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Etiology and Outcomes of Acute Kidney Injury in a Tertiary Care Hospital in Bangladesh: A Study Using the ISN 0 by 25 Protocol

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Abstract **Original Research Article**

***Background*:** Acute Kidney Injury (AKI) is a significant public health concern with high morbidity and mortality, yet data on its etiology and outcomes in resource-limited settings remain scarce. The ISN 0by25 protocol provides a standardized framework for AKI research in such contexts. Objective: To determine the etiology and outcomes of AKI in a tertiary care hospital in Bangladesh using the ISN 0by25 protocol. ***Methods*:** This observational longitudinal study was conducted at the National Institute of Kidney Disease and Urology (NIKDU), Dhaka, from June 2018 to July 2019. A total of 304 adult patients with confirmed AKI were enrolled using purposive sampling. Data were analyzed using SPSS version 23, with chi-square tests used to determine associations. ***Results*:** The mean age was 43.8 ±16.2 years, with a slight female predominance (51%). Pre-renal AKI was most common (60.2%), and 72.7% presented with Stage 3 AKI. Sepsis (21.1%) and diarrhea (20.4%) were the leading individual etiologies. At seven days, 35.2% achieved complete recovery, 34.5% partial recovery, 21.1% had no recovery, and 9.2% expired. Sepsis was the predominant cause among non-survivors ($p<0.001$), while diarrhea was associated with complete recovery ($p<0.001$). Acute glomerulonephritis or vasculitis was linked to non-recovery ($p<0.001$). ***Conclusion*:** AKI in this tertiary care setting presents with distinct etiologies and prognostic patterns. Sepsis carries the highest mortality, diarrhea-associated AKI has excellent recovery potential, and acute GN or vasculitis portends poor renal recovery. These findings highlight the need for etiology-specific prevention and management strategies.

Keywords: Acute glomerulonephritis, Acute kidney injury, ISN 0by25 protocol, Mortality, Outcomes.

INTRODUCTION

Acute Kidney Injury (AKI) represents a formidable global public health challenge, characterized by a sudden decline in renal function that is associated with substantial morbidity, mortality, and healthcare costs [1]. The condition is particularly devastating in low- and middle-income countries (LMICs), where resources for early detection and management are often limited, and the epidemiological profile differs markedly from that observed in high-income nations [2]. In these settings, AKI frequently affects younger individuals, arises from community-acquired causes, and carries a disproportionately poor prognosis [3]. The global burden of AKI has garnered increasing international attention, leading to initiatives such as the International Society of Nephrology (ISN) 0by25 project, which aims to eliminate preventable deaths from AKI by 2025 [2]. This initiative recognizes that AKI is not a single disease entity but rather a syndromic presentation with diverse etiologies that vary significantly across geographic regions and healthcare contexts [4]. The ISN 0by25 protocol provides a standardized framework for AKI research in resource-constrained environments, enabling consistent data collection and meaningful comparisons across different populations [2]. South Asia bears a particularly high burden of AKI, with studies from the region reporting complete recovery rates ranging from 40% to 80% and mortality varying between 2.2% and 52% [3]. A meta-analysis of South Asian studies comprising over 16,500 patients revealed considerable heterogeneity in both presentation and outcomes, highlighting the need for region-specific data to guide clinical practice and health policy [3]. The predominant

