

Impact of Age and Gender in Kidney Disorder

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CERTIFICATE

This is to certify that project work entitled “**Impact of Age and Gender in Kidney Disorder**” done by Mr Rabshan submitted to Department of Pharmacy, is a bonafide research work done by Mr Rabshan under the supervision and guidance of Dr Ashok Kumar Gupta, Professor, School of Medical and Allied Sciences, Greater Noida. The work is completed and ready for evaluation in partial fulfillment for the award of Bachelor of Pharmacy during the academic year 2021-2022. The project report has not formed the basis for the award of any Degree/Diploma/Fellowship or other similar title to any candidate of any University.

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BONAFIDE CERTIFICATE

This to certify that the project work entitled “**Impact of Age and Gender in Kidney Disorder**” is the bonafide research work done by Mr Rabshan who carried out the research work under my supervision and guidance for the award of Bachelor of Pharmacy under Galgotias University, Greater Noida during the academic year 2021-2022. To the best of my knowledge the work reported herein is not submitted for award of any other degree or diploma of any other Institute or University.

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DECLARATION

I hereby declare that the work embodied in this project report entitled “**Impact of Age and Gender in Kidney Disorder**” in Partial fulfillment of the requirements for the award of Bachelor of Pharmacy, is a record of original and independent research work done by me during the academic year 2021-22 under the supervision and guidance of Dr. Ashok Kumar Gupta, Professor, School of Medical and Allied Sciences, Galgotias University, Greater Noida. I have not submitted this project for award of any other degree or diploma of any other Institute or University.

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Impact of Age and Gender in Kidney Disorder

Abstract

Over 850 million people worldwide suffer from kidney disease in which Indian population suffering is over 7.8 million. High blood pressure and diabetes are two of the most prevalent causes. Women are less likely than men to receive a kidney transplant, but more likely to donate one. Kidney transplantation remains the best treatment option for all people with renal failure. Biological variances can cause differences in illness epidemiology, manifestation, and consequences. Gender differences, which are societal characteristics of masculinity and femininity, can cause discrepancies. Men and women may be treated differently or cope with their sickness differently, maybe due to cultural and societal behavioural expectations. Men and women have behavioural and biological variations that can contribute to variances in illness prevalence, progression rates, and treatment results, and this awareness could lead to the discovery of novel disease processes or better therapeutic options. Renal diseases can cause a variety of issues, including fluid retention, which can cause swelling in the legs and arms, high blood pressure, and fluid in the lungs diabetes, a family medical history of kidney disorder, and African-American ancestry are the most common risk factors. When kidney disease is in its early stages, it seldom causes symptoms. Because the body can generally manage with a large decline in kidney function, this is the case. When a regular test for another issue, including a urine and blood test, reveals a suspected problem, kidney disease is typically only detected at this time. If it's discovered early on, treatment and frequent tests to check it may be able to prevent it from progressing. This article explains variations in symptoms, risk factor and complications of renal disorder according to impact of gender and age of the population

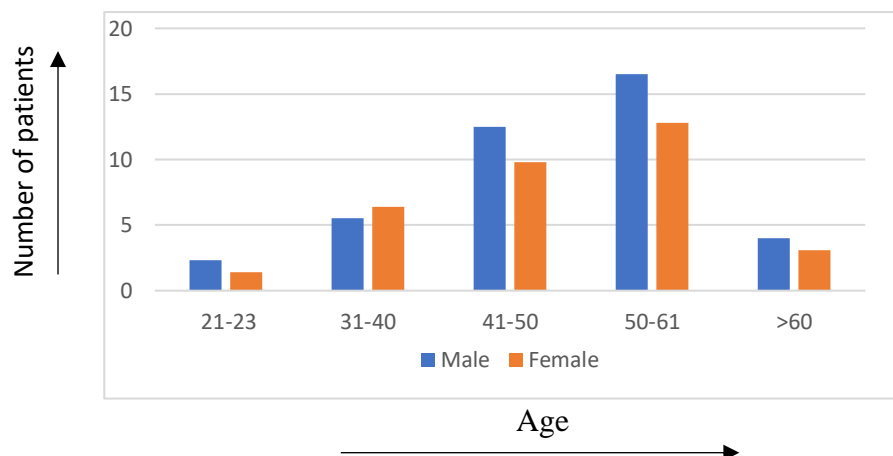
Keywords: Kidney disorder, risk factor, CVD, diabetes, hypertension, gender, elderly adult, women, UTI, creatine level, variation, health, transplant

