

## Awareness about kidney failure in allied health care working professionals: A question based survey

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### **ABSTRACT:**

Kidney play a vital role in our body, it excreted nitrogenous waste from human body. Renal failure is worldwide problem, but mostly in developing country renal failure spread rapidly<sup>(1)</sup>. A large number of patients approximate 2 million suffering with renal failure annually, so renal failure have a large economic burden on country. Renal failure treated by different modalities like hemodialysis, peritoneal dialysis, continuous renal replacement, SLED therapy, kidney transplantation. OBJECTIVE- Because renal failure affect a large number of population they will treated in the hospital by nephrologist and dialyzed in dialysis unit by dialysis technologist. Prevention is better than cure so raising awareness about the renal failure system is a must-have in all health care professionals, this survey observed the awareness in allied health care professional. METHODOLOGY: -It is a question-based survey on the observation of awareness about renal failure in allied health care professional. Question set is based on demographic, education and knowledge based on allied health care professional. Data collection is done by online sampling method. RESULT: It is a question based online survey of allied healthcare provider regarding awareness of function and dysfunction of kidney. Approximate 184 participant take participation in this survey mostly person have a well awareness, but a large number of participant have no awareness about leading cause of renal failure. CONCLUSION- The study was about awareness of kidney function, renal failure, signs, symptoms, and indications among allied health professionals. Few participants have a lack of awareness, which is not good for the health sector and general population.

**Keywords:** *Kidney failure, Awareness, Treatment modalities, Allied health care provider*

### **INTRODUCTION:**

Kidney is an essential organ it play a vital role in human body by blood filtration, it excreted nitrogenous waste and extra fluid from human body.<sup>1</sup> Kidney produce urine by a complex mechanism and maintain electrolyte balance in human body. Kidney release some hormones which regulate the blood pressure of human body, it produced vitamin D<sub>3</sub> which is necessary for bone health, it produced EPO which promote blood formation, it also maintain acid and base balance in human body.<sup>2,3</sup> When these kidney functions are disrupted, renal failure develops. Renal failure mostly affects both kidneys. In the human body, some kidney diseases do not produce renal failure symptoms, but there are some warning sign of renal failure help to identify the disease like hypertension, hematuria (blood in urine)

proteinuria (protein in urine), increase blood urea and creatinine level in blood, reduced glomerular filtration rate below 60 GFR, hyperkalemia, acidosis, pedal edema, eyes puffiness and frequent urination in night.<sup>4,5,6</sup> Obstructive uropathy, glomerulonephropathy, congenital anomaly, SLE, NSAIDs, aminoglycoside and illegal drugs are also several cause of kidney failure in India.<sup>7,8</sup> Renal failure is a global problem, but in developing countries renal failure spread rapidly. The prevalence of chronic renal disease was approximately 697.5 million cases in 2017, it is seen higher in women (9.5%) compared to men (7.3%). An estimated 115.1 million cases were in India. It was one of the 12 leading causes of death globally (approximately 1.2 million) in 2017. Chronic kidney disease mortality increased by 41.5% in all age groups globally between 1990 and

2017. Diabetes and HTN is the leading cause of renal failure<sup>9</sup>. Renal disease is major cause of morbidity and mortality in developing country<sup>10</sup>. A large number of patients, approximate 2 million, suffer from renal failure annually, there is definite data about renal failure. Patient in India is not found 800 per million population each year, but some study show one in 10 person in general population.<sup>11</sup> Most government health programs run for prevention of critical chronic diseases focused on HTN, diabetes mellitus and cardiac disease<sup>12,13</sup>. Accurate CKD burden of renal failure is not assessed in India due to absence of renal disease register but few study show CKD burden approximate 58% in children.<sup>14,15</sup> Approximately 100,000 patients in India are on dialysis; this is growing at a rate of 31 %, which is the highest in the world,<sup>16</sup> so renal failure have a large economic burden on country it affect socioeconomic status of patient. Most people have not received proper medical treatment in the initial stage of disease due to absence of proper awareness, treatment and guideline<sup>17</sup>. Currently ARF is diagnosed on the base of GFR, acute rise of BUN (blood urea nitrogen), serum creatinine level and decrease urine output in 48 hours.<sup>18,19,20</sup> It is a common critical problem in multiple organ failure patient and have a high mortality rate.<sup>21,22</sup> Accumulated extra fluid in plural, pericardium, peritoneal membrane and other soft tissue<sup>23,24</sup>. It recovered by renal replacement therapy, some ARF patient recovered very fast and some convert to CRF.<sup>25,26,27</sup> It treated by different modalities like Hemodialysis, peritoneal dialysis, CRRT, and kidney transplantation.

