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Review Article

A Systematic Review of the Effectiveness of Brief Health Behaviour Change Interventions on Service Users Accessing the Third and Social Economy Sector

Beth Nichol,[1] **Angela M. Rodrigues**,[2] **Rob Wilson**,[3] **and Catherine Haighton**[1]

[1]*Department of Social Work, Education, and Community Wellbeing, Northumbria University, Newcastle upon Tyne, UK*
[2]*Department of Psychology, Northumbria University, Newcastle upon Tyne, UK*
[3]*Newcastle Business School, Northumbria University, Newcastle upon Tyne, UK*

Correspondence should be addressed to Beth Nichol; bethany.nichol@northumbria.ac.uk

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There are well-established relationships between socioeconomic status (SES) and all aspects of health. Brief interventions offer a cost-effective method to target health behaviours, helping to reduce these health inequalities. Furthermore, the third and social economy (TSE) sector, which encompasses all not-for-profit groups and organisations that operate outside of the family, household, and government, offers access to those of lower SES and a motivated workforce with established relationships with service users. The aim of this systematic review was to investigate the effectiveness of brief interventions targeting health behaviours and their social determinants, when delivered within TSE settings or by TSE service providers (PROSPERO registration number: CRD42022301969). Eight databases were searched for brief health behaviour change interventions lasting under 30 minutes per session, delivered by volunteers within the TSE sector or delivered within the TSE sector provided by or within a TSE, from all possible publication dates to February 2022. Behaviours relating to smoking, diet, alcohol, physical activity, housing, or finance were included. Narrative synthesis and Cochrane risk of bias tools were applied. Eight eligible studies were identified, most measuring smoking behaviour and with a considerable risk of bias. Only one study was set both within a TSE setting and delivered by TSE providers. The most common behaviour change techniques applied were the provision of information on both the consequences of the behaviour and further support. Brief interventions showed a minimal, if any, reduction in smoking behaviour and cholesterol levels, with more intensive interventions resulting in a far greater improvement in smoking, diet, and physical activity behaviours than brief intervention. This study highlighted a lack of research on brief interventions within the TSE sector, particularly for alcohol consumption. More qualitative research is needed to explore the feasibility and acceptability of brief interventions within the TSE settings. Limitations are discussed, including the high risk of bias of included studies and the exclusion of mental health.

1. Introduction

It is becoming increasingly apparent that low socioeconomic status (SES) negatively and dramatically affects health status [1]. This is evident in increased morbidity from a range of chronic diseases [2–5] and a stark reduction in life expectancy, as the gap in life expectancy due to differences in education ranged between two and eight years for men and a half to four and a half years for women across Europe [6]. Furthermore, occupation accounted for a two-year gap overall in life expectancy between differing occupations across developed countries [7]. Concerning the drivers for this difference in mortality and morbidity, health behaviours are affected by low SES such as lower dietary quality [8], lower levels of physical activity [9], and higher smoking rates [6, 8]. However, even though alcohol consumption is lower in the manual labour class as compared to the professional and managerial classes [10], the risk of disease [11] and death [12] related to alcohol is higher among individuals from manual labour class or low SES. Furthermore, there is evidence that

even within the UK in which healthcare is universally provided by the National Health Service (NHS), quality of treatment is unequal among the spectrum of SES. For example, patients of lower SES have been found to wait longer for hip replacements [13] and coronary revascularization procedures [14]. Furthermore, the majority of this difference in waiting times is not due to personal choice of hospital or procedure [14] or from severity of the illness [13]. Indeed, physicians are more likely to view patients of low SES more negatively on a number of dimensions such as intelligence [15]. While this inequality has been found to be driven more by education than income, both influence waiting times independently [13].

Certainly, the aforementioned inequalities justify international action, one approach being health intervention. While altering the environment to facilitate and encourage behaviour change, such as the case with nudging, which can be a powerful tool [16, 17], brief advice lasting between seconds and 30 minutes can be an opportunistic and cost-effective approach to change health behaviour [18–20]. There is some evidence that brief interventions are effective in improving health behaviours. For example, a review of 52 trials found that brief interventions delivered by healthcare professionals (HCPs) within a range of healthcare and public sector settings significantly reduced the quantity and frequency of alcohol consumption [21]. Another review of 42 controlled trials comparing smoking cessation advice interventions delivered by HCPs within healthcare settings found that while there was no significant difference in smoking cessation interventions lasting under or over 20 minutes, both increased the quit rate by 3% [19]. Overall, brief interventions have been shown to be effective in reducing alcohol consumption and smoking, with some evidence to indicate that they can improve activity levels and dietary quality.

However, there is a growing consensus that targeting socioeconomic determinants of health is far more effective in improving health behaviours than health promotion alone [22]. Indeed, while the available evidence to support the effectiveness of brief interventions for smoking, alcohol, diet, and physical activity rarely explores the impact of SES, there is some evidence that brief interventions to increase physical activity are less effective for those of lower SES [23] and that a decline in dietary quality after brief intervention was most strongly predicted by low educational attainment [24]. By targeting the root cause of health inequalities including education, income, and housing, health [25] and health behaviours including reduced smoking [26] and alcohol [27] are improved in turn. Thus, any evaluation of brief interventions with a focus on those of low SES should recognise the importance and relevance of the social determinants in improving health behaviour. Although it is acknowledged that social determinants such as education and income are less amenable to change through intervention at an individual level, discussion of topics including finance and housing can facilitate improved management and offer opportunity for further support [25].

However, healthcare may not be the most appropriate nor effective setting to deliver brief interventions to those of low SES. Considering the inequalities with access and quality of treatment within healthcare, it is not surprising that a random sample of 1,187 participants in England and Wales found how the system was run including waiting times to be the main sources of distrust of patients [28]. Additional barriers that have been cited during qualitative work on brief interventions include limited time and competing priorities of healthcare professionals [29–31], and it is being viewed as an inappropriate time to talk about lifestyle behaviours that may be unrelated to a patient's presentation to healthcare [29]. Building a trusting long-term relationship and rapport with service users is consistently identified as a facilitator [32, 33], which may not always be possible given that the average general practice (GP) appointment in the UK is just over 9 minutes, the shortest across the whole of Europe [34]. An alternate setting is the third and social economy (TSE) sector, informally described as the voluntary and community sector and defined as any action where community wellbeing is the main goal, independent of the government, and participants can freely join [35]. This includes nonprofit institutions (NPIs), volunteers working outside of their family and household, and cooperatives and mutual and social enterprises where the main goal is social impact to join and are outside of the family or household (29). TSE may act as a more suitable environment to deliver health behaviour change interventions given that it is better able to access those of low SES [36], trusting relationships are built between service providers and users [37], and the potential for delivery by volunteers provides further cost-effectiveness [38]. Indeed, reviews of a range of intervention types and intensities within food banks and pantries found them to be effective in changing health behaviour [38, 39], with low cost, reliance on volunteers to implement, and convenience for participants found to be the main facilitators of effectiveness [38]. However, as far as we are aware, there are no systematic reviews examining the effectiveness of brief interventions in the whole of the TSE sector.

Therefore, the aim of this systematic review was to explore the effectiveness of brief interventions on preventative health behaviours and social determinants of health within the TSE settings. Ultimately, this will allow us to explore if brief interventions targeting those of lower SES and outside of healthcare settings remain effective in changing health behaviour.

2. Methods

The protocol for this systematic review was preregistered via PROSPERO [40], registration number: CRD42022301969 (accessible here https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42022301969). The search terms of the registration were updated to include faith-based settings, as these were realised during searching to be relevant and within scope. The PRISMA 2020 statement was used to guide reporting throughout [41] (Supplementary Material S1).

2.1. Inclusion/Exclusion Criteria. Any quantitative studies which measured the effectiveness of brief interventions on health or its social determinants were included, providing participants were over 18 years. Interventions were brief,

individual, one-to-one conversations lasting up to 30 minutes each time, and with or without follow-up sessions. Conversations were required to discuss at least one of the following: diet, physical activity, smoking, alcohol intake, housing, employment, or finance. Studies with any or no comparator groups were included. Given the paucity of available literature related to brief interventions within TSE, interventions were included if they were either delivered by volunteers within the TSE sector or delivered within the TSE sector, both as defined by Salamon and Sokolowski [35].

