

Depression in patients requiring hemodialysis: prevalence, correlates and association with mortality in a large multi-national cohort study

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Background Depression is highly prevalent in people with chronic kidney disease (CKD) and is linked to increased all-cause mortality, although the association with cardiovascular mortality remains uncertain and large prospective studies that sufficiently adjust for potential confounding variables are lacking.

Objective Our aim was to evaluate the association between depression and cardiovascular mortality when controlled for relevant clinical and demographic variables.

Methods We conducted a multinational prospective cohort study of 3686 adult outpatients receiving hemodialysis in 76 randomly selected dialysis centers in 9 countries within a collaborative dialysis network. Consecutive patients receiving hemodialysis between April and November 2010 were eligible. At baseline enrolment into the study, depression was assessed by the Beck Depression Inventory (BDI) II questionnaire. Participants with a BDI score of 14 or greater were considered to have depressive symptoms. The primary outcomes were total and cardiovascular mortality at 12 months. Cox regression models were used to analyze the association between depression and mortality adjusted for clinical and demographic variables.

Results 2280 (62%) of enrolled patients provided complete data for the BDI questionnaire (mean age 64.7 (14.8) years; 60.8% of men). Of these, 1047 (46%) reported a BDI score consistent with depressive symptoms, which were associated with female gender, education, use of anxiolytic drugs, lower dialysis duration and lower albumin levels. During a mean follow-up of 11 ±2.5 months, 30 of 1047 participants with depressive symptoms and 36 of 1233 participants without depressive symptoms died from cardiovascular causes. Participants with depressive symptoms experienced increased risks of all-cause (adjusted hazard ratio 1.51 [95% CI, 1.04-2.20]) but not cardiovascular-related mortality (HR, 0.64 [95% CI, 0.38-1.07]), compared to non-depressed people.

Conclusion Depressive symptoms affect nearly one-half of persons with end-stage kidney disease but are not associated with cardiovascular mortality in analyses controlled for clinical and demographic variables.

Table 1. Adjusted risks of all cause mortality and cardiovascular mortality associated with depression

	All cause mortality HR (95% CI) ^a	Cardiovascular mortality HR (95% CI) ^b
Race		
White	1.00	1.00
Black	1.04 (0.25-4.35)	45.01 (4.88-414.49)
Other	3.70 (1.3-10.45)	1.12 (0.25-4.99)
Age	1.05 (1.03-1.07)	-
Time on dialysis	1.00 (1.00-1.00)	-
Hb	0.73 (0.64-0.84)	-
Diabetes	2.49 (1.52-4.10)	-
Depression	1.51 (1.04-2.20)	-

^a Adjusted for: age, gender, race, primary renal diagnosis, diabetes, time on dialysis, Hb, phosphorus, occupational status, presence of cardiovascular disease [including one or more of the following: myocardial infarction, TIA, stroke, coronary revascularization procedure, other type of revascularization procedure, coronary heart disease, congestive heart failure, other heart disease, cerebrovascular disease, peripheral vascular disease], country.

^b Adjusted for: age, gender, race, time on dialysis, presence of cardiovascular disease [including one or more of the following: myocardial infarction, TIA, stroke, coronary revascularization procedure, other type of revascularization procedure, coronary heart disease, congestive heart failure, other heart disease, cerebrovascular disease, peripheral vascular disease], country.

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