Treating Depression in the Dialysis Setting: Validating Symptom Targeted Intervention

Shaun Boyd,[1] Duane Dunn,[1] Kathryn Aebel-Groesch,[1] Deborah Evans,[1] Teresa Gonzalez,[1] Mary Burgess,[1] Tammy Howard,[1] Rich Mutell,[1] Melissa McCool[2]

[1]*DaVita Healthcare Partners Inc, Denver, CO, USA,* [2]*STI Innovations, Encinitas, CA, USA*

Introduction

- Approximately 25% of all end-stage renal disease dialysis patients are depressed, which increases risk of infections and missed dialysis sessions, leading to increased hospitalizations and mortality rates.[1,2]
- In 2011, 46 nephrology social workers participated in a nationwide Practice Outcome Evaluation (POE) to determine if Symptom Targeted Intervention (STI) would improve the Kidney Disease Quality of Life (KDQOL-36) and Center for Epidemiologic Studies Depression Scale (CES-D 10) scores of patients involved in the project.[3]
- Following STI counseling, patients' KDQOL-36 and CES-D 10 scores were improved over baseline; however, mean-level patient scores were not reported.
- The DaVita social workers' STI Project expanded on the original pilot by not only looking at KDQOL-36 and CES-D 10 scores, but also looking at changes in clinical outcomes and statistical significance in changes in scores and outcomes.

Objective

- Primary analysis looked at the impact of STI on depressed patients' KDQOL-36 and CES-D 10 scores.
- Secondary analysis was to determine impact of STI on:
  – Albumin
  – Phosphorus
  – Kt/V
  – Hospitalizations
- Exploratory analysis looked at KDQOL-36 and CES-D 10 scores of patients taking antidepressants vs. patients not taking antidepressants.

Methods

- In 2013, 85 social workers in a large dialysis organization replicated the STI POE.
  – The 6-week intervention period occurred in May-June of 2013; followed by 3 months of post-intervention and analysis.
- Statistical Package for Social Sciences software was used to determine if changes in patient scores were statistically significant (pre- and post-dependent T test).
- Social workers received weekly training via WebEx and conference calls prior to and throughout the 6-week intervention period.
- KDQOL-36 and CES-D 10 questionnaires were completed by each participating in-center hemodialysis patient (N = 91) prior to and after completion of the 6-week intervention period.

Results

Primary Analysis

- There were 91 participants in the study.
- Statistically significant improvement occurred in KDQOL-36 Mental Component scores (p < 0.001), Physical Component scores (p = 0.042), as well as Burden (p < 0.001) and Effects (p = 0.001) domain scores (Table 1 and Figure 1).
- Statistically significant improvement occurred in patients' CES-D 10 scores (p < 0.001).

Secondary Analysis

- Promising results:
  – Albumin (p = 0.024) (Table 2)
- No statistically significant change:
  – Hospitalizations
  – Kt/V
  – Phosphorus

Table 1. Comparison of KDQOL-36 and CES-D 10 Results Among Patients Pre- and Post-Intervention

n = 91		Mean	Standard Deviation	Standard Error Mean	p Value
Pair 1	Pre PCS	33.90	9.06	0.95	0.042
	Post PCS	36.09	11.81	1.24	
Pair 2	Pre MCS	37.89	11.03	1.16	< 0.001
	Post MCS	45.61	12.57	1.32	
Pair 3	Pre Burden	27.26	23.20	2.43	< 0.001
	Post Burden	39.18	26.99	2.83	
Pair 4	Pre Effects	55.06	24.14	2.53	0.001
	Post Effects	64.23	23.13	2.42	
Pair 5	Pre Symptoms	68.28	14.75	1.55	0.080
	Post Symptoms	71.71	18.62	1.95	
Pair 6	Pre CES-D 10	15.60	5.88	0.62	< 0.001
	Post CES-D 10	9.69	6.05	0.63	

Abbreviations: CES-D, Center for Epidemiologic Studies Depression Scale; KDQOL, Kidney Disease Quality of Life; MCS, Mental Component Score; PCS, Physical Component Score

