A scoping review of opioid harm reduction interventions for equity-deserving populations

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Summary

Background Morbidity and mortality associated with opioid use has become a North American crisis. Harm reduction is an evidence-based approach to substance use. Targeted harm reduction strategies that consider the needs of specific populations are required. The objective of this scoping review was to document the range of opioid harm reduction interventions across equity-deserving populations including racialized groups, Indigenous peoples, LGBTQIA2S+, people with disabilities, and women.

Methods Ten databases were searched from inception to July 5th, 2021. Terms for harm reduction and opioid use formed the central concepts of the search. We included studies that: (1) assessed the development, implementation, and/or evaluation of harm reduction interventions for opioid use, and (2) reported health-related outcomes or presented perspectives that directly related to experiences receiving or administering harm reduction interventions, (3) were completed within an equity-deserving population and (4) were completed in New Zealand, Australia, Canada or the US. A knowledge map was developed a-priori based on literature outlining different types of harm reduction interventions and supplemented by the expertise of the research team.

Findings 12,958 citations were identified and screened, with 1373 reviewed in full-text screening. Of these, 15 studies were included in the final dataset. The most common harm reduction program was opioid agonist treatment (OAT) (n = 11, 73%). The remaining four studies included: overdose prevention; drug testing equipment; and outreach, peer support, and educational programs for safer use. Nine studies focused on women, primarily pregnant/post-partum women, three focused on Indigenous peoples, and three studies included racialized groups. No studies were identified that provided any information on persons with a disability or members of the LGBTQIA2S+ population.

Interpretation The scant opioid specific harm reduction literature on equity-deserving populations to date has primarily focused on OAT programs and is focused primarily on women. There is a need for more targeted research to address the diverse social experiences of people who use drugs and the spectrum of harm reduction interventions that are needed. There is also a need to acknowledge the history of harm reduction as a drug-user activist movement aimed at challenging bio-medical paradigms of drug use. Further, there is a need to recognize that academic research may be contributing to health inequity by not prioritizing research with this lens.

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Keywords: Opioid; Overdose; Equity-deserving; Harm reduction; Scoping review; Health equity

Background

Morbidity and mortality associated with the use of opioids has become a public health crisis.[1] Multiple drivers influence this epidemic, including high rates of opioid prescriptions, aggressive promotion strategies by pharmaceutical companies, and the increasing toxicity of the illegal drug supply.[2] The opioid overdose epidemic has disproportionally affected subpopulations that are vulnerable to marginalization, discrimination,

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and injustices. Indigenous peoples, racialized groups, women, people with disabilities, and people identifying as lesbian, gay, bisexual, transgender, queer, questioning, intersex, asexual, and two-Spirit (LGBTQIA2S+) are over-represented in the opioid morbidity and mortality burden.[3-7] For example, in Western Canada, Indigenous peoples are three times more likely to overdose from opioids than non-Indigenous people.[6] Sexual minority adults are two times more likely to report opioid misuse than heterosexual adults[8] and the opioid overdose death rate for Americans who qualify for disability are nearly five times that of the general adult population.[4] Social context and conditions are integral to substance use; they mediate initiation and patterns of use, discontinuation of use, abstinence, and return to use. Gender, race, disability and sexual orientation affect an individual's access to, and interactions with, health care systems which in turn affect susceptibility to harms associated with substance use.[9]

One of the ways the opioid overdose crisis is being addressed is through the development of harm reduction strategies and programs. Harm reduction originated as a grassroots movement led by drug user activists aimed at challenging the "legal suppression of drug use and the oppression of drug users."[10] As an alternative to criminalized and medicalized models of drug use, harm reduction places an emphasis on autonomy, compassion, and human rights for people using substances.[11] Yet as it has evolved and been incorporated by health care systems and policy responses to drug use, harm reduction has come to be more narrowly defined as an approach to drug use which aims to minimize harms from use, such as death, injury, and disease.[10] Distinctions of harm reduction include attempts to minimize the harms associated with drug use, make use safer, and to work with people who use drugs (PWUD) towards positive change, rather than attempting to change behaviours.[10] In addition, unlike most medical approaches to drug use, harm reduction is distinguished by an emphasis on empowering users towards any positive change in their practices, rather than prioritizing abstinence-goals.[12]

Given the unique experiences and needs of PWUD, it is reasonable to assume that a "one size fits all" approach will not necessarily reach those who are most vulnerable. Harm reduction strategies vary between populations and require a targeted approach for optimal success The opioid overdose crisis is not abating and requires a sharpened focus on developing appropriate, targeted harm reduction strategies for equity-deserving populations.[13] The objective of this scoping review was to document the range of harm reduction interventions implemented across equity-deserving populations (i.e., Indigenous peoples, racialized groups, women, people with disabilities, and LGBTQIA2S+). Recognizing the structural, not individual, barriers constraining those who are marginalized, throughout this paper, we intentionally use the language of "equity-deserving", as opposed to language like vulnerable or equity-seeking, to underscore that people who are marginalized deserve equity as a right.[13]

Methods

Search strategy

We conducted this scoping review using the Arksey and O'Malley methodological approach as a framework. This is a five-stage framework that includes identifying the research question, identifying relevant studies, study selection, charting the data, and collating, summarizing and reporting of results. We searched APA PsycINFO, CINAHL, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Education Research Complete, Embase, ERIC, Health Technology Assessment database, MEDLINE, and Web of Science from inception to July 5th, 2021. The search strategy was developed by a medical librarian; the two central concepts incorporated into the search strategy were harm reduction and opioid use. Keywords and synonyms relevant to these two concepts were searched as both text words (title/abstract) and subject headings (e.g., MeSH), as appropriate. Searches were limited to English or French language studies. Identified systematic reviews were hand-searched for potentially relevant articles. The PRIMSA-ScR reporting guidelines were followed.[14] The OVID MEDLINE search strategy can be found in the Appendix.

