

# TOBACCO PREVENTION AND CESSATION

## Supplementary file

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**Supplementary Table 1. Characteristics of studies evaluating Counseling/Motivational Interviewing (MI) to reduce smoking rates among people experiencing homelessness**

N= 21 out of 55 total selected articles. Searched Pubmed and Web of Science databases searched up to July 1<sup>st</sup>, 2026.

| Author, year          | Country   | Study Design                                   | Participants                                                                                                       | Sample size                    | Age                                                                                        | Aim                                                                                                                                 | Intervention                                                                                                                                                                                                                                                               | Main findings                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| Okuyemi et al., 2006  | USA       | Pilot RCT (PTQ)                                | 18 years or older, >=5 cigarettes/day, smoked >=1 year, interested in quitting in the following 2 weeks, homeless. | 46                             | 43.8 (MI targeting smoking only); 43.7 (MI targeting smoking, addictions and life events). | RCT of two MI approaches, assessment of the feasibility of a community-based smoking cessation intervention among homeless smokers. | Five individual MI sessions, six group meetings, and choice of 8 weeks of 21-mg nicotine patch or 4-mg nicotine lozenge. MI targeted either smoking behaviors exclusively or smoking and other addictions or life events that could affect ability to quit (smoking plus). | Results support the feasibility of conducting an MI smoking cessation intervention among homeless smokers. Findings also show promising effects for nicotine replacement therapy and counseling.                                                                                                                                                                                                                                |
| Shelley et al., 2010  | USA       | Single-arm pilot study                         | Current smokers, sheltered homeless persons                                                                        | 58                             | 47                                                                                         | To test the effectiveness and feasibility of a smoking cessation intervention among sheltered homeless persons.                     | 12-week smoking cessation intervention combining group MI and CBT plus pharmacotherapy. Examination of the effects of the intervention on smoking abstinence rates.                                                                                                        | Results support the feasibility of enrolling and retaining sheltered homeless persons in a smoking cessation program. Counseling plus pharmacotherapy options may be effective in helping sheltered homeless smokers quit.                                                                                                                                                                                                      |
| Goldade et al., 2011  | USA       | RCT (PTQ)                                      | Participants residing in eight homeless shelters and transitional housing units.                                   | 430                            | N/A                                                                                        | To test the efficacy of MI to enhance adherence to nicotine replacement therapy (NRT) and smoking cessation outcomes.               | 8 weeks of NRT + 6 sessions of MI or control (NRT + SC) care. Six in-person assessment sessions and eight retention visits over 6 months.                                                                                                                                  | The protocol is feasible, with the following elements: 1) a Community Advisory Board to engage participants; 2) location of the study in specific shelters to enhance visibility and access; 3) minimization of exclusion criteria; 4) adapting the calendar of study visits; 5) regular and persistent calls to remind participants of upcoming appointments using cell phones and shelter-specific channels of communication. |
| Bonevski et al., 2012 | Australia | Single-group pre-post, proof of concept study. | English-speaking, receiving accommodation support from a homelessness                                              | 12 completed baseline measures | 18 to 49                                                                                   | To explore the feasibility and acceptability of a low-cost, telephone-delivered program.                                            | Six sessions once per week to provide personalized counseling about smoking cessation or reduction, as well as fruit and vegetable consumption, alcohol                                                                                                                    | High acceptability of the Phone for Health program judged convenient, useful and practical to help meet smoking reduction goals.                                                                                                                                                                                                                                                                                                |

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|                       |     |                                        | outreach center.                                                                    |                                                        |       |                                                                                                                   | use, physical activity and sun protection.                                                                                                                               |                                                                                                                                                                                                                                   |
| Goldade et al., 2013  | USA | Secondary analysis of RCT (PTQ)        | Homeless smokers in emergency shelters and transitional housing units.              | 428 (324 returned at 26 week follow-up)                | 44.34 | To examine the impact of knowing quitters on cessation after participation in an RCT.                             | Secondary analysis of data derived from the community-based RCT PTQ (intervention arm (NRT +MI) or control arm (NRT + standard care counseling).                         | Smoking cessation more likely in smokers who knew ≥ 5 quitters compared with those who knew no quitters.                                                                                                                          |
| Okuyemi et al., 2013  | USA | RCT (PTQ)                              | Homeless smokers from emergency shelters and transitional housing units.            | 430 (216 MI; 214 Control)                              | 44.4  | To assess the effects of adding MI to nicotine patch for smoking cessation.                                       | SC + six individual sessions of MI counseling vs. SC (8-week treatment of 21 mg nicotine patch) + one session of brief advice to quit smoking.                           | No difference in verified 7-day smoking abstinence rate at week 26 nor in the number of cigarettes smoked between baseline and week 26.                                                                                           |
| Reitzel et al., 2014  | USA | Secondary analysis study of RCT (PTQ). | Homeless smokers in emergency shelters and transitional housing units.              | 22 (of 57 participants enrolled in the original study) | 51,1  | To explore associations between shelter proximity and real-time affect during specific smoking cessation attempt. | 40 minutes weekly group cessation counseling sessions + NRT if prescribed by the on-site physician.                                                                      | Proximity to the shelter cued negative affect and stress, due to the increased exposure to cigarettes and other smoking cues nearby. All participants relapsed to smoking by one week post-quit attempt.                          |
| Richards et al., 2015 | USA | Secondary analysis of RCT (PTQ)        | Homeless smokers, recruited from emergency shelters and transitional housing units. | 430                                                    | 44.35 | To describe strategies to increase retention in a smoking cessation RCT.                                          | Visits in locations convenient for participants; collection of different forms of contact information; flexible schedule with frequent low-intensity visits; incentives. | Overall retention of 75% at 26 weeks. Increased retention associated with older age; healthcare coverage; history of homelessness, low stress; high PHQ-9. Decreased retention associated with a history of alcohol and drug use. |
| Ojo-Fati et al., 2016 | USA | Secondary analysis of RCT (PTQ)        | Homeless smokers.                                                                   | 430                                                    | 44.4  | To identify predictors of adherence to NRT 8 weeks after randomization.                                           | 6 MI sessions + 8 weeks of NRT or SC (Brief quitting advice + 8 weeks of NRT).                                                                                           | NRT adherence associated with depression and motivation to quit.                                                                                                                                                                  |
| Robinson et al., 2016 | USA | Secondary analysis of RCT (PTQ)        | Homeless smokers.                                                                   | 428                                                    | 44.3  | To assess the impact of depression symptoms (DS) on                                                               | MI or SC, with NRT for both arms. DS or control group using PHQ -9.                                                                                                      | No effect of DS on smoking abstinence at week 8 or week 26. No significant interaction                                                                                                                                            |

