

Affected other interventions: a systematic review and meta-analysis across addictions

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Abstract

Background and Aims: Individuals impacted by someone else's alcohol, illicit drug, gambling and gaming problems (affected others) experience extensive harms. To our knowledge, this is the first systematic review and meta-analysis to determine the effectiveness of psychosocial interventions delivered to affected others across addictions.

Methods: This review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses. An electronic database search (PsycInfo, Medline, Cinahl and EMBASE) of randomized controlled trials (RCTs) published until August 2021 was conducted. RCTs with passive control groups, evaluating psychosocial tertiary interventions delivered to affected others of people with addictions (problematic alcohol use, substance use, gambling or gaming) that did not require the involvement of the addicted person, were included.

Results: Twenty included studies, published in 22 articles, mainly evaluated interventions for alcohol use, followed by gambling and illicit drugs, with none investigating gaming interventions. The interventions mainly targeted partners/spouses and focused upon improving affected other outcomes, addicted person outcomes or both. Meta-analyses revealed beneficial intervention effects over control groups on some affected other (depressive symptomatology [standardized mean difference (SMD) = -0.48, 95% confidence interval (CI) = -0.67, -0.29], life satisfaction (SMD = -0.37, 95% CI = -0.71, -0.03) and coping style (SMD = -1.33, 95% CI = -1.87, -0.79), addicted person [treatment entry, risk ratio (RR) = 0.86, 95% CI = 0.75-0.98] and relationship functioning outcomes (marital discord, SMD = -0.40, 95% CI = -0.61, -0.18) at post-intervention. No beneficial intervention effects were identified at short-term follow-up (4-11 months post-treatment). The beneficial intervention effects identified at post-treatment remained when limiting to studies of alcohol use and therapist-delivered interventions.

Conclusions: Psychosocial interventions delivered to affected others of people with addictions (problematic alcohol use, substance use, gambling or gaming) may be effective in improving some, but not all, affected other (depression, life satisfaction, coping), addicted person (treatment) and relationship functioning (marital discord) outcomes for affected others across the addictions, but the conclusion remains tentative due to limited studies and methodological limitations.

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KEYWORDS

Addiction, affected others, alcohol, family, gambling, illicit drugs, meta-analysis, significant others, systematic review, treatment

INTRODUCTION

The 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) classifies substance-based and behavioural addictions, including alcohol use, illicit drug use and gambling disorders, as substance-related and addictive disorders, with gaming disorder identified as a condition for further research [1]. Given the negative consequences for individuals, family and friends and communities, these addictions are of public health concern [2–4]. International estimates indicate that a large proportion of the population have experienced at least one harm due to someone else's drinking (13–78%), illicit drug use (13–28%) or gambling problem (2–19% [5–8]). The harms experienced by family members and friends (affected others) include emotional or psychological distress, relationship disruption, conflict or breakdown, physical harm and decrements to health, financial harm, criminal activity and reduced performance at work or study [8–12], with recent findings suggesting that the burden of harm contributed by these addictions is comparable [13, 14].

Despite these harms, there are limited intervention options for affected others. Available interventions are mainly psychosocial in nature, but vary substantially in their aims. These interventions tend to fall into the following categories: (1) interventions that aim to improve the relationship between the affected other and the addicted person by working jointly with them (i.e. family systems interventions, such as couples therapy); (2) interventions that are directed towards the addicted person but include the involvement and support of the affected other in the treatment of the addicted person (i.e. family-involved interventions); and (3) interventions that are delivered to the affected other and do not require the involvement of the addicted person (i.e. affected other-delivered interventions). The aims of affected other-delivered interventions can be twofold, as they can aim to equip the affected other to support the addicted person into treatment or to reduce their addictive behaviour (i.e. affected other-delivered interventions with an addicted person focus) and/or help the affected other manage the impacts of the addicted person's behaviour (i.e. affected other-delivered interventions with an affected other focus [15–17]). A recent scoping review highlighted that despite the needs of affected others, most of the interventions evaluated across the addiction literature have focused upon family systems and family-involved interventions [18].

