# Incidence of the Apparent Active Problems of Chronic Kidney Disease Patients in CKD Clinic of the Outpatient Department at Thammasat Hospital

Anake Yoosabai MD[1]

[1] Nephrology Unit, Department of Internal Medicine, Faculty of Medicine, Thammasat University, Pathum Thani, Thailand

**Background**: Chronic kidney disease (CKD) is a common disease. Patients with CKD usually have many other diseases, and complications are more common than general patients. The nephrologist must deal with these problems. It may take a long time to advise these patients in CKD clinic.

**Objective**: To identify the number of apparent problems in CKD patients, the duration of the nephrologist visits for these patients, and the relationship between the number of problems and the duration of doctor visit.

**Materials and Methods**: The study was a descriptive observational cohort study. Patients with CKD aged 18 years and over were enrolled at the CKD clinic of Thammasat University Hospital. The patient's information including any current active problems and the time spent during each visit were recorded by data collectors. The data was collected for a period of six months between September 1, 2015 and February 28, 2016.

**Results**: Five hundred forty-eight patients were included. Nine physicians were observed by the data collectors in each patient visit. The average number of problems was 2.10. The three most common problems were hypoalbuminemia, proteinuria, and edema. The average time spent in each visit was 8.4 minutes, 14.56 minutes for new cases, and 7.81 minutes for old cases. Physicians spent 5.39 minutes for each visit to CKD patients with no apparent problems and spent more time for additional problems.

**Conclusion**: CKD patients had at least two problems, and each visit lasted an average of 8.40 minutes. When the number of problems increased, the physician required longer time to solve the problems.

**Keywords**: Active problem, Chronic kidney disease, Outpatient department, Spending time, Nephrology

Chronic kidney disease (CKD) is found in 9 to 17.5% of cases in general population of Thailand[1,2] and often associated with a number of pre-existing conditions such as diabetes, hypertension, and heart disease[3]. Patients with CKD usually have multiple diseases, and more complications such as hyperkalemia metabolic acidosis and hyperphosphatemia than the general patients[4]. The nephrologist must deal with these problems. It takes time to provide advice on these issues and may take longer time taking care of the patients. The purpose of the present study was to find out the number of active current problems a CKD patient needed to be treated or advised at the outpatient department, the average length of time that a kidney doctor used to treat an individual patient, and the relationship between the number of problems and the duration of the examination.

## Materials and Methods

The present study was a descriptive observational cohort study. Data were collected by data collectors. The information was recorded in the record form.

### Inclusion criteria

Patients with CKD aged 18 years and over who came to the CKD clinic at the outpatient department of Thammasat University Hospital were included in the present study. Patients were treated by a kidney doctor or a trainee fellow physician between September 1, 2015 and February 28, 2016.

### Exclusion criteria

Patients receiving dialysis treatment were excluded from the study. Patients in each visit with

**Correspondence to:**

Yoosabai A.

Nephrology Unit, Department of Internal Medicine, Faculty of Medicine, Thammasat University, 95 Moo 8, Paholyothin Road, Klongnung, Klongluang District, Pathum Thani 12120, Thailand.

**Phone**: +66-2-9269794, **Fax**: +66-2-9269793

**Email**: anake_med@hotmail.com

no continuous examination during the visit were also excluded from the study.

### Data collection

Data were collected by the data collectors during the doctor visit. The problems of the patients were observed and collected while the patients met the doctor. The laboratory data from computer databases were recorded. The time of entering the examination room and the time of departure from the examination room were also recorded. The data collectors were expected to have at least a bachelor's degree and had been working on clinical patient data for at least six months prior to the collection. Before the data were collected, there was a rehearsal on how to collect the data. Finding or identifying problems was discussed with the researcher. Two weeks of pre-collection testing was done before performing the actual data collection. Data were collected for a period of six months between September 1, 2015 and February 28, 2016. Data collection required the consents from all the patients.

