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Negative Impact of Fear of COVID-19 on Kidney Disease Quality of Life and Its Subscales among Hemodialysis Patients as Modified by Health Literacy: A Multi-Hospital Survey

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Objectives : Hemodialysis patients constitute a highly vulnerable population amid the COVID-19 pandemic. With their quality of life being adversely affected by fear of COVID-19 and other COVID-19 related factors. Therefore, we aimed to explore the negative impact of fear of COVID-19 on subscales of quality of life among hemodialysis patients and the potential modifying impact of health literacy

Methods : A survey was conducted at 8 hospitals in Vietnam from July 2020 to March 2021. Data from 972 patients were collected, including socio-demographic factors, clinical parameters, health literacy (HL), digital health literacy (DDL), hemodialysis diet knowledge (HDK), fear of COVID-19, suspected COVID-19 symptoms (S-COVID-19-S), and kidney disease quality of life (KDQOL). Multiple linear regression models were utilized to explore associations

Results : The results show that the factors associated with higher overall KDQOL scores were HL (regression coefficient, $B = 0.13$; 95% confidence interval, 95% CI = 0.06 to 0.21; $p = 0.001$) and HDK ($B = 0.58$; 95% CI = 0.31 to 0.85; $p = 0.001$). Conversely, S-COVID-19-S ($B = -6.12$; 95% CI = -7.66 to -4.58; $p = 0.001$), and fear of COVID-19 ($B = -0.91$; 95% CI = -1.03 to -0.80; $p = 0.001$) were associated with lower overall KDQOL scores. The negative impact of fear of COVID-19 on overall KDQOL and kidney disease component summary (KDCS) was significantly attenuated by higher HL scores groups

Conclusions : During the COVID-19 pandemic, the KDQOL and its subscales of hemodialysis patients were affected by fear of COVID-19, and S-COVID-19-S. HL ameliorates the negative impact of fear of COVID-19 on overall KDQOL and KDCS

table 1.1.png

Table 1. Patients' characteristics, kidney disease quality of life, and subscales (N = 972).