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|                             |     |                                  |                                                                                           | (173 DS, 255 Control)                              |                                                                                                 | smoking abstinence and the effect of MI at 26 weeks.                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                             | between depression symptoms (DS vs. Control) and the intervention (MI vs. SC).                                                                                                                            |
| Santa Ana et al., 2016      | USA | Pre-post intervention            | Homeless veterans addicted to alcohol and nicotine with co-morbid psychiatric conditions. | 37 (16 GMI, 21 T-GMI)                              | GMI: 51.1<br>T-GMI: 54.5                                                                        | Group MI including tobacco-specific components (T-GMI).                                                                                                       | GMI to enhance engagement in substance abuse treatment and reduce substance use. T-GMI protocol with additional content specific to cessation of tobacco use and enhancing smoking cessation treatment, in addition to the standard substance abuse content of GMI. 4 sessions over 4 consecutive days.                                                                                                                     | T-GMI participants more likely to attend tobacco cessation as well as combined tobacco cessation program with prescribed NRT.                                                                             |
| Vijayaraghavan et al., 2016 | USA | Pre-post-intervention            | Current and former-smokers living and working in homeless shelters.                       | 12 staff and 46 homeless persons                   | <u>Site 1:</u><br>Staff: 48.8<br>Homeless: 38.4<br><u>Site 2:</u><br>Staff: 36<br>Homeless:45.8 | To test the feasibility and acceptability of a capacity building intervention up to 12 weeks follow-up.                                                       | 3.5 hours training for shelter staff in smoking cessation counseling.                                                                                                                                                                                                                                                                                                                                                       | Staff knowledge and efficacy in treating tobacco dependence increased. Acceptance of tobacco-related program services increased significantly among homeless persons from post-intervention to follow-up. |
| Ojo-Fati et al., 2017       | USA | Report on RCT (PTQ1, PTQ2)       | Homeless smokers.                                                                         | N/A                                                | N/A                                                                                             | Lessons learned based on <b>two</b> RCTs (PTQ 1 & 2).                                                                                                         | Implementation of <b>two</b> RCTs: lessons learned, barriers and challenges.                                                                                                                                                                                                                                                                                                                                                | The study shows challenges in smoking cessation for homeless persons: need to negotiate daily access to food, clothing and shelter.                                                                       |
| Vijayaraghavan et al., 2019 | USA | Community Intervention (non RCT) | Homeless adults.                                                                          | 52 (45 counseling; 7 counseling + pharmacotherapy) | N/A                                                                                             | To test an intervention introducing smoking cessation services in community day or service events; raise awareness and increase engagement with primary care. | Smoking cessation resources, behavioral counseling and pharmacotherapy provided to event attendees: 1) 2-week supply of NRT; 2) coupon for a free 4-week smoking cessation class at the UCSF Fontana Treatment Center; 3) a "quit kit" from San Francisco Department of Public Health; 4) a 1-800-NO-BUTTS card; 5) list of local tobacco cessation resources; 6) soft mints offered to who expressed interest in quitting. | 2 participants out of 52 abstinent after the program.                                                                                                                                                     |
| Pratt et al., 2019          | USA | Qualitative study                | Homeless people                                                                           | 40                                                 | 50.20                                                                                           | To understand the interplay between                                                                                                                           | One-on-one semi-structured interviews after the intervention                                                                                                                                                                                                                                                                                                                                                                | Participants described feeling pressure to smoke and drink in and around shelters and                                                                                                                     |

|                           |     |                                  |                                                                                 |     |       |                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                       |
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|                           |     |                                  | participating in an ongoing RCT (PTQ2) for smoking cessation.                   |     |       | the social environment and smoking cessation.                                                                               | describing how the social environment impacts smoking cessation attempts and participant perceptions.                                                                                                                                                                                                                                                                              | feeling motivated to quit and seeing smoking cessation as positive. Many participants more interested in reducing rather than quitting smoking.                                                                                                                                       |
| Savoy et al., 2021        | USA | Pre-post intervention            | Homeless smokers recruited in a shelter.                                        | 57  | 48.8  | Ecological Momentary Assessment (EMA) reporting affective variables on smoking behaviors following a specific quit attempt. | 6 tobacco cessation classes using an American Cancer Society-based therapy and support group with NRT.                                                                                                                                                                                                                                                                             | Affect and CPD significantly associated in the early part of the week but effects progressively fading. Increases in positive affect post- quit week significantly predicted fewer CPD.                                                                                               |
| Bhattacharya et al., 2022 | USA | Secondary analysis of RCT (PTQ)  | Homeless smokers enrolled in the 26-week RCT (PTQ) targeting smoking cessation. | 324 | 45,3  | To assess predictors of smoking reduction and quitting.                                                                     | Data from PTQ RCT (MI+NRT vs brief advice to quit (SC)+NRT).                                                                                                                                                                                                                                                                                                                       | Higher tobacco use associated with lower reductions in smoking levels. Tobacco quitting vs. reduction more likely among men, persons experiencing housing instability, attached to quitting, with higher NRT adherence and lower illegal drug use.                                    |
| Odukoya et al., 2022      | USA | Survey to RCT participants (PTQ) | Homeless smokers.                                                               | 315 | 45.7  | To assess opinions on the Power to Quit study.                                                                              | Participants enrolled in community-based RCT PTQ completed a 26 week-study feedback survey. Program satisfaction was measured by a single question on a 5-point Likert scale.                                                                                                                                                                                                      | Visa gift Cards were the preferred incentive followed by bus tokens and Subway Restaurant coupons. NRT and counseling considered as helpful; phone calls or messages rated as helpful for appointment reminders. Majority very satisfied with the program schedule and program staff. |
| Pratt et al., 2022        | USA | Qualitative study (PTQ2)         | Homeless smokers.                                                               | 40  | 50,20 | Participants' experiences with the RCT intervention PTQ2 to inform future implementation .                                  | Three-groups: 1) SC for smoking and alcohol cessation; 2) Intensive smoking cessation + SC alcohol abstinence counseling (IS); 3) Integrated Intensive Smoking and Intensive Alcohol Counseling (IntS+A). Counseling used individual CBT approach to smoking cessation and alcohol abstinence. 12 weeks of NRT for all participants. Qualitative semi-structured interviews, 25 in | Positive description of the PTQ2. Counseling and NRT products appreciated. Bond with PTQ2 staff and trust for emotional support and encouragement. The culture of alcohol use and cigarette smoking around the shelter environment presented a serious challenge.                     |