Study selection

Studies were included if they met all the following inclusion criteria: (1) assessed the development, implementation, and/or evaluation of a harm reduction intervention for opioid use, (2) reported a health-related outcome (e.g. quality of life, interaction with the healthcare system, death) or presented perspectives that directly related to experience receiving or administering a harm reduction intervention, (3) were completed within an equity-deserving population (i.e. women, people of colour, Indigenous Peoples, members of the LGBTQ2S+ community, disabled people), (4) were published in English or French, and (5) were conducted in Australia, Canada, New Zealand, or the United States, as these countries have similar colonial histories which led to similar social structures and could feasibly be most comparable. Studies were excluded if they: (1) assessed only non-opioid use, (2) used a cohort not classified as equity-deserving (e.g., Caucasian male, general adult population), (3) only reported non-health outcomes (e.g., employment, interactions with the criminal system.), (4) were animal studies, (5) had main cohorts of newborn infants, (6) had a primary goal of abstinence, (7) did not report original data, or (8) were a

predictive model, editorial, commentary, conference abstract, or a costing study. All abstracts were reviewed in duplicate. Any study included by either reviewer proceeded to full text review. Full-text review was conducted in duplicate by two reviewers, with disagreements resolved through consensus. Calibration was conducted prior to starting abstract review (n = 100 abstracts) and full-text review (n = 25 full-texts) to ensure consistency across reviewers.

Data charting/extraction

A-priori, a knowledge map was developed based on the literature on harm reduction interventions and supplemented by the expertise of the research team. A knowledge map is a visual representation of the expected knowledge areas compared to that identified within the review. This adds in identifying the gaps or needs in an area of knowledge.[15] The map was organized by equity-deserving populations and harm reduction strategy. The equity-deserving groups were defined following the Government of Canada's definitions.[16] Harm reduction strategies were included based on preliminary scoping of the literature supplemented with knowledge from experts in the field. Included categories were: (1) Opioid Agonist Therapy, (2) Overdose Prevention, (3) Outreach, Peer Support, and Educational Programs for Safe Use Practices, (4) Drug Testing Equipment, (5) Health Care Professional Training, (6) Prescription Monitoring Program, (7) Supervised Consumption, and (8) Needle Supply/Distribution. Other was used to capture harm reduction strategies not captured in any of the above. The following detailed information was extracted from the included studies: study characteristics and design; the harm reduction strategy/strategies; the 'actor' involved in the intervention (e.g., doctor, peer, family etc.); target population; reported outcomes; specific opioid used; and summary of findings. Data extraction for full-text studies was completed by one reviewer and verified by a second reviewer. Discrepancies were resolved though consensus or the input of a third reviewer, as necessary.

Role of the funding source

This research was funded by the Canadian Institutes for Health Research. The grant was specifically for a knowledge synthesis project. The funder played no role in the study design, in the collection, analysis, and interpretation of data, in the writing of the report, or in the decision to submit the paper for publication. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Findings

A total of 12,958 citations were identified (Figure 1). Of these, 11,585 were excluded, and 1373 proceeded to full text review. During full-text screening, 1,358 studies were excluded. The most common reasons for exclusion were: not an equity-deserving population (n = 337), not a harm reduction strategy (n = 258), no relevant outcomes (n = 229), wrong country (n = 204), not addressing development, implementation, or evaluation (n = 153), duplicate study (n = 49), not accepted study design (e.g., commentary, editorial, conference abstract) (n = 44), not original data (n = 29), not pertaining to opioid use (n = 27), others (n = 15), full-text not available (n = 10), not English or French language (n = 2), and not humans (n = 1). A total of 15 publications formed the final dataset and proceeded to data charting and extraction (Figure 1).

Study characteristics

Included studies were published between 2013 and 2021. All included studies were published in the United States (n = 10) or Canada (n = 5). Ten studies were quantitative study designs: observational (n = 7) and experimental (n = 3). Four studies employed a qualitative methodology, and one study used a mixed-methods design. Equity-deserving populations of interest included women (n = 9), racialized groups (n = 3), and Indigenous peoples (n = 3). No studies reported on people with disabilities or LGBTQIA2S+ populations. A full description of included studies can be found in Table 1.

Four harm reduction strategies were identified during data extraction: (1) opioid agonist treatment (OAT) programs, such as treatments involving buprenorphine or methadone; (2) overdose prevention interventions or overdose prevention educational studies; (3) outreach, peer support, and educational programs geared towards safer use practices; and (4) the use of drug testing equipment. The greatest number of included studies addressed OAT strategies amongst women (n = 5), racialized groups (n = 3), or Indigenous peoples (n = 3). We did not identify any literature on other harm reduction strategies, such as supervised consumption sites, healthcare professional training, prescription monitoring, or needle/supply distribution for women, Indigenous, or racialized groups. There were no included studies that examined harm reduction strategies in people who identify as LGBTQIA2S+ or people with disabilities (Table 2).

