

Study of the Risk Factors on the Patients with Kidney Disorders at the Hospital Universiti Sains Malaysia

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Abstract

Background: Now days, many people hospitalized due to kidney disorder with high morbidity and mortality, especially in the developing countries. The most common risk for kidney disease is diabetes and hypertension. Other risk factors are glomerulonephritis (nephritis), polycystic kidney disease, urinary tract obstruction, reflux nephropathy, and drug or medication-induced kidney problem. **Objectives:** This paper described the risk factor of patients with kidney disorder in Hospital University Sains Malaysia. **Methodology:** The research was conducted using longitudinal study design and clinical prospective method on all adult patients with kidney disorder at the Hospital University Sains Malaysia during the period of April and May 2012. Data was analysis using OR analysis. **Result:** From the 29 males and 9 females with the mean age of 57.40±15.586 year and 47.80±8.189. The most common risk factor of patient with kidney disorder at the Hospital University Sains Malaysia was Diabetes mellitus, Hypertension, Autoimmune and Smoking. Base on gender, female with diabetes mellitus and autoimmune tend to suffer from kidney disease compare to male patients (OR=0.421 and OR=0.923) respectively. On the other side, male with hypertension and smoking tend to suffer from kidney disease compare to female patients (OR=1.571 and OR=1.038) respectively.

Keywords: Kidney disorder, risk factor, hospital university sains Malaysia, odd ratio

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1. Introduction

Normally, the kidneys are essential to maintain good health. The most important functions of the kidneys are to remove toxins, excess salt and water from the body in the form of urine [1]. The kidneys also have an important role to play in the management of blood pressure and maintaining the number of circulating red blood cells (erythrocytes) in a narrow range [2].

The morbidity and mortality of the patient due to kidney disease is increase in the United States [3]. In this country over 300,000 patients have renal

disease (especially ESRD) and by 2010 the number of 650,000 patients with ESRD is predicted [4]. In Malaysia, with 18 million populations, the prevalence of 1800 kidney failure case per year is reported and 100 cases in 2010 were ESRD [5].

Risk factors for kidney disease are reported in example diabetes [6], hypertension [7], heart disease, a family with history of kidney failure [3-8]. Where diabetes is the leading one. In fact, 44 percent of people with kidney failure due to diabetes were stated dialysis [9]. Both type 1 and type 2 diabetes can cause kidney disease. Kidney disease from

diabetes usually progresses slowly, over a period of 10-15 years. Damage usually occurs to the glomeruli, the blood-filtering units of the kidneys. When these blood filtering units are injured, the kidneys cannot clean the blood [10]. The majority of patients with diabetes are at risk of developing renal issues [6]. More than 60 percent of patients with type 2 diabetes manifest some form of clinical kidney damage which leaves them at risk of progressive chronic kidney disease [11]. Furthermore, poorly controlled high blood pressure can cause rapid loss of kidney function by damaging the tiny filter of the kidney [12]. Improving blood pressure control has proven to slow and, in some cases, stop chronic kidney damage [13].

2. Methodology

This is prospective longitudinal study, which was conducted on 38 patients with kidney disease. Patients with renal failure are taken in the medical record. Data socio demography includes age, gender, race, diagnosis, medical history. Data socio demography and diagnosis were descriptive analysis while relationships risk factors with gender by odds ratios analysis.

3. Result

Socio demographic data collected includes: gender, race and age. A number of 38 patients are involved in study consisted of 76.3 % (29 patients) of male and 23.6 % (9 patients) of female. Most of them are Malay 100%. The average age of 57.40 ± 15.586 for male and 47.8 ± 8.189 for female (Table 1).

Table 1: Socio demographic of Patients Kidney disease

Sosiodemografi	N(%)	Mean ± SD
Gendar		
Male	29 (76.3)	
Female	9(23.6)	
Race		
Malay	38 (100.0)	
Age		
Male		57.40±15.586
Female		47.80±8.189

During the period study total of 38 medical admissions were recorded case of kidney disorder: 5 (13.1%) Acute renal failure, 4 (10.5%) Chronic renal disease stage II, 2 (5.2%) Chronic renal disease stage III, 7 (18.4%) Chronic renal disease stage IV, 14 (36.8) Chronic renal disease stage V, 3 (7.8%) Acute kidney injury, 1 (2.6%) Lupus Nephritis and 2 (5.2%) Nephritic syndrome.

Diagnose of patient in Hospital Universiti Sains Malaysia. During the research 38 patients were as follow; end-stage renal failure is the most frequency disease diagnosed (36.8%), and the second frequency was chronic kidney disease (CKD) stage IV (18.4%) (Table 2).

Risk factor patient with gender frequencies are such in Table 3. Among this population, the most frequencies risk factor is hypertension, while diabetes mellitus, auto immune and smoker. Female with diabetes mellitus is more prone to experience kidney failure than male with diabetes mellitus (OR: 0.421 CI: 95%). Male with hypertension is more prone to experience kidney failure than female with hypertension (OR: 1.571 CI: 95%). Female with auto immune is more prone to experience kidney failure than male with auto immune (OR: 0.923 CI: 95%). Male with smoking is more prone to experience kidney failure than female with smoking (OR: 1.038 CI: 95%).