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|                       |           |                                    |                                                                       |     |      |                                                                                                                                                                                              | intervention group and 15 in control group.                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Skelton et al., 2022  | Australia | Pilot study, pre-post-intervention | Male smokers attending a health clinic within a homelessness service. | 20  | 44   | To test the feasibility of providing varenicline in combination with NRT and MI.                                                                                                             | 12 weeks of intervention: 4 weeks of medication and NRT on 3 occasions. Weekly individual counseling sessions of 5-10 min, employing MI techniques (face to face or phone counseling).                            | 65% retention 12-weeks post-intervention. 15%: reported continuous abstinence. 10% reported 30-day point prevalence abstinence, confirmed by CO level. 10 participants who did not quit smoking reported a significant reduction in the number of cigarettes smoked per day. Good adherence to pharmacological interventions. Low adherence to counseling sessions. NRT and MI rated highly acceptable. Some expressed concerns about the safety of varenicline. |
| Onigbogi et al., 2025 | USA       | RCT                                | PTQ2                                                                  | 344 | 46.8 | To test the efficacy of combined smoking cessation and alcohol abstinence biobehavioral intervention, Intensive Smoking plus Alcohol (IS+A), versus SC for adults experiencing homelessness. | IS+A (10 sessions of cognitive behavioral therapy for smoking and alcohol cessation plus nicotine replacement therapy [NRT], n=168) or SC (educational session on smoking and alcohol cessation plus NRT, n=176). | At week 26, the IS+A intervention group did not differ from the SC group in expired carbon monoxide-verified 7-day point-prevalent smoking abstinence (16.6% vs. 12.8%, P=0.47) or rate of self-reported 30-day alcohol abstinence (91.1% vs. 90.2%, P=0.75). The IS+A intervention did not result in significantly better smoking or alcohol cessation outcomes than SC. Trends in smoking outcome data favored the intervention group.                         |

Notes: CBT : Cognitive behavioral therapy, CO: Carbon monoxide, CPD: Cigarettes smoked per day, ENDS/EC: Electronic Nicotine Delivery Service/E-cigarette, N/A: Not available, NRT: Nicotine replacement therapy, PEH: People experiencing homelessness, PTQ: Power to Quit, RCT: Randomized controlled trial, SC/UC: Standard Care/Usual Care.  
Age is expressed in mean years or a year range, unless indicated otherwise (median, average).

**Supplementary Table 2. Characteristics of studies on contingency management (CM) and financial incentives to reduce smoking rates among people experiencing homelessness**

N= 10 out of 55 total selected articles. ~~Searched~~ Pubmed and Web of Science databases searched up to July 1<sup>st</sup>, 2026.

| Author, year               | Country | Study Design                                                    | Participants                                                                          | Sample size          | Age  | Aim                                                                                                   | Intervention                                                                                                                                                                                                                                                                                                                                                                                                                 | Main findings                                                                                                                                                                                         |
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| Businelle et al., 2014, a. | USA     | Non-RCT                                                         | Homeless smokers in a shelter.                                                        | 68 (58 SC, 10 SC+CM) | 49,2 | To compare the effectiveness of an adjunctive CM intervention plus small financial incentives vs. SC. | SC (weekly support groups + NRT if prescribed) vs SC + CM (financial incentives). 5 weeks (1 pre-quit + 4 post-quit). CM participants could earn a \$20 gift card for biochemically-verified abstinence on the quit date. Escalating reinforcement schedule: gift card increased by \$5 with each consecutive week of abstinence (40\$). Non-abstinent participants also able to earn incentives if abstinence criteria met. | Significant effect of CM group on smoking abstinence (50% vs. 19% abstinent) and at 4 weeks post-quitting (30% vs. 1.7% abstinent).                                                                   |
| Businelle et al., 2014, b. | USA     | Secondary analysis study of non RCT (Businelle et al., 2014 a). | Homeless individuals recruited from a smoking cessation clinic in a homeless shelter. | 57                   | N/A  | To examine pre-cessation parameters linked with smoking abstinence.                                   | Real-time assessment methodology used during 6 days prior to a scheduled quit attempt. Multiple variables (i.e., motivation for quitting, smoking expectancies, quit self-efficacy, smoking urges, negative affect, positive affect, restlessness, hostility, and stress) used as predictors of biochemically verified quit date abstinence.                                                                                 | Declining (negative slope) negative affect, restlessness, and stress predicted quit date abstinence. Increasing positive coping expectancies across the pre-quit week predicted quit date abstinence. |
| Carpenter et al., 2015     | USA     | Pilot                                                           | Homeless smokers                                                                      | 20                   | 54.7 | To evaluate a smart phone based application for CM named mobile CM                                    | 4 smoking cessation counseling sessions, nicotine replacement and bupropion (if medically eligible). 7 laboratory visits (set quit date after                                                                                                                                                                                                                                                                                | Bioverified smoking abstinence of 60% at six months.                                                                                                                                                  |

