King's Research Portal

DOI:

[10.1111/sdi.12755](https://doi.org/10.1111/sdi.12755)

Document Version

Peer reviewed version

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Chilcot, J., & Hudson, J. L. (2019). Is successful treatment of depression in dialysis patients an achievable goal? *SEMINARS IN DIALYSIS*, 32(3), 210-214. <https://doi.org/10.1111/sdi.12755>

Citing this paper

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

Take down policy

If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Is successful treatment of depression in dialysis patients an achievable goal?

Joseph Chilcot & Joanna L. Hudson

Health Psychology Section, Department of Psychology,
Institute of Psychiatry, Psychology & Neuroscience, King's College London

Corresponding author: Dr Joseph Chilcot, Health Psychology Section, Psychology Department, Institute of Psychiatry, Psychology and Neuroscience, King's College London, 5th floor Bermondsey Wing, Guy's Campus, London Bridge, London SE1 9RT (joseph.chilcot@kcl.ac.uk)

Key words: Depression; End-Stage Kidney Failure; Dialysis; Cognitive Behavioural Therapy; CBT; antidepressants; Sertraline.

Conflict of interest: None to declare

Funding: This work received no funding

Abstract

Depression is undisputedly common among individuals with End-Stage Kidney Failure and associated with adverse outcomes. It is well recognized that effective treatments for depression are needed within routine dialysis care. But, *are we any closer to successfully treating depression in dialysis patients?* We consider this question here with respect to two common treatments, anti-depressant medication and Cognitive Behavioural Therapy (CBT). Currently, there are limited data from randomized placebo-controlled trials regarding the acceptability and efficacy of anti-depressants. CBT trials appear to show more consistent treatment effects, albeit the feasibility of routine delivery remains unknown. No studies in dialysis patients have evaluated the combined effects of CBT with anti-depressants. There is a need to consider pragmatic depression treatment trials in dialysis patients in order to increase study recruitment in order to have more reliable data from which to evaluate the evidence base. Furthermore, we need to understand why treatments work, and for whom do they work? Lastly, addressing issues surrounding treatment acceptability and implementation as part of regular care remain key challenges that require attention if we are to improve the mental health of individuals on dialysis.

Introduction

There is a growing body of evidence demonstrating the association between depression and mortality among individuals with End-Stage Kidney Failure (ESKF). It is estimated that the presence of depressive symptoms is associated with a 50% increase in the risk of mortality^{1,2}. This is particularly concerning given the high prevalence of depression, which is estimated to be approximately between 23-39%, depending on whether diagnostic or screening tools are used for evaluation³. Similar estimates of depression prevalence are also reported among individuals with a kidney transplant⁴. Furthermore, depression is also associated with other adverse outcomes, including increased hospitalization⁵, treatment non-adherence⁶ and increased inflammation and malnutrition⁷. Such factors may serve as candidate mechanisms underpinning the depression-mortality relationship.

Given the large body of evidence detailing the impact of depression among those on dialysis, developing a robust evidence base for treatment effectiveness is imperative if we are to improve mental health and patient outcomes. Here, we address the question; *“Are we any closer to successfully treating depression in dialysis patients?”* by considering the current evidence base with a focus on the two most common treatments modalities, anti-depressants and Cognitive Behavioural Therapy (CBT). Before this however, we begin by discussing the importance of treatment acceptability.

Do dialysis patients want yet another set of treatment(s)?

Individuals receiving dialysis are prescribed a complex and demanding treatment regimen, including multiple medications and significant dietary and fluid restrictions. Given this complexity, non-adherence remains common to aspects of treatment, often for a variety of reasons including depression⁸ and unhelpful treatment beliefs^{9,10}. In light of high levels of polypharmacy¹¹ and significant treatment burden, it is understandable that undertaking additional treatment(s) for depression might be intolerable for some.

