

## Chapter 3

### Preliminary Data Analysis

In this chapter we describe the preliminary data analysis of CKD among gout patients in Nongjik hospital, Pattani Province between January 2004 and December 2010.

There were three sections in this chapter: variables of interest, frequency distribution of determinants and the association between the outcome and determinants.

#### 3.1 Variables of interest

The roles of the variables classified as determinant and outcome. These variables, role and data type are shown in Table 3.1.

*Table 3.1: Variables, role and data type*

Variable	Role	Type
BMI	Determinant	Binary
HT	Determinant	Binary
DM	Determinant	Binary
Dyslipidemia	Determinant	Binary
Thiazide use	Determinant	Binary
Anti-gout agent	Determinant	Binary
Serum uric acid	Determinant	Binary
CKD	Outcome	Binary

As shown in Table 3.1, there were 7 determinants. All determinants were binary variables.

The outcome of interest in this study was CKD among gout patients in Nongjik's Hospital, Pattani Province, which were of binary data type.

### **3.2 Distribution of Determinants**

Table 3.2 shows the frequency distribution of categorical determinants. There were 167 gout patients in Nongjik Hospital, Pattani Province. Overall, more than half (62.9%) were overweight. Almost 90% of patients had any of the considered co-morbidities, HT (76.0%), dyslipidemia (49.7%) and DM (17.4%) being the most common.

Considering the use of thiazide, only 9.6% of patients received thiazide to treat high blood pressure. Allopurinol plus colchicine were the most commonly dispensed (in 68.3% of patients with gout). There were 53 subjects (31.7%) who received colchicine alone.

Approximately 45% of patients achieved the serum uric acid goal of  $< 8$  mg/dl.

*Table 3.2: Frequency distribution of categorical determinants*

Determinant	Category	Count	Percent
BMI	< 23 kg/m <sup>2</sup>	62	37.1
	≥ 23 kg/m <sup>2</sup>	105	62.9
HT	absent	40	24.0
	present	127	76.0
DM	absent	138	82.6
	present	29	17.4
Dyslipidemia	absent	84	50.3
	present	83	49.7
Thiazide use	no	151	90.4
	use	16	9.6
Anti-gout agent	colchicine	53	31.7
	allopurinol & colchicine	114	68.3
Serum uric acid	< 8 mg/dl	75	44.9
	≥ 8 mg/dl	92	55.1

Table 3.3 shows the frequency distribution of gender. Most of gout patients were male (77.2%) and the rest were female.

*Table 3.3: Frequency distribution of gender*

Gender	Count	Percent
Female	38	22.8
Male	129	77.2

The age of the male patients ranged from 34 to 90 years and of the female patients from 48 to 93 years. In men, the mean age was 61.1 years with standard deviation 12.7 years.

In women, the average age was 69.7 years with standard deviation 11.0 years.

### 3.3 Distribution of outcome variable

Table 3.4 shows the frequency distribution of CKD stage. There were 14 cases (8.4%) of the patients had CKD stage 1, 62 cases (37.1%) had CKD stage 2, 71 cases (42.5%) had CKD stage 3, 15 cases (9.0%) had CKD stage 4 and only 5 cases (3.0%) had CKD stage 5.

CKD was divided into two categorical, CKD (stage 3-5) and non-CKD (stage 1-2).

Approximately half of gout patients (54.5%, 95% CI 46.6-62.2) had CKD.

*Table 3.4: Frequency distribution of CKD stage*

Stage of CKD	Count	Percent
1 <sup>st</sup>	14	8.4
2 <sup>nd</sup>	62	37.1
3 <sup>rd</sup>	71	42.5
4 <sup>th</sup>	15	9.0
5 <sup>th</sup>	5	3.0

### 3.4 Association between outcome and categorical determinants

Since the outcome and all determinants are categorical, Pearson's chi-square test was used to assess the association between the determinant variables and outcome, as shown in Table 3.5.

