

Canadian Senior Renal Leaders Community of Practice: Vulnerable Populations With Chronic Kidney Disease—Evidence to Inform Policy

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Abstract

Purpose: Low socioeconomic status, race, ethnicity, and rural/remote populations are all associated with disparities in access, care, and outcomes for chronic kidney disease (CKD). There have been different interventions supported by Canadian renal programs to address these disparities. This article reviews the evidence for impact of strategies to reduce inequities experienced by vulnerable populations living with or at risk of CKD and to collate and share interprovincial targeted interventions through the newly formed “Canadian Senior Renal Leaders Community of Practice” focused on translating evidence into clinical practice and policy.

Source of Information: A literature search of Medline, CINAHL, PubMed, and Google Scholar from 2008 to 2018 identified 13 reports of processes and interventions that have been implemented in Australia, Canada, and the United States to reduce inequities in CKD care and can be categorized into 3 broad areas: (1) early screening and prevention, (2) disease management and dialysis, and (3) pretransplant. Web sites from each Canadian jurisdiction and from Canadians Seeking Solutions and Innovations to Overcome Chronic Kidney Disease (Can-SOLVE CKD) Network were used to assess the current state of Canadian initiatives.

Methods: Reviews were completed to gather information on renal initiatives for vulnerable populations, including (1) identification of populations that experience disparities in access to care or in outcomes in the context of CKD prevention and treatment and (2) interventions that have been implemented to reduce disparities in access, care, and outcomes for vulnerable populations with CKD. A current state summary of Canadian initiatives related to vulnerable populations was conducted through a review of publicly available information, including a review of renal program Web sites and a review of current projects related to vulnerable populations that are part of Can-SOLVE CKD. Can-SOLVE CKD is a Canadian Institutes of Health Research Strategy for Patient-Oriented Research (CIHR-SPOR) funded research network to transform the care of people affected by kidney disease.

Key Findings: Interventions to improve inequities in access to CKD screening, disease management, and care are successful when developed with community engagement, provided to the patient in their own environment, and tailored to specific populations. Many provincial renal programs have implemented initiatives to support vulnerable populations with or at risk of CKD. Current projects funded through CIHR SPOR focus on underserved populations and involve partnerships with Indigenous populations. Many renal programs in Canada had or were in the process of implementing interventions to support vulnerable populations with CKD; however, information about the initiatives were not readily available online despite a strong interest and opportunity to support interprovincial knowledge sharing. Despite this common interest, little information is systematically shared between Canadian jurisdictions to support interprovincial sharing to promote evidence-informed policy and program development. Efforts will be made through the newly formed Canadian Senior Renal Leaders Community of Practice to collaborate and share learnings to inform future program and policy development, implementation, and evaluation.

Limitations: As this was not a systematic review, literature search only encompassed studies published in English between 2008 and 2018. It is possible that populations and interventions were overlooked during the search and through the screening process. Furthermore, the controversial definition of “vulnerable” and literature that only came from Canada, the United States, and Australia limits the generalizability of this review.



Abrégé

Contexte et objectifs: En contexte d'insuffisance rénale chronique (IRC), le faible statut socioéconomique du patient, sa race, son origine ethnique et le fait d'habiter une région rurale/éloignée sont associés à des iniquités dans l'accès et la qualité des soins et dans les résultats de santé. Ces disparités ont d'ailleurs fait l'objet de différentes interventions de la part des programmes rénaux canadiens. Cet article explore les données probantes sur l'effet de ces stratégies de réduction des inégalités subies par les populations vulnérables atteintes ou susceptibles de développer une néphropathie chronique. L'article vise également à colliger et à partager les interventions ciblées entre les provinces par le biais de la toute nouvelle « Communauté de pratique des hauts dirigeants en néphrologie au Canada », laquelle est axée sur la transposition des données probantes en politiques et pratiques cliniques.

Sources: Une recherche sur Medline, CINAHL, PubMed et Google Scholar de la littérature publiée entre 2008 et 2018 a permis de répertorier 13 rapports faisant état d'interventions mises en œuvre en Australie, au Canada et aux États-Unis pour réduire les iniquités de soins en IRC. Ces interventions ont été classées selon trois thèmes: 1) prévention et dépistage précoce, 2) prise en charge et dialyse, et 3) pré-transplantation. Les sites Web du réseau Can-SOLVE CKD (*Canadians Seeking Solutions and Innovations to Overcome Chronic Kidney Disease*) et de chaque province et territoire canadiens ont été consultés pour dresser l'état actuel des stratégies canadiennes.

Méthodologie: La revue de la littérature a permis de recenser les populations subissant des inégalités quant à l'accès aux soins ou aux résultats en contexte de prévention et de traitement de l'IRC, et de recueillir de l'information sur les interventions mises en œuvre pour réduire ces inégalités pour les populations vulnérables atteintes d'IRC. Un résumé des stratégies canadiennes actuelles a été rédigé à partir des informations accessibles au public sur les sites Web des différents programmes rénaux et des projets de Can-SOLVE CKD visant les populations vulnérables. Can-SOLVE CKD est un réseau de recherche financé par la Stratégie de recherche axée sur le patient des Instituts de recherche en santé du Canada (SRAP-IRSC) dont l'objectif est de transformer les soins destinés aux personnes atteintes de néphropathie.

Principaux résultats: Les interventions visant à réduire les iniquités dans l'accès au dépistage, à la prise en charge et aux soins en IRC sont efficaces lorsqu'elles sont élaborées avec la participation de la communauté, prodiguées au patient dans son milieu de vie et adaptées en fonction de la population visée. Plusieurs programmes rénaux provinciaux ont déployé des stratégies pour venir en aide aux populations vulnérables atteintes ou susceptibles de développer une IRC. Les projets actuels financés par la SRAP-IRSC se concentrent sur les populations mal desservies et impliquent des partenariats avec les communautés autochtones. Plusieurs programmes rénaux canadiens disposent ou s'affairent à implanter des stratégies pour aider les populations vulnérables atteintes d'IRC. Par contre, malgré un grand intérêt et la possibilité de soutenir un partage interprovincial des connaissances, l'information concernant ces initiatives demeure difficilement accessible en ligne. De même, malgré l'intérêt, peu d'information est partagée systématiquement entre les provinces canadiennes pour soutenir l'élaboration de politiques et de programmes fondés sur les données probantes. La toute nouvelle « Communauté de pratique des hauts dirigeants canadiens en néphrologie » s'efforcera donc de collaborer et de partager l'information afin d'éclairer l'élaboration, la mise en œuvre et l'évaluation des futurs programmes et politiques.