Reported outcomes were program-related (acceptance or retention of program) (n = 6, 40%), perspectives (n = 5, 33%), quality of life/health measures (n = 3, 20%), and safe drug-use practice (n = 2, 13%) (Figure 2). Most studies reported on unspecified opioids (n = 9, 60%), followed by heroin (n = 6, 40%), and other (e.g., prescription opioids, opioids mixed with other illegal drugs) (n = 4, 27%). Actors of intervention always included PWUD, with physicians (n = 11, 73%), other healthcare workers (n = 10, 67%), and psychologists or counsellors (n = 8, 53%) reported as important actors in providing and administering the harm reduction

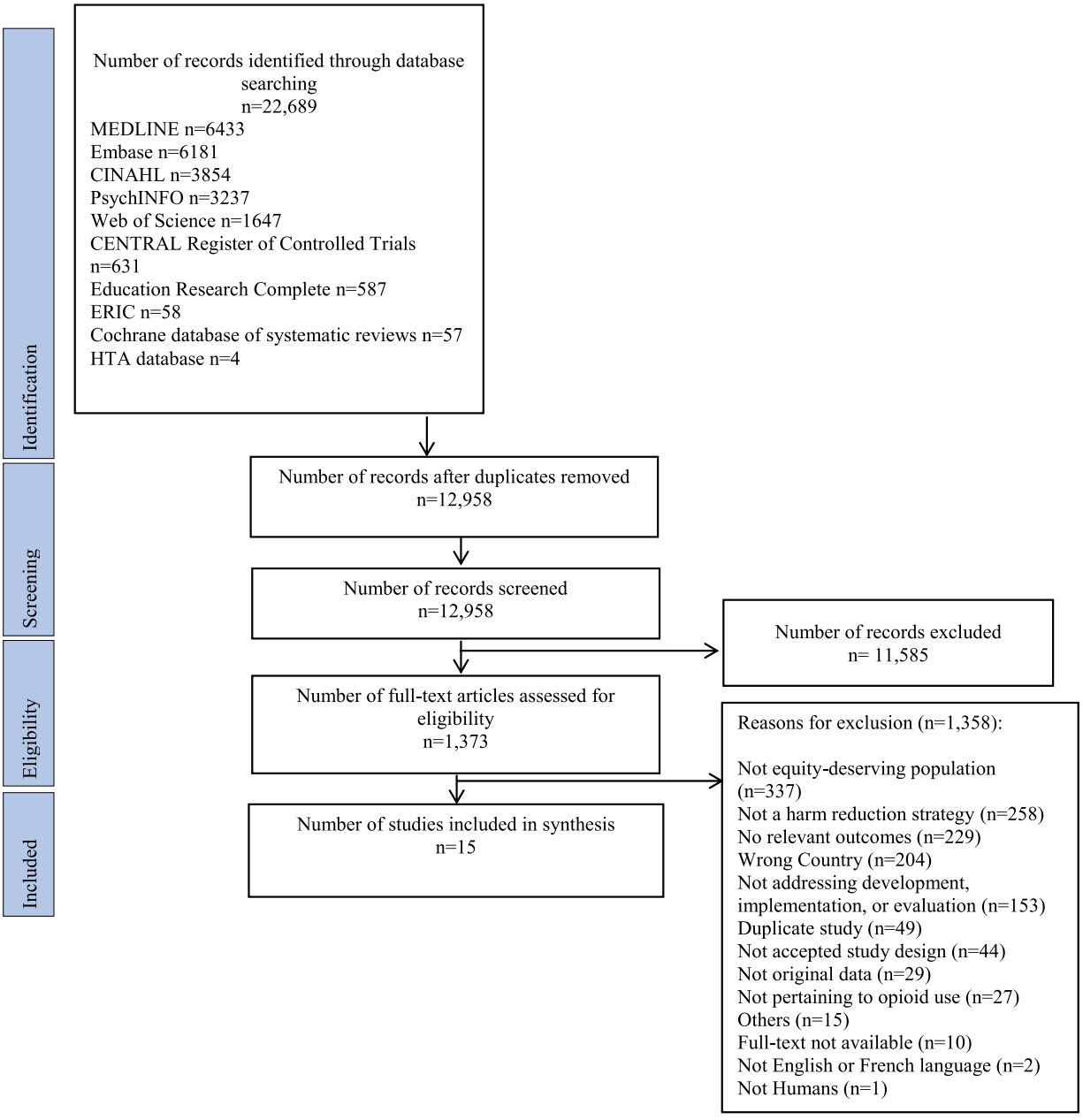

Figure 1. PRISMA-ScR Flow chart.

strategy. One third of the studies considered lived experience when designing and implementing the harm reduction strategy.

Equity-deserving populations

Women: Nine studies examined the effects of opioid harm reduction strategies in women. Six studies focused on pregnant and/or post-partum women, and one study each focused on female sex-workers women living in supportive housing, and women with a history of criminal justice involvement.[20] OAT was the primary strategy (n = 5), with overdose prevention (n = 3), and outreach, peer support, and education programs (n = 2) also represented. The primary actors of these interventions were healthcare workers (e.g., physicians, nurses, and other healthcare workers), counsellors and/or psychologists, and PWUD. Four studies reported qualitative data, with three providing perspectives of the opioid user, and one providing the perspectives of OAT providers. Only one study included people with lived experience of using drugs in the study design.[17]