causes of community-acquired AKI in this region include diarrheal diseases, sepsis, and tropical infections, which differ substantially from the postsurgical and critically ill populations typically studied in high-income countries [5-6]. In LMICs overall, the incidence of AKI among critically ill patients ranges from 29% to 58.5%, with mortality rates between 25.7% and 68% [7]. Common risk factors include increasing age, male sex, sepsis, hypovolemia, and comorbidities such as hypertension and diabetes mellitus [7]. Sepsis-associated AKI (SA-AKI) deserves particular attention, as it carries a higher risk of death and longer hospital stays compared to non-septic AKI, with some studies reporting 30-day mortality exceeding 30% among affected patients [4-10]. The pathophysiological mechanisms involve complex interactions between inflammation, microvascular dysfunction, and cellular adaptation to injury [4]. Diarrheal diseases represent another major contributor to AKI burden in resource-limited settings. Patients hospitalized with acute gastroenteritis face a significantly increased risk of developing AKI due to hypoperfusion from volume depletion [5]. A recent study found that 13.6% of patients with acute gastroenteritis developed AKI, with dehydration and comorbid conditions serving as key risk factors [5]. Early detection and prompt fluid resuscitation in these cases can lead to excellent renal outcomes, underscoring the importance of timely intervention [5]. Glomerular and vascular causes of AKI, including acute glomerulonephritis (GN) and vasculitis, carry distinct prognostic implications. Among children developing acute kidney disease, acute GN comprises approximately 34.5% of cases and is associated with a significant risk of progression to chronic kidney disease [6]. These intrinsic parenchymal diseases often involve irreversible structural damage, leading to poor renal recovery even with appropriate immunosuppressive therapy [8]. In Bangladesh, data on AKI epidemiology remain limited despite the country's vulnerability to both communicable and non-communicable disease-related kidney injury. A single-center study during the COVID-19 pandemic reported AKI incidence of 22.6% among hospitalized patients, with stage 3 AKI being most common and mortality exceeding 80% among those with renal involvement [9,10]. However, comprehensive data on the full spectrum of AKI etiologies and outcomes in Bangladeshi tertiary care settings, particularly using standardized protocols such as ISN 0by25, are lacking. This study was therefore undertaken to determine the etiology and outcomes of AKI in a tertiary care hospital in Bangladesh using the ISN 0by25 protocol. By employing a standardized, internationally recognized methodology, we aimed to generate robust, comparable data that can inform clinical practice, guide resource allocation, and contribute to the global effort to reduce AKI-associated morbidity and mortality in resource-limited settings.

METHODOLOGY

This observational longitudinal study was conducted at the National Institute of Kidney Disease and Urology (NIKDU) in Dhaka, Bangladesh, over one year from June 2018 to July 2019. The study population comprised adult patients with suspected AKI attending the outpatient department or admitted to the Nephrology ward. A total of 340 patients were enrolled using a purposive sampling technique, with sample size determined by time constraints.

Inclusion criteria:

Patients were included if they had confirmed AKI as per the modified kidney disease: Improving Global Outcomes (KDIGO) 2012 criteria, identical to those used in the ISN 0by25 Global Snapshot Study. Additional inclusion criteria were age 18 years or older and AKI confirmation occurring within three days before or after the index day (the day of data collection).

Exclusion criteria:

Patients were excluded if they were on maintenance dialysis or had received chronic dialysis within the preceding three months. Renal transplant recipients and individuals whose AKI was confirmed more than three days before the index day were also excluded from participation.

Study procedure:

After obtaining ethical clearance, suspected AKI patients were screened on the index day based on oliguria, clinical signs, or urinalysis abnormalities. Baseline serum creatinine was defined as the lowest value from the previous 12 months or, if unavailable, the first value at evaluation. Following informed written consent, eligible patients were enrolled, and data on demographics, clinical presentation, risk factors, and etiology were recorded using standardized case report forms from the ISN 0byby25 study. All patients received standard hospital care without additional interventions by the researcher. After seven days of AKI confirmation, outcomes including mortality, dialysis dependency, and renal recovery status were documented. Serum creatinine was repeated at day seven using a standardized autoanalyzer.

Data analysis:

Data were analyzed using SPSS version 23. Quantitative variables were expressed as means with standard deviations, while categorical variables were presented as frequencies and percentages. Associations between categorical variables were assessed using the chi-square test, with p-values less than 0.05 considered statistically significant.