Limites: Cette étude n'est pas une revue systématique; elle ne visait que les articles publiés en anglais entre 2008 et 2018. Ainsi, certaines populations ou interventions pourraient avoir été mises de côté lors de la recherche et de la sélection des articles. De plus, la définition controversée du terme « vulnérable » et le fait que les articles retenus ne provenaient que du Canada, des États-Unis et de l'Australie rendent nos résultats difficilement généralisables.

Keywords

strategic initiatives, health policy, vulnerable populations

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What was known before

Racial, ethnic, and socioeconomic disparities are well recognized in chronic kidney disease (CKD) populations. Interventions to improve access to and outcomes of CKD care for vulnerable populations have been implemented within and outside of Canada and are influenced by demographics and geography. A review of broad scope interventions that aim to address CKD care disparities—their lessons and learnings—would be valuable to inform consistent policy and program development across Canadian renal programs.

What this adds

Our review provides a summary of which groups experience disparities in access to care or in outcomes in the context of CKD prevention and treatment and highlights what interventions have been implemented to reduce these disparities, both within and outside of Canada. We highlight other clinical and policy areas of interest to Canadian clinical and administrative leaders that will be explored in future.

Introduction

In 2017, senior executives from adult nephrology programs and networks across Canada formed a national Community of Practice. The Community of Practice provided a national forum for senior leaders within provincial renal health care agencies, health authorities, strategic networks and programs to (1) engage in group strategy discussions in areas of common interest, (2) provide a national knowledge transfer forum to inform evidence-based policy and program development, and (3) support cross-jurisdictional quality improvement and performance measurement. Administrative and physician strategic leaders were identified for each jurisdiction.

Initial thematic areas were put forward for topics of interest. Meeting the chronic kidney disease (CKD) care needs of vulnerable populations was the highest ranked theme by participants. The group sought to (1) identify which populations experience disparities in access to care or in outcomes in the context of CKD prevention and treatment, (2) conduct a literature review of interventions that have been implemented to reduce disparities in access, care, and outcomes for vulnerable populations with CKD, (3) establish a current state of provincial initiatives related to vulnerable populations through a review of publicly available information, including a review of renal program Web sites, and (4) review projects related to vulnerable populations that are part of the CAN-SOLVE CKD (Canadians Seeking Solutions and Innovations to Overcome Chronic Kidney Disease) Network, currently funded through the Canadian Institutes of Health Research, Strategy for Patient-Oriented Research (CIHR-SPOR).¹

Methods

Literature Review

A rapid evidence review on access to CKD care in vulnerable populations was performed in July 2018. The purpose of this review was to summarize the evidence on vulnerable populations in the context of CKD and to identify interventions that have been implemented in Canada, the United States, and Australia to improve access and outcomes to CKD treatment in these vulnerable populations. The review focused on two research questions:

Research Question 1: Which populations experience disparities in access to care or in outcomes in the context of CKD prevention and treatment?

Research Question 2: What interventions have been implemented to reduce disparities in access, care, and outcomes for vulnerable populations with CKD?

Search Strategy

A literature search was conducted on June 20, 2018, by Knowledge Resource Services (KRS) within the Knowledge Management Department of Alberta Health Services (AHS). KRS searched databases for English language papers published from 2008 to 2018 and included Medline, CINAHL, PubMed, and Google Scholar. Search strategy involved combinations of keywords and subject headings that targeted the definitions of “vulnerable” as described by Waisel² and focused on CKD and renal insufficiency. The term “vulnerable” was used to describe the populations that experience disparate health care access and that may be socially or economically disadvantaged²; however, the term is inconsistently defined and used heterogeneously in public health.³ The search strategy was designed to include Indigenous population, those of low socioeconomic status (SES), ethnic and racial minorities, gender/sexual minorities, among others. Like “vulnerable,” “race” and “ethnicity” are also complex terms.⁴ It is important to include them as they are a source of health disparity in jurisdictions where the majority population is white and English-speaking.⁴ Here, “race” refers to groupings based on skin color or ancestry, whereas ethnicity refers to cultural background or spoken language. The full search strategy is included in the appendix. As the literature review was originally written in August 2018, the search was limited to the previous 10 years (2008–2018) to ensure that interventions were relatively recent. Reports were limited to publication in English.

Articles identified by KRS in their search were screened in two phases by title and abstract against the inclusion/exclusion criteria listed in Table 1 below. The first phase of screening was to eliminate articles that did not describe a defined population affected by disparities in access to CKD

Table 1. Inclusion and Exclusion Criteria for Screening Results From the Literature Search.

Inclusion criteria	Exclusion criteria
1. Any jurisdiction	1. No population described
2. Includes a specific population that is at a disadvantage for CKD care	2. Describes general disparity in kidney disease outcomes
3. Describes a specific disparity or barrier in access to CKD care	3. Report discusses the role of determinants of health in CKD rather than an intervention
4. Any age group	4. Intervention is not specific to CKD prevention and care
5. Intervention targets disparities along the CKD care continuum	5. Intervention targets general access to care (eg, primary care)
6. Describes outcomes of intervention to improve access	6. Does not describe outcomes
7. Published between 2008 and 2018	7. Languages other than English
8. English language	8. Editorial/viewpoint articles
9. Peer-reviewed full text, conference proceeding, or abstract	

Note. CKD = chronic kidney disease.

care. The second phase was to identify reports that described both a disadvantaged population and an intervention to reduce disparities in access.

Inclusion and Exclusion Criteria

Titles and abstracts of the search output were screened and evaluated using the selected full-text publications for final article selection and the predefined inclusion and exclusion criteria. The criteria are defined in Table 1. Eligible populations included both individuals at risk of developing CKD and individuals who have already developed CKD. Reports were included if they described an intervention that specifically was intended to improve access to the CKD continuum of care. Reports were excluded if they did not describe an intervention or if the outcomes of the intervention were not stated. There were no jurisdictional limitations.

Jurisdictional Scan of Provincial Health Initiatives Targeting Vulnerable Populations and CAN-SOLVE CKD Projects

A Canadian jurisdictional scan was conducted to supplement the results of the literature search. The scan included a Web review of provincial renal programs and projects underway by CAN-SOLVE CKD. A review was undertaken of publicly available information from each provincial jurisdiction in July and August 2018. This review consisted of a search targeting resources available on the Internet that pertained to health programs with a specific focus on those initiatives that targeted vulnerable populations. The search was organized by province and included Web resources for provincial agencies and departments across Canada such as health authorities, social services, health and wellness, and health and community services (see Table 3 for Web sites accessed). Key data points that were collected included the name of the agency, the name of the initiative, objectives of the initiative (as presented through Web resources), the definition of vulnerable populations (where available), and necessary sources/references. Only English Web sites were included.