### **METHODOLOGY:**

This study conducted on allied health professional for observed awareness about kidney failure disease. The study was conducted at Saifai, Etawah, UP, India from October 2020 to December 2020. The questionnaire distributed questions about demographic condition, education qualification, and the understanding of a dialysis therapist and other allied health care professionals. Study population is all allied health professionals of north and west India who are active on social media platform.

**Study design:** This study done by social media platform form, first design a Google form on Google classroom of different type of question about demographic condition, qualification, and the awareness about prevention of kidney failure by different preventive method by allied health professional. Sample size –The sample size is 165

candidate of north and west India. Data collection- We searched online data from WHO, CDC, MOHFW, platform, contact to dialysis therapist & allied health professional who working in different hospital & hemodialysis unit of north and west India by what's app group. Allied health professional fill online Google form which consist of different type of question, we used the grading and approach to assess the quality of the evidence. All allied health professional watched the questionnaire, and after feeding the mail ID and then answering all question, we analyzed and evaluated the data. The inclusion criteria- allied health professional, exclusion criteria- except then allied health professional. Ethical approval is not required.

### **RESULTS:**

Most candidate working in private sector, out of 184 participant 43.5% working in private sector and 52% working in government sector hospital. 45% was dialysis therapist, 8% nursing professional and 42% other allied health care professional take participate in the Google based survey. 60% male and 40% female participant, it indicated that a large number of female working in the health sector. 74% participant was diploma holder, 14.4% graduate, only 6.5% was post graduate it show that a very few candidate achieved higher qualification.

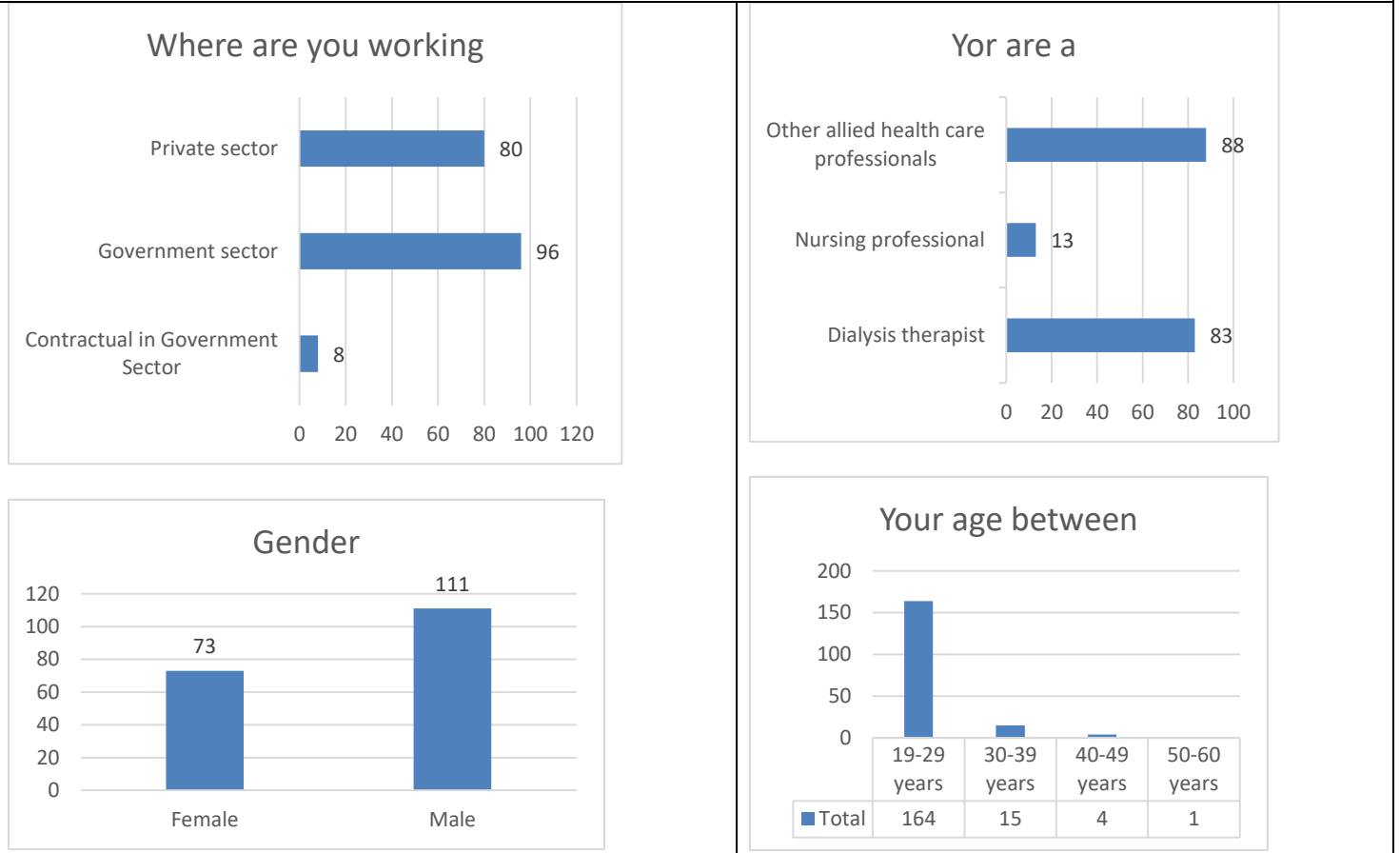
Question was about normal function of kidney, only 84.1% give correct response out of 184 participants. On leading cause of renal failure only 30% participant give correct answer it mean that most allied health professionals are unaware about the leading cause of renal failure. Who is treating physician of renal disease, 97% participant give right answer. Severe dehydration is also the cause of ARF 82% participant give right answer. On prevention of kidney diseases 81% participant give right answer. About nephrotoxic drugs and EPO only 48.4% participants give correct answer. On treatment of renal failure 89.1% participants give correct answer. Only 57.6% participant give right answer on indication of renal failure water which use for hemodialysis therapy only 67% candidate give right answer.