Introduction

Kidneys are necessary for a healthy body, they are mostly in charge of removing waste products, extra fluid, and other contaminants from the bloodstream. Toxins are accumulated in the bladder and subsequently eliminated by urine. The kidneys also control the body's pH, salt, and potassium levels. They generate hormones that govern red blood cell formation and control blood pressure. Even a type of vitamin D that aids calcium absorption is activated by the kidneys [1]. Kidney condition affects over 850 million persons in the world [2]. It occurs if our kidneys get damaged and unable to operate properly. Diabetes, hypertension, and a variety of other chronic (long-term) illnesses can all cause damage [3]. Kidney illness can result in brittle bones, neurological damage, and starvation, among other issues. kidneys could stop functioning altogether if the condition progresses [4]. This signifies that haemodialysis will be necessary to carry out the kidney's function. Dialysis is a therapy that employs a machine to filter and cleanse the blood. It does not cure kidney disease, but it can help you live a longer life [5].

Many medical fields are becoming aware that illnesses affect men and women differently and also differ in term of age. Biological variances can cause differences in illness epidemiology, manifestation, and consequences. Gender differences, which are societal characteristics of masculinity and femininity, can cause discrepancies [6]. Men and women may be treated differently or cope with their sickness differently, maybe due to cultural and societal behavioural expectations. Men and women have behavioural and biological variations that can contribute to variances in illness prevalence, progression rates, and treatment results, and this awareness could lead to the discovery of novel disease processes or better therapeutic options [7].

Fig. 1: Age and gender wise distribution of CKD



Impact of age and gender in kidney disorders were reported (Fig. 1) as the analysis result of evaluation of 70 patients that were chosen randomly [8]. Potential antifibrotic as well as antiapoptotic actions of oestrogen, as well as proinflammatory detrimental effects of testosterone, may impact gender variations in kidney disease progression rates. Women, regardless of ethnicity, are referred for kidney maintenance therapy later and take fewer arteriovenous hernias than males. Women, on the other hand, are less likely than males to undergo kidney transplants, but are much more likely to give a kidney [9].

The quantity of renal tissue and kidney function reduces as people age, the number of filtering units (nephrons) decreases, and the blood arteries feeding the kidneys might become hardened. As a result of this kidneys filter blood more slowly and many kidney and bladder problems arise, such as bladder difficulties, leakage as well as urinary incontinence (being not capable of holding your urine) and urinary retention (being not capable to completely unload your bladder), other UTIs, and chronic kidney diseases, are all more common as people get older [10,11]. Chronic renal disease is the most frequent type of kidney disease. It's a chronic ailment that doesn't go better with time. High blood pressure is a common reason [12]. Another common kidney ailment is kidney stones. They become solid masses when ions and other chemicals in the blood crystallise in the kidneys [13]. Glomerulonephritis is a condition in which the glomeruli become inflamed [14]. Polycystic infection is a hereditary illness in which the kidneys develop multiple cysts (tiny sacs of fluid) [15]. Urinary tract infection (UTI) is known as common pathogens infections of the urinary tract in any portion of the body and complications of these all disease depends on age and gender [16]. Risk factors, sign and symptoms, medication and treatment all varies according to age and gender of the patient.

Common renal complications

Renal diseases can cause a variety of issues, including fluid retention, which can cause swelling in the legs and arms, high blood pressure, and fluid in the lungs (pulmonary edema) Hyperkalaemia is a rapid increase in potassium blood levels that can compromise heart function and be life-threatening [17,19]. Symptoms of kidney disease appear gradually and

are not unique to the disease. Some patients are asymptomatic and are identified by a blood test. Medications aid in the management of symptoms but when it

goes worse several disorders arise and filtering the bloodstream with a device (dialysis) or even a transplant could be necessary at a later stage [20].