Author (Year), Country	Design	Population	Intervention	Outcomes
Women				
Bardwell (2021)[18] Canada	Design: Qualitative Person with lived experience included in design? Yes — "A qualitative interview guide was first developed by our peer research assistants (i.e., community members trained in research activities with lived expertise of drug use) and then refined in consultation with a group of women with lived experience of drug use."	Sub-population(s): supportive housing Type of opioid(s) used: Unspecified Opioids (and stimulants)	Harm reduction strategy: Overdose Prevention Strategy details: Wireless overdose response button in supportive housing. "This system allows residents who are using drugs alone to press a wall-mounted battery-powered button (about 1 inch in diameter) prior to their drug use, which then sends a notification to a cellular phone monitored by building support staff who can then check on residents and respond accordingly. The button can only be used in their designated units, as each is assigned a room number." Actor(s) of intervention: institution, peer, PWUD, other	Outcome(s) reported: perspectives Summary of results: "While participants described the utility and disadvantages of the technology for overdose response, most participants, unexpectedly described alternate adoptions of the technology. Participants used the technology for other emergency situations (e.g., gender-based violence), rather than its intended purpose of overdose response."
Jancaitis (2020)[19] USA	Design: Experimental (quasi-experimental) Person with lived experience included in design? No	Sub-population(s): pregnant; primarily African-American Type of opioid(s) used: Heroin	Harm reduction strategy: OAT Strategy details: 'Treatment consisted of a seven-day residential stay during which patients underwent detoxification or induction for methadone and became oriented and engaged with the treatment program. Treatment services were provided predominantly through group counseling with once weekly individual sessions. The brief residential stay was followed by intensive outpatient treatment.' Actor(s) of intervention: physician, other HCW, PWUD, counsellor, other	Outcome(s) reported: program retention Summary of results: "Patients who elected non-pharmacological treatment were 2.77 times as likely to leave residential treatment as patients who elected methadone maintenance therapy (adjusted odds ratio [OR = 2.77, 95% confidence interval [CI]: 1.23−6.17)."
Liang (2021)[20] USA	Design: Mixed (Qualitative and descriptive) Person with lived experience included in design? No	Sub-population(s): pregnant Type of opioid(s) used: Unspecified Opioids	Harm reduction strategy: Outreach, Peer Support, and Educational Programs for Safe Use Practices Strategy details: "Online Health Community [that]: (1) is anonymous, allowing for discussion of stigmatized and sensitive health topics; (2) does not have length limits, thereby providing space for relatively detailed accounts of personal experiences; (3) has a wide range of coverage in health condition topics, including pregnancy, substance use, and pain management, so that participants are not constrained to discuss only one aspect of their health given the complex nature of gestational opioid	Outcome(s) reported: perspectives Summary of results: "A total of 5 themes of self-management support needs were identified as women sought information about: 1) the potential adverse effects of gestational opioid use, 2) protocols for self-managed withdrawal, 3) pain management safety during pregnancy, 4) hospital policies and legal procedures related to child protection, and 5) strategies for navigating off-line support systems."

Table 1 *(Continued)*

Author (Year), Country	Design	Population	Intervention	Outcomes
			use; and (4) has a long history that allows us to study the activities of OHC participants at the beginning of the millennium when reports of overdoses from prescribed opioids began to rise sharply." Actor(s) of intervention: peers, PWUD	
Macleod (2021)[21] Canada	Design: Qualitative Person with lived experience included in design? No	Sub-population(s): History of criminal justice involvement Type of opioid(s) used: Multiple (heroin, followed by Percocet, Oxycontin, and morphine.)	Harm reduction strategy: Overdose Prevention Strategy details: User experience with "opioids and overdose prevention efforts, especially involving naloxone" Actor(s) of intervention: peers, PWUD, pharmacists, government	Outcome(s) reported: perspectives Summary of results: "Participants who had used illicit opioids since naloxone became available over-the-counter in 2016 were much more knowledgeable about naloxone than participants who had only used opioids prior to 2016. The portability, dosage form, and effects of naloxone are important considerations for women who use opioids. Social alienation, violence, and isolation affect the wellbeing of women who use opioids."
Nielsen (2020)[22] USA	Design: Observational Person with lived experience included in design? No	Sub-population(s): Postpartum Type of opioid(s) used: Unspecified Opioids	Harm reduction strategy: OAT Strategy details: "Women were defined as enrolled in an opioid treatment program if they had any evidence of enrollment in a state-funded program in the 12 months before delivery from BSAS records, which includes acute treatment services, crisis stabilization, residential, and intensive outpatient programs. Women were defined as receiving medication for OUD (MOUD) in the 12 months before delivery and the month of delivery if they had a claim for methadone maintenance treatment (Supplementary Table 1), record of methadone treatment from BSAS, or had filled a prescription for buprenorphine or buprenorphine/naloxone" Actor(s) of intervention: physician, pharmacist, other HCW, PWUD	Outcome(s) reported: overdose related Summary of results: "— adjusted OR for postpartum opioid overdose was non-significant for women with OUD diagnosis enrolled in publicly funded program for opioid problem in 12 months before delivery, and 15.95 (95% CI 6.37 to 39.92) for women without a OUD diagnosis.

Table 1 *(Continued)*

Author (Year), Country	Design	Population	Intervention	Outcomes
Park (2020)[23] USA	Design: Observational Person with lived experience included in design? No	Sub-population(s): sex workers Type of opioid(s) used: Multiple (heroin, fentanyl, crushed opioid pills, other non-opioids)	Harm reduction strategy: Drug Testing Equipment, Overdose Prevention, Education program Strategy details: "Participants underwent a brief (5−10 min) training on use of the FTS (collecting a sample, completing the test, and interpreting results) as well as harm reduction micro-counseling. Harm reduction micro-counseling was tailored individually to behaviors participants had reported throughout the risk assessment portion of the Fentanyl Innovative Testing survey. Staff also emphasized the potential risks of fentanyl and safe drug use practices such as doing a test dose of drugs before using the full amount, having someone nearby to administer naloxone, and polysubstance use. An insert card with FTS instructions and key harm reduction concepts covered in the training was also provided, along with 5 FTS, safe injection equipment (e.g., cookers, gauze, clean water, and an alcohol pad) and two doses of intramuscular naloxone hydrochloride." Actor(s) of intervention: peer, PWUD, counsellor	Outcome(s) reported: safe practice, program acceptance, overdose related Summary of results: "We found high fentanyl test strip (FTS) acceptability and reductions in drug use frequency and solitary drug use following FTS use among FSW who use drugs in Baltimore. These findings demonstrate that FTS-based interventions hold potential in reducing overdose risk."
Schauberger (2020)[24] USA	Design: Observational Person with lived experience included in design? No	Sub-population(s): post-partum Type of opioid(s) used: Unspecified Opioids	Harm reduction strategy: OAT Strategy details: Opioid Maintenance Therapy identified by reviewing medical records of women who met the DSM-5 criteria for OUD. Treatment details not reported, Actor(s) of intervention: physician, nurse, other HCW, counsellor, PWUD	Outcome(s) reported: program retention; QoL and health measures Summary of results: "Via multivariate analysis, women on opioid maintenance therapy (OMT) were more likely to continue in treatment whereas women enrolled in a residential treatment program during pregnancy were less likely to continue in treatment."

