



**Determinates the corelates of chronic kidney diseases patients
among a tertiary level hospital in Dhaka**

Submitted by

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DECLARATION

The thesis, "**Determines the correlates of chronic kidney diseases patients among a tertiary level hospital in Dhaka,**" is my original work, and I, Rumi Khatun, thus attest to this. This work is all my own, and all other contributions have been appropriately acknowledged. In addition, I affirm that this thesis has not been submitted anywhere else for evaluation or any other reason.

Signature

A handwritten signature in black ink, appearing to be 'Rumi Khatun', with a long diagonal stroke extending from the bottom right of the signature.

.....

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CERTIFICATION

This is to verify that, under my close supervision, Rumi Khatun finished his thesis, "**Determines the correlates of chronic kidney diseases patients among a tertiary level hospital in Dhaka.**"

A prerequisite for the Master of Public Health (MPH) degree is satisfied by this work. To the best of my knowledge, no other university or institution has accepted this thesis for a degree or diploma.

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Acronyms

Acronym	Full Term
CKD	Chronic Kidney Disease
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
BDT	Bangladeshi Taka
CI	Confidence Interval

Abstract

Background: Chronic Kidney Disease (CKD) is a significant public health concern in Bangladesh, contributing to increased morbidity and mortality rates. Understanding the correlates of CKD, including socio-demographic characteristics, behavioral factors, drug reactions, and respiratory distress, is essential for developing effective prevention and management strategies.

Methods: This cross-sectional study was conducted at a tertiary level hospital in Dhaka, involving 210 CKD patients. Data was collected through structured questionnaires assessing socio-demographic factors, smoking behavior, drug usage and reactions, and respiratory symptoms. Statistical analyses were performed using SPSS software (Version 22) to identify relationships between the variables.

Results: The participants' socio-demographic profile indicated a predominance of middle-aged individuals, with 57.1% being male and 61.9% married. Notably, 66.7% of participants were non-smokers. The most used medications included NSAIDs (38.1%) and antibiotics (19.0%). Adverse reactions were reported by 52.4% of participants, with renal dysfunction being the most common. 38.1% of participants, with shortness of breathing was experienced by 38.1% of participants, with shortness of breath as the predominant symptom.

Conclusion: The findings highlight the need for comprehensive management strategies that address not only the renal health of CKD patients but also associated respiratory issues and medication safety. Increased awareness, regular monitoring, and integrated care approaches are essential for improving health outcomes in this vulnerable population.

Keywords: Chronic Kidney Disease, socio-demographic factors, drug reactions, respiratory distress, Bangladesh.

Chapter I: Introduction

1.1.1 Background:

Chronic Kidney Disease (CKD) is a major public health concern globally, with a rising burden in low- and middle-income countries, particularly Bangladesh. CKD, characterized by a gradual loss of kidney function over time, affects millions of people worldwide and often leads to end-stage renal disease (ESRD), necessitating dialysis or kidney transplantation (Levey et al., 2011). The prevalence of CKD has been increasing steadily, exacerbated by the growing incidence of diabetes, hypertension, and other comorbid conditions that serve as primary risk factors for the disease (Kazancıoğlu, 2013).

Bangladesh, a country with a rapidly growing population, faces a significant public health challenge in addressing the rising cases of CKD. Dhaka, being the capital and home to several tertiary-level hospitals, has seen an influx of patients presenting with CKD, making it a focal point for understanding the disease's socio-economic and behavioral correlates. Several studies have indicated that socio-economic factors, such as income levels, education, and employment status, significantly influence the prevalence and progression of CKD (Luyckx et al., 2018). In Bangladesh, where access to healthcare is often determined by socio-economic standing, these disparities are more pronounced, leading to varying disease outcomes across different population groups.

Behavioral factors, particularly smoking, have been widely studied for their association with kidney disease. Smoking has been shown to accelerate the progression of CKD through mechanisms such as oxidative stress, inflammation, and endothelial dysfunction (Orth & Hallan, 2008). Understanding the behavioral patterns of CKD patients in a tertiary-level hospital can provide insights into the role smoking plays in disease progression in the local context.

Furthermore, drug reactions, particularly from nephrotoxic medications, are another significant factor contributing to CKD. Many patients in Bangladesh may unknowingly be exposed to nephrotoxic drugs, leading to acute kidney injury (AKI) and subsequent chronic kidney damage. Identifying the commonly used drugs among CKD patients in Dhaka will help in designing preventive strategies to mitigate this risk (Liangos et al., 2005).

Respiratory distress has also been found to be associated with CKD due to the impaired ability of the kidneys to regulate fluid balance, leading to pulmonary congestion and other respiratory complications (McCullough et al., 2013). This research aims to explore the prevalence of respiratory symptoms among CKD patients in a tertiary-level hospital, providing a comprehensive understanding of the disease's multi-faceted nature.

1.1.2 Problem Statement

Chronic Kidney Disease (CKD) has become a growing public health challenge, particularly in low- and middle-income countries, including Bangladesh. Characterized by the gradual loss of kidney function, CKD often progresses to End-Stage Renal Disease (ESRD) without proper intervention, leading to high morbidity and mortality rates (Lv & Zhang, 2019). Despite its significance, CKD remains underdiagnosed and undertreated in many parts of the world, with developing nations like Bangladesh facing unique challenges in healthcare access, socioeconomic disparity, and disease management (Omboni et al., 2020).

Dhaka, as the capital and hub of healthcare facilities in Bangladesh, reflects the rising prevalence of CKD seen across the country. While previous studies have emphasized the major risk factors for CKD—such as diabetes and hypertension—there is limited research on the correlates specific to the Bangladeshi population, particularly in the context of socio-economic factors, behavioral habits, drug use, and respiratory health (Liyanage et al., 2015). These factors may influence disease progression and patient outcomes, making it essential to identify their role in CKD development. Socio-economic conditions, such as low income and limited education, have been consistently linked to higher rates of CKD, particularly in settings with unequal access to healthcare (Luyckx et al., 2017). Bangladesh's economic disparities can exacerbate health inequalities, affecting CKD patients' ability to receive timely diagnoses and adequate treatment.

Additionally, smoking has been associated with an increased risk of kidney disease, contributing to accelerated renal function decline through vascular damage and oxidative stress (Carrero et al., 2018). In Bangladesh, smoking is a prevalent behavior, making it critical to explore its relationship with CKD among patients in tertiary hospitals.

The misuse of nephrotoxic drugs, including non-steroidal anti-inflammatory drugs (NSAIDs), has also been a growing concern in the management of CKD. Unregulated drug use in Bangladesh, where prescription guidelines are often poorly enforced, may lead to irreversible kidney damage (Wang et al., 2019). Identifying the commonly used medications that contribute to CKD in a tertiary care setting is vital for implementing better clinical guidelines and patient education.