The information on reviewed provincial and federal initiatives involving vulnerable populations was collated and summarized, and can be viewed in Table 3.

Research initiatives that are part of the CAN-SOLVE CKD Network were reviewed to identify any projects currently underway that are primarily focused on vulnerable groups and reducing disparities to CKD care. Summary descriptions of the projects were reviewed and captured if they identified a specific population that is at a disadvantage for CKD care (eg, ethnic minorities, Indigenous populations, rural/remote, low SES) and was explicitly referenced within their study description.

Results

Literature Search

A total of 228 articles were identified by KRS with references and abstracts provided for further review. One study was found through Google when searching for an article identified in the literature search. A total of 151 studies were excluded in the first round of screening, and 77 articles were included in the review. Thirteen studies described an intervention to improve access to CKD care and were used in the qualitative synthesis; 51 studies were included as a high-level overview of populations that experience disparities in CKD outcomes or in access to CKD care; and 13 were excluded following full-text review (Figure 1). Although jurisdictional boundaries were not included as a screening criteria, articles describing the results of CKD interventions were only identified from Canada, the United States, and Australia. See Table 2 for a summary of the 13 studies included in the qualitative synthesis.

Web Search

Generally, the vulnerable population definitions were homogeneous, speaking of services to people of First Nations, Inuit, Metis, and urban Indigenous backgrounds. Inclusion of people of recent immigrant status or homelessness was more variable. This review highlighted 15 provincial initiatives and 1 federal initiative targeting “vulnerable populations”

Table 2. Data Extraction Table of Included Studies.

Article	Study design	Population	Intervention	Comparator(s)	Outcomes
Access to Early Screening Programs Barrett et al. ⁸ : "Chronic kidney disease in an aboriginal population: a nurse practitioner-led approach to management."	Quality improvement report	4000 Indigenous Australians in rural New South Wales	- Nurse practitioner-led team in CKD outreach clinic - Team included aboriginal health workers, chronic disease nurses, and GPs - Active review of health records in the community to identify and follow up with individuals at high risk for CKD - Develop CKD management plans for patients - Awareness campaign to improve community knowledge of CKD	None	- 179 new patients identified with CKD and staged for progression (8 prior diagnoses) - Strategies for disease management developed for each CKD patient - High-risk patients prioritized for follow-up and better management - Improved GP awareness of CKD risk factors - Improved community awareness of CKD identification and management
Komenda et al. ⁹ : "The Prevalence of CKD in rural Canadian Indigenous peoples: results from the First Nations Community Based Screening to Improve Kidney Health and Prevent Dialysis (FINISHED) Screen, Triage, and Treat Program"	Cross-sectional cohort study	1700 Indigenous people, 10 years and older residing in 11 representative Canadian rural communities across 2 Tribal Councils in Manitoba, Canada (only adult data included in report)	- "First Nations Community Based Screening to Improve Kidney Health and Prevent Dialysis" (FINISHED) Project - Indigenous-led team, supported by Manitoba renal program - Mobile-targeted screening for CKD, individualized kidney failure risk prediction, and individual risk-based counseling	None	- Achieved overall screening rate of 22.4%, ranging from 8%-30% in air-accessible communities to 24%-68% in road-accessible communities - Air-accessible communities had higher CKD prevalence (34.4%) compared with road-accessible communities (17.6%) - CKD prevalence is 2- to 3-fold higher among Indigenous communities than was estimated by Canadian Health Measures Survey - 87% of screened population were in stages 1 and 2 of CKD - Long-term epidemiology of CKD in these communities will not be available for several years
Ryz et al. ¹⁰ : "A before and after cross-sectional analysis of a public health campaign to increase kidney health awareness in a Canadian province"	Pre-post cross-sectional analysis	- Urban and rural/remote Indigenous people and ethnic minorities (Filipino, South-East Asian, and Chinese populations) - 804 and 802 people were surveyed pre- and postintervention, respectively	- Multifaceted public health campaign to improve community awareness and knowledge of the risks of CKD - Targeted to high-risk populations in both urban and rural/remote Manitoba	Preintervention CKD knowledge	- 17% increase in population awareness of the campaign ($P < .0001$) - 4.7% increase in CKD awareness overall - Main themes recalled were risk factors for kidney disease, see your family doctor for kidney health assessment
Senéviratne et al. (2018) ⁸ : "HealthNavigator: a mobile application for chronic disease screening and linkage to services at an urban primary health network"	Retrospective program evaluation	- Urban Australian community with ethnic and socioeconomic diversity. - 1492 completed assessments	- Chronic disease screening app ("HealthNavigator") launched in Brisbane, Australia. - Screened for stroke risk, diabetes risk, and kidney disease risk using validated tools and advises users of doctors and lifestyle supports to mitigate risk	None	- High-risk individuals were more likely to be identified through a facilitated screen rather than a self-screen ($P < .01$) - Identified relatively high burden of unrecognized early kidney disease (58% of adults required biochemical screening, compared with 3% with self-reported CKD) - 37% of all assessments were undertaken by those with low socioeconomic status (socioeconomic indices of area score of 0-50)
Sinclair et al. ⁹ : "Positive community responses to an arts-health program designed to tackle diabetes and kidney disease in remote aboriginal communities in Australia: a qualitative study"	Qualitative program evaluation	10 underserved rural/remote communities in Western Desert region of Australia	- "Western Desert Kidney Health Project" (WDKHP) - Annual 2-week residency program to deliver point-of-care screening and community arts programs to deliver health messages related to CKD - Indigenous-led project, using traditional ways of teaching and arts to disseminate messages	None	- Both the screening program and arts program were positively received by communities - Community knowledge of kidney disease risk factors and healthy lifestyles increased
Vassilotti et al. ¹⁰ : "KEEP: a community-based screening approach to address disparities in chronic kidney disease"	Observational cohort study	- 89 552 participants - Populations at high risk for disease, or individuals with a personal or family history of diabetes or hypertension - 52% identified as ethnic minority	- "KEEP" - Community-based free screening program for CKD, including counseling from clinician on screening day - Call center for participants to ask about results (received by mail)	- No comparator (control) group - Internal comparisons made between racial and ethnic groups in the evaluation program	- KEEP was better able to reach African Americans compared with general health surveys (11.3% vs 34%) - Identified CKD prevalence ranging from 20.1% in those who identified their race as "other," to 29.2% in Native Americans - Awareness of CKD averaged 8.1% for all groups - Approx. 71% of participants followed up with physician within 3 months of screening
Access to Disease Management and Dialysis Programs Reilly et al. ¹¹ : "Effectiveness, cost effectiveness, acceptability and implementation barriers/enablers of chronic kidney disease management programs for Indigenous people in Australia, New Zealand and Canada: a systematic review of mixed evidence"	Systematic Review	Indigenous communities in Australia, New Zealand, and Canada	- CKD management programs - Interventions aimed to slow progression of disease or increase access to kidney care programs - Common components of effective programs were the integration or coordination with primary care; nurse-led or Indigenous Health Worker-led care; intensive follow-up, including home visits; the provision of antihypertensive medication following a step-wise protocol; and addressing barriers to adherence such as cost and lack of transport	No comparator or usual care	- Overall interventions reduced albumin-creatinine ratio and blood pressure; mixed results on eGFR and glycemic index - Limited measurement of health knowledge and behavior, some improvement reported - Risk of starting dialysis within 5 years reduced by 57% - Programs appear to be cost-effective, but no sensitivity analysis done - Programs are acceptable when the community is engaged, the content is culturally appropriate and integrated with existing systems, and is autonomous and flexible within the community