Systematic reviews exploring the effectiveness of these four different psychosocial intervention types are available [17, 19–23] but have focused mainly upon interventions for alcohol [17, 19, 21–23]. These reviews have shown how, over time, interventions involving affected others have moved away from focusing solely upon family systems and family-involved interventions, the focus of which relies

upon the involvement of the addicted person, towards a more holistic approach that takes into consideration the needs of affected others in their own right [17]. They have generally shown promising findings for the effectiveness of all types of psychosocial interventions involving affected others across addicted person (e.g. treatment engagement), affected other (e.g. distress) and relationship/family functioning outcomes (e.g. conflict [17,20]). Five of the six reviews, however, provided a qualitative synthesis of the evidence base [17, 20–23], which can increase the potential for subjectivity in the interpretation of findings [24], and only two [17, 18] conducted a risk of bias assessment that allows for an examination of the validity of the evidence base [17, 19, 25].

In the only available meta-analysis of affected other interventions, Edwards & Steinglass [19] explored the effectiveness of mainly family systems and family-involved interventions, and few affected other-delivered interventions, for alcohol use problems. While this meta-analysis was limited by its focus upon addicted person outcomes (with no affected other or relationship functioning outcomes assessed despite the intervention aims) and its use of passive controls and active comparisons in the same meta-analyses (which reduces statistical power to identify intervention effects), the findings revealed that these interventions produced better addicted-person outcomes than those that did not involve affected others.

Although the available systematic reviews and meta-analysis suggest promising findings, their methodological shortcomings preclude definitive statements regarding the effectiveness of psychosocial interventions delivered to the affected other that do not require the involvement of the addicted person throughout addictions, and are now outdated in the face of this rapidly emerging area of research. No systematic review has focused solely upon the effectiveness of psychosocial interventions delivered to the affected other (i.e. affected other-delivered interventions with an addicted person or affected other focus). The current systematic review and meta-analysis will therefore be the first to evaluate the effectiveness of affected other-delivered interventions across the range of relevant outcomes (i.e. addicted person, affected other and relationship/family functioning outcomes). By exploring affected other interventions across numerous addictions (alcohol use, substance use, gambling and gaming), this systematic review and meta-analysis will identify gaps in knowledge and provide the formative work necessary for the development of evidence-based affected other interventions across these addictions, particularly for the newer behavioural addictions (gambling and gaming).

This systematic review and meta-analysis aims to: (1) determine the effectiveness of psychosocial interventions delivered to affected others across addictions and the durability of intervention effects, relative to passive control groups; and (2) explore whether the meta-

analytical findings are robust to clinically relevant factors (addiction type, mode of intervention delivery, therapist-delivered intervention modality and intervention approach) and methodological quality via sensitivity analyses.

METHODS

This systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA [26]) and was registered a priori with the International Prospective Register of Systematic Reviews (PROSPERO) (CRD42020151875). Differences between the PROSPERO protocol and the published review can be found in the Supporting information.

Search strategy

Medline, PsycInfo, CINAHL and EMBASE electronic databases were searched for peer-reviewed literature published up until 21 August 2021, using a combination of keywords and wildcards relating to addiction (e.g. *gamb**), affected others (e.g. *famil**), interventions (e.g. *treat**) and randomized controlled trials (RCTs; e.g. *random**). Title and abstract, English language, adult and human limiters were employed. A Google search of the first 10 pages (100 citations) was conducted to identify relevant grey literature, as was a manual search of the reference lists of all included articles. See Supporting information for the complete search strategy.

Eligibility criteria

Studies were included if: (1) they evaluated the effectiveness of a psychosocial intervention delivered to affected others of alcohol use, substance use, gambling or gaming that do not require the involvement of the addicted person, regardless of whether the intervention aimed to improve the affected others wellbeing or improve the addicted person's treatment engagement or behaviour (i.e. affected other-delivered interventions with an affected other and/or addicted person focus); (2) they were RCTs or controlled trials (i.e. best-quality evidence); (3) they included a passive control group (e.g. no intervention, waiting-list control, assessment only, treatment referral or non-specific treatment component controls [27, 28]); (4) the affected other and addicted person were 18 years of age or older; and (5) they assessed any affected other, addicted person or relationship functioning outcome.