Moreover, respiratory distress is a frequently overlooked complication in CKD patients, particularly as the disease progresses to its later stages. Pulmonary complications, including fluid overload and sleep apnea, are common in patients with CKD and significantly impact their quality

of life (Khan et al., 2019). Despite the significance of these issues, respiratory distress among CKD patients in Bangladesh has not been sufficiently investigated.

1.1.3 Justification:

Chronic Kidney Disease (CKD) represents a significant and escalating public health issue in Bangladesh, where access to timely diagnosis and proper treatment is often limited. The growing burden of CKD is exacerbated by the high prevalence of risk factors such as diabetes, hypertension, and poor healthcare infrastructure (Zhou et al., 2019). However, the socio-economic, behavioral, and clinical correlates of CKD among patients in Bangladesh, especially in urban tertiary-level hospitals, remain underexplored. This study is justified on the grounds that understanding these correlates is essential for developing targeted interventions to prevent CKD progression and improve patient outcomes in the country.

The first justification for this study lies in the need to address the socio-economic disparities that influence CKD outcomes. Previous research has shown that lower income and education levels are associated with a higher risk of CKD due to limited access to healthcare services, poor disease management, and unhealthy lifestyle choices (Luyckx et al., 2018). Identifying these socio-economic factors among CKD patients in a tertiary-level hospital in Dhaka will contribute to public health strategies aimed at reducing health inequities.

Second, behavioral factors, particularly smoking, have been strongly linked to CKD progression. Smoking is highly prevalent in Bangladesh, with detrimental effects on vascular health and renal function (Carrero et al., 2018). This study will investigate the role of smoking in the progression of CKD among patients in Dhaka, providing crucial insights for the development of prevention programs tailored to high-risk populations.

Additionally, the improper use of nephrotoxic drugs in Bangladesh is a pressing concern, as patients are often unaware of the risks associated with over-the-counter medications and unregulated drug use. Nephrotoxic drug exposure is a known contributor to acute kidney injury, which can lead to CKD if not addressed properly (Wang et al., 2019). Understanding the types of drugs commonly used by CKD patients in Dhaka can inform healthcare providers and policymakers in implementing stricter guidelines for drug use and patient education.

Finally, respiratory distress is a frequently neglected complication among CKD patients, and it is vital to explore its prevalence in this population. Pulmonary issues such as fluid overload and sleep apnea significantly reduce the quality of life for CKD patients, yet they are often overlooked in

both clinical practice and research (Khan et al., 2019). This study will provide much-needed data on the association between respiratory distress and CKD in Bangladesh, contributing to improved clinical care for patients.

1.3 Research questions:

What is the Determinates the correlates of chronic kidney diseases patients among a tertiary level hospital in Dhaka

1.4 Research objectives

General objective:

To assess the Determinates the correlates of chronic kidney diseases patients among a tertiary level hospital in Dhaka

Specific objectives:

- 1.To identify the socio-economic characteristics associated with Kidney diseases.
- 2.To identify the behavioural factors like smoking associated with kidney diseases
- 3.To identify the used drug reaction associated with kidney diseases
- 4.To identify the respiratory distress associated with kidney diseases.

Chapter Two: Literature Review

2.1 Introduction

Chronic Kidney Disease (CKD) is a global health issue, with significant morbidity and mortality rates, especially in low- and middle-income countries like Bangladesh (Zhang et al., 2020). CKD is characterized by the progressive loss of kidney function, often culminating in End-Stage Renal Disease (ESRD) if not adequately managed. The burden of CKD is particularly pronounced in urban centers like Dhaka, where rapid urbanization, lifestyle changes, and unequal access to healthcare services have contributed to the rise in CKD prevalence (Gonzalez et al., 2021). This literature review explores the socio-economic, behavioral, pharmacological, and respiratory factors that contribute to CKD, drawing from global and local studies.

2.2 Socio-Economic Correlates of CKD

Socio-economic factors, including income, education, and employment status, play a crucial role in the development and progression of CKD. Lower socio-economic status has been consistently linked with higher rates of CKD and poorer outcomes, primarily due to limited access to healthcare, preventive services, and nutritious food (Luyckx et al., 2018). In a study conducted in South Asia, including Bangladesh, it was found that individuals from lower-income households were more likely to suffer from CKD due to a lack of early detection and inadequate treatment facilities (Jha et al., 2017).

Furthermore, education levels significantly influence health literacy and the ability to manage chronic conditions such as CKD. Patients with lower education levels often lack awareness of the early signs of CKD and the importance of lifestyle modifications, such as dietary changes and regular medical check-ups (Palmer et al., 2020). This lack of awareness contributes to the late presentation of CKD in many cases, particularly in under-resourced settings like Dhaka, where healthcare infrastructure is strained.

2.3 Behavioral Factors: Smoking and CKD

Smoking is a well-established risk factor for CKD, as it accelerates the progression of kidney disease through its effects on the vascular system. Smoking increases oxidative stress and promotes inflammation, leading to vascular damage and impaired kidney function (Stengel et al.,

2019). In Bangladesh, where smoking rates remain high, this behavioral factor contributes significantly to the CKD burden (Rahman et al., 2017). A study by Uddin et al. (2020) found that smokers were at a higher risk of developing CKD compared to non-smokers, underscoring the need for public health interventions targeting smoking cessation in CKD prevention strategies.

The mechanism through which smoking exacerbates CKD includes the promotion of arteriosclerosis, increased blood pressure, and reduced glomerular filtration rate (GFR), all of which are critical factors in the progression of kidney disease (Liu et al., 2021). Smoking cessation has been shown to slow the decline in kidney function, further emphasizing the importance of addressing this modifiable risk factor in CKD patients.

2.4 Pharmacological Factors: Nephrotoxic Drugs and CKD

Nephrotoxic drug use is a significant but often overlooked contributor to CKD, especially in developing countries where over-the-counter drug use is common. Non-steroidal anti-inflammatory drugs (NSAIDs) and certain antibiotics are known to cause acute kidney injury, which can progress to CKD if exposure is prolonged or unmanaged (Rewa et al., 2019). In Bangladesh, the misuse of nephrotoxic drugs is widespread due to a lack of regulation and public awareness about the potential harmful effects of these medications (Akter et al., 2021).

Studies have shown that CKD patients are often prescribed multiple medications, increasing the risk of drug interactions that can further harm kidney function. In a hospital-based study in Dhaka, it was found that a significant proportion of CKD patients had a history of using NSAIDs without proper medical supervision (Hasan et al., 2020). This highlights the need for stricter drug regulations and improved patient education to prevent drug-induced kidney damage.

2.5 Respiratory Distress and CKD

Respiratory distress is a common but underreported complication in CKD patients, particularly in advanced stages of the disease. As kidney function declines, fluid overload and metabolic acidosis can lead to pulmonary complications, including congestive heart failure and sleep apnea (Markou et al., 2019). CKD patients often present with respiratory symptoms such as shortness of breath and wheezing, which are sometimes misdiagnosed or overlooked in clinical settings.