(continue)

Table 2. (continue)

Article	Study design	Population	Intervention	Comparator(s)	Outcomes
Tracey et al. ¹² : "A nurse-managed kidney disease program in regional and remote Australia"	Program evaluation and implementation study	Rural/remote Indigenous populations in Western Australia	"Goldfields Kidney Disease Nursing Management Program" (GKDNMP) - Nurse-led program team based in regional hospital monitor and provide CKD management services to rural communities - Telehealth services and travel to rural/remote sites as needed - Provide culturally safe education and outreach programs - Aboriginal Health Worker to engage patients - Patient coordination services	No comparator	- Improved access to subacute services in rural Goldfields - Better identification of individuals in stage 3-5 CKD (100% increase in stage 5 identification) - Significant decrease in transfers to Perth from regional hospital (Kalgoorlie) and decreased lengths of stay - Improved attendance at vascular access sessions - Improved engagement with primary care services
Access to Transplant List and Donors					
Freeman et al. ¹³ : "Has the Department of Veterans Affairs found a way to avoid racial disparities in the evaluation process for kidney transplantation?"	Prospective longitudinal cohort study	602 participants who were evaluated for transplant between 2010 and 2012	- National Veterans Affairs Kidney Transplant evaluation process - Standardized referral and evaluation process, variable acceptance criteria - Central coordination of transplant activities	No comparator	- Race/ethnicity did not affect time to acceptance for kidney transplant ($P > .05$) - Younger age, fewer comorbidities, private insurance, married status, and positive depression status were significantly associated with transplant acceptance ($P < .05$)
Melancon et al. ¹⁴ : "Paired kidney donor exchanges and antibody reduction therapy: novel methods to ameliorate disparate access to living donor kidney transplantation in ethnic minorities"		- Four paired kidney exchanges to achieve 60 living donor transplants over a 2-year period. 63% ethnic minority 65% ABO incompatible or sensitized - Patients that may not have received a transplant otherwise	- Kidney transplant matching strategy using paired kidney donor exchange (PKDE) and immunodepletion (antibodies and lymphocytes) - Prospective single-arm trial		- All patients received a transplant within 90 days of evaluation for living donor transplant 1-year patient and graft survival of 100%
Melanson et al. ¹⁵ : "New kidney allocation system associated with increased rates of transplants among black and Hispanic patients"	Pre-post implementation study	179 071 patients waiting for kidney transplants between June 2013 and September 2016 - Dialysis time of 34 133 patients 41% white, 38% black, 21% Hispanic	- Change to deceased donor kidney allocation policy by the United Network for Organ Sharing - The starting point for calculating waiting time was changed from the time of wait-listing to the earliest of either the first regular dialysis date or the wait-listing date - Retrospective analysis of policy change	Internal comparison of racial/ethnic subgroups on the kidney waitlist (black/Hispanic vs white)	- Average kidney transplant rate for white patients was significantly reduced (-0.12; $P < .001$), while the rates for black and Hispanic patients, $+0.16$ ($P < .001$) and $+0.12$ ($P < .005$), respectively, were significantly increased ($P < 0$). - Significantly narrowed the gap in transplantation rates for deceased donor kidneys (-0.29 for black patients, -0.24 for Hispanic patients; $P < .01$) - Time spent on dialysis significantly increased for all ethnic groups ($P < .001$) - Increases in evaluation completion observed in all racial and socioeconomic groups posteducation session (44.7% in the pre- and 80.4% in the postevaluation groups) - Education session eliminated differences in probability of evaluation completion by ethnicity or socioeconomic status (after confounding: RR = 1.38; 95% CI = 1.12-1.71) - Improved median time to evaluation completion ($P < .0001$) - Intervention effect was more pronounced among black and low-income patients
Patzner et al. ¹⁶ : "Impact of a patient education program on disparities in kidney transplant evaluation"	Pre-post evaluation study	1126 ESKD patients evaluated for kidney transplant 61% black - Urban center	- Required educational session for ESKD patients referred for transplant evaluation - Included lectures and discussions from transplant coordinator, financial coordinator, and social worker - Retrospective analysis of program implementation	Preintervention group	- HC group were more likely to have at least one LDKT inquiry ($P < .001$) - HC group were ready for transplant sooner than IC and GB group ($P < .001$) - HC group had fewer concerns and were more willing to talk to others ($P < .001$)
Rodriguez et al. ¹⁷ : "Making house RCT calls increases living donor inquiries and evaluations for blacks on the kidney transplant waiting list"		145 black study participants allocated between 3 groups	Education sessions in patient's home with friends and family to increase LDKT inquiries (HC)	IC, GB, HC	

Note. CKD = chronic kidney disease; GP = general practitioner; KEEP = Kidney Early Evaluation Program; eGFR = estimated glomerular filtration rate; ESKD = end-stage kidney disease; RR = relative risk; CI = confidence interval; RCT = randomized controlled trial; LDKT = living donor kidney transplant; HC = house call; IC = individual counseling; GB = group-based counseling.

and “susceptible populations.” The majority of these initiatives targeted First Nations and Indigenous populations affected by chronic disease.

