Abstract

Assessment of the Health-Related Quality of Life on a Korean Cohort Study for Outcome in Patients with Kidney Disease

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Given the emerging medical and social impact of chronic kidney disease (CKD), many leading countries have established CKD cohorts with an aim to achieve evidence-based standardized clinical practice guidelines. The Korea Disease Control and Prevention Agency (KDCA) established the KoreaN Cohort Study for Outcome in Patients With Chronic Kidney Disease (KNOW-CKD); a longitudinal study from 2011 to 2016. KNOW-CKD conducted numerous studies on the various aspects of CKD, many of which included studies on the health-related quality of life (HRQOL). The aim of this study was to assess the HRQOL of CKD patients. The HRQOL of CKD patients was assessed at the start of the study. Findings indicated that, as each patient's CKD progressed, all the HRQOL indices, including the kidney specific component summary score, the physical component summary (PCS) and the mental component summary score (MCS) grew poorer. Vitamin D deficiency was associated with poor QOL, and adequate sleep (7 hours a day) was associated with the best QOL. Furthermore, abdominal obesity was associated with lower PCS, and lower QOL was associated with a higher risk of CKD progression, cardiovascular events, and increased mortality. This study recommended that efforts be made to improve the QOL of CKD patients.

Keywords: Chronic Kidney Disease (CKD), Quality of life

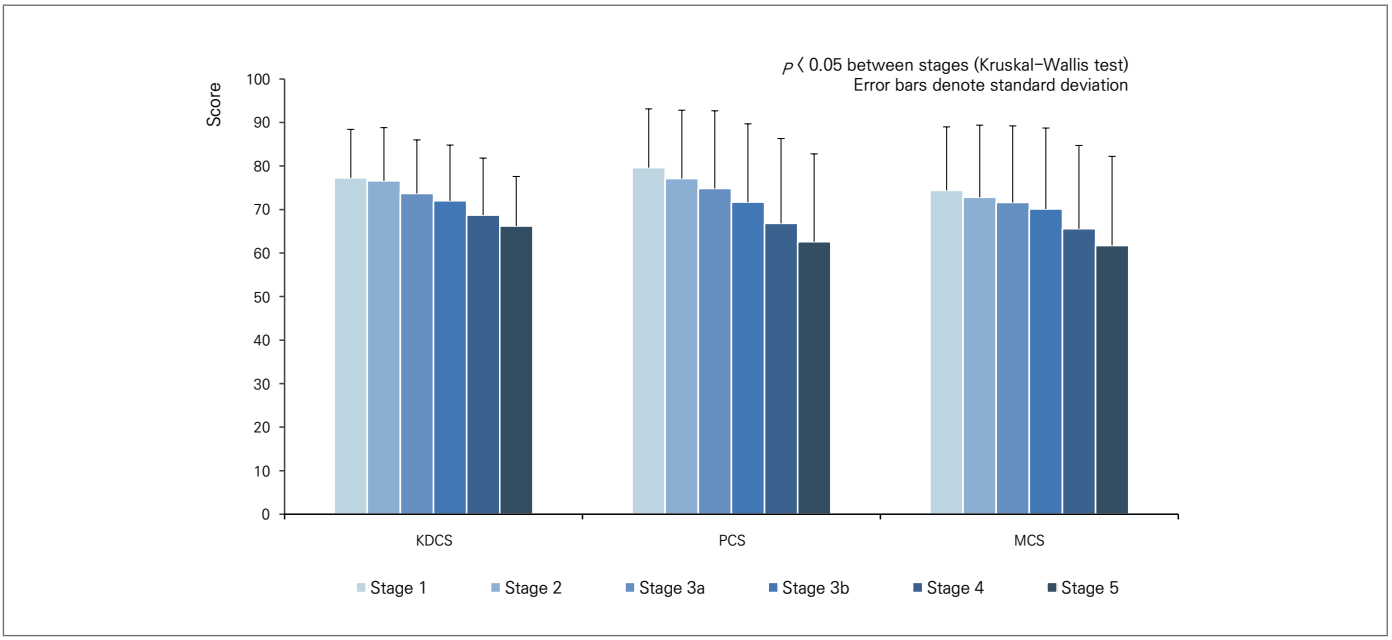

Figure 1. Evaluation of the Quality of Life Across the Chronic Kidney Disease Stages