Settings were included as TSE if social impact or benefit was the primary goal, operation was independent of the government and they were free to dissolve at any time without governmental orders, and members were not within a family or household or legally obliged to join. However, as a focus of this review is health inequalities, educational settings were excluded due to a historical association between attaining and performance within higher education and social inequalities [42]. Furthermore, although educational settings are technically included within the TSE definition [43], institutional sectoring of educational settings as governmental organisations as opposed to the third sector is so engrained that there is little justification to include both educational settings and the remaining TSE groups and organisations within one review [44]. Included studies based on the TSE setting were required to complete the first session in-person at the TSE setting.

Volunteers were included as TSE following the definition by Salamon and Sakolowski [35]; individuals freely choose to carry out unpaid work for a TSE organisation or group that benefits others, which was carried out for a consistent period of time. For the same reason as highlighted above, volunteers from educational settings were excluded, although studies that included both volunteers from TSE and educational settings were included. Included interventions based on volunteers from TSE settings could be delivered via any medium, such as telephone or video call.

The main outcome inclusion criteria were a change in behaviour related to at least one of the following: alcohol consumption, smoking, diet, physical activity, housing, or finance. There were three broad types of behavioural outcome that were included to measure the effect: self-report (e.g., food diaries), objective measures of behaviours (e.g., accelerometer or exhaled carbon monoxide), and biological indicators (e.g., BMI, blood pressure, glycaemic index, or cholesterol), where studies measured multiple of these; the most objective measure was taken as the primary outcome and any remaining measures as additional. Interventions only measuring knowledge, intentions, or self-efficacy were excluded.

2.2. Search Strategy. The search was applied to the Health Research Premium collection (Consumer Health Database, Health and Medical Collection, Healthcare Administration Database, MEDLINE®, Nursing and Allied Health Database, Psychology Database, and Public Health Database), PsychArticles, and ASSIA, all via ProQuest. The search was limited to human, peer-reviewed studies written in English language and searched all possible publication dates up to February 2022. Forward and backward citation searching as well as communication with colleagues and academics was used to identify additional studies.

Search terms were grouped into four domains: study type, intervention type, setting or provider, and target behaviour, as shown in Table 1. Search terms were entered using truncations, wildcards, and proximity operators and combined with Boolean operators "OR" within groups and "AND" between grouping. An example of the search specific search string is provided in Supplementary Material S2. Scoping was applied before finalising search terms to ensure all key words were captured.

2.3. Study Selection. Search results were downloaded as an RIS formatted file and uploaded to Rayyan (https://www.rayyan.ai/) for the recording of screening decisions, before the removal of duplicates. All studies were then screened by the title and abstract by one reviewer (BN), followed by full-text screening, before data extraction which was uploaded publicly via SRDR plus [45]. A second reviewer (CH) independently screened and extracted the first 10% of papers at each stage, with any disagreements resolved through discussion. Both reviewers referred to the inclusion-exclusion criteria table throughout screening (Supplementary Material S3).

2.4. Risk of Bias Assessment. Risk of bias was assessed in accordance with the Cochrane recommendations [46, 47]. Randomised controlled trials (RCTs) were assessed using the Cochrane risk of bias tool version 2 (ROB-2) [48], and cluster randomised trials were assessed with an adaptation of this. Nonrandomised trials were assessed using the ROBINS-I tool [49], and for studies without a control group, an adaptation of ROBINS-I was applied.

2.5. Data Extraction and Synthesis. Data extraction was adapted from the suggested form by the Cochrane EPOC group [50] and completed via SRDR plus, publicly available here, https://srdrplus.ahrq.gov/public_data?id=2764&type=project. Although multiple studies measured the point prevalence of abstinence (PPA) in the same way, heterogeneity across comparison groups meant that meta-analysis was not possible. Therefore, following guidance from Popay et al. [51], narrative synthesis was applied to the included studies, providing more weight to studies with a low risk of bias, and reported values for each outcome are displayed in Table 2.

In addition, the content of included interventions was coded for behaviour change techniques (BCTs) by one reviewer (BN) using the two versions of the Behaviour Change Technique Taxonomy: a classification agreed among 14 behaviour change experts [60]. However, for studies that measured smoking behaviour, the taxonomy designed specifically for individual level smoking cessation interventions was used as the primary source for intervention coding [61], with any remaining techniques coded using the general taxonomy [60]. Reviewer BN and a third reviewer

Table 1: Search terms applied (with phrase searching, truncation, wildcard, and proximity operators) which were categorised by the TSE setting or provider, intervention type, behaviour, and study type.

Setting/service provider	Intervention	Behaviour	Study type
"Food assistance," "socioeconomic disadvantage," "girl guide*," "boys brigade," scout*, "university of the third age," U3A, "lay health educator*," "lay health volunteer*," "lay health advisor*," "lay counsellor*," ambassador*, "food bank*," "food plants*," "age UK," "red cross," "soup kitchen*," "homeless shelter*," "community bank*," "nongovernmental organisation," "nongovernmental institution," "social enterprise*," "leisure trust", "third sector," voluntary, cooperative, charity*, "food support," "free meals," "food insecurity*," "food security*," "nonprofit," "not for profit," "faith-based," "faith-placed," "church-based," "church-placed," church*, diocese*, faith, mosque*, parish, protestant, religion*, synagogue, temple, congregation, clergy, "place of worship"	(Brief near/3 (intervention*, therapy*, interview*, advice, teach*)) (minimal near/3 (intervention*, therapy*, interview*, advice, teach*)) (early near/3 (intervention*, therapy*, interview*, advice, teach*)) (motivate* near/3 (intervention*, therapy*, interview*, advice, teach*)) (behaviour near/3 (intervention*, therapy*, interview*, advice, teach*)) (education* NEAR/3 (intervention*, therapy*, interview*, advice, teach*)) counselling, advice, "low intensity," screening, cessation, promotion*, prevention, abstinence, quit, control	smoking*, tobacco, nicotine, alcohol*, drinking, exercise, "physical activity," sedentary, nutrition, diet, food, obesity, weight, housing, employment, finance*	effect* "before after" clinical control* blind* "multicent* studies" random* placebo* trial* group* allocate* mask* quantitative evaluation*

(AR) met to discuss coding before independently coding 10% of the included studies, with any discrepancies resolved through discussion. The remaining coding was checked by and discussed with reviewer AR until a consensus was reached.

3. Results

The PRIMSA diagram for screening of studies is displayed in Figure 1. Forty-three articles were excluded based on full text for the following reasons: not conducted within a TSE setting [62–71], not delivered by a TSE service provider [72–81], not brief [82–91], not one-to-one [92–105], and no effectiveness measure [106–114], and the brief intervention was part of a combined intervention [115–128]. Furthermore, two studies were excluded after contacting the authors to request more information with no response within the allocated time [129, 130].

3.1. Study Characteristics. Characteristics and findings of the eight included studies [52–59] are displayed in Table 3. Seventy-five percent of the included studies measured smoking behaviour [52–57], and the remaining two studies measured factors related to diet [58, 59] and exercise [58]. The included studies were a mixture of TSE settings [54, 57–59] and TSE service providers [52, 53, 55, 56, 58]. TSE settings ranged from churches [58, 59], homeless shelters [54], and a food bank [57], and TSE service providers were often peers such as fellow veterans [52] or church attenders [58], although some were volunteers from voluntary organisations [55, 56] such as girl guides [53]. Only one study utilised a brief intervention delivered both within and by someone from TSE [58]. For service providers from TSEs, training in brief intervention ranged from one [52] to 16 hours [58]. For the remaining studies, providers ranged from trained counsellors [54] to clinical psychology PhD students [57] and to study authors [59]. Concerning study samples, sample size at the beginning of the study ranged from 64 [57] to 1,226 [55] and were mostly male. Both studies conducted at nonreligious TSE sites reported samples that were of lower SES [54, 57] and thus showed greater comorbidities such as substance misuse [54], higher weight status [54], and greater financial strain [57] than samples that were not recruited via TSE [53, 55, 56]. Of the studies measuring smoking behaviour, samples ranged from most participants smoking between 1 and 10 per day [55, 56] to an average of 19 per day [54].