Chronic kidney disease: Chronic renal disease is the most common type of kidney disease. CKD is a chronic condition that does not improve. High blood pressure is a common reason. Hypertension can put too much strain on the glomeruli in the kidneys, causing them to fail. Glomeruli are tiny blood vessels that cleanse the blood in the kidneys. Over time, the increased pressure damages these vessels, leading kidney function to decrease. Kidney function will deteriorate over time to the point where the kidneys would be unable to function properly. Dialysis would be required in this situation. Dialysis eliminates waste and extra fluid from the circulation. Dialysis is a therapy for kidney disease, not a cure. A kidney transplant may be an option, depending on circumstances [21, 22].

Diabetic nephropathy is a common complication of diabetes. Diabetes is a set of illnesses characterised by elevated blood sugar levels. Over time, the elevated sugar level in the blood destroys the capillaries in the kidneys. This shows that now the kidneys will be unable to clear the blood properly. When body is overburdened with pollutants, kidney failure can ensue [23].

Kidney stones: Another frequent type ailment is kidney stones. They become solid masses when ions and other chemicals in the blood crystallise in the kidneys (stones). Kidney stones are normally passed through the body by urine. Kidney stones could be excruciatingly painful to pass, although they seldom cause serious complications [24].

Glomerulonephritis: Glomerulonephritis is an inflammatory disorder that affects the glomeruli. Glomeruli are tiny blood-filtering structures found inside the kidneys. Glomerulonephritis can be caused by infections, medicines, or congenital defects. It usually improves on its own [25].

Polycystic kidney disease: It is a hereditary illness in which cysts occur in the kidneys in large numbers. These cysts can induce renal failure by interfering with kidney function. Single kidney cysts are rather frequent and nearly invariably benign. Polycystic kidney failure, on either hand, is a distinct and potentially fatal condition [26].

Urinary tract infections: UTI is bacterial infection of the urinary tract that can affect any area of the body. Infections of the bladder as well as urethra are among the most common. They are easily curable and seldom result in additional health issues. These infections are able to spread throughout the kidneys and induce renal failure if left untreated [27].

Acute renal failure: ARF can affect the whole body, that creates a build-up with waste material in your blood, making it difficult for the kidneys to maintain the proper fluid balance in your body. Other organs, like the brain, lungs, and heart, can be affected by ARF [28].

Nephrogenic systemic fibrosis: It is an uncommon condition that affects patients who have severe renal failure and require dialysis or not. Skin illnesses including scleroderma and scleromyxedema can have thickening and darkening on vast portions of the skin, similar to nephrogenic systemic fibrosis [29].

Pulmonary edema: Excess extracellular fluid build-up owing to poor water and solute excretion is the most prevalent cause of pulmonary edema in renal failure, but it can also be caused by increased pulmonary capillary permeability, which is exacerbated by reduced plasma oncotic pressure [30,31].

Uremic pericarditis: Patients with a higher blood urea nitrogen concentration may develop uremic pericarditis. Chest discomfort, pericardial friction rub, pain intensifying while lying down, and ECG abnormalities might not be present. Any of these symptoms should raise the possibility of uremic pericarditis as a differential diagnosis. Pain treatment and inpatient admission are recommended if no symptoms of pericardial effusion are observed. In individuals who aren't currently on dialysis, uremic pericarditis is generally the trigger for starting dialysis [32].

Anaemia & Heart problems: kidneys generate fewer erythropoietin, that is a hormone that control bone marrow to manufacture red blood cells, when they are injured. Body produces less red blood cells when you have less EPO, and oxygen is transported to organs and tissues is reduced. Severe anaemia can raise the risk of cardiac problems in persons with CKD because the heart receives less oxygen than usual and has to work harder to pump adequate red blood cells towards organs and tissues. People with chronic kidney disease and anaemia may be more susceptible to stroke-related consequences [33].

Kidney disease complications in children

There are some specific conditions that affects the children suffering from kidney disorders, which are following:

Growth delay: Kidney illness causes a child's kidneys to stop filtering waste from the body in the same manner that fine kidneys do. Toxins and impurities can accumulate in the bloodstream, resulting in anaemia, hypertension, protein in the urine, and poor nutrition. These difficulties might obstruct the body's and brain's development and growth [34]. Kidney illness causes youngsters to grow and develop at a slower rate than their peers. Kidney disease causes youngsters to hit puberty 2 years later comparatively healthy children. For all persons with renal failure, including children, a kidney transplant remains the best therapy option. After a kidney transplant, a child's development may accelerate, which is known as catch-up growth [35].