Q2.10 what is glomerular filtration rate 90.8% candidate give right answer

Q2.11 it questions about sign of renal failure only 52 give right answer

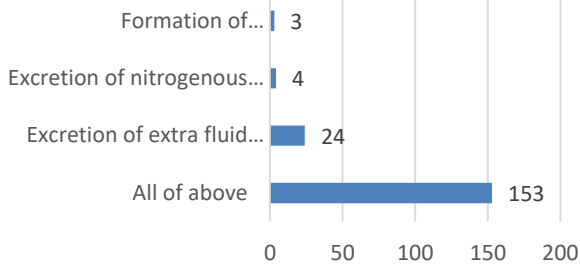
Q2.12 the site of PD catheterization 82.6% participant give right answer

**TABLE 1**

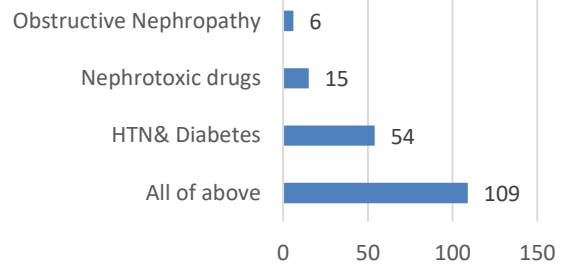


**TABLE 2**

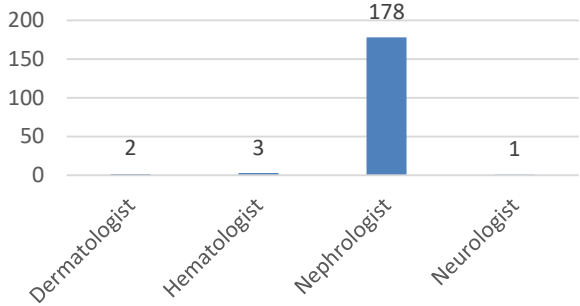
### What is normal function of kidney



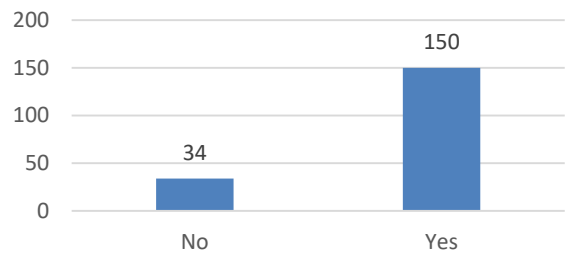
### What is the leading cause of renal failure-