The approach and techniques used for the content of the brief interventions varied. Most utilised brief advice [54, 56, 58, 59], such as the AWARD framework [53, 55],which follows the following structure: ask about smoking status, warn of the consequences of smoking, advise on quitting, refer smokers to cessation services, and do it again at a later date where necessary [112]. Two studies utilised a condensed or low-intensity form of motivational interviewing (MI) [54, 57], which is a counselling style that aims to increase an individual's motivation for behaviour change [131]. Another study applied behavioural counselling, which included positive reinforcement and handling thoughts and cravings around smoking [52]. For one study, both arms were eligible for inclusion [54]: a six-session programme of MI and a one-off session of brief advice. Brief interventions ranged from a one-off session [54, 56, 57, 59] to multiple sessions [52–55, 58] of up to six [54].

Table 2: A summary of the values was reported related to the effectiveness of brief interventions for improving health behaviours.

Outcome	Type of measurement	Measure	Study	Intervention effects					
				1 m	6 w	2 m	3 m	6 m	18 m
Smoking	Self-report	Self-reported 7 days PPA (%)	[52]	—	—	26.4	—	—	—
			[53]	8.5	—	—	7.5	12.2	—
			[54] (MI)	—	—	15.28	—	16.67	—
			[54] (BA)	—	—	12.2	—	11.7	—
			[55]	5.5	—	6.3	8.9	9.4	—
			[56]	6.8	—	11.0	8.6	12.0	15.7
		≥50% reduction (%)	[53]	17.5	—	—	6.1	15.1	—
			[55]	24.5	—	21.6	23.8	23.3	—
			[56]	18.8	—	16.7	16.2	19.3	10.4
		Nicotine patch use (%)	[54] (MI)	46.8	40.7	33.8	—	—	—
			[54] (BA)	42.5	36.5	33.7	—	—	—
			[57]	5.6	—	—	—	—	—
		Use of smoking cessation services (%)	[53]	—	—	—	—	7.5	—
			[55]	0.5	—	0.5	1.2	2.4	—
			[56]	2.9	—	3.4	6.3	7.1	8.9
		Reduction in the no. of cigarettes (unit)	[57]	−3.92	—	—	—	—	—
		Change in self-efficacy to adhere (scale point)	[54] (MI)	—	5.7	—	—	—	—
			[54] (BA)	—	5.7	—	—	—	—
		Change in motivation to adhere (scale point)	[54] (MI)	—	0.4	—	—	—	—
			[54] (BA)	—	−0.4	—	—	—	—
		Serious quit attempt (%)	[57]	27.8	—	—	—	—	—
	Physiological	Biochemically verified 7 days PPA (%)	[53]	—	—	—	—	5.7	—
			[54] (MI)	—	—	9.3	—	9.3	—
			[54] (BA)	—	—	8.9	—	5.6	—
			[55]	—	—	—	3.8	5.0	—
			[56]	—	—	—	4.7	3.9	6.0
				6 m	12 m				
Diet	Self-report	Change in the no. of fruit vegetable servings (unit)	[58]	—	0.0				
		Change in % meeting 5 a day (%)	[58]	—	−0.6				
		Change in calories from fat (unit)	[58]	—	0.1				
Exercise	Self-report	Change in MET hours of moderate-vigourous activity (hours/week)	[58]	—	0.1				
		Change in % meeting government physical activity recommendations (%)	[58]	—	−1.6				
Diet and exercise	Physiological	% decrease in cholesterol (%)	[59]	16.0	—				

Type of value varies depending on the measure used (see "measure" column for specific details of the measure and unit of measurement). To facilitate comparison across studies, 4 weeks has been equated to 1 month. Timescales reported are from baseline. PPA = point prevalence of abstinence; MI = motivational interviewing; BA = brief advice; MET = metabolic equivalents; *m* = months; *w* = weeks.

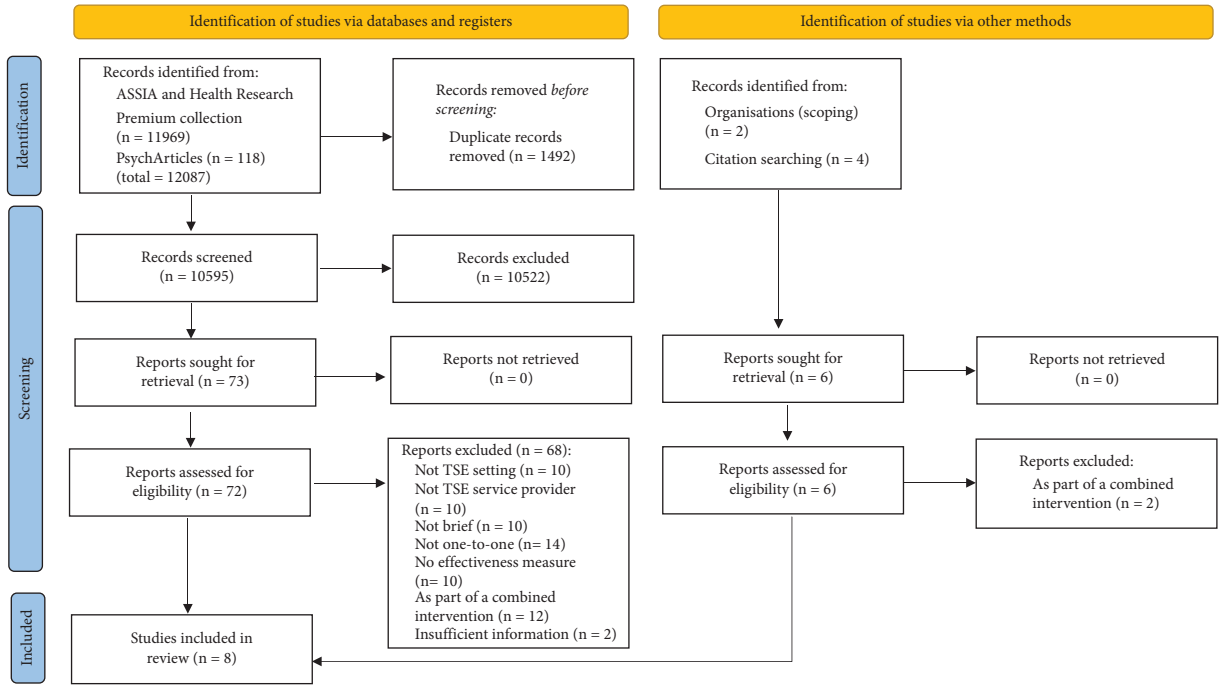

Figure 1: PRIMSA diagram [41] depicting how studies were screened and distinguishing between where they were sourced.

Studies varied in design. While most were of an RCT [54, 57] or cluster RCT design [55, 56, 58], others lacked randomisation of groups [59], and two involved no comparison group at all [52, 53]. For those that did contain a comparison group, there were a variety of other intervention arms and combinations of these [54–59]. Mostly, studies compared a brief intervention to another intervention such as nicotine replacement therapy [57], a form of active referral [55], or tailored messaging [58], alongside a control condition of minimal treatment or usual care, with one study also testing a combination of the interventions [58]. Studies differed as to whether brief intervention was considered as an intervention [54, 55, 57, 58] or control arm [54, 56, 59]. As most studies targeted smoking behaviour, the most common outcome measures for smoking were a 7-day self-reported point prevalence of abstinence (PPA) [52–56] and biochemically verified PPA [53–56]. Smoking reduction by 50% was another commonly used measure [53, 55, 56], as well as utilisation of smoking cessation services [53, 55–57]. Other outcomes measured are related to diet [58, 59] and physical activity [58].

3.2. Risk of Bias. Risk of bias results for the two individual RCTs [54, 57] are shown in Figure 2(a), and risk of bias for the three cluster RCTs [55, 56, 58] is shown in Figure 2(b). Two RCTs showed the low risk of bias [54, 55], while the remaining three showed the high risk of bias (refs). Studies varied on the domains that were most at risk of bias, although all studies showed low risk of bias from the randomisation process, and none were judged as high risk for measurement of the outcome.

For the three nonrandomised studies (refs) (Figure 3), risk of bias was often uncertain, usually resulting in a serious overall risk of bias.