|                         |     |                                                             |                                                            |                                  |                             |                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                         |     |                                                             | between ages of 18–70.                                     |                                  |                             | (mCM), building on a web-based CM approach.                                                                                                                                                                           | session 3), 1 brief telephone session, and 5 weeks of CO monitoring.                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Baggett et al., 2018 a. | USA | Pilot RCT                                                   | Homeless smokers                                           | 50 (25 intervention, 25 control) | 46.6                        | To determine whether smoking in homeless persons is sensitive to financial rewards.                                                                                                                                   | Escalating rewards (\$15–\$35) for brief smoking abstinence assessed 14 times over 8 weeks. Control arm given \$10 at each assessment regardless of abstinence. All participants offered nicotine patches and counseling.                                                                                                         | Financial incentives increased brief smoking abstinence and quit attempts at 8 weeks. Incentive arm participants made more quit attempts. Nicotine patch use and counseling attendance not significantly different between study groups. Alcohol and drug use did not change significantly.                                                                                                                                                                                                       |
| Baggett et al., 2018 b  | USA | Cross-sectional survey and longitudinal data from pilot RCT | Homeless smokers.                                          | 306 survey and 75 for pilot RCT  | Survey : 47.6<br>RCT : 46.4 | To examine associations between subsistence difficulties and 1) smoking cessation readiness, confidence, and barriers in a cross-sectional study, and 2) smoking abstinence during follow-up in a longitudinal study. | Cross-sectional data used to examine the association between subsistence difficulties and smoking cessation readiness, confidence, and barriers. Longitudinal data from an 8-week pilot RCT used to test the association between baseline subsistence difficulties and biochemically-defined smoking abstinence during follow-up. | Homeless smokers with greater subsistence difficulties perceive more barriers to smoking cessation. Greater subsistence difficulties are associated with more perceived barriers to quitting but not with cessation readiness or confidence. Dose-response relationship for most barriers, particularly psychosocial. Individuals with the highest level of subsistence difficulty had one-third the odds of being abstinent during follow-up compared to those without subsistence difficulties. |
| Rash et al., 2018       | USA | RCT                                                         | Homeless smokers recruited from local homeless facilities. | 70 (33 SC, 37 SC+CM)             | SC : 45.5<br>SC+CM: 44.7    | To examine smoking-related outcomes of homeless smokers receiving SC for smoking cessation with or without CM.                                                                                                        | SC (smoking cessation with NRT, standard counseling and CO monitoring) vs SC + CM (behavioral intervention based on reinforcement in prizes, for negative CO sample submissions).                                                                                                                                                 | CM efficacious to increase initial quit rates in homeless smokers, significantly longer duration of abstinence and higher proportion of CO-negative samples relative to SC group. 4 weeks post-quit day: 22% in the CM condition abstinent, 9% in SC condition. At 6-months follow-up: about 10% in both conditions abstinent.                                                                                                                                                                    |

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| Sharbin et al., 2022 | USA | Secondary data analysis of RCT (Rash et al., 2018) | Smokers experiencing homelessness.                                                          | 70                                                                       | 45.07                        | To characterize nicotine withdrawal symptoms, during a quit attempt in treatment-seeking smokers experiencing homelessness.                      | Minnesota Nicotine Withdrawal Severity Index to assess symptoms three times prior to the scheduled quit date and twice weekly for 4 weeks post-quit date. Treatment outcomes: quit day smoking status, patch adherence, duration of abstinence, and percent negative CO samples.                                                                | Endorsement of withdrawal symptoms highest prior to the quit date and decreased over time with increases at weeks 3 to 4 (20% to 35%). Anticipatory withdrawal inversely related to nicotine patch adherence ( $p = .01$ ), but not to abstinence-based treatment outcomes ( $p > .05$ ).                                                  |
| Miller et al., 2023  | USA | Qualitative study                                  | Current smokers, with current or past experiences of homelessness.                          | 26                                                                       | Median: 48.5                 | To explore views towards smoking cessation and explore factors influencing acceptability of engaging in a contingency management clinical trial. | Questionnaire and in-depth semi-structured interviews on tobacco use behaviors, prior cessation experiences, attitudes toward cessation, attitudes toward engaging in a clinical trial for cessation, and factors that might influence participation in a proposed contingency management clinical trial.                                       | Most participants attempted to quit smoking and were interested in engaging in a clinical trial as a method to quit smoking.                                                                                                                                                                                                               |
| Wilson et al., 2023  | USA | Comparative effectiveness trial                    | Homeless smokers in VA healthcare, willing to make a quit attempt in the following 30 days. | 127                                                                      | 55.72 for SC; 53.76 for mCM. | To assess the effectiveness of mCM, telephone- delivered CBT, tobacco cessation, pharmacotherapy, and long-term incentives.                      | mCM treatment (4 weeks of mCM, 5 weeks of telehealth counseling, and the option of 12 weeks of pharmacotherapy) or VA SC (3 biweekly group sessions and clinically appropriate pharmacotherapy). All participants randomly assigned to a \$100 longer-term financial incentive for abstinence at 3-months follow-up; follow-up up to 12-months. | mCM cost-effective for smoking cessation among veterans experiencing homelessness. At 6-months, mCM associated with prolonged abstinence compared to SC (OR = 3.07, 95% CI [1.02, 9.20], $p=0.04$ ). By 12-months, no statistically significant group difference in smoking abstinence.                                                    |
| Gu et al., 2026      | USA | Qualitative study of RCT                           | Adult PEH engaged in primary care.                                                          | Out of 83 participants in the RCT, 31 respondents to in-depth interview. | 52                           | To examine experiences and perspectives on cessation among a subset of participants in a RCT of an extended (6-month) CM intervention for        | The CM group received escalating incentives in the form of gift cards contingent on carbon monoxide-verified abstinence; the control group received fixed incentives for attending visits, not contingent on abstinence. All participants received                                                                                              | Participants experiencing homelessness viewed financial incentives as reinforcing smoking cessation and contributing to improved quality of life. Results of the parent clinical trial show that the extended CM intervention was effective in promoting 7-day point-prevalence abstinence at 6 months, and the CM group had significantly |

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|  |  |  |  |  |  | smoking cessation among PEH and who were engaged in primary care. | cessation care through their primary care clinics.<br>At one-year follow-up, in-depth interviews were conducted with a convenience sample (N = 31) from both study arms. | higher odds of achieving abstinence than the control group. |
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Notes: CBT : Cognitive behavioral therapy, CO: Carbon monoxide, CPD: Cigarettes smoked per day, ENDS/EC: Electronic Nicotine Delivery Service/E-cigarette, N/A: Not available, NRT: Nicotine replacement therapy, PEH: People experiencing homelessness, PTQ: Power to Quit, RCT: Randomized controlled trial, SC/UC: Standard Care/Usual Care.  
Age is expressed in mean years or a year range, unless indicated otherwise (median, average).

