



# Mental Health Care for Adults Treated With Dialysis in Canada: A Scoping Review

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Laurence Fernandez<sup>1</sup>, Stephanie Thompson<sup>2</sup> ,  
Charlotte Berendonk<sup>1</sup>, and Kara Schick-Makaroff<sup>1</sup> 

## Abstract

**Purpose of review:** Mental illnesses, especially depression and anxiety, are common conditions frequently underrecognized and untreated among individuals with end-stage kidney disease. Existing tools/interventions, approaches to care, and resources to support mental health for people treated with dialysis in Canada are not well known. The aim of this scoping review was to systematically describe how mental health care is provided to adults treated with dialysis in Canada. The research questions we sought to answer were the following: (1) What mental health assessment tools and interventions for adults treated with dialysis have been investigated and utilized in Canada? (2) what is the structure and process of mental health care delivered by kidney care to adults treated with dialysis in Canada? and (3) what is the availability of mental health care resources developed for adults treated with dialysis in Canada?

**Sources of information:** Electronic databases included Medline, Embase, CINAHL, PsycINFO, Cochrane Library, Scopus, and Web of Science for peer-reviewed literature, and Google search engine for gray literature.

**Methods:** Systematic searches were conducted to identify peer-reviewed and gray literature that focused on mental health care or support offered to adults receiving any form of dialysis in Canadian kidney care settings and/or community organizations. Mental health care and support was defined to include mental health assessment tools, interventions, resources, guidelines, and/or pathways used in dialysis in Canada. Title, abstracts, and full texts were screened independently by 2 reviewers with discrepancies resolved by additional team members. Web sites were screened by individual members. Data from included studies and Web sites were extracted based on the abovementioned research questions.

**Key findings:** We identified 8 peer-reviewed articles from electronic databases, and 28 separate Web site addresses. Of the 8 articles, 4 investigated mental health assessment tools and 4 examined mental health interventions for individuals treated with dialysis in Canada. The mental health assessment tools that have been used are Beck Depression Inventory-II (BDI-II), Edmonton System Assessment Scale (ESAS), Edmonton System Assessment Scale revised (ESAS-r): Renal, Hospital Anxiety and Depression Scale (HADS), and Distress Assessment and Response Tool (DART), and the nonpharmacological interventions that have been investigated are intradialytic exercise, tai chi exercise program, medical music therapy, and brief mindfulness meditation. Of the 28 Web site addresses, 2 contained clinical tools for kidney care providers for the management of depression and anxiety in individuals treated with dialysis. The 26 remaining Web sites contained mental health resources for individuals with kidney disease, which presented different types of resources, including psychoeducation, peer support, and linkage to other services.

**Conclusion:** In conclusion, we found only a limited number of studies investigating mental health assessment tools and interventions in Canada; there was a paucity of randomized controlled trials. Clinical pathways for the assessment and management of mental illness or symptoms in individuals treated with dialysis in Canada are also limited, and no clinical practice guidelines exist. Several mental health resources for people living with dialysis are available, predominantly focused on psychoeducation and peer support. Despite increasing prevalence of mental health concerns by people treated with dialysis, mental health care remains underaddressed.

**Limitations:** It is plausible that additional literature related to mental health assessment tools, interventions, resources, guidelines, and pathways exists that we did not find during our systematic search, especially in gray literature that was limited to one search engine. In addition, health care agencies or organizations may have developed other mental health resources, which may not be available on the Internet.

## Abrégé

**Justification:** Les troubles de santé mentale, la dépression et l'anxiété particulièrement, sont des affections courantes, mais souvent non reconnues et non traitées chez les personnes atteintes d'insuffisance rénale terminale. Les outils, interventions,



approches de soins et ressources qui existent pour soutenir la santé mentale des personnes traitées par dialyse au Canada sont eux aussi mal connus. Cette revue de littérature vise à décrire systématiquement la façon dont les soins de santé mentale sont prodigués aux adultes dialysés au Canada. Pour ce faire, nous avons tenté de répondre aux questions de recherche suivantes: (1) Quels outils d'évaluation de la santé mentale et interventions auprès des adultes dialysés ont été étudiés et sont utilisés au Canada? (2) Quelle est la structure des soins de santé mentale dispensés par l'équipe des soins rénaux aux adultes dialysés au Canada, et quel en est le processus? (3) Les ressources en santé mentale mises au point pour les adultes dialysés au Canada sont-elles disponibles?

**Sources:** Les bases de données électroniques Medline, Embase, CINAHL, PsycINFO, Cochrane Library, Scopus et Web of Science ont été consultées à la recherche de littérature évaluée par des pairs. Le moteur de recherche Google a été utilisé pour la littérature grise.

**Méthodologie:** Des recherches systématiques ont été effectuées pour répertorier la littérature grise et la littérature évaluée par les pairs portant sur le soutien ou les soins de santé mentale offerts aux adultes recevant une forme quelconque de dialyse dans les établissements de santé rénale et/ou organismes communautaires canadiens. Le soutien et les soins en santé mentale ont été définis de façon à inclure les outils d'évaluation, interventions, ressources, lignes directrices ou schémas utilisés en contexte de dialyse au Canada. Les titres, résumés et articles complets ont été examinés de façon indépendante par deux auteurs; les désaccords ayant été résolus par d'autres membres de l'équipe. Les sites Web ont été examinés par des membres individuels. Les questions susmentionnées ont servi à l'extraction des données d'intérêt des études et sites inclus.

**Principaux résultats:** Les bases de données électroniques ont permis de répertorier huit articles évalués par des pairs et 28 adresses de sites Web différentes. Des huit articles inclus, quatre avaient examiné des outils d'évaluation et quatre avaient examiné des interventions en santé mentale pour les personnes dialysées au Canada. Les outils d'évaluation de la santé mentale utilisés étaient BDI-II, ESAS, ESAS-r: Renal, HADS et DART. Les interventions non pharmacologiques incluaient des exercices intradialytiques, un programme de tai-chi, la musicothérapie médicale et une courte séance de méditation de pleine conscience. Sur les 28 adresses de site Web retenues, deux contenaient des outils cliniques destinés aux professionnels de la santé rénale pour la prise en charge de la dépression et de l'anxiété chez les personnes dialysées. Les 26 autres contenaient des ressources en santé mentale destinées aux personnes atteintes d'une néphropathie, soit différents types de ressources incluant notamment de la psychoéducation, du soutien par les pairs et des liens vers d'autres services.

Pour résumer, nous n'avons trouvé qu'un nombre limité d'études portant sur les outils d'évaluation et les interventions pour la santé mentale au Canada, dont aucun essai randomisé contrôlé. Les cheminements cliniques pour évaluer et prendre en charge les troubles de santé mentale et leurs symptômes chez les personnes traitées par dialyse au Canada sont également limités, et il n'existe aucune ligne directrice en matière de pratique clinique. Plusieurs ressources en santé mentale sont disponibles pour cette population, elles sont principalement axées sur la psychoéducation et le soutien par les pairs. Malgré la prévalence croissante des troubles de santé mentale chez les personnes dialysées, les soins demeurent rarement abordés.

**Limites:** Il est possible que d'autres documents existent sur les outils d'évaluation de la santé mentale, les interventions, les ressources, les lignes directrices ou les voies d'accès, et que nous les ayons manqués lors de la recherche systématique, particulièrement dans la littérature grise puisque celle-ci était limitée à un seul moteur de recherche. Il est également possible que des agences ou organismes de soins de santé aient mis au point d'autres ressources en santé mentale qui ne sont pas disponibles sur Internet.

## Keywords

dialysis, mental health, patient-oriented outcomes, quality of life, systematic review

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## What was known before

- Mental illnesses, specifically depression and anxiety, are highly prevalent among individuals treated with dialysis.

## What this adds

- There are a limited number of studies (N = 8) investigating mental health assessment tools and interventions for adults treated with dialysis in Canada.

<sup>1</sup>Edmonton Clinic Health Academy, AB, Canada

<sup>2</sup>Division of Nephrology, University of Alberta, Edmonton, Canada

### Corresponding Author:

Kara Schick-Makaroff, Faculty of Nursing, Edmonton Clinic Health Academy, 11405-87 Avenue NW, Edmonton, AB T6G 1C9, Canada.

Email: kara.schickmakaroff@ualberta.ca

- Mental health resources for people living with dialysis predominantly provide psychoeducation and peer support.
- Guidelines and clinical pathways for the assessment and management of mental illness in dialysis patients in Canada are limited; future work is needed.