Delay in development: kidney disease complications can interfere with a child's natural brain development [36]. Kidney disease in children can cause:

- Difficulty in focusing
- Difficulty in learning
- Difficulty in remembering what they've learned
- Learning to communicate and walk is more difficult
- Visual spatial awareness is poor (e.g., hand-eye coordination)

Other problems: Children with renal illness may also exhibit the following symptoms as compared to healthy children:

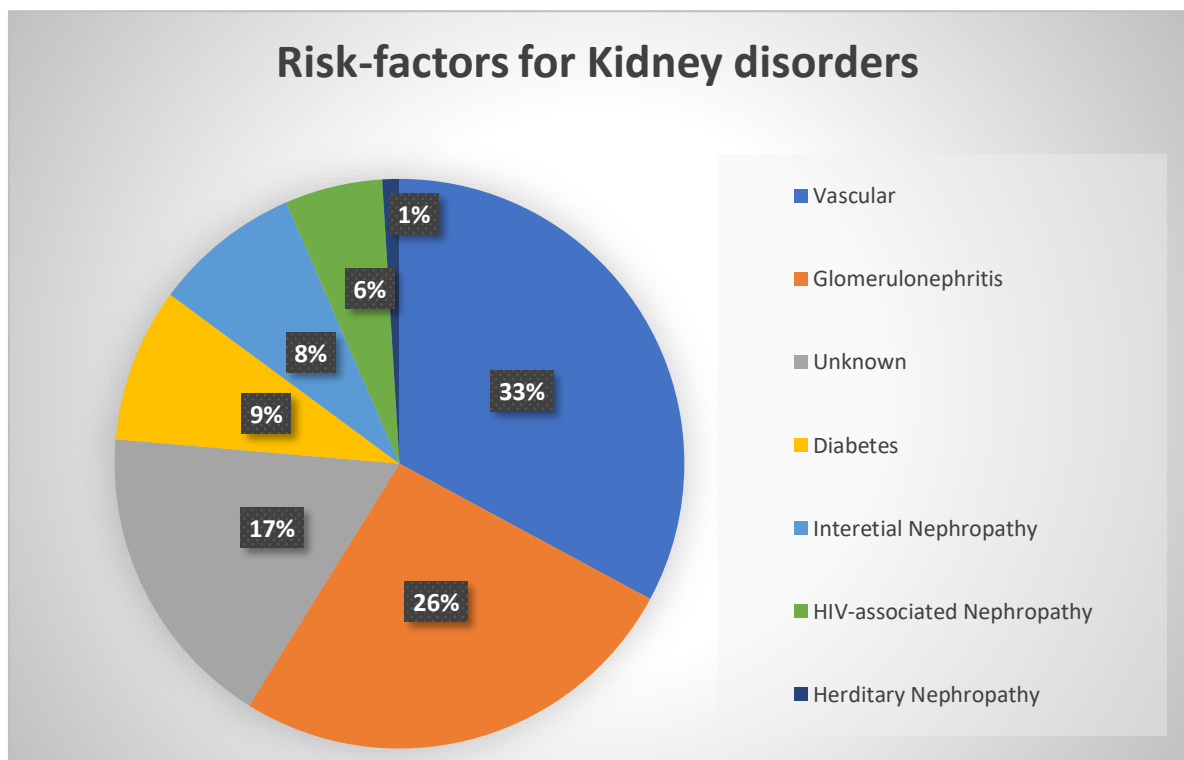
- Problems with behaviour [37]
- Emotional issues [37]
- Self-esteem problems [38]
- Damage to the nerves [39]
- Problems with sleep [40]
- Issues with bladder control [41]

Risk factors

There are several risk factors that can make you more likely to develop kidney disorders. Some of them cannot be alter, while others are alterable. Older age, low birthweight, overweight, smoking, hypertension, diabetes, a family medical history of kidney disorder, and African-American ancestry are the most common risk factors [42].

In following figure (Fig. 2) [42], some of the major threat of the kidney disorders has been shown that's indicate vascular disorders and glomerulonephritis are major contributor followed by diabetes and other risk factors as second lead in race.