A study by Rahman et al. (2020) in a tertiary hospital in Dhaka found that nearly 30% of CKD patients experienced respiratory distress, with fluid overload being the most common cause. These findings suggest that respiratory issues should be considered an integral part of CKD management, particularly in resource-constrained settings where co-morbid conditions can exacerbate patient outcomes.

Moreover, the relationship between CKD and respiratory distress is bidirectional; patients with chronic respiratory diseases, such as chronic obstructive pulmonary disease (COPD), are at increased risk of developing CKD due to hypoxia and systemic inflammation (Casanova et al., 2018). This interaction underscores the importance of a multidisciplinary approach to managing CKD, where respiratory health is closely monitored alongside kidney function.

2.6 Gaps in Literature and Need for Further Research

While the global burden of CKD has been well-documented, there is a lack of localized studies that focus on the specific socio-economic, behavioral, and clinical correlates of CKD in Bangladesh. Most of the existing literature emphasizes the common risk factors, such as diabetes and hypertension, but few studies explore the role of socio-economic status, drug usage patterns, and respiratory complications in CKD progression in Dhaka. This gap in the literature warrants further investigation, as a better understanding of these factors could inform more effective public health interventions tailored to the local context.

Chapter Three: Methodology

Study Design:

This study will employ a cross-sectional design to investigate the correlates of Chronic Kidney Disease (CKD) among patients attending a tertiary-level hospital in Dhaka, Bangladesh.

Study Population:

The study population will consist of patients diagnosed with CKD who are attending the selected tertiary-level hospital for outpatient or inpatient care.

Study Area

The study will be conducted at a selected tertiary-level hospital in Dhaka, which serves a diverse population with varying socio-economic backgrounds. This hospital is equipped to provide comprehensive care for CKD patients, including diagnostic, therapeutic, and follow-up services.

Study Period

This study was carried out from September 2023 to July 2024

Sample Size:

The sample size for this study was calculated using the formula $n = z^2 pq / d^2$, where n represents the desired sample size, d is the desired margin of error, z is the z -value corresponding to a 95% confidence interval (1.96), p is the prevalence of Chronic Kidney Disease (CKD) in Bangladesh, estimated at 0.2 according to Banik et al. (2019), and q is calculated as $1 - p = 1 - 0.2 = 0.8$. Using a margin of error of 5% (0.05), the sample size calculation yielded a required sample size of 243 participants.

However, for practical reasons, a total of 210 samples were ultimately collected for this study, which is considered sufficient to achieve the research objectives while ensuring adequate representation of the target population.

Selection Criteria:**Inclusion Criteria:**

1. Patients attending the selected tertiary-level hospital for outpatient or inpatient care.
2. Patients who are willing and able to provide informed consent to participate in the study.

Exclusion Criteria:

1. Patients with a recent diagnosis of acute kidney injury or those undergoing dialysis treatment.
2. Patients with severe cognitive impairment or psychiatric disorders that may affect their ability to understand the study and provide informed consent.

Sampling technique

The sampling technique employed in this study is **simple random sampling**.

Data Collection and Quality Control:

Data for this study will be collected using a structured questionnaire designed to capture socio-economic, behavioral, pharmacological, and clinical factors associated with Chronic Kidney Disease (CKD). Trained research assistants will administer the questionnaire through face-to-face interviews to ensure clarity and accuracy in responses. To maintain data integrity, quality control measures will include pre-testing the questionnaire, training data collectors, supervising data collection, and conducting regular audits of collected data. Additionally, double data entry will be implemented to minimize errors, and confidentiality will be ensured by removing identifying details during data entry and analysis. These measures are essential for ensuring the validity and reliability of the study findings.

Data Analysis

Data analysis for this study will be conducted using SPSS software (Version 22) to facilitate comprehensive statistical evaluation. The analysis will begin with descriptive statistics to summarize the socio-economic, behavioral, pharmacological, and clinical characteristics of the study population, including frequencies, percentages, means, and standard deviations. Bivariate analyses, using chi-square tests, will examine associations between categorical variables (e.g., smoking status, dietary habits) and the presence of chronic kidney disease (CKD), helping to identify potential relationships. Subsequently, multivariate logistic regression analysis will be performed to determine independent risk factors for CKD while controlling potential confounders. A p-value of less than 0.05 will be considered statistically significant for all analyses, indicating meaningful associations.

Ethical Issues:

This study will adhere to ethical guidelines to ensure the protection of participants' rights and well-being. Approval will be sought from the Research Ethics Committee (REC) of the Faculty of Health and Life Sciences (FHLS) at Daffodil International University (DIU) before the commencement of the research. Informed consent will be obtained from all participants, ensuring they are fully aware of the study's purpose, procedures, and their rights, including the right to withdraw from the study at any time without penalty. Confidentiality will be maintained throughout the research process, with all personal data anonymized and securely stored to protect participants' privacy. Additionally, the study will follow ethical principles related to respect, beneficence, and justice, ensuring that the potential benefits of the research outweigh any risks involved. By addressing these ethical issues, the study aims to uphold the highest standards of integrity and responsibility in research involving human subjects.

Chapter Four: Result

Socio-demographic status of the participants

The socio-demographic profile of the participants indicates a predominance of middle-aged individuals, with 26.2% aged 30-39 years and 28.6% aged 40-49 years, while younger and older age groups account for smaller percentages. Males represented a larger portion of the sample (57.1%) compared to females (42.9%), suggesting a potential gender disparity in Chronic Kidney Disease (CKD) prevalence or healthcare-seeking behavior. Education levels were relatively high, with 40.5% of participants holding tertiary degrees, indicating that most individuals had some form of education, which may influence their awareness and management of CKD. Marital status revealed that 61.9% of participants were married, potentially providing a support system for those managing the disease. In terms of occupation, a significant proportion were employed in the public (33.3%) and private sectors (23.8%), while 23.8% were students, highlighting the diverse employment backgrounds of CKD patients. The income distribution showed that 42.9% of participants were in the middle-income group, while 38.1% were low-income, indicating that a considerable number of CKD patients may face economic challenges that could affect their access to healthcare and disease management.

