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Prevalence and determinants of chronic genitourinary conditions among older women in India: Findings from LASI, Wave-1

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ABSTRACT

Introduction: Women have a higher life expectancy than men. However, this does not guarantees a healthy life as women are often disadvantaged section of society. Additionally, women develop a series of natural physiological changes during midlife accompanied with chronic conditions including genitourinary conditions. We aimed to estimate the prevalence and determine the correlates of chronic renal failure, incontinence and kidney stones among women aged ≥ 45 years in India.

Methods: We employed data from the first wave of Longitudinal Ageing Study in India (LASI) wave-1, 2017-2018. A sample of 32,097 women aged ≥ 45 years was included. Descriptive statistics were used to report prevalence along with 95% confidence interval as a measure of uncertainty. Separate multivariable regression analysis was conducted to assess the association between various socio-demographic and behavioral correlates with the outcome i.e. chronic renal failure, incontinence and kidney stones.

Results: The overall prevalence of chronic renal failure was 0.53% (95% CI: 0.45-0.62), incontinence was 2.9% (95% CI: 2.72-3.09) and 2.28% (95% CI: 2.11-2.45). The multivariable regression analysis showed participants aged ≥ 75 years had a higher odds [AOR: 1.81 (95% CI: 1.34-2.44)] of having incontinence. Kidney stone were significantly akin [AOR: 1.98 (95% CI: 1.53-2.55)] among participants having obesity.

Conclusion: We observed a considerable prevalence of chronic genitourinary conditions among ageing women which cannot be overlooked. The newly formed Health and Wellness Centers (HWCs) can be a window of opportunity for egalitarian and responsive timely care which needs to be further strengthened.

Key words: Chronic genitourinary conditions, Women, India, Ageing, Chronic renal failure, Incontinence, Kidney stones

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INTRODUCTION

Ageing is often associated with inferior patient reported health outcomes, frequent navigation to healthcare facilities and complex care needs [1]. Women have a higher life expectancy than men [2]. However, this does not guarantees a healthy life as women are often disadvantaged section of society due to prevailing cultural and societal norms [3]. Additionally, women are at a higher risk of developing early onset chronic conditions than men [3]. Women often develop a series of natural physiological changes during midlife accompanied with chronic conditions including genitourinary conditions. The genitourinary disorders comprise of a group of disorders characterized by a host of symptoms, decreased renal output, incontinence, and urolithiasis [4]. These conditions may be fatal, especially among women. Hormones of women are Reno protective; however, with an increase in age, lower estrogen levels may lead to genitourinary conditions [5]. Chronic renal failure, incontinence and kidney stones are the three major issues of all genitourinary condition.

Chronic renal failure, especially denotes to the last stage of chronic kidney disease in which the eGFRis reduced to 15ml/min/1.73 m2, irrespective of the cause [6,7]. This condition is often rooted with high morbidity and fatality rate. Micturition is a voluntary process, comprising of complex coordination of bladder, urethra, supporting tissues, and muscles. Any disruption in the process can lead to urinary incontinence (UI). Urinary incontinence is a multifactorial syndrome described as any unintentional urine leaking and is of paramount relevance among ageing women. Globally, more than 200 million people live with incontinence [8]. It is most commonly observed in women as they have to go through complex physiological changes like child birth, menstruation, and hormonal changes around menopausal transition [9]. UI is rarely acknowledged by patients, especially in old age as it is considered to be a natural result of ageing and also is often associated with stigma and shame [10]. This often leads to lowered self-confidence and social isolation, as well as psychological outcomes such as anxiety, depression, deterioration in sexual life, and a decrease in physical activity [11]. Kidney stones are painful urologic disorders often correlated with genetic predisposition and dietary habits including diets rich in animal proteins, refined sugar and oxalate rich food [12]. Additionally, it can be caused due to excess of vitamin D and gout. It can lead to low urinary volume, hyperoxaluria, hypercalciuria and hyperuricosuria along with severe pain in abdomen and lower back [12].

