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Sex and Gender Characteristics of Adults on Hemodialysis Experiencing Depression and Depressive Symptoms: A Scoping Review

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ADMINISTRATIVE INFORMATION**Support** - Mind the Gap research project -part of CIHR-funded Can-SOLVE CKD: Looking, listening, learning, leading: Canadians Seeking Solutions and Innovations to Overcome Chronic Kidney Disease.**Review Stage at time of this submission** - Completed but not published.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202550035**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 13 May 2025 and was last updated on 22 May 2025.**INTRODUCTION**

Review question / Objective To describe sex and gender characteristics in adults and living with depression or depressive symptoms treated with hemodialysis.

Rationale People treated with maintenance hemodialysis are at a higher risk of experiencing depression with approximately one in five reporting depressive symptoms. Depression is linked to risk of hospitalization, poor dialysis adherence, missed medications, and inadequate nutrition. Sociodemographic variables, including sex (biological factors) and gender (sociocultural factors), influence depression in individuals undergoing hemodialysis. Sex and gender distinctions are crucial to understanding how depression can co-exist with kidney failure and have not been fully addressed. Integration of sex and gender considerations in depression among individuals undergoing hemodialysis could improve

healthcare access, reduce potential biases among healthcare professionals, promote equity in clinical decision-making, and result in more personalized and effective patient care.

Condition being studied Describing sex and gender characteristics in adults and living with depression or depressive symptoms treated with hemodialysis.

METHODS

Search strategy The literature search strategies were developed with assistance from a health sciences librarian. The search strategy was developed and conducted in April 2024 using the following electronic databases: Cochrane Library, Embase, Medline, CINAHL, and PsycINFO. A sample list of the search terms used included: renal; nephrology; kidney or dialysis; h? emodialysis; adult; elder; grown up; people; patient; client; individual; population; society;

group; depress; sex; gender; male; female; man; woman; masculin*; and feminin*. Each database was searched separately.

Participant or population Adults, eighteen years and older, treated with hemodialysis, and experiencing depression or depressive symptoms.

Intervention Due to the nature and focus of the study, there was no intervention.

Comparator Due to the nature of the study, a comparator was not required for inclusion. The following categories will guide data extraction: 1. Describe the study including methods, study aim, sample characteristics and size, prevalence of depression or depressive symptoms in males/females/men/women (%), duration on hemodialysis, depressive symptoms assessment/screening tool, depressive symptoms assessment/screening tool cut-off point applied, definition of gender and/or sex stated in study, sex/gender used interchangeably in the study.

Study designs to be included We followed the scoping review framework developed by Arksey and O'Malley and revised by Levac, Colquhoun, and O'Brien. This scoping review framework includes the following stages: identifying the research question/purpose, identifying relevant studies, selecting studies, charting the data, and reporting results.

Eligibility criteria We included studies that reported results stratified by sex and/or gender characteristics of individuals receiving hemodialysis and living with depression or depressive symptoms. We did not limit our inclusion criteria to individuals with a diagnosis of depression but also included those reporting self-identified depressive symptoms. The dialysis modalities included hemodialysis offered in in-centre and satellite units. The study population were adults, eighteen years and older, treated with hemodialysis, and experiencing depression or depressive symptoms. The review included all relevant peer-reviewed primary research and reviews/syntheses to avoid publication bias. Geographical limits were not included to capture studies throughout the world. Studies were limited to those published in English from 2000 to 2024.

Information sources Cochrane Library, Embase, Medline, CINAHL, and PsycINFO.

Main outcome(s) Results will be written narratively, there are no outcomes per se. The purpose of the scoping review is to describe the

characteristics of sex and/or gender in adults receiving hemodialysis and living with depression or depressive symptoms.

Additional outcome(s) None.

Data management We used Covidence systematic review software was utilized to select studies based on our inclusion and exclusion criteria and screen the articles. Two reviewers screened the titles and abstracts, as well as performed the full-text screening with $\geq 90\%$ agreement. If discrepancies arose over article eligibility, the reviewers discussed to come to a resolution. We conducted the citation chaining from included articles to identify additional information sources. The inclusion and exclusion criteria were applied during the title, abstract, and full-text screening; texts were mainly excluded if sex and /or gender characteristics were not explicitly outlined in the article.

Quality assessment / Risk of bias analysis Quality appraisal is not intended to evaluate the scholarly merits of the research.

Strategy of data synthesis In the analysis stage, following the scoping review framework, we developed both a descriptive numerical summary and a thematic analysis. We presented an overview of the extent, nature and distribution of the data mapped in a descriptive numerical table which summarizes basic characteristics of all the studies. We subsequently organized the studies thematically based on sex and gender-related characteristics observed in individuals with depression or depressive symptoms undergoing hemodialysis. The descriptive numerical summary included the overall number of studies, years of publication, geographical location where the studies were conducted, study aim/objective, target population, hemodialysis setting, and type of research study utilized. This section of the analysis illuminates the predominant research areas, specifically focusing on the study aim/objective, target population, hemodialysis setting, and geographical location.

We adopted an inductive approach to identify themes that integrates both sex and gender characteristics in individuals with depression or depressive symptoms. The resulting data were thematically analyzed, identifying similarities and differences to fulfill the objectives of our review. By consistently applying this framework to report the findings, we facilitated meaningful comparisons based on sex and gender characteristics in individuals with depression or depressive symptoms. Two authors collaboratively reviewed

the data and resolved discrepancies through discussion and consensus.

Subgroup analysis None.

Sensitivity analysis Due to the nature of the study, sensitivity analysis was not performed.

Language restriction Studies were limited to those published in English.

Country(ies) involved Canada (University of Alberta).

Keywords Depression; hemodialysis; sex; gender; adults.

Dissemination plans The results will be submitted to an international peer reviewed journal.

Contributions of each author

Author 1 - Primrose Mharapara - Author 1 drafted and wrote the manuscript.

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