National Indigenous
Fire Safety Council

Conseil national
autochtone de la sécurité incendie

Evaluation of the NIFSC Community Fire Safety Programs

A companion report to the LEAD Fire Safety and Prevention Community Toolkit

JUNE 2023

The British Columbia Injury Research and Prevention Unit (BCIRPU) was established by the Ministry of Health and the Minister's Injury Prevention Advisory Committee in August 1997. BCIRPU is housed within the Evidence to Innovation research theme at BC Children's Hospital and supported by the Provincial Health Services Authority and the University of British Columbia. BCIRPU's vision is to be a leader in the production and transfer of injury prevention knowledge and the integration of evidence-based injury prevention practices into the daily lives of those at risk, those who care for them, and those with a mandate for public health and safety in British Columbia.

Authors: Samar Al-Hajj, Brendan Smith, Kate Turcotte, Len Garis, Ian Pike

This report draws on data that are currently in place that were available for First Nations Populations on Reserve. There is a goal in moving beyond this current state and wherever possible by implementing new forms of data collection, drawing upon different data sources, and framing research questions that include Inuit and Métis populations and communities, and First Nations residents on and off reserve.

The authors would like to acknowledge the National Indigenous Fire Safety Council (NIFSC) for requesting this work and being committed to evidence-based decision-making in such critical areas of community health. In particular, the authors express thanks to the Board of Directors, Nathan Wright, Executive Director, Blaine Wiggins, Senior Director Indigenous Fire Marshals Service, Mandy Desautels Senior Director of Strategic Initiatives, and Len Garis, Director of Research for their vision and guidance as the project unfolded.

For any questions regarding this report, contact:
BC Injury Research and Prevention Unit
F508 – 4480 Oak Street
Vancouver, BC V6H 3V4
Email: bcinjury@bcchr.ca Phone: (604) 875-3776

Suggested Citation: Al-Hajj S, Smith B, Turcotte K, Garis L, Pike I. Evaluation of the NIFSC Community Fire Safety Programs: A companion report to the LEAD Fire Safety and Prevention Community Toolkit. A report by the BC Injury Research and Prevention Unit, for the National Indigenous Fire Safety Council Project: Vancouver, BC. June 2023.

indigenousfiresafety.ca
info@indigenousfiresafety.ca
1.888.444.6811

Table of Contents

1. OVERVIEW

Indigenous communities bear a disproportionate burden of residential fire-related deaths and injuries compared to their non-indigenous counterparts. This burden poses a real threat to community health and well-being. Factors such as lack of access to fire safety and prevention resources and effective programs contribute to the increased risk of fire-related injuries and deaths. Yet, evidence from the existing literature confirms that residential fires are both predictable and preventable. Thus, this calls for an urgent need to leverage community resources and join efforts to mitigate the impact of fire on vulnerable populations.

This evaluation of the National Indigenous Fires Safety Council (NIFSC) community fire safety education programming was conducted to assess the evidence supporting each program, and to provide a rating of each program for communities, based upon the evidence.

This work formed the basis of the creation of the LEAD Fire Safety and Prevention Community Toolkit, designed for Indigenous and small communities interested in reducing the frequency and severity of fire incidents, and their associated injuries and deaths (Turcotte et al, 2023). The development of the LEAD toolkit is based on previous work to review fire safety and prevention evidence and practices (Al-Hajj et al., 2022), and to document the process of gathering information regarding Indigenous community needs concerning fire safety knowledge and research needs (Turcotte et al., 2022).

2. BACKGROUND

2.1. Residential Fire: A Public Health Priority

Residential fire-related morbidity and mortality constitute a major health concern globally (James et al., 2020; Smolle et al., 2017). According to estimates from the Global Burden of Disease, approximately 9 million individuals sustained fire-related injuries in 2019, with an additional 110,000 reported deaths globally (Vos et al., 2020). The burden of residential fires disproportionally affects low-income countries worldwide(Forjuoh, 2006; Peck, 2011). While high-income countries have shown steady progress in mitigating the frequency and severity of residential fires, the issue remains a serious health concern driven primarily by the absence of fire safety measures, inadequate housing infrastructure, and substandard living conditions among higher-risk populations (Beaulieu et al., 2020; Ghassempour et al., 2022).

The magnitude and extent of the fire health problem imposes a real threat to the health and well-being of affected individuals. Physical injuries and psychological trauma associated with fires, including smoke inhalation, burns, and scalds, often result in severe pain and disfigurement (Chernichko et al., 1993; Turner et al., 2017). Furthermore, fires cause grief, anxiety, and long-term disabilities for fire survivors, while also placing a substantial financial toll on caregivers and family members. It is crucial to prioritize fire safety and prevention interventions and to develop comprehensive action plans to mitigate fire risks, reduce the burden of fire-related mortality and morbidity, and improve population safety.

2.2. The Burden of Fire on Vulnerable Populations

Fire-related mortality and morbidity rates often differ among residents belonging to various socio-economic status groups in high-income countries, with a devastating impact on their higher-risk populations (Runefors et al., 2017; Schwarz et al., 1993; Setien et al., 2014). Global estimates from the US, Canada, Australia, and New Zealand report disproportionate rates of fire-related fatalities and hospitalizations affecting higher-risk populations, including Indigenous communities, as compared to other residents (Duncanson et al., 2000; Stevenson et al., 1998). Reports from Statistics Canada and national level research confirms a disparity in the prevalence of residential fires, and associated injuries and deaths, when comparing Indigenous populations with the general population (Feir & Akee, 2019; Kumar, 2021). The increased risk of residential fires among Indigenous populations can be attributed to multiple factors that strongly correlate with community characteristics and socioeconomic status. These factors include overcrowded households, homes with young children or older adults, low income, unemployed adults, lone parents, and poor housing infrastructure (Afrin & Garcia-Menendez, 2021; Gilbert & Butry, 2018; Jennings, 2013).

Indigenous communities experience a significantly higher rate or death from residential fires, up to 10.4 times compared to their non-Indigenous counterparts (Garis et al., 2016). This stems from multiple risk factors associated with community characteristics, including high rates of unemployment (up to 3 times), lone parents (up to 2 times), overcrowded housings (up to 2 times) and the need for major dwelling repairs (up to 6 times) as compared to non-indigenous populations [Garis, et al. 2023. Personal communication]. In comparison with the general Canadian population, Indigenous people experience 2.5 times higher rates of residential fires and 3.2 times higher rates of burns-related hospitalizations (Gilbert et al., 2006).

These estimates underscore the substantial burden of residential fires on Indigenous communities. The ripple effects of fire-related injuries and deaths can have a negative impact on individuals' physical and mental health, with associated stigmatization, disfigurement, and long-term disabilities. The economic toll associated with fire incidents is also significant, with damaged and destroyed homes and properties, increased fire response costs, rising insurance premiums, and loss of productivity.

2.3. Ending Fire among Indigenous Communities

Given the increased rates of fire mortality and hospitalization among Indigenous communities as compared to the general population, it is imperative to adopt a paradigm shift and implement fire safety and prevention solutions that are effective, sustainable, and tailored to the Indigenous cultural and environmental context. This necessitates the adoption of evidence-based and data-driven fire safety and prevention interventions that have been proven effective in curtailing the fire problem, and reducing fire-related morbidity and mortality.

Investing in fire system infrastructure and costly apparatus has demonstrated limited success in addressing the fire problem in various jurisdictions, particularly in terms of decreasing the frequency and severity of fire incidents, and reducing fire-related casualties within Indigenous communities. In consideration of the existing evidence, it is important to recognize that the best investment is to allocate funds, resources, and personnel towards effective and proven successful fire safety programs that prevent fires and mitigate injuries and fatalities.

While existing literature revealed a scarcity of fire prevention research among Indigenous communities, evidence from existing literature underscores the predictability and preventability of residential fire-related injuries and deaths, often applicable to Indigenous settings. Outcomes from various implemented fire safety programs globally confirm that combining multiple interventions enhances the effectiveness of such programs. A recent systematic review examined more than 3,000 unique records from the residential fire literature and analyzed nearly 80 articles of effective fire interventions (Al-Hajj et al., 2022). The review categorized these interventions based on the '4 E's of injury prevention' (4E's): Education (safety education to change behaviours), Enforcement (fire safety laws, policies, and regulations), Engineering (environmental

modifications, smoke alarm installation, safe products), and Engagement (safety promotion and stakeholders' engagement). Outcomes were classified into 1) Enhancement in safety knowledge, 2) Reduction in injury frequency and severity, 3) Decrease in fire injury hospitalization and death, 4) Increase in the safe environment, and 5) Decrease in healthcare costs. More importantly, the review highlighted the effectiveness of multi-faceted fire safety and prevention interventions (e.g., environmental modification combined with educational interventions) in substantially reducing fire incidents and associated casualties. The review confirmed the substantial impact of combined intervention on reducing injury morbidity and mortality rates, particularly when conducted in collaboration with community partners and implemented through in-person approaches like door-to-door visits to high-risk households in the community.