A recent study investigated the acceptance of antidepressant treatment by haemodialysis (HD) patients and their renal team¹², by evaluating patients randomized to the management arm of the Symptom Management Involving End-Stage Renal Disease (SMILE) trial¹³. As part of this trial, depression symptoms were evaluated monthly for a year using the Patient Health Questionnaire-9 (PHQ-9); PHQ-9 screening score ≥ 10 was employed to indicate possible depression. Of the 101 patients evaluated, 39 had depression on at least one or more of the monthly assessments. These 39 patients undertook 373 depression screening assessments during the study. In 147 of these 373 assessments depression was detectable. In approximately 70% of these cases anti-depressants had been previously prescribed. In cases where health professions recommended intensified anti-depressant treatment, 70% of patients

did not accept the recommendation. At 44 assessments points, patients with a PHQ-9 score ≥ 10 were not receiving anti-depressants; in 91% of those cases patients refused treatment. The primary reason for refusal was the attribution of their depression to an acute event, chronic illness, or dialysis. Interestingly, in 18 instances in which patients accepted the recommendation for treatment, 61% (n=11) of renal services were unwilling to provide treatment. No reasons for rejecting the treatment recommendation were given in 8 of the 11 instances¹².

Notwithstanding the complexity of this study and the identified limitations¹⁴, which includes the reliance on the PHQ-9 to indicate depressive cases, these data provide some striking insight into the acceptability of anti-depressant treatment. It suggests that both patients and renal staff are reluctant to initiate or modify anti-depressant treatments. This is also reflected indirectly by the low consent rates observed in clinical trials of anti-depressant in kidney disease patients (discussed below). Efforts to provide better psychoeducation to patients and health care professionals might be one strategy to better support treatment decisions and overcome such barriers.

Given that some patients refuse treatment on the basis of their illness and symptom attributions, specifically eliciting their illness and treatment beliefs and trying to alter them, might be of benefit. Indeed, Taylor et al¹⁵ argue that offering treatment interventions that are congruent with patient's illness beliefs and coping styles may promote uptake. Moreover, Taylor et al¹⁵ identified that treatment interventions that were explicitly linked with the illness label *depression* were deemed to be less acceptable to ESKF patients. Consideration of how a person's emotional response to ESKF is identified and subsequently managed in a way that is acceptable to both patients and health care staff is therefore needed. This exploratory work is underway¹⁶ aiming to identify the needs and preferences of ESKF patients and likewise to identify the barriers and facilitators to the detection and management of depression by renal staff. Considering these factors will help to embed evidence-based treatments for depression as part of routine care.

What is the evidence for anti-depressants in dialysis patients?

According to the UK National Institute of Health and Care Excellence (NICE) depression guidelines, pharmacotherapy should only be used to treat patients who meet diagnostic criteria for moderate to severe symptoms of depression¹⁷. When prescribing drug treatments to manage depression in people with physical long-term conditions (LTC) the following factors need to be considered: (i) the potential for drug-drug interactions, (ii) the likely side effects of the medication, (iii) the patient's previous history of pharmacotherapy treatments, (iv) patient preference, and (v) the toxicity of the drug and the risk of overdose among patients with suicidal ideation.

Despite the ever-growing literature on depression in dialysis patients, there remains a remarkable lack of treatment studies. Most antidepressant trials in dialysis patients have focused on Selective Serotine Reuptake Inhibitors (SSRIs). Unfortunately, most studies examining the effectiveness of antidepressants have been small non-randomized studies¹⁸⁻²⁶, albeit suggesting some potential efficacy. A recent non-placebo-controlled study compared paroxetine and agomelatine (an atypical anti-depressant) in a sample of chronic kidney disease (CKD) patients, reported a similar treatment response by 4 weeks²⁷. By 8 and 12 weeks however, depression scores were significantly lower in those treated with agomelatine. There were no serious adverse events and side effect profiles for each drug were reportedly similar²⁷.

To date, there have only been three randomized placebo-controlled trials of an antidepressant agent in individuals with kidney disease²⁸⁻³⁰, of which two studies were in dialysis patients. The first, in 14 HD patients found no significant improvement in depression symptoms after an 8 week treatment with fluoxetine compared with placebo²⁸. The most recent study in HD patients was a feasibility randomized placebo-controlled trial of sertraline by Friedli et al²⁹. Of 1353 patients approached for depression screening, 243 were excluded due to inability to read English. 64% consented to be screened (n=709) with 32% (n=231) screening positive using a Beck Depression Inventory of ≥ 16 . 68 (29%) were ineligible for the trial phase because of current treatment for depression. 63 patients gave further consent to be assessed by the study psychiatrist who diagnosed major depressive disorder in 37 (58.7%) of patients. 30 patients were randomized (n=15 in each), half the recruitment target specified in the study protocol³¹. There were no significant nor clinically meaningful differences in the change of depression symptoms between the two-arms, albeit the study was drastically underpowered. Drop-outs due to adverse events were considerably higher in the Sertraline arm compared to the placebo arm (7 in the sertraline arm, 2 in the placebo arm). Overall, the study clearly demonstrated the problems with conducting a trial of this particular design³¹ since a relatively high proportion of patients were already taking anti-depressants. Modification of trial design to allow inclusion of patients already receiving treatment is one recommendation to improve trial feasibility through better eligibility.

