

# Clinical profile of acute kidney injury in a tertiary hospital

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## Abstract

**Background:** Acute Kidney Injury is becoming the leading cause of mortality in hospital settings globally. AKI should be given consideration as prompt diagnosis and management can make it reversible. **Materials and Methods:** 50 patients who were diagnosed to have AKI based on Acute Dialysis Quality Initiative criteria were selected from medical wards of tertiary care hospital. The study was done for a period of 1 year and data of presenting symptoms, leading cause and complications noted were assessed for each subjects. **Results:** Out of the 50 subjects, majority 28(56%) were males and maximum number 16(32%) of subjects belonged to more than 60 years. In our study most common presentation was fatigue 30(60%), next was fever 27(54%) and oliguria 24(48%). In the study 10(20%) had metabolic acidosis and pulmonary oedema. Also 4(8%) had hyperkalemia as complication. **Conclusion:** The study identified many factors like presenting symptoms and causes of AKI which can be used as useful predictor and can prevent further delay and complications.

**Key Word:** Acute Kidney Injury, Clinical profile, Kidney,

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## INTRODUCTION

Kidney is one of the major organ in the body. Its importance lies in the fact that the organ will be simultaneously affected with other organ dysfunction. Even with the presence of dual kidneys chance of getting damage which leads to failure is highly likely. Acute kidney injury (AKI) is a global problem. Its incidence varies in different geographical regions as well as the targeted population under the study. According to one meta-analysis, the pooled incidence rates of AKI in adult were 21.6–20% of hospitalized adult patients experienced AKI during a hospital care which is associated with high

expenditure of resources and lead to adverse outcomes.<sup>1</sup> AKI is defined as occurrence of any of the following. Increase in Serum Creatinine by  $\geq 0.3$  mg/dl ( $\geq 26.5$   $\mu$ mol/l) within 48 hours; or Increase in Serum Creatinine to  $\geq 1.5$  times baseline, which is known or presumed to have occurred within the prior 7 days; or Urine volume  $< 0.5$  ml/kg/h for 6 hours.<sup>2</sup> The most common cause of AKI is: volume depletion, hypotension, amino-glycoside antibiotics and Radio contrast agents. Major surgery is also an important cause of AKI. Advanced age, liver disease, underlying renal insufficiency and diabetes have been implicated as risk factor for the development of AKI.<sup>3</sup> AKI being an asymptomatic disease till the later stage has the tendency to progress to a deadly disease. Early recognition and prompt adequate management can be life saving for such patients. The variation in the pattern of appearance of AKI and poor resources for its recognition make it one of the most common secondary causes of morbidity. The difference in the prevalence and the causative factors of the disease should be identified to tackle it. This study aimed to identify the clinical profile of AKI in a tertiary care hospital and the results might shed some light to the unseen areas.

## MATERIALS AND METHODS

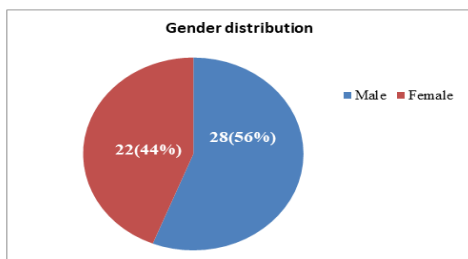
A cross sectional observational study was conducted among AKI patients admitted in the Department of General Medicine in Shri Sathya Sai medical college and research institute, Kancheepuram district, Tamil Nadu. The patients were selected by convenient sampling. The study was conducted for a period of one year (June 2017 to May 2018). All the study participants were evaluated by thorough clinical examination and appropriate laboratory investigations. The AKI was diagnosed if the patients had satisfied the either increase in creatinine value or decline in the urine output or both as per second International Consensus Conference of the Acute Dialysis Quality Initiative (ADQI) Group criteria.<sup>4</sup> Diagnosis of AKI was made on basis of history, signs and symptoms, supported by blood investigations, and radiological data. All patients with clinical and / or biochemical evidences of Acute Kidney Injury (patients whose blood urea and serum Creatinine [ >2 ] increases above normal ) were included. Patients with preexisting chronic renal failure or chronic renal disease ( pre existing increase in Blood urea and serum Creatinine) Patients aged below 14 years were excluded. Data of presenting symptoms, leading cause and complications noted where assessed for each subjects. Data was entered in Micro Soft Excel and analyzed using statistical software. Descriptive details were presented as frequencies, means and standard deviations. Inferential statistical methods were used to find any significant association. P value less than 0.05 was considered as significant.