RESULT

A total of 304 patients with confirmed Acute Kidney Injury (AKI) were enrolled in this study. The

mean age was 43.79 ± 16.16 years, with the largest proportion (22%) in the 41-50 years age group. The study population consisted of 51% females, and the majority of patients (71.1%) had a normal body mass index. More than half (53.6%) resided in rural areas, and 29.3% were smokers. Pre-renal AKI was the most common type, accounting for 60.2% of cases, followed by renal (29.9%) and post-renal (9.9%) AKI. The majority of patients (72.7%) presented with Stage 3 AKI. Anemia was the most frequent risk factor (42.8%), followed by chronic kidney impairment (28.6%) and diabetes mellitus (23.0%). Most cases (87.8%) were community-acquired. Dehydration and hypotension with shock were the most common etiologies, each responsible for 21.4% of cases. Diarrhea was the primary cause of dehydration, while sepsis was the leading cause of hypotension and shock. Acute kidney diseases accounted for 18.7% of cases, with acute glomerulonephritis (GN) or vasculitis and pyelonephritis occurring in 7.6% and 7.2% of patients, respectively. Nephrotoxic agents were implicated in 15.4% of cases, with NSAIDs being the most common offender. Pregnancy-related AKI constituted 6.2% of cases. When analyzed as individual causes, sepsis was the most common etiology (21.1%), closely followed by diarrhea (20.4%). Regarding management, 70.4% of patients received conservative treatment alone, while 22.7% required hemodialysis. At seven days post-AKI confirmation, 35.2% of patients achieved complete renal recovery, 34.5% had partial recovery, and 21.1% showed no recovery. The mortality rate was 9.2%. Significant associations were observed between etiology and outcomes. Complete renal recovery was highest among medical causes (38.4%, p=0.017), while no recovery was most frequent in obstetrical causes (42.1%, p=0.040). Mortality was highest in medical causes (10.6%, p=0.001). Analysis of specific etiologies revealed that among expired patients, 57.1% had AKI due to sepsis (p<0.001). Among patients with complete recovery, 31.8% had AKI secondary to diarrhea (p<0.001). Conversely, among patients with no renal recovery, 26.6% had AKI due to acute GN or vasculitis (p<0.001). These findings demonstrate distinct prognostic patterns: septic AKI carries the highest mortality risk, diarrhea-associated AKI carries the best chance for complete recovery, and acute GN or vasculitis carries the highest risk for non-recovery.

Table 1: Distribution of the study subjects according to demographic characteristics (N=304)

Variables	**n**	**%**
Age (years)		
≤20	17	5.6
21 - 30	65	21.4
31 - 40	61	20.1
41 – 50	67	22
51 – 60	51	16.8
61 – 70	33	10.9
>70	10	3.3
Mean ±SD	43.79 ± 16.16 (18-95)	
Gender		
Male	149	49
Female	155	51
BMI (kg/m2)		
Underweight (<18.5)	12	3.9
Normal weight (18.5 - 24.9)	216	71.1
Overweight (25.0 - 29.9)	74	24.3
Obese (≥30)	2	0.7
Residence		
Rural	163	53.6
Urban	141	46.4
Smoking		
Smoker	89	29.3
Non smoker	215	70.7