Table 2. Comparison of Clinical Outcomes Among Patients Pre- and Post-intervention

n = 85*		Mean	Standard Deviation	Standard Error Mean	p Value
Pair 1	Pre Albumin (g/dL)	3.88	0.37	0.04	0.02
	Post Albumin (g/dL)	3.94	0.33	0.04	
Pair 2	Pre Kt\V	1.59	0.27	0.03	1.00
	Post Kt\V	1.59	0.25	0.03	
Pair 3	Pre Phosphorus (mg/dL)	5.46	1.10	0.12	0.83
	Post Phosphorus (mg/dL)	5.43	1.27	0.14	

*Several patients were missing from either the pre-intervention data pull or post-intervention data pull, thus these patients were not included in this analysis.

Figure 1. Percentage of Patients Whose KDQOL-36 and CES-D 10 Scores Improved Following Intervention

Abbreviations: CES-D, Center for Epidemiologic Studies Depression Scale; KDQOL, Kidney Disease Quality of Life; MCS, Mental Component Score; PCS, Physical Component Score; POE, Practice Outcome Evaluation

Exploratory Analysis

- Of the 91 total patients, 34 patients were taking antidepressants and 57 were not taking antidepressants. A comparison of KDQOL-36 and CES-D 10 Results pre- and post-intervention is shown in Table 3.
  – Patients taking antidepressants had statistically significant improvement in MCS (p < 0.001) and Burden (p = 0.001) scores.
  – Patients not taking antidepressants MCS (p = 0.015), Burden (p = 0.002), Effects (p = 0.002), and PCS (p = 0.048) scores improved.
  – CES-D 10 scores for patients not taking antidepressants improved more than those for patients taking antidepressants.

Table 3. Comparison of KDQOL-36 and CES-D 10 Results Between Patients Not Taking Antidepressants and Patients Taking Antidepressants

n = 91		Patients Not Taking Antidepressants n = 57			Patients Taking Antidepressants n = 34		
		Mean	Standard Deviation	p Value	Mean	Standard Deviation	p Value
Pair 1	Pre PCS	34.08	9.00	0.048	33.60	9.29	0.560
	Post PCS	37.11	13.11		34.40	9.19	
Pair 2	Pre MCS	39.45	12.54	0.015	35.28	7.31	< 0.001
	Post MCS	44.91	13.40		46.78	11.13	
Pair 3	Pre Burden	30.42	24.44	0.002	21.96	20.22	0.001
	Post Burden	41.18	27.67		35.84	25.89	
Pair 4	Pre Effects	54.70	24.79	0.002	55.66	23.37	0.133
	Post Effects	65.51	23.61		62.10	22.47	
Pair 5	Pre Symptoms	69.81	14.60	0.382	65.70	14.86	0.057
	Post Symptoms	72.16	19.33		70.95	17.62	
Pair 6	Pre CES-D 10	15.26	5.91	< 0.001	16.18	5.86	< 0.001
	Post CES-D 10	8.77	5.11		11.24	7.18	

Abbreviations: CES-D, Center for Epidemiologic Studies Depression Scale; MCS, Mental Component Score; PCS, Physical Component Score

Conclusions

The results indicate that nephrology social workers can use Symptom Targeted Intervention to help in-center hemodialysis patients improve their quality of life scores and positively impact their level of depression.

References

1. Boulware LE, Liu Y, Fink NE, et al. Temporal relation among depression symptoms, cardiovascular disease events, and mortality in end-stage renal disease: contribution of reverse causality. Clin J Am Soc Nephrol 2003;1(3):496-504.
2. Weiner S, Kutner NG, Bowles T, Johnstone S. Improving psychosocial health in hemodialysis patients after a disaster. Soc Work Health Care 2010;49(6):513-525.
3. Sledge R, Aebel-Groesch K, McCool M, et al. Part 2. The promise of symptom-targeted intervention to manage depression in dialysis patients: improving mood and quality of life outcomes. Nephrol News Issues 2011;25(7):24-28, 30-31.

Acknowledgments