTS

Participants' ages ranged from 58.64 to 9.48 on average. The majority of participants (56.2%) were between the ages of 45 and 59; 67.8% were from rural areas; and 58.8% had no formal education. There were 38.8% of the participants who were obese. Incontinence was 3.02% (95% CI: 2.82-3.23), chronic renal failure was 0.82% (95% CI: 0.71-0.93), and kidney stones were 3.0% (95% CI: 2.79-3.20). According to the results of the multivariable regression analysis, incontinence was more likely to affect participants under the age of 75 [AOR: 1.91 (95% CI: 1.34-2.44)]. Among patients who had obesity, kidney stones were substantially more common [AOR: 1.88 (95% CI: 1.53-2.55)].

Compared to individuals in other age groups, adults 60 to 74 years old had a higher prevalence of chronic renal failure. Compared to people living in rural areas, urban inhabitants had a higher rate of chronic renal failure. The group of people with the highest levels of education had the highest frequency of chronic renal failure. Chronic renal failure was more prevalent in the most wealthy group.

The prevalence of incontinence was higher among persons under the age of 75. Incontinence was more common among rural than urban residents. Incontinence was more common among those who weren't currently employed. Compared to consumers of other tobacco products, smokers of smokeless tobacco had the highest prevalence of incontinence. Obese people were more likely to suffer from incontinence.

We discovered that participants between the ages of 45 and 59 had a high prevalence of kidney stones. Compared to people living in rural areas, urban inhabitants showed a higher prevalence of kidney stones. The wealthiest groups were more likely to have kidney stones. Kidney stones were more frequent in dual smokers.

Table 1: Prevalence of genito-urinary conditions across various socio-demographic characteristics of the study population

Socio-demographic Characteristics		Chronic Renal Failure	Incontinence	Kidney Stones
Age	45-59 years	85, 0.52 (0.41-0.64)	352, 2.14 (1.92-2.37)	411, 2.50 (2.26-2.75)
	60-74 years	72, 0.58 (0.45-0.73)	398, 3.22 (2.91-3.54)	274, 2.22 (1.96-2.50)
	≥75 years	14, 0.53 (0.23-0.71)	181, 5.51 (4.75-6.35)	46, 1.42 (1.02-1.86)
Residence	Rural	99, 0.45 (0.36-0.54)	650, 2.95 (2.72-3.17)	471, 2.13 (1.94-2.33)
	Urban	72, 0.73 (0.56-0.90)	281, 2.80 (2.49-3.15)	260, 2.60 (2.29-2.93)
Caste	Scheduled Castes	28, 0.46 (0.29-0.64)	160, 2.57 (2.19-2.99)	113, 1.81 (1.49-2.17)
	Scheduled Tribes	12, 0.44 (0.22-0.75)	68, 2.45 (1.89-3.08)	50, 1.82 (1.33-2.36)
	Other Backward Class	60, 0.41 (0.31-0.53)	297, 2.04 (1.82-2.28)	277, 1.90 (1.70-2.14)
	Other	67, 0.81 (0.63-1.03)	383, 4.64 (4.19-5.12)	288, 3.49 (3.10-3.91)
Education	No Formal Education	99, 0.47 (0.38-0.57)	582, 2.77 (2.55-3.00)	416, 1.98 (1.79-2.17)
	Up to Primary	33, 0.55 (0.38-0.77)	237, 3.96 (3.48-4.48)	169, 2.83 (2.42-3.28)
	Middle school to Higher Secondary & Diploma	31, 0.72 (0.48-1.01)	93, 2.14 (1.72-2.60)	122, 2.80 (2.32-3.33)
	Graduation & Above	8, 1.10 (0.46-2.09)	19, 2.48 (1.53-3.94)	24, 3.14 (2.06-4.74)
Occupation	Never Worked	102, 0.70 (0.56-0.84)	466, 3.17 (2.89-3.46)	339, 2.31 (2.07-2.56)
	Currently not working	42, 0.54 (0.39-0.73)	249, 3.23 (2.85-3.66)	187, 2.43 (2.10-2.80)
	Currently working	27, 0.28 (0.18-0.40)	216, 2.23 (1.94-2.54)	205, 2.12 (1.83-2.42)
Wealth Index	Most Deprived	37, 0.54 (0.38-0.74)	194, 2.84 (2.45-3.25)	98, 1.43 (1.16-1.74)
	2	17, 0.25 (0.14-0.39)	188, 2.76 (2.38-3.18)	152, 2.24 (1.89-2.61)
	3	39, 0.60 (0.42-0.81)	200, 3.05 (2.64-3.50)	147, 2.23 (1.89-2.63)
	4	31, 0.49 (0.33-0.70)	167, 2.64 (2.26-3.07)	164, 2.61 (2.22-3.02)
	Most Affluent	47, 0.84 (0.62-1.12)	182, 3.27 (2.82-3.77)	170, 3.06 (2.62-3.54)
Tobacco	Abstainer	141, 0.55 (0.46-0.64)	687, 2.67 (2.47-2.87)	603, 2.34 (2.16-2.53)
	Smokeless	24, 0.47 (0.30-0.69)	200, 3.90 (3.39-4.47)	99, 1.94 (1.57-2.35)
	Smoking	6, 0.62 (0.21-0.12)	34, 3.23 (2.25-4.49)	25, 2.42 (1.54-3.49)
	Dual	1, 0.24 (0.22-4.83)	9, 8.64 (3.71-14.58)	3, 2.77 (0.55-7.56)
Alcohol	Yes	4, 0.50 (0.13-1.21)	19, 2.28 (1.37-3.52)	14, 1.64 (0.91-2.79)
	No	167, 0.54 (0.45-0.62)	911, 2.92 (2.73-3.11)	717, 2.30 (2.13-2.47)
BMI	Obese	96, 0.44 (0.36-0.54)	634, 2.94 (2.71-3.17)	363, 1.68 (1.51-1.86)
	Not Obese	69, 0.69 (0.53-0.86)	282, 2.79 (2.47-3.12)	362, 3.58 (3.22-3.95)