Variables	Total n (%)	MCS (Mean ± SD)	p	PCS (Mean ± SD)	p	KDCS (Mean ± SD)	p	KDQOL (Mean ± SD)	p
Age			0.684		0.001		0.001		0.001
18-59	585 (60.2)	41.0 (9.8)		34.8 (9.2)		57.3 (14.9)		50.8 (11.3)	
60-85	387 (39.8)	40.8 (10.3)		32.4 (8.5)		53.8 (16.4)		48.1 (12.5)	
Gender			0.407		0.153		0.013		0.014
Male	517 (53.5)	41.1 (9.9)		34.2 (9.2)		57.1 (15.8)		48.7 (11.7)	
Female	450 (46.5)	40.6 (10.1)		33.4 (8.9)		54.5 (15.3)		50.6 (11.9)	
Education			0.372		0.018		0.414		0.815
Illiterate or elementary	399 (44.0)	40.7 (10.3)		32.8 (8.9)		56.4 (15.9)		49.8 (12.3)	
Junior high school	281 (31.0)	41.5 (8.3)		34.6 (8.2)		54.9 (15.3)		49.3 (11.3)	
Senior high school or above	226 (25.0)	41.6 (10.6)		34.2 (9.4)		55.1 (16.5)		49.4 (12.5)	
Working status			0.287		0.249		0.503		0.553
Not working	334 (34.4)	41.3 (7.9)		33.4 (7.7)		55.5 (16.8)		49.4 (12.6)	
Working	638 (65.6)	40.7 (10.9)		34.1 (9.6)		56.2 (14.9)		44.9 (11.5)	
Married status			0.329		0.004		0.606		0.354
Never married	86 (8.8)	41.9 (9.8)		36.5 (9.7)		56.8 (16.2)		50.9 (12.50)	
Ever married	886 (91.2)	40.8 (9.9)		33.6 (8.9)		55.8 (15.6)		49.6 (11.8)	
Social status			0.001		0.001		0.001		0.001
Low	274 (28.2)	38.3 (10.6)		31.9 (9.5)		49.7 (15.0)		44.8 (11.5)	
Middle & high	698 (71.8)	42.0 (9.5)		34.6 (8.7)		58.4 (15.1)		51.7 (11.50)	
Medication payment ability			0.001		0.001		0.001		0.001
Very or fairly difficult	726 (75.9)	39.3 (9.4)		33.2 (9.0)		52.6 (14.4)		47.2 (10.9)	
Very or fairly easy	231 (24.1)	46.0 (9.9)		36.0 (8.6)		66.0 (14.8)		57.7 (11.4)	
S-COVID-19-S			0.001		0.001		0.001		0.001
Without S-COVID-19-S	274 (28.2)	43.3 (11.1)		35.7 (10.7)		63.1 (15.1)		55.2 (12.0)	
With S-COVID-19-S	698 (71.8)	39.8 (9.2)		32.9 (7.9)		52.5 (14.6)		47.1 (10.9)	
BMI, kg/m ²			0.287		0.925		0.155		0.167
BMI < 24	876 (90.1)	40.8 (9.8)		33.8 (9.1)		56.7 (15.5)		49.6 (11.8)	
BMI ≥ 24	96 (9.9)	41.9 (11.2)		33.9 (8.1)		58.1 (16.8)		51.3 (12.9)	
Edema			0.001		0.245		0.001		0.001
No	527 (54.2)	42.6 (10.7)		33.5 (9.0)		57.5 (16.2)		51.0 (12.6)	
Yes	445 (45.8)	39.0 (8.6)		34.2 (9.0)		54.1 (14.6)		48.2 (10.8)	
Hypothyroidism			0.682		0.661		0.099		0.149
No	961 (98.9)	40.9 (10.0)		33.8 (9.0)		56.0 (15.5)		49.8 (11.8)	
Yes	11 (1.1)	42.2 (9.1)		32.6 (10.8)		48.2 (19.7)		44.6 (14.0)	
Hyperthyroidism			0.264		0.019		0.001		0.001
No	930 (95.8)	40.9 (10.1)		34.0 (9.1)		56.3 (15.6)		50.0 (11.9)	
Yes	41 (4.2)	42.6 (7.7)		30.6 (7.3)		47.5 (14.7)		43.9 (11.2)	
Hospitalization within one month			0.003		0.024		0.001		0.001
No	906 (93.3)	41.2 (9.6)		34.0 (8.7)		56.6 (14.9)		50.3 (11.4)	
Yes	65 (6.7)	37.4 (13.7)		31.4 (13.1)		46.3 (20.6)		42.4 (15.9)	
Physical activity, MET-min/wk			0.001		0.001		0.001		0.001
Tertile 1 (MET ≤ 178)	232 (31.8)	38.0 (8.9)		31.8 (8.2)		52.9 (14.0)		46.9 (10.2)	
Tertile 2 (178 < MET ≤ 912)	249 (34.2)	41.2 (10.8)		33.2 (9.1)		58.4 (14.6)		51.3 (11.4)	
Tertile 3 (MET > 912)	248 (34.0)	44.5 (12.0)		35.5 (9.9)		62.4 (17.0)		54.9 (13.1)	
HD vintage, years			0.072		0.116		0.002		0.004
HD vintage ≤ 5	550 (56.7)	41.5 (9.8)		34.4 (8.9)		56.1 (15.8)		50.1 (12.0)	
5 < HD vintage ≤ 10	276 (28.5)	40.5 (11.1)		33.2 (9.7)		57.5 (14.8)		50.6 (11.6)	
HD vintage ≥ 10	144 (14.8)	39.6 (8.1)		33.1 (8.0)		52.0 (15.8)		46.8 (11.6)	
CCI (Mean ± SD)	2.1 ± 3.0								
Fear of COVID 19 (Mean ± SD)	20.6 ± 6.0								
HL index (Mean ± SD)	25.0 ± 9.2								
DDL index (Mean ± SD)	24.1 ± 11.6								
HDK (Mean ± SD)	5.4 ± 2.5								

Abbreviation: KDQOL, kidney disease quality of life, MCS, mental component summary; PCS, physical component summary; KDCS, kidney disease component summary; S-COVID-19-S, suspected COVID-19 symptoms; BMI, body mass index; HD, hemodialysis; CCI, Charlson Comorbidity index; DDL, digital health diet literacy; HDK, hemodialysis dietary knowledge. p* results of the chi-square test and one-way ANOVA test.

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Table 2: Interaction of health literacy with fear of COVID-19 on KDQOL and KDCS.

	KDQOL*		KDCS*	
	B (95% CI)	p	B (95% CI)	p
Fear of COVID-19 (lower score) x HL (lower score)	ref		ref	
Fear of COVID-19 (every 1-point scores increment) x HL (lower score)	- 1.18 (- 1.47, -0.90)	0.001	- 1.55 (- 1.93, - 1.14)	0.001
Fear of COVID-19 (lower score) x HL (every 1-point scores increment)	- 0.08 (- 0.30, 0.14)	0.469	- 0.14 (- 0.43, 0.15)	0.347
Fear of COVID-19 (every 1-point scores increment) x HL (every 1-point scores increment)	0.01 (0.00, 0.21)	0.042	0.015 (0.00, 0.03)	0.038

Abbreviation: KDQOL, kidney disease quality of life, KDCS, kidney disease component summary; HL, health literacy; CI, confidence interval. * These models were adjusted for age, gender, social, S-COVID-19 S, hyperthyroidism, Physical activity, HD vintage, edema, HDK, hospitalization, BMI, and hypothyroidism.