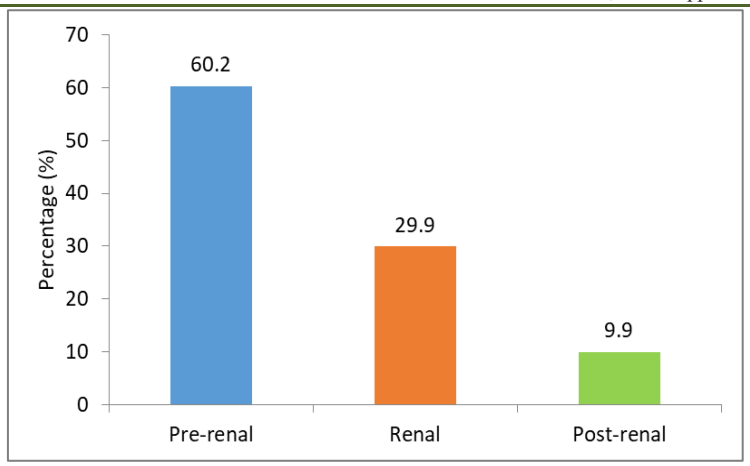

Figure 1: Type of acute kidney injury

Table 2: Distribution of the study subjects according to probable etiology

Etiology	**n**	**%**
Dehydration	65	21.4
Diarrhea	62	20.4
Vomiting	3	1.0
Hypotension & shock	65	21.4
Sepsis	64	21.1
Hemorrhage	1	0.3
Cardiac	10	3.3
Myocardial infarction	10	3.3
Liver	1	0.3
Acute hepatitis	1	0.3
Acute kidney disease	57	18.7
Acute GN/Vasculitis	23	7.6
Pyelonephritis	22	7.2
Rhabdomyolysis	12	3.9
Urinary obstruction	25	8.2
Urinary stones	9	3.0
Tumor/Neoplasm	4	1.3
Obstruction(unspecified)	12	3.9
Infection	3	1.0
Infection (Unspecified)	3	1.0
Pregnancy related	19	6.2
Puerperal sepsis	8	2.6
PPH	11	3.6
Systemic diseases	9	2.9
Multiple myeloma	1	0.3
SLE	2	0.7
DIC	1	0.3
Non-renal neoplasm	5	1.6
Nephrotoxic agents or contributing medications	47	15.4
NSAID	22	7.2
Chemotherapy	12	3.9
Contrast media	6	2.0
Non-prescription drugs	6	2.0
Aminoglycosides	1	0.3
Poisoning	3	1.0
Chemical poisoning	2	0.7
Plants	1	0.3

Table 3: Distribution of etiology of AKI patients according to medical specialty

Etiology	n	%
Medical	255	83.9
Diarrhea	62	20.4
Vomiting	3	1.0
Sepsis	64	21.1
Hemorrhage	1	0.3
Myocardial Infarction	10	3.3
Acute hepatitis	1	0.3
Acute GN/Vasculitis	23	7.6
Pyelonephritis	22	7.2
Rhabdomyolysis	12	3.9
Infection (Unspecified)	3	1.0
Multiple myeloma	1	0.3
SLE	2	0.7
DIC	1	0.3
NSAID	22	7.2
Chemotherapy	12	3.9
Contrast media	6	2.0
Non-prescription drugs	6	2.0
Aminoglycosides	1	0.3
Chemical poisoning	2	0.7
Plants	1	0.3
Surgical	30	9.9
Urinary stones	9	3.0
Tumor/Neoplasm	4	1.3
Obstruction(unspecified)	12	3.9
Non-renal neoplasm	5	1.6
Obstetrical	19	6.3
Puerperal sepsis	8	2.6
PPH	11	3.6