**Supplementary Table 3. Characteristics of studies examining Text Messaging-based Interventions (TMI) to reduce smoking rates among people experiencing homelessness**

N= 3 out of 55 total selected articles. Searched Pubmed and Web of Science databases searched up to July 1<sup>st</sup>, 2026.

| Author, year           | Country | Study Design                                           | Participants                                                                                                      | Sample size | Age                               | Aim                                                                                                                | Intervention                                                                                                                                                                                                                                                                                                    | Main findings                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Tucker et al., 2021    | USA     | Pilot RCT                                              | Young people experiencing homelessness (YEH), current smokers desiring to quit, recruited from 3 drop-in centers. | 77 (TMI:40) | 18 to 25 years.<br>Average : 22.6 | To evaluate the feasibility of using a TMI for behavior change.                                                    | Group counseling + Nicotine patches vs. Group counseling session + Nicotine patches + TMI for 6 weeks. 3 to 6 automatic SMS per day to support quit attempt: amount of money saved; health and social benefits; managing cravings and negative moods; maintaining motivation; reminder to use nicotine patches. | 6-week TMI support in addition to counseling promising for smoking reduction and abstinence among YEH smokers. Seven-day abstinence prevalence at 90-day follow-up higher than with SC. 90-day continuous abstinence rate not statistically different from zero in either condition. Reduction in the number of smoking days in the preceding 30 days from baseline to follow-up greater in TMI condition than in SC.                  |
| Linnemayr et al., 2021 | USA     | Randomized controlled study, cluster cross-over design | YEH, current smokers who desired to quit, recruited from 3 drop-in centers.                                       | 77 (TMI:40) | 18 to 25 years.<br>Average : 22.6 | To describe the development of a smoking cessation TMI for homeless youths who are interested in quitting smoking. | Group-based cessation counseling session and nicotine patches, with random assignment to 6 weeks of TMI with additional smoking cessation support.                                                                                                                                                              | TMI was well accepted and feasible. Participant feedback points to the importance of carefully crafting text messages, leading to high (> 70%) approval of most text messaging components of the intervention. Participants enjoyed group counseling preceding TMI and suggested including more group elements into the intervention. Despite interruptions in phone use, participants reported being able to receive 95% of messages. |
| Baggett et al., 2019   | USA     | Pilot RCT                                              | Homeless; >=18 years, >=100 cigarettes lifetime or >=5/day currently;                                             | 50          | 45.6                              | To assess whether TMI, added to evidence-based pharmacotherapy and counseling, improves smoking abstinence         | 8-week pilot RCT of nicotine patch therapy and weekly in-person counseling with (n=25) or without (n=25) TMI.                                                                                                                                                                                                   | TMI, added to nicotine patch therapy and in-person counseling, did not significantly improve smoking abstinence. 56% participants (n=14) confirmed enrollment for ≥2 weeks. Smoking abstinence did not differ significantly between TMI and control arm participants. Of TMI enrollees who completed                                                                                                                                   |

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|  |  |  | readiness to quit smoking; English proficiency. |  |  | among homeless adult smokers. |  | exit surveys (n=15), two-thirds were satisfied. Qualitative interviews (n=14) revealed that many participants preferred in-person over phone-based interventions, found TMI impersonal and robotic, and felt that messages were too frequent and repetitive. |
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Notes: CBT : Cognitive behavioral therapy, CO: Carbon monoxide, CPD: Cigarettes smoked per day, ENDS/EC: Electronic Nicotine Delivery Service/E-cigarette, N/A: Not available, NRT: Nicotine replacement therapy, PEH: People experiencing homelessness, PTQ: Power to Quit, RCT: Randomized controlled trial, SC/UC: Standard Care/Usual Care.  
Age is expressed in mean years or a year range, unless indicated otherwise (median, average).

**Supplementary Table 4 : Characteristics of studies on E-cigarette interventions to reduce smoking rates among people experiencing homelessness**

N= 8 out of 55 total selected articles. Searched Pubmed and Web of Science databases searched up to July 1<sup>st</sup>, 2026.

| Author, year           | Country | Study Design                | Participants                                                                | Sample size                                        | Age   | Aim                                                                                                                                                                                                                                                 | Intervention                                                                                                                                                                                      | Main findings                                                                                                                                                                                                                                                                                                                                                                                                 |
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| Collins et al., 2019   | USA     | Single-arm pilot study      | Smokers experiencing chronic homelessness.                                  | 44                                                 | 48.24 | EC + smoking Harm reduction: a) participant-led tracking of smoking-related outcomes, b) harm-reduction goals and progress made toward them, c) relative risks of nicotine delivery systems, and d) instructions on use of safer nicotine products. | Group and individual sessions + NRT + ENDS.                                                                                                                                                       | Harm-reduction counseling plus ENDS shows promise for smokers experiencing chronic homelessness. Reductions in cigarette dependence, frequency and intensity. ENDS use associated with an additional 44% reduction in smoking intensity and a 1.2-point reduction in dependence. 24% and 27% weekly uptake in NRT and ENDS use, respectively. Each week associated with a 18% increase in odds of abstinence. |
| Dawkins et al., 2020   | UK      | Non-RCT, feasibility trial. | >=18 years, daily smokers, accessing homeless centre services.              | 80                                                 | 42,66 | To assess the feasibility of supplying free EC starter kits.                                                                                                                                                                                        | Supplying of free EC starter kits.                                                                                                                                                                | Reasonable recruitment and retention rates. Intervention well received with minimal negative effects and few unintended consequences (e.g. loss, theft, adding illicit substances).                                                                                                                                                                                                                           |
| Scheibein et al., 2020 | Ireland | Non-RCT                     | People accessing a supported temporary accommodation (STA) homeless service | 9 (14 out of 23 did not complete the intervention) | 43.89 | To explore the efficacy, challenges and opportunities of using ENDS to support cessation of tobacco smoking with people accessing STA homeless service.                                                                                             | Participants were given an ENDS for 3 months and two 10-ml bottles containing e-liquid available in several flavours and at several strengths, delivery on a weekly basis. Follow-up at 12 weeks. | Statistically significant self-reported reductions in cigarette consumption, nicotine dependence, but no reductions in carbon monoxide. Barriers to engagement were peer norms, vaping restrictions and adverse life events. Positive effects reported included increased energy, less coughing, better breathing and financial benefits.                                                                     |