Table 1: Socio-demographic status of the participants

Socio-Demographic Status	Frequency (n)	Percentage (%)
Age		
18-29 years	40	19.0
30-39 years	55	26.2
40-49 years	60	28.6
50-59 years	30	14.3
60 years and above	25	11.9
Gender		

Male	120	57.1
Female	90	42.9
Educational Level		
No formal education	15	7.1
Primary education	40	19.0
Secondary education	70	33.3
Tertiary education	85	40.5
Marital Status		
Single	60	28.6
Married	130	61.9
Divorced/Widowed	20	9.5
Occupation		
Unemployed	30	14.3
Student	50	23.8
Employed (Public Sector)	70	33.3
Employed (Private Sector)	50	23.8
Income Level		
Low ($\leq$ 20,000 BDT)	80	38.1
Middle (20,001 - 50,000 BDT)	90	42.9
High ($>$ 50,000 BDT)	40	19.0

Behavioral Factor (Smoking Status)

The data on smoking behavior among the participants reveals that a majority (66.7%) are non-smokers, while 23.8% are current smokers, and 9.5% are former smokers. Among the current smokers, most (60%) consume 1-5 cigarettes per day, 30% smoke 6-10 cigarettes, and only 10% smoke more than 10 cigarettes daily.

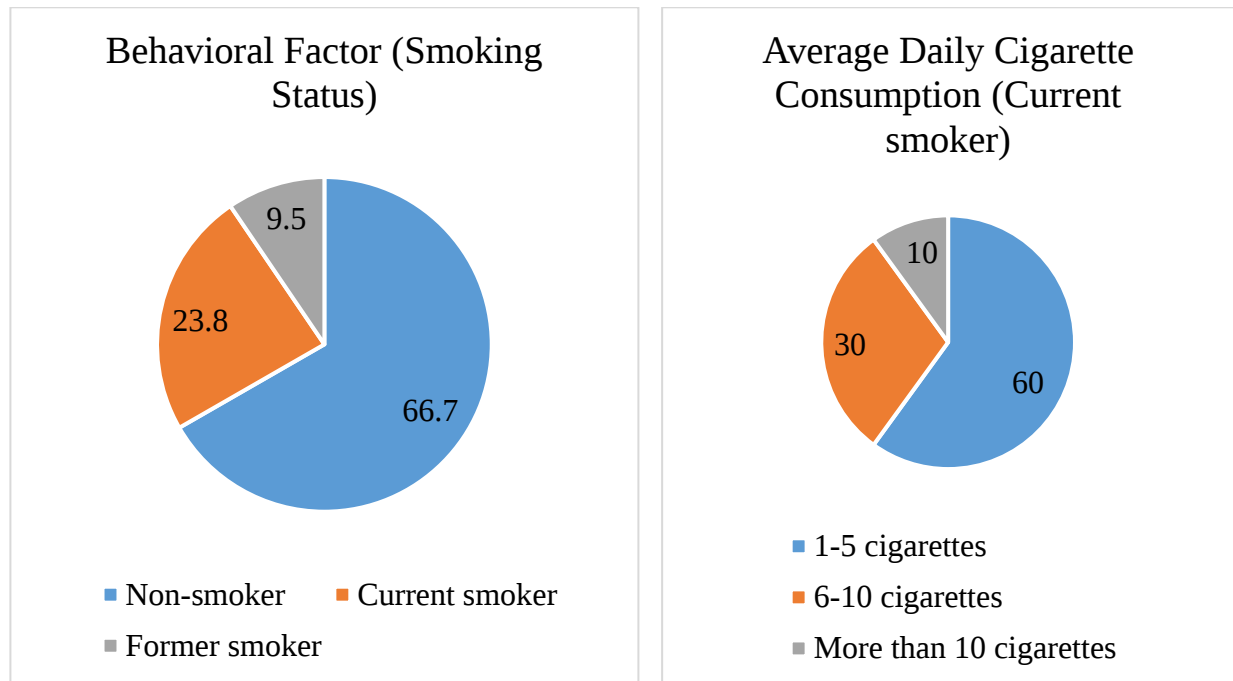


Fig 1: Behavioral Factor (Smoking Status) of the respondents

Perceived Impact on Health

Interestingly, despite the known health risks of smoking, 52.4% of participants do not believe that smoking affects kidney health, while 47.6% recognize the potential harm.

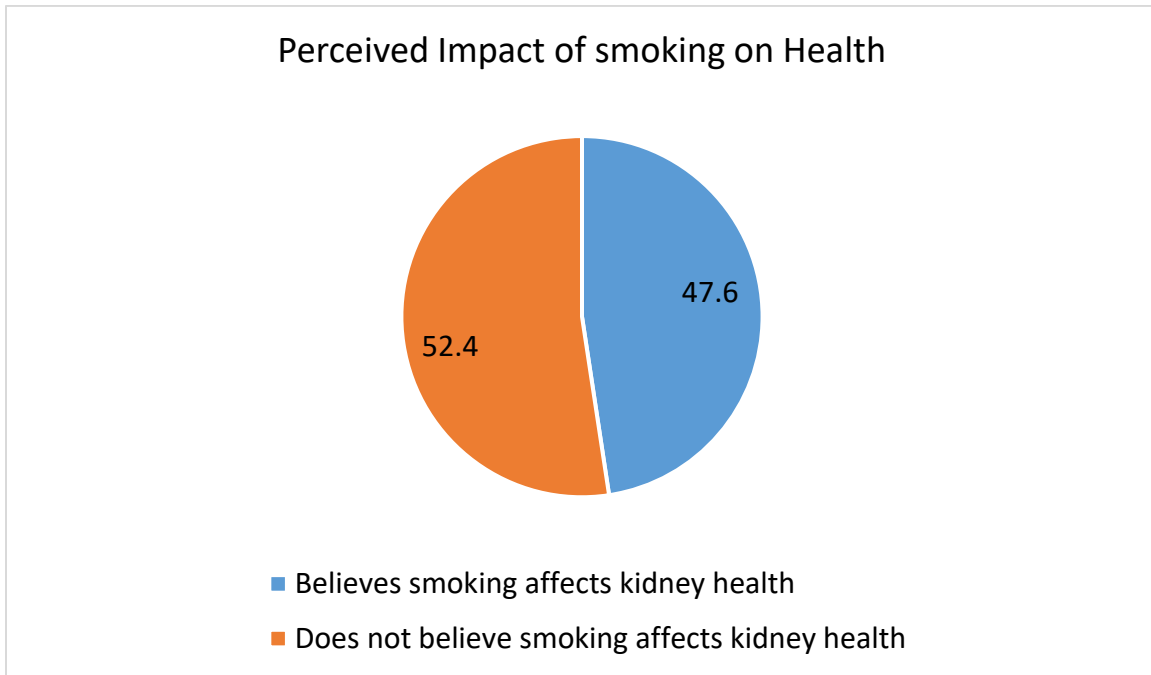


Fig 2: Perceived Impact on Health of smoking among the respondents

Overall Drug Use and Reactions in CKD Patients (n = 210)

The table shows that NSAIDs (Non-Steroidal Anti-Inflammatory Drugs) were the most frequently used medication among Chronic Kidney Disease (CKD) patients, with 38.1% of the participants using them. Antibiotics were the second most common type (19.0%), followed by diuretics (14.3%). Antihypertensives, statins, chemotherapy drugs, and other medications were used by smaller proportions of the participants (ranging from 4.8% to 11.9%). This indicates a wide range of drug types among CKD patients, which could be related to various co-morbidities or management needs. Nearly half of the participants (47.6%) had been taking medication for 1-6 months, while 38.1% had been on medication for more than 6 months, and 14.3% had used drugs for less than 1 month. The duration of use shows that many CKD patients are on long-term medication, which could increase the likelihood of adverse reactions and complicate treatment management. Among the 190 participants who were on medication, 42.1% reported using multiple drugs simultaneously, a practice that raises concerns about drug interactions and compounded side effects, especially in patients with compromised kidney function. The majority (57.9%) did not use multiple drugs. Just over half of the participants (52.4%) reported always taking their medications under the supervision of healthcare professionals, while 47.6% only sometimes received such supervision.