3.3. Findings

3.3.1. Smoking. Six studies focused on smoking behaviour [52–57], of which specific values are displayed in Table 2. The most objective measure of smoking utilised was biochemically verified by 7 days PPA, which was reported by several studies [53–56]. Biochemically verified abstinence was as little as a third of the abstinence rates indicated by a self-report [56], supporting the validity of the objective measure. One study with a low risk of bias showed the smallest difference in abstinence rates, which were reduced by around a third [54]. Abstinence rates at 6 months for brief intervention groups ranged from 3.9% [56] to 5.7% [53]. Brief interventions generally had a minimal effect on biochemically verified abstinence [53], which did not differ significantly from minimal intervention groups [54, 55] such as provision of a self-help booklet [55]. More intensive referral interventions showed significantly greater biochemically verified abstinence rates when compared to brief interventions [55, 56], which remained when adjusting for baseline covariates such as age, nicotine dependency, and intention to quit [56].

Self-reported 7-day PPA rates at 6 months varied between 9.4% and 12.2% [53, 55, 56]. While there was evidence of a dose-response effect [52], more intensive interventions showed a significantly higher abstinence rate [55, 56], and brief advice did not significantly differ in the effect from the

Table 3: Summary table of the included studies.

Papers	Country	SS	Target beh.	Study type	Baseline characteristics	Intervention	Control (if applicable)	Service provider	Setting	Outcome measure	Findings	Covariates and interactions
[52]	USA	131	Smoking	Mixed methods (electronic medical records, interviews, and observation of calls). Comparison between frequent and infrequent attenders of the intervention	Mostly male veterans (95%), unemployed (81%), and with multiple comorbidities (78% with 3 or more)	4 brief smoking cessation phone calls as follow-up to an inpatient intervention, over 60 days	No control group, but results were analysed between those who received 0-1 ($n = 25$) and 2–4 ($n = 106$) phone calls	Fellow-veteran volunteers for the director of voluntary services	Within homes (phone calls)	24 hours and 7 days PPA at 60 days	Marginally nonsignificant difference in previous 7 days PPA between those who received 2–4 versus 0-1 phone calls (26% versus 8% and $p = 0.06$), and a significant increase in 24 hours PPA (33% versus 4%, $p < 0.01$)	No covariates controlled for. Those with lung disease showed higher 24 hours PPA. Older participants more likely to be reached
[53]	China	106	Smoking	Before-after trial, two phases; training the service providers and evaluation of effectiveness	Female smokers, mostly educated to secondary school level (60.4%) and employed (67.9%)	4 brief smoking cessation phone calls based on the AWARD model, delivered and redelivered at 1, 3, and 6 months follow-up if participants reported as still smoking	No control group	50 girl guides aged between 13 and 18 ($M = 14.7$)	Within homes (phone calls)	Primary: self-reported 7 day PPA at 6 months. Secondary: biochemically verified PPA at 6 months, self-reported reduction in cigarette consumption of at least 50% at 6 months, and utilisation of smoking cessation services	7 day PPA; 12.2%, biochemically verified PPA; 5.7%. After excluding self-reported quitters, ~15.1% had reduced their cigarette consumption by at least 50% at 6 months. The prevalence of quitting and reduction at 6 months was 25.5%. No measure of variance or test of significance	No covariates controlled for or predictors investigated
[58]	USA	587	Diet and physical activity	Cluster RCT, using a 2 × 2 factorial design	99% African American, 74% women, 25% with some education posthigh school, 40% were obese	Opportunistic conversations based around health education and social support to church members	Tailored newsletters and videotapes (4 of each) sent to the participant's home (TVP condition), control group comprising health education sessions chosen by church members, and a combination of TVP and LHA interventions	62 lay health advisors (LHAs) who received around 16 hours of training, tested for competence at baseline and after each training session. Selected by fellow church members based on who they turned to for help and advice	Within the community (including the church)	Diet (servings of fruit and vegetables per day, % reaching their daily recommendations, and calories from fat), physical activity (moderate to vigorous activity in terms of metabolic equivalent task hours per week, and % reaching their weekly recommendations)	No effect of LHAs on any outcome measure	Baseline value, gender, age, and education were adjusted for. No significant interaction between the tailored video and newsletter and LHA interventions when both were combined

Table 3: Continued.

Papers	Country	SS	Target beh.	Study type	Baseline characteristics	Intervention	Control (if applicable)	Service provider	Setting	Outcome measure	Findings	Covariates and interactions
[54]	USA	430	Smoking	Two-group RCT	Homeless adults, 74.7% male, 56.3% African American, mean age of 44. Most screened positive for a lifetime history of drug abuse/ dependence and participants' average BMI was in the obese range (30)	6 MI sessions: baseline, 1, 2, 4, 6, and 8 weeks, with a duration between 15 and 20 minutes. Alongside provision of nicotine patches	Same provision of nicotine patches alongside a one-time brief advice session to quit smoking. Duration was between 10 and 15 minutes meaning it was also eligible for inclusion as a brief intervention	Both delivered by trained counsellors	8 homeless shelters in Minnesota	Self-reported 7-day PPA at week 26 (follow-up), validated using exhaled carbon monoxide and salivary cotinine	7-day PPA was higher in the intervention group (9.3 versus 5.6%), although this difference was not significant ($p = 0.15$). Repeated measures logistic regression for verified PPA at weeks 1, 2, 4, 6, 8, and 26 (intention to treat analysis) yielded a nonsignificant odds ratio of 1.33 for the MI versus standard care group (95% CI: 0.88, 2.02; $p = 0.17$)	Controlled for baseline measure, time was included as a predictor in regression analyses. No additional predictors explored
[57]	USA	57	Smoking	Pilot RCT (3 groups)	Low SES adults, majority male (71.9%), diverse range of ethnicities (49.1% white), with high financial strain (only 18.2% could comfortably meet basic expenses)	1 × 30-minute MI session to elicit motivation to quit smoking, alongside referral information as with the control group	10-minute NRT sampling (provision of nicotine patches and lozenge) and referral information as in the control group, or the control group of referral information only	25 clinical psychology PhD students who had received 25 hours of training. Measured for competence during audio-recorded sessions and only included if they met competence criteria	A local food bank in a US state	Cigarette consumption, quit attempts made, motivation to quit, usage of NRT, and financial strain	No main effect of intervention on cigarettes per day at follow-up (F (2, 49) = 2.44, $p < 0.10$), or an interaction with time (F (2, 49) = 1.57, $p = 0.22$)	Time entered into ANOVA as a predictor alongside intervention. MI intervention was unaffected by subjective financial strain. Significant main effect of time (F (1, 49) = 7.33, $p < 0.001$)

Table 3: Continued.

Papers	Country	SS	Target beh.	Study type	Baseline characteristics	Intervention	Control (if applicable)	Service provider	Setting	Outcome measure	Findings	Covariates and interactions
[55]	China	1226	Smoking	Cluster RCT (single blind, 3 groups)	Mostly male (80.8%), married (62.7%), and employed (76.5%) adults smoking less than 20 cigarettes per day	Brief advice guided by the AWARD model, with follow-up telephone calls at 1 and 2 months	Active referral (same brief advice based on the AWARD model, and additional active referral to smoking cessation services) and control group (30-second general advice and a 12-page self-help booklet)	Smoking cessation ambassadors (university students and volunteers from NGOs trained from half-day workshop	First session at the recruitment site (community sites such as public transport centers and shopping malls), follow-up by telephone call	Primary: 7-day PPA at 6 months. Secondary: biochemically verified PPA at 6 months, smoking reduction by at least 50%, and use of smoking cessation services	Main effect of intervention (the active referral group more likely to quit) and education (those achieving secondary education were almost half as likely to quit than those only receiving primary). Significant improvement in self-reported and biochemically verified abstinence and smoking cessation services in active referral compared to brief advice and control groups	Sex and education level entered into the logistic regression model. No tests of their interaction
[56]	Hong Kong	1163	Smoking	3-arm cluster RCT (brief cessation advice, brief cessation advice with active referral, and active referral via mobile text-messaging)	Mean age 41.4 (SD = 16.7), mostly male (77.7%), employed (65.8%), educated to secondary level or above (84.6%), and mostly smoking less than 20 cigarettes per day (89%)	Brief advice guided by the AWARD model	On site referral (same as brief advice group and active referral with follow-up) and text-messaging referral (same as brief advice group and text message referral reminders)	Smoke-free ambassadors (university students and volunteers from NGOs trained in a 1-day workshop)	Community sites (e.g., shopping malls and public transport hubs)	Primary: self-reported 7 day PPA at 6 months post-treatment initiation. Secondary: 7-day PPA at 3 and 18 months, biochemically validated abstinence, smoking reduction, and the use of cessation services at 3, 6, and 18 months	Increased PPA at 6 months (both self-reported and biochemically verified between both active referral groups, although this was only significant for the brief advice group and the onsite referral group and when using self-reported PPA as a measure (OR = 1.56, CI = 1.00–2.42). By 18 months, there were no significant differences between groups, with biochemically verified PPA ranging between 4 and 6%	Multiple logistic regression model adjusted for baseline covariates including age, sex, marital status, nicotine dependency, quit attempt, reduction attempt, and intention to quit (factors known to predict smoking cessation). Point estimates were similar after adjusting for baseline covariates. No further moderators/ mediators explored

Table 3: Continued.