|                      |     |                                                                                                           |                                                                                         |                                    |       |                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| Cox et al., 2022     | UK  | Prospective four-center pragmatic cluster feasibility study with embedded qualitative process evaluation. | Smokers accessing homeless centers (two residential units and two day centers).         | 80                                 | 42.66 | To evaluate the offer of an ENDS or SC for smokers accessing a homeless center.                                                                                             | Single refillable EC provided together with e-liquid once per week for 4 weeks (three flavours; two nicotine strengths: 12 or 18 mg/ml) with information on EC use and information on quitting smoking.                                                                                         | Retention rates of 75%, 63% and 59% at 4, 12 and 24 weeks, respectively. High perceived value of the intervention. Barriers included participants' personal difficulties and cannabis use. Facilitators were desire to change, free electronic cigarettes and social dynamics. Good staff capacity to support the study.                                                                                                      |
| Sifat et al., 2024   | USA | Pilot study                                                                                               | Adults who smoked combustible cigarettes (CC) daily recruited from an urban day shelter | 60                                 | 48.8  | To determine whether switch to EC is a useful tobacco harm reduction approach and to evaluate the addition of financial incentives.                                         | EC with or without financial incentives. All participants received an EC device and nicotine pods during for 4 weeks; those in the ENDS+FI group also received escalating weekly incentives for abstinence during the same period. Key follow-ups were conducted at 4- and 8-weeks post-switch. | EC switching with financial incentives promising as a harm reduction tool. CC smoking abstinence rates among ENDS and ENDS +FI were 3.3 % vs. 13.3 % at 4 weeks and 10.0 % vs. 13.3 % at 8 weeks in the control group. ENDS +FI participants reported fewer days of smoking, more days of EC use, and greater reductions in CO at 4-week follow-up. Most participants reported a high likelihood of switching to EC (67.7 %). |
| Dawkins et al., 2025 | UK  | Cluster RCT                                                                                               | Adults who smoked daily and accessed 32 homeless support centres                        | 475 in 32 homeless support centres | 43.7  | To measure the effectiveness of an EC starter kit and 4-week supply of e-liquids provided to people who smoked accessing homeless support centres compared with usual care. | EC starter kit and 4-week supply of e-liquids provided in e-cigarette arm vs UC arm (brief advice and signposting to local stop smoking service).                                                                                                                                               | EC did not support sustained smoking abstinence for 24 weeks. Sustained 24 weeks CO-validated smoking cessation rates were 5/239 (2.1%) with EC vs. 2/236 (0.8%) with UC (aRR: 2.43, 95%CI: 0.51–11.64)                                                                                                                                                                                                                       |
| Ford et al., 2025    | UK  | Process evaluation of Cluster RCT                                                                         | Adults who smoked daily and accessed 32 homeless support centres                        | 475 in 32 homeless centres         | 43.7  | To explore the factors which influenced potential smoking abstinence among participants receiving an EC intervention within the cluster RCT.                                | EC starter kit and 4-week supply of e-liquids provided in e-cigarette arm vs usual care arm (brief advice and signposting to local stop smoking service).                                                                                                                                       | After receiving the intervention, participants demonstrated high capability to use EC and appreciation of EC for harm reduction. Some participants reported dissatisfaction with vaping. Opportunity for behaviour change was strengthened by perceived acceptability to vape and social support beyond the centre but hindered by a smoking culture and perceived lack of staff support.                                     |

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|                 |    |             |                                                                  |                            |      |                                                                                                                                  |                                                                                                                                                           | Motivation was enhanced by EC efficacy belief, pride from cutting down, and financial benefits of vaping, but negatively impacted by challenging personal circumstances    |
| Li et al., 2025 | UK | Cluster RCT | Adults who smoked daily and accessed 32 homeless support centres | 475 in 32 homeless centres | 43.7 | To determine the cost-effectiveness of providing an EC for smoking cessation in homeless support centres compared to usual care. | EC starter kit and 4-week supply of e-liquids provided in e-cigarette arm vs usual care arm (brief advice and signposting to local stop smoking service). | Providing EC for smoking cessation in homeless support centres was more costly than usual care, but the small increase in quality-adjusted life-years was not significant. |

Notes: CBT : Cognitive behavioral therapy, CO: Carbon monoxide, CPD: Cigarettes smoked per day, ENDS/EC: Electronic Nicotine Delivery Service/E-cigarette, N/A: Not available, NRT: Nicotine replacement therapy, PEH: People experiencing homelessness, PTQ: Power to Quit, RCT: Randomized controlled trial, SC/UC: Standard Care/Usual Care.  
Age is expressed in mean years or a year range, unless indicated otherwise (median, average).