### Data analysis

The data were analyzed to find the number of problems and the average number of problems in each patient. In addition, the problems were identified, and the prevalence of each problem was determined. The length of time for the patient visit was calculated. The relationship between the number of problems and the duration of the examination was also evaluated. Stata, version 14.0 (StataCorp LP, College Station, TX, USA) was used for data analysis.

## Results

Five hundred forty-eight patients enrolled in the present study. The first stage of CKD included 51 patients. The number of patients with CKD stage 2, 3, 4, and 5 were 74, 194, 137, and 92, respectively. The mean age of the patients was 65 years (Table 1).

The average number of problems per person was 2.10. The three most common problems were hypoalbuminemia, proteinuria, and edema (Table 2). The number of problems increased by CKD stage (Figure 1).

The average length of time using for a CKD patient follow-up was 8.4 minutes. The new and old cases took 14.56 and 7.81 minutes, respectively, for face-to-face doctor visit. The patient who came for regular follow-up with no additional problem spent 5.39 minutes. The examination time was increased by the number of problems (Figure 2).

**Table 1.** Demographics

| Demographics (n=548) | Frequency; n (%) |
|---|---|
| Age (years); mean±SD | 65±16 |
| Body weight (kg); mean±SD | 65±15 |
| Sex | |
|   Male | 269 (49) |
|   Female | 279 (51) |
| CKD | |
|   Stage 1 | 51 (9) |
|   Stage 2 | 74 (14) |
|   Stage 3 | 194 (35) |
|   Stage 4 | 137 (25) |
|   Stage 5 | 92 (17) |
| Average serum creatinine(mg/dL); mean±SD | 2.34±2.01 |
| Average eGFR (mL/minute/1.73m$^2$); mean±SD | 44.30±29.88 |
| New cases/old cases | 50/498 |

CKD=chronic kidney disease; eGFR=estimated glomerular filtration rate; SD=standard deviation

**Table 2.** Active problems identified during nephrology visit

| Problems identified | n (%) |
|---|---|
| Hypoalbuminemia (serum albumin <3.5 g/dL) | 169 (31) |
| Proteinuria (urine dipstick ≥1+) | 81 (15) |
| Edema | 64 (12) |
| Anemia (Hb <10%) | 59 (11) |
| Pyuria (WBC >5 cells/HPF) | 54 (10) |
| SBP ≥160 or DBP ≥100 mmHg | 53 (10) |
| Hyperlipidemia* | 49 (9) |
| Hypokalemia | 37 (7) |
| HbA1c >8% | 35 (6) |
| Muscle pain | 22 (4) |

Hb=hemoglobin; WBC=white blood cell; SBP=systolic blood pressure; DBP=diastolic blood pressure

* Triglyceride >190 mg/dL, low-density lipoprotein cholesterol >100 mg/dL, or total cholesterol >200 mg/dL
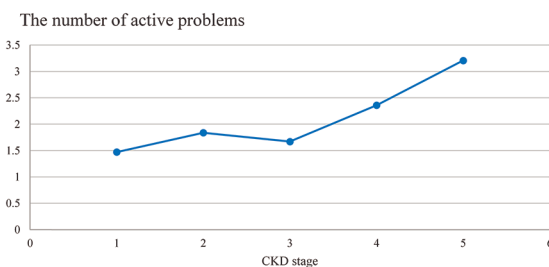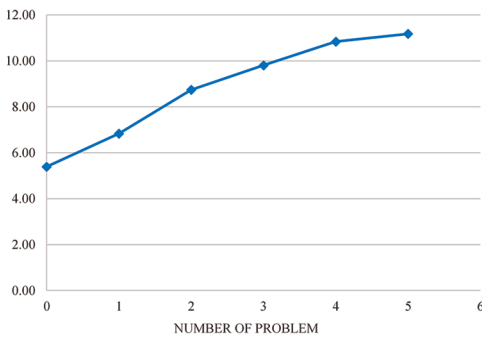