※ Stage 1: Normal of High with renal injury; Stage 2: Mildly decreased with renal injury; Stage 3a: Mildly to moderately decreased; Stage 3b: Moderately to severely decreased; Stage 4: Severely decreased; Stage 5: Kidney failure

Table 1. The Relationship of HRQOL with Serum 25(OH)D

	Unadjusted		Multivariable adjusted	
	β±SE	P value	β±SE	P value
Kidney Disease Component Summary Score (KDCS)				
Serum 25(OH)D (ng/dl)	0.265±0.040	<0.001	0.147±0.049	0.003
Physical Component Summary Score (PCS)				
Serum 25(OH)D (ng/dl)	0.308±0.057	<0.001	-	0.075
Mental Component Summary Score (MCS)				
Serum 25(OH)D (ng/dl)	0.284±0.057	<0.001	0.151±0.076	0.047

* Stepwise multiple regression adjusted for factors including age, sex (male), eGFR, unemployed status, diabetes mellitus, education, economic status, serum 25(OH)D, parathyroid hormone, hemoglobin, albumin, HDL-C and hsCRP

※ HRQOL, Health-related quality of life; OHD, hydroxy vitamin D; HDL, high density lipoprotein cholesterol; hsCRP, high sensitivity C-reactive protein

Table 2. Baseline Characteristics of 1,910 Adults with CKD Based on Sleep Duration

Characteristic	Missing Data, %	Sleep Duration, h				
		≤ 5 [n=204]	6 [n=498]	7 [n=567]	8 [n=504]	≥ 9 [n=137]
Age, yr	0	55±12	53±12	53±12	53±12	55±13
Men, %	0	52	65	64	62	59
eGFR, mL/min/1.73m2	0	54±30	56±32	55±31	52±31	39±26
24-h Urine protein, mg/d	86 (5)	383 [130-1,190]	501 [154-1,313]	600 [178-1,551]	600 [176-1,781]	852 [286-2,440]
Alcohol drinking, %	0	30	37	39	34	34
Active smoking, %	0	14	15	17	18	17
Health-enhancing physical activity, %	78 (4)	38	43	44	43	35
Body mass index, kg/m2	0	24.7±3.4	24.6±3.3	24.2±3.3	24.4±3.4	25.1±3.5
Hemoglobin, g/dl	0	12.9±1.9	13.1±1.9	13.0±2.1	12.7±2.0	11.9±2.0
Serum albumin, g/dl	0	4.2±0.4	4.2±0.5	4.2±0.4	4.2±0.4	4.0±0.5
Unmarried, %	46 (2)	18	17	15	16	18
Low income, %	27 (1)	34	19	18	25	39
Low education, %	0	29	20	20	26	31
Diabetes, %a	0	29	30	30	35	48
Hypertension, %	0	92	96	96	97	99
Cardiovascular disease, %	0	7	12	9	12	18
Physical component summary	0	67±21	75±17	76±16	71±18	62±21
Mental component summary	0	64±21	72±17	72±16	69±18	62±20
Low Physical component summary, %	0	27	12	9	18	32
Low Mental component summary, %	0	25	11	13	16	30