**Supplementary Table 5. Characteristics of studies on collaborative professional models for interventions to reduce smoking among people experiencing homelessness**

N= 6 out of 55 total selected articles. ~~Searched~~ Pubmed and Web of Science databases searched up to July 1<sup>st</sup>, 2026.

| Author, year                | Country   | Study Design                         | Participants                                                                                                    | Sample size              | Age          | Aim                                                                                                                                                                           | Intervention                                                                                                                                                                                                                                                                                                                                                                                                      | Main findings                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------|-----------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Segan et al., 2015          | Australia | Uncontrolled before and after study. | Individuals experiencing homelessness interested in reducing smoking or quitting, 18 year old or above; nurses. | 49 enrolled<br>14 nurses | Average : 48 | To examine the feasibility, acceptability, and effectiveness of a smoking cessation treatment model delivered by staff of a homeless persons programme.                       | Co-management model involving a nurse, a doctor, and Quitline: nurse-assisted bulk-billed doctor appointment to review physical and mental health, medications affected by tobacco and prescription of nicotine patch and/or bupropion, or varenicline for up to 3 months; up to 12 weekly smoking cessation appointments with a nurse; proactive phone support for 3 months. Assessment 6 months post-enrolment. | Integrating nurse support with readily accessible cessation interventions was feasible and acceptable. While quit rates were low, treatment benefits included harm-reduction, significant financial savings, and psychological benefits. Tobacco expenditure and CO readings at follow-up approximately halved. Participants who used Quitline were more likely to report a 50% or higher reduction in tobacco consumption at 6 months. |
| Beckham et al., 2018        | USA       | Qualitative study.                   | Staff members from 7 Veteran Affairs (VA) homeless provider teams.                                              | 34                       | N/A          | To evaluate the feasibility of an integrated care (IC) approach to improve smoking cessation interventions and evaluate the utility of the learning collaborative (LC) model. | Self-reported questionnaires, to assess providers' perceptions of the LC model and the number of providers delivering IC.                                                                                                                                                                                                                                                                                         | 54% of providers reported delivering IC at the end of training and at 10-months. Providers rated face-to-face trainings and collaborative team trainings as the most helpful LC components. Barriers to the use of LC included lack of leadership support and lack of ability to electronically track progress through the electronic medical record.                                                                                   |
| Hartman-Filson et al., 2022 | USA       | Single-arm, community-based,         | PEH and trained shelter staff.                                                                                  | PEH :52<br>Staff :69     | 50           | To test a community pharmacy-linked smoking cessation program integrated                                                                                                      | Shelter staff trained to provide brief cessation counseling, tested in two shelters including one-time pharmacist-delivered cessation                                                                                                                                                                                                                                                                             | Community-based pharmacists judged effective in expanding smoking cessation services in homeless shelters.                                                                                                                                                                                                                                                                                                                              |

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|                           |     | uncontrolled trial.                             |                                                                                                  |                                           |      | within two homeless shelters to increase quit attempts and reduce daily cigarette consumption.                                                                                                              | counseling and nicotine replacement therapy (NRT) for 3 months.                                                                                                                                                                  | 70% of participants reported making a quit attempt, 84% used NRT. Having an encounter with staff in the past week was associated with a 40% reduction in weekly consumption.                                                                                                                                                                                                                                                                                                                                                                                                      |
| De Los Reyes et al., 2023 | USA | Single-arm community-based, uncontrolled trial. | Homeless persons recruited from three homeless shelters.                                         | 51                                        | 46.5 | To evaluate a community pharmacist-linked cessation intervention.                                                                                                                                           | One-time pharmacist-delivered counseling and NRT for 3months. Questionnaires at baseline and during 12 weekly follow-up visits. In-depth interviews with residents to understand barriers to and facilitators of engagement.     | A pharmacist-linked smoking cessation program can reduce structural barriers to cessation care and reduce tobacco use among people experiencing homelessness: average daily cigarette consumption was reduced by over 55% CO-verified abstinence. Use of medications in preceding week associated with a 29% reduction in weekly consumption, and increased odds of a quit attempt (x2.89).                                                                                                                                                                                       |
| Hudmon et al., 2023       | USA | Cross-sectional survey.                         | Participants recruited in 11 health access events across 2 food pantries and 1 homeless shelter. | 639 individuals assessed for tobacco use. | N/A  | To evaluate the feasibility of a pharmacist-led tobacco use screening and brief cessation intervention during mobile health access events.                                                                  | Survey administered verbally by pharmacy team members as part of a broader intervention, which also involved the administration of vaccines (COVID-19 and influenza). Brief cessation counseling provided by pharmacy personnel. | Pharmacist-led health events at sites serving populations that are under-resourced affording unique opportunities to interface with and provide brief interventions for smokers. Among the 639 persons assessed for tobacco use, 189 self-reported current use (29.6%); 23.7% at food pantries, and 66.7% at their homeless shelter. About half indicated readiness to quit within 2 months; of these, 9 out of 10 accepted a tobacco quitline card.                                                                                                                              |
| Kui et al., 2025          | USA | Single-arm community-based, uncontrolled trial. | adults experiencing homelessness from three homeless shelters                                    | 206                                       | 47   | To explore the role of mental health and substance use disorders on cigarette consumption and weekly quit attempts among adults experiencing homelessness who were engaged in a community pharmacist-linked | 12-week pharmacist-linked smoking cessation program that involved pharmacist counseling and furnishing of NRT and brief cessation coaching by trained shelter staff.                                                             | Adjusting for baseline mental health conditions and other covariates, the use of pharmacist-furnished NRT was associated with lower weekly consumption (Incidence Rate Ratio [IRR]: 0.74, 95 % Confidence Interval [CI]: 0.71–0.76) and increased weekly quit attempts (Adjusted Odds Ratio (AOR): 1.78, 95 % CI: 1.23–2.58). After adjusting for baseline substances used and other covariates, use of pharmacist-furnished NRT was associated with lower weekly consumption (IRR: 0.74, 95 % CI: 0.73–0.76) and increased weekly quit attempts (AOR: 1.99, 95 % CI: 1.45–2.74). |

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|  |  |  |  |  |  | smoking cessation<br>program. |  |  |
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Notes: CBT : Cognitive behavioral therapy, CO: Carbon monoxide, CPD: Cigarettes smoked per day, ENDS/EC: Electronic Nicotine Delivery Service/E-cigarette, N/A: Not available, NRT: Nicotine replacement therapy, PEH: People experiencing homelessness, PTQ: Power to Quit, RCT: Randomized controlled trial, SC/UC: Standard Care/Usual Care.  
Age is expressed in mean years or a year range, unless indicated otherwise (median, average).