Disadvantaged Populations in CKD Care

In general, the populations that are disadvantaged with respect to CKD care are the same groups that are otherwise generally disadvantaged in health care.¹⁸ Specifically, the literature focuses on disparities experienced by those with low SES, racial/ethnic minorities, Indigenous populations, rural/remote populations, with somewhat less evidence related to CKD care disparities for undocumented immigrants, the unemployed, and those with substance misuse problems. Often, these populations intersect and are associated with other risk factors for CKD such as smoking, obesity, and diabetes, thus compounding the vulnerability of these groups.¹⁹⁻²¹

Disparities exist across the continuum of care for CKD, regardless of jurisdiction. Inadequate access to early screening and prevention has been noted in low SES populations in the United States²²; ethnic minority populations in the United States²³⁻²⁵; and in Indigenous populations in Canada and Australia.^{5,9,26-28} These populations also experience disparities in access to all renal replacement therapies, as do rural/remote populations, undocumented immigrants, the unemployed, and substance misusers. It has been shown that disadvantaged populations experience reduced access to and worse outcomes from dialysis treatments.^{11,29-34} Once on dialysis, these populations wait longer for pretransplant evaluation,^{14,33-39} and have consistently lower rates of transplant from both deceased and living kidney donors.^{14,42-45} Furthermore, disadvantaged populations also may experience inadequate posttransplant care and have fewer end-of-life care discussions.⁴⁴⁻⁴⁶

Interventions to Improve Access to CKD Care

Disparities in access to CKD care lead to poorer treatment outcomes and increased mortality rates in these vulnerable populations.⁴⁹⁻⁵¹ Interventions to improve access to care fall into three categories along the care continuum: early screening and prevention, disease management and dialysis, and pretransplant. The literature describing interventions for rural disease management and screening/prevention activities came largely from Australia and Canada, rather than from the United States. The reports describing interventions are detailed in Table 2. Early screening programs were often mobile and implemented in rural/remote communities, and tended to be successful when developed with community engagement, and education strategies and individualized counseling were included to complement the program activities.⁵⁻¹⁰

Effective disease management programs for vulnerable populations were able to engage and treat the patient in their own environment; thus, these programs leveraged telehealth technology, allied health professionals,

and community members to support patients.¹² Effective programs for Indigenous people were integrated with primary care, were led by either nurses or Indigenous health workers, included intensive follow-up, provided antihypertensive medication to participants, and improved treatment adherence by mitigating transportation and cost barriers to care.¹¹ Overall, these programs were able to significantly reduce clinical signs of kidney disease, such as creatinine levels and blood pressure.¹¹

Reports on limiting the disparities in access to kidney transplantation were from the United States and focused on ethnic minority groups (specifically, African American and Hispanic populations), rather than rural/remote communities. Transplant access was often improved using educational strategies or policy changes rather than using health promotion strategies.^{14,36} On the policy side, these included standardizing transplant referral and eligibility processes¹³; on the education side, these included engaging the patient and the patient’s social network to discuss transplantation.¹⁷

This review highlighted the lack of long-term evaluations of access improvement interventions along the continuum of CKD care. Outcomes used in the included studies were largely focused on the short term. They included process outcomes (eg, number of screens undertaken or completed), engagement outcomes, or short-term epidemiological outcomes (eg, percent positive screens compared with hypothesis). The studies were limited in their measurement of health outcomes such as incident CKD, incident end-stage renal disease, glomerular filtration rate progression, emergent dialysis starts (“crash starts”), incident planned dialysis starts, and transplant rates. Instead, reports more often measured program-related and process outcomes, such as screening rates or patient satisfaction. Although these are useful pieces of information, they can only support inferences about the long-term effect of the intervention on CKD outcomes in vulnerable populations.

Web Review of Provincial Renal Programs

It was clear that publicly available information told an incomplete story, based on the internal knowledge of work underway or in development within specific jurisdictions. For example, information on the Manitoba-based Kidney Check Program was readily available; while the Ontario adoption was well underway, it was not publicly reported. Furthermore, Saskatchewan conducts such work regionally or locally, and is not reported in provincial public Web forums.

A second common theme was the focus of most provinces on First Nations, Inuit and Metis communities, patients with chronic diseases and complex health conditions. Many provinces emphasized the importance of cultural competency, cultural safety, access issues, and promoting equity for all people. Cultural competency courses are available online by British Columbia and Ontario, both at no cost. Some provinces provided detail of a number of different approaches to