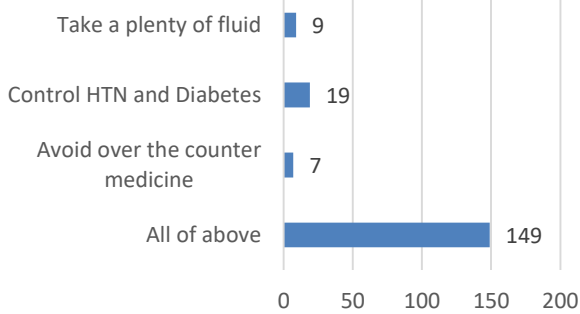
### Kidney Disease treated by-



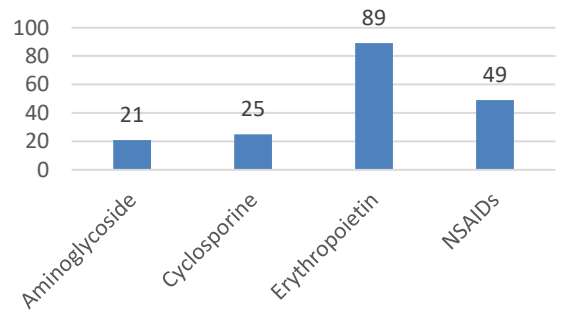
### Severe dehydration is the cause of ARF-



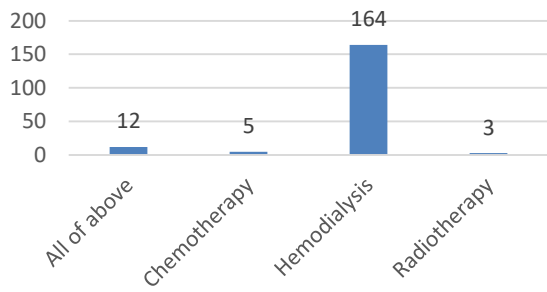
### How you prevent your kidney



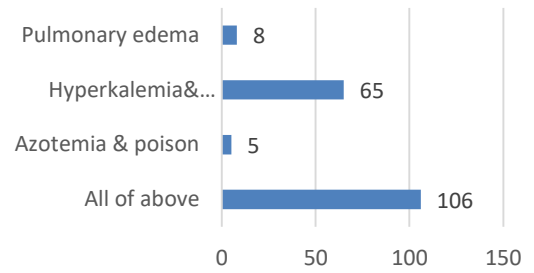
### All are nephrotoxic drugs except one-



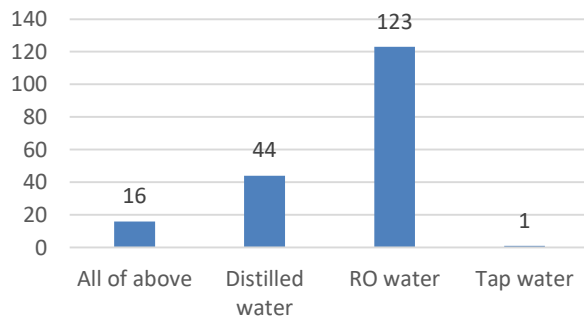
### What is treatment of renal failure-



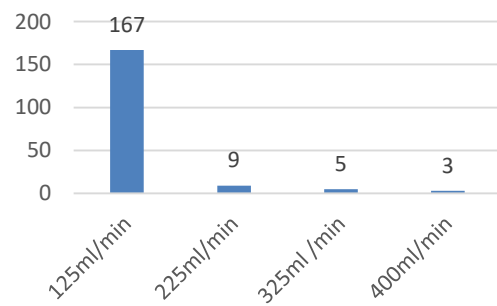
### What is the indication Dialysis



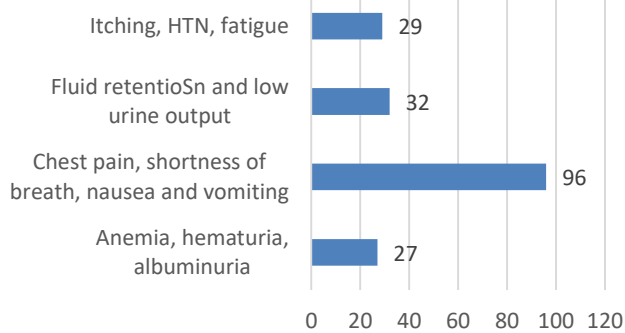
### Which type of water is required for Hemodialysis-