Papers	Country	SS	Target beh.	Study type	Baseline characteristics	Intervention	Control (if applicable)	Service provider	Setting	Outcome measure	Findings	Covariates and interactions
[59]	USA	348	Diet and smoking	Nonrandomised control trial	Black church members of 6 black churches in Oklahoma. Included participants had serum cholesterol of 200 mg per dl or higher. Age $M = 51$, 69.25% female	All participants received health screening for BMI, blood pressure, and cholesterol, a copy of these results, and 5–10 minutes of brief counselling on smoking and dietary fat intake. 174 of these participants were named the "usual care" group	174 participants from 1 church received 6 weekly nutrition education sessions, lasting 1 hour each, and received an instruction manual based on the topics covered during the sessions	Brief counselling delivered by nurses, members of the churches, nurses from the local black nurses association, and medical and graduate public health students	Delivered within the churches in the education rooms and fellowship halls, following Sunday services	Change in cholesterol levels from baseline to follow-up	The only significant difference in cholesterol between groups was at baseline (education group: $M = 137.4$, SD = 22 and usual care: $M = 129.5$, SD = 18; $p < 0.02$). Both usual care and education significantly reduced cholesterol levels (by 16% and 10%, respectively, $p < 0.003$ for the usual care group) but did not significantly differ from each other. However, only 36% of the usual care group completed follow-up measures	BMI, age, and systolic and diastolic blood pressure were entered as covariates using an ANCOVA. None were significant predictors of cholesterol levels. No significant interaction between intervention, educational attainment, and sex

SS = sample size; $p = p$ value; M = mean; SD = standard deviation; PPA = point prevalence of abstinence.

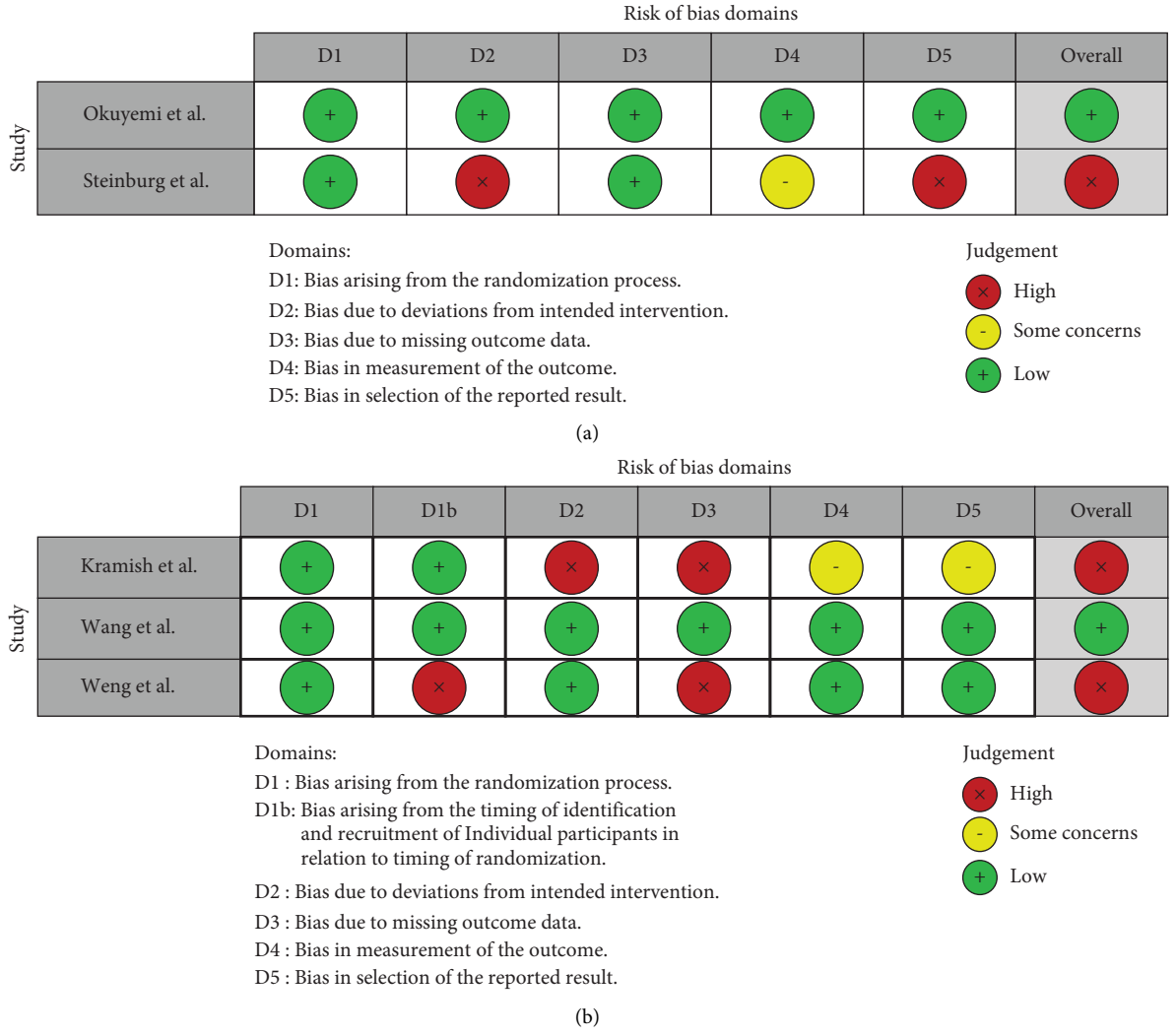

Figure 2: (a) A robvis table [132] to demonstrate conclusions for each domain of the ROB-2 risk of bias assessment and the overall conclusion. (b) A robvis table [132] to display the conclusions for each domain of the ROB-2 tool for cluster randomised trials and the overall judgement.

delivery of a self-help booklet [55]. Adjusting for socio-demographic characteristics showed the same pattern [55, 56]. As abstinence rates for brief advice intervention increased between 3 and 6 months [55, 56], this suggests an influence of time rather than intervention. Predictably, 24-hour PPA was higher than 7-day PPA [52].

Smoking reduction by at least 50% at 6 months ranged between 15.1% [53] and 23.3% [55] for brief intervention groups. Although brief intervention did reduce smoking [53–56], all studies with multiple intervention groups found no significant differences in smoking reduction between baseline and follow-up between groups [54–56], including the two highest quality studies in this review [54, 55]. The same was found irrespective of whether a continuous measure of number of cigarettes [54] or dichotomous cutoff of reduction of more than 50% [55, 56] was used. Smoking reduction was considerably lower at 18 months compared to all-time points up to 6 months [56]. The only study to measure cigarettes per day was a pilot RCT but found brief MI to significantly reduce consumption between baseline and follow-up compared to nicotine replacement therapy (NRT) [57]. There were no significant differences in quit attempts made between NRT and MI groups [57], although the only study investigating quit attempts was a pilot study, and so adequate power to detect an effect may not have been reached. To support this, NRT was found to exert a moderate effect on quit attempts compared to both brief MI and referral only [57].