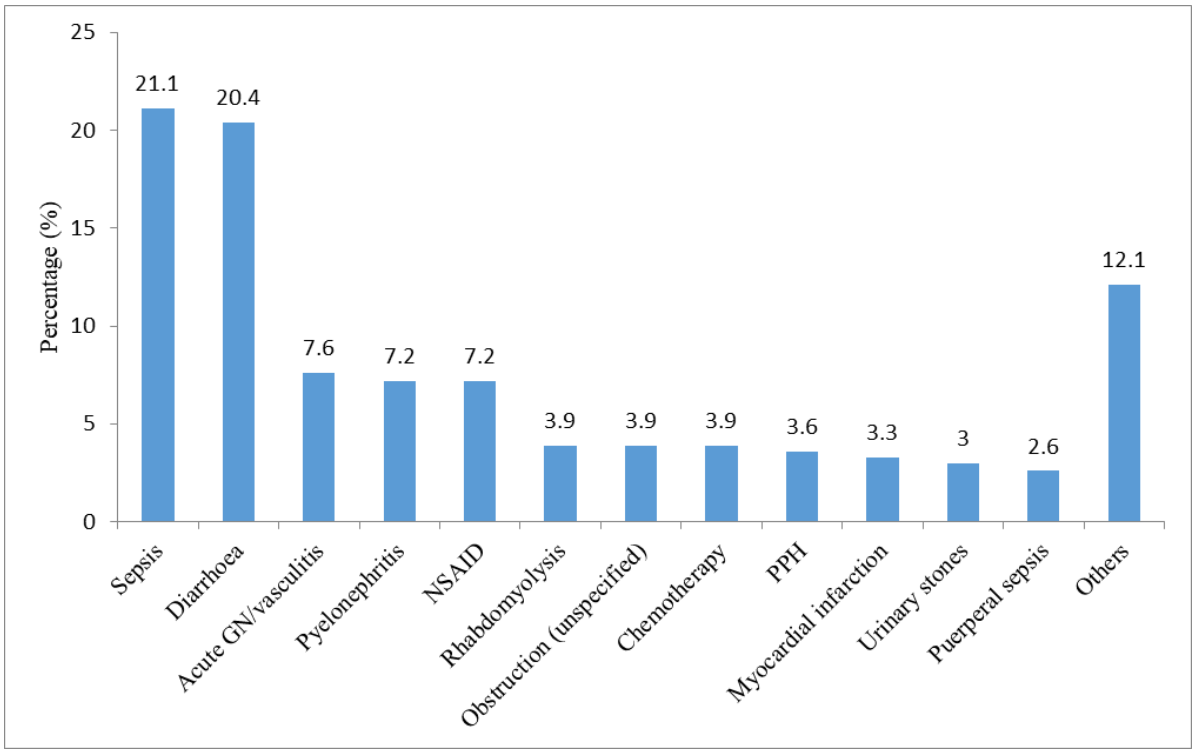

Figure 2: Common etiology of AKI in the study subjects

Table 4: Distribution of the study subjects according to the outcomes

7 days post AKI outcome	n	%
No renal recovery	64	21.1
Partial renal recovery	105	34.5
Complete renal recovery	107	35.2
Expired	28	9.2

Table 5: Distribution of the study subjects according to dialysis dependency status (n=78)

Dialysis dependency status	n	%
Dependable	42	53.8
Not dependable	21	26.9
Expired	15	19.2

Table 6: Association of etiology (according to medical specialty) with outcome

Outcome	Causes			p-value*
	Medical (n=255)	Surgical (n=30)	Obstetrical (n=19)	
No renal recovery	48 (18.8%)	8 (26.7%)	8 (42.1%)	0.04
Partial renal recovery	82 (32.2%)	15 (50.0%)	8 (42.1%)	0.117
Complete renal recovery	98 (38.4%)	7 (23.3%)	2 (10.5%)	0.017
Expired	27 (10.6%)	0 (0.0%)	1 (5.3%)	0.001

A chi-square test was done to measure the level of significance

Table 7: Association of type of AKI with outcome

Outcome	Type of AKI			p-value
	Pre-renal (n=183)	Renal (n=91)	Post-renal (n=30)	
No renal recovery	27 (14.8)	29 (31.9)	8 (26.7)	0.001
Partial renal recovery	58 (31.7)	32 (35.2)	15 (50.0)	0.117
Complete renal recovery	75 (41.0)	25 (27.5)	7 (23.3)	0.04
Expired	23 (12.6)	5 (5.5)	0 (0.0)	0.001

A chi-square test was done to measure the level of significance

Table 8: Association of common etiology of AKI with outcome

Common etiology	Outcome				p-value
	No renal recovery (n=64)	Partial renal recovery (n=105)	Complete renal recovery (n=107)	Expired (n=28)	
Sepsis	10 (15.6)	21 (20.0)	17 (15.9)	16 (57.1)	<0.001
Diarrhea	3 (4.7)	18 (17.1)	34 (31.8)	7 (25.0)	<0.001
Acute GN/Vasculitis	17 (26.6)	3 (2.9)	2 (1.9)	1(3.6)	<0.001
Pyelonephritis	1 (1.6)	16 (15.2)	5 (4.7)	0 (0.0)	0.001
NSAID	2 (3.1)	4 (3.8)	16 (15.0)	0 (0.0)	0.001

A chi-square test was done to measure the level of significance

DISCUSSION

This study provides a comprehensive analysis of the etiology and outcomes of AKI in a tertiary care hospital in Bangladesh using the standardized ISN 0by25 protocol. Our findings reveal distinct etiological patterns and prognostic associations that have important clinical and public health implications. The mean age of our study population was 43.8 ± 16.2 years, which aligns closely with previous South Asian studies reporting mean ages between 42.3 and 46.5 years [11-12]. This consistently younger demographic compared to high-income countries reflects the different epidemiological profile of AKI in resource-limited settings, where community-acquired infections and obstetric complications affect a predominantly working-age population [3-5]. The slight female predominance (51%) in our cohort differs from some regional studies reporting male preponderance [13-14], possibly reflecting the inclusion of obstetric causes and the healthcare-seeking patterns in Bangladesh. A recent Indian study similarly reported female predominance (54.3%) among AKI patients, attributing this to pregnancy-related complications and higher community burden of diarrheal diseases affecting women [15]. Pre-renal AKI was the most common type (60.2%), consistent with the