Studies were excluded if: (1) a composite addictive disorder and mental health sample (e.g. affected others of problem alcohol use and/or depression) was employed, whereby the data for the addictive disorder sample were not analysed separately; (2) an RCT with an active comparison condition was employed; (3) the affected other was involved in a treatment that was targeted towards the addicted person (i.e. family-involved treatment); (4) the intervention was

couples therapy, family therapy, pharmacological, neurobiological, confrontative (i.e. an 'intervention' where affected others confront the individual in the hope of engaging him/her into treatment) or a non-therapeutic group (e.g. 12-Step programmes); (5) the intervention related to prevention of use rather than tertiary intervention; and (6) the article was a qualitative report, review, case study, conference proceeding, abstract, editorial, dissertation, book, book chapter or protocol paper. Four reviewers were independently involved in the identification of included studies, with double screening conducted for one-third of the identified studies. Discrepancies were resolved through group discussion, with a third reviewer acting as arbiter when required.

Data extraction and risk of bias assessment

A standardized, pilot-tested extraction sheet was employed to extract data from the included articles. Data relating to basic study descriptors (e.g. country), interventions (e.g. intervention approach), outcomes (e.g. measures employed) and meta-analytical data [e.g. means and standard deviations (SD)] were extracted.

Risk of bias was assessed using the revised Cochrane risk of bias tool for randomized trials (version 2.0 [29]), which evaluates bias that may arise across five domains: randomization process, deviations from intended treatments, missing outcome data, outcome measurement and reported result selection. Each study is classified as having either a low risk of bias, some concerns or high risk of bias on each domain, with these judgements then used to determine the overall risk of bias. Overall, a study can be classified as having: (1) a low risk of bias (all domains classified as low-risk); (2) some concerns (at least one domain is classified as having some concerns and no domains are classified as high-risk); or (3) a high risk of bias [at least one domain is classified as high-risk or multiple domains (≥ 4) are classified as having some concerns]. Three reviewers were independently involved in the data extraction and risk of bias assessment. Double data extraction was conducted for one-third of the included articles, whereas the risk of bias for all studies was independently assessed by two reviewers. Discrepancies were resolved through group discussion, with a fourth reviewer acting as arbiter when required. Where available, original articles and published protocols were used for the risk of bias assessment.

Data analysis

Meta-analysis

A series of meta-analyses explored the effectiveness of all affected other-delivered psychosocial interventions for affected others across addictions compared to passive control groups, regardless of focus (i.e. affected other- and/or addicted person-focused). A primary outcome was not selected due to the large number of aims of the available interventions. Moreover, given that 20 different outcomes were

evaluated across the included studies, final outcomes for this meta-analysis were selected *post hoc* whereby outcomes reported in at least five of the included RCTs were selected for inclusion. These outcomes included: (1) affected other outcomes (depressive symptomatology, life satisfaction, addiction-related harms, psychological distress, coping styles, anxiety symptomatology); (2) addicted person outcomes (frequency of use, treatment entry); and (3) relationship functioning outcomes (marital/relationship discord). Only studies that provided sufficient data for at least one of these affected other, addicted person or relationship functioning outcomes were included in the meta-analytical component of this review. Data relevant to the meta-analyses included means, standard deviations and sample sizes for continuous variable and events and sample sizes for categorical variables for each intervention and control arm. Where these data were not available, several attempts were made to ascertain the required data from other sources, including other statistics (e.g. *t*-values, standard errors, 95% confidence intervals) that could be used to calculate the means and/or standard deviations using standard formulas [30], other papers using the same data set and contacting authors directly. Two author teams were contacted directly for data, with none responding to the review team.

The meta-analyses were conducted in Review Manager [31]. Random-effects models were used, which provide a weighted estimate of the effectiveness of the intervention condition relative to the control condition at each time-point [i.e. post-intervention (0–3 months), short-term follow-up (4–11 months), medium-term follow-up (12–23 months) and long-term follow-up (24+ months)] [27, 32]. For continuous variables, the weighted estimate was the standardized mean difference [SMD], produced using the DerSimonian & Laird estimator. For categorical outcomes, the weighted estimate was the risk ratio (RR), produced using the Mantel-Haenszel estimator. The SMDs and RRs were interpreted using conventional thresholds (small = 0.2 and 1.22; medium = 0.5 and 1.86; large = 0.8 and 3.00, respectively; [33, 34]). Statistical heterogeneity was assessed using the χ^2 and associated *P*-value, the Tau² statistic and the *I*² statistic (0–40% = minor; 30–60% = moderate; 50–90% = substantial; 75–100% = considerable [35]). Given the relatively limited literature, a minimum of two estimates were required to conduct a meta-analysis. The decision rules for the meta-analyses are presented in the Supporting information.