## Introduction

Individuals with end-stage kidney disease (ESKD) encounter many physical and psychosocial stressors that are related to both illness and life-sustaining treatments, which often necessitate major lifestyle changes. These stressors include biochemical imbalance, physiological changes, neurological disturbances, dietary constraints, and fluid restriction.<sup>1</sup> Additional stressors that are commonly experienced by individuals with ESKD include financial constraints, sexual dysfunction, employment changes, time restrictions, marital conflicts, feelings of self-isolation, family dynamics, and functional limitations.<sup>2</sup> These stressors often contribute to mental health difficulties, of which depression and anxiety are the most common.

In comparison with the general population, people treated with dialysis have higher prevalence rates of depression and anxiety.<sup>3,4</sup> The global prevalence rates of depression and anxiety in 2015 were estimated at 4.4% and 3.6%, respectively.<sup>5</sup> Comparatively, a meta-analysis of 249 studies identified the prevalence estimates for depression among people undergoing dialysis range between 20% and 40%.<sup>6</sup> For anxiety disorder, prevalence rates of 17% to 46% have been reported for people treated with dialysis.<sup>7,8</sup> These mental health challenges that they face, particularly depression and anxiety, have deleterious impact on their health outcomes. Depression is associated with increased risk for hospitalization, mortality, poor nutrition, and poor dialysis compliance<sup>9</sup>; anxiety is associated with concomitant depression, increased comorbidities and length of hospitalizations, and reduced vitality and quality of life.<sup>10</sup>

Pharmacological and nonpharmacological interventions can improve the mental health of people treated with dialysis. Nonpharmacological interventions such as cognitive-behavioral therapy (CBT), exercise, and relaxation techniques can alleviate depressive and anxiety symptoms in individuals living with dialysis.<sup>11,12</sup> Pharmacological interventions for anxiety and depression are prescribed,<sup>6,10,13-15</sup> but at times regarded with caution due to renal failure, side effects, stigma, or perceived barriers.<sup>16-19</sup>

During the Covid-19 pandemic, Canadians' reports of mental health concerns have doubled.<sup>20</sup> This is particularly concerning for people treated with dialysis in Canada who already reported high levels of depression and anxiety.<sup>21</sup> Hao et al<sup>22</sup> showed that the prevalence of depression and anxiety symptoms has increased among individuals living with maintenance dialysis during the Covid-19 pandemic. Susceptibility to infection, attributed to lower immunity

and the requirement to attend treatments in high-risk areas such as hospitals, is a concern expressed by people treated with dialysis during the Covid-19 pandemic.<sup>23</sup> Individuals living with dialysis have identified the need for more psychological support during Covid-19.<sup>23</sup> A prepandemic survey including 30 Canadian nephrologists agreed that psychosocial care improves patient outcomes, but the current psychosocial care in hemodialysis units is lacking.<sup>24</sup> Furthermore, when the Can-SOLVE CKD Triple I Project identified the top 10 challenges to in-center hemodialysis care, people treated with hemodialysis believed that access to mental health care was a priority challenge to address.<sup>25</sup> However, stigma, siloed care designated by body parts (eg, kidney), dialysis culture, and concerns by providers about scope of practice<sup>24,26</sup> have all contributed to this pervasive, multifaceted health service gap. In turn, mental health care of adults treated with dialysis in Canada has been largely unexplored and unaddressed.

The aim of this scoping review was to systematically describe how mental health care is provided to adults treated with dialysis in Canada. The research questions we sought to answer were the following:

**Research Question 1:** What mental health assessment tools and interventions for adults treated with dialysis have been investigated and utilized in Canada?

**Research Question 2:** What is the structure and process of mental health care delivered by kidney care to adults treated with dialysis in Canada?

**Research Question 3:** What is the availability of mental health care resources developed for adults treated with dialysis in Canada?

This scoping review is part of a larger project focusing on mental health care in dialysis in Alberta (<https://kidney.ca/Research/Supported-Research/ABS/Tailoring-a-Pathway-for-Mental-Health-Care-for-Alb>). Results will inform future evidence-based research interventions and development of a pathway for Canadian dialysis programs to address mental health experienced by adults receiving dialysis.

## Method

### Study Design

We followed the scoping review framework developed by Arksey and O'Malley,<sup>27</sup> and revised by Levac, Colquhoun, and O'Brien.<sup>28</sup> This scoping review framework includes the following stages: identifying the research question, identifying relevant studies, selecting studies, charting the data, and reporting results. In contrast to systematic reviews, which attempt to answer a defined research question, a scoping review aims to identify and map available evidence, discover knowledge gaps, clarify key concepts, and establish a foundation for future systematic reviews.<sup>29</sup>

**Table 1.** Inclusion/Exclusion Criteria.

	Inclusion	Exclusion
Topic	<ul style="list-style-type: none"> <li>The focus of the text is mental health care or support<sup>a</sup> offered within kidney care settings and/or community organizations</li> </ul>	<ul style="list-style-type: none"> <li>The text reports a mental component summary (eg, KDQOL-36), mental health or emotional role domain (eg, SF-36) or a depression or anxiety item (eg, ESAS, EQ-5D-5L), but does not have a specific focus on mental health care or support<sup>a</sup> offered within kidney care settings and/or community organizations</li> <li>Mental health care offered to dialysis patients by primary care providers, psychologist, psychiatrist, and so on outside of kidney care</li> </ul>
Sample	<ul style="list-style-type: none"> <li>All types of dialysis interventions (eg, hemodialysis or peritoneal)</li> <li>All modality settings (eg, home-based dialysis, in-center dialysis, outpatient dialysis)</li> <li>Adults 18 years and older</li> <li>Canada</li> </ul>	<ul style="list-style-type: none"> <li>Nondialysis population (eg, kidney transplant patients, predialysis patients, patients receiving conservative care, caregivers of dialysis patients, family members of dialysis patients)</li> </ul>
Time	<ul style="list-style-type: none"> <li>After January 2000</li> </ul>	
Languages	<ul style="list-style-type: none"> <li>All languages</li> </ul>	<ul style="list-style-type: none"> <li>Articles: protocol, conference abstract, opinion or letter to the editor</li> </ul>
Text	<ul style="list-style-type: none"> <li>Articles: peer-reviewed studies</li> <li>Web sites: health authorities or community organizations</li> </ul>	

Note. KDQOL-36 = Kidney Disease Quality of Life-36; SF-36 = Short Form-36; ESAS = Edmonton System Assessment Scale; EQ-5D-5L = European Quality of Life Five Dimension Five Level Scale.

<sup>a</sup>Mental health care or support was defined to include mental health assessment tools, interventions, resources, guidelines and/or pathways used in dialysis.

### Inclusion Criteria

The selection of texts was based on inclusion/exclusion criteria (see Table 1). Texts were required to focus on mental health care or support offered to adults receiving any form of dialysis in Canadian kidney care settings and/or community organizations. Care or support was defined to include mental health assessment tools, interventions, resources, guidelines, and/or pathways used in dialysis. If a text reported a mental component summary (eg, Kidney Disease Quality of Life-36 [KDQOL-36]), mental health or emotional role domain (eg, Short Form-36 [SF-36]), or a depression or anxiety item (eg, Edmonton System Assessment Scale [ESAS], European Quality of Life Five Dimension Five Level Scale [EQ-5D-5L]), but did not explicitly focus on mental health care or support offered to adults receiving any form of dialysis in Canadian kidney care settings and/or community organizations, then it was excluded.

### Search Strategy

The peer-reviewed and gray literature search strategies were developed with an information scientist from the Alberta Strategy for Patient-Oriented Research–Knowledge Translation (SPOR-KT) (see Supplementary File 1). The information scientist developed and conducted the search strategy in November 2020 using the following electronic databases: (1) Medline, (2) Embase, (3) CINAHL, (4) PsycINFO, (5) Cochrane Library, (6) Scopus, and (7) Web of

Science. A sample list of search terms used by the information scientist includes (1) kidney, (2) dialysis, (3) mental health, (4) depression, (5) depressive symptoms, (6) anxiety, (7) end stage kidney disease, (8) ESKD, (9) nephrology, (10) treatment, (11) intervention, (12) mental health assessment, (13) algorithm, (14) program, (15) Canada, (16) kidney care, (17) flow chart, (18) end stage renal disease, and (19) ESRD.

From January 29 to February 14, 2021, we also searched the Internet using Google search engine to identify any Web sites related to mental health assessment tools, interventions, resources, guidelines, and pathways aimed to target individuals treated with dialysis in Canada. Our main strategy for screening Web sites was searching through the Web pages of health authorities and community organizations in each province and territory across Canada. Examples of search terms used in screening Web sites were mental health, mental health resources, mental health screening, mental health treatment, depression, anxiety, dialysis, psychological well-being, emotional health, and psychological help.