Fig. 2: Risk-factors of kidney disorders



Diabetes: Diabetic nephropathy is indeed a common diabetes complication. Hyperglycaemia can damage blood vessel subsets in the kidneys, which filter waste from the blood, over time. This can damage the kidneys and raise blood pressure. High blood pressure can worsen kidney problems by increasing pressure in the kidneys' delicate filtering system [43]. Uncontrolled high blood sugar (hyperglycaemia), unregulated high blood pressure (hypertension), being a smoker, high blood cholesterol, obesity, or a history of

diabetes and kidney disease are all factors that increase risk of diabetic nephropathy if you have diabetes. Diabetes is more likely to develop as you get older. According to the CDC, 4.0 percent of people aged 18 to 44 have diabetes, 17 percent of those aged 45 to 64 have diabetes, and 25.2 percent of those over 65 have diabetes [44]. Men are nearly twice as likely as women to develop diabetes. Men store extra fat in their bellies, which is a recognized risk factor [43].

High blood pressure: High blood pressure causes blood vessels to constrict and narrow, causing damage and weakness all through the body, even in the kidneys. Blood flow is reduced as a result of the narrowing. If the blood vessels in the kidneys are affected, they may stop working properly. When this happens, the kidneys will be unable to clear all wastes and extra fluid from the body. Extra fluid in blood vessels could indeed raise blood pressure even higher, setting off a dangerous cycle that can lead to kidney failure [45]. Blood pressure typically rises with age. Although it can happen at any age, the risk of hypertension begins to rise around the age of 45. Hypertension was found to be more common in men (34.6 percent) than that in women (30.8 percent). Even so, after the age of 60, females were more likely than males to have hypertension [46].

Cardiovascular disease: CVD and kidney problems are closely linked, and disease in one organ causes dysfunction in the other, eventually resulting in both organs failing. Patients with ESRD are at a significantly higher risk of CVD-related mortality [47]. Traditional CVD risk factors, such as hypertension, hyperlipidaemia, and diabetes, do not contribute to the high heart disease risk in CKD patients, and normal medical interventions for managing CVD that work in the general population do not work in CKD patients. In terms of endothelial dysfunction, non-traditional aspects associated to disturbed ions and vitamin D biotransformation were able to have some explanation for the enhanced risk of CKD [48]. Cardiovascular disease, which includes heart, blood vessels, or both, is more common in those 65 and older than in younger persons. Modifications in the cardiovascular system arteries associated with ageing can raise a person's risk of cardiovascular disease. Men are more likely than women to acquire cardiovascular disease (CVD) at a relatively young age and also have a greater risk of CHD. Women, on the other hand, have a larger stroke risk, which occurs more frequently as they become older [49].

Smoking: Smoking has a multitude of negative effects on the kidneys. It can raise chances of getting some types of kidney cancer. Heart and blood arteries can damage, resulting in insufficient renal blood flow and, over time, kidney damage. Smoking is associated with increases in serum creatinine, with each 5 cigarettes consumed per day leading in a 0.3 mg/dL increase in serum creatinine [50].

Obesity: One of the most powerful risk markers for new-onset CKD is a high BMI. Obese people have compensatory hyperfiltration to meet the higher metabolic demands of their increasing body weight. Increased intraglomerular pressure can harm the kidneys and increase the likelihood of long-term CKD development. Obesity-related glomerulopathy has grown by a factor of ten in recent years. Obesity has also been linked to nephrolithiasis, as well as a variety of other cancers, including kidney cancer [51,52]. Obesity is 50 percent quite common in women than it is in men across the world. However, not all nations have the same gender disparity. Surprisingly, these gender inequalities are linked to both wealth and location. Adult obesity rates found to be lowest (22.4 percent) among young individuals aged 18 to 24, and greatest among those aged 45 to 74. Obesity rates is also lower in the older group, those aged 75 and up and thus the risk varies [53].

Family history of kidney disease: A higher risk of end-stage renal illness is linked to a family background of kidney disease. However, regardless of kidney disease risk, it is unclear if blacks are much more likely than other ethnicities to have a family background of ESRD. While certain kinds of kidney disease are inherited, most cases of kidney disease in numerous family members are caused by something other than genetics. Instead, social and environmental variables, often known as social determinants of health, are the catalysts that put kidney disease in motion [54, 55].