Sensitivity analyses

To examine whether the meta-analytical findings are robust to clinically relevant factors and methodological quality, sensitivity analyses were conducted. This involved repeating the meta-analyses for each outcome while retaining only articles that met certain criteria. Specifically, the sensitivity analyses were sequentially restricted to articles that explored the effectiveness of: (1) psychosocial interventions for affected others of alcohol use (i.e. addiction type); (2) therapist-delivered psychosocial interventions (i.e. mode of intervention delivery); (3) individually delivered psychosocial interventions

(i.e. therapist-delivered intervention modality); (4) community reinforcement approach and family training (CRAFT; i.e. intervention approach); and (5) psychosocial intervention in studies that were rated overall as having a low risk of bias. A minimum of five estimates were required to conduct the sensitivity analyses.

RESULTS

Search results

After duplicate removal, 6381 articles were identified for title and abstract screening. Of these, 150 articles remained for full-text assessment. Twenty studies of 22 articles were included in this review, none of which were identified from the grey literature search. Of these, 15 studies among 17 articles were included in the meta-analysis. See Figure 1 for a PRISMA flow diagram of these search results and Supporting information for the list of studies excluded at the full-text assessment stage.

Characteristics of included studies

Table 1 displays the characteristics of included studies. Of the 20 included studies, the majority (70.0%; *k* = 14) evaluated interventions for individuals affected by alcohol use, followed by gambling (20.0%; *k* = 4) and illicit drug use (10.0%; *k* = 2). No study evaluated an intervention for problematic gaming. Most studies were conducted in the United States (40.0%; *k* = 8) and Australia (15.0%; *k* = 3). Sample sizes ranged from 18 to 312 (mean = 78.0, SD = 72.0, median = 52.5). Most studies evaluated interventions that specifically targeted spouses/partners only (65.0%; *k* = 13), with fewer studies evaluating interventions that broadly targeted any family member-, friend- or care-focused (30.0%; *k* = 6).

Numerous outcomes were evaluated among the included studies (*n* = 24). Almost all studies evaluated affected other mood and functioning (95.0%; *k* = 19; e.g. depressive symptomatology), followed by addicted person outcomes (75.0%; *k* = 15; e.g. treatment entry) and relationship/family functioning outcomes (55.0%; *k* = 11; e.g. marital/relationship discord). Most studies evaluated outcomes at a post-intervention time-point (85.0%; *k* = 17), with fewer studies examining short-term (50.0%; *k* = 10), medium-term (40.0%; *k* = 8) and long-term (5.0%; *k* = 1) outcomes. Intention-to-treat analysis was conducted in some studies (40%; *k* = 8), with most studies (45.0%; *k* = 9) providing insufficient information on the analytical approach utilized.

A range of therapist-delivered interventions were evaluated (individually delivered: 40.0%, *k* = 8; group-delivered: 40.0%, *k* = 8), with fewer studies evaluating self-directed interventions (20.0%; *k* = 4). Four studies (20.0%) evaluated single intervention arms that used a combination of individually delivered, group-delivered and/or self-directed modalities. Intervention duration ranged from 2 to 24 weeks (mean = 9.86, SD = 6.47).