*Table 3.5: Distributions of the CKD among gout patients by each study variable*

Variable	CKD: n=91 (54.5%)		Non-CKD: n=76 (45.5%)		Total: n=167 (100.0%)		p-value
<b>BMI</b>							
< 23.0 kg/m <sup>2</sup>	34	(37.4)	28	(36.8)	62	(37.1)	0.927
≥ 23.0 kg/m <sup>2</sup>	57	(62.6)	48	(63.2)	105	(62.9)	
<b>HT</b>							
present	77	(84.6)	50	(65.8)	127	(76.0)	0.008
absent	14	(15.4)	26	(34.2)	40	(24.0)	
<b>DM</b>							
present	14	(15.4)	15	(19.7)	29	(17.4)	0.593
absent	77	(84.6)	61	(80.3)	138	(82.6)	
<b>Dyslipidemia</b>							
present	56	(61.5)	27	(35.5)	83	(49.7)	0.001
absent	35	(38.5)	49	(64.5)	84	(50.3)	

Variable	CKD: n=91 (54.5%)		Non-CKD: n=76 (45.5%)		Total: n=167 (100.0%)		p-value
<b>Thiazide use</b>							
use	8	(8.8)	8	(10.5)	16	(9.6)	0.908
no	83	(91.2)	68	(89.5)	151	(90.4)	
<b>Anti-gout agent</b>							
colchicine	26	(28.6)	27	(35.5)	53	(31.7)	0.427
allopurinol & colchicine	65	(71.4)	49	(64.5)	114	(68.3)	
<b>Serum uric acid</b>							
< 8 mg/dl	33	(36.3)	42	(55.3)	75	(44.9)	0.021
≥ 8 mg/dl	58	(63.7)	34	(44.7)	92	(55.1)	

The result from Pearson's chi-square test shows that the majority of gout patients, 62.9% was in overweight group ( $BMI \geq 23.0 \text{ kg/m}^2$ ). There was no statistically significant association between patient's BMI and having CKD.

The most common morbid disease in patients with gout was HT. CKD patients had a greater number and proportion of present HT ( $p\text{-value} = 0.008$ ) as compared to non-CKD. There were 82.6% of gout patients with an absent DM and 50.3% with an absent dyslipidemia. The presence of DM was not statistically significant association with CKD but dyslipidemia was associated with CKD.

Thiazide use was not statistically significantly associated with CKD. Overall, more than half (68.3%) received colchicine plus allopurinol. There were 53 subjects

(31.7%) received only colchicine continuously. The use of anti-gout agent was not significantly associated with CKD.

Only 36.3% CKD and 55.3% non-CKD reached the serum uric acid goal of  $< 8.0$  mg/dl ( $p = 0.021$ ).

The plot of odds ratios and 95% confidence intervals presented the association between CKD and each risk factor (Figures 3.1-3.3).

Figure 3.1 shows the association between CKD and present HT. The gout patients who present HT had higher risk of CKD than those absent HT (OR= 2.86, 95% CI= 1.36, 6.00).