predominance of diarrhea and sepsis as leading etiologies. The high proportion of Stage 3 AKI (72.7%) at presentation is concerning but reflects the reality of delayed healthcare seeking in resource-limited settings, a phenomenon well-documented across South Asia [3-5]. A multicenter study from India reported that 68% of community-acquired AKI patients presented with Stage 3 disease, with a median time from symptom onset to hospital presentation exceeding five days [15]. This late presentation likely contributes to the substantial morbidity and mortality observed. Sepsis emerged as the single most common etiology (21.1%) and was disproportionately associated with mortality, accounting for 57.1% of expired patients. This finding aligns with global literature establishing sepsis-associated AKI (SA-AKI) as a particularly lethal condition [10-12]. The pathogenic mechanisms involve complex interactions between inflammation, microvascular dysfunction, and cellular adaptation to injury, often leading to multi-organ failure despite appropriate antimicrobial therapy [4]. A recent multicenter study reported in-hospital mortality ranging from 38% to 48.6% among SA-AKI patients requiring renal replacement therapy [12], corroborating our findings. The high mortality associated with septic AKI in our setting underscores the need for early recognition, aggressive hemodynamic support, and timely initiation of renal replacement therapy when indicated [4-12]. A meta-analysis of SA-AKI studies identified delayed antibiotic administration, vasopressor dependency, and high baseline SOFA scores as independent predictors of mortality [16]. Conversely, diarrhea-associated AKI demonstrated the most favorable prognosis, with 31.8% of patients achieving complete recovery. This finding is consistent with previous reports that prerenal AKI from volume depletion is rapidly reversible with prompt and adequate fluid resuscitation [7-13]. A recent Indian study of post-diarrheal AKI during an epidemic reported that 71% of patients presented with Stage 3 AKI, yet the overall mortality was only 6.5%, with most survivors achieving renal recovery [13]. The relatively low mortality (9.2% overall) and high complete recovery rate (35.2%) in our study reflect the reversibility of hypovolemic AKI when appropriate interventions are implemented. However, it is noteworthy that 25% of expired patients in our cohort had diarrhea-associated AKI, suggesting that delayed presentation, septic shock complicating gastroenteritis, or underlying comorbidities may transform a potentially reversible condition into a fatal one [7-13]. A Bangladeshi community-based study identified distance to healthcare facility, reliance on traditional healers, and failure to recognize danger signs as key barriers to timely presentation for diarrheal illness [17]. Acute GN or vasculitis emerged as the etiology most strongly associated with non-recovery, affecting 26.6% of patients with no renal recovery at seven days. This finding aligns with the pathophysiological understanding that glomerular and vascular injuries often involve irreversible structural damage, including crescent formation and glomerulosclerosis [6,14]. A recent pediatric cohort study reported that acute GN comprised 34.5% of acute kidney disease cases and was associated with a significant risk of progression to chronic kidney disease [6]. The poor renal recovery in this subgroup highlights the importance of early diagnosis, timely immunosuppressive therapy, and close long-term follow-up to mitigate progression to end-stage renal disease [14]. A study from South Asia evaluating crescentic GN outcomes found that only 40% of patients achieved renal recovery at six months, with dialysis dependency at presentation and severe interstitial fibrosis predicting poor prognosis [18]. The distribution of etiologies by medical specialty revealed that obstetrical causes, though comprising only 6.3% of cases, were associated with the highest rate of non-recovery (42.1%). This finding reflects the severity of obstetric AKI in resource-limited settings, where delayed presentation, limited access to emergency obstetric care, and the combination of hemorrhagic and septic insults contribute to poor renal outcomes [5-11]. A Nigerian study reported that obstetric AKI accounted for 19.3% of cases, with puerperal sepsis and post-partum hemorrhage being the predominant causes, and 34% of affected women progressing to chronic kidney disease [19]. Post-partum hemorrhage and puerperal sepsis remain important preventable causes of AKI-related morbidity in young women of reproductive age, emphasizing the need for strengthened maternal health services. The association between AKI type and outcome observed in our study—pre-renal AKI having the highest complete recovery rate (41.0%) and renal AKI the highest non-recovery rate (31.9%)—is consistent with established pathophysiological principles. However, the finding that mortality was highest in pre-renal AKI (12.6%) despite its reversibility potential likely reflects the severity of underlying conditions such as septic shock, where multi-organ failure rather than kidney injury per se determines survival [4-12]. Patients with pre-renal AKI secondary to sepsis had significantly higher mortality than those with pre-renal AKI from pure volume depletion, underscoring the importance of etiology even within the same pathophysiological category. The treatment patterns observed in our study—70.4% receiving conservative management and 22.7% requiring hemodialysis—reflect both the reversibility of predominant etiologies and potential resource limitations. A recent Bangladeshi study reported that 34% of AKI patients required dialysis, with affordability and availability of hemodialysis being major determinants of treatment received [11]. Among dialysis-dependent patients in our cohort, 53.8% remained dependent at seven days, highlighting the substantial burden of severe AKI requiring ongoing renal support. Our study has several limitations. First, the single-center design limits generalizability to other healthcare settings in Bangladesh. Second, the seven-day follow-up period may underestimate late renal recovery, as some patients with acute tubular necrosis may recover function over