Several secondary measures were also recorded in relation to smoking. Only interventions that involved active, guided referral improved use of smoking cessation services [55, 56], and all other interventions including brief interventions showed no significant differences to each other [55–57], or minimal change from baseline [53]. While there were no significant differences in motivation to adhere between baseline and 6 weeks for brief MI, scores showed a nonsignificant trend favouring MI compared to standard care [54]. Furthermore, there were no significant differences

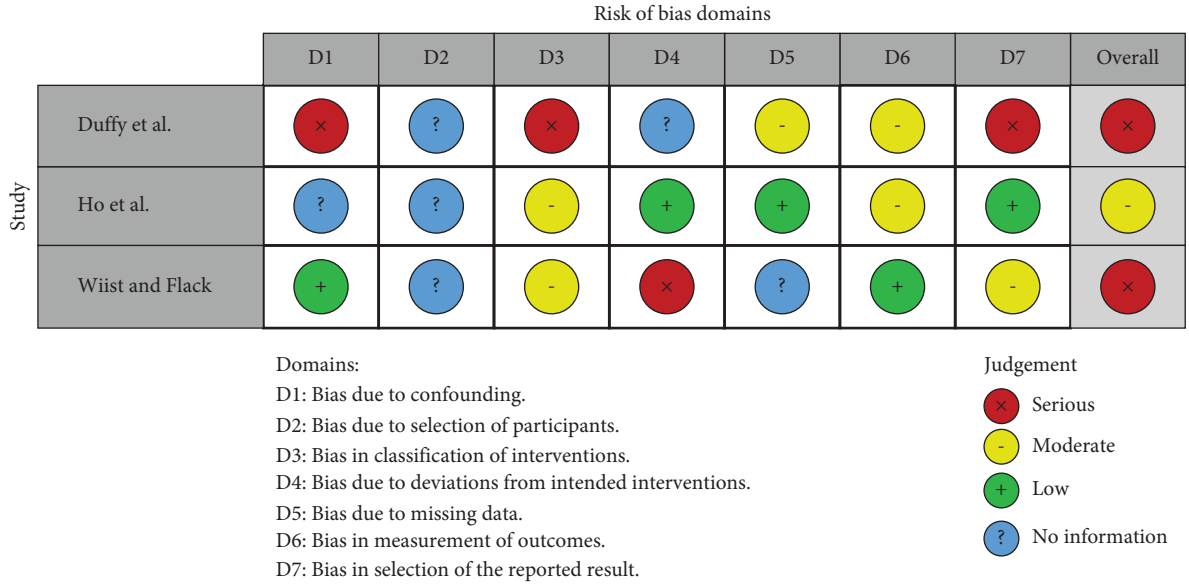

Figure 3: Robvis table for studies with no randomisation and/or control group. Note, for domain 2 for Duffy et al. and Ho et al., "no information" is used to denote that this domain was not assessed as there was no control group. For domain 4 for Duffy et al, "no information" denotes that there was no control group.

found in self-efficacy [54], confidence in one's ability to quit [57], perception of importance of smoking [57], and readiness to quit [57] between intervention groups at follow-up. Only an intervention actively targeting increased use of nicotine patches significantly increased use [57], brief intervention did not [54, 57].

Other positive predictors of abstinence at follow-up were having lung disease, although this effect was only observed for 24-hour PPA [52], and having not been admitted for psychiatric or substance abuse [52]. Financial strain did not have a differential effect on reduction of cigarettes in the brief MI group compared to NRT and referral only groups [57]. No other independent or interacting predictors were explored.

Comparing studies set within TSE settings to studies utilising TSE providers, although the brief MI intervention based within a TSE settings showed higher biochemically verified abstinence rates [54], this may only be due to the shorter follow-up time or higher frequency and contact time of the intervention. Indeed, the shorter intervention showed abstinence rates similar to when delivered by a TSE provider. No differences were observed for self-reported cigarette consumption, although the different measures utilised by Steinberg et al. [57] mean that comparison was difficult. Similar use of smoking cessation services was also observed between studies utilising TSE providers [53, 55, 56] or setting [57].

3.3.2. Diet and Exercise. The only two studies which measured diet and exercise (specific values displayed in Table 3), or their biological consequences, were both based within the same TSE setting, namely, churches [58, 59]. The only study to objectively measure dietary and physical activity changes by using cholesterol and blood pressure found brief counselling alone to decrease cholesterol and blood pressure more than when provided with health education, contrary to the study hypotheses [59]. However, the retention rate for the brief intervention group was only 36% compared to 75% for the comparison intervention, indicating possible attrition bias [133]. The only study to measure dietary behaviour found no significant effect of a brief lay health advisor (LHA) intervention on fruit and vegetable intake compared to group health education as both showed little change [58]. Furthermore, the LHA intervention did not significantly reduce fat intake and had no additional effect on dietary measures when combined with a tailored newsletter and video intervention. The same pattern was found for recreational exercise, and the LHA did not significantly improve total physical activity compared to the health education group [58].

Baseline blood pressure, BMI, and age did not predict changes in cholesterol [59], and the intervention group did not interact with education level or sex. Although those in the brief counselling only group were almost 5 years older on average, no differences were found between groups in medical history, use of tobacco, or socioeconomic factors, meaning it is unlikely that this accounted for the improvement in blood pressure and cholesterol.

3.4. Intervention Components. The characteristics of each included intervention are displayed in Table 4 in accordance with the TIDieR checklist [134], as well as the coded BCTs as an exploratory analysis. Three interventions required the retrieval of protocol or methodology papers [110, 112, 135, 136]. The most common BCTs applied by the brief interventions included in this review were providing both information on the consequences of adverse lifestyle behaviours, [53–56, 58], and on further support [53, 55–57],

Table 4: The remaining intervention components not included in Table 1, following the TIDieR checklist [134] and with added coding for the BCTs.

Studies	Items 1 and 2: name and why (rationale)	Items 3, 5, 9, 11, and 12: materials for the intervention, training of who provided, tailoring, and how well	BCTs
[52]	*Name*: smoking cessation counselling calls *Why*: evidence to support efficacy of peer counselling, participants like it too	*Materials*: volunteers provided with a script *Who*: 1-hour tobacco tactics programme, video on smoking cessation, and video "tools for being a helpful peer partner" *Tailoring*: none specified *How well*: 19% participants were reached less than two out of four times. Volunteers offered encouragement, showed empathy, and referred when needed. Patients liked the volunteers but wanted more sessions and access to pharmacotherapy. Greatest barriers were space and lack of a coordinator of the programme	10.4: social reward BS1: facilitate barrier identification and problem solving RC6: discussing withdrawal symptoms and what can be done to alleviate ($n = 3$)
[53]	*Name*: brief intervention *Why*: previous evidence for the effectiveness and feasibility of a community based-network, and in the AWARD model, but no existing studies to test its efficacy within the community	*Materials*: none *Who*: half-day workshop on how to deliver the AWARD model, how to assess smoking status and readiness to quit, and how to communicate with older adults. Required to pass an examination of a case scenario before delivering the intervention *Tailoring*: intervention repeated for as long as the participant reported still smoking *How well*: logbook to note the duration of the interaction and a checklist to evaluate adherence to intervention protocol (adherence not reported). Intervention was usually completed within around one minute. 51% retention rate at 6 months follow-up	3.1: social support (unspecified) 4.1: instruction on how to perform a behaviour 10.4: social reward BM1: providing information on the consequences BM3: provide feedback on current behaviour BM4: provide rewards contingent on successfully stopping smoking BM7: provide rewards contingent on effort or progress A5: providing information about additional support RI1: assess amount smoked, age when started, pattern of smoking behaviour RI2: assess current level of motivation to stop and confidence in success ($n = 10$)
[58]	*Name*: lay health advisor (LHA) *Why*: to distinguish the elements with the largest effect within complex interventions. LHAs represent social support	*Materials*: a detailed training manual appropriate to the study population, pilot tested *Who*: 16 hours of training on the role of an LHA, increasing knowledge around diet and physical activity, and how to facilitate change and overcome barriers *Tailoring*: no set guidance for interactions with service users *How well*: only 10% of participants in the LHA group reported having a conversation with their LHA. LHAs reported discussing fruits and vegetables and dietary fat the most (more frequently than physical activity). No retention rate provided	3.1: social support (unspecified) 4.1: instruction on how to perform a behaviour 5.1: information about health consequences 9.1: credible source 12.1: restructuring the physical environment 12.2: restructuring the social environment 12.5: adding objects to the environment ($n = 7$)

Table 4: Continued.