Table 1 (Continued)

Author (Year), Country	Design	Population	Intervention	Outcomes
Schiff (2018)[25] USA	Design: observational Person with lived experience included in design? No	Sub-population(s): pregnant/post-partum Type of opioid used: unspecified	Harm reduction strategy: OAT Strategy details: "Database records for pregnant/post-partum women with evidence of OUD defined as the presence of any of the following criteria in linked records: (1) International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) and Tenth Revision, Clinical Modification (ICD-10-CM) codes related to OUD in hospital discharge or claims records24; (2) an opioid overdose event, as further defined below; (3) enrollment in a state-funded treatment program for an "opioid problem"; (4) claims for methadone maintenance treatment (. . .exclude claims of methadone prescribed for pain); (5) receipt of methadone from a state-funded treatment program; (6) filled prescription for buprenorphine or combined buprenorphine and naloxone; or (7) infant diagnosis of neonatal abstinence syndrome." Actor(s) of intervention: physician, pharmacist, other healthcare worker, PWUD	Outcome(s) reported: Overdose-related Summary of results: "When comparing opioid overdose rates by receipt of pharmacotherapy, rates on treatment are lower than rates off treatment in every time-period except for the third trimester, when the number of events was low in both groups, but only reached statistical significance in the 4—6 months post delivery (1.3 per 100,000 person days on pharmacotherapy (95% CI 0.16—4.74) v. 10.7 per 100,000 person days for those not on pharmacotherapy (95% CI 6.84—15.88)."
Titus-Glover (2021)[26] USA	Design: Qualitative Person with lived experience included in design? No	Sub-population(s): pregnant Type of opioid(s) used: Unspecified Opioids	Harm reduction strategy: OAT Strategy details: Perspectives of MOUD delivery from "obstetrics, perinatal mental health, psychiatry, psychology, behavioral health (child/family), addiction services, and behavioral research, who treat, assess, diagnose, facilitate and coordinate the care of pregnant and postpartum women with OUD." Treatment details not reported. Actor(s) of intervention: physician, nurse, other HCW, psychologist/ counsellor, PWUD	Outcome(s) reported: perspectives Summary of results: Emerging themes revealed persistent gaps in treatment and challenges in provider, health systems and patient factors. Providers perceived MOUD to be a "lifeline" to women.

Table 1 (Continued)

Author (Year), Country	Design	Population	Intervention	Outcomes
Racialized Groups				
Lister (2019) USA	Design: Observational Person with lived experience included in design? No	Sub-population(s): African Americans (or any racial minority); gender stratified Type of opioid(s) used: Unspecified Opioids (and cocaine)	Harm reduction strategy: OAT Strategy details: "Typically, patients were inducted on methadone doses (30–40 mg) during the first 2 weeks. Thereafter, doses were titrated to effective levels according to clinical judgment and stabilized during the second month. During treatment, all patients were required to submit visually monitored urine specimens tested for opioids, cocaine, cannabinoids, and benzodiazepines at least twice during the first month. Benzodiazepine-positive UDS resulted in reducing the patient's methadone dose and potential discharge to mitigate overdose potential." Actor(s) of intervention: physician, pharmacist, other HCW, PWUD	Outcome(s) reported: program retention; drug use (via positive urine sample) Summary of results: This study offers an analysis of gender differences in risk factors, MMT outcomes, and gender-specific predictors among African American patients. MMT clinics should tailor assessment and treatment protocols to address gender-specific needs.
Mitchell (2015) USA	Design: RCT Person with lived experience included in design? No	Sub-population(s): African Americans Type of opioid(s) used: Heroin	Harm reduction strategy: OAT Strategy details: "Participants in buprenorphine treatment were provided with individualized doses of buprenorphine, with a modal maintenance dose of 16 mg. Medication was initially administered under supervision at the program five days a week, with participants eventually able to receive up to monthly prescriptions. Participants [in this study] were starting outpatient buprenorphine treatment." Actor(s) of intervention: physician, pharmacist, other HCW, PWUD, counsellor	Outcome(s) reported: QoL Summary of results: There were statistically significant increases over time across all four QoL domains: physical, psychological, environmental, and social. Self-reported frequency of opioid use was negatively associated with psychological QoL, but opioid urine test results were not significantly associated with any QoL domains. Continued treatment enrollment was significantly associated with higher psychological QoL and environmental QoL
Mitchell (2013)[29] USA	Design: RCT Person with lived experience included in design? No	Sub-population(s): African Americans Type of opioid(s) used: Heroin	Harm reduction strategy: OAT Strategy details: intensive vs. standard outpatient buprenorphine treatment "Dose induction in both Conditions typically started with buprenorphine/ naloxone combination between 4 and 8 mg, and increased to an individually determined dose. Most patients achieved a maintenance dose	Outcome(s) reported: QoL and health measures, program retention, efficacy, safe practice Summary of results: Buprenorphine patients receiving standard outpatient and intensive outpatient levels of care both show short-term improvements.