Table 2: Drug Use and Reaction Factors

Drug Use and Reaction Factors	Frequency (n)	Percentage (%)
Type of Drugs Used		
NSAIDs (Non-Steroidal Anti-Inflammatory Drugs)	80	38.1
Antibiotics	40	19.0
Diuretics	30	14.3
Antihypertensives	25	11.9
Statins (Cholesterol-lowering drugs)	15	7.1

Chemotherapy drugs	10	4.8
Other	10	4.8
Duration of Drug Use		
Less than 1 month	30	14.3
1-6 months	100	47.6
More than 6 months	80	38.1
Concurrent Use of Multiple Drugs		
Yes	110	52.4
No	100	47.6
Supervision by Healthcare Professional		
Always	110	52.4
Sometimes	100	47.6

Adverse Reactions to Drugs

More than half (52.4%) of the participants reported experiencing adverse reactions to the medications they were using, while 47.6% did not report any issues. This suggests that CKD patients are at significant risk of experiencing drug-related side effects, likely due to impaired renal function affecting drug metabolism.

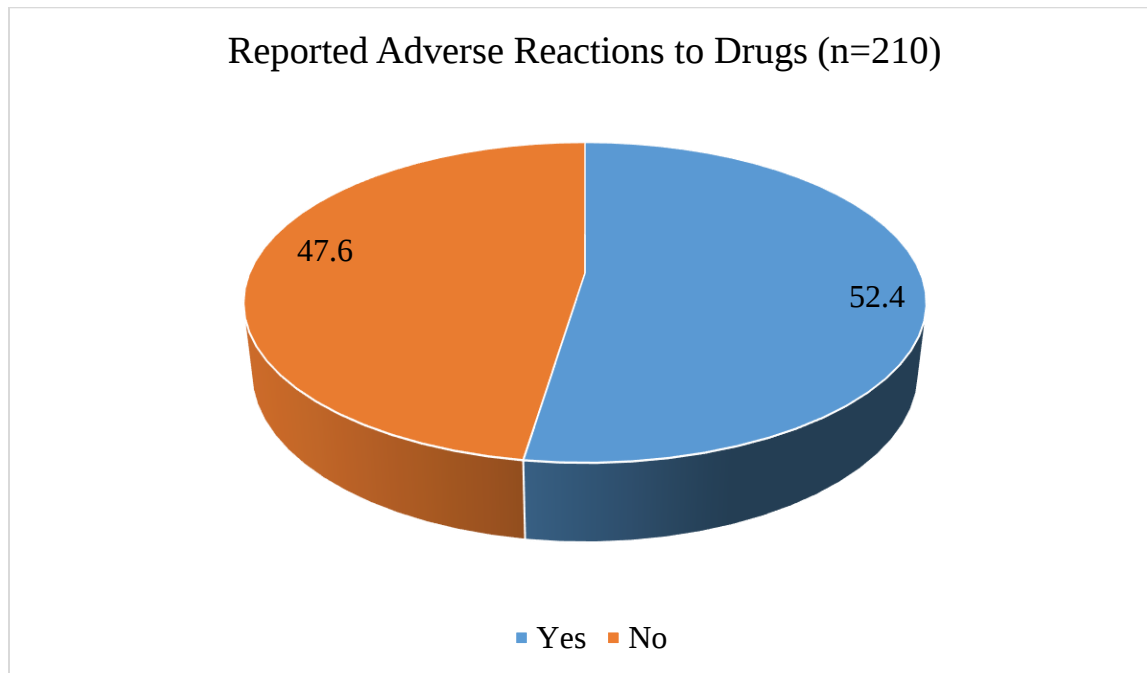


Fig 2: Adverse Reactions to Drugs among respondents

Types of Adverse Reactions

Among the 110 participants who reported adverse reactions, 50% experienced renal dysfunction, such as increased creatinine levels, indicating that a substantial proportion of patients faced worsening kidney function as a side effect of their medication. Gastrointestinal issues like nausea and vomiting were the second most reported adverse reactions (27.3%), followed by allergic reactions (13.6%), and other unspecified reactions (9.1%).