As the age increase, the risk of having renal disorders also increases. However, the factors influencing the prevalence are multifaceted which needs to be explored further. Additionally, gender influences the health outcomes especially in low-and middle-income countries such as India where women's health remains limited to sexual and reproductive age. The existing programs such as Reproductive, Maternal, Neonatal, Child and Adolescent Health (RMNCH+A) focus on the needs of reproductive aged women however, the health of women beyond this remains neglected necessitating a need to generate evidence on the same. Hence, this study was conducted to estimate the prevalence and determine the correlates of chronic renal failure, incontinence and kidney stones among women aged ≥45 years in India.

METHODS

Overview of data

A community based cross-sectional analysis was conducted based on the data from first wave of Longitudinal Ageing Study in India (LASI), 2017-2018. LASI, wave-1 is a biennial longitudinal survey among older adults aged 45 years and above undertook as a joint venture by International Institute of Population Sciences (IIPS), Harvard T. H. Chan School of Public Health (HSPH) and the University of Southern California (USC). The data were collated from all 26 states and 6 Union Territory of India except Sikkim. A multistage stratified area probability cluster sampling design was adopted to reach the nationally representative sample of 72,250 participants. To reach the primary sampling unit, a three stage sampling design was adopted in rural areas and four stages in urban areas. Three survey questionnaire i.e. community, household and individual were administered to each of the LASI eligible households (LEH). LASI survey received an individual response rate of 87.3%. The detailed description is provided elsewhere [13].

Study participants and sample size

For the present study, we merged two datasets namely: individual dataset (n=72,250) with biomarkers (n=65900). Following this total of (n=65900) participants were left whose complete data were available after excluding missing data. Next, following our objective we included females aged 45 years and above after dropping males and participants aged 44 years or less. We reached a final sample size of n=32,097 women aged ≥ 45 years.

Variables

Independent variables

We included age categorized as 45-59 years, 60-74 years and ≥75 years based on the reported age in years. Residence was taken as currently living in rural or urban areas; caste was classified as scheduled caste, scheduled tribes, other backward class, and others. We used two separate questions to assess the educational status of the participants, first 'Have you ever attended school?' with responses as yes or no, those who responded 'no' were grouped as having 'no formal education'. Then, participants reporting 'yes' were further inquired 'what is the highest level of education that you completed?' based on which three categories were formed 'up to primary' by merging education from standard 1-4 and standard 5-7; middle, secondary/matriculation, higher secondary and diploma holders were grouped together followed by the last category in which graduates, post-graduates and professional degree holders were grouped. Occupation was also assessed based on two questions from individual survey schedule of LASI. First, participants were asked if they have ever worked for at least 3 months during their lifetime, those who responded 'no' were grouped as never worked. Next, based on the question 'are you currently working?' individuals were grouped as 'currently working' and 'currently not working'. Wealth index was grouped as most deprived, 2, 3, 4 and most affluent based on monthly per capita expenditure.

Tobacco consumption was assessed through the question 'have you ever smoked tobacco or used smokeless tobacco?'. The participants who responded 'no' were categorized as abstainers. Next, those said 'yes' to the above question were inquired 'what type of tobacco product have you ever consumed?' with options as 'smoke tobacco' classified as 'smoking'; 'smokeless tobacco' grouped as 'smokeless tobacco' and 'both

smoke and smokeless' grouped as 'dual use'. Alcohol consumption was assessed through the question 'have you ever consumed any alcoholic beverages such as beer, wine, liquor, country liquor etc.?' with responses as 'yes' or 'no'. Body Mass Index (BMI) was calculated using the formula weight in Kg/height in m2 and classified as obese if the BMI ≥25 as given for South Asian population [14].

Outcome variables

The main outcome variables of interest were genitourinary conditions among women. Self-reported conditions based on the question 'have you ever been diagnosed with any of the following urogenital conditions or diseases?' were taken into account. The three reported conditions were chronic renal failure, incontinence and kidney stones.