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The bivariate analysis showed BMI to be significantly associated chronic renal failure whereas after adjusting for other socio-demographic and health behaviors we did not get a significant association between the two [Table 2].

Table 2: Association between genito-urinary conditions with various socio-demographic attributes

Socio-demographic Characteristics		Chronic Renal Failure		Incontinence		Kidney Stones	
		OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
Age	45-59 years	0.88 (0.57-1.37)	0.81 (0.50-1.31)	0.77 (0.53-0.81)	0.75 (0.53-0.81)	1.13 (0.89-1.43)	1.07 (0.83-1.35)
	60-74 years	Reference		Reference		Reference	
	≥75 years	0.77 (0.39-1.50)	0.77 (0.38-1.54)	1.75 (1.31-2.35)	1.81 (1.34-2.44)	0.73 (0.41-0.97)	0.77 (0.50-1.17)
Education	No Formal Education	0.43 (0.17-1.12)	0.52 (0.18-1.52)	1.12 (0.55-2.30)	0.91 (0.44-1.85)	0.72 (0.34-1.13)	0.98 (0.53-1.83)
	Up to Primary	0.49 (0.17-1.42)	0.57 (0.19-1.71)	1.72 (0.78-3.37)	1.44 (0.79-2.98)	0.89 (0.47-1.71)	1.19 (0.72-2.31)
	Middle school to Higher Secondary yh& Diploma	0.75 (0.22-1.91)	0.72 (0.24-2.13)	0.87 (0.40-1.84)	0.84 (0.39-1.79)	0.88 (0.47-1.71)	0.99 (0.51-1.95)
	Graduation & Above	Reference		Reference		Reference	
Wealth Index	Most Deprived	Reference		Reference		Reference	
	2	0.47 (0.22-0.97)	0.45 (0.21-0.93)	0.97 (0.72-1.30)	0.94 (0.70-1.27)	1.58 (1.03-2.42)	1.50 (0.98-2.28)
	3	1.12 (0.70-2.01)	0.99 (0.52-1.87)	1.07 (0.78-1.47)	1.04 (0.77-1.44)	1.57 (1.07-2.32)	1.43 (0.97-2.12)
	4	0.91 (0.49-1.72)	0.82 (0.43-1.57)	0.93 (0.78-1.27)	0.92 (0.77-1.25)	1.85 (1.28-2.75)	1.71 (1.11-2.33)
	Most Affluent	1.57 (0.87-2.81)	1.20 (0.74-2.25)	1.17 (0.84-1.59)	1.15 (0.82-1.70)	2.18 (1.52-3.12	1.77 (1.22-2.57)
Tobacco	Abstainer	Reference		Reference		Reference	
	Smokeless	0.85 (0.47-1.53)	1.02 (0.57-1.87)	1.48 (1.18-1.87)	1.47 (1.15-1.85)	0.82 (0.70-1.13)	0.97 (0.70-1.34)
	Smoking	1.13 (0.47-2.74)	1.43 (0.57-3.54)	1.22 (0.83-1.78)	1.24 (0.84-1.84)	1.03 (0.77-1.71)	1.35 (0.87-2.12)
	Dual	0.43 (0.15-1.21)	0.55 (0.19-1.57)	3.45 (1.50-7.93)	3.35 (1.42-7.93)	1.18 (0.34-4.08)	1.59 (0.47-5.54)
Alcohol	Yes	0.92 (0.31-2.72)	1.09 (0.35-3.38)	0.77 (0.45-1.31)	0.78 (0.39-1.19)	0.71 (0.37-1.39)	0.88 (0.45-1.74)
	No	Reference		Reference		Reference	
BMI	Obese	1.54 (1.00-2.39)	1.37 (0.82-2.27)	0.95 (0.77-1.17)	1.07 (0.87-1.31)	2.17 (1.72-2.73)	1.98 (1.53-2.55)
	Not Obese	Reference		Reference		Reference	