2.4. Residential Fires: Root Causes

The increased risk of residential fire among Indigenous communities globally can be attributed to multiple factors. To effectively address the burden of fire within these communities, a multi-pronged approach that examines and addresses the core causes of the fires is recommended.

The social-ecological model serves as a framework for understanding various risk and protective factors at the individual, relationship, community, and social levels. This model further provides essential information for developing and implementing comprehensive fire safety and prevention strategies that encompass all levels of the social-ecological model.

Understanding the interplay between the multiple risk and protective factors is crucial to address the root causes of residential fires among Indigenous communities. This involves enhancing individual safety knowledge and practices, improving community fire safety preparedness, ensuring access to necessary resources, and tackling housing and socio-economic disparities. Adopting this approach can effectively mitigate fire risks and promote fire safety among Indigenous populations.

2.4.1. The Social Ecological Model

	Individual	Relationship	Community	Society
Risk Factors	• Children <6 years • Older adults >65 years • Male sex • Mental or physical disability • Low educational attainment • Unemployed or underemployed • Lack of fire safety knowledge / skills • Smoker • Substance abuse/alcohol • Unsafe cooking practices • Arsonist	• Family structure (lone parents, young children <6 years, older adults >65) • Poor child supervision • Low socio-economic status • Over-crowded households • Housing condition – major repair needed. • High occupancy household • Rental households	• High-risk community characteristics • High level of community poverty • High unemployment • Older houses or buildings • Poorly maintained housing • Households lacking smoke alarms and fire extinguishers • High mobility rates • Poor emergency response systems	• Low economic support • Socio-economic disparity and marginalization • Cultural norms • Lack of building codes and regulations • Inadequate cooling and heating systems • Inadequate fire response resources (firefighter training, monitoring fire risks) • Limited access to resources (healthcare, education)
Protective Factors	• Individuals ages 6 – 65 years • Female sex • High educational attainment • Employed • Fire safety knowledge • Fire safety skills: safe behaviors (disposal smoking materials, safe storage of flammable products, fire escape plan); frequent smoke alarm checks	• Extended family support • Good child supervision • High socio-economic status • Practice safety skills and fire escape plans • Financial security • Safe behaviors (keeping matches away from young children, safe cooking, safe use of portable heaters)	• Households with functioning smoke alarms and fire extinguishers • Fire safety programs • Community support • Safe environment • Good emergency response systems	• Fire safety regulations • Policies to advocate for social equity • Building codes and regulations • Laws to address economic vulnerability and ensure protection from discrimination

3. NIFSC PROGRAMMING EVALUATION

An evaluation of the NIFSC community fire safety education programming was conducted to assess the evidence supporting each program, and to provide a rating of each program based upon the evidence.

3.1. Methods

The NIFSC community fire safety education programming evaluation was performed using the following steps:

1. The NIFSC fire safety programs were reviewed; each program was classified by design (i.e., education only, education and environment) based on program designs listed in Al-Hajj and colleagues (2022).

2. A search strategy was adapted from Al-Hajj and colleagues (2022); two versions were tested on PubMed, the strategy with the higher number of results was selected as it captured a broader scope of the literature.

   In addition, articles in PubMed and UBC Library were hand-searched; at least one additional article relevant to the fire-setter program was found.

3. Titles and abstracts of all articles were skimmed; relevant articles were flagged for follow-up. Some articles referenced an original study; in at least two cases the original study replaced an evaluation study as it provided information on more relevant outcomes. In addition, relevant articles that described a similar program and did not provide an evaluation were screened out.

4. The selected articles were classified by design (i.e., education only, education and environment) based on program designs listed in Al-Hajj and colleagues (2022).

5. Selected articles were matched to similar NIFSC fire safety programs; a short description was provided for each relevant study.

6. Study designs for relevant articles were categorized using the Centre for Evidence-based Medicine decision model: https://www.cebm.net/wp-content/uploads/2014/06/CEBM-study-design-april-20131.pdf

7. Systematic reviews, randomized controlled trials, pre-post designs, and cohort studies were assessed using the National Heart Lung Blood Institute (NHLBI) quality assessment scales https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools (Appendix A); each article received a score based on study design:
   - Pre-post designs: Score 0-4 = Poor; 5-8 = Fair; 9-11 = Good
   - Systematic review: Score 0-2 = Poor; 3-5 = Fair; 6-7 = Good

- Randomized controlled trials: Score 0-4 = Poor; 5-8 = Fair; 9-12 = Good
- Cohort studies: Score 0-5 = Poor; 6-10 = Fair; 11-14 = Good

An average rating was provided for NIFSC programs by study design, as needed.

8. A level of evidence (LOE) score was provided for each NIFSC program using criteria based on Ackley et al. (2008) https://libguides.winona.edu/ebptoolkit/Levels-Evidence , where Level I is the highest level of evidence, and Level VII is the lowest level of evidence.

Level of evidence	Description
Level I	Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trial) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
Level II	Evidence obtained from at least one well-designed RCT (e.g. large multi-site RCT).
Level III	Evidence obtained from well-designed controlled trials without randomization (i.e. quasi-experimental).
Level IV	Evidence from well-designed case-control or cohort studies.
Level V	Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
Level VI	Evidence from a single descriptive or qualitative study.
Level VII	Evidence from the opinion of authorities and/or reports of expert committees.

9. Comments were provided for each NIFSC program based on study quality and LOE.

10. A summary 5-star system was implemented based on the quality and level of evidence (i.e., 1 star = lowest evidence; 5 stars = highest evidence).

3.2. Results

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
114 Home Safety Assessment 	Provide recommendations to mitigate identified and potential hazards; the community administration is provided a summary report that identifies home safety trends and gaps.	All population Education & Environment	Averaged ratings: Systematic review: 5/7 Fair RCT: 4.5/12 Fair Descriptive studies: 5.5/11 Fair LOE: I Comment: There is fair quality evidence from an RCT, observational studies, and a systematic review that home safety assessments reduce fire incidence and fire-related injury, as well as increase safety behaviours and working smoke alarms in households.

Evidence:

Kendrick et al. (2012): In a systematic review of 98 articles on home safety education and provision of safety equipment, home safety Interventions were effective when delivered in home and increase proportion of families with safe hot water temperatures, working smoke alarms, fire escape plan and electrical safety. May also reduce injury rates.[17]
Systematic review
Rating: 5/7 Fair

King et al. (2001): In a multicenter randomized control trial of a home visit for childhood injury, participants who received a home visit reported fewer injury visits to the doctor at four-month follow-up. [18]
Randomized controlled trial
Rating: 6/12 Fair

Schwarz et al. (1993): In an evaluation of the Safe Block Project in an urban African-American community, the program reported larger proportion of families with working smoke detectors at follow-up in the intervention group, but no differences on home hazards between groups.[19]
Non-randomized controlled trial
Rating: 3/12 Poor

Arch et al. (2013): In an evaluation of home safety assessments in England in two periods between 2002-2011, a reduced rate of incidental home fires and fire injuries, but not containment of fires to room of origin, was reported after the intervention.[16]

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
	Observational descriptive study Rating: 5/11 Fair Forster-Cox et al. (2010): In a data analysis of the Environmental Health/Home safety Education Project at the U.S.-Mexico border between 2002-2005, the program reported an increase in homes having working smoke alarms.[20] Observational descriptive study Rating: 6/11 Fair		
110 Smoke Alarm and Carbon Monoxide Installation 	Assist a community or fire department to implement a smoke and carbon monoxide alarm installation program. The program educates involved participants with the proper installation, use, and maintenance of residential smoke alarms and carbon monoxide detectors.	All population Education & Environment	Averaged ratings: RCTs: 7/12 Fair Cohort studies: 5.67/14 Fair Descriptive study: 5/11 Fair LOE: II Comment: There is fair quality evidence from observational studies and an RCT that smoke alarm installation and education programs reduce fire-related injury, death, and fire incidence. One well-designed RCT found that giving out smoke alarms did not reduce fire-related injuries, death, or fire incidence.
Evidence:	Clare et al. (2012): In a cluster randomized controlled study, a 2008 firefighter-delivered door-to-door fire-prevention education and smoke alarm initiative in Surrey reported a reduction overall in fires, and significantly larger reduction of fire incidence in intervention group versus control.[9] Randomized controlled trial Rating: 5/12 Fair DiGuiseppi et al. (2002): -In a cluster randomized controlled trial, it was found that giving out smoke alarms did not reduce fire-related injuries, deaths and fires responded by fire departments.[10] Randomized controlled trial Rating: 9/12 Good		