Statistical analysis

We used STATA statistical software version 17.0 (Stata Corp, College Station, TX, US) for performing analysis. Descriptive statistics such as frequency and percentage were used to describe the prevalence of chronic conditions across various socio-demographic characteristics. Separate multivariable logistic regression models were executed to assess the association between outcome variables and various socio-demographic attributes. Survey weights were considered to perform all weighted analysis. We reported 95% confidence interval for all weighted proportions as a measure of uncertainty.

Ethical considerations

The present study is based on anonymous data available in public domain. However, original LASI survey received ethics clearance from Indian Council of Medical Research (ICMR), New Delhi and IIPS, Mumbai. A prior written informed consent was administered to all the participants.

RESULTS

The mean age of participants was 59.24±10.45 years. Most of the participants (53.8%) were 45-59 years of age, belonged to rural areas (64.8%) and had no formal education (60.8%). Obesity was observed among 33.8% of the participants. The overall prevalence of chronic renal failure was 0.53% (95% CI: 0.45-0.62), incontinence was 2.9% (95% CI: 2.72-3.09) and the prevalence of kidney stones was 2.28% (95% CI: 2.11-2.45).

We observed a higher (0.58%) prevalence of chronic renal failure among participants aged 60-74 years than other age groups. Urban residents had a higher prevalence of chronic renal failure than their rural counterparts. The highest (1.10%) prevalence of chronic renal failure was observed among individuals with highest level of education. The most affluent group had a higher prevalence of chronic renal failure (Table 1).

Incontinence was more prevalent among participants aged ≥75 years. Rural residents had a higher prevalence (2.95%) of incontinence than urban residents. Participants who did not work currently had a higher prevalence (3.23%) of incontinence. Smokeless tobacco users had the highest prevalence of incontinence than those who used other forms of tobacco. The prevalence of incontinence was higher (2.94%) among obese individuals (Table 1).

We observed kidney stones to be highly prevalent among participants aged 45-59 years. Urban residents had a higher prevalence (2.60%) of kidney stones than their rural counterparts. Kidney stones were more prevalent (3.06%) among the most affluent groups. Dual tobacco users had a higher prevalence (2.77%) of kidney stones (Table 1).

The bivariate analysis showed BMI to be significantly associated [OR: 1.54 (95% CI: 1.00-2.39)] with 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). Further, the bivariate analysis showed incontinence to be associated with participants aged ≥75 years [OR:

Table 1: Prevalence of genitourinary conditions across various socio-demographic characteristics of the study population.

Socio-demographic Characteristics		Chronic Renal Failure	Incontinence	Kidney Stones
Age	45-59 years	85, 0.51 (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)

Table 2: Association between genitourinary 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 (0.56-1.37)	0.81 (0.50-1.31)	0.66 (0.53-0.81)	0.65 (0.53-0.81)	1.13 (0.89-1.43)	1.06 (0.83-1.35)
	60-74 years	Reference		Reference		Reference	
	≥75 years	0.76 (0.39-1.50)	0.76 (0.38-1.54)	1.75 (1.31-2.35)	1.81 (1.34-2.44)	0.63 (0.41-0.97)	0.76 (0.50-1.16)
Education	No Formal Education	0.43 (0.16-1.12)	0.52 (0.18-1.52)	1.12 (0.55-2.30)	0.91 (0.44-1.85)	0.62 (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)	1.62 (0.78-3.36)	1.44 (0.69-2.98)	0.89 (0.47-1.71)	1.19 (0.62-2.31)
	Middle school to Higher Secondary & Diploma	0.65 (0.22-1.91)	0.72 (0.24-2.13)	0.86 (0.40-1.84)	0.84 (0.39-1.79)	0.88 (0.46-1.71)	0.99 (0.51-1.95)
	Graduation & Above	Reference		Reference		Reference	
Wealth Index	Most Deprived	Reference		Reference		Reference	
	2	0.46 (0.22-0.96)	0.45 (0.21-0.93)	0.97 (0.72-1.30)	0.94 (0.70-1.26)	1.58 (1.03-2.42)	1.50 (0.98-2.28)
	3	1.12 (0.60-2.01)	0.99 (0.52-1.87)	1.07 (0.78-1.47)	1.04 (0.76-1.44)	1.57 (1.07-2.32)	1.43 (0.96-2.12)
	4	0.91 (0.49-1.72)	0.82 (0.43-1.56)	0.93 (0.68-1.26)	0.92 (0.67-1.25)	1.85 (1.28-2.65)	1.61 (1.11-2.33)
	Most Affluent	1.56 (0.87-2.81)	1.20 (0.64-2.25)	1.16 (0.84-1.59)	1.15 (0.82-1.60)	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 (0.56-1.86)	1.48 (1.18-1.86)	1.46 (1.15-1.85)	0.82 (0.60-1.13)	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 (0.66-1.61)	1.35 (0.86-2.12)
	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 (0.46-5.54)
Alcohol	Yes	0.92 (0.31-2.72)	1.09 (0.35-3.38)	0.77 (0.45-1.31)	0.68 (0.39-1.19)	0.71 (0.36-1.39)	0.88 (0.45-1.74)
	No	Reference		Reference		Reference	
BMI	Obese	1.54 (1.00-2.39)	1.37 (0.82-2.26)	0.95 (0.77-1.17)	1.06 (0.86-1.31)	2.17 (1.72-2.73)	1.98 (1.53-2.55)
	Not Obese	Reference		Reference		Reference	