RCTs on drug therapy of depression in dialysis patients are thus greatly limited. Expanding the target patient population to CKD in general does not add much to our knowledge of this area. Similar issues of scale and feasibility were apparent in a much larger randomized placebo-controlled trial of sertraline in CKD patients³⁰. 977 of 14,658 CKD patients screened positive for depression. 201 were consented and randomized to either sertraline (n=102) or placebo (n=99) arms. Over a 12-week follow-up there were no significant differences between the treatment arm and placebo with regards to depression scores. Remission rates were also similar at 15%, as was end of follow-up health related

quality of life and function scores. Those in the sertraline arm reported significantly more side effects compared with the placebo arm. Thus, the study offered no support for the use of sertraline for major depression in CKD and parallels can be drawn with Friedli et al.²⁹ since both studies required a very large screening sample.

Cognitive behavioural therapy (CBT)

Treatment options for depression in dialysis patients are not restricted to anti-depressant agents. Talking therapies, particularly CBT might well have advantages in terms of acceptability to those who are reluctant to take anti-depressants and should be considered for individuals with mild to moderate symptoms of depression¹⁷. Two meta-analyses exploring the effectiveness of psychological talking therapies (including CBT) for the management of depression in people with coronary heart disease³² and diabetes³³ showed that these types of interventions improve depressive symptoms. However, the size of improvements in depressive symptoms was relatively small. This likely reflects the need to refine psychological treatments further to manage illness specific beliefs and challenging treatment demands and health consequences that present uniquely for each LTC³⁴.

Three randomized controlled trials have tested the efficacy of CBT for depression in HD patients. The first study compared a 12 week group CBT treatment (n=41) to a control arm (n=43) and reported significant improvements in depressive symptoms and quality of life³⁵ over a 9 month follow-up. Although a relatively small study, consent rates were impressive compared to the aforementioned drug trials. A total of 350 patients were screened for eligibility, with 100 identified as depressed with 90 randomized (46 to the intervention arm of which 41 started CBT treatment).

In the second study, individual CBT administered in the dialysis centre (n=26), significantly improved depression symptoms, quality of life and daily fluid adherence compared with a waiting list control group (n=33)³⁶. The third study compared five-weeks of individual CBT with usual care in 60 dialysis patients with mild to moderate depression and anxiety symptoms³⁷. Statistically significant effects of CBT on depression and anxiety outcomes were observed post treatment and after nine-weeks of follow-up.

A secondary analysis of data from a RCT testing the efficacy of a brief self-management intervention showed that compared with usual care, those in the intervention arm had significantly fewer depression symptoms over a 12 month follow-up³⁸. Intriguingly, the intervention was designed to target self-management behaviour, through the use of behaviour change techniques, and did not include components that target emotional regulation. It could be that the intervention achieved its effects via increasing personal resources, resilience and self-efficacy³⁸.

Although CBT has shown promise for improving depressive symptoms, how easily CBT treatment protocols can be administered as part of routine dialysis care remains unknown. Efforts to look at the optimal delivery methods are therefore required. One option might be internet delivered CBT (iCBT). The feasibility of iCBT for use in HD patients was first evaluated in a non-randomized controlled single group design, with 22 patients receiving a 8 week on-line CBT intervention, with therapist support³⁹. Consent rates were reassuring, with 22 of 30 patients assessed for study eligibility starting the intervention, 20 followed up post treatment and 17 at 3 months follow-up. Clinically significant improvements were observed for both depression (34%) and anxiety (31%).