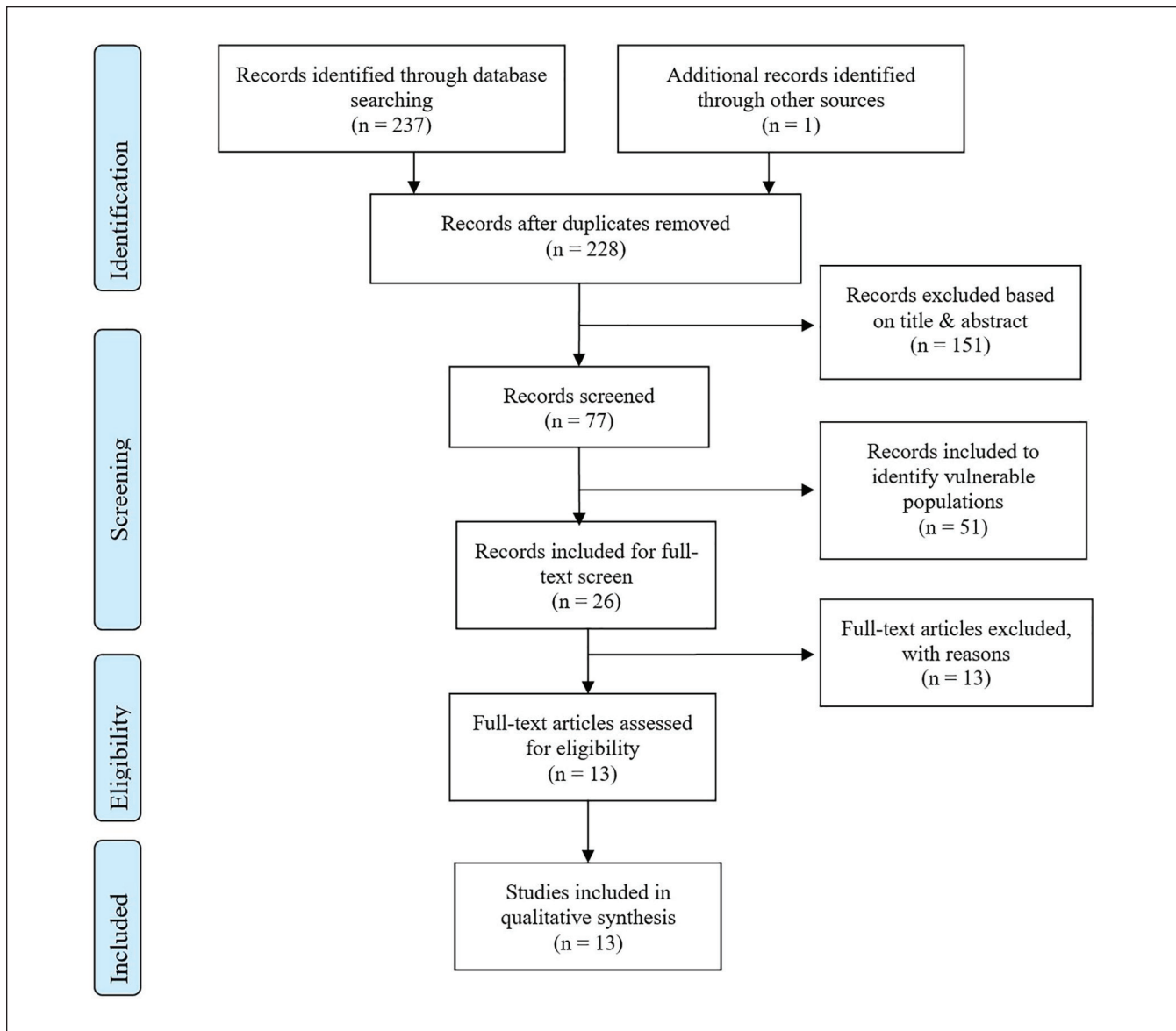


Figure 1. PRISMA flow diagram of the identified studies.⁵²

Note. Thirteen articles were included in this rapid review.

these issues, but not on how the approaches were integrated from the patient's perspective or how they specifically applied to provincial renal programs. These initiatives and the Web sites accessed can be found in Table 3.

CAN-SOLVE CKD

Of the 18 Can-SOLVE CKD research projects, two identified specific populations that are at a disadvantage for CKD care (eg, ethnic minorities, Indigenous populations, rural/remote, low SES) and of special interest to their study. Both projects related to Indigenous health. Broadly, the two respective projects seek to (1) identify diabetes and CKD in Indigenous communities, and (2) improve

Indigenous patient knowledge about treatment options. Kidney Check, is a screening initiative in Indigenous communities in five provinces across Canada with a goal of decreasing the burden of CKD and kidney failure in these communities.⁵³ The second project involves working in partnership with Indigenous patients and families who have or are affected by CKD to develop a unique suite of educational approaches for treatment options for failing kidneys specifically for the Indigenous population.⁵⁴

While not calling out vulnerable populations explicitly, several CAN-SOLVE research projects include interventions for managing diabetes and other comorbidities frequently linked with CKD which may disproportionately impact vulnerable populations.

Table 3. (continued)

Province	Agency	Initiative	Objectives	Reference
Ontario	Ministry of Health and Long Term Care	Health Equity Impact Assessment	To provide a strong framework for examining whether an organization's policies, programs, and initiatives are on the whole taking advantage of available opportunities to improve equity, or whether they may potentially result in widening the health disparities between vulnerable and marginalized populations and the general population.	http://www.health.gov.on.ca/en/pro/programs/health/docs/workbook.pdf
		Excellent Care for All—eShift	eShift is an innovative mobile tool that connects up to 4 ePSWs working overnight shifts in the homes of clients with a remote RNs via a Web-enabled iPhone. ePSWs and nurses use the device to share information securely through a Web portal. The software developed for the project is intuitive and includes highly customizable clinical decision support tools, a reference library, chat and phone capability and supplies ordering features.	http://www.health.gov.on.ca/en/pro/programs/health/docs/protocols_guidelines/Population_Health_Assessment_Surveillance_2018_en.pdf
	Relationship with Indigenous Communities Guideline, 2018	Population Health Assessment and Surveillance Protocol	To contribute to the maintenance and improvement of the health and well-being of the population, including the reduction of health inequities. This protocol requires boards of health to consider the social determinants of health, identify priority populations and use population health data and information to focus public health action.	http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/protocols_guidelines/Relationship_with_Indigenous_Communities_Guideline_en.pdf
			To provide boards of health with the fundamentals to begin forming meaningful relationships with Indigenous communities that come from a place of trust, mutual respect, understanding, and reciprocity.	http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/protocols_guidelines/Relationship_with_Indigenous_Communities_Guideline_en.pdf
		Ontario First Nations Health Action Plan	To ensure Indigenous people have access to more culturally appropriate care and improved outcomes, focusing on the North where there are significant gaps in health services.	https://news.ontario.ca/mohitc/en/2016/05/ontario-launches-222-million-first-nations-health-action-plan.html
	Health Quality Ontario	Improving the Odds: Championing Health Equity in Ontario Patients First	To discuss the tools available now to address growing inequity in parts of the population and makes the case that public health units have the expertise and interconnectivity to champion health equity at the local level.	http://www.health.gov.on.ca/en/common/ministry/publications/reports/cmoh_18/default.aspx
		Palliative Care	To improve access to the right care, to deliver better coordinated and integrated care in the community, closer to home, to support people and patients by providing the education, information and transparency they need to make the right decisions about their health, and protect our universal public health care system.	http://www.hqontario.ca/Evidence-to-Improve-Care/Quality-Standards/View-all-Quality-Standards/Palliative-Care/About
	Public Health Ontario	Priority Populations Project	To identify populations at risk, to determine those groups that would benefit most from public health programs and services (ie, priority populations).	https://www.publichealthontario.ca/en/Repository/Priority_Populations_Technical_Report.pdf
		OPHS	To strategically balance targeted and universal approaches in the OPHS; to allow for program-specific, local-level decisions to maximize the benefit and impact of public health unit programs and services; to help identify areas of greatest need for resource allocation, and to operationalize public health action on the determinants of health.	https://www.publichealthontario.ca/en/Repository/Focus_On_Priority_Populations.pdf
	Cancer Care Ontario	Population Health Program	To identify at-risk populations and make predictions for populations based on their characteristics and behaviors through data analysis and research.	https://www.cancercareontario.ca/en/cancer-care-population-health-team
Ontario Renal Network	Measuring Cancer in First Nations, Inuit & Métis Populations		To assist First Nations, Inuit and Métis planners, policymakers, and health care staff to understand the meaning behind cancer statistics and how to use them in health planning and priority setting for their populations and communities.	https://www.cancercareontario.ca/en/first-nations-inuit-metis/understanding-cancer-statistics
		Aboriginal Cancer Strategy	To address the unique cancer care issues affecting First Nations, Inuit and Métis communities by promoting a holistic approach to cancer education, prevention, screening, and research.	https://www.cancercareontario.ca/en/cancer-care-ontario/programs/aboriginal-programs/cancer-strategy
	First Nations, Inuit & Métis Kidney Care		To support the unique needs of First Nations, Inuit and Métis peoples, including those living in rural, remote, and isolated communities, by creating culturally and geographically appropriate kidney care.	https://www.ontariorenalnetwork.ca/en/about/our-work/first-nations-inuit-metis
		First Nations, Inuit & Métis Tools	A set of 13 free online courses to increase awareness of First Nations, Inuit and Métis history, culture and the health landscape and improve person-centered care.	https://www.ontariorenalnetwork.ca/en/kidney-care-resources/clinical-tools/first-nations-inuit-metis