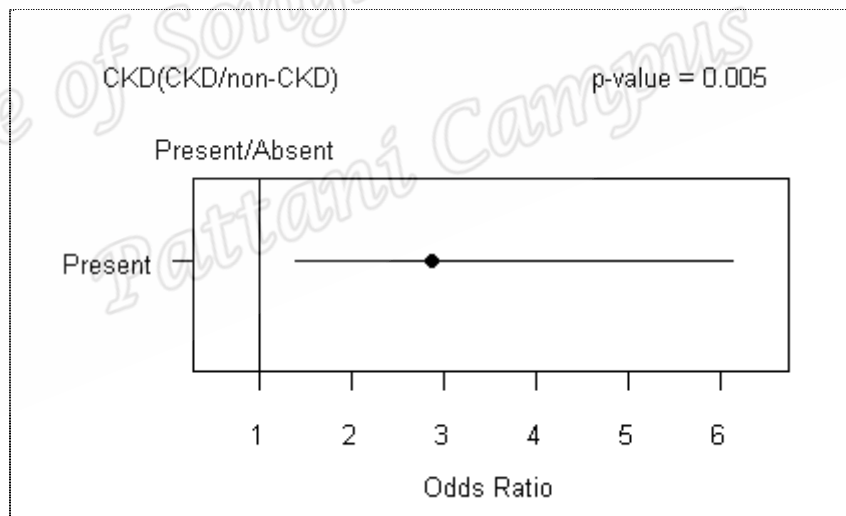


Figure 3.1: Association between CKD and present HT

Figure 3.2 shows the association between CKD and present dyslipidemia. The gout patients who present dyslipidemia had higher risk of CKD than those absent dyslipidemia (OR= 2.90, 95% CI= 1.54, 5.46).

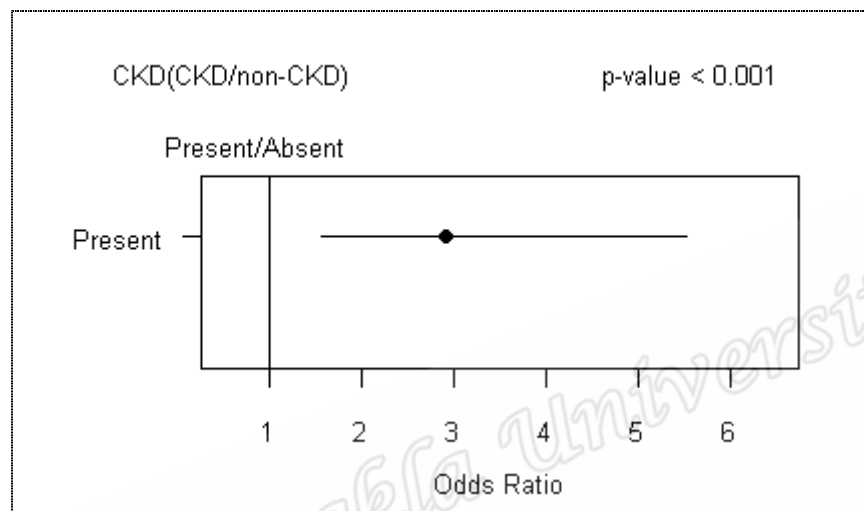


Figure 3.2: Association between CKD and present dyslipidemia

Figure 3.3 shows the association between CKD and serum uric acid. The uncontrolled patients had a significantly higher risk of CKD compared to those with controlled (OR= 2.17, 95%CI= 1.17, 4.04).

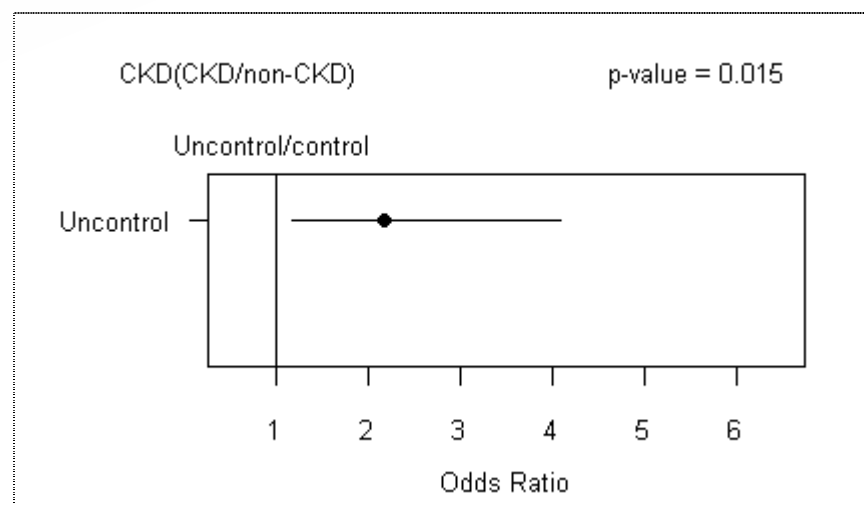


Figure 3.3: Association between CKD and serum uric acid