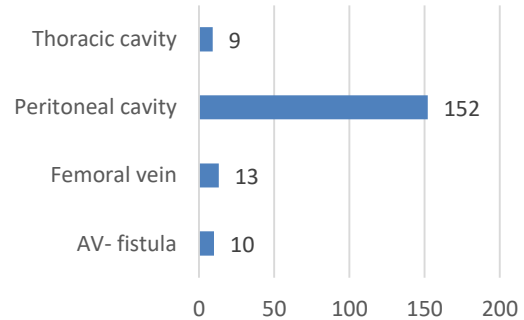
### What is the normal GFR



### All are sign of kidney failure except one



### Peritoneal dialysis done from which site-



## **DISCUSSION:**

Renal disease is major cause of morbidity and mortality in developing country<sup>10</sup>. Many study show one of the 10 person in general population affected with renal disease.<sup>11</sup> government of India run some health program for prevention of renal disease, opendialysis unit in each districtand focused on hypertension, diabetes mellitus i.e. the major cause of renal disease.<sup>12</sup>This study shows the awareness in allied health professional about renal disease.In India, most allied health professionals are diploma or degree holders while post graduate professionals are very less, which is not good for health care system. According to survey, a large number of participants are from theyounger generation, which is

good for the health sector.A large number of allied health professionals are well aware of the normal function of the kidney, but less than 50% ofparticipants are aware that the leading causes of renal failure areHTN&diabetes. Mostparticipants know very well about nephrologists who treat renal failure patients. Severe dehydration is the cause of acute renal failure, which most allied health professionals knowvery well. The kidney is an important organs of human body.Maintaining a healthy kidney is the duty of all humans, and mostparticipants know very well how to prevent renal failure.Erythropoietinhormonessecreted by healthy kidneys are not nephrotoxic; They stimulate bone marrow for RBC production; approximately 50%

of participants are aware of this fact. Renal failure patients treated by renal replacement therapy or hemodialysis; a large number of participants have knowledge of this, which is must for all allied health professionals. For knowledge about the indication of dialysis treatment in renal failure patients; most participants know the indications of dialysis. RO water is use only for hemodialysis, a large number of candidates know about this fact. The normal glomerular filtration rate is 180 liters per day, or 125ml/min; a large number of participants give the right answer. In ICU setting, critically ill patients with multi-organ failure and acute renal failure are treated with continuous renal replacement therapy, but only 50% of participants know that nephrotic syndrome is a renal disease and that most children recover after 12 years of age. Its symptoms are weight gain, facial swelling, protein loss by urine, hypo albuminemia etc. A large number of participants know about these signs of renal failure: azotemia, anaemia, hematuria, albuminuria, anuria, fluid retention, itching and fatigue. More than 50% of participants are well aware of these signs. Peritoneal dialysis is the treatment of renal failure. To apply this treatment, a peritoneal catheter is implanted in the peritoneal cavity, most participants are well aware of that fact.

### **CONCLUSION:**

The study found there is awareness among allied health professionals about kidney function, renal failure signs, symptoms and indication, but a few participants lack of awareness, which is not good for health sector and the general population. So plan a proper awareness education programme by government of India for all allied health care professionals and the general population with of seminars and webinars. Allied health professionals require proper awareness about kidney function and renal failure because they are directly involved in the treatment and awareness of patients.

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Conflict of interest –

No conflict.

**Financial support and sponsorship:** Nil

**Ethical approval:** Not required

**Statistical Analysis:** Not required

### **Authors contribution:**

The study's idea and design, data collection, analysis and interpretation of results, and text were all contributed by all authors.