DISCUSSION

Men begin experiencing a variety of chronic diseases in their midlife (about 45 years old) that may be related to aging. While incontinence and kidney stones were more common in men, chronic renal failure was less common among them. Participants who were 60 to 74 years old, urban inhabitants, most educated, and/or most wealthy were more likely to have chronic renal failure. Age, smokeless tobacco use, and dual tobacco use were all found to be strongly linked with incontinence. We found a strong correlation between obesity and kidney stones in the most affluent group.[12,13]

According to the results of a comparable study utilizing nationally representative data from India, the prevalence of chronic renal failure was 0.82%. Our findings concur with those of a Delhi research, which found that among persons aged 16 and older, the prevalence of chronic renal failure was approximately 0.78 percent.[14,15] We found that persons aged 60 to 74 years had a higher prevalence of chronic renal failure, which may be related to its relationship with a number of other chronic illnesses such diabetes and hypertension, which are frequently seen at this age.[16] According to evidence, the prevalence of many chronic diseases rises with age,[17] and due to physiological processes and the effects of polypharmacy on the kidney, this condition may progress to chronic renal failure. Additionally, the incidence of multimorbidity in India is increasing, as shown by a community-based study, which found that among persons aged 60 and older, the prevalence of multimorbidity was around 51.1%.[18] This will raise the risk of chronic renal failure. Patient-centered care is necessary to reduce this. Furthermore, chronic diseases are influenced

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by social determinants of health, as seen in the current study where chronic renal failure is more common among urban inhabitants and the most educated and wealthy group.[19,20]

In contrast to our findings, a facility-based investigation indicated that the prevalence of incontinence was 27% among men in West Bengal who were 50 years of age or older. The recall bias in our self-reported community-based data, whereas in the case of facility-based studies, prescriptions can also be cross-verified, is most likely the cause of the disparity in prevalence. Our results, however, conflict with those of a community-based research of men aged 60 and older, which found that urine incontinence was prevalent in both urban and rural populations at rates of between 16% and 23%. Despite this, research indicates that males with urine incontinence have a lower quality of life. We found an association between incontinence and cigarette smoking, which is similar with research done among Indian males in facilities. Due to changes in vascular structure and an increase in collagen synthesis, tobacco use may harm the urethral sphincter.[21,22,23,24]

However, a review that included India reported that the frequency of kidney stones ranged from 0.5% to 0.75%, which is lower than the results of our study. The prevalence of kidney stones was determined to be 3.0%. Contrary to the results of an Iranian investigation, we found that kidney stones were substantially more common in the most affluent group. The socioeconomic differences between the two countries may be a likely cause of this. In addition, many eating practices in India have also been connected to kidney stones. According to our findings, obesity increases the incidence of kidney stones, which is consistent with earlier research that suggested a link between the two.[25,26,27,28]

Policy and Practice Ramifications

The current study indicates that there is a significant demand for continuum of care due to the high prevalence of genitourinary disorders. Health and Wellness Centers (HWCs) can serve as a window of opportunity for equitable, timely care while sustaining the cascade of care needs in this situation. (28). Targeting particular risk factors like obesity requires ongoing encouragement to start exercising. Frontline staff or community health officers who check the at-risk population for non-communicable diseases could carry out this task.

Strengths and Weaknesses

Our findings have a stronger generalizability because we extrapolated them using a nationally representative population. However, the use of self-reported circumstances, which can result in recollection bias, limits our study. This may also cast doubt on the precise population prevalence. Furthermore, because this study is based on cross-sectional data, causality cannot be proven.

CONCLUSION

It is impossible to ignore the significant prevalence of chronic genitourinary diseases we found among males who are becoming older. The recently established Health and Wellness Centers (HWCs) present an opening for equitable and timely care that has to be strengthened.

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