A recent study assessed the feasibility of delivering online CBT, with or without therapist telephone support, for psychological distress (mild to moderate depression and anxiety symptoms) in HD patients⁴⁰. Of the 410 patients approached, 182 (44%) completed screening measures. 26% of patients found screening unacceptable; and a further 30% found it unfeasible. Psychological distress was detected in 101 (55%), with 60 meeting the remaining study inclusion criteria. The primary reason for ineligibility was poor computer literacy (N=17). Twenty-five patients were randomised to the supported (N=18) or unsupported arm (N=7) with 92% retained at follow-up. No differences in psychological distress or cost-effectiveness were apparent between the groups, although the study was concerned with feasibility and hence not powered to detect differences in mood outcomes.

Future directions and conclusions

Whilst efforts to evaluate effective treatments for depression have been undertaken in dialysis patients recently, it is clear from the current literature that we need to be able to increase recruitment into trials, with one option being employing more pragmatic or adaptive trial designs. We need to better understand and mitigate the barriers to recruitment particularly considering how to include patients already receiving treatment (for example drug wash out for anti-depressant studies) and likewise consider how depression interventions are implemented in a way that is acceptable to patients and renal staff.

For CBT studies, considering how treatments work (i.e. which cognitions and behaviours change in therapy that mediate treatment effects) and which treatments work from whom (i.e. treatment moderators), is required to improve the tailoring of treatment to individuals. Furthermore, there are no studies in dialysis patients that have evaluated the combined effects of CBT with anti-depressants.

Despite these challenges, it is imperative we invest further into treatments trials for depression in order to develop evidence-based treatment guidelines specific to individuals on dialysis. In order to deliver future treatment guidelines, it remains critical that there is access to renal psychology services that are suitably resourced to manage the sometimes complex psychosocial needs of dialysis

patients. In doing so it is hoped more patients will receive acceptable and efficacious treatment for depression leading to improved mental health and quality of life.

References

1. Farrokhi F, Abedi N, Beyene J, Kurdyak P, Jassal SV. Association between depression and mortality in patients receiving long-term dialysis: A systematic review and meta-analysis. *Am J Kidney Dis*. 2014;63(4):623-635. doi:10.1053/j.ajkd.2013.08.024
2. Chilcot J, Guirguis A, Friedli K, et al. Depression symptoms in haemodialysis patients predict all-cause mortality but not kidney transplantation: A cause-specific outcome analysis. *Ann Behav Med*. 2018;52(1):1-8. doi:10.1007/s12160-017-9918-9
3. Palmer S, Vecchio M, Craig JC, et al. Prevalence of depression in chronic kidney disease: Systematic review and meta-analysis of observational studies. *Kidney Int*. 2013;84(1):179-191. doi:10.1038/ki.2013.77
4. Chilcot J, Spencer BWJ, Maple H, Mamode N. Depression and kidney transplantation. *Transplantation*. 2014;97(7):717-721. doi:10.1097/01.TP.0000438212.72960.ae
5. Lopes AA, Bragg J, Young E, et al. Depression as a predictor of mortality and hospitalization among hemodialysis patients in the United States and Europe. *Kidney Int*. 2002;62(1):199-207. doi:10.1046/j.1523-1755.2002.00411.x
6. Cukor D, Rosenthal DS, Jindal RM, Brown CD, Kimmel PL. Depression is an important contributor to low medication adherence in hemodialyzed patients and transplant recipients. *Kidney Int*. 2009;75(11):1223-1229. doi:10.1038/ki.2009.51
7. Simic Ogrizovic S, Jovanovic D, Dopsaj V, et al. Could depression be a new branch of MIA syndrome? *Clin Nephrol*. 2009. doi:5403 [pii]
8. Clark S, Farrington K, Chilcot J. Nonadherence in dialysis patients: prevalence, measurement, outcome, and psychological determinants. *Semin Dial*. 2014;27(1):42-49. doi:10.1111/sdi.12159
9. Wileman V, Chilcot J, Norton S, Hughes L, Wellsted D, Farrington K. Choosing not to take phosphate binders: The role of dialysis patients' medication beliefs. *Nephron - Clin Pract*. 2011;119(3):c205-c213. doi:10.1159/000329106
10. Wileman V, Farrington K, Wellsted D, Almond M, Davenport A, Chilcot J. Medication beliefs are associated with phosphate binder non-adherence in hyperphosphatemic haemodialysis patients. *Br J Health Psychol*. 2015;20(3):563-578. doi:10.1111/bjhp.12116
11. Chiu YW, Teitelbaum I, Misra M, De Leon EM, Adzize T, Mehrotra R.