Table 1 *(Continued)*

Author (Year), Country	Design	Population	Intervention	Outcomes
			between 8 and 24 mg daily. Patients received supervised dose administration in the clinics during the early stages of treatment and gradually switched to unsupervised buprenorphine/naloxone combination through prescriptions written by the clinic physician. Participants were permitted to remain on buprenorphine as long as clinically indicated and desired by the patient. After a period of stabilization (typically after 6 months), patients were to be linked to primary care physicians for continued buprenorphine treatment, at which time they could continue receiving counseling at the treatment program." *Intensive Outpatient Treatment:* "Intended to provide at least 9 h per week of counseling for a planned duration of approximately 45 days. Counseling was to be provided four days per week, for at least 2 h per day, plus one weekly individual session. In practice, several group meetings per week were typically conducted by counseling staff. These groups usually had a topical focus such as substance abuse education, relapse prevention, medication education, HIV prevention, health promotion, and women's support groups. Twelve-step meeting attendance was encouraged." *Standard Outpatient Treatment*: "Expected to entail a minimum of one group and one individual session per week, but could include up to 8 h of counseling per week (typically delivered in group settings). Twelve step meeting attendance was also encouraged and relapse prevention groups were offered weekly." Actor(s) of intervention: physician, pharmacist, other HCW, PWUD, counsellor	

Table 1 *(Continued)*

Author (Year), Country	Design	Population	Intervention	Outcomes
Indigenous Peoples				
Kanate (2015)[30] Canada	Design: Observational Person with lived experience included in design? No. Indigenous community-members included in design? Yes — First Nations Counselors and Healers	Sub-population(s): First Nations Community — Northwestern Ontario Type of opioid(s) used: Unspecified Opioids	Harm reduction strategy: OAT Strategy details: "[Buprenorphine-naloxone] Medication inductions (and sublingual administration) are undertaken in the community clinic by the visiting family physicians or addiction specialists. Initially the program runs daily for each patient for 28 days and is managed by the community nurses and mental health workers. Following that initial month, buprenorphine-naloxone dispensing and daily follow-up is managed by community-trained health aides. First Nations counselors and healers deliver group and individual daily sessions several weeks per month during and after the month-long initiation of the program. They focus on addiction recovery, relapse prevention, understanding early-life trauma, grief counseling, and traditional healing teachings. Land-based activities were used, along with individual and group education and counseling sessions." Actor(s) of intervention: physician, other HCW, PWUD, counsellor, other, Nurse	Outcome(s) reported: emergency/acute care usage Summary of results: drug-related medical evacuations reduced 30% before and after healing program
Landry (2016)[31] Canada	Design: Qualitative Person with lived experience included in design? No Indigenous community-members included in design? Yes — traditional Elder as actor of intervention	Sub-population(s): First Nations Community - New Brunswick Type of opioid(s) used: Unspecified Opioids	Harm reduction strategy: OAT Strategy details: "The Elsipogtog methadone maintenance treatment program's mission is true to First Nation cultural beliefs and provides care according to the native medicine wheel. Most of the program's staff are from the Elsipogtog community and provide services in Mi'kmaq. They include a family physician, a nurse practitioner, a registered nurse, an alcohol—drug counsellor and a psychologist, as well as a traditional elder and a medical receptionist who provide ancillary services." Actor(s) of intervention: physician, nurse, counsellor/psychologist, PWUD, traditional Elder	Outcome(s) reported: perspectives Summary of results: All groups of participants expressed that patients in the program are stigmatized and marginalized. Discussions also revealed widespread misconceptions about the program. Participants associated the program with improvements in community-level outcomes and in parenting abilities of patients, but also with difficulties preserving family unity.

Table 1 *(Continued)*

Author (Year), Country	Design	Population	Intervention	Outcomes
Mamakwa (2017)[32] Canada	Design: Observational Person with lived experience included in design? No Indigenous community-members included in design? Yes — "Each community designed its own program and complement of staff and consultants".	Sub-population(s): First Nations communities - northwestern Ontario Type of opioid(s) used: Oxycodone, morphine	Harm reduction strategy: OAT Strategy details: *Buprenorphine-naloxone prescriptions:* "Patients were often started on buprenorphine-naloxone in group inductions of 10 to 25 patients at a time, depending on funding and the availability of clinical personnel. Often inductions were initiated by visiting community physicians; if available, addiction physicians from urban centers assisted during group inductions. The physician completes a comprehensive assessment of all patients, and those who meet the *Diagnostic and Statistical Manual of Mental Disorders,* 4th edition, criteria for opioid use disorder begin taking buprenorphine-naloxone when they have provided informed consent. Community physicians, who visit each community for 1-week periods each month, prescribe follow-up buprenorphine-naloxone doses. The buprenorphine-naloxone is dispensed daily under the supervision of a community nurse or community addiction worker. Take-home doses are prescribed by the addiction physician or the community physician in consultation with other members of the treatment team." *Counseling:* "After induction, the group attends 4 weeks of intensive day treatment and aftercare. All programs provide daily, supervised dispensing of buprenorphine-naloxone. A "Land" aftercare program has been developed in some of the communities, with organized days of fishing, hunting, traditional walks for memorial events, and community gardening programs. Elders and experienced First Nations counselors provide individual and group healing sessions where possible. Some communities hire counselors from outside of the community if resources permit. In many programs, the community physician provides the core clinical support." Actor(s) of intervention: physician, nurse, other HCW, counsellor, PWUD	Outcome(s) reported: program retention Summary of results: Treatment retention rates at 6, 12, and 18 months were 84%, 78%, and 72%, respectively