※ eGFR: estimated glomerular filtration rate

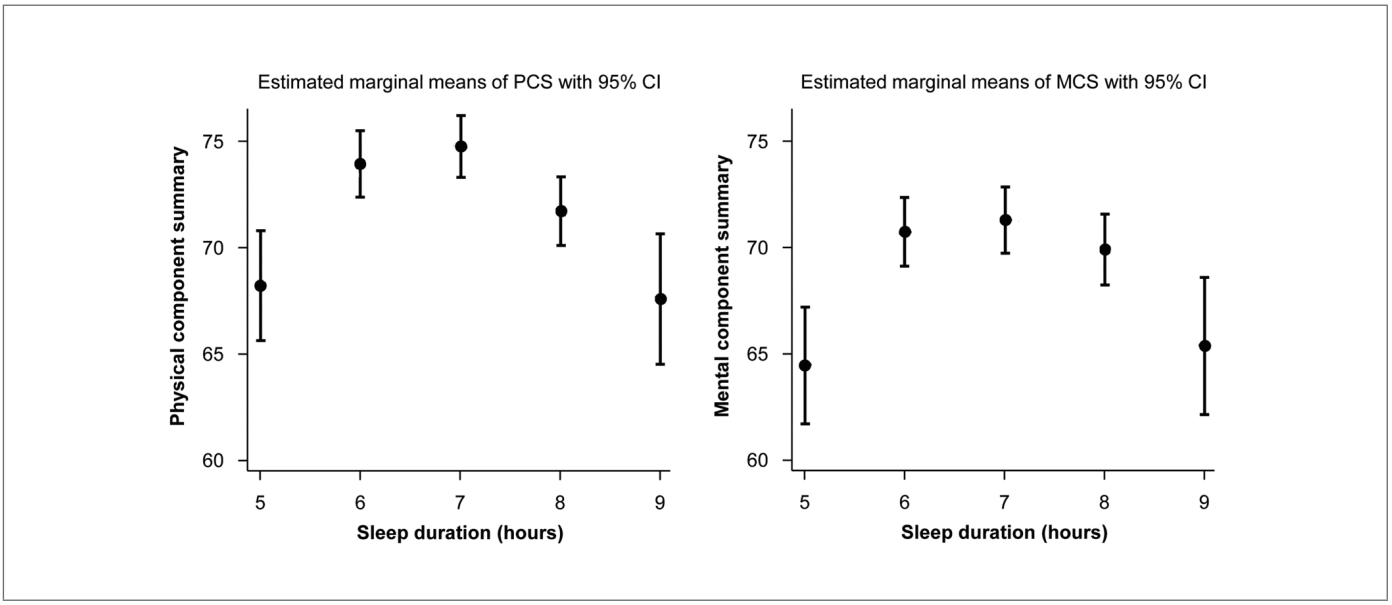

Figure 2. Relationship of Sleep Duration with PCS and MCS Compared with Referent 7–Hour Sleep Duration Predicted by a Multivariable Regression Model (Marginal effect was estimated by Stata Software adjusted to the predictors in model 2. 95% CI)

※ PCS, physical component score; MCS, mental component score; CI, confidence interval