- Pill burden, adherence, hyperphosphatemia, and quality of life in maintenance dialysis patients. *Clin J Am Soc Nephrol*. 2009;4(6):1089-1096. doi:10.2215/CJN.00290109
12. Pena-Polanco JE, Mor MK, Tohme FA, Fine MJ, Palevsky PM, Weisbord SD. Acceptance of antidepressant treatment by patients on hemodialysis and their renal providers. *Clin J Am Soc Nephrol*. 2017;12(2):298-303. doi:10.2215/CJN.07720716
13. Weisbord SD, Mor MK, Green JA, et al. Comparison of symptom management strategies for pain, erectile dysfunction, and depression in patients receiving chronic hemodialysis: A cluster randomized effectiveness trial. *Clin J Am Soc Nephrol*. 2013;8(1):90-99. doi:10.2215/CJN.04450512
14. Hackett ML, Jardine MJ. We need to talk about depression and dialysis: But what questions should we ask, and does anyone know the answers? *Clin J Am Soc Nephrol*. 2017;12(2):222-224. doi:10.2215/CJN.13031216
15. Taylor F, Hare J, Combes G. Exploring patients' attitudes to different intervention approaches for supporting psychosocial needs. *J Ren Care*. 2016;42(4):212-222. doi:10.1111/jorc.12182
16. Taylor F, Taylor C, Baharani J, Nicholas J, Combes G. Integrating emotional and psychological support into the end-stage renal disease pathway: A protocol for mixed methods research to identify patients' lower-level support needs and how these can most effectively be addressed. *BMC Nephrol*. 2016;17(1). doi:10.1186/s12882-016-0327-2
17. National Institute for Health and Clinical Excellence. Depression in Adults: Recognition and Management Clinical Guideline: NICE Guideline [CG90]. *Natl Collab Cent Ment Heal*. 2009.
18. Atalay H, Solak Y, Biyik M, et al. Sertraline treatment is associated with an improvement in depression and health-related quality of life in chronic peritoneal dialysis patients. *Int Urol Nephrol*. 2010;42(2):527-536. doi:10.1007/s11255-009-9686-y
19. Turk S, Atalay H, Altintepe L, et al. Treatment with antidepressive drugs improved quality of life in chronic hemodialysis patients. *Clin Nephrol*. 2006;65(2):113-118. doi:10.5414/cnp65113
20. Wuerth D, Finkelstein SH, Ciarcia J, Peterson R, Kliger AS, Finkelstein FO. Identification and treatment of depression in a cohort of patients maintained on chronic peritoneal dialysis. *Am J Kidney Dis*. 2001;37(5):1011-1017. doi:10.1016/S0272-6386(05)80018-6
21. Koo J-R, Yoon J-Y, Joo M-H, et al. Treatment of depression and effect of antidepressant treatment on nutritional status in chronic hemodialysis patients. *Am J Med Sci*. 2005;329(1):1-5. doi:10.1097/00000441-200501000-00001
22. Lee S-K, Lee H-S, Lee T-B, et al. The Effects of Antidepressant Treatment on Serum Cytokines and Nutritional Status in Hemodialysis