***Table 1*: Study characteristics of included studies (*n* = 15).**

Abbreviations: CI = confidence interval; FTS = fentanyl test strips; HCW = healthcare worker; MMT = methadone maintenance treatment; MOUD = medication for opioid use disorder; OAT = opioid agonist therapy; OMT = opioid maintenance therapy; OR = odds ratio; OUD = opioid use disorder; PWUD = people who use drugs; QoL = quality of life

		Equity-Deserving Populations					
		Racialized Groups	Indigenous Peoples	LGBTQIA2S+	Persons with Disabilities	Women	Total
Harm Reduction Strategy	Opioid Agonist Therapy	3	3	—-	—-	5	11
	Overdose Prevention	—-	—-	—-	—-	3	3
	Outreach, Peer Support, and Educational Programs for Safe Use Practices	—-	—-	—-	—-	2	2
	Drug Testing Equipment	—-	—-	—-	—-	1	1
	Health Care Professional Training	—-	—-	—-	—-	—-	0
	Prescription Monitoring Program	—-	—-	—-	—-	—-	0
	Supervised Consumption	—-	—-	—-	—-	—-	0
	Needle Supply/Distribution	—-	—-	—-	—-	—-	0
	Other	—-	—-	—-	—-	—-	0

***Table 2*: Map of reported harm reduction strategies by population.**

Racialized Groups: Three studies examined the effectiveness of OAT for African American participants (Table 1). Two studies reported QoL and health measures from an RCT comparing intensive versus standard outpatient buprenorphine treatment.[26,30] The remaining study evaluated gender-specific predictors of methadone treatment retention among African American participants.[31] Actors of the intervention included a physician, a pharmacist, other HCWs, PWUD, and counsellors. People with lived experience did not participate in designing any of the studies.

Indigenous Peoples: Three studies explored OAT in various Indigenous communities in Canada (Table 1).[27-29] No studies included people with lived experience; however, all OAT programs included members of the community in the design and/or implementation of the therapy. Community members included traditional Elders, and traditional healers and counsellors. Outcomes of interest included

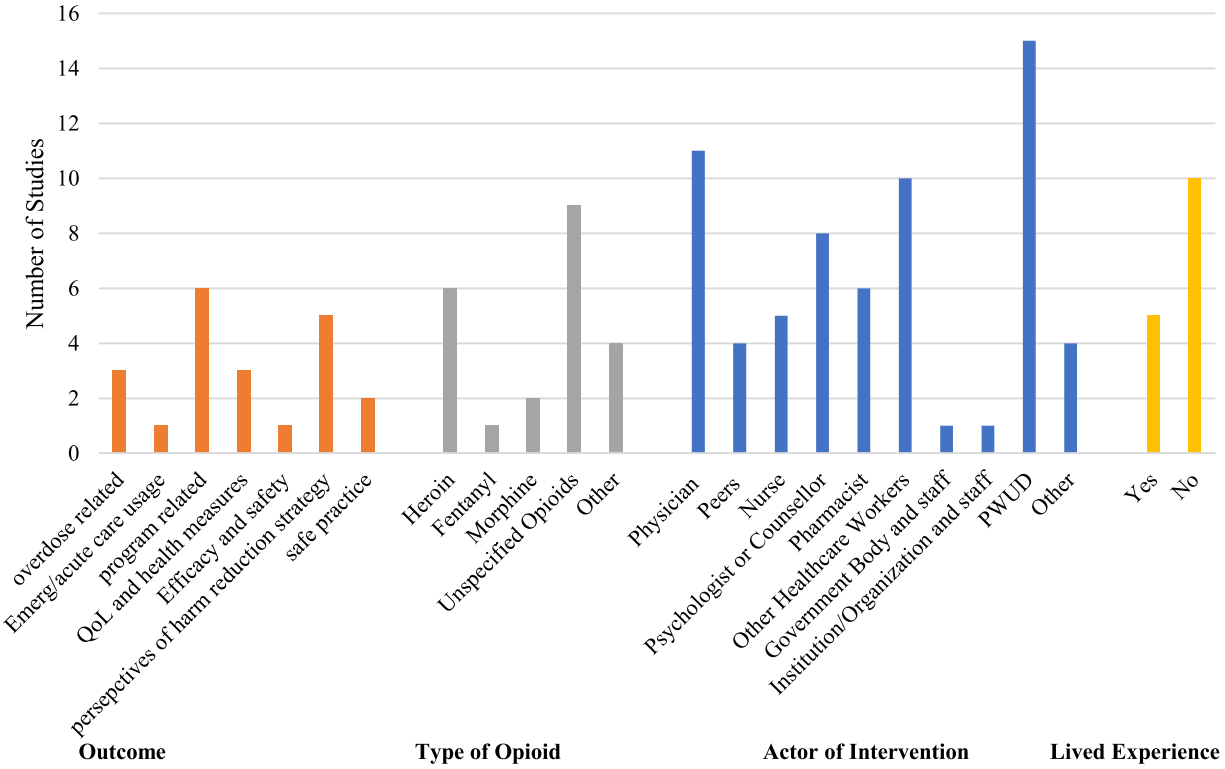

Figure 2. Characteristics of included studies.
Abbreviations: PWUD = people who use drugs; QoL = quality of life.

program retention, emergency care usage, and perspectives of harm reduction strategy by the opioid user.

LGBTQIA2S± Populations: No literature matching the inclusion criteria was identified for people identifying as LGBTQIA2S+.

Persons with Disabilities: No literature matching the inclusion criteria was identified for persons with disabilities.

Discussion

To the best of our knowledge, this is the first scoping review of harm reduction strategies for opioid use in equity-deserving populations.