### Study Selection

We used Covidence systematic review software<sup>30</sup> to screen articles according to inclusion/exclusion criteria. Ten reviewers screened titles and abstracts, and 6 reviewers performed full-text screening. Discrepancies among reviewers over article eligibility were discussed for resolution. Five reviewers conducted Web site screening and selection. We used a Google spreadsheet to facilitate the Web site screening



process. Four members of our research team also conducted citation chaining from included articles in March 2021 to identify additional information sources.

### Data Extraction

Following the identification of eligible articles and Web sites, the data were extracted into 2 Microsoft Excel Spreadsheets by 5 reviewers. The spreadsheet for the eligible articles included the following predefined categories: (1) authors, (2) year of publication, (3) target population, (4) type of dialysis, (5) mental health condition, (6) name of assessment tool, (7) name of intervention, (8) province or territory of origin of the article, (9) sample size of the study if applicable, (10) design of the study if applicable, (11) results of the study if applicable, (12) summary of the article, (13) involved health care providers, and (14) intervention setting.

The spreadsheet for selected Web sites included the following categories: (1) URL, (2) target user (ie, patients or clinicians), (3) target population (ie, all kidney patients or dialysis patients only), (4) type of dialysis if applicable, (5) mental health condition (ie, for depression, anxiety, or general mental health), (6) province and territory of origin, (7) name of the developer of the Web site, (8) type of organization (ie, regional health care authority, provincial health care authority, or volunteer nonprofit/community organization), (9) brief summary of the information contained in the Web site, (10) type of resource (ie, psychoeducation, peer support, clinical tools for health care providers, linkage to other resources), (11) content of the psychoeducation Web site, (12) type of peer support, (13) link to other resources or crisis/emergency contacts, (14) language, and (15) registration and fee requirement if applicable.

### Data Analysis

Following the scoping review framework,<sup>27,28</sup> in the analysis stage we developed both a descriptive numerical summary and a thematic analysis. The descriptive numerical summary characterized the identified studies and included the overall number of studies, years of publication, geographical location where the studies were conducted, intervention types, characteristics of study populations, type of research methods adopted, and the outcome measures. The studies were organized thematically according to mental health assessment tool or intervention type. In addition to the peer-reviewed publications, we analyzed the information from Web sites to assess the structure and processes of mental health care delivery by kidney care and/or community organizations in Canada, and availability of mental health resources. The Web sites were descriptively summarized and categorized as a resource for health care providers or patients. The descriptive summaries of both the peer-reviewed publications and the Web sites, along with the extracted data from

all included sources, were thematically analyzed by the team to answer the 3 research questions. We adhered to the checklist for Preferred Reporting Items for Systemic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)<sup>31</sup> (see Supplementary File 2).

## Review

### Results

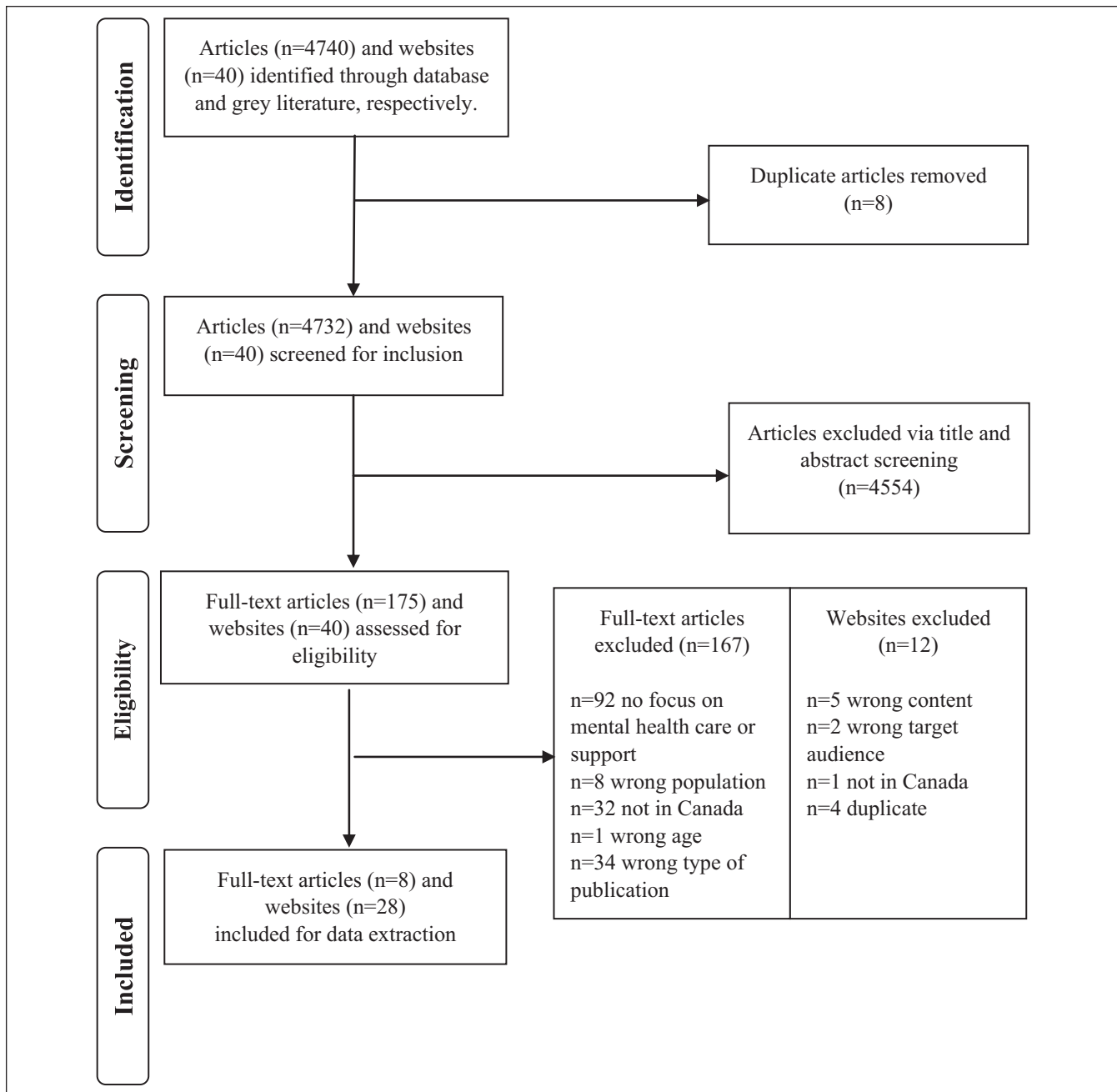
The PRISMA study flow diagram is shown in Figure 1. From the peer-reviewed literature, database searches yielded 4740 potentially relevant articles prior to removing duplicates. After title and abstract screening, 175 full texts were screened. Of these, 167 articles did not meet our inclusion criteria, yielding 8 eligible articles for data extraction. We did not identify any additional articles from the citation chaining process of the 8 articles. We identified 40 different Web site addresses using Google search engine. In total, 12 Web sites were excluded in accordance with our criteria, yielding 28 separate Web site addresses for data extraction.

Overall, our search process identified 8 peer-reviewed articles from electronic databases and 28 separate Web site addresses. Of the 8 articles, 4 investigated mental health assessment tools and 4 examined mental health interventions for individuals living with dialysis in Canada (see Table 2). Of the 28 separate Web site addresses, 2 contained clinical tools for kidney care providers and 26 contained mental health resources for individuals with kidney disease. These texts are presented below to describe (1) the mental health assessment tools and interventions that have been investigated and utilized for adults treated with dialysis in Canada, (2) the structure and process of mental health care delivered by dialysis care in Canada, and (3) the availability of mental health resources.

### Assessment Tools

The assessment tools for mental illness or symptoms that have been investigated or used with adults treated with dialysis in Canada include Beck Depression Inventory-II (BDI-II),<sup>32</sup> ESAS,<sup>21</sup> ESAS revised: Renal (ESAS-r: Renal),<sup>34</sup> Hospital Anxiety and Depression Scale (HADS),<sup>21</sup> and Distress Assessment and Response Tool (DART).<sup>33</sup> All of these tools are completed through patient self-report and are patient-reported outcome measures (PROMs).