**Supplementary Table 6. Characteristics of studies on smoke-free and smoking cessation policies in services for people experiencing homelessness**

N= 7 out of 55 total selected articles. ~~Searched~~ Pubmed and Web of Science databases searched up to July 1<sup>st</sup>, 2026.

| Author, year                   | Country | Study Design                     | Participants                                                                     | Sample size          | Age  | Aim                                                                                                                                      | Intervention                                                                                                                                                                                                | Main findings                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|---------|----------------------------------|----------------------------------------------------------------------------------|----------------------|------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shadel et al., 2014            | USA     | Qualitative study                | 19 service providers of 23 shelters and drop-in centers serving homeless youths. | 19 service providers | N/A  | To document service providers' interest in smoking cessation services to homeless youths, potential barriers, and ways to overcome them. | No intervention. Perceptions of smoking cessation policies and implementation. Semi-structured telephone interviews with 19 service providers from 23 shelters and drop-in centers serving homeless youths. | 91% of homeless facilities were interested in smoking cessation services but 84% did not offer any. Barriers included lack of resources (e.g., money, personnel) to support the programs, staff training, and concern that smoking cessation may not be a high priority for homeless youths. Service providers preferred less intensive smoking cessation program that could be delivered on-site. |
| Businelle et al., 2015         | USA     | Pre-post Intervention            | Homeless adults                                                                  | 394                  | 43.3 | To examine guest support for and expected/actual effects of a smoking ban.                                                               | 2 waves (before and after partial outdoor smoking ban).                                                                                                                                                     | Most participants were smokers (76%) and supported the creation of a large smoke-free zone, but support for a shelter-wide smoking ban was limited. Participants who completed both study waves experienced a reduction in expired carbon monoxide at wave 2.                                                                                                                                      |
| Vijayaraghavan et Pierce. 2015 | USA     | Questionnaire after Intervention | Homeless adults in emergency and transitional housing facilities.                | 170                  | 43,3 | Current and former smokers were interviewed on smoking behaviors and attitudes toward smoking policies.                                  | No intervention. Perceptions of smoke-free policies. Prohibition of smoking indoors and outdoors within five blocks of the building, permitted during four smoking breaks per day outside the building.     | Smoke-free policies judged to reduce smoking behaviors. Three-fourths of smokers agreed that facility policies reduced their smoking, and about half thought they were associated with either a quit attempt or cessation. 60% agreed that further restrictions could increase interest in quitting smoking completely.                                                                            |
| Sung et al., 2017              | USA     | Qualitative study                | Administrators of 9 homeless service agencies.                                   | N/A                  | N/A  | To evaluate tobacco control policies in homeless housing programs                                                                        | No intervention. Survey and open-ended interviews assessing institutional smoking- policies and cessation programs; barriers and                                                                            | Most programs adopted smoke-free grounds and limited staff smoking. Most administrators receptive to policies that promote a tobacco-free culture; however, clients have unique challenges                                                                                                                                                                                                         |

|                             |     |                                                                       |                                             |                     |      |                                                                                                           |                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|                             |     |                                                                       |                                             |                     |      |                                                                                                           | receptivity to tobacco control interventions.                                                                                                                                                                                         | making traditional smoking cessation programs unfeasible.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Vijayaraghavan et al., 2017 | USA | Qualitative study                                                     | Homeless current or former smokers.         | 66                  | 42.9 | To examine attitudes toward smoke-free policies and perceptions of e-cigarette use.                       | No intervention. Perceptions of smoke-free policies and e-cigarette use, anti-tobacco norms, attitudes toward smoke-free policies.                                                                                                    | Strong support for indoor and outdoor smoke-free policies to limit secondhand smoke exposure for non-smokers and children. Interest in e-cigarettes in areas of smoking prohibition and/or as a cessation aid.                                                                                                                                                                                                                                                                                                                                             |
| Cox et al., 2022            | UK  | Cross sectional survey including structured and open-ended questions. | Homeless services recruited from charities. | 99 homeless centres | N/A  | To document smoking and e-cigarette policies of UK homeless services and identify areas of good practice. | No intervention. Perceptions of smoke-free policies and smoking cessation support. 99 homeless services answered open-ended questions: policies, screening, cessation, training for staff, types of cessation support, good practice. | Smoking accounted for across different policy types (92%, 56% stand-alone smoking policy) and restricted in some areas (84% with some indoor and outdoor areas). Most centers did not provide staff training to support smoking cessation. Good practice included smoking cessation support embedded in routine health reviews or visits from SSS and tangible harm reduction support. Areas for improvement include staff training, staff smoking with service users and skipping routine screening questions around smoking.                             |
| Martinez et al., 2022       | USA | Cross-sectional survey                                                | Adult guests of a homeless shelter.         | 394                 | 43.3 | To characterize guest support for smoke-free policies within a homeless shelter.                          | No intervention. Perceptions of smoke-free policies. Assessment of participant sociodemographics, smoking status, behavioral health diagnoses, and support for two versions of an on-property outdoor courtyard smoke-free policy.    | Implementation of smoke-free living/workplace policies in homeless shelters enjoy more support - specifically, non-smokers - than anticipated by shelter administrators. Overall, 64.0% of participants supported a partial, and 32.0% a full smoking ban. Older participants, non-veterans, former smokers, and those without severe mental illness had significantly higher odds of supporting a partial smoking ban. Relative to current smokers, never smokers and former smokers had significantly greater odds of supporting a complete smoking ban. |

Notes: CBT : Cognitive behavioral therapy, CO: Carbon monoxide, CPD: Cigarettes smoked per day, ENDS/EC: Electronic Nicotine Delivery Service/E-cigarette, N/A: Not available, NRT: Nicotine replacement therapy, PEH: People experiencing homelessness, PTQ: Power to Quit, RCT: Randomized controlled trial, SC/UC: Standard Care/Usual Care.  
Age is expressed in mean years or a year range, unless indicated otherwise (median, average).

### ***Appendix 1: Complete citations for included articles (N=55)***

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