Table 1: Showing pattern of risk factors affecting patient based on age and gender[42]

Risk Factor	Male Patient (%)	Female Patient (%)	Age majority (Year)
Diabetes	31.8	26.1	Over 60
Hypertension	34.6	30.8	Over 45
Cardiovascular diseases	44.3	36.0	35-55
Obesity	29.7	40.0	45-74
Smoking	37.2	31.2	26-32
Family history	29.0	41.5	Over 45
Abnormal kidney	-	-	-
Frequent use of medications	26.5	34.7	22-36

Abnormal kidney structure: Birth disorders affecting the structure and function of the kidneys and urinary system are known as congenital abnormalities of the kidneys and urinary tract. Congenital abnormalities are aberrant differences in the structure at birth that disrupt the kidneys' function and the body's healthy urine output. There are anomalies in every section of the urinary system. One or either both kidneys can fail to develop in certain situations. In other cases, an anomaly may exist that prevents urine from draining. This obstruction may lead urine to roll back into the kidney, causing hydronephrosis, which makes the kidney seem larger on an ultrasound examination [56]. A family background of kidney as well as urinary tract disorders may increase the likelihood of a new-born with these abnormalities, although the reason is usually unclear [57].

Frequent use of medications that can damage the kidneys: Our kidneys filter every medicine we take into our bodies. Kidney harm can occur if the medicine is not taken according to our medical provider's instructions or if it is an illicit substance. If you use a lot of over-the-counter pain relievers like aspirin, naproxen, or ibuprofen, your kidneys might be harmed. Both the kidneys and the liver can be harmed by excessive drinking. Alcoholics are at an increased risk of renal and liver failure. Antibiotics can potentially be harmful when they're not used properly. Antibiotics must be taken in lesser doses by persons with renal disease than by people with normal kidneys [58]. Over-the-counter laxatives are generally

safe for most people. Some prescription laxatives used to clear the bowels, on the other hand, might be damaging to the kidneys. Most street drugs, such as heroin, cocaine, and ecstasy, can lead to hypertension, stroke, heart failure, and even death after just one usage [59]. These things affect everyone so frequently irrespective of their gender; age can be a variable as a reference a of body and kidney health.

Sign and symptoms of kidney disorders

When kidney disease is in its early stages, it seldom causes symptoms. Because the body can generally manage with a large decline in kidney function, this is the case. When a regular test for another issue, including a urine and blood test, reveals a suspected problem, kidney disease is typically only detected at this time. If it's discovered early on, treatment and frequent tests to check it may be able to prevent it from progressing. If kidney disorder is not detected early or if it worsens despite therapy, a variety of symptoms might occur. The capacity of the kidneys to adjust for defects in their function is amazing. As a result, chronic kidney disease can grow without causing any symptoms for a long period, until just a small amount of renal function remains [60,61]. Kidney illness may impact the body in a variety of ways since the kidneys conduct so many tasks for the body. Symptoms might range from mild to severe. A variety of bodily systems may be impacted. Even in the most severe stages of chronic kidney disease, most patients do not see a drop in urine production [62].

Common signs of kidney disorder

- 1. More tired or have less energy.**

A significant drop in renal function can result in an accumulation of toxins and pollutants in the bloodstream. Anaemia, which can induce weakness and weariness, is another effect of renal illness.

- 2. Trouble in sleeping.**

Toxins linger in the circulation rather than exiting the body through urine whenever the kidneys are really not filtering adequately. This can make sleeping difficult. Obesity has also been linked to chronic kidney disease, while sleep apnea is more frequent in chronic kidney disease patients than in the general population [63,64].

- 3. Dry and itchy skin.**

Kidneys assist your body eliminate waste and excess fluid, help form red blood cells, keep your bones healthy, and keep the appropriate quantity of ions in your blood [1].

Dry, itchiness can be an indication of mineral and bone illness, which is common with severe renal disease and occurs whenever the kidneys aren't any longer able to maintain the proper balance of macro and micronutrients in the blood [65].

4. Feel of need to urinate more often.

If you're urinating more often, particularly at night, it might be an indication of renal illness. When the kidney filters are compromised, the need to pee might become stronger. In males, this can sometimes be an indication of an UTI or an enlarged prostate [66].

5. Blood in your urine.

When separating wastes from the blood to make urine, healthy kidneys normally keep blood corpuscles in the body, but when the filters in the kidneys are damaged, the blood cells can "leak" out into the urine. In addition to renal illness, blood in the urine might signify malignancy, gallstones, or an infection [67].