The use of these mental health assessment tools in Canadian settings was for various purposes (see Table 2). Wilson et al<sup>32</sup> examined the prevalence of depression in a hemodialysis center in London, Ontario, as measured by BDI-II, the primary nurse, and the nephrology team. They found that patients were diagnosed with depression 38.7%, 41.9%, and 24.2% of the time, according to the BDI-II > 14, the primary nurse, and the nephrology team, respectively. Collister et al<sup>21</sup> investigated the operating features of single



**Figure 1.** PRISMA.

Note. PRISMA = Preferred Reporting Items for Systemic reviews and Meta-Analyses.

questions for anxiety and depression from the ESAS and compared this instrument with the HADS in a cross-sectional study of patients from 2 hemodialysis units in Hamilton, Ontario. They reported that the ESAS anxiety and depression levels were moderately related to HADS scores. The ESAS-r: Renal, a revised version of ESAS, is for dialysis patients to self-report physical and psychosocial symptoms. Evans et al<sup>34</sup> performed a longitudinal mixed-methods study in 8 hemodialysis units in Ontario to explore the perspectives of

patients and health care professionals on the implementation of the ESAS-r: Renal. They found that ESAS-r: Renal increased patient and provider awareness of psychosocial symptoms and encouraged patients to speak up about their concerns. El-Majzoub et al<sup>33</sup> administered the DART—an assessment tool for anxiety, depression, and distress using multiple validated PROMs—to examine psychosocial distress and its association with hospitalization and emergency room visits in 80 patients from a hemodialysis unit in Quebec.

**Table 2.** Summary of Canadian Studies Using Mental Health Assessment Tools and Interventions for Individuals Treated With Dialysis.

Author	Assessment tool or intervention	Name tool or intervention	Condition	Setting	Sample size, design	Study outcomes measured	Results/summary
Wilson et al <sup>32</sup>	Assessment tool	BDI-II	Depression	HD	N = 124, prospective cohort study	The prevalence of depression as evaluated by BDI-II, the primary nurse, and nephrology team	Patients were diagnosed with depression 38.7%, 41.9%, and 24.2% of the time, according to the BDI-II $\geq 14$ , the main nurse, and the nephrology team, respectively. The findings illustrate the primary nurse's role in recognizing patients at risk of depression.
Collister et al <sup>21</sup>	Assessment tool	ESAS & HADS	Depression and anxiety	HD	N = 50, cross-sectional study	The operating characteristics of single questions for anxiety and depression from ESAS were assessed and compared with using HADS.	Using the HADS as a benchmark, 56% of patients were diagnosed with anxiety and 54% with depression. The areas under the ROC curves for anxiety and depression were 0.83 and 0.81, respectively, using ESAS scores of $\geq 2$ . Results indicate that ESAS scores for anxiety and depression moderately correlated with HADS scores.
El-Majzoub et al <sup>33</sup>	Assessment tool	DART	Depression, anxiety, and distress	HD	N = 80, single-center prospective study	DART was used to measure the anxiety, depression, and psychosocial distress of patients, as well as the relationship between psychosocial distress and hospitalization and emergency department visits.	14% of patients reported anxiety, 33% reported depression, and 46% reported psychosocial distress using DART as a tool. The findings show that psychosocial distress is common in HD patients and is linked to a shorter time to being hospitalized.
Evans et al <sup>34</sup>	Assessment tool	ESAS-r: Renal	General mental health	HD	N = 1459, longitudinal mixed methods	The impact of the ESAS-r: Renal on symptom management, patient-provider contact, and interdisciplinary communication was investigated from the perspectives of patients and providers during the implementation process.	The introduction of the ESAS-r: Renal increased patient and provider psychosocial symptom understanding, as well as patient empowerment. Symptom control, patient-provider contact, and the interdisciplinary team all showed no change in improvement.

(continued)

Table 2. (continued)

Author	Assessment tool or intervention	Name tool or intervention	Condition	Setting	Sample size, design	Study outcomes measured	Results/summary
Kolewaski et al <sup>35</sup>	Intervention	Intradialytic exercise rehabilitation program	General mental health	HD	N = 7, qualitative design using semi-structured interviews	The perceived impact of the exercise program on the physical, emotional, and social well-being of patients	The study identified 3 main themes that contributed to the overall impact on quality of life of patients: improved performance (increased strength, enhanced energy, and greater endurance capacity), positive change in HD experience (changed outlook, engaged in activity, and sense of wellness), enhanced sense of control (value of exercise, convenience, and time, and advancement of HD treatment).
Mustata et al <sup>36</sup>	Intervention	Tai Chi exercise program	General mental health	PD	N = 6, pilot study	The SF-36 was used to assess the impact of a Tai chi-based exercise training program on the quality of life in PD patients.	Six PD patients' overall mental health dimension score increased significantly ( $P = .047$ ) from 48.9 at baseline to 58.4 at the conclusion of the intervention. The overall SF-36 score increased from 52.8 at the onset to 59.9 at the end of the intervention, but the difference was not statistically significant ( $P = .10$ ).
Eyre <sup>37</sup>	Intervention	Medical Music Therapy	General mental health	HD	N = 34, clinical pilot study with no research protocol established	The benefit of music therapy in the medical setting of hemodialysis treatment	Patients found medical music therapy to be effective in reducing anxiety, changing mood, and relieving pain, according to case vignettes.
Thomas et al <sup>38</sup>	Intervention	Brief Mindfulness Meditation	Depression and anxiety	HD	N = 40, pilot study, randomized, controlled, assessor-blinded trial	The efficacy of brief mindfulness meditation for depression and anxiety as contrasted with standard therapy.	Subjective benefits were associated with brief mindfulness meditation. There was no statistically significant impact on depression (change in PHQ-9, $-3.0 \pm 3.9$ in the intervention group vs $-2.0 \pm 4.7$ in the controls; $P = .45$ ) or anxiety (change in GAD- $-0.9 \pm 4.6$ vs $-0.8 \pm 4.8$ ; $P = .91$ ) ratings.

Note. BDI-II = Beck Depression Inventory-II; DART = Distress Assessment and Response Tool; ESAS = Edmonton System Assessment Scale; ESAS-r: Renal = Edmonton System Assessment Scale revised; Renal; HADS = Hospital Anxiety and Depression Scale; HD = hemodialysis; PD = peritoneal dialysis; SF-36 = Short Form with 36 Questions Tool.



They concluded that psychosocial distress is common in hemodialysis patients and is correlated with shorter time to being admitted to the hospital. The authors propose that a wider symptom screen for distress can provide a more comprehensive understanding of the patient's situation.

### *Interventions*

We identified 4 nonpharmacological interventions (one using randomized controlled trial design, 2 qualitative studies, and one uncontrolled before and after study) aimed to prevent or address mental illness or its symptoms (eg, depression, anxiety, burnout, and stress) with dialysis patients in Canada. The randomized controlled trial examined the effectiveness of brief mindfulness meditation in patients ( $N = 41$ ) from a hemodialysis unit in Quebec.<sup>38</sup> Brief, mindfulness meditation was associated with subjective benefits in this study, but it had no impact on depression or anxiety ratings. The effect of an intradialytic exercise program on the physical, mental, and social well-being on 7 dialysis patients in Ontario was investigated in a qualitative study by Kolewaski et al.<sup>35</sup> From semi-structured interviews, they identified the following 3 themes: enhanced quality of life, including improved performance (increased strength, enhanced energy, and greater endurance capacity); positive change in hemodialysis experience (changed outlook, engaged in activity, and sense of wellness); and enhanced sense of control (value of exercise, convenience, and time, and advancement of hemodialysis treatment). A uncontrolled before and after pilot study in Toronto Western Hospital assessed the impact of a tai chi-based exercise training program on the quality of life in a group of peritoneal dialysis patients using the SF-36.<sup>36</sup> The findings of this study indicate that 3 months of tai chi-based exercise training increased the mental health dimension scores in 6 peritoneal dialysis patients. Last, a qualitative case study using medical music therapy was created for 34 dialysis patients to help them relax, express emotions, and change their mood.<sup>37</sup> According to the case vignettes in this qualitative study, patients considered music therapy to be beneficial in reducing anxiety, changing mood, and relieving pain.<sup>37</sup>

### *Structure and Process of Mental Health Care in Dialysis Context*

We did not identify any national clinical practice guidelines for mental health care in dialysis, like those used in other chronic conditions such as the Diabetes and Mental Health Clinical Practice Guidelines from Diabetes Canada.<sup>38</sup> The British Columbia Renal Agency<sup>39</sup> has established provincial standards and guidelines on how depression and anxiety should be managed. However, this guideline was developed for all chronic kidney disease patients and excludes dialysis patients. The Alberta Kidney Care–North Program has also

used an anxiety and depression guideline for health care providers, but this was originally created for conservative (ie, no dialysis therapy) kidney management.<sup>40</sup>

We identified 2 clinical pathways from 2 kidney health organizations in Canada, allowing us to examine how mental health concerns are detected and managed in adults treated with dialysis. The first was a clinical pathway developed by Ontario Renal Network<sup>41</sup> for health care providers to help treat depression and anxiety in individuals treated with hemodialysis. This pathway was adapted from the BC Renal Agency's Provincial Standards and Guidelines. It includes an algorithm for managing depression and anxiety with detailed information on the etiology and symptomatology of depression and anxiety in individuals on hemodialysis, as well as commonly used screening tools and referral. The recommended questionnaires to screen for depression and anxiety in this algorithm are the ESAS-r: Renal and the EQ-5D-5L. If the patient requests help and/or expresses self-harm and/or ESAS-r: Renal or EQ-5D-5L anxiety/depression scores worsen, then a more comprehensive assessment is recommended. The comprehensive assessment tools listed in this pathway include Generalized Anxiety Disorder 7-Item Scale (GAD-7), Patient Health Questionnaire (PHQ-9), Geriatric Depression Scale, HADS, and Beck Depression Index (BDI).