Note: BCCSU = British Columbia Centre on Substance Use; AHTF = Aboriginal Health Transition Fund; ePSWs = enhanced-skill Personal Support Workers; RN = registered nurse; OPHS = Ontario Public Health Standards.

Discussion

Although this review sought to understand broadly what different groups experience disparities and what interventions provinces and other jurisdictions have implemented to address these, there are important limitations and risks when vulnerable populations are grouped together. The term “vulnerable populations” for the purposes of this review captured low-income populations, Indigenous populations, ethnic minorities, and rural/remote populations. The search strategy developed for this review was thorough but not systematic, so it is possible that some populations were missed in this review. Elderly populations, language minorities, and specific racial minorities were not specifically included in the search strategy so the interventions identified in the scoping review may not reflect their experiences with CKD care. Even for the populations that were included in the search strategy, how each of these populations and individuals within them experience CKD care—their inherent or experienced challenges, barriers and advantages—is, of course, very different.

Diseases of aging (eg, diabetes, cardiovascular disease, chronic obstructive pulmonary disease [COPD]) often disproportionately affect vulnerable or socially disadvantaged populations.¹⁸ Although comparing different diseases was outside the scope of this review, there is existing literature that examines interventions related to cardiovascular disease for vulnerable populations.⁵⁵ The systematic review published by Walton-Moss⁵⁵ examining vulnerable populations in cardiovascular diseases found remarkable similarities between the populations (racial and ethnic minorities, those with low SES, rural populations) and interventions (education and counseling interventions conducted by health care workers). For type 2 diabetes, the same pattern was seen in a study of community-based interventions in the United Kingdom.⁵⁶ In this study, community outreach interventions, interventions involving peers, and interventions that were relevant and accessible to the target population were identified as key success factors.⁵⁶

As described earlier in this review, it is important to note that the term “vulnerable populations” itself has been criticized. It has been argued that the term “underemphasizes the multi-dimensional processes that cause unequal distributions of material, cultural, social and political resources.”⁵⁷ Furthermore, it has been noted that the characterization of susceptibility and vulnerability can be disempowering and can further contribute to an “us” and “them” power imbalance.⁵⁸ How to effectively implement provincial policies that effectively reduce disparities in care is a challenge facing all renal programs and governments across Canada, and this labeling may be a barrier itself in thinking about how to improve care. Although no explicit jurisdictional limitations were placed on the literature search, articles that included both a defined population and a specific CKD intervention were exclusively from Canada, the United States, and

Australia—all English-speaking countries with highly developed health care systems, limiting the generalizability of the results to Quebec (which is primarily francophone).

As our review has found, partnership-building is a key and necessary component to initiatives involving First Nations, Inuit, and Métis communities. Can-SOLVE CKD can leverage existing health services and research partnerships to improve kidney care in underserved populations, while leveraging the engagement and patient-oriented research strategies to improve the knowledge translation element of CKD care.⁵⁹ This model helps improve the relevance, accessibility, and acceptability of CKD interventions. For example, the implementation of CKD screening in both Ontario and Manitoba is built entirely on a foundation of trust and partnership with First Nations communities. Within Can-SOLVE CKD, the Indigenous Peoples’ Engagement and Research Council (IPERC) was established to ensure that the network “appropriately incorporates, addresses and respects the unique needs and perspectives of Indigenous peoples.”⁶⁰ To further support respectful and effective partnership-building, the IPERC commissioned a working group to develop *Wabishki Bizhiko Skaanj* (wah-bish-kih biish-ih-goo skaan-eh), a learning pathway to enhance researchers’ knowledge and awareness of racial biases, Indigenous voices and stories, the impact of colonization on Indigenous health, and culturally safe health research practices.

While initiatives have been implemented in Canada to reduce the disparities in access to and treatment of CKD, up-to-date information about these initiatives are not consistently available, despite the strong clinical and administrative interest in translating knowledge into clinical practice and policy. Members of the Canadian Senior Renal Leaders Community of Practice have committed to increased inter-provincial collaboration and knowledge transfer. Sharing and disseminating practical tools such as business cases, toolkits, and evaluation frameworks could strengthen and expedite more consistent broad-scale policy and program implementation across provincial borders and help guide investment. CAN-SOLVE will be an important contributor and partner in building evidence, and their own efforts are guided by a Knowledge User and Translation Committee.

The Community of Practice has identified several other opportunities for increased collaboration, and these will be areas of focus for the group moving forward. These include building strategic influence in health policy with provincial Ministries of Health, approaches to sustainability for renal services, developing national quality indicators for renal care, and identifying effective upstream strategies to prevent CKD.

Conclusion

Interventions to improve inequities in access to CKD screening, disease management, and care are successful when developed with community engagement, provided to the patient in their own environment, and tailored to specific

populations. Many provincial renal programs have implemented initiatives to support vulnerable populations with or at risk of CKD. Despite this common interest, little information is systematically shared between Canadian jurisdictions to support interprovincial sharing to promote evidence-informed policy and program development. Efforts will be made through the newly formed Canadian Senior Renal Leaders Community of Practice to collaborate and share learnings to inform future program and policy development, implementation, and evaluation.