6. Foamy urine.

Excessive bubbles inside the urine, particularly those that need multiple flushes to disappear, suggest the presence of proteinuria. Because the common protein present in urine, this is because albumin, is same protein found in eggs, this froth may resemble scrambled eggs [68].

7. Experiencing persistent puffiness around eyes.

Protein in the urine is a symptom that the filters in the kidneys have been damaged, enabling protein to flow into the urine. Kidneys may be leaking a high amount of protein into the urine rather than storing it in the body, causing puffiness around your eyes [69].

8. Swollen ankles and feet.

Salt retention, which causes edema in the feet and ankles, can be caused by impaired renal function. Heart illness, liver disease, and venous leg vein issues can all cause swelling inside the lower limbs [65].

9. Poor appetite.

This is a pretty common symptom, but one of the explanations might be an accumulation of toxins due to decreased renal function [70].

10. Muscles cramp.

Impaired renal function can lead to electrolyte abnormalities. For example, muscle cramping can be caused by low serum calcium and poorly managed phosphorus [70].

The signs and symptoms of kidney problems in children vary and include [71,72]

- fever
- Edema around the eyes, face, feet, and ankles.
- During peeing, there may be a burning sensation or discomfort.
- Urination frequency has increased significantly.
- Urination control issues in children who are old enough for using the toilet.
- A repeat of bedwetting at night.
- Urination with blood in it.
- Hypertension
- Pains in the body on a regular basis.
- Urine colour change is a sign that something is wrong.
- Abdominal discomfort that persists.
- Ants appear near the urinated region.

Older adult

In most situations, understanding a handful of the signs of renal failure is enough to diagnose it. Fatigue, nausea, disorientation, chest discomfort, breathlessness, and reduced urine production are common symptoms. Fluid retention and edema are prevalent, especially in the legs [60]. However, kidney failure might happen slowly enough that no symptoms appear right away. In the elderly, signs of renal failure may be hidden by another concomitant illness [73]. Following (table 2)[74] depicts how symptoms differ and emerge depending on the severity of kidney or urinary tract disorders.

Table 2: Various symptoms according to complications

Early stage of renal failure	Kidney function worsening	End stage renal failure
Appetite loss	Abnormally light or dark skin	Anaemia (may begin earlier)
Fatigue and weakness	Drowsiness	Difficulty breathing (fluid in lungs)
Pruritis and dry skin	Numbness	Nocturia
Nausea	Breath odour	Swelling and puffiness
Weight loss without trying to lose weight	Frequent hiccups	High blood pressure
Decreased mental sharpness	Blood in stool	Changes in menstrual cycle
Muscle twitching, cramps	Problem sleeping	Poor digestion

Kidney problems in elderly adults, particularly

1. **Proteinuria** - Proteinuria in the elderly is caused by a variety of factors. Diabetes mellitus type 2 is becoming more common among the elderly, and it is a leading cause of proteinuria and renal impairment. Affected people had a prevalence of 15.3 per 1,000 person-years of chronic proteinuria [75].
2. **Haematuria** - Particularly if they can't control their desire to urinate (incontinence), need to pee more frequently, or have a fever or chills, are likely reasons of blood in the urine or UTI in older individuals, even those with Alzheimer's disease [76].
3. **Higher Creatinine levels** - Creatinine levels in some people may be greater than normal, because of their larger muscle mass, young or middle-aged people who are strong or athletic may well have higher creatinine levels. Creatinine levels may be high in elderly adults who really are dehydrated or even have illnesses [77].
4. **Electrolyte's imbalance** - Dehydration or electrolyte imbalances may be more common in older persons than in younger adults. This is due to a variety of factors, including the following: With ageing, the kidney may lose part of their function. Multiple drugs, such as diuretics, may be taken by older persons, causing electrolyte levels to fluctuate [78].

5. **Hypertension** - High blood pressure, is a serious health concern that affects many elderly people. The vascular system in the body, varies with age. Blood pressure rises as arteries get stiffer. This is true even for those who appear to have been in good health and practise heart-healthy activities [79].