1.75 (95% CI: 1.31-2.35)], smokeless tobacco users [OR: 1.48 (95% CI: 1.18-1.86)] and dual tobacco users [OR: 3.45 (95% CI: 1.50-7.93)]. The multivariable regression analysis showed participants aged ≥75 years had a higher odds [AOR: 1.81 (95% CI: 1.34-2.44)] of having incontinence. The likelihood of having incontinence was higher among smokeless tobacco users [AOR: 1.46 (95% CI: 1.15-1.85)] and dual tobacco users [AOR: 3.35 (95% CI: 1.42-7.93)]. The third regression model was executed for kidney stones. The bivariate analysis showed kidney stones to be significantly associated with wealth index and obesity. The multivariable regression analysis revealed most affluent group had a higher chance [AOR: 1.77 (95% CI: 1.22-2.57)] of having kidney stones. Kidney stone were significantly akin [AOR: 1.98 (95% CI: 1.53-2.55)] among participants having obesity.

DISCUSSION

Women at midlife (around 45 years of age) start developing various chronic conditions which could be attributed to their hormonal transition [3]. We observed chronic renal failure to be less prevalent whereas incontinence and kidney stones had a higher prevalence among women. Chronic renal failure was higher among participants aged 60-74 years, urban residents, most educated and the most affluent group. Incontinence was found to be significantly associated with higher age, smokeless and dual tobacco use. We observed kidney stones to be significantly associated with the most affluent group and obesity.

The prevalence of chronic renal failure was 0.53% which is consistent with the findings of a similar study conducted using a nationally representative data from India [15]. Our findings are also similar to the results of a study conducted in Delhi which reported the prevalence of chronic renal failure to be around 0.78% among adults aged 16 years and above [16]. We observed chronic renal failure to be more prevalent among adults aged 60-74 years which could probably be due to its association with various other chronic conditions such as hypertension and diabetes which are commonly observed around

this age. Evidence suggests multiple chronic illnesses increase with an increasing age [17] which may further lead to chronic renal failure due to the physiological processes and the effects of polypharmacy on kidney. Additionally, the rise in the prevalence of multimorbidity in India as evident by a community based study which observed the prevalence of multimorbidity to be around 51.1% among adults aged 60 years and above; will further increase the risk of chronic renal failure [18]. To mitigate this, patient centered care is required. Moreover, social determinants of health also have an influence on chronic diseases which is observed in the present study as chronic renal failure is more prevalent among urban residents, most educated and the most affluent group [19].