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
	Falcone et al. (2016): Individuals who received a home safety bundle, including, smoke detector, and education experienced 59% fewer injuries versus control group over a two-year period.[8] Observational analytical cohort study Rating: 6/14 Fair Istre et al. (2014): In a cohort approach, high-risk houses of Dallas, Texas who received smoke alarm programme experienced a 68% lower fire-related death and injury rate than non-programme houses.[7] Observational analytical cohort study Rating: 5/14 Poor Mallonee et al. (1996): In an evaluation of the Oklahoma City Smoke Alarm Project, the residential fire injury rate went down about 80% in the intervention group while a small increase the rest of Oklahoma City in four years after the intervention.[12] Observational analytical cohort study Rating: 6/14 Fair Haddix et al. (2001): In a cost effectiveness analysis of a smoke alarm giveaway in 1990 Oklahoma City, Oklahoma, an estimated 20 fatal injuries/24 non-fatal injuries were prevented, with a discounted cost of $531,000 and total discounted net savings were $1 million in five years post-intervention.[11] Observational descriptive study Rating: 5/11 Fair		
111 Home Escape Planning 	Educate both adults and children on the awareness, planning, use, and practice of home escape plans.	Parents & Children Education	Ratings: RCT: 6/12 Fair Descriptive study: 5/11 Fair LOE: II Comment: There is fair quality evidence from an observational study that an educational program improves fire escape planning. An RCT found that an educational intervention led the intervention group to report more behaviours for escaping from fires.

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
Evidence:	Deave et al. (2017): In a cluster randomized controlled trial of a fire-prevention briefing, there was no difference between the briefing group and control on the 1112 participants possessing a fire escape plan. More families who were briefed reported more behaviours for escaping from fires.[14] Randomized controlled trial Rating: 6/12 Fair Furman et al (2021): In an evaluation of a mobile safety center, the 50 participants were more likely to have fire escape plan at 4 weeks after the visit to the center.[13] Observational descriptive study Rating: 5/11 Fair		
109 Electrical Safety 	Focus on basic prevention activities specific to common electrical hazards.	All population Education	Rating: 7/12 Fair LOE: III Comment: There is fair quality evidence from an RCT that education including electrical safety improves fire preparedness in homes.
Evidence:	Joffe et al. (2019): In a controlled educational intervention focusing on fire preparedness, the sample from the United States showed significant improvement in fire preparedness, including electrical safety, at 12-month follow-up.[6] Randomized controlled trial Rating: 7/12 Fair		
107 Cooking Safety 	Educate adults with safe cooking tips, dangers of cooking-related fires, and basic kitchen safety based on resources designed and maintained by NFPA	Adults Education	Averaged rating: 4.67/11 Fair LOE: VI Comment: There is fair quality evidence from observational studies that cooking safety education improves knowledge among parents and older adults. No studies on fire-injury, death, or fire incidence were found.

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
Evidence:	Lehna et al. (2017): -In a pre-test, post-test and follow-up study on home fire safety knowledge, 12 urban older adults from Wales showed improvements on cooking safety scores from baseline to after watching a video and from baseline to 2-week follow-up.[3] Observational descriptive study Rating: 4/11 Poor Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 110 urban older adults from Kentucky, either home bound or community-based, showed improvements on knowledge scores, which included cooking safety, from baseline to after watching a video and from baseline to 2-week follow-up, without differences between groups.[4] Observational descriptive study Rating: 5/11 Fair Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 103 parents of newborns from the United States, showed improvements on knowledge scores, which included cooking safety, from baseline to after watching a video and from baseline to 2-week follow-up.[5] Observational descriptive study Rating: 5/11 Fair		
108 Heating Safety in the Community ★★★	Educate adults with hazards of heating sources within the home	All population Education	Averaged rating: 4.67/11 Fair LOE: VI Comment: There is fair quality evidence from observational studies that heating safety education improves knowledge among parents and older adults. No studies on fire-injury, death and fire incidence were found.
Evidence:	Lehna et al. (2017): In a pre-test, post-test and follow-up study on home fire safety knowledge, 12 urban older adults from Wales showed mixed results on heating safety scores from baseline to after watching a video and from baseline to 2-week follow-up. [3] Observational descriptive study Rating: 4/11 Poor Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 110 urban older adults from Kentucky, either home		

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
	bound or community-based, showed improvements on knowledge scores, which included heating safety, from baseline to after watching a video and from baseline to 2-week follow-up, without differences between groups.[4] Observational descriptive study Rating: 5/11 Fair Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 103 parents of newborns from the United States, showed improvements on knowledge scores, which included heating safety, from baseline to after watching a video and from baseline to 2-week follow-up. [5] Observational descriptive study Rating: 5/11 Fair		
112 Senior and Elder Safety ★★★	Educate on fall prevention and fire safety for seniors. The program covers senior living, common hazards and prevention, and fire-related occurrences.	Seniors & caregivers Education	Averaged ratings:4.67/11 Fair LOE: VI Comment: There is fair quality evidence from observational studies that fire safety education for older adults improves fire safety knowledge. No studies on fire-injury, death, or fire incidence were found.
Evidence:	Lehna et al. (2017): In a pre-test, post-test and follow-up study on home fire safety knowledge, 12 urban older adults from Wales showed improvements on knowledge scores from baseline to after watching a video and from baseline to 2-week follow-up. 3 Observational descriptive study Rating: 4/11 Poor Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 110 urban older adults from Kentucky, either home bound or community-based, showed improvements on knowledge scores from baseline to after watching a video and from baseline to 2-week follow-up, without differences between groups.[4] Observational descriptive study Rating: 5/11 Fair Leahy et al. (2012): Most older adults found information new, helpful and intended to use.[15] Observational descriptive study		

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
	Rating: 5/11 Fair		
113 Multi-Generation Residence Safety ★★★	Educate all demographics living within one residence. The program focuses on hazards associated with multiple generations within one household and combines other age-specific programs using resources from NFPA and other providers.	All population Education	Averaged ratings: 4.67/11 Fair LOE: VI Comment: There is fair quality evidence from observational studies that fire safety education for specific demographics improves fire safety knowledge. No studies on fire-injury, death, or fire incidence were found.
Evidence:	Lehna et al. (2017): In a pre-test, post-test and follow-up study on home fire safety knowledge, 12 urban older adults from Wales showed improvements on knowledge scores from baseline to after watching a video and from baseline to 2-week follow-up.[3] Observational descriptive study Rating: 4/11 Poor Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 110 urban older adults from Kentucky, either home bound or community-based, showed improvements on knowledge scores from baseline to after watching a video and from baseline to 2-week follow-up, without differences between groups.[4] Observational descriptive study Rating: 5/11 Fair Leahy et al. (2012): In an evaluation of a community-based fire initiative for New York City older adults, 2590 older adults received education during community-based health fairs and most reported learning new information, found the information helpful and intended to apply the information.[15] Observational descriptive study Rating: 5/11 Fair		
115 Wood Heat Safety ★★★	Shown how to remove or reduce the risk with their heating units, focusing on wood heating appliances safety.	All population Education	Averaged ratings 4.67/11 Fair LOE: VI Comment: There is fair quality evidence from observational

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
			studies that fire education programs improve heating safety knowledge. One poor quality observational study found mixed results for heating safety knowledge among older adults following education.
Evidence:	Lehna et al. (2017): In a pre-test, post-test and follow-up study on home fire safety knowledge, 12 urban older adults from Wales showed mixed results on heating safety scores from baseline to after watching a video and from baseline to 2-week follow-up.[3] Observational descriptive study Rating: 4/11 Poor Lehna et al. (2015): - In a pre-test, post-test and follow-up study on home fire safety knowledge, 110 urban older adults from Kentucky, either home bound or community-based, showed improvements on knowledge scores, which included heating safety from baseline to after watching a video and from baseline to 2-week follow-up, without differences between groups.[4] Observational descriptive study Rating: 5/11 Fair Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 103 parents of newborns from the United States, showed improvements on knowledge scores, which included heating safety, from baseline to after watching a video and from baseline to 2-week follow-up.[5] Observational descriptive study Rating: 5/11 Fair		
116 Wood Heat Maintenance ★★★	Focus on the proper maintenance for wood heating units.	Home occupants & building maintenance staff Education	Averaged rating: 4.67/11 Fair LOE: VI Comment: There is fair quality evidence from observational studies that similar fire education programs improve heating safety knowledge. One poor quality observational study found mixed results for heating safety knowledge among older adults following education.