In the progress of abstract and full text review, this scoping review found a wealth of literature on harm reduction strategies published to date (upwards of 450 studies), however, only 15 focused on equity-deserving populations. Of the studies that did examine equity-deserving populations, many examined OAT in pregnant/post-partum women, racialized groups, and Indigenous peoples. The scale-up of medications to treat opioid use disorder has received a great deal of emphasis. However, OAT on its own, is not sufficient to address the current crisis because it is not universally accepted as a harm reduction approach but is often defined as addiction treatment.[32,33]

We did not find any studies specific to the LGBTQIA2S+ community, persons with disabilities, or racialized groups other than African American participants, did not identify any literature on harm reduction strategies such as supervised consumption sites, safer supply programs,[34] healthcare professional training, prescription monitoring, needle exchange programs,/ supply distribution, and services specifically developed for women, Indigenous, and racialized groups.

The prioritization of pregnant and post-partum research on women may be an example of the medicalization of substance use, when pregnancy and childbirth are seen as medical events rather than natural events.[35] This preoccupation with bio-medical approaches may be part of the reason for the scarcity of literature grounded in the original principles of harm reduction. Given that risk of overdose harms and deaths intersect with multiple forms of structural marginalization, it is vital to understand how designing, implementing, and evaluating harm reduction strategies can best reduce the burden of the opioid crisis on these already stigmatized and vulnerable populations. Consideration should be given to the root causes of the crisis and how inequities tied to the social determinants of health can exacerbate harms.[36] An equity-oriented framework to interventions and future research would prioritize projects meant to build health equity, reduce the harms of stigma and include cultural safety, trauma- and violence-informed care, and/or harm reduction as their primary objective.[7] It is critical for researchers to understand and frame their research questions and designs with, and for, organizations working with people who use drugs and primarily with people who use drugs themselves.[11]

In the identified literature, the involvement of lived experiences of people who use drugs was limited to one study. Across the studies that were conducted in Indigenous communities, none included people with lived experience, but all included members of the community in the design and implementation of the harm reduction strategies, such as traditional healers/counsellors, and Elders. Inclusion of lived experience brings incredible value and nuanced perspective to the development of general and targeted harm reduction best practices in subpopulations at risk of overdose. Inclusion of people who use drugs in research helps build equity[37] and research results that are grounded in real life and real-world strategies. In addition, the exclusion of people who use drugs from this research body can itself be seen as a form of structural violence, and is contradictory to the harm reduction maxim of 'nothing about us without us.'[38]

For researchers to play a role in reducing inequities requires a nuanced understanding of the diverse, complex and often intersecting oppressions experienced by people who use drugs. An intersectional lens to research allows an examination across social structures and the interconnected ways that social identities converge within social, historical and political contexts to produce, or mitigate, drug-related outcomes.[39] Canada's colonial history is a root cause of health inequities. As such, harm reduction's historical roots as an anti-oppressive or health equity-oriented movement specifically to challenge hegemonic criminalized and bio-medical understandings of drug use, provide a valuable framework to address these complexities.[11]

Limitations

Several limitations of this scoping review should be noted. First, this scoping review only included studies conducted exclusively in equity-deserving populations. Studies with general adults that stratified their outcomes by sex and/or gender, race, Indigenous status, sexual orientation and/or identity, or disability were not captured. Second, study inclusion was limited to opioid-specific harm reduction strategies. Harm reduction strategies for general substance use and/or abuse, which may have included opioids, were not captured. Similarly, studies that are labelled with general terms like "illicit drugs" would not have been captured in our search. This may have led to the exclusion of some studies reporting harm reduction approaches in equity-deserving groups. One such example is an ethnographic analysis on a women-only supervised drug consumption site in Vancouver, Canada.[40] We recognize that harm reduction strategies for general illicit drugs would likely

include opioids, but also note the differences between those who use opioids and those who use other illicit drugs[41] thus, continue to underscore the relevance of tailored harm reduction. Third, the aim of the scoping review was to provide a snapshot of the literature, rather than a detailed synthesis of the outcomes; therefore, we cannot draw conclusions about effectiveness or patient perspectives, or an assessment of study quality or risk of bias. Fourth, government reports, community-led evaluations, and policy documents that may be pertinent were not included due to the inclusion of only peer reviewed literature and exclusion of grey literature. The inclusion of grey literature may have identified additional programs that have been implemented but not formally evaluated or published in the peer-reviewed literature.

Conclusions

This scoping review found multiple gaps in the harm reduction literature related to opioid use. OAT strategies had the greatest number of included publications, with few studies assessing other harm reduction strategies. Moreover, overall, there are few studies that target equity-deserving populations, and none in LGBTQIA2S + and people with disabilities. Gaps in this knowledge limit what we 'know' about groups who face health inequity generally and impact how we can safely and appropriately respond to the diverse needs of people who use drugs. It appears that the structural barriers many groups face in their help-seeking opportunities may be influenced by academics and the research community. Further research focused on subpopulations at risk of overdose, including applying an equity-oriented framework to examine intersecting experiences of marginalization, cultural-safety and targeted harm reduction interventions, is warranted. Future research should also prioritize qualitative and participatory methods and longitudinal approaches. This is particularly important given the need for evidence in health policy and intervention decision making.

Contributors

KM, RHS, DL and FC conceptualized the study. KM secured funding and coordinated all review activities. KM, FC, BF, OG, LM collaborated on study searching, screening, data extraction, and quality appraisal. All authors critically revised the Article for important intellectual content and approved the final version. All authors had full access to the data in the study and had final responsibility for the decision to submit for publication.

Data sharing

Full search strategy can be made available upon request to the corresponding author.

Declaration of interests

Authors declare no financial and personal relationships with other people or organizations in the development of this research and the manuscript

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Dr Katrina Milaney had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Supplementary materials

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