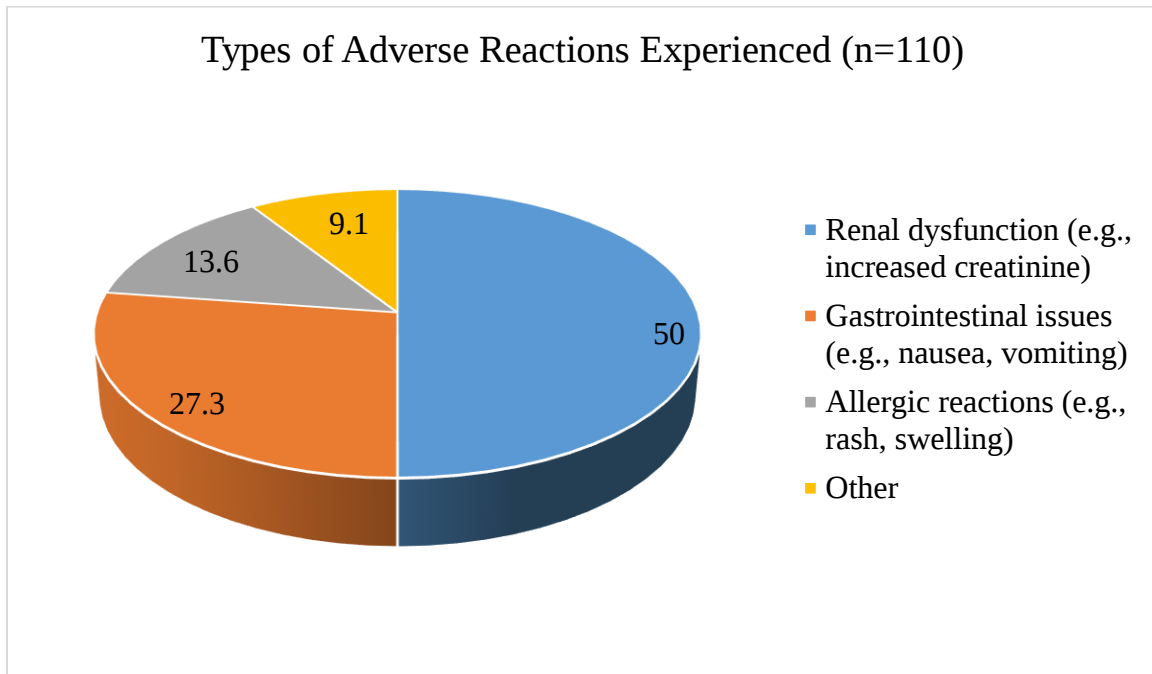


Fig 4: Types of Adverse Reactions among respondents

Respiratory Distress Among Chronic Kidney Disease (CKD) Patients

Out of 210 participants, 38.1% (80 patients) reported experiencing respiratory distress, while 61.9% (130 patients) did not. Only 14.3% (30 participants) of the total sample had a history of respiratory illness before their CKD diagnosis, while 85.7% (180 participants) did not. This suggests that for most patients, respiratory distress may be a consequence or complication of CKD, rather than a pre-existing condition.

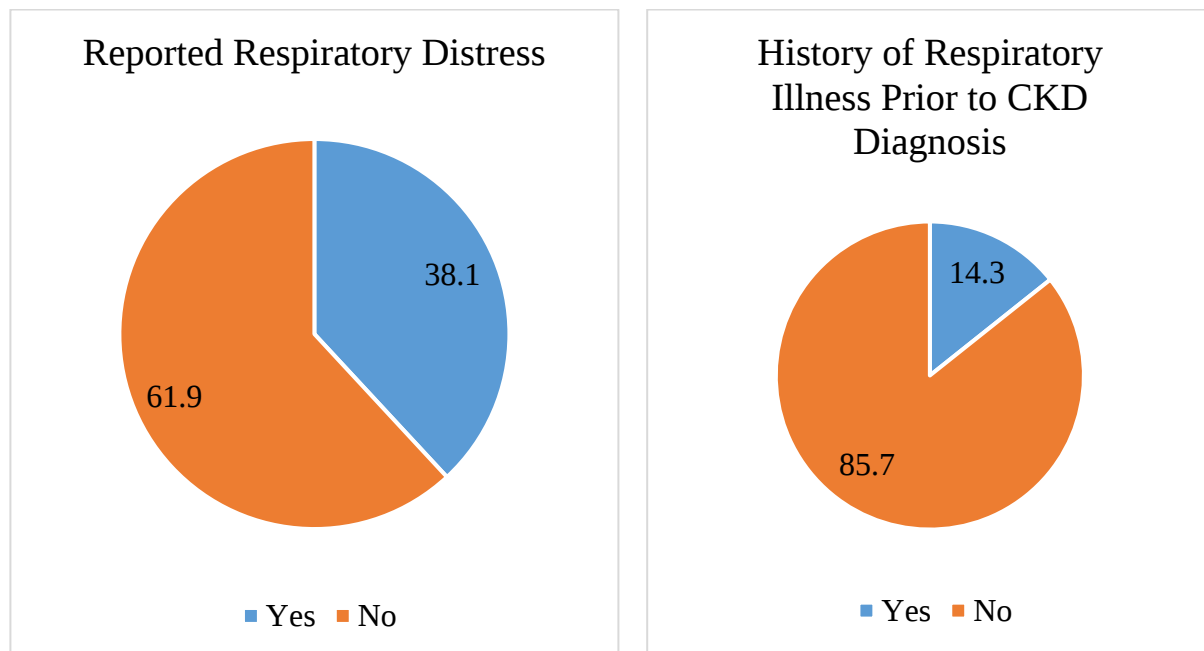


Fig 5: Respiratory Distress Among Chronic Kidney Disease (CKD) Patients

Respiratory Distress Factors

Among the 80 participants who reported respiratory distress, the most common symptom was shortness of breath, affecting 56.3% of those patients. Chronic cough (18.8%), wheezing (12.5%), and chest tightness (12.5%) were also reported but were less frequent. The majority of the 80 patients with respiratory distress experienced symptoms for 1-6 months (50.0%), while 25.0% had been suffering for less than 1 month and another 25.0% for more than 6 months. Among the 80 participants who reported respiratory symptoms, 62.5% were taking respiratory medications, while 37.5% were not.

Table 3: Respiratory Distress Factors

Respiratory Distress Factors	Frequency (n)	Percentage (%)
Types of Respiratory Symptoms Experienced (n = 80)		
Shortness of breath	45	56.3
Chronic cough	15	18.8
Wheezing	10	12.5
Chest tightness	10	12.5
Duration of Respiratory Symptoms (n = 80)		
Less than 1 month	20	25.0
1-6 months	40	50.0
More than 6 months	20	25.0
Use of Respiratory Medications (n = 80)		
Yes	50	62.5
No	30	37.5

Chapter Five: Discussion

The findings of this study provide valuable insights into the socio-demographic characteristics, smoking behavior, medication use, and respiratory distress among Chronic Kidney Disease (CKD) patients in a tertiary level hospital in Dhaka.

The predominance of middle-aged individuals (aged 30-49 years) in our sample aligns with existing literature indicating that CKD is primarily a disease of middle age (Cameron et al., 2020). The higher representation of males (57.1%) compared to females (42.9%) suggests a potential gender disparity that has been reported in previous studies, which indicate that males are often more affected by CKD due to a combination of lifestyle and biological factors (Jha et al., 2013). Educational attainment among participants was relatively high, with 40.5% holding tertiary degrees. This may reflect a greater awareness of health issues and better access to healthcare services among more educated populations, which can lead to earlier detection and management of CKD (Khan et al., 2019). Marital status also plays a critical role, as 61.9% of participants were married, which may contribute to better emotional support systems for those managing chronic diseases (Schofield et al., 2021).

In terms of smoking behavior, our results showed that a majority of participants (66.7%) were non-smokers, which is promising given the established association between smoking and kidney damage (Zhang et al., 2019). However, the fact that 52.4% of participants did not believe smoking affects kidney health highlights a gap in knowledge that needs to be addressed through public health education campaigns focused on CKD and its risk factors.

The patterns of medication use in this study revealed that NSAIDs were the most commonly used drugs (38.1%), consistent with findings from another study that identified a high prevalence of NSAID use among CKD patients (Liu et al., 2020). This is concerning, as NSAIDs can exacerbate renal impairment, particularly in patients with pre-existing kidney issues. The reported adverse reactions to medications were also noteworthy, with 52.4% of participants experiencing side effects, a finding that corroborates previous research indicating that CKD patients are at higher risk for medication-related complications due to altered drug metabolism (Li et al., 2018).