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Appendix

Search Strategy

Medline

- 1 Vulnerable Populations/ (8714)
 - 2 Minority Groups/ (12546)
 - 3 exp Social Class/ (38022)
 - 4 Hierarchy, Social/ (2057)
 - 5 Poverty/ (33580)
 - 6 “socioeconomic status”.mp. (36802)
 - 7 Working Poor/ (10)
 - 8 Rural Population/ (52402)
 - 9 exp Homeless Persons/ (7951)
 - 10 Drug Users/ (2547)
 - 11 Alcoholics/ (799)
 - 12 exp Ethnic Groups/ (140185)
 - 13 Oceanic Ancestry Group/ (9113)
 - 14 exp American Native Continental Ancestry Group/ (20204)
 - 15 aborigin*.mp. (8834)
 - 16 inuit.mp. (1655)
 - 17 metis.mp. (307)
 - 18 indigenous.mp. (27960)
 - 19 “native american*”.mp. (4392)
 - 20 “first nation*”.mp. (3844)
 - 21 “american indian*”.mp. (5783)
 - 22 exp “Sexual and Gender Minorities”/ (2875)
 - 23 exp Homosexuality/ (26972)
 - 24 Bisexuality/ (3659)
 - 25 Transsexualism/ (3368)
 - 26 exp Prisoners/ (15397)
 - 27 Medically Uninsured/ (6974)
 - 28 exp Disabled Persons/ (59875)
 - 29 exp “Emigrants and Immigrants”/ (10122)
 - 30 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 (454174)
 - 31 exp Renal Insufficiency, Chronic/ (103304)
 - 32 CKD.mp. (22287)
 - 33 31 or 32 (112100)
 - 34 exp Health Services Accessibility/ (100544)
 - 35 exp HEALTH STATUS DISPARITIES/ (12464)
 - 36 exp HEALTHCARE DISPARITIES/ (13163)
 - 37 exp Health Promotion/ (69314)
 - 38 34 or 35 or 36 or 37 (183830)
 - 39 30 and 33 and 38 (318)
 - 40 limit 39 to (english and last 10 years) (237)
- Of 237 156 kept

CINAHL

- S1 (MH “Special Populations”) 4820
 - S2 (MH “Minority Groups”) 9924
 - S3 (MH “Socioeconomic Factors+”) 277 015
 - S4 (MH “Rural Population”) 7528
 - S5 (MH “Homeless Persons”) 4425
 - S6 (MH “Substance Abusers+”) 6468
 - S7 (MH “Ethnic Groups+”) 115 586
 - S8 aborigin* OR inuit OR metis OR indigenous OR “native american*” OR “first nation*” OR “american indian*” 23 121
 - S9 (MH “Gender Identity+”) 5350
 - S10 (MH “Sexual Identity”) 185
 - S11 (MH “GLBT Persons+”) 11 081
 - S12 (MH “Prisoners”) 7301
 - S13 (MH “Medically Uninsured”) 6302
 - S14 (MH “Disabled+”) 48 458
 - S15 (MH “Immigrants+”) 12 118
 - S16 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 467 622
 - S17 (MH “Renal Insufficiency, Chronic+”) 21 246
 - S18 CKD 6195
 - S19 S17 OR S18 23 934
 - S20 (MH “Health Services Accessibility+”) 67 040
 - S21 (MH “Health Status Disparities”) 4628
 - S22 (MH “Healthcare Disparities”) 6688
 - S23 (MH “Health Promotion+”) 52 156
 - S24 S20 OR S21 OR S22 OR S23 124 836
 - S25 S16 AND S19 AND S24 196
 - S26 S16 AND S19 AND S24 Limiters – Published Date: 20080101-20181231 161
 - S27 S16 AND S19 AND S24 Limiters – Published Date: 20080101-20181231 Limit: English 159
- Of 159, kept 40.

PubMed

- 1 Vulnerable Populations
- 2 Minority Groups
- 3 exp Social Class/
- 4 Hierarchy, Social/
- 5 Poverty/
- 6 “socioeconomic status” title/abstract
- 7 Working Poor/
- 8 Rural Population/
- 9 exp Homeless Persons/
- 10 Drug Users/
- 11 Alcoholics/
- 12 exp Ethnic Groups/
- 13 Oceanic Ancestry Group/
- 14 exp American Native Continental Ancestry Group/
- 15 aborigin* title/abstract
- 16 inuit title/abstract
- 17 metis title/abstract
- 18 indigenous title/abstract
- 19 “native american*” title/abstract
- 20 “first nation*” title/abstract
- 21 “american indian*” title/abstract
- 22 exp “Sexual and Gender Minorities”/
- 23 exp Homosexuality/ s
- 24 Bisexuality/
- 25 Transsexualism/
- 26 exp Prisoners/
- 27 Medically Uninsured/
- 28 exp Disabled Persons/
- 29 exp “Emigrants and Immigrants”/
- 30 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or
12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or
21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29
- 31 exp Renal Insufficiency, Chronic/
- 32 CKD title/abstract

- 33 31 or 32
- 34 exp Health Services Accessibility/
- 35 exp HEALTH STATUS DISPARITIES/
- 36 exp HEALTHCARE DISPARITIES/
- 37 exp Health Promotion/
- 38 34 or 35 or 36 or 37
- 39 30 and 33 and 38
- 40 limit 39 to (english and last 10 years) – 227
Of 227, kept 8.

Google Scholar

(vulnerable OR minority OR “social class” OR poverty OR poor OR socioeconomic OR rural OR homeless) AND (“chronic kidney disease” OR “chronic kidney failure” OR “chronic renal insufficiency CKD) AND (disparity OR accessibility OR “health promotion”)—Of first 100 results, kept 6.

(“drug users” OR “substance abuser” OR alcoholic OR ethnic OR immigrant OR disabled OR prisoners) AND (“chronic kidney disease” OR “chronic kidney failure” OR “chronic renal insufficiency CKD) AND (disparity OR accessibility OR “health promotion”)—Of first 100 results, kept 5.

(“first nation” OR “native american” OR aboriginal OR inuit OR metis OR indigenous OR “american indian”) AND (“chronic kidney disease” OR “chronic kidney failure” OR “chronic renal insufficiency CKD) AND (disparity OR accessibility OR “health promotion”)—Of first 100 results, kept 7.

(uninsured OR bisexual OR homosexual OR transexual OR “gender minority” OR “sexual minority”) AND (“chronic kidney disease” OR “chronic kidney failure” OR “chronic renal insufficiency CKD) AND (disparity OR accessibility OR “health promotion”)—Of first 100 results, kept 5.