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
Evidence:	Lehna et al. (2017): In a pre-test, post-test and follow-up study on home fire safety knowledge, 12 urban older adults from Wales showed mixed results on heating safety scores from baseline to after watching a video and from baseline to 2-week follow-up.[3] Observational descriptive study Rating: 4/11 Poor Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 110 urban older adults from Kentucky, either home bound or community-based, showed improvements on knowledge scores, which included heating safety from baseline to after watching a video and from baseline to 2-week follow-up, without differences between groups.[4] Observational descriptive study Rating: 5/11 Fair Lehna et al. (2015): In a pre-test, post-test and follow-up study on home fire safety knowledge, 103 parents of newborns from the United States, showed improvements on knowledge scores, which included heating safety, from baseline to after watching a video and from baseline to 2-week follow-up.[5] Observational descriptive study Rating: 5/11 Fair		
101 Youth Fire Setter Intervention Awareness ★★	Identify the specialized resources and community roles required to effectively utilize the YFSI program	Youth Education	Averaged rating: 4/11 Poor LOE: VI Comment: There is poor quality evidence from observational studies that educational fire-setting interventions reduce arson re-offenses, but do not reduce general re-offenses among youth fire setters.
Evidence:	Lambie et al. (2013): In a ten- year follow-up to the New Zealand Fire Awareness and Intervention Program, child and adolescent fire-setters reported 2% arson re-offenses and 59% re-offenses over the time period.[1] Observational Descriptive study Rating: 6/11 Fair		

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
	Bennett et al. (2004): 42 children fire-setters were assigned to the Burn Education Awareness Recognition and Support program (BEARS) in 2002 and as of 2004 no children have performed fire-setting behvaiours.[2] Observational Descriptive study Rating: 2/11 Poor		
102 Getting to Know Fire ★	Introduce community fire departments / fire prevention resources to the BC OFC Getting to Know Fire curriculum and how to effectively use the program.	All population Education	No evaluation studies for similar or related programs. Quality assessment not performed. LOE: VII
103 Learn Not to Burn ★	Introduce community fire departments / fire prevention resources to the NFPA Learn Not to Burn curriculum and how to effectively use the program	All population Education	No evaluation studies for similar or related programs. Quality assessment not performed. LOE: VII
104 Close Before You Doze ★	Focus on closing bedroom doors while sleeping to reduce risks associated	All population Education	No evaluation studies for similar or related programs. Quality assessment not performed. LOE: VII
106 Sparky in the Community ★	Provide instruction on how to use Sparky and lesson plans	All population Education	No evaluation studies for similar or related programs. Quality assessment not performed. LOE: VII
117 Seasonal Safety ★	Focus on known and emerging issues pertaining to seasonal fire safety issues, using existing media platforms or sole delivery in communities.	All population Education	No evaluation studies for similar or related programs. Quality assessment not performed. LOE: VII
118 Fire Smart & Indigenous Ecology	Utilize the FireSmart Canada program and Indigenous focused	All population Education	No evaluation studies for similar or related programs.

NIFSC Fire Safety Program	Program Component	Target Population & Approach	Evidence-based Rating
★	ecology to help communities mitigate the impact of wildland fires.		Quality assessment not performed. LOE: VII
119 Introduction to Fire and Life Safety Educator ★	Provide the foundation for participants to advance into certified Fire Life Safety Educator programs.	Firefighters, teachers & safety officers Education	No evaluation studies for similar or related programs. Quality assessment not performed. LOE: VII
120 Traditional Fire Knowledge ★	Focus on cultural and traditional land management methods.	All population Education	No evaluation studies for similar or related programs. Quality assessment not performed. LOE: VII

3.2.1. Evidence References

1. Lambie I, Ioane J, Randell I, Seymour F. Offending behaviours of child and adolescent firesetters over a 10-year follow-up. J Child Psychol Psychiatry. 2013 Dec;54(12):1295-307. doi: 10.1111/jcpp.12126. Epub 2013 Aug 9. PMID: 23927002.

2. Bennett BK, Gamelli RL, Duchene RC, Atkocaitis D, Plunkett JA. Burn Education Awareness Recognition and Support (BEARS): a community-based juvenile firesetters assessment and treatment program. J Burn Care Rehabil. 2004 May-Jun;25(3):324-7. doi: 10.1097/01.bcr.0000124748.35135.a2. PMID: 15273475.

3. Lehna C, Merrell J, Furmanek S, Twyman S. Home fire safety intervention pilot with urban older adults living in Wales. Burns. 2017 Feb;43(1):69-75. doi: 10.1016/j.burns.2016.06.025. Epub 2016 Aug 27. PMID: 27575674.

4. Lehna C, Coty MB, Fahey E, Williams J, Scrivener D, Wishnia G, Myers J. Intervention study for changes in home fire safety knowledge in urban older adults. Burns. 2015 Sep;41(6):1205-11. doi: 10.1016/j.burns.2015.02.012. Epub 2015 Jun 15. PMID: 26088150.

5. Lehna C, Fahey E, Janes EG, Rengers S, Williams J, Scrivener D, Myers J. Home fire safety education for parents of newborns. Burns. 2015 Sep;41(6):1199-204. doi: 10.1016/j.burns.2015.02.009. Epub 2015 Mar 25. PMID: 25816967.

6. Joffe H, Potts HWW, Rossetto T, Doğulu C, Gul E, Perez-Fuentes G. The Fix-it face-to-face intervention increases multihazard household preparedness cross-culturally. Nat Hum Behav. 2019 May;3(5):453-461. doi: 10.1038/s41562-019-0563-0. Epub 2019 Apr 1. PMID: 30936428.

7. Istre GR, McCoy MA, Moore BJ, Roper C, Stephens-Stidham S, Barnard JJ, Carlin DK, Stowe M, Anderson RJ. Preventing deaths and injuries from house fires: an outcome evaluation of a community-based smoke alarm installation programme. Inj Prev. 2014 Apr;20(2):97-102. doi: 10.1136/injuryprev-2013-040823. Epub 2013 Jul 19. PMID: 23873498.

8. Falcone RA Jr, Edmunds P, Lee E, Gardner D, Price K, Gittelman M, Pomerantz W, Besl J, Madhavan G, Phelan KJ. Volunteer driven home safety intervention results in significant reduction in pediatric injuries: A model for community based injury reduction. J Pediatr Surg. 2016 Jul;51(7):1162-9. doi: 10.1016/j.jpedsurg.2015.11.020. Epub 2015 Dec 8. PMID: 26792663.

9. Clare J, Garis L, Plecas D, Jennings C. Reduced frequency and severity of residential fires following delivery of fire prevention education by on-duty fire fighters: cluster randomized controlled study. J Safety Res. 2012 Apr;43(2):123-8. doi: 10.1016/j.jsr.2012.03.003. Epub 2012 Apr 13. PMID: 22709997.

10. DiGuiseppi C, Roberts I, Wade A, Sculpher M, Edwards P, Godward C, Pan H, Slater S. Incidence of fires and related injuries after giving out free smoke alarms: cluster randomised controlled trial. BMJ. 2002 Nov 2;325(7371):995. doi: 10.1136/bmj.325.7371.995. PMID: 12411355; PMCID: PMC131023.

11. Haddix AC, Mallonee S, Waxweiler R, Douglas MR. Cost effectiveness analysis of a smoke alarm giveaway program in Oklahoma City, Oklahoma. Inj Prev. 2001 Dec;7(4):276-81. doi: 10.1136/ip.7.4.276. PMID: 11770651; PMCID: PMC1730770.

12. Mallonee S, Istre GR, Rosenberg M, Reddish-Douglas M, Jordan F, Silverstein P, Tunell W. Surveillance and prevention of residential-fire injuries. N Engl J Med. 1996 Jul 4;335(1):27-31. doi: 10.1056/NEJM199607043350106. PMID: 8637539.

13. Furman L, Strotmeyer S, Vitale C, Gaines BA. Evaluation of a mobile safety center's impact on pediatric home safety behaviors. BMC Public Health. 2021 Jun 8;21(1):1095. doi: 10.1186/s12889-021-11073-4. PMID: 34098915; PMCID: PMC8184352.

14. Deave T, Hawkins A, Kumar A, Hayes M, Cooper N, Watson M, Ablewhite J, Coupland C, Sutton A, Majsak-Newman G, McDaid L, Goodenough T, Beckett K, McColl E, Reading R, Kendrick D. Evaluating implementation of a fire-prevention injury prevention briefing in children's centres:

Cluster randomised controlled trial. PLoS One. 2017 Mar 24;12(3):e0172584. doi: 10.1371/journal.pone.0172584. PMID: 28339460; PMCID: PMC5365108.

15. Leahy NE, Sessler KA, Baggott K, Laverde L, Rabbitts A, Yurt RW. Engaging older adults in burn prevention education: results of a community-based urban initiative. J Burn Care Res. 2012 May-Jun;33(3):e141-6. doi: 10.1097/BCR.0b013e3182335a14. PMID: 22561308.

16. Arch BN, Thurston MN. An assessment of the impact of home safety assessments on fires and fire-related injuries: a case study of Cheshire Fire and Rescue Service. J Public Health (Oxf). 2013 Jun;35(2):200-5. doi: 10.1093/pubmed/fds068. Epub 2012 Aug 21. PMID: 22915771.