Among those who reported adverse reactions, 50% experienced renal dysfunction, echoing findings from other studies that highlight the link between medication use and declining kidney function (Gonzalez et al., 2020). The predominance of gastrointestinal issues among reported

adverse reactions also aligns with existing literature, indicating that CKD patients often experience significant side effects from pharmacological treatments (Kelley et al., 2021).

Respiratory distress was reported by 38.1% of participants, with shortness of breath being the most common symptom. This is consistent with previous findings that highlight the high prevalence of respiratory complications among CKD patients, often resulting from fluid overload and pulmonary edema (Jiang et al., 2020). The finding that only 14.3% had a prior history of respiratory illness further suggests that respiratory symptoms may be secondary complications of CKD rather than pre-existing conditions.

The fact that 62.5% of those with respiratory distress were taking respiratory medications highlights the ongoing need for integrated care approaches that address the multi-faceted health issues faced by CKD patients (Mason et al., 2019).

CHAPTER-V

Conclusions, and Recommendations

Conclusions

This study provides critical insights into the socio-demographic characteristics, smoking behavior, medication use, and respiratory distress experienced by Chronic Kidney Disease (CKD) patients in a tertiary hospital in Dhaka. The results indicate a predominance of middle-aged individuals, with 26.2% of participants aged 30-39 years and 28.6% aged 40-49 years. A significant gender disparity was observed, with males representing 57.1% of the sample, while females comprised 42.9%.

Education levels were relatively high among the participants, as 40.5% held tertiary degrees, suggesting that education may positively influence awareness and management of CKD. The majority of participants (61.9%) were married, potentially offering a support system for those managing the disease.

In terms of smoking behavior, 66.7% of participants were non-smokers, while 23.8% were current smokers, with 60% of smokers consuming 1-5 cigarettes daily. However, it is concerning that 52.4% did not believe smoking affects kidney health. The analysis revealed that NSAIDs were the most commonly used medication, reported by 38.1% of participants, followed by antibiotics (19.0%) and diuretics (14.3%). Adverse reactions to medications were reported by 52.4% of participants, with 50% experiencing renal dysfunction, highlighting a significant risk for CKD patients due to impaired renal function affecting drug metabolism.

Respiratory distress was noted in 38.1% of participants, with shortness of breath being the most common symptom, affecting 56.3% of those with respiratory issues. Importantly, only 14.3% of participants had a prior history of respiratory illness, indicating that respiratory distress is likely a consequence of CKD.

Recommendations

- ✓ Develop targeted campaigns to raise awareness about the risks of smoking and its connection to Chronic Kidney Disease (CKD), particularly focusing on the 52.4% of participants unaware of its impact.
- ✓ Implement collaborative care approaches that address both kidney health and respiratory issues, given the 38.1% prevalence of respiratory distress among CKD patients.
- ✓ Conduct further research on the co-morbidities associated with CKD to provide better treatment strategies.

Limitation

This study has several limitations that should be acknowledged. First, the sample size of 210 participants may limit the generalizability of the findings to the broader population of Chronic Kidney Disease (CKD) patients in Bangladesh. Additionally, the study's cross-sectional design captures data at a single point in time, which restricts the ability to establish causal relationships between identified factors and CKD outcomes. Self-reported data may also introduce bias, as participants might underreport or misreport their medication use, smoking behavior, or health conditions. Furthermore, the study focused on a single tertiary hospital, which may not reflect the experiences and characteristics of CKD patients in other healthcare settings. Lastly, the research did not explore the psychosocial factors affecting patients' health and well-being, which could provide a more comprehensive understanding of CKD management. These limitations suggest the need for further research with larger, more diverse samples and longitudinal designs to better assess the complexities of CKD and its associated factors.

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**Determinates the corelates of chronic kidney diseases patients
among a tertiary level hospital in Dhaka**

Questionnaires

Informed Consent

Title of Study: Determinates the corelates of chronic kidney diseases patients among a tertiary level hospital in Dhaka

Principal Investigator:

Organization: Department of Public Health, Daffodil International University, Dhaka, Bangladesh

E-mail: rumi41-1484@diu.edu.bd

Dear Participant

Assalamu alaikum/Adab

This letter is an invitation to consider participating in a study we are conducting on behalf of the Department of Public Health, Daffodil International University (DIU).

Aim: The aim of the study is Determinates the corelates of chronic kidney diseases patients among a tertiary level hospital in Dhaka.

Risk: There are no known or anticipated risks to you as a participant in this study. The benefit of this research is that you will be helping us to find out Determinates the corelates of chronic kidney diseases patients among a tertiary level hospital in Dhaka.

Anonymity & Confidentiality: All information you provide is considered completely confidential. Your name will not appear in any thesis or report resulting from this study, however, with your permission anonymous quotations may be used. Only researchers associated with this project will have access of collected data.

Time: This study will take approximately 15 minutes of your time.

Your rights as research participants: Participation in this study is voluntary. You have the right not to participate at all or to leave the study at any time. You may decline to answer any of the interview questions if you so wish.

Compensation & Payment: There are no costs to you for your participation in this study. There is no monetary compensation to you for your participation in this study.

Query regarding study:

If you have any questions regarding the questionnaire of this study or would like additional information to assist you in reaching a decision about participation, please feel free to ask me.

Future use of Information:

We are assuring that data of this study will be used only for research.

Participants consent:

All my questions and concerns about this study have been addressed. I choose, voluntarily, to participate in this research project. My **willingly placed** signature below as evidence of my acceptance of all the conditions contained herein.

Signature of the participant

Date:

Signature of the Interviewer

Date:

Determinates the corelates of chronic kidney diseases patients among a tertiary level hospital in Dhaka

ID No:

Date:

Section – 1: Socio-economic & Demographic		
Questions	Coding Categories	Code
Q.1.1 আপনার বয়স কত?	বছর	
Q. 1.2 আপনার লিঙ্গ কি?	1= পুরুষ 2= মহিলা	
Q. 1.3 আপনার বৈবাহিক অবস্থা কি?	1= বিবাহিত 2= অবিবাহিত 3= অন্যান্য (উল্লেখ).....	
Q.1.4 আপনার শিক্ষাগত যোগ্যতা	1= প্রাইমারী 2= হাই স্কুল 3= কলেজ 4= ব্যাচেলর বা অধিক 5= নিরক্ষর	
Q.1.5 আপনার ধর্ম কি?	1= ইসলাম 2= হিন্দু 3= বৌদ্ধ ধর্ম 4= খ্রীস্টান	
Q.1.6 আপনার পেশা কি?	1= চাকুরী 2= ব্যবসা 3= কৃষক	