A GFR test is used to diagnose kidney disease early on, when it is still curable. GFR can also be used to track persons with chronic kidney disease or other kidney-damaging disorders [80]. GFR decreases by 10 ml/min per decade after age 40, until it has dropped by roughly 30 ml/min by the age of 70. The elderly is vulnerable to CKD because to the ageing process, which is exacerbated by risk factors and the hemodynamic and nonhemodynamic implications of renin angiotensin system activation. The categorization and estimated prevalence of chronic renal disease are shown in the table below (Table 3)[81].

Table 3: Classification and estimated prevalence of kidney disorders

Stage	GFR status	eGFR (ml/min/1.73 m ²)	Intervention
1	Kidney disease with normal GFR	>90	Control comorbidities, slow progression, CVD risk reduction
2	Mildly impaired GFR	60-89	Estimating rate of progression
3	Moderately impaired GFR	30-59	Treat complications
4	Severely impaired GFR	15-29	Preparation for dialysis or transplant
5	Kidney failure	<15	Dialysis or transplant

Kidney disorder's sign and symptoms in female

UTIs cause over 10 million medical visits each year, and if not treated promptly, the bacteria can spread to the renal organs and develop pyelonephritis, a more serious illness. Women are more likely to get urinary tract infections and kidney infections, and the risk rises during pregnancy [82]. Women with kidney disorder are often advised against using "the pill" as a method of birth control due to an increased risk of hypertension and blood clots, both of which can exacerbate renal disease. Decreased urine output, fluid retention, swelling in legs,

ankles or feet, shortness of breath, fatigue, confusion, nausea, weakness, irregular heartbeat, chest pain or pressure, seizures or coma in severe cases, poor appetite, thyroid and high diabetes level are common symptoms among female, but female anatomy's difference created difference among sign and symptoms that is specific to female such as irregular periods, skin problems, frequent hair fall and mood swings, difficulty in conceiving, problems during pregnancy and miscarriage [83].

Irregular periods. Excessive bleeding, missing periods, and the beginning of menopause may occur in women with CKD. Certain medications may aid with menstrual cycle regulation [84].

Sexual dysfunction. Women having CKD realise that they aren't as interested in sex as they formerly were. The emotional, physical, and psychological elements that come with living with a chronic illness might contribute to this. Changing your medicine or using hormones may be beneficial [85].

Pregnancy. Women with CKD are much less likely to get pregnant. If become pregnant have an increased risk of hypertension and preterm delivery, as well as the possibility of losing considerable kidney function and needing dialysis. Women with diabetes or hypertension should seek preconception counselling to avoid problems [86].

Bone Disease. One of the kidney's primary roles is to produce hormones, including vitamin D, which is essential for bone health. To avoid osteoporosis and bone loss caused by renal disease, women with CKD may require supplemental calcium and vitamin D [87].

Depression. Everyone with a chronic condition is prone to depression. According to studies, one out of every four women on dialysis tests positive for depression [83].

Kidney problems are often unnoticed. They may cause a gradual decrease of kidney function, eventually leading to renal failure and the need for dialysis or a kidney transplant to stay alive. Only 5 -10% of patients with kidney failure are fortunate enough to receive definitive treatment options such as dialysis or kidney transplantation, due to the high cost and potential problems of lack of availability in developing countries, while the rest die without receiving any definitive therapy. Because chronic kidney disease is so frequent and has no treatment, the only alternative is to prevent it is early detection [88]. Early identification and treatment

can frequently prevent or delay the need for definitive therapy, preventing or delaying the progression of CKD.

Conclusion

Kidney disease symptoms occur gradually and are not specific to the condition. The most prevalent risk factors are advanced age, low birthweight, obesity, smoking, hypertension, diabetes, a family medical history of renal disease . Diabetic nephropathy is a frequent consequence of diabetes. Diabetes affects nearly twice as many males as it does women.

Kidney disease can have a range of effects on the body. Dry, itchy skin might be a sign of mineral and bone disease. The signs and symptoms might range from minor to severe. High blood pressure is a major health problem that many older individuals suffer from. Elderly people are more likely to suffer from dehydration or electrolyte abnormalities. The kidneys may lose some of their function as they age.

Urinary tract infections and kidney infections are more common in women. Women with chronic kidney disease (CKD) are less likely to become pregnant, and their risk of hypertension and premature birth is higher. Risk factors, sign and symptoms, medication and treatment all varies according to age and gender of the patient. Early detection and treatment can often prevent or delay the need for final treatment, therefore slowing or stopping the course of CKD.

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