17. Kendrick D, Young B, Mason-Jones AJ, Ilyas N, Achana FA, Cooper NJ, Hubbard SJ, Sutton AJ, Smith S, Wynn P, Mulvaney C, Watson MC, Coupland C. Home safety education and provision of safety equipment for injury prevention. Cochrane Database Syst Rev. 2012 Sep 12;2012(9):CD005014. doi: 10.1002/14651858.CD005014.pub3. PMID: 22972081; PMCID: PMC9758703.

18. King WJ, Klassen TP, LeBlanc J, Bernard-Bonnin AC, Robitaille Y, Pham B, Coyle D, Tenenbein M, Pless IB. The effectiveness of a home visit to prevent childhood injury. Pediatrics. 2001 Aug;108(2):382-8. doi: 10.1542/peds.108.2.382. PMID: 11483803.

19. Schwarz DF, Grisso JA, Miles C, Holmes JH, Sutton RL. An injury prevention program in an urban African-American community. Am J Public Health. 1993 May;83(5):675-80. doi: 10.2105/ajph.83.5.675. PMID: 8484447; PMCID: PMC1694716.

20. Forster-Cox SC, Mangadu T, Jacquez B, Fullerton L. The Environmental Health/Home Safety Education Project: a successful and practical U.S.-Mexico border initiative. Health Promot Pract. 2010 May;11(3):325-31. doi: 10.1177/1524839909341026. Epub 2009 Oct 20. PMID: 19843700.

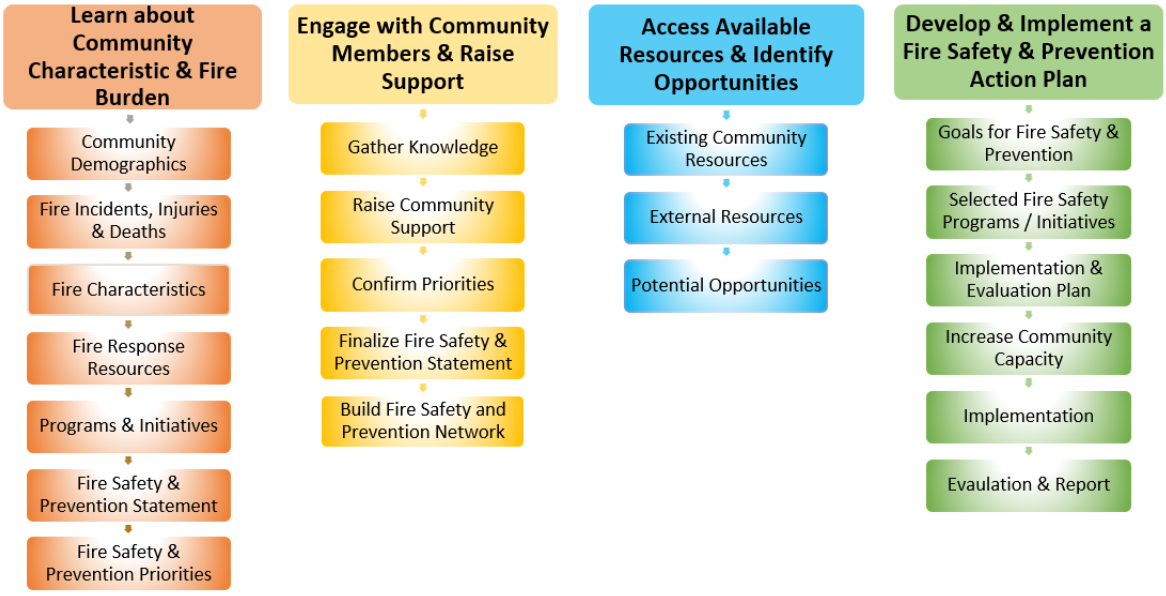
4. LEAD COMMUNITY TOOLKIT FOR FIRE SAFETY AND PREVENTION

The LEAD Fire Safety and Prevention Community Toolkit is designed for Indigenous and small communities interested in reducing the number of fire incidents and the associated injuries and deaths (Turcotte et al, 2023).

4.1. LEAD Strategies

The LEAD toolkit is built upon four main strategies, inspired by the best available evidence and practices from a review of the extensive fire prevention literature (Al-Hajj et al., 2022).

Learn about community characteristics and fire burden
Engage with community members and build support
Assess available resources and identify opportunities
Develop and implement fire safety and prevention action plan



4.2. Toolkit Use

Based on the LEAD strategies, the toolkit is a step-by-step workbook to guide the process from assessing community needs, to raising community support, to planning evidence-based and data-driven fire safety and prevention activities, to implementing the action plan and evaluating the results. Best practices are those interventions are evidence-based, cost-effective, and efficient in reducing the frequency and severity of fire.

Each LEAD strategy encompasses core components and targeted activities to guide the development of an action plan and to facilitate the adaptation and integration of fire safety and prevention approaches and programs to Indigenous settings.

4.3. Intended Users

The intended users of the toolkit are community leaders and stakeholders in fire safety and prevention, and may include:

- Chief / Reeve / Mayor and Council
- Fire Prevention Officer / Fire Chief
- Housing (e.g., Manager / Director for Operations and Maintenance)
- Emergency Response Network
- Police Chief / RCMP
- Schools and Educational Institutions
- Insurance Agency
- Justice
- Community leaders and organizations
- Others, as identified by the community

4.4. Indicators

The LEAD toolkit provides a set of indicators to document baseline community fire burden and prevention activities, and to evaluate the implementation, short-term outcomes, and long-term impact of the fire safety and prevention action plan. This set of indicators includes:

1. Number of fire incidents (over a defined period of time)
2. Number of fire-related injuries (over a defined period of time)
3. Number of fire-related deaths (over a defined period of time)
4. Number of fire safety and prevention programs or initiatives implemented (over a defined period of time)

5. Number of smoke alarms installed / inspected (over a defined period of time)
6. Number of home safety checks completed (over a defined period of time)
7. Number of community members trained (over a defined period of time)

4.5. Components

The LEAD components include strategies and associated activities to plan and implement fire safety and prevention activity within the community to enhance the safety and well-being of the community. Each component outlines the aim, approaches, sources of information, and ways of gathering information.

Strategy	Aim	Approach	Sources of Information	Ways of Gathering Information
Learn	*To understand community demographics and characteristics, and to assess the existing fire burden and existing fire safety / prevention programming* *To describe the ways in which the situational knowledge will be used to understand how you can best engage your community in the process ahead*	Document: • Community demographics • Baseline measurements of fire incidents, injuries, and deaths • Where and how fires occur in community • Existing fire response resources • Existing fire safety and prevention programs, initiatives, and resources Draft: • Fire safety and prevention statement • Priorities for fire safety and prevention	Band Office Fire Prevention Officer / Fire Chief Community Leadership	Key Participant Interviews Key Participant Survey
Engage	*To engage community fire safety knowledge users and knowledge keepers, understand your community priorities, develop and strengthen your community fire prevention capacity, and raise community awareness*	• Gather situational knowledge about fires, and fire safety and prevention • Build community support for a fire safety / prevention initiative	Community at large Community fire safety and prevention knowledge users and keepers	Community Gatherings Community Survey Stakeholder meeting

Strategy	Aim	Approach	Sources of Information	Ways of Gathering Information
		• Confirm the priorities for fire safety and prevention • Finalize the community fire safety and prevention statement • Build a network fire safety and prevention knowledge users and keepers		
Assess	*To access available resources both within and outside of community, addressing priorities for action, and identifying opportunities*	• Review and assess available community resources • Review and assess available external resources • Identify potential opportunities	Community priorities for fire safety and prevention List of community programs and initiatives List of external programs	From *Learn & Engage*
Develop & Implement	*To develop a community Fire Safety and Prevention action plan, and its key components: public education and equipment/ environmental modifications* *Inherent in the implementation:* • *consideration of funding and sustainability* • *an implementation plan* • *an evaluation plan and reporting*	• Set goals for fire safety and prevention • Select fire safety and prevention actions • Develop an implementation & evaluation plan • Implement the selected program(s) / initiative(s) • Evaluate the program(s) / initiative(s) implementation and outcomes • Document the work in a progress report	SWOT analysis List of preferred community programs & initiatives List of preferred external programs	From *Assess*

5. CONCLUSION

Adopting existing and proven effective interventions that have been successfully implemented globally is an effective and efficient way to reduce the devastating impact of residential fires within Indigenous communities. This evaluation of the NIFSC community fire safety education programming rated each program using a 5-star system based upon the research evidence. The highest rated programs include Home Safety Assessment, Smoke Alarm and Carbon Monoxide Installation, Home Escape Planning, and Electrical Safety.

The LEAD toolkit was specifically designed to support communities to reduce fire-related mortality and morbidity. Each strategy within the LEAD toolkit is inspired by international evidence and successful interventions implemented globally to address the substantial burden of residential fires. By adopting the LEAD strategies, communities will develop context-sensitive and culturally appropriate fire prevention programs that are both effective and sustainable.