Second, as part of a study,<sup>42</sup> the Alberta Kidney Care–South Program developed a clinical pathway for the management of anxiety and depression in individuals with kidney disease (ie, includes dialysis population). This clinical pathway was also adapted from the BC Renal Agency's depression and anxiety guideline. Similar to Ontario Renal Network's clinical pathway, it also contains an algorithm to guide health care providers on the detection of anxiety and depression and to facilitate treatment. The tool for patients to self-report symptoms of anxiety and/or depression is the Integrative Palliative Care Outcome Scale (IPOS). Further comprehensive assessment tools that may be used as needed are the GAD-7 and PHQ-9 for anxiety and depression, respectively. The recommended nonpharmacological therapeutic approaches in this guideline include physical activity, meditation/relaxation therapy, peer support, primary care network education classes, and online platforms (eg, e-couch, mood gym, This Way Up, Center for Clinical Intervention).

### *Availability of Mental Health Resources*

Of the 28 Web sites identified (Table 3), 2 contained clinical tools developed for kidney health care providers. The Ontario Renal Network clinical pathway described above<sup>36</sup> provides health care providers with information that can be used to assess and treat depression and anxiety in hemodialysis patients. And British Columbia Renal Agency<sup>43</sup> provides a document with information about dosing adjustments if antidepressants are required in adults with renal failure, which included hemodialysis and peritoneal dialysis populations.

**Table 3. List of Web-Based Mental Health Clinical Tools and Patient Resources.**

Type of resource	Creator	Province of origin	Target user	Title of resource	Summary of resource	Link to resource
Clinical Tools	BC Renal Agency	BC	Health care Providers	Antidepressant Use in Adults with Chronic Kidney Disease	Provides information sheet for physicians and nurse practitioners for dosing adjustments for antidepressants	<a href="http://www.bcrenal.ca/resource-gallery/Documents/Antidepressant%20Use%20in%20Adults%20with%20Chronic%20Kidney%20Disease.pdf">http://www.bcrenal.ca/resource-gallery/Documents/Antidepressant%20Use%20in%20Adults%20with%20Chronic%20Kidney%20Disease.pdf</a>
Clinical Tools	Ontario Renal Network	ON	Health care Providers	Depression and Anxiety	Provides a clinical pathway for managing depression and anxiety in hemodialysis patients	<a href="https://www.ontariorenalnetwork.ca/sites/renalnetwork/files/assets/DepressionAndAnxietyResource.pdf">https://www.ontariorenalnetwork.ca/sites/renalnetwork/files/assets/DepressionAndAnxietyResource.pdf</a>
Psychoeducation	BC Renal Agency	BC	Patients	Anxiety	Provides information on anxiety, phobias, and coping with anxiety	<a href="http://www.bcrenal.ca/health-info/managing-my-care/mental-health/anxiety">http://www.bcrenal.ca/health-info/managing-my-care/mental-health/anxiety</a>
Psychoeducation	BC Renal Agency	BC	Patients	Coping with Grief and Loss	Provides information on coping with grief and loss.	<a href="http://www.bcrenal.ca/health-info/managing-my-care/mental-health/coping-with-grief-and-loss">http://www.bcrenal.ca/health-info/managing-my-care/mental-health/coping-with-grief-and-loss</a>
Psychoeducation	BC Renal Agency	BC	Patients	Expressing Anger	Provides information and tips on recognizing and managing anger	<a href="https://www.bcrenal.ca/health-info/managing-my-care/mental-health/expressing-anger">https://www.bcrenal.ca/health-info/managing-my-care/mental-health/expressing-anger</a>
Psychoeducation	BC Renal Agency	BC	Patients	Managing Stress	Provides information on stress and ways to manage stress	<a href="http://www.bcrenal.ca/health-info/managing-my-care/mental-health/managing-stress#Recognizing—the—Signs—&amp;—Symptoms—of—Stress">http://www.bcrenal.ca/health-info/managing-my-care/mental-health/managing-stress#Recognizing—the—Signs—&amp;—Symptoms—of—Stress</a>
Psychoeducation	BC Renal Agency	BC	Patients	Sadness and Depression	Provides information on sadness and depression, getting help and supporting someone with depression, and symptoms of depression	<a href="http://www.bcrenal.ca/health-info/managing-my-care/mental-health/sadness-and-depression">http://www.bcrenal.ca/health-info/managing-my-care/mental-health/sadness-and-depression</a>
Psychoeducation	BC Renal Agency	BC	Patients	Body Image	Provides information on kidney disease and body image and mental health	<a href="http://www.bcrenal.ca/health-info/managing-my-care/mental-health/body-image#Overview">http://www.bcrenal.ca/health-info/managing-my-care/mental-health/body-image#Overview</a>
Psychoeducation	BC Renal Agency	BC	Patients	Deep Breathing Exercises	Provides information deep breathing exercises for mental health	<a href="http://www.bcrenal.ca/health-info/managing-my-care/mental-health/body-image#Overview">http://www.bcrenal.ca/health-info/managing-my-care/mental-health/body-image#Overview</a>
Psychoeducation	BC Renal Agency	BC	Patients	Progressive Muscle Relaxation	Provides information on muscle relaxation techniques and mental health	<a href="http://www.bcrenal.ca/health-info/managing-my-care/mental-health/progressive-muscle-relaxation">http://www.bcrenal.ca/health-info/managing-my-care/mental-health/progressive-muscle-relaxation</a>
Psychoeducation	Kidney Foundation of Canada	—	Patients	Chronic Kidney Disease and Mental Health	Provides webinar intended to remind people that what they are feeling is not unusual, that they are not alone in feeling overwhelmed by a diagnosis, and that there are resources available to help adapt to a life with CKD and cope with the challenges	<a href="https://kidney.ca/Support/Resources/Webinars/all/Webinars/CKD-and-Mental-Health">https://kidney.ca/Support/Resources/Webinars/all/Webinars/CKD-and-Mental-Health</a>

(continued)

**Table 3. (continued)**

Type of resource	Creator	Province of origin	Target user	Title of resource	Summary of resource	Link to resource
Psychoeducation	London Health Sciences Centre	ON	Patients	Adjusting and Coping	Provides information on adjusting and coping to dialysis, videos on dialysis patient experiences, link to peer support groups, link to depression self-assessment tool, stress management techniques, and links to mental health Web sites	<a href="https://www.lhsc.on.ca/regional-renal-program/adjusting-coping">https://www.lhsc.on.ca/regional-renal-program/adjusting-coping</a>
Psychoeducation	Psycho-nephrology	—	Patients	Psychological Impact	Provides information on self-perception, uncertainty and fear, depression, anxiety, and coping tips	<a href="https://psychonephrology.com/psychological-impact/">https://psychonephrology.com/psychological-impact/</a>
Psychoeducation	Ontario Renal Network	ON	Patients	How to Manage Depression	Provides general information on depression, causes, symptoms, management, and other resources	<a href="https://www.ontariorenalnetwork.ca/sites/renalnetwork/files/assets/HowToManageDepression.pdf">https://www.ontariorenalnetwork.ca/sites/renalnetwork/files/assets/HowToManageDepression.pdf</a>
Psychoeducation	Ontario Renal Network	ON	Patients	How to Manage Anxiety	Provides general information on anxiety, causes, symptoms, management, and other resources	<a href="https://www.ontariorenalnetwork.ca/sites/renalnetwork/files/assets/HowToManageAnxiety_0.pdf">https://www.ontariorenalnetwork.ca/sites/renalnetwork/files/assets/HowToManageAnxiety_0.pdf</a>
Peer Support (Individual)	Kidney Foundation of Canada	—	Patients	Peer Support	Provides peer support volunteers who assist and offer support and encouragement to people with kidney disease	<a href="https://kidney.ca/Support/Peer-Support/Peer-Support-Request-Form">https://kidney.ca/Support/Peer-Support/Peer-Support-Request-Form</a>
Peer Support (Group)	Kidney Foundation of Canada	—	Patients	Support and Engagement Groups	Provides linkage to peer support groups who meet on a regular basis to discuss topics or participate in activities of common interests	<a href="https://kidney.ca/Support/Peer-Support/Support-Engagement-Groups">https://kidney.ca/Support/Peer-Support/Support-Engagement-Groups</a>
Peer Support (Online)	Kidney Foundation of Canada	—	Patients	Kidney Connect	Provides an online platform that allows patients to connect online with people who have shared experiences to reduce stress, gather information, and validate one's feelings	<a href="http://www.kidneyconnect.ca/">http://www.kidneyconnect.ca/</a>
Peer Support (Group)	Lakeridge Health	ON	Patients	Kidney Connect Coffee Club	Support group that provides an opportunity to meet and connect with people that have shared experiences	<a href="https://www.lakeridgehealth.on.ca/en/our-services/kidney-connect-coffee-club.asp">https://www.lakeridgehealth.on.ca/en/our-services/kidney-connect-coffee-club.asp</a>
Peer Support (Group)	Scarborough Health Network	ON	Patients	Peer Support Group	Provides a peer support group service that help kidney patients and families to adjust to living with a chronic illness, improve survival and overall well-being, and ease anxieties about dialysis	<a href="https://www.shn.ca/nephrology-and-dialysis/home-dialysis/">https://www.shn.ca/nephrology-and-dialysis/home-dialysis/</a>