weeks to months [7-20]. Third, the etiology assignment was based on the treating consultant's diagnosis, introducing potential subjectivity. Fourth, the relatively small sample size for subgroup analyses limits statistical power for certain comparisons. Fifth, the absence of long-term follow-up precludes assessment of progression to chronic kidney disease, particularly in patients with acute GN or vasculitis [6-14]. Finally, resource constraints prevented systematic evaluation of all potential etiologies using advanced diagnostic modalities. Despite these limitations, our study provides valuable region-specific data using a standardized international protocol, enabling comparison with other LMIC settings. The clear tripartite relationship between etiology and prognosis—septic AKI carries the highest mortality, diarrheal AKI best recovery, and acute GN or vasculitis poorest renal recovery—has important clinical implications. Early recognition of these patterns can guide etiology-specific management strategies: aggressive resuscitation and antimicrobial therapy for sepsis, prompt fluid replacement for diarrhea, and timely immunosuppression with nephrology referral for suspected glomerulonephritis [13-14]. In conclusion, this study demonstrates that AKI in Bangladesh affects a young population with predominance of community-acquired, potentially reversible causes. However, the high proportion of late presentations with severe disease, the substantial mortality associated with sepsis, and the poor renal recovery in glomerular diseases highlight critical areas for intervention. Health system strengthening to ensure early recognition and referral, coupled with public health measures to prevent diarrheal diseases and improve obstetric care, could substantially reduce the burden of AKI-related morbidity and mortality in Bangladesh.

Limitations:

This single-center study with a seven-day follow-up may underestimate late renal recovery. The etiology assignment relied on the consultant's diagnosis, introducing potential subjectivity. The modest sample size limits subgroup analyses, and the absence of long-term follow-up precludes assessment of progression to chronic kidney disease.

CONCLUSION

This study demonstrates that AKI in Bangladesh affects a young population with predominantly community-acquired, potentially reversible causes. Sepsis carries the highest mortality risk, diarrhea-associated AKI has excellent recovery potential, and acute GN or vasculitis portends poor renal recovery. These distinct etiological patterns underscore the need for etiology-specific management strategies. Health system strengthening to ensure early recognition and timely intervention could substantially reduce AKI-related morbidity and mortality.

Recommendation:

Early recognition of AKI using standardized protocols like ISN 0by25 should be implemented across Bangladesh. Public health measures should focus on preventing diarrheal diseases and sepsis. Timely fluid resuscitation for diarrhea-associated AKI, aggressive management of sepsis, and prompt nephrology referral for suspected glomerulonephritis is essential to improve outcomes.