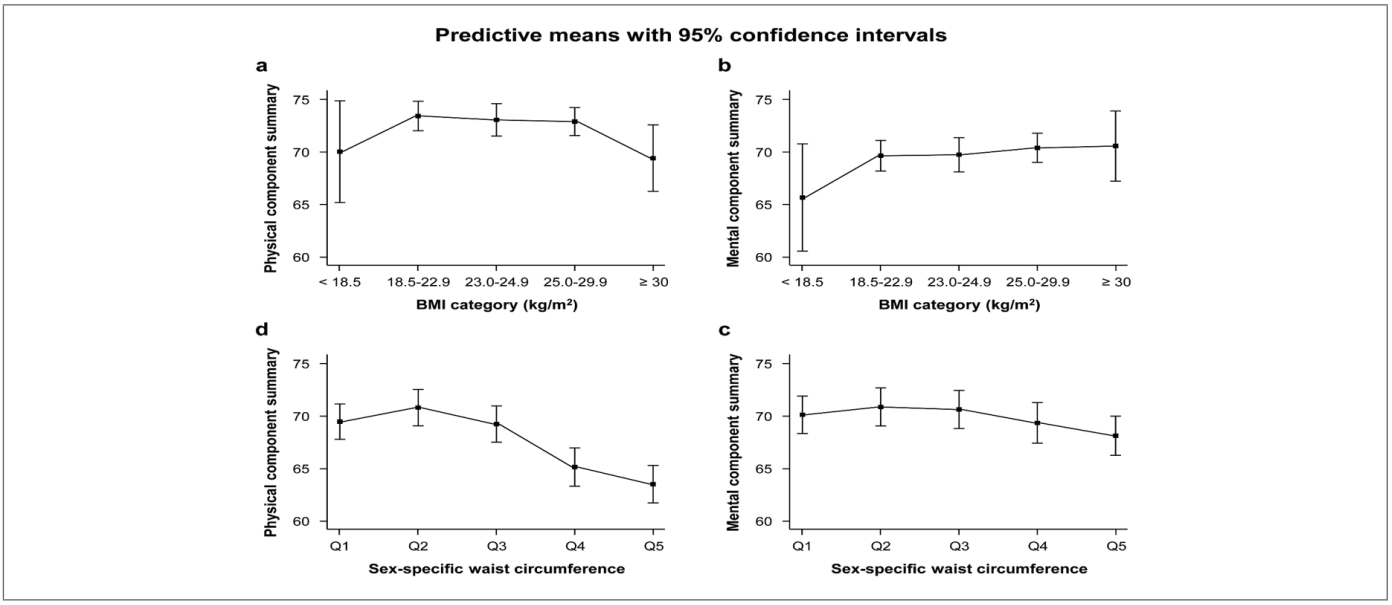

Figure 3. Relationship of Body Mass Index(BMI) Categories and Sex–Specific Waist Circumference Quintiles with a PCS and b MCS Predicted by a Multivariable Regression Model (Marginal effect was estimated by Stata software adjusted for the predictors in Model 2. An inverse–J shaded association was observe for c PCS and d WC)

※ BMI : Body mass index

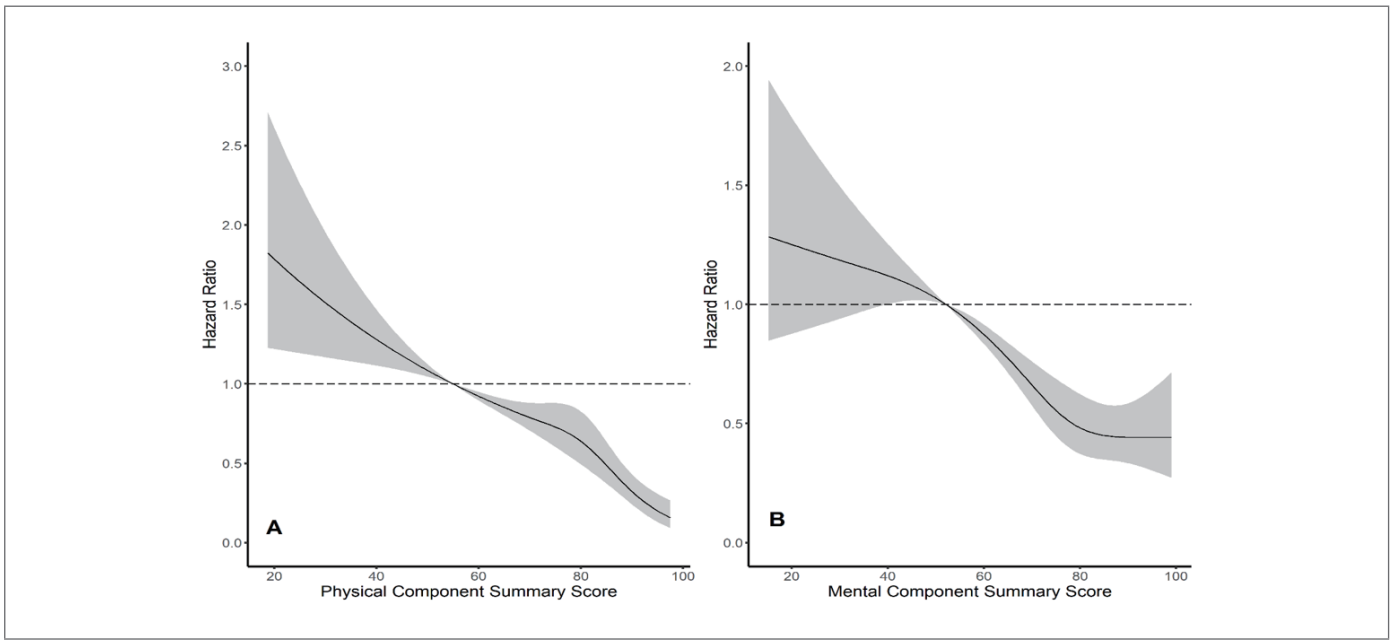

Figure 4. Relationship of Composite Renal Outcome Hazard Ratio with Physical Component Summary and Mental Component Summary

※ PCS, physical component score; MCS, mental component score