(continued)

**Table 3. (continued)**

Type of resource	Creator	Province of origin	Target user	Title of resource	Summary of resource	Link to resource
Peer Support (Group)	Windsor Regional Hospital	ON	Patients	Windsor Kidney Connect Support Group	Provides a linkage to a support group that offers an opportunity to connect with others with shared experiences by telephone or video conference	<a href="https://www.wrh.on.ca/uploads/Common/ON_Windsor_PeerSupport.pdf">https://www.wrh.on.ca/uploads/Common/ON_Windsor_PeerSupport.pdf</a>
Service Linkages	Alberta Health Services	AB	Patients	Alberta Kidney Care Health Information for Renal Patients Support Lines and Groups	Provides linkage to health information resources (eg. depression) from MyHealth.Alberta.ca	<a href="https://www.albertahealthservices.ca/info/Page11278.aspx">https://www.albertahealthservices.ca/info/Page11278.aspx</a>
Service Linkages	Manitoba Renal Program	MB	Patients	Support Lines and Groups	Provides linkage to support lines such as renal social workers and occupational therapists, and available peer support offered by Kidney Foundation of Canada	<a href="https://www.kidneyhealth.ca/living-with-kidney-disease/moreresources/support-lines/">https://www.kidneyhealth.ca/living-with-kidney-disease/moreresources/support-lines/</a>
Service Linkages	Southern Health	MB	Patients	Welcome to the Portage District General Hospital Dialysis Unit	Provides linkage to social worker, spiritual care worker, Kidney Foundation of Canada, and Indigenous Support Services	<a href="https://www.southernhealth.ca/assets/Finding-Care/Dialysis-PDGH.pdf">https://www.southernhealth.ca/assets/Finding-Care/Dialysis-PDGH.pdf</a>
Service Linkage	Niagara Health	ON	Patients	Niagara Health: Kidney/Dialysis Care	Provides linkage to peer support programs, online education for learning how to manage and live with kidney disease, and other resources	<a href="https://www.niagarahealth.on.ca/site/kidney-care-program">https://www.niagarahealth.on.ca/site/kidney-care-program</a>
Service Linkages	Ontario Renal Network	ON	Patients	Recommended Resources for Patients and Families	Provides linkage to resources, such as financial support and peer support	<a href="https://www.ontariorenalnetwork.ca/en/recommended-resources-patients-families">https://www.ontariorenalnetwork.ca/en/recommended-resources-patients-families</a>
Service Linkage	Saskatchewan Health Authority	SK	Patients	Specialized Ambulatory Care: Kidney Program	Provides linkage to mental health support	<a href="https://sk.211.ca/service/11952234_11952233/specialized_ambulatory_care_kidney_program">https://sk.211.ca/service/11952234_11952233/specialized_ambulatory_care_kidney_program</a>
Service Linkages	St. Mary's Hospital	QC	Patients	Psychology Services	Lists of psychology services and staff psychologists who collaborate with the nephrology department	<a href="https://www.smhc.qc.ca/en/departments-programs/mental-health/psychology-services">https://www.smhc.qc.ca/en/departments-programs/mental-health/psychology-services</a>

The remaining Web sites (N = 26) are mental health resources developed for individuals with kidney disease. The province of origin of these Web sites were Alberta (N = 1), British Columbia (N = 9), Manitoba (N = 2), Ontario (N = 9), Saskatchewan (N = 1), and Quebec (N = 1). We did not identify any Web sites offering resources relevant to mental health for individuals treated with dialysis provided by health authorities from the following Canadian provinces and territories: New Brunswick, Newfoundland and Labrador, Nova Scotia, Northwest Territories, Nunavut, Prince Edward Island, and Yukon Territory. Of the 26 Web-based resources, 5 of the Web sites were developed by voluntary nonprofit health organizations (ie, 4 from Kidney Foundation of Canada, and one from Psychonephrology). The remaining Web sites were developed by regional or provincial health authorities. All 26 of the Web sites are available publicly and freely, but they are only offered exclusively in English.

The types of resources contained across all of 26 Web sites offer psychoeducation, peer support, and links to psychosocial services. The content of the psychoeducation resources includes patient education on the nature of mental health illnesses (eg, etiology and symptomatology), course of illness or prognosis, warning signs, and/or treatment options for anxiety and/or depression. Some of these psychoeducation resources incorporated information about coping techniques, including deep breathing exercises, progressive muscle relaxation, meditation, calming techniques, counseling, support from family and friends, and exercise. We identified 6 separate Web sites that offered peer support programs for individuals with kidney diseases, developed to connect individuals with people who have shared experiences and help individuals adjust to living with kidney disease. The mode of delivery for these peer support programs includes face-to-face, telephone, videoconference, and asynchronous online community forums. These peer support programs can be in individual or group settings. Most Web sites also include links to other services and/or additional help (eg, mental health Web sites such as Canadian Mental Health Association). Some of these resources also offer link to crisis or emergency contacts.

## Discussion

In this scoping review, we provided a comprehensive overview of the peer-reviewed and gray literature on the assessment tools and interventions, structure and process, and availability of mental health resources for adults treated with dialysis in Canada. Eight peer-reviewed studies from Canada examined mental health assessment tools and interventions for individuals living with dialysis. The studies used a range of study designs and included various mental health conditions, assessment options, nonpharmacological interventions, and study outcomes. A major evidence gap, however, is the lack of randomized controlled trials investigating nonpharmacological and pharmacological interventions in this

context. Of the 8 studies, 4 were pilot studies that investigated mental health interventions, including intradialytic exercise, tai chi exercise, brief mindfulness meditation, and medical music therapy. Of these 4, only one study was a randomized controlled trial conducted by Thomas et al.<sup>38</sup> A Cochrane review<sup>12</sup> that assessed the effectiveness of psychosocial interventions for treating depression in people living with dialysis identified CBT as having the strongest evidence, yet it has not been undertaken in Canada. Furthermore, this review has recommended more robust studies because the current evidence base is insufficient to inform clinical practice.

We identified only 2 clinical pathways, and no clinical practice guidelines, on mental health care for adults treated with dialysis in Canada. In contrast, expert groups for other chronic conditions have developed Canadian guidelines for the mental health care of people living with cancer or diabetes.<sup>44,45</sup> These guidelines recommend the provision of regular screening for mental illness using validated questionnaires, referral to mental health care professionals, collaborative care by interprofessional teams, and psychosocial interventions that are integrated into care plans.<sup>44,45</sup> The 2 existing pathways for people treated with dialysis outline clear screening/assessment, timelines, roles, assessment tools, and possible treatments, all of which are characteristics of effective clinical pathways.<sup>46</sup> However, it is unclear whether the recommended therapeutic approaches in these pathways are based on evidence. In the absence of high-quality evidence, clinical recommendations and best practice can inform a clinical pathway as this guidance has been shown to improve the identification of mental illness and increase the referral rates for treatment in individuals with other comorbid conditions.<sup>47</sup> Nevertheless, a pathway or clinical practice guideline is a starting point for multidisciplinary kidney practitioners and dialysis programs supporting mental health care. As Lehecka et al point out,<sup>24</sup> Canadian nephrologists believe that additional health care support workers (allied health), clinician education, and available resources are all needed to effectively address psychosocial concerns experienced by people treated with dialysis. The perspectives of people in Canada receiving dialysis are also critical to explore. For example, Farrokhi et al<sup>19</sup> looked at patient-related barriers that may limit screening and treatment of depression. Patients were primarily worried about side effects from antidepressant medications (40%) and taking additional medications (32%) while not perceiving threat (not at risk of depression [23%], depression not severe enough [23%]). The authors recommend that screening alone is insufficient to identify patients at highest risk. Further work is needed to address patient-perceived and provider-perceived barriers alongside social influences that have limited mental health care for people receiving dialysis, both nationally and internationally. These insights will inform future research and health service interventions to address this significant gap in health services.