Table 2: Diagnosis Patients in Population Study

Diagnosis	Number of Patients	Percentage
Acute renal failure	5	13.1 %
CKD stage 2	4	10.5 %
CKD stage 3	2	5.2 %
CKD stage 4	7	18.4 %
ESRF	14	36.8 %
Acute kidney injury	3	7.8%
Lupus nephritis	1	2.6 %
Nephritic syndrome	2	5.2 %
Total	38	100 %

Table 3: Risk Factor Patients with Gender frequencies

M: Male; F: Female

Risk Factors		Yes	No	Odd Ratio
Diabetes Mellitus	M	10	19	0.421
	F	5	4	
Hypertension	M	22	7	1.571
	F	6	3	
Autoimmune	M	3	26	0.923
	F	1	8	
Smoker	M	3	26	1.038
	F	0	9	

4. Discussion

During this study, total patients with renal disease are 38 patients. Most of them, (76.4%) were male, while female only 23.6% (Table 1). It is an agreement with Kenward and Tan (2003), Gibney (2005) and Ismail (2010) in Malaysia reported that male were dominant, this is due to multifactors such as food/drink, life style and high stress [14,15,16]. On the contrary, researches in Indonesia reported that the number of population suffer from renal disease during 2005-2007 were female of 64%. This is due to life style and complication with diabetes mellitus. Populations in the research are Malay because most of Kelantan population ethnic is Malay. Previous research claimed that the ethnic Malay tends to suffer kidney disease compared to Chinese and Indian ethnic¹⁷. Furthermore, Kidney damage is influenced by age¹⁸. Based on this research, the average age of the patient with renal diseases is male of 57.40 year old and female of 47.80 year old. Similar with Fitri (2011), the average age of the patient with renal diseases 40-50 year old, in this age the function of many organs include renal is decreased [2-7].

The result of this research showed that most diagnoses nephrology diseases ward at HUSM was end-stage renal failure 36.8% (Table 2). The number of male patient was greater than female, but not significantly. This is in agreement with Setyo (2010) who studied the same case in Hospital Dr. Moewardi Surakarta [20]. On the other hand, the research by Saydah (2007) reported that male and female have the same opportunities to suffer from ESRD [21].

Many factors affect kidney disease. From previous research, the factors that were related to

the incidence and progression of kidney disease are diabetes mellitus, hypertension, auto immune and smoking [22]. In this research, most risk factor in patients with renal disease was hypertension, followed by diabetes mellitus, auto immune and smoker. In the result, hypertension is the most risk factor for the patient suffers from ESRD. This is in agreement with Ebony (2009) and Irza (2005) [23-24]. On the contrary, the research by Chris (2007) in United States and Arora (2010) reported that diabetes mellitus is the most risk factor for the patient ESRD [2-25].

Diabetes mellitus in adult increase risk of the renal disease. Type 2 DM will increase the incidence of ESRF due to diabetes [26]. Obesity, cholesterol and family history of CKD will also increase this risk [27]. In this study, the numbers of female with DM suffer from kidney failure is greater than male (OR: 0.421, CI: 95%). This is in agreement with Soni (2005) in Prof. Dr Margono Hospital Indonesia, while and Jennifer (2011) reported that female were dominant. This is due to multifactors such as life style and overweight of female patient [28-29].

High blood pressure is a leading cause of kidney disease. High blood pressure can damage blood vessels throughout the body. This will reduce the blood supply to the important organs like the kidneys. High blood pressure also damages the tiny filtering units (nephron) in the kidneys. As a result, the kidneys may stop removing wastes and extra fluid from blood [30].

In this study, the numbers of male with hypertension suffer from kidney failure is greater than female (OR: 1.571, CI: 95%). This is in agreement with Jhon (2005) who studied in Australia and Salomeh (2008). According to these to research in male an increase of aldosteron hormone produce water retention that cause increased blood pressure [12-31]. On the contrary, the research by Mori (2004) reported that the number of female with hypertension suffer from ESRF is greater than male. This is due to high blood pressure to female after menopause [32]. In this result, the number of female with auto immune suffer from kidney failure is greater than male (OR: 0.923, CI:95%). This is in agreement with Delisa (2004) in United States and Wang (2012). This is due to female hormone and immune responses [33-34].

Smoking is associated independently with cardiac disease, peripheral vascular disease, and renal diseases [35]. Smoking activity cause abnormal renal vascular function through endothelial cell damage so as occurrence of kidney damage³⁶. In this result the number of patient male with smoke suffer from kidney failure is greater than female (OR: 1.038, CI:95%). This is in agreement with Orth (2008) and Josep (2010). The describe that this is due to the toxic content in cigarettes that increase oxidative stress which causes blood vessels burning. Nicotine levels in cigarettes smoke trigger an increase of blood pressure by 20 mmHg [37-38].

Conclusion

The most diagnoses nephrology diseases ward at The Hospital Sains Malaysia was end-stage renal failure. The most common risk factor of patient with kidney disorder was Diabetes mellitus, Hypertension, Autoimmune and Smoking. Base on gender, female with diabetes mellitus and autoimmune tend to suffer from kidney disease compare to male patients. On the other side, male with hypertension and smoking tend to suffer from kidney disease compare to female patients.

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