6. RESOURCES

City of Surrey HomeSafe Program

https://www.surrey.ca/about-surrey/emergency-services/surrey-fire-service/smoke-alarms

US Fire Prevention Week

https://www.nfpa.org/fpw

Fire Safety Program Toolkit.

A comprehensive resource for fire safety educators. Centers for Disease Control and Prevention (CDC), National Center for Injury Prevention and Control (NCIPC).

https://www.usfa.fema.gov/downloads/pdf/publications/fire_safety_program_toolkit.pdf

Simple Steps: Simple Steps

A workbook to help you plan a Community Literacy Project. Yukon Literacy Coalition.
https://www.maine.gov/doe/sites/maine.gov.doe/files/inline-files/simple%20steps.pdf

Focus On

Logic model–A planning and evaluation tool. Public Health Ontario.

https://www.publichealthontario.ca/-/media/documents/f/2016/focus-on-logic-model.pdf?la=en

7. REFERENCES

Afrin, S., & Garcia-Menendez, F. (2021). Potential impacts of prescribed fire smoke on public health and socially vulnerable populations in a Southeastern US state. *Science of The Total Environment*, *794*, 148712.

Al-Hajj, S., Desapriya, E., Pawliuk, C., Garis, L., & Pike, I. (2022). Interventions for preventing residential fires in vulnerable neighbourhoods and Indigenous communities: a systematic review of the literature. *International journal of environmental research and public health*, *19*(9), 5434.

Beaulieu, E., Smith, J., Zheng, A., & Pike, I. (2020). The geographic and demographic distribution of residential fires, related injuries, and deaths in four Canadian provinces. *Canadian journal of public health*, *111*, 107-116.

Chernichko, L., Saunders, L. D., & Tough, S. (1993). Unintentional house fire deaths in Alberta 1985-1990: a population study. *Canadian journal of public health= Revue canadienne de sante publique*, *84*(5), 317-320.

Duncanson, M., Woodward, A., Reid, P., & Langley, J. (2000). *Unintentional house fire deaths in New Zealand 1991-1998*. National Emergency Training Center.

Feir, D., & Akee, R. (2019). First Peoples lost: Determining the state of status First Nations mortality in Canada using administrative data. *Canadian Journal of Economics/Revue canadienne d'économique*, *52*(2), 490-525.

Forjuoh, S. N. (2006). Burns in low-and middle-income countries: a review of available literature on descriptive epidemiology, risk factors, treatment, and prevention. *Burns*, *32*(5), 529-537.

Garis, L., Hughan, S., McCormick, A., & Maxim, P. (2016). *Targeted Residential Fire Risk Reduction*. Centre for Public Safety and Criminal Justice Research, University of the ….

Ghassempour, N., Tannous, W. K., Agho, K. E., Avsar, G., & Harvey, L. A. (2022). Comparison of causes, characteristics and consequences of residential fires in social and non-social housing dwellings in New South Wales, Australia. *Preventive medicine reports*, *28*, 101860.

Gilbert, M., Dawar, M., & Armour, R. (2006). Fire-related deaths among Aboriginal people in British Columbia, 1991–2001. *Canadian journal of public health*, *97*, 300-304.

Gilbert, S. W., & Butry, D. T. (2018). Identifying vulnerable populations to death and injuries from residential fires. *Injury prevention*, *24*(5), 358-364.

James, S. L., Lucchesi, L. R., Bisignano, C., Castle, C. D., Dingels, Z. V., Fox, J. T., Hamilton, E. B., Henry, N. J., McCracken, D., & Roberts, N. L. (2020). Epidemiology of injuries from fire, heat and hot substances: global, regional and national morbidity and mortality estimates from the Global Burden of Disease 2017 study. *Injury prevention*, *26*(Suppl 2), i36-i45.

Jennings, C. R. (2013). Social and economic characteristics as determinants of residential fire risk in urban neighborhoods: A review of the literature. *Fire Safety Journal*, *62*, 13-19.

Kumar, M. B. (2021). *Mortality and morbidity related to fire, burns and carbon monoxide poisoning among First Nations people, Métis and Inuit: Findings from the 2011 Canadian Census Health and Environment Cohort*. Statistics Canada= Statistique Canada.

Peck, M. D. (2011). Epidemiology of burns throughout the world. Part I: Distribution and risk factors. *Burns*, *37*(7), 1087-1100.

Runefors, M., Johansson, N., & van Hees, P. (2017). The effectiveness of specific fire prevention measures for different population groups. *Fire Safety Journal*, *91*, 1044-1050.

Schwarz, D. F., Grisso, J. A., Miles, C., Holmes, J. H., & Sutton, R. L. (1993). An injury prevention program in an urban African-American community. *American Journal of Public Health*, *83*(5), 675-680.

Setien, M. A., Han, D., Zuniga, G. C., Mier, N., Lucio, R. L., & Treviño, L. (2014). Does injury prevention education initiate household changes in a Spanish-speaking minority population? *Journal of community health*, *39*, 167-172.

Smolle, C., Cambiaso-Daniel, J., Forbes, A. A., Wurzer, P., Hundeshagen, G., Branski, L. K., Huss, F., & Kamolz, L.-P. (2017). Recent trends in burn epidemiology worldwide: a systematic review. *Burns*, *43*(2), 249-257.

Stevenson, M. R., Wallace, L. D., Harrison, J., Moller, J., & Smith, R. J. (1998). At risk in two worlds: injury mortality among indigenous people in the US and Australia, 1990–92. *Australian and New Zealand journal of public health*, *22*(6), 641-644.

Turcotte, K., Al-Hajj, S., Smith, B., Garis, L., Pike, I. (2023) The LEAD Fire Safety Community Toolkit: A workbook for planning fire safety and prevention initiatives in community. A resource by the BC Injury Research and Prevention Unit, for the National Indigenous Fire Safety Council Project: Vancouver, BC.

Turcotte, K, Karmali, S., Bauer, M., Pike, I.(2022) Developing an Indigenous process to identify and respond to community fire safety and prevention knowledge that translates into a research framework. A report by the BC Injury Research and Prevention Unit, for the National Indigenous Fire Safety Council: Vancouver, BC.

Turner, S. L., Johnson, R. D., Weightman, A. L., Rodgers, S. E., Arthur, G., Bailey, R., & Lyons, R. A. (2017). Risk factors associated with unintentional house fire incidents, injuries and deaths in high-income countries: a systematic review. *Injury prevention*, *23*(2), 131-137.

Vos, T., Lim, S. S., Abbafati, C., Abbas, K. M., Abbasi, M., Abbasifard, M., Abbasi-Kangevari, M., Abbastabar, H., Abd-Allah, F., & Abdelalim, A. (2020). Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, *396*(10258), 1204-1222.

8. Appendix A: Quality Assessment and Study Design

Study design identification adapted from
https://www.cebm.net/wp-content/uploads/2014/06/CEBM-study-design-april-20131.pdf

Quality Assessment scales adapted from
https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools

1. Lambie I, Ioane J, Randell I, Seymour F. Offending behaviours of child and adolescent firesetters over a 10-year follow-up. J Child Psychol Psychiatry. 2013 Dec;54(12):1295-307. doi: 10.1111/jcpp.12126. Epub 2013 Aug 9. PMID: 23927002.

    1) Was the study question or objective clearly stated? **Yes**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **No**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **Yes**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **Yes**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **No**

    Rating: 6/11 Fair
    Study design: Observational Descriptive Study

2. Bennett BK, Gamelli RL, Duchene RC, Atkocaitis D, Plunkett JA. Burn Education Awareness Recognition and Support (BEARS): a community-based juvenile firesetters assessment and treatment program. J Burn Care Rehabil. 2004 May-Jun;25(3):324-7. doi: 10.1097/01.bcr.0000124748.35135.a2. PMID: 15273475.

    1) Was the study question or objective clearly stated? **No**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **No**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **No**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **Cannot determine (CD)**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **No**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **No**

    Rating: 2/11 Poor
    Study design: Observational Descriptive Study

3. Lehna C, Merrell J, Furmanek S, Twyman S. Home fire safety intervention pilot with urban older adults living in Wales. Burns. 2017 Feb;43(1):69-75. doi: 10.1016/j.burns.2016.06.025. Epub 2016 Aug 27. PMID: 27575674.

    1) Was the study question or objective clearly stated? **Yes**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **No**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **No**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not Reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **NR**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **Yes**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **No**

    Rating: 4/11 Poor
    Study design: Observational Descriptive Study

4. Lehna C, Coty MB, Fahey E, Williams J, Scrivener D, Wishnia G, Myers J. Intervention study for changes in home fire safety knowledge in urban older adults. Burns. 2015 Sep;41(6):1205-11. doi: 10.1016/j.burns.2015.02.012. Epub 2015 Jun 15. PMID: 26088150.