## RESULTS

Out of the 50 subjects, majority 28(56%) were males and maximum number 16(32%) of subjects belonged to more than 60 years. The mean (SD) of the study population was 53.50(15.04) years.

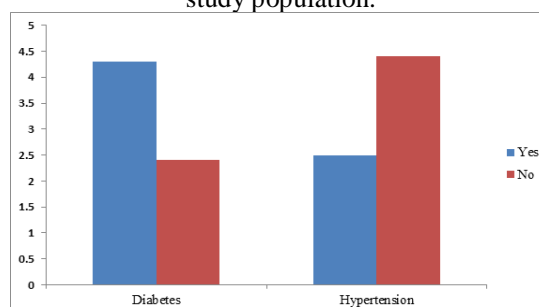
**Table 1:** Age distribution among the study population

Age (years)	Frequencies	percentage
20 - 29	2	4%
30 - 39	9	18%
40 - 49	11	22%
50 - 59	12	24%
>60	16	32%



**Figure 1:** Gender distribution among the study population (n = 150)

Majority 28(56%) of the subjects were males among the study population.



**Figure 2:** Presence of diabetes and hypertension among study population

Among the 50 subjects 21(42%) and 18(36%) had diabetes and hypertension respectively.

**Table 2:** Presented symptoms of the study population

Duration of symptoms	Frequency	Percentage
Vomiting	21	42
Oliguria	24	48
Fatigue	30	60
Fever	27	54
Loose stools	23	46
jaundice	17	34
Polyuria	11	22
dyspnea	13	26

In our study most common presentation was fatigue 30(60%), next was fever 27(54%) and oliguria 24(48%).

**Table 3:** Causes of AKI among the study population

Causes	Frequency	Percentage
Septicemia	12	24
AGE	9	18
Cardiac causes	7	14
Drug toxicity	3	6
Communicable disease like malaria	5	10
BPH	4	8
Renal stone	4	8
Post operation	6	12
Snake bite	4	8

In the study medical causes for AKI is more compared to that of surgical cause.

**Table 4:** Complications of AKI among the study population

Signs	Frequency	percentage
Encephalitis	1	2
Hyperkalemia	4	8
Anaemia	7	14
Multi Organ Dysfunction	4	8
Hypotension	6	12
Metabolic acidosis	10	20
Pulmonary oedema	10	20

In the study 10(20%) had metabolic acidosis and pulmonary oedema. Also 4(8%) had hyperkalemia as complication.

## DISCUSSION

In the study we aimed to note the clinical profile of AKI patients in tertiary hospital. In our study we found that majority 28(56%) were males and maximum number 16(32%) of subjects belonged to more than 60 years. Many studies have shown that AKI subjects belonged to more than 60 year age group.<sup>5,7</sup> In our study the mean age of the subjects were 53.50(15.04) years. This is similar to many studies where age group falls in this mean age.<sup>6,7</sup> In the subjects' majority were males 28(56%). This is similar to many studies where male shows preponderance in AKI as usual to many diseases.<sup>8,9</sup> In the study fatigue, fever and oliguria were the most common symptoms presented by the study population. This finding is similar to many studies where fever, vomiting and oliguria were the most common presentations.<sup>10,12</sup> These symptoms are due to reduced blood supply to the organ leading to further reduced kidney function. In the study most common cause of AKI was septicemia followed by acute gastroenteritis. This finding also similar to many studies where septicemia, poisoning and communicable disease.<sup>13,15</sup> These causes leads to AKI due to oxidative stress and reduced tubular dysfunction. In the study 10(20%) had metabolic acidosis and pulmonary oedema as complication. Also 4(8%) had hyperkalemia as complication. This finding is similar to the studies where complications occur as a consequence of AKI.<sup>5</sup>

## CONCLUSION

In our study we found majority of AKI subjects had male predominance and most of the subjects were more than 60 years of age. The most common cause of AKI was septicemia and symptom was fatigue. The study was useful to identify and treat AKI at an early stage. The presence of these symptoms and causes can be considered as a prior warning in developing AKI. The study should have included the prognosis and management of these subjects to add further value. The timely diagnosis and assessment of AKI can reduce the financial constraints due to lengthy hospital stays and investigations. So further studies have to be done to effectively predict AKI for further management.

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