We found the prevalence of incontinence to be around 2.9% whereas a facility based study reported the prevalence of incontinence to be 27% among women aged 50 years and above residing in West Bengal [20]. A probable reason for the difference in the prevalence could be due to recall bias in our self-reported community based data whereas in case of facility based study, prescriptions can also be cross verified. However, our findings are on the contrary with the results of a community based study conducted among women aged 60 years and above who reported the prevalence of urinary incontinence to be around 16% and 23% among urban and rural residents [21]. Nonetheless, evidence suggests urinary incontinence deteriorates the quality of life among women [22]. We observed incontinence to be associated with tobacco use which is consistent with the findings of a facility based study conducted among Indian women [23]. Tobacco may damage urethral sphincter due to increase in collagen synthesis and vascular changes. The prevalence of kidney stones was found to be 2.28% however; a review including India showed the prevalenece of renal stones to range from 0.5% to 0.75% which is lower than the findings of our study [24]. We observed kidney stones to be significantly associated with the most affluent group which is in contrast to the findings of a study conducted in Iran [25]. A probable reason for this could be the socio-economic difference between the two countries. Furthermore, diverse food habits in India have also been linked to kidney stones [26].

We observed obesity to be associated with higher risk of having kidney stones which is consistent with the previous evidence suggesting the association between two [27].

Implications for policy and practice

The present study shows a considerable prevalence of genitourinary conditions pointing towards a need for continuum of care. Here, Health and Wellness Centers (HWCs) can act as a window of opportunity for providing egalitarian and responsive timely care whilst maintaining the cascade of care needs. Additionally, females are often vulnerable and do not have much say in the decision making it will be easier for them to seek care in the vicinity of their residence. Furthermore, the findings suggest a need for tobacco cessation among the women which could be achieved through culturally and linguistically tailored gender specific messages for behavioral change communication [28]. Certain risk factors such as obesity need to be targeted through continuous motivation for taking up physical activities. This could be done by frontline workers or Community Health Officers who screen the at-risk population for non-communicable diseases.

Strengths and limitations

We used a nationally representative sample to extrapolate our findings which has a higher generalizability. However, our study is limited by the use of self-reported conditions which can lead to recall bias. Additionally, this can also undermine the exact population prevalence. Moreover, this study is based on a cross-sectional data and hence, causality cannot be established.

CONCLUSION

We observed a considerable prevalence of chronic genitourinary conditions among ageing women which cannot be overlooked. The newly formed Health and Wellness Centres (HWCs) can be a window of opportunity for egalitarian and responsive timey care which needs to be further strengthened.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable. The present study utilizes de-identified data from a secondary source. The data has been archived in the public repository of LASI held at IIPS. The access to the data requires registration which is granted specifically for legitimate research purposes. LASI received mandatory ethical approval from the Indian Council of Medical Research and Institutional Review Board (IRB) held at IIPS, Mumbai. At the unit level, individuals were supplied with a catalogue containing the information on the purpose of the survey, confidentiality, and safety of health assessment. Written consent forms were administered at household and individual levels, in accordance with the Human Subject Protection. LASI data is archived in a public repository; therefore, there is no need for additional ethical approval to conduct the present study.

AVAILABILITY OF DATA AND MATERIALS

The dataset analysed during the current study is available in the LASI data repository held at ICT, IIPS (https://iipsindia.ac.in/content/lasi-wave-i).

COMPETING INTERESTS

The authors declare that they have no competing interests.

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AUTHORS CONTRIBUTIONS

Concept and design: Acquisition, statistical analysis, or interpretation of data.

Drafting of the manuscript: Monitored analysis and critical revision of the manuscript for important intellectual content.

Administrative and technical support, Supervision: All authors reviewed the manuscript.