    1) Was the study question or objective clearly stated? **Yes**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **No**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not Reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **NR**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **Yes**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **No**

    Rating: 5/11 Fair
    Study design: Observational Descriptive Study

5. Lehna C, Fahey E, Janes EG, Rengers S, Williams J, Scrivener D, Myers J. Home fire safety education for parents of newborns. Burns. 2015 Sep;41(6):1199-204. doi: 10.1016/j.burns.2015.02.009. Epub 2015 Mar 25. PMID: 25816967.

    1) Was the study question or objective clearly stated? **Yes**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **No**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not Reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **NR**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **Yes**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **No**

    Rating: 5/11 Fair
    Study design: Observational Descriptive Study

6. Joffe H, Potts HWW, Rossetto T, Doğulu C, Gul E, Perez-Fuentes G. The Fix-it face-to-face intervention increases multihazard household preparedness cross-culturally. Nat Hum Behav. 2019 May;3(5):453-461. doi: 10.1038/s41562-019-0563-0. Epub 2019 Apr 1. PMID: 30936428.

    1) Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT? **Cannot determine (CD)**

    2) Was the method of randomization adequate (i.e., use of randomly generated assignment)? **Yes**

    3) Was the intervention allocation concealed (so that assignments could not be predicted)? **Not reported (NR)**

    4) Were study participants and providers blinded to the group assignment? **CD**

    5) Were the people assessing the outcomes blinded to the participants' group assignments? **Yes**

    6) Were the groups similar baseline on important characteristics that could affect outcomes (i.e., demographics, risk factors, co-morbid conditions) **Yes**

    7) Was the overall drop-out rate from the study at endpoint 20% or lower? **No**

    8) Was the differential drop-out rate (between groups) at endpoint 15 percentage points or lower? **Yes**

    9) Was there high adherence to the intervention protocols in the intervention group? **CD**

    10) Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants? **Yes**

    11) Was the sample size sufficiently large enough to be able to detect a difference in the main outcome between groups with at least 80% power? **Yes**

    12) Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)? **Yes**

    Rating: 7/12 Fair
    Study design: Randomized Controlled Trial

7. Istre GR, McCoy MA, Moore BJ, Roper C, Stephens-Stidham S, Barnard JJ, Carlin DK, Stowe M, Anderson RJ. Preventing deaths and injuries from house fires: an outcome evaluation of a community-based smoke alarm installation programme. Inj Prev. 2014 Apr;20(2):97-102. doi: 10.1136/injuryprev-2013-040823. Epub 2013 Jul 19. PMID: 23873498.

    1) Was the research question or objective in this paper clearly stated? **Yes**

    2) Was the study population clearly specified and defined? **Yes**

    3) Was the participation rate of eligible persons at least 50%? **Cannot determine (CD)**

    4) Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants? **Yes**

    5) Was the sample size justification, power description, or variance and effect estimates provided? **Not reported (NR)**

    6) For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured? **No**

    7) Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed? **Yes**

    8) For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., Categories of exposure or exposure measured as continuous variable)? **CD**

    9) Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants? **No**

    10) Was the exposure(s) assessed more than once over time? **Yes**

    11) Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants? **No**

    12) Were the outcome assessors blinded to the exposure status of participants? **NR**

    13) Was loss to follow-up after baseline 20% or less? **NR**

    14) Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)? **No**

    Rating: 5/14 Poor
    Study design: Observational analytical cohort study

8. Falcone RA Jr, Edmunds P, Lee E, Gardner D, Price K, Gittelman M, Pomerantz W, Besl J, Madhavan G, Phelan KJ. Volunteer driven home safety intervention results in significant reduction in pediatric injuries: A model for community based injury reduction. J Pediatr Surg. 2016 Jul;51(7):1162-9. doi: 10.1016/j.jpedsurg.2015.11.020. Epub 2015 Dec 8. PMID: 26792663.

    1) Was the research question or objective in this paper clearly stated? **Yes**

    2) Was the study population clearly specified and defined? **Yes**

    3) Was the participation rate of eligible persons at least 50%? **No**

    4) Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants? **Yes**

    5) Was the sample size justification, power description, or variance and effect estimates provided? **Not reported (NR)**

    6) For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured? **No**

    7) Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed? **Yes**

    8) For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., Categories of exposure or exposure measured as continuous variable)? **Yes**

    9) Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants? **No**

    10) Was the exposure(s) assessed more than once over time? **Yes**

    11) Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants? **No**

    12) Were the outcome assessors blinded to the exposure status of participants? **NR**

    13) Was loss to follow-up after baseline 20% or less? **NR**

    14) Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)? **No**

    Rating: 6/14 Fair
    Study design: Observational analytical cohort study

9. Clare J, Garis L, Plecas D, Jennings C. Reduced frequency and severity of residential fires following delivery of fire prevention education by on-duty fire fighters: cluster randomized controlled study. J Safety Res. 2012 Apr;43(2):123-8. doi: 10.1016/j.jsr.2012.03.003. Epub 2012 Apr 13. PMID: 22709997.

    1) Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT? **Yes**

    2) Was the method of randomization adequate (i.e., use of randomly generated assignment)? **Yes**

    3) Was the intervention allocation concealed (so that assignments could not be predicted)? **Cannot determine (CD)**

    4) Were study participants and providers blinded to the group assignment? **CD**

    5) Were the people assessing the outcomes blinded to the participants' group assignments? **CD**

    6) Were the groups similar baseline on important characteristics that could affect outcomes (i.e., demographics, risk factors, co-morbid conditions) **Yes**

    7) Was the overall drop-out rate from the study at endpoint 20% or lower? **NR**

    8) Was the differential drop-out rate (between groups) at endpoint 15 percentage points or lower? **NR**

    9) Was there high adherence to the intervention protocols in the intervention group? **CD**

    10) Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants? **NR**

    11) Was the sample size sufficiently large enough to be able to detect a difference in the main outcome between groups with at least 80% power? **Yes**

    12) Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)? **Yes**

    Rating: 5/12 Fair
    Study design: Randomized controlled trial

10. DiGuiseppi C, Roberts I, Wade A, Sculpher M, Edwards P, Godward C, Pan H, Slater S. Incidence of fires and related injuries after giving out free smoke alarms: cluster randomized controlled trial. BMJ. 2002 Nov 2;325(7371):995. doi: 10.1136/bmj.325.7371.995. PMID: 12411355; PMCID: PMC131023.

    1) Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT? **Yes**

    2) Was the method of randomization adequate (i.e., use of randomly generated assignment)? **Yes**

    3) Was the intervention allocation concealed (so that assignments could not be predicted)? **Yes**

    4) Were study participants and providers blinded to the group assignment? **CD**

    5) Were the people assessing the outcomes blinded to the participants' group assignments? **Yes**

    6) Were the groups similar baseline on important characteristics that could affect outcomes (i.e., demographics, risk factors, co-morbid conditions) **Yes**

    7) Was the overall drop-out rate from the study at endpoint 20% or lower? **Not reported (NR)**

    8) Was the differential drop-out rate (between groups) at endpoint 15 percentage points or lower? **NR**

    9) Was there high adherence to the intervention protocols in the intervention group? **Yes**

    10) Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants? **Yes**

    11) Was the sample size sufficiently large enough to be able to detect a difference in the main outcome between groups with at least 80% power? **Yes**

    12) Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)? **Yes**

    Rating: 9/12 Good
    Study design: Randomized controlled trial

11. Haddix AC, Mallonee S, Waxweiler R, Douglas MR. Cost effectiveness analysis of a smoke alarm giveaway program in Oklahoma City, Oklahoma. Inj Prev. 2001 Dec;7(4):276-81. doi: 10.1136/ip.7.4.276. PMID: 11770651; PMCID: PMC1730770.

    1) Was the study question or objective clearly stated? **Yes**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **No**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **Not reported (NR)**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **NR**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **NR**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **No**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **Yes**

    Rating: 5/11 Fair
    Study design: Observational descriptive study

12. Mallonee S, Istre GR, Rosenberg M, Reddish-Douglas M, Jordan F, Silverstein P, Tunell W. Surveillance and prevention of residential-fire injuries. N Engl J Med. 1996 Jul 4;335(1):27-31. doi: 10.1056/NEJM199607043350106. PMID: 8637539.