- Patients. *J Korean Med Sci*. 2004;19(3):384.
doi:10.3346/jkms.2004.19.3.384
23. Kalender B, Ozdemir AC, Koroglu G. Association of depression with markers of nutrition and inflammation in chronic kidney disease and end-stage renal disease. *Nephron Clin Pr*. 2006;102(3-4):c115-21.
doi:10.1159/000089669
24. Kennedy SH, Craven JL, Rodin GM. Major depression in renal dialysis patients: an open trial of antidepressant therapy. *J Clin Psychiatry*. 1989;50(2):60-63. <http://www.ncbi.nlm.nih.gov/pubmed/2644243>.
25. Kamo T, Horikawa N, Tsuruta Y, Miyasita M, Hatakeyama H, Maebashi Y. Efficacy and pharmacokinetics of fluvoxamine maleate in patients with mild depression undergoing hemodialysis. *Psychiatry Clin Neurosci*. 2004;58(2):133-137. doi:10.1111/j.1440-1819.2003.01206.x
26. Levy NB, Blumenfield M, Beasley CMJ, et al. Fluoxetine in depressed patients with renal failure and in depressed patients with normal kidney function. *Gen Hosp Psychiatry*. 1996;18(1):8-13.
27. Chen J, Xie S. Agomelatine versus paroxetine in treating depressive and anxiety symptoms in patients with chronic kidney disease. *Neuropsychiatr Dis Treat*. 2018;Volume 14:547-552. doi:10.2147/NDT.S159636
28. Blumenfield M, Levy NB, Spinowitz B, et al. Fluoxetine in Depressed Patients on Dialysis. *Int J Psychiatry Med*. 1997;27(1):71-80.
doi:10.2190/WQ33-M54T-XN7L-V8MX
29. Friedli K, Guirguis A, Almond M, et al. Sertraline versus placebo in patients with major depressive disorder and undergoing haemodialysis (ASSertID): a randomised, controlled feasibility trial. *Clin J Am Soc Nephrol*. 2017;12(2):280-286.
30. Hedayati SS, Gregg LP, Carmody T, et al. Effect of Sertraline on Depressive Symptoms in Patients With Chronic Kidney Disease Without Dialysis Dependence The CAST Randomized Clinical Trial. *J Am Med Assoc*. 2017;318(19):1876-1890. doi:10.1001/jama.2017.17131
31. Friedli K, Almond M, Day C, et al. A study of sertraline in dialysis (ASSertID): a protocol for a pilot randomised controlled trial of drug treatment for depression in patients undergoing haemodialysis. *BMC Nephrol*. 2015;16(1):172. doi:10.1186/s12882-015-0170-x
32. Dickens C, Cherrington A, Adeyemi I, et al. Characteristics of psychological interventions that improve depression in people with coronary heart disease: A systematic review and meta-regression. *Psychosom Med*. 2013;75(2):211-221.
doi:10.1097/PSY.0b013e31827ac009
33. Harkness E, Macdonald W, Valderas J, Coventry P, Gask L, Bower P. Identifying psychosocial interventions that improve both physical and mental health in patients with diabetes: A systematic review and meta-analysis. *Diabetes Care*. 2010;33(4):926-930. doi:10.2337/dc09-1519

34. Hudson JL, Moss-Morris R, Game D, Carroll A, Chilcot J. Improving Distress in Dialysis (iDiD): A tailored CBT self-management treatment for patients undergoing dialysis. *J Ren Care*. 2016;42(4):223-238. doi:10.1111/jorc.12168
35. Duarte PS, Miyazaki MC, Blay SL, Sesso R. Cognitive-behavioral group therapy is an effective treatment for major depression in hemodialysis patients. *Kidney Int*. 2009;76(4):414-421. doi:10.1038/ki.2009.156
36. Cukor D, Ver Halen N, Asher DR, et al. Psychosocial Intervention Improves Depression, Quality of Life, and Fluid Adherence in Hemodialysis. *J Am Soc Nephrol*. 2014;25(1):196-206. doi:10.1681/ASN.2012111134
37. Lerma A, Perez-Grovas H, Bermudez L, Peralta-Pedrero ML, Robles-García R, Lerma C. Brief cognitive behavioural intervention for depression and anxiety symptoms improves quality of life in chronic haemodialysis patients. *Psychol Psychother Theory, Res Pract*. 2017;90(1):105-123. doi:10.1111/papt.12098
38. Griva K, Lam KFY, Nandakumar M, Ng J-AH, McBain H, Newman SP. The effect of brief self-management intervention for hemodialysis patients (HED-SMART) on trajectories of depressive and anxious symptoms. *J Psychosom Res*. 2018;113:37-44. doi:10.1016/j.jpsychores.2018.07.012
39. Chan R, Dear BF, Titov N, Chow J, Suranyi M. Examining internet-delivered cognitive behaviour therapy for patients with chronic kidney disease on haemodialysis: A feasibility open trial. *J Psychosom Res*. 2016;89:78-84. doi:10.1016/j.jpsychores.2016.08.012
40. Hudson JL, Rona-Moss-Morris, Norton S, et al. Tailored online cognitive behavioural therapy with or without therapist support calls to target psychological distress in adults receiving haemodialysis: A feasibility randomised controlled trial. *J Psychosom Res*. 2017;102:61-70. doi:10.1016/j.jpsychores.2017.09.009