Screening Web sites, we examined the availability of mental health resources for dialysis clinicians or individuals treated with dialysis. We identified 28 separate publicly available Web site addresses. Most Web sites were created by health care agencies from British Columbia (N = 9) and Ontario (N = 9). The Web sites are only offered in English, which does not address equity, diversity, and inclusivity for people treated with dialysis. Given the burden of mental health conditions and the unique challenges of dialysis, it is critical to provide resources that alleviate mental illness and/or symptoms in individuals with kidney disease. Future Web-based interventions and resources may also be advantageous as they require minimal staffing time, allow privacy and anonymity, and allow increased accessibility.<sup>46</sup>

## Limitations

The findings of this scoping review have limitations that merit consideration. First, it is possible that other provincial or local mental health guidelines and pathways for adults treated with dialysis exist that we did not come across during our systematic search. A second potential limitation is that health care agencies may have developed other mental health resources for people living with dialysis, but they are not on the Internet or are not made publicly available. Third, we did not search for texts using quality-of-life instruments in kidney care. Some quality-of-life assessment instruments used in Canada, such as the KDQOL-36 or SF-36, have domains pertaining to mental health, and the ESAS-r: Renal, EQ-5D-5L, and Integrated Palliative Outcome Score–Renal have individual items addressing depression and anxiety.<sup>48</sup> If texts reported these domains or items as a minor focus of their study, these findings would not have been included in our scoping review and we may have missed mental health care or supports being offered in Canadian kidney care settings and/or community organizations.

## Implications

The findings from this scoping review have several implications for dialysis stakeholders/programs, health care providers, and researchers. First, there is a paucity of high-quality studies, including randomized trials investigating the effectiveness of mental health interventions for individuals treated with dialysis in Canada. A concerted effort should be made by stakeholders and researchers to narrow this gap. Adults living with dialysis have unique challenges that require dedicated approaches, such as restrictive diets and treatment schedules, overlapping disease symptomatology, and a higher risk of side effects with pharmacological approaches. Second, there is a need to develop clinical practice guidelines and clinical pathways in managing mental health concerns experienced by adults treated with dialysis in Canada. Third, there is a lack of mental health resources developed by kidney care organizations across Canada. Mental health resources are increasing in

abundance, but they are often targeted toward the general adult population. People living with dialysis have unique stressors; therefore, mental health interventions and resources should be tailored to address the identified needs of this group. Last, studies should further evaluate the quality of Web sites providing information on mental health for people with kidney disease. The Internet is growing in popularity as a source of health information, but it lacks regulation; thus, there is a need to evaluate the quality of these Web sites. Mental health-related Web sites with quality content should provide evidence-based information and interventions.

## Conclusion

While prevalence of depression and anxiety are 20% to 40% and 17% to 46%, respectively, among people treated with dialysis,<sup>6-8</sup> it is frequently underrecognized and untreated. In our scoping review, we mapped the peer-reviewed and gray literature on the assessment tools and interventions, structure and process, and availability of mental health resources for adults treated with dialysis in Canada. We identified only 8 studies that investigated mental health assessment tools and/or interventions, and 2 clinical pathways for the assessment and management of mental health care for adults treated with dialysis in Canada. No clinical practice guidelines have been developed in this field. Twenty-eight Web sites provided mental health resources, predominantly focused on psychoeducation, peer support, and linkage to other services. Despite increasing prevalence for mental health symptoms and concerns by people treated with dialysis, mental health care remains underaddressed.

## Ethics Approval and Consent to Participate

Not applicable.

## Consent for Publication

Not applicable.

## Availability of Data and Materials

Data sharing is not applicable as no datasets were generated or analyzed during this study. However, the search strategy is provided in the electronic supplementary materials.

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## ORCID iDs

Stephanie Thompson  <https://orcid.org/0000-0003-3109-6837>

Kara Schick-Makaroff  <https://orcid.org/0000-0001-6200-3416>

## Supplemental Material

Supplemental material for this article is available online.

## References

1. Finnegan-John J, Thomas VJ. The psychosocial experience of patients with end-stage renal disease and its impact on quality of life: findings from a needs assessment to shape a service. *ISRN Nephrol*. 2013;2013:1-8. <https://www.hindawi.com/journals/isrn/2013/308986/>. Accessed March 7, 2022.
2. Cukor D, Cohen SD, Peterson RA, Kimmel PL. Psychosocial aspects of chronic disease: ESRD as a paradigmatic illness. *J Am Soc Nephrol*. 2007;18(12):3042-3055. <https://jasn.asnjournals.org/lookup/doi/10.1681/ASN.2007030345>. Accessed March 7, 2022.
3. Chilcot J, Wellsted D, Farrington K. Depression in end-stage renal disease: current advances and research. *Semin Dial*. 2010;23(1):74-82. <http://doi.wiley.com/10.1111/j.1525-139X.2009.00628.x>. Accessed March 7, 2022.
4. Goh ZS, Griva K. Anxiety and depression in patients with end-stage renal disease: impact and management challenges—a narrative review. *Int J Nephrol Renovasc Dis*. 2018;11:93-102. <https://www.dovepress.com/anxiety-and-depression-in-patients-with-end-stage-renal-disease-impact-peer-reviewed-article-IJNRD>. Accessed March 7, 2022.
5. World Health Organization. Depression and Other Common Mental Disorders: Global Health Estimates. Geneva: World Health Organization; 2017.
6. 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. <https://linkinghub.elsevier.com/retrieve/pii/S0085253815559279>. Accessed March 7, 2022.
7. Cukor D, Coplan J, Brown C, et al. Anxiety disorders in adults treated by hemodialysis: a single-center study. *Am J Kidney Dis*. 2008;52(1):128-136. <https://linkinghub.elsevier.com/retrieve/pii/S0272638608005301>. Accessed March 7, 2022.
8. Prelicjevic VT, Østhus TBH, Sandvik L, et al. Psychiatric disorders, body mass index and C-reactive protein in dialysis patients. *Gen Hosp Psychiatry*. 2011;33(5):454-461. <https://linkinghub.elsevier.com/retrieve/pii/S0163834311002349>. Accessed March 7, 2022.
9. Shirazian S, Grant CD, Aina O, Mattana J, Khorassani F, Ricardo AC. Depression in chronic kidney disease and end-stage renal disease: similarities and differences in diagnosis, epidemiology, and management. *Kidney Int Reports*. 2017;2(1):94-107. <https://linkinghub.elsevier.com/retrieve/pii/S2468024916300845>. Accessed March 7, 2022.
10. Huang CW, Wee PH, Low LL, et al. Prevalence and risk factors for elevated anxiety symptoms and anxiety disorders in chronic kidney disease: a systematic review and meta-analysis. *Gen Hosp Psychiatry*. 2021;69:27-40. <https://linkinghub.elsevier.com/retrieve/pii/S0163834320301717>. Accessed March 7, 2022.
11. Gerogianni G, Babatsikou F, Polikandrioti M, Grapsa E. Management of anxiety and depression in haemodialysis patients: the role of non-pharmacological methods. *Int Urol Nephrol*. 2019;51(1):113-118. <http://link.springer.com/10.1007/s11255-018-2022-7>. Accessed March 7, 2022.
12. Natale P, Palmer SC, Ruospo M, Saglimbene VM, Rabindranath KS, Strippoli GF. Psychosocial interventions for preventing and treating depression in dialysis patients. *Cochrane Database Syst Rev*. 2019. doi:10.1002/14651858.CD004542.pub3.
13. Palmer SC, Natale P, Ruospo M, et al. Antidepressants for treating depression in adults with end-stage kidney disease treated with dialysis. *Cochrane Database Syst Rev*. 2016. doi:10.1002/14651858.CD004541.pub3
14. Mehrotra R, Cukor D, Unruh M, et al. Comparative efficacy of therapies for treatment of depression for patients undergoing maintenance hemodialysis. *Ann Intern Med*. 2019;170(6):369-379. <http://annals.org/article.aspx?doi=10.7326/M18-2229>. Accessed March 7, 2022.
15. Constantino JL, Fonseca VA. Pharmacokinetics of antidepressants in patients undergoing hemodialysis: a narrative literature review. *Brazilian J Psychiatry*. 2019;41(5):441-446. [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1516-44462019000500441&tlng=en](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-44462019000500441&tlng=en). Accessed March 7, 2022.
16. Gelfand SL, Scherer JS, Koncicki HM. Kidney supportive care: core curriculum 2020. *Am J Kidney Dis*. 2020;75(5):793-806.
17. Cohen SD, Norris L, Acquaviva K, Peterson RA, Kimmel PL. Screening, diagnosis, and treatment of depression in patients with end-stage renal disease. *Clin J Am Soc Nephrol*. 2007;2(6):1332-1342.
18. Guirguis A, Chilcot J, Almond M, Davenport A, Wellsted D, Farrington K. Antidepressant usage in haemodialysis patients: evidence of sub-optimal practice patterns. *J Ren Care*. 2020;46(2):124-132.
19. Farrokhi F, Beanlands H, Logan A, Kurdyak P, Jassal SV. Patient-perceived barriers to a screening program for depression: a patient opinion survey of hemodialysis patients. *Clin Kidney J*. 2017;10(6):830-837.
20. Canadian Mental Health Association. *Mental health impacts of COVID-19: Wave 2*. 2020. <https://cmha.ca/wp-content/uploads/2020/12/CMHA-UBC-wave-2-Summary-of-Findings-FINAL-EN.pdf>. Accessed March 7, 2022.
21. Collister D, Rodrigues JC, Mazzetti A, et al. Single questions for the screening of anxiety and depression in hemodialysis. *Can J Kidney Heal Dis*. 2019;6:205435811882544. doi:10.1177/2054358118825441.
22. Hao W, Tang Q, Huang X, Ao L, Wang J, Xie D. Analysis of the prevalence and influencing factors of depression and