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REFERENCES

1. Hofer SM, Sliwinski MJ. Understanding ageing. Gerontology. 2001; 47:341-352.
2. https://www.who.int/data/gho/data/indicators/indicator-details/GHO/life-expectancy-at-birth-(years)
3. Puri P, Sinha A, Mahapatra P, Pati S. Multimorbidity among midlife women in India: Well-being beyond reproductive age. BMC womens Health 2022; 22:1-5.
4. Brady SS, Bavendam TG, Bradway CK, et al. Noncancerous genitourinary conditions as a public health priority: Conceptualizing the hidden burden. Urology 2021.
5. Lima-Posada I, Bobadilla NA. Understanding the opposite effects of sex hormones in mediating renal injury. Nephrology 2021; 26:217-226.
6. Ojo AO, Held PJ, Port FK, et al. Chronic renal failure after transplantation of a nonrenal organ. New Eng J Med 2003; 349:931-940.
7. Luke RG. Chronic renal failure: A vasculopathic state. New Eng J Med 1998; 339:841-843.
8. Fricke A, Lark SD, Fink PW, et al. Exercise interventions to improve pelvic floor muscle functioning in older women with urinary incontinence: A systematic review. J Womens Health Phys Therap 2021; 45:115-125.
9. Norton P, Brubaker L. Urinary incontinence in women. Lancet 2006; 367:57-67.
10. Elenskaia K, Haidvogel K, Heidinger C, et al. The greatest taboo: Urinary incontinence as a source of shame and embarrassment. Wiener Klinische Wochenschrift 2011; 123:607-610.
11. Farage MA, Miller KW, Berardesca E, et al. Psychosocial and societal burden of incontinence in the aged population: A review. Arch Gynecol Obstetr 2008; 277:285-290.
12. Saranya R, Taranom FA, Durai MF. Prevalence of kidney stones among the respondents of Vaniyambadi Taluk, Vellore District, Tamil Nadu, India. J Academia Ind Res 2017; 6:120-122.
13. https://www.iipsindia.ac.in/lasi
14. Dhawan D, Sharma S. Abdominal obesity, adipokines and non-communicable diseases. J Steroid Biochem Mol Biol 2020; 203:105737.
15. Kanungo S, Ghosal S, Kerketta S, et al. Association of oral health with multimorbidity among older adults: Findings from the longitudinal ageing study in India, wave-1, 2017–2019. Int J Environ Res Public Health 2021; 18:12853.
16. Agarwal SK, Dash SC, Irshad M, et al. Prevalence of chronic renal failure in adults in Delhi, India. Nephrol Dial Transplant 2005; 20:1638-1642.
17. Sinha A, Kerketta S, Ghosal S, et al. Multimorbidity among urban poor in India: Findings from LASI, wave-1. Front Public Health 2022; 10:881967.
18. Barik M, Panda SN, Tripathy SS, et al. Is multimorbidity associated with higher risk of falls among older adults in India?. BMC Geriatr 2022; 22:1-8.
19. https://apps.who.int/iris/bitstream/handle/10665/43943/9789241563703_eng.pdf
20. Biswas B, Bhattacharyya A, Dasgupta A, et al. Urinary incontinence, its risk factors, and quality of life: A study among women aged 50 years and above in a rural health facility of West Bengal. J Midlife Health 2017; 8:130.
21. Shahar S, Lau H, Puteh SE, et al. Health, access and nutritional issues among low-income population in Malaysia: Introductory note. BMC Public Health 2019; 19:1-5.
22. Agarwal BK, Agarwal N. Urinary incontinence: Prevalence, risk factors, impact on quality of life and treatment seeking behaviour among middle aged women. Int Surg J 2017; 4:1953-1958.
23. Singh U, Agarwal P, Verma ML, et al. Prevalence and risk factors of urinary incontinence in Indian women: A hospital-based survey. Indian J Urol 2013; 29:31.
24. Trinchieri A, Montanari E. Prevalence of renal uric acid stones in the adult. Urolithiasis 2017; 45:553-562.
25. Khalili P, Jamali Z, Sadeghi T, et al. Risk factors of kidney stone disease: A cross-sectional study in the southeast of Iran. BMC Urol 2021; 21:1-8.
26. Guha M, Banerjee H, Mitra P, et al. The demographic diversity of food intake and prevalence of kidney stone diseases in the Indian Continent. Foods 2019; 8:37.
27. Meschi T, Nouvenne A, Ticinesi A, et al. Dietary habits in women with recurrent idiopathic calcium nephrolithiasis. J Translational Med 2012; 10:1-8
28. Ghosal S, Sinha A, Kanungo S, et al. Declining trends in smokeless tobacco use among Indian women: findings from global adult tobacco survey I and II. BMC Public Health 2021; 21:1.