### **REFERENCES:**

1. Sakhuja V, Muthukumar T, Sud K, et al. Vesicoureteral reflux and reflux nephropathy as seen at a tertiary care adult nephrology service in India – An analysis of 86 patients. *Renal Failure* 2003;25:173-81
2. National kidney foundation 2020 how your kidney work.
3. Bostwick DG, Eble JN: *Urologic Surgical Pathology*. St Louis, Mosby
4. Bindroo S, Quintanilla Rodriguez BS, Challa HJ. Renal failure. (updated 12 Aug 2020)
5. Levey AS, Cores J, Bolton K et al. K/DOQI clinical practices guidelines for chronic kidney disease: evolution, classification, and stratification
6. Jane S. Davis, CRNP, DNP: Kim Zuber et al Determining renal function: A clinician reviews 2013, 23(8)25.
7. Jamro S, Channa NA, Shaikh AH, Ramzan A. Chronic renal failure in children. *J Pak Med Assoc* 2003;53:140-2.
8. Chadha V, Warady BA. Epidemiology of pediatric chronic kidney disease. *Adv Chronic Kidney Dis* 2005;12:343-52.
9. Carney, E.F. The impact of CKD on global health 6 Mar 2020. *Nat Rev Nephrol* 16, 251 (2020) <https://doi.org/10.1038/s41581-020-0268-7>
10. WHO: Preventing chronic disease: A vital investment. Geneva who, 2005
11. Agarwal SK: Chronic kidney disease and its prevention in India. *Kidney Int* 2005;98:S41-S45
12. Grassmann A, Gioberge S, et al: ESRD patient in 2004: global overview of patient numbers, treatment modalities and associated trend. *Nephrol Dial Transplants* 2005;20:2587-2593
13. Center for disease control and prevention: Prevalence of chronic kidney disease and associated risk factors- US, 1999-2004.
14. Agarwal SK, Dash SC, Irshad M, et al prevalence of chronic kidney failure in adult in Delhi, India. *Nephrol Dial Transplants* 2005;20:1638-1642
15. Gulati S, Mittal S, Sharma RK, Gupta A. Etiology and outcome of chronic renal failure in Indian children. *Pediatric Nephrol* 1999; 13: 594-6.
16. Jha Vivekananda dialysis in India today and tomorrow 04 Feb 2016 health world .com
17. Balwani R, Manish, Charulata P, Bawankule, Khetan P, Pasari A awareness about kidney and its related function/dysfunction in school going

- children:26 Feb-2019, Volume:30/ Issue:1,Page 202-207
18. Bellomo R, RoncoC, KellumJA, Mehata RL, Palevsky P, Acute dialysis quality initiative workgroup, ARF definition,outcome measures,animal models, fluid therapy and information technology needs: international consensus of conference of ADQI.crit care20004;8;R204-12
  19. Mehta RL,Kellum JA,Shah SV,Molitoris BA, Ranco C,Warnock DG,et al.Acute kidney injury network: report of an initiative to improve outcome in acute kidney injury.crit care.2007;11R31.(PubMed)
  20. Lentine,LKrista ,Kasiske,L Bertram et al. Summary of kidney disease, Kidney disease improving globaloutcomes, clinical practices guideline for AKI. KidneyInt suppl.2012; 2:1-138
  21. OstermannM,Chang R W, AKI in intensive care unit.crit care med.2007; 35:1837-1843; quiz 1852(PubMed)
  22. Chan-Yu lin andYong-Chang chen Acute kidney injury classification: world J crit care med.4Apr 2012;1(2):40-45
  23. Lin CY,Chin YC,Tsai FC,Tian YC,JenqCC,HuangCC,FangJT,Yang CW.CRRT combine with extracorporeal membrane oxygenation in advance cardiac failure patients.J Nephrol.2008;21:789-792(PubMed).
  24. Journois D. Hemofiltration during cardiopulmonary Bypass. KidneyInt SUppl.1998;66:S174(PubMed)
  25. Chen YC, Jenq CC,Tian YC, ChangMY, Lin CY,ChangCC,Lin HC,FangJT,Yang CW,Lin SM. Rifle classification for predicting in hospital mortality in critical ill patient.2009;31:139-145(PubMed)
  26. Ali T, Khan I, Simpson W, Prescott G, Townend J, SmithW, Macleod A, incidence and outcome in AKI:A comprehensive population based study Am Soc Nephrol.2007;18:1292-1298(PubMed)
  27. Lin SM,HuangCD,Lin Hc, Liu CY,Wang CH, KuoHP. A modified goal- directed protocol improve clinical outcome in ICU Patient with septic shock.2006;26:551-557