- anxiety among maintenance dialysis patients during the COVID-19 pandemic. *Int Urol Nephrol*. 2021;53(7):1453-1461. doi:10.1007/s11255-021-02791-0.
23. Xia X, Wu X, Zhou X, Zang Z, Pu L, Li Z. Comparison of psychological distress and demand induced by COVID-19 during the lockdown period in patients undergoing peritoneal dialysis and hemodialysis: a cross-section study in a tertiary hospital. *Blood Purif*. 2020;1-9. <https://www.karger.com/Article/FullText/510553>. Accessed March 7, 2022.
  24. Lehecka A, Mendelssohn D, Hercz G. Nephrologists' attitudes regarding psychosocial care in hemodialysis units. *Can J Kidney Health Dis*. 2021;8:20543581211037426.
  25. Rossum K, Finlay J, McCormick M, et al. A mixed method investigation to determine priorities for improving information, interaction, and individualization of care among individuals on in-center hemodialysis: the Triple I study. *Can J Kidney Health Dis*. 2020;7.
  26. Schick-Makaroff K, Wozniak LA, Short H, et al. Burden of mental health symptoms and perceptions of their management in in-centre hemodialysis care: a mixed methods study. *J Patient-Reported Outcomes*. 2021;5(1):1-14.
  27. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol*. 2005;8(1):19-32. <http://www.tandfonline.com/doi/abs/10.1080/1364557032000119616>. Accessed March 7, 2022.
  28. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci*. 2010;5(1):69. <http://implementationscience.biomedcentral.com/articles/10.1186/1748-5908-5-69>. Accessed March 7, 2022.
  29. Munn Z, Peters MDJ, Stern C, Tufanaru C, McArthur A, Aromataris E. Systematic review or scoping review? guidance for authors when choosing between a systematic or scoping review approach. *BMC Med Res Methodol*. 2018;18(1):143. <https://bmcmmedresmethodol.biomedcentral.com/articles/10.1186/s12874-018-0611-x>. Accessed March 7, 2022.
  30. Covidence. Covidence systematic review software. Melbourne: Veritas Health Innovation; 2021.
  31. Tricco AC, Lillie E, Zarin W, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med*. 2018;169(7):467-473. doi:10.7326/M18-0850.
  32. Wilson B, Spittal J, Heidenheim P, et al. Screening for depression in chronic hemodialysis patients: comparison of the Beck Depression Inventory, primary nurse, and nephrology team. *Hemodial Int*. 2006;10(1):35-41. doi:10.1111/j.1542-4758.2006.01172.x.
  33. El-Majzoub S, Mucsi I, Li M, et al. Psychosocial distress and health service utilization in patients undergoing hemodialysis: a prospective study. *Psychosomatics*. 2019;60(4):385-392. <https://linkinghub.elsevier.com/retrieve/pii/S0033318218304663>. Accessed March 7, 2022.
  34. Evans JM, Glazer A, Lum R, et al. Implementing a patient-reported outcome measure for hemodialysis patients in routine clinical care. *Clin J Am Soc Nephrol*. 2020;15(9):1299-1309. <https://cjasn.asnjournals.org/lookup/doi/10.2215/CJN.01840220>. Accessed March 7, 2022.
  35. Kolewaski CD, Mullally MC, Parsons TL, Paterson ML, Toffelmire EB, King-VanVlack CE. Quality of life and exercise rehabilitation in end stage renal disease. *CANNT J*. 2005;15(4):22-29.
  36. Mustata S, Cooper L, Langrick N, Simon N, Jassal SV, Oreopoulos DG. The effect of a Tai Chi exercise program on quality of life in patients on peritoneal dialysis: a pilot study. *Perit Dial Int*. 2005;25(3):291-294.
  37. Eyre L. Medical music therapy and kidney disease: the development of a clinical method for persons receiving haemodialysis. *Can J Music Ther*. 2008;14:55-87. <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=psyc6&NEWS=N&AN=2008-19172-006>. Accessed March 7, 2022.
  38. Thomas Z, Novak M, Platas SGT, et al. Brief mindfulness meditation for depression and anxiety symptoms in patients undergoing hemodialysis. *Clin J Am Soc Nephrol*. 2017;12(12):2008-2015. doi:10.2215/CJN.03900417.
  39. BC Renal Agency. *Depression and anxiety: the role of kidney care clinics (Provincial Standards & Guidelines)*. 2015. <http://www.bcrenal.ca/resource-gallery/Documents/DepressionAndAnxietyGuideline.pdf>. Accessed March 7, 2022.
  40. Conservative Kidney Management. *Anxiety and depression guideline for healthcare professionals*. <https://www.ckmcare.com/InformationRows/PracSymptoms>. Accessed March 7, 2022.
  41. Ontario Renal Network. Depression & anxiety. *Ontario Renal Network*; 2019 <https://www.ontariorenalnetwork.ca/sites/renalnetwork/files/assets/DepressionAndAnxietyResource.pdf>. Accessed March 7, 2022.
  42. Johnson JA, Al Sayah F, Buzinski R, et al. A cluster randomized controlled trial for the Evaluation of routinely Measured PATient reported outcomes in HemodialYsis care (EMPATHY): a study protocol. *BMC Health Serv Res*. 2020;20:731.
  43. BC Renal Agency. Antidepressant use in adults with chronic kidney disease. <http://www.bcrenal.ca/resource-gallery/Documents/AntidepressantUseinAdultswithChronicKidneyDisease.pdf>. Published 2015. Accessed March 7, 2022.
  44. Howell D, Keshavarz H, Esplen MJ, et al. Pan-Canadian practice guideline: screening, assessment and management of psychosocial distress, depression and anxiety in adults with cancer. <http://www.capo.ca/>. Published 2015. Accessed March 7, 2022.
  45. Robinson DJ, Coons M, Haensel H, Vallis M, Yale J-F. Diabetes and mental health. *Can J Diabetes*. 2018;42:S130-S141. <https://linkinghub.elsevier.com/retrieve/pii/S1499267117308419>. Accessed March 7, 2022.
  46. Butow P, Price MA, Shaw JM, et al. Clinical pathway for the screening, assessment and management of anxiety and depression in adult cancer patients: Australian guidelines. *Psychooncology*. 2015;24(9):987-1001. doi:10.1002/pon.3920.
  47. Ski CF, Page K, Thompson DR, Cummins RA, Salzberg M, Worrall-Carter L. Clinical outcomes associated with screening and referral for depression in an acute cardiac ward. *J Clin Nurs*. 2012;21(15-16):2228-2234. doi:10.1111/j.1365-2702.2011.03934.x.
  48. Schick-Makaroff K, Molzahn A, Kusi-Appiah E. *Supportive Care of Patients With Kidney Failure*. 4th ed. Contemporary Nephrology Nursing, American Nephrology Nurses Association.