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Awareness and Prevalence of Chronic Kidney Disease: The Korean National Health and Nutrition Examination Surveys (KNHANES) 1998-2016

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Objectives: In order to properly manage CKD, patients with CKD should be aware of the disease and begin treatment from the early stage of CKD. The Korean population-based CKD awareness has not been reported. We analyzed CKD awareness for 20 years using Korean National Health and Nutrition Survey.

Methods:

This study was conducted on 43,201 subjects aged 20 years or older, who underwent blood tests and urinalysis, and received a CKD awareness survey among participants in NHANES I (1998), III (2005), V (2010-2012), and VI-VII (2014-2016). The definition of CKD was eGFR <60 ml/min/1.73 m2, regardless of urinalysis, and the CKD stages followed the KDIGO guideline. The definition of CKD awareness was 'Have your doctor been diagnosed by a doctor with impaired renal function?' During the same period, CKD prevalence was also investigated, CKD awareness and CKD unawareness groups among CKD patients were compared, and logistic regression of CKD awareness was performed.

Results:

For 20 years, CKD prevalence in CKD stages 3-4 had clearly increased. CKD awareness was significantly lower at all CKD stages. CKD awareness, however, did not differ significantly from 20 years ago (table 1). The CKD awareness group was significantly different from the unawareness group in terms of young age, high income and education, medical aid, dyslipidemia, proteinuria, and low eGFR. CKD awareness was proportionally associated with proteinuria (3.2 [1.54-6.64]), high income (4 quartile 2.96 [1.23-7.14]) and higher education (3.05 [1.48-6.3]) and negatively associated with habitual alcohol intake (0.10 [0.02-0.45]), arthritis (0.40 [0.17-0.95]) and women (0.49 [0.24-1.0]).

Conclusions: CKD awareness of CKD patients in Korea is quite low, especially at CKD stages 3a and 3b. In order to raise the awareness of CKD from the mild stage of CKD, it is necessary to strengthen the promotion of CKD in subgroups with low CKD awareness, and to actively diagnose CKD by doctors.

Prevalence and awareness of CKD stage at each period

Table 1. 각 시기별 CKD단계별 유병율과 인지도 Prevalence and awareness of CKD stage at each period

	1998		2005		2010-2012		2014-2016	
	Prevalence (%)	Awareness (%)	Prevalence (%)	Awareness (%)	Prevalence (%)	Awareness (%)	Prevalence (%)	Awareness (%)
CKD stage 3a	1.03	2.9	2.93	0.6	1.76	0.8	1.97	1.2
CKD stage 3b	0.11	NA	0.44	7.0	0.33	3.8	0.54	6.2
CKD stage 4	0.06	34.3	0.14	28.7	0.11	23.4	0.15	38.3
CKD stage 5	0.05	10.7	0.03	100	0.02	84	0.06	85.2

Logistic regression of CKD awareness in CKD patients

Table 2. Logistic regression of CKD awareness in CKD patients

	OR	95% CI
Female	0.49	0.24-1.0
BMI ≥25 kg/m^2	0.91	0.44-1.91
Habitual Alcohol intake	0.10	0.02-0.45
Exercise	0.37	0.12-1.12
Income		
1	1	
2	0.64	0.23-1.76
3	1.06	0.36-3.06
4	2.96	1.23-7.14
Education		
< high school	1	
≥ High school	3.05	1.48-6.30
Marital status		
Live together	1	
Live alone	0.83	0.38-1.82
Social medical care		
Medical insurance	1	
Medical aid	2.17	0.0-5.22
Regular medical examination	0.85	0.42-1.72
Proteinuria	3.20	1.54-6.64
Comorbidities		
DM	1.43	0.70-2.95
Hypertension	1.50	0.67-3.39
CVD	1.96	0.89-4.33
Dyslipidemia	1.62	0.79-3.31
Arthritis	0.40	0.17-0.95