**Figure 1.** Stage of chronic kidney disease and number of active problems in chronic kidney disease patients.

**Table 3.** Diagnosis of patients presenting at CKD clinic

| Diagnosis of diseases in CKD patients | No. of patients; n (%) |
|---|---|
| Hypertension | 456 (83) |
| Hyperlipidemia | 338 (62) |
| Diabetes mellitus | 283 (52) |
| Atherosclerotic heart disease | 77 (14) |
| Benign prostatic hypertrophy | 60 (11) |
| Cerebrovascular disease | 55 (10) |
| Gout | 55 (10) |
| Diabetic retinopathy | 45 (8) |
| Atrial fibrillation | 32 (6) |
| Systemic lupus erythematosus | 23 (4) |

CKD=chronic kidney disease



**TIME (MINUTE)**

**Figure 2.** Number of active problems and duration of examination for each visit of chronic kidney disease patients.



Time (minute)
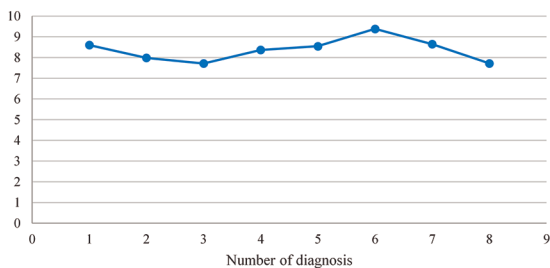
**Figure 3.** Number of diseases of chronic kidney disease patients and duration of screening.

The number of diagnosed diseases of patients with CKD was 4.3. The most common diseases were hypertension, hyperlipidemia, and diabetes mellitus, respectively (Table 3). The duration of doctor visit did not associate with the number of diagnosis of diseases (Figure 3).

## Discussion

The results of the present study showed that the number of problems increasing from regular follow-up were at least two, and the three most common problems were hypoalbuminemia, proteinuria, and edema, sequentially. Previous studies have shown that patients with CKD have higher incidence of complications[5,6] and number of problems compared with those without kidney disease[7]. The number of complications increase with the stage of CKD[4,7], which is not different from the present study (Figure 1). The complications of CKD have a significant impact on the safety of patients, increasing the risk of death[5]. In the present study, up to 31% of hypoalbuminemia was diagnosed. Patients in Taiwan were found to have 24% and 48% lower serum albumin in patients with CKD stage 4, 5, respectively[8]. This is close to the present study. Patients with hypoalbuminemia will increase the rate of coronary heart disease and mortality[8,9]. Physicians often place more emphasis on these patients' complications. Therefore, the physician will usually focus on these problems of the patient. As the number of problems increases, the length of the examination is longer, usually due to the fact that the doctors will need time to explain the problems to the patients and give some advice. In the present study, it was found that patients with CKD who came for regular visit at the outpatient department at Thammasat University Hospital spent 8.40 minutes on the average, which was different from the CKD patients who did not have add-on problems as they visited for 5.39 minutes. CKD patients with no additional problems often do not need more time with the doctor.

In the new patients, the physician spent nearly 15 minutes for the visit. The additional time is for history and physical examination in the new cases, as this is required[10,11]. In the old cases, it took about 8 minutes in each visit. A study in outpatient department of internal medicine in Chiang Rai Prachanukroh Hospital in Northern Thailand found that the average length of time of the patient for meeting with the internists was about 5 minutes[12]. There are no studies that investigate the time spent by nephrologist in each outpatient visit of CKD patients. In the present study, patients with kidney disease who do not have any problems will spend time as in the previous study[12]. Patients with CKD will have a longer duration of examination if there was additional problem (Figure 2). The nephrologist needs to spend more time explaining or solving the problem of CKD patients who are being treated. In

the United States, where the patient's context may be different from that in Thailand, the time taken by the physician to perform an outpatient examination is 18 minutes and it takes more time to describe problems. Advice for food needs to take longer, at least another two to four minutes[11].