REFERENCES

1. Macedo, Etienne, and Ravindra L. Mehta. "Preventing acute kidney injury." Critical care clinics 31.4 (2015): 773-784.
2. Perico, Norberto, e Giuseppe Remuzzi. "Acute Kidney Injury in Poor Countries Should No Longer Be a Death Sentence: The ISN ‘0 by 25'Project." Annals of Nutrition and Metabolism 66.Suppl. 3 (2015): 42-44.
3. Soto, Karina, *et al*. "The risk of chronic kidney disease and mortality is increased after community-acquired acute kidney injury." Kidney International 90.5 (2016): 1090-1099.
4. Poston, Jason T., and Jay L. Koyner. "Sepsis-associated acute kidney injury." Bmj 364 (2019).
5. Chow, Chung M., Alexander KC Leung, and Kam L. Hon. "Acute gastroenteritis: from guidelines to real life." Clinical and experimental gastroenterology (2010): 97-112.
6. Cao, Yan, *et al*. "Etiology and outcomes of acute kidney injury in Chinese children: a prospective multicentre investigation." BMC Urology 13.1 (2013): 41.
7. Izawa, Junichi, Shigehiko Uchino, and Masanori Takinami. "A detailed evaluation of the new acute kidney injury criteria by KDIGO in critically ill patients." Journal of Anesthesia 30.2 (2016): 215-222.
8. Hirsch, Jamie S., *et al*. "Acute kidney injury in patients hospitalized with COVID-19." Kidney International 98.1 (2020): 209-218.
9. da Rocha Guedes[1], Jailza, *et al*. "Incidence and risk factors associated with acute kidney injury in intensive care unit." Cogitare Enferm 22.2 (2017): e49035.
10. Chawla, Lakhmir S., *et al*. "Acute kidney disease and renal recovery: consensus report of the Acute Disease Quality Initiative (ADQI) 16 Workgroup." Nature Reviews Nephrology 13.4 (2017): 241-257.
11. Dahlerus, Claudia, *et al*. "Acute kidney injury requiring dialysis and incident dialysis patient outcomes in US outpatient dialysis facilities." Clinical Journal of the American Society of Nephrology 16.6 (2021): 853-861.
12. Cho, A. Young, *et al*. "Clinical characteristics of sepsis-induced acute kidney injury in patients undergoing continuous renal replacement therapy." Renal failure 40.1 (2018): 403-409.

13. Bertholet-Thomas, A., *et al*. "Post-diarrheal haemolytic uremic syndrome: when shall we consider it? Which follow-up?" Archives de Pédiatrie: Organe Officiel de la Société Française de Pédiatrie 18.7 (2011): 823-830.
14. Plafkin, Callie, Weixiong Zhong, and Tripti Singh. "ANCA vasculitis presenting with acute interstitial nephritis without glomerular involvement." Clinical nephrology. Case Studies 7 (2019): 46.
15. Kaul, Anupma, *et al*. "Spectrum of community-acquired acute kidney injury in India: a retrospective study." Saudi Journal of Kidney Diseases and Transplantation 23.3 (2012): 619-628.
16. Liu, Jiefeng, *et al*. "Rates, predictors, and mortality of sepsis-associated acute kidney injury: a systematic review and meta-analysis." BMC Nephrology 21.1 (2020): 318.
17. Chowdhury, Fahima, *et al*. "Diarrheal illness and healthcare seeking behavior among a population at high risk for diarrhea in Dhaka, Bangladesh." PLoS One 10.6 (2015): e0130105.
18. Nagaraju, Shankar Prasad, *et al*. "Clinicopathological characteristics and outcomes of diffuse crescentic glomerulonephritis-A single-center experience from Southern India." Journal of Clinical and Diagnostic Research: JCDR 11.9 (2017): OC21.
19. Adejumo, O. A., *et al*. "Pregnancy-related acute kidney injury: Etiologies and short-term outcomes in a tertiary hospital in Southwest Nigeria." Saudi Journal of Kidney Diseases and Transplantation 30.6 (2019): 1423-1430.
20. Sawhney, Simon, and Simon D. Fraser. "Epidemiology of AKI: utilizing large databases to determine the burden of AKI." Advances in chronic kidney disease 24.4 (2017): 194-204.