    1) Was the research question or objective in this paper clearly stated? **Yes**

    2) Was the study population clearly specified and defined? **Yes**

    3) Was the participation rate of eligible persons at least 50%? **Yes**

    4) Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants? **Yes**

    5) Was the sample size justification, power description, or variance and effect estimates provided? **Not reported (NR)**

    6) For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured? **Cannot determine (CD)**

    7) Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed? **Yes**

    8) For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., Categories of exposure or exposure measured as continuous variable)? **NR**

    9) Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants? **No**

    10) Was the exposure(s) assessed more than once over time? **Yes**

    11) Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants? **No**

    12) Were the outcome assessors blinded to the exposure status of participants? **NR**

    13) Was loss to follow-up after baseline 20% or less? **CD**

    14) Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)? **NR**

    Rating: 6/14 Fair
    Study design: Observational analytical cohort study

13. Furman L, Strotmeyer S, Vitale C, Gaines BA. Evaluation of a mobile safety center's impact on pediatric home safety behaviors. BMC Public Health. 2021 Jun 8;21(1):1095. doi: 10.1186/s12889-021-11073-4. PMID: 34098915; PMCID: PMC8184352.

    1) Was the study question or objective clearly stated? **Yes**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **No**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not Reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **NR**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **Yes**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **No**

    Rating: 5/11 Fair
    Study design: Observational descriptive study

14. Deave T, Hawkins A, Kumar A, Hayes M, Cooper N, Watson M, Ablewhite J, Coupland C, Sutton A, Majsak-Newman G, McDaid L, Goodenough T, Beckett K, McColl E, Reading R, Kendrick D. Evaluating implementation of a fire-prevention injury prevention briefing in children's centres: Cluster randomized controlled trial. PLoS One. 2017 Mar 24;12(3):e0172584. doi: 10.1371/journal.pone.0172584. PMID: 28339460; PMCID: PMC5365108.

    1) Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT? **Yes**

    2) Was the method of randomization adequate (i.e., use of randomly generated assignment)? **Yes**

    3) Was the intervention allocation concealed (so that assignments could not be predicted)? **Yes**

    4) Were study participants and providers blinded to the group assignment? **No**

    5) Were the people assessing the outcomes blinded to the participants' group assignments? **No**

    6) Were the groups similar baseline on important characteristics that could affect outcomes (i.e., demographics, risk factors, co-morbid conditions) **Cannot determine (CD)**

    7) Was the overall drop-out rate from the study at endpoint 20% or lower? **No**

    8) Was the differential drop-out rate (between groups) at endpoint 15 percentage points or lower? **Yes**

    9) Was there high adherence to the intervention protocols in the intervention group? **CD**

    10) Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants? **NR**

    11) Was the sample size sufficiently large enough to be able to detect a difference in the main outcome between groups with at least 80% power? **Yes**

    12) Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)? **Yes**

    Rating: 6/12 Fair
    Study design: Randomized controlled trial

15. Leahy NE, Sessler KA, Baggott K, Laverde L, Rabbitts A, Yurt RW. Engaging older adults in burn prevention education: results of a community-based urban initiative. J Burn Care Res. 2012 May-Jun;33(3):e141-6. doi: 10.1097/BCR.0b013e3182335a14. PMID: 22561308.

    1) Was the study question or objective clearly stated? **Yes**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **Yes**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not Reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **NR**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **No**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **No**

    Rating: 5/11 Fair
    Study design: Observational descriptive study

16. Arch BN, Thurston MN. An assessment of the impact of home safety assessments on fires and fire-related injuries: a case study of Cheshire Fire and Rescue Service. J Public Health (Oxf). 2013 Jun;35(2):200-5. doi: 10.1093/pubmed/fds068. Epub 2012 Aug 21. PMID: 22915771.

    1) Was the study question or objective clearly stated? **Yes**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **Yes**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not Reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **NR**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **No**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **No**

    Rating: 5/11 Fair
    Study design: Observational descriptive study

17. Kendrick D, Young B, Mason-Jones AJ, Ilyas N, Achana FA, Cooper NJ, Hubbard SJ, Sutton AJ, Smith S, Wynn P, Mulvaney C, Watson MC, Coupland C. Home safety education and provision of safety equipment for injury prevention. Cochrane Database Syst Rev. 2012 Sep 12;2012(9):CD005014. doi: 10.1002/14651858.CD005014.pub3. PMID: 22972081; PMCID: PMC9758703.

    1) Is the review based on a focused question that is adequately formulated and described? **Yes**

    2) Were eligibility criteria for included and excluded studies predefined and specified? **Cannot determine (CD)**

    3) Did the literature search strategy use a comprehensive, systematic approach? **Yes**

    4) Were titles, abstracts, and full-text articles dually and independently reviewed for inclusion and exclusion to minimize bias? **No**

    5) Was the quality of each included study rated independently by two or more reviewers using a standard method to appraise its internal validity? **Yes**

    6) Were the included studies listed along with important characteristics and results of each study? **Yes**

    7) Was publication bias assessed? And for meta-analysis, was heterogeneity assessed? **Yes**

    Rating: 5/7 Fair
    Study design: Systematic review

18. King WJ, Klassen TP, LeBlanc J, Bernard-Bonnin AC, Robitaille Y, Pham B, Coyle D, Tenenbein M, Pless IB. The effectiveness of a home visit to prevent childhood injury. Pediatrics. 2001 Aug;108(2):382-8. doi: 10.1542/peds.108.2.382. PMID: 11483803.

    1) Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT? **Yes**

    2) Was the method of randomization adequate (i.e., use of randomly generated assignment)? **Yes**

    3) Was the intervention allocation concealed (so that assignments could not be predicted)? **Not reported (NR)**

    4) Were study participants and providers blinded to the group assignment? **NR**

    5) Were the people assessing the outcomes blinded to the participants' group assignments? **NR**

    6) Were the groups similar baseline on important characteristics that could affect outcomes (i.e., demographics, risk factors, co-morbid conditions) **Yes**

    7) Was the overall drop-out rate from the study at endpoint 20% or lower? **Yes**

    8) Was the differential drop-out rate (between groups) at endpoint 15 percentage points or lower? **Yes**

    9) Was there high adherence to the intervention protocols in the intervention group? **NR**

    10) Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants? **No**

    11) Was the sample size sufficiently large enough to be able to detect a difference in the main outcome between groups with at least 80% power? **Yes**

    12) Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)? **Cannot determine (CD)**

    Rating: 6/12 Fair
    Study design: Randomized controlled trial

19. Schwarz DF, Grisso JA, Miles C, Holmes JH, Sutton RL. An injury prevention program in an urban African-American community. Am J Public Health. 1993 May;83(5):675-80. doi: 10.2105/ajph.83.5.675. PMID: 8484447; PMCID: PMC1694716.

    1) Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT? **No**

    2) Was the method of randomization adequate (ie. use of randomly generated assignment)? **N/A**

    3) Was the intervention allocation concealed (so that assignments could not be predicted)? **Yes**

    4) Were study participants and providers blinded to the group assignment? **NR**

    5) Were the people assessing the outcomes blinded to the participants' group assignments? **No**

    6) Were the groups similar baseline on important characteristics that could affect outcomes (ie. demographics, risk factors, co-morbid conditions) **Yes**

    7) Was the overall drop-out rate from the study at endpoint 20% or lower? **Cannot determine (CD)**

    8) Was the differential drop-out rate (between groups) at endpoint 15 percentage points or lower? **CD**

    9) Was there high adherence to the intervention protocols in the intervention group? **NR**

    10) Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants? **No**

    11) Was the sample size sufficiently large enough to be able to detect a difference in the main outcome between groups with at least 80% power? **Yes**

    12) Were outcomes reported or subgroups analyzed prespecified (ie. identified before analyses were conducted)? **Cannot determine (CD)**

    Rating: 3/12 Poor
    Study design: Non-randomized controlled trial

20. Forster-Cox SC, Mangadu T, Jacquez B, Fullerton L. The Environmental Health/Home Safety Education Project: a successful and practical U.S.-Mexico border initiative. Health Promot Pract. 2010 May;11(3):325-31. doi: 10.1177/1524839909341026. Epub 2009 Oct 20. PMID: 19843700.

    1) Was the study question or objective clearly stated? **No**

    2) Were eligibility/selection criteria for the study population prespecified and clearly described? **Yes**

    3) Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest? **Cannot determine (CD)**

    4) Were all eligible participants that met the prespecified entry criteria enrolled? **No**

    5) Was the sample size sufficiently large to provide confidence in the findings? **Yes**

    6) Was the test/service/intervention clearly described and delivered consistently across the study population? **Yes**

    7) Were the outcome measures prespecified, clearly defined, valid, reliable, and accessed consistently across all study participants? **No**

    8) Were the people assessing the outcomes blinded to the participants' exposures/interventions? **Not Reported (NR)**

    9) Was the loss to follow-up after baseline 20% or less, and were those lost to follow-up accounted for in the analysis? **Yes**

    10) Did the statistical methods examine changes in outcome measures from before to after the intervention; Were statistical tests done that provided p values for the pre-to-post changes? **Yes**

    11) Were outcomes measures taken multiple times before the intervention and multiple times after the intervention? **Yes**

    Rating: 6/11 Fair
    Study design: Observational descriptive study