Studies	Items 1 and 2: name and why (rationale)	Items 3, 5, 9, 11, and 12: materials for the intervention, training of who provided, tailoring, and how well	BCTs
[54]	*Name*: standard care *Why*: N/A (control group)	*Materials*: a 23-page self-help guide on the risks of smoking, common reasons for smoking and cognitive exercises to increase quitting *Who*: two training sessions by a doctoral-level health communications specialist. Sessions included role play and basics in providing smoking cessation advice *Tailoring*: none specified *How well*: attendance to study visits ranged between 64% and 89% across the study duration	RI1: assess current and past smoking behaviour RI2: assess current readiness and ability to quit BM1: providing information on the consequences BS1: facilitate barrier identification and problem solving BS2: facilitate relapse prevention and coping ($n = 5$)
[54]	*Name*: motivational interviewing (MI) *Why*: evidence for motivational interviewing and long-term smoking cessation, and as a feasible and acceptable intervention for homeless participants. MI may be used to increase adherence to pharmacological therapy	*Materials*: same as above *Who*: initial training in MI by a doctoral-level psychologist, followed by around 40 hours of supervised training *Tailoring*: none specified *How well*: attendance to study visits ranged between 66% and 88% across the 26-week study duration	(a) 1.1: goal setting (behaviour) 1.2: problem solving 1.3: goal setting (outcome) 1.4: action planning 1.7: review outcome goal 3.1: social support (unspecified) 3.3: social support (emotional) 6.2: social comparison? 8.7: graded tasks 9.2: pros and cons 9.3: comparative imagining of future outcomes 13.2: framing/reframing 13.4: valued self-identity 15.3: focus on past success 16.1: imaginary punishment 16.2: imaginary reward (b) 11.1: pharmacological support RC1: build general rapport RC7: use active listening ($n = 19$ (16 associated with MI))
[57]	*Name*: brief motivational interviewing *Why*: evidence for MI in increasing motivation to quit and quit attempts, short duration, and large scalability potential	*Materials*: none *Who*: 25 hours of training by the first author. Required to meet prespecified criteria before delivering the intervention *Tailoring*: none specified *How well*: 95% completed follow-up	The same BCTTv1 BCTs as section a) above RC1: build general rapport RC7: use active listening BM2: boost motivation and self-efficacy BM9: identify reasons for wanting and not wanting to stop smoking A5: providing information about additional support ($n = 21$ (16 associated with MI))

Table 4: Continued.

Studies	Items 1 and 2: name and why (rationale)	Items 3, 5, 9, 11, and 12: materials for the intervention, training of who provided, tailoring, and how well	BCTs
[55]	*Name*: brief advice *Why*: AWARD model is part of clinical smoking cessation guidelines. Aimed to trial its delivery by volunteers	*Materials*: health warning leaflet *Who*: half-day workshop covering knowledge in tobacco control and SC, and brief SC and reduction advice skills *Tailoring*: none specified *How well*: experienced smoking cessation counsellors (research staff) monitored the process and quality of the intervention through on-site observation, debriefing, and reviewing records of telephone interventions at follow-ups. Follow-up rate for the brief advice group at 6 months was 72%	5.2: salience of consequences 10.4: social reward BM1: providing information on the consequences BM2: boost motivation and self-efficacy RC5: offer/direct towards appropriate written materials A5: providing information about additional support ($n = 6$)
[56]	*Name*: control group *Why*: N/A (control group)	*Materials*: 12-page self-help smoking cessation booklet *Who*: 1-day workshop. Service providers were tested on their knowledge, attitude, and practice before recruitment. Supervised by a research assistant at each recruitment session *Tailoring*: none followed a standardised recruitment script *How well*: overall follow-up rate was 73% at 6 months	4.1: instruction on how to perform a behaviour BM1: providing information on the consequences RI1: assess current and past smoking behaviour RC5: offer/direct towards appropriate written materials ($n = 4$)
[59]	*Name*: usual care *Why*: N/A (control group)	*Materials*: all participants were provided a copy of their health screening results *Who*: intervention delivered by one of the authors, no training specified *Tailoring*: topic and duration of discussion depended on health screening results (e.g., cholesterol and smoking) *How well*: only 36% of the usual care group returned for follow-up	2.6: biofeedback 4.1: instruction on how to perform a behaviour ($n = 2$)

Number format only = general BCT taxonomy [60] and letter and number format = BCT taxonomy specifically for smoking cessation interventions [61].

whether this was services [53, 55, 57] or written information [55, 56]. Providing social support [53, 54, 58], assessing current and past behaviour [53, 54, 56], providing instructions on how to perform the behaviour [53, 56, 58, 59], and identifying barriers for change and solutions to overcome these [52, 54] were also commonly applied as two interventions [54, 57] applied brief motivational interviewing based on Miller and Rollnick's original MI principles [131], and 16 general BCTs were coded, in keeping with expert coding [137].

Both interventions that applied motivational interviewing [54, 57] showed the most promising results concerning smoking reduction behaviour. The BCTs were associated with a motivational interviewing center around goals and planning but also included social support, building rapport, and applying active listening.

4. Discussion

In summary (see also Table 5), evidence across TSE settings and providers indicates a small positive effect of brief intervention on abstinence rates from baseline, an effect slightly increased for smoking reduction rates and driven by motivational interviewing. However, when compared to more intensive interventions, this effect is minimal and nonsignificant and is further reduced when considering biologically verified cessation rates. The minimal evidence available relating to diet and exercise within church settings indicates no effect on behavioural, self-reported outcomes. The one study assessing physiological outcomes related to diet and exercise was subject to considerable selection bias; thus, there is insufficient evidence to draw conclusions.

This systematic review revealed a paucity of evidence on brief opportunistic and motivational interventions within TSEs. Most of the included studies measured smoking, of which brief motivational interviewing showed the largest effect on smoking behaviour [54, 57], although this may be due to its longer duration rather than its specific combination of BCTs. When changes from baseline were compared between groups, brief interventions showed a minimal effect on abstinence, smoking reduction, and precursors of these such as self-efficacy, motivation to quit, and use of smoking cessation services. There was a large difference between self-reported and biologically verified abstinence rates, highlighting the importance of objectively measuring smoking behaviour. More intensive smoking interventions were consistently more effective than brief interventions, and the brief intervention with the most follow-up sessions showed the highest biochemically verified abstinence rates [54]. Indeed, qualitative data from one included study found more follow-up phone calls to be the main suggestion for improvement of the intervention by participants [52]. However, it is important to also consider cost-effectiveness, as studies reporting the effects of brief interventions as comparable to more intensive interventions indicate an increased cost-effectiveness of brief intervention [18], a priority for health interventions within the NHS [138].

A similar pattern was observed for the minority of studies investigating diet and exercise, in that brief intervention showed a minimal effect, if at all, when acknowledging the possible influence of attrition bias for one of the included studies [59]. One important potential reasoning is that neither of the interventions utilised self-monitoring nor those which have been found to be up to twice as effective in increasing weight loss [139, 140]. In contrast to the findings around smoking, however, more intensive interventions were not necessarily more effective, as health education did not exert any additional effect on diet and physical activity-related behaviour or their biological outcomes. One possible explanation is that the importance of brief intervention is tailoring, which group health education lacks. To support this argument, tailored education significantly improved fruit and vegetable intake and physical activity [58]. Another explanation suggested by one of the included study's authors [59] is that as both studies utilised a cluster RCT design between church sites [58, 59], there may have been rivalry between churches, and so participants may have engaged in activities outside of the study to encourage behaviour change. Further research has found that interventions within TSE settings that target the environment have been shown to lower BMI [141], improve glycaemic control [142], self-reported dietary outcomes [143], and a skills-based intervention significantly reduced waist circumference [144]. When combined with brief motivational interventions, interventions targeting the environment increased fruit and vegetable consumption [88, 90], and providing skills-based learning decreased blood pressure [122], indicating that brief interventions to improve dietary outcomes are more effective when combined with other intervention types. This demonstrates that the systems of behaviour change are more complex for diet than other lifestyle behaviours [145] and thus benefit most from multicomponent interventions.