The number of diseases found in CKD patient is 4.3. The most common was hypertension, hyperlipidemia, and diabetes, respectively. From the presented study, it was found that the number of diseases did not increase the length of the examination. Therefore, the duration of the examination was increased with the number of active problems rather than the number of diagnoses.

## Conclusion

In the present study, at least two additional problems were identified in patients with CKD follow-up at the outpatient department. The average length of the examination is 8.40 minutes. When the number of problems increases, the doctor will need longer examination time to solve the problems.

## What is already known on this topic?

The time used during face-to-face doctor visit of CKD patients in outpatient department at Thammasat University Hospital.

## What this study adds?

1.  The number of active problems of CKD patients during OPD visit in nephrology follow-up.
2.  The time used during face-to-face doctor visit of CKD patients in outpatient department at Thammasat University Hospital.
3.  The association between active problems of CKD patients and time spent during kidney doctor visit at the outpatient department.

## Conflicts of interest

The author declares no conflict of interest.

## References

1.  Chittinandana A, Chailimpamontree W, Chaloeiphap P. Prevalence of chronic kidney disease in Thai adult population. J Med Assoc Thai 2006;89 Suppl 2:S112-20.
2.  Ingsathit A, Thakkinstian A, Chaiprasert A, Sangthawan P, Gojaseni P, Kiattisunthorn K, et al. Prevalence and risk factors of chronic kidney disease in the Thai adult population: Thai SEEK study. Nephrol Dial Transplant 2010;25:1567-75.
3.  Singh AK, Farag YM, Mittal BV, Subramanian KK, Reddy SR, Acharya VN, et al. Epidemiology and risk factors of chronic kidney disease in India - results from the SEEK (Screening and Early Evaluation of Kidney Disease) study. BMC Nephrol 2013;14:114.
4.  Ahn SY, Ryu J, Baek SH, Kim S, Na KY, Kim KW, et al. Incident chronic kidney disease and newly developed complications related to renal dysfunction in an elderly population during 5 years: a community-based elderly population cohort study. PLoS One 2013;8:e84467.
5.  Einhorn LM, Zhan M, Hsu VD, Walker LD, Moen MF, Seliger SL, et al. The frequency of hyperkalemia and its significance in chronic kidney disease. Arch Intern Med 2009;169:1156-62.
6.  Ginsberg JS, Zhan M, Diamantidis CJ, Woods C, Chen J, Fink JC. Patient-reported and actionable safety events in CKD. J Am Soc Nephrol 2014;25:1564-73.
7.  Drawz PE, Babineau DC, Rahman M. Metabolic complications in elderly adults with chronic kidney disease. J Am Geriatr Soc 2012;60:310-5.
8.  Wu IW, Hsu KH, Lee CC, Sun CY, Hsu HJ, Hung MJ, et al. Re-evaluating the predictive roles of metabolic complications and clinical outcome according to eGFR levels--a four-years prospective cohort study in Taiwan. BMC Nephrol 2013;14:92.
9.  Bastos MG, Kirsztajn GM. Chronic kidney disease: importance of early diagnosis, immediate referral and structured interdisciplinary approach to improve outcomes in patients not yet on dialysis. J Bras Nefrol 2011;33:93-108.
10. Yawn B, Goodwin MA, Zyzanski SJ, Stange KC. Time use during acute and chronic illness visits to a family physician. Fam Pract 2003;20:474-7.
11. Chen LM, Farwell WR, Jha AK. Primary care visit duration and quality: does good care take longer? Arch Intern Med 2009;169:1866-72.
12. Lawskul N, Tapsan S, Jinaphay K, Bintisong Y. Waiting times for outpatients service at Chiangrai Prachanukroh hospital. Chiangrai Med J 2013;5:79-85.