	4= দিন মজুর 5= গৃহিণী 6= অবসর 7= ছাত্র/ছাত্রী 8= বেকার	
Q. 1.7 পরিবারের মাসিক আয় কত?		
Q. 1.8 আবাসস্থলের ধরন?	1= টিন সেড 2= বিন্ডিং 3= অন্যান্য (উল্লেখ).....	
Q. 1.9 পরিবারের ধরন	1= একক 2= যৌথ	
Q. 1.10 পরিবারের সদস্য সংখ্যা কত?		
Q. 1.11 আপনার কি কিডনি রোগের পারিবারিক ইতিহাস আছে?	0= না 1= হ্যাঁ	
Q. 1.12 আপনি কি বর্তমানে আপনার কিডনি রোগের কোনো চিকিৎসা নিচ্ছেন?	0= না 1= হ্যাঁ	
Q. 1.13 আপনার কি স্বাস্থ্যসেবা বীমা আছে?	0= না 1= হ্যাঁ	

Section – 2: Lifestyle		
Questions	Coding Categories	Code

Q.2.1 শারিরিক পরিশ্রম কেমন হয়?	1= স্বাভাবিক 2= কম 3= অতিরিক্ত কায়িক শ্রম 4= অন্যান্য (উল্লেখ).....	
Q.2.2 দৈনন্দিন খাবার তালিকা?	1= মিশ্র খাবার 2= তৈলাক্ত 3= ফাস্ট ফুড 4= প্রক্রিয়াজাত করন খাবার 5= সবজি 6= অন্যান্য (উল্লেখ).....	
Q. 2.3 ঘুমের ধরন	1= ভালো 2= মোটামুটি 3= ভালো নয়	
Q. 2.4 মদ্যপান অভ্যাস	0= না 1= হ্যাঁ	
Q. 2.5 ব্যায়াম করার অভ্যাস	0= না 1= হ্যাঁ	
Q. 2.6 সামগ্রিকভাবে আপনার প্রিয় বিনোদনমূলক কার্যকলাপ কি?	1= নাই 2= ভ্রমণ 3= বই পড়া 4= সংগীত 5= গেমিং 6= ফিল্ম এবং টিভি 7= খেলাধুলা	

Section – 3: Behavioural Factors (Smoking) Associated with Kidney Diseases

Questions	Coding Categories	Code
Q.3.1 আপনি কি বর্তমানে ধূমপান করেন?	0= না 1= হ্যাঁ	
Q.3.2 দি হ্যাঁ, আপনি প্রতিদিন কতগুলি সিগারেট/তামাকজাত দ্রব্য ধূমপান করেন?		
Q. 3.3 আপনি কতদিন ধরে ধূমপান করছেন?		
Q. 3.4 আপনি কি কখনো ধূমপান ছাড়ার চেষ্টা করেছেন?	0= না 1= হ্যাঁ	
Q. 3.5 আপনি কি ঘন ঘন সেকেন্ডহ্যান্ড ধূমপানের সংস্পর্শে এসেছেন?	0= না 1= হ্যাঁ	
Q. 3.6 আপনি কি কিডনি রোগের সাথে ধূমপানের সম্পর্ক সহ ধূমপানের স্বাস্থ্য ঝুঁকি সম্পর্কে সচেতন?	0= না 1= হ্যাঁ	

Section – 4: Used Drug Reactions Associated with Kidney Diseases		
Questions	Coding Categories	Code
Q.4.1 আপনি কি বর্তমানে কোনো প্রেসক্রিপশনের ওষুধ খাচ্ছেন?	0= না 1= হ্যাঁ	
Q.4.2 আপনি কি কখনও ওষুধের পার্শ্ব-প্রতিক্রিয়া অনুভব করেছেন?	0= না 1= হ্যাঁ	
Q. 4.3 আপনি কি একজন স্বাস্থ্যসেবা কর্মীর সাথে আপনার ওষুধের পদ্ধতি নিয়ে আলোচনা করেছেন?	0= না 1= হ্যাঁ	
Q. 4.4 আপনি কি ওভার-দ্য-কাউন্টার ওষুধ বা সম্পূরক গ্রহণ করেছেন?	0= না 1= হ্যাঁ	
Q. 4.5 আপনি কি একজন স্বাস্থ্যসেবা কর্মীর সাথে আপনার ওষুধ এবং সম্ভাব্য কিডনি-সম্পর্কিত ঝুঁকি নিয়ে আলোচনা করেছেন?	0= না 1= হ্যাঁ	

Q. 4.6 আপনি কি কিডনি স্বাস্থ্যের উপর কিছু ওষুধের সম্ভাব্য প্রভাব সম্পর্কে সচেতন?	0= না 1= হ্যাঁ	
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Section – 5: Respiratory Distress Associated with Kidney Diseases		
Questions	Coding Categories	Code
Q.5.1 আপনি কি শ্বাস নিতে অসুবিধা বা শ্বাসকষ্ট অনুভব করেছেন?	0= না 1= হ্যাঁ	
Q.5.2 আপনার কি হাঁপানি বা ক্রনিক অবস্ট্রাকটিভ পালমোনারি ডিজিজ (সিওপিডি) এর মতো শ্বাসযন্ত্রের অবস্থার ইতিহাস আছে?	0= না 1= হ্যাঁ	
Q. 5.3 আপনি কি আপনার কিডনি রোগের লক্ষণ এবং শ্বাসকষ্টের মধ্যে কোনো সম্পর্ক লক্ষ্য করেন?	0= না 1= হ্যাঁ	
Q. 5.4 আপনি কি শ্বাসকষ্টের জন্য কোন নির্দিষ্ট চিকিৎসা নিচ্ছেন?	0= না 1= হ্যাঁ	
Q. 5.5 আপনার পরিবারের কি হাঁপানি বা ক্রনিক অবস্ট্রাকটিভ পালমোনারি ডিজিজ (সিওপিডি) এর মতো শ্বাসযন্ত্রের অবস্থার ইতিহাস আছে?	0= না 1= হ্যাঁ	
Q. 5.6 আপনি কি কিডনি রোগ এবং শ্বাসযন্ত্রের সমস্যাগুলির মধ্যে সম্ভাব্য সংযোগ সম্পর্কে সচেতন?	0= না 1= হ্যাঁ	
Q. 5.7 আপনি কি কিডনি রোগের সাথে সম্পর্কিত শ্বাসযন্ত্রের উপসর্গগুলির জন্য কোন চিকিৎসা পরামর্শ বা চিকিৎসা পেয়েছেন?	0= না 1= হ্যাঁ	
Q. 5.8 আপনি কত ঘন ঘন শ্বাসকষ্ট অনুভব করেন?	1= কখনই না 2= কখনও কখনও 3= প্রায়ই 4= সর্বদা	
Q. 5.8 আপনার শ্বাসকষ্ট পরিচালনা করতে আপনি কি কোনো শ্বাসযন্ত্রের ওষুধ (যেমন, ইনহেলার) ব্যবহার করেন?	0= না 1= হ্যাঁ	