Although most studies of LHAs did not collect data on adoption and implementation [53, 55, 56], qualitative data from one included study indicated that volunteers enjoyed the experience [52]. However, one of the only two included studies to have measured implementation of LHAs in this review found that only 10% of participants had spoken to them, indicating a huge discrepancy in planned and actual reach [58]. The other study found that the LHA programme had been discontinued twice, with LHAs reporting disappointment [52]. This suggests that for the included studies utilising TSE service providers, it is difficult to distinguish between a lack of effect or an issue with implementation. Therefore, future research would benefit from a qualitative exploration of the barriers and facilitators to implementing brief interventions within TSEs specifically.

Only two included studies discussed multiple health behaviours [58, 59]. A person-centered approach, allowing the topic of the brief intervention to be guided by the needs of the individual, is one adopted by the Making Every Contact Count (MECC) initiative, which began in the UK and was designed to optimise everyday interactions healthcare professionals have with patients [146]. Instead of one target behaviour, the topic of smoking, diet, physical

Table 5: Overall summary of review findings.

Outcome	Measure	Strength of evidence
Smoking	Biochemically verified 7-day PPA	4 studies, all indicate a small effect comparable to other minimal interventions, although a gradual increase indicates this may be attributable to the passage of time
	Self-reported 7-day PPA	5 studies, measure over inflates cessation estimation but shows similar patter to biochemically verified PPA
	Smoking reduction by >50%	3 studies, indicate an effect of brief interventions comparable to other interventions tested, which is stable over time
	Number of cigarettes	1 study, indicates an effect compared to nicotine replacement therapy
	Use of smoking cessation services	4 studies, inconsistent findings across studies, with some evidence that the small effect is comparable to that of other interventions tested
	Motivation to adhere to smoking guidelines	1 study, minimal if any effect of brief interventions
	Self-efficacy	1 study, small effect of brief intervention
	Use of nicotine patches	2 studies, inconsistent findings across studies, effect depends on the focus of the brief intervention being on improving nicotine patch use
Diet	Fruit and vegetable intake	1 study, no effect of brief intervention
	Fat intake	Same as above
Exercise	Physical activity	Same as above
Diet and exercise	Cholesterol	1 study, positive effect of brief intervention alone but evidence is weak (stark differences in retention rates between groups and only explored within church settings)
	Blood pressure	Same as above

Judgement of evidence (colour coded) is based on the number of studies, consistency of findings, and amenability to confounding factors, rather than magnitude of effect or an improvement compared to other possibly more intensive interventions. PPA = point prevalence of abstinence. strong positive. weak positive. suggestive positive. nonsignificant. content-dependent.

activity, or alcohol intake is dependent on the individual [146]. Furthermore, this holistic approach can be broadened to include brief advice of some of the social determinants of health, including housing and finance, under the umbrella term MECC plus [146]. Subsequently, this person-centered approach may be better suited for tackling the social determinants of health for those who it is most relevant to and only focusing on health behaviours when individuals have the ability to do so. However, there is limited evidence to support the effectiveness of MECC [24, 147], and no available literature is exploring its effectiveness within the TSE or as MECC plus. Future research within the TSE would therefore benefit from exploring the effectiveness of MECC plus specifically, particularly given that its delivery is a key recommended local solution to tackling health inequalities by the Association of Directors of Public Health [148].

No studies targeted behaviours relating to alcohol, despite the effectiveness of brief interventions for alcohol within healthcare settings being well-established [149–152]. Furthermore, TSE, particularly faith-based settings, may be best placed to address alcohol use within seldom-heard communities due to increased access. For example, faith-based settings are often the first point of contact for African-Americans seeking help with their alcohol intake, suggested to be attributable to a trust in the institution compared to healthcare services [153]. Thus, research is needed to investigate the translation of the effectiveness of brief interventions to target alcohol consumption within the TSE sector.

Furthermore, no eligible studies targeted housing or finance, despite the importance of social determinants of health within TSE settings. There is support for the effectiveness of brief interventions addressing the social determinants of health within TSEs, as a credit counselling intervention provided by a credit counselling organisation lasting from 30 minutes significantly decreased frequency of

stressful financial events, which in turn improved perception of financial situation and self-reported health status [25]. This study, although relevant, was not eligible to be included in the review as it was neither delivered within a TSE setting nor by a volunteer. In addition, qualitative data suggest that raising the service user's awareness of their behaviours and motivating them to change are the most beneficial elements of credit counselling [154], which resembles the principles of MECC. Therefore, this review has highlighted a need for research on the effectiveness of MECC that specifically includes the social determinants of health, particularly as the mixed findings within this review may suggest a moderating effect of SES.

Included studies that measured smoking behaviour were heavily biased towards male participants, aside from one which purposively sampled females [53]. This likely reflects the fact that the prevalence of smoking is much higher among men than women globally [155]. There is evidence of gender differences in smoking behaviour change, as within low to middle income countries, males generally show a higher intention to quit, although women are more likely to have recently made a quit attempt [155]. However, there is evidence that these sex differences do not exist within higher income countries [156, 157] and thus are not likely to affect the findings of this review. However, across low to high income countries, women are found to show more difficulty in sustaining smoking abstinence [158–160]. For example, a meta-analysis found that for half of the included countries, females were significantly more likely to relapse 1-day after smoking cessation, even when controlling for variables such as age at smoking initiation, education, and exposure to health warnings [158]. Therefore, future research would benefit from including more females to ensure generalisable results.

The results of this review also established faith-based organisations and groups as a potential setting and workforce to deliver brief interventions. These settings may appear to lend themselves well to offering health interventions due to an evident commitment to social justice [161] and regular interactions between religious members [162]; however, conflicting values and a lack of public trust are among multiple barriers to implementation [161]. Both included church-based studies with African-American participants found contrasting results. While one study found no effect of LHAs on variables related to diet and exercise [58], the other found brief counselling alone to be more effective than when combined with a health education programme [59]. An explanation is that support from church members only encourages a healthy lifestyle in African-American church members when sense of belongingness is high [162], and so sense of belongingness in participants may have differed between included studies. Therefore, future research within faith-based organisations would benefit from considering the complex interactions between the effect of brief interventions and factors such as faith-based values, sense of belongingness, and public trust.

There are several strengths and limitations of this review. Forward and backward citation searching allowed for a comprehensive collation of studies of TSE providers from a range of organisations and interventions from within a variety of TSE settings. However, only two of the included studies were judged to be low risk of bias [54, 55]. Furthermore, as meta-analysis was not possible due to the variation of comparison groups within studies, it was difficult to give weight to these studies accordingly when reporting the results. Despite a comprehensive search strategy comprising terms related to the duration of the intervention and various TSE settings and providers, like all systematic reviews, there is the possibility that relevant studies may not have been identified. Due to the focus of this review on health behaviours and their social determinants, mental health was excluded from the scope of the review. However, this could be viewed as a limitation due to its intertwined relationship with health behaviours [163–165] and subsequent physical health [163, 166]. Furthermore, SES is a well-established predictor of mental health difficulties [167–172], and the MECC consensus statement recommends the inclusion of mental health for individuals with more complex needs [146]. Therefore, future research of MECC within TSEs should acknowledge the influence of mental health.

5. Conclusion

The current review highlights the gap in research for brief interventions within the TSE sector. Among the few available studies, the effect of brief interventions appears minimal in comparison with more intensive and sustained interventions. However, particularly when utilising volunteers from TSEs, this lack of effect may at least in part be due to difficulties in implementation. Thus, further qualitative research is required to explore the barriers and facilitators to the uptake and implementation of brief interventions such as MECC within TSEs.

Data Availability

All relevant data for the current systematic review are available. Extracted data are publicly available on SRDR plus.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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Supplementary Materials

S1: PRISMA checklist. S2: an example search string, for PsychArticles via ProQuest. S3: inclusion/exclusion table. (*Supplementary Materials*)

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