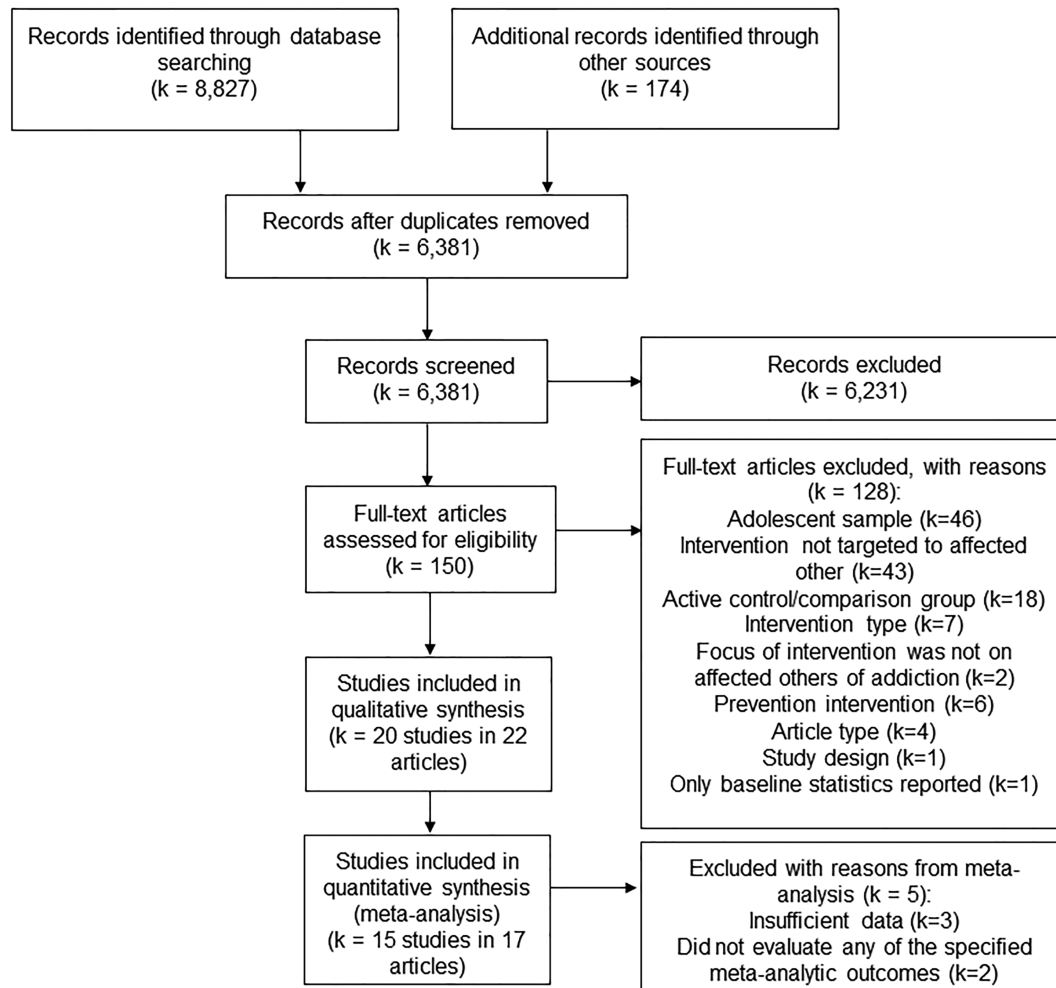


FIGURE 1 Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram

Eight studies (40.0%) evaluated interventions that were both addicted person- and affected other-focused, followed by affected other-focused (35.0%; $k = 7$) and addicted person-focused (25.0%; $k = 5$) interventions. Five studies (25.0%) evaluated interventions based on CRAFT, a cognitive-behavioural programme that helps affected others to engage treatment-resistant addicted individuals into treatment and improve the affected other's quality of life (i.e. affected other-delivered intervention with an affected other and addicted person focus [36]). Three studies (15.0%) evaluated coping skills training (CST), which helps affected others to cope with addiction-related distress (i.e. affected other-delivered intervention with an affected other focus; [37]). Three studies (15.0%) evaluated the pressures to change intervention, which provides partners with appropriate coping responses that empower them and increasingly incentivize the addicted person to change their behaviour or seek help (i.e. affected other-delivered intervention with an addicted person focus [38]). The remaining studies (45.0%; $k = 9$) evaluated a range of other affected other-delivered interventions with an addicted person and/or affected other focus (e.g. quality of life therapy).

Risk of bias

Overall, half of the included studies were classified as having some concerns (50.0%; $k = 10$) or high risk of bias (50.0%; $k = 10$; see Supporting information, Table S1). When broken down by domain, half the studies (50.0%; $k = 10$) were classified as having some concerns for bias arising from the randomization process, followed by high (30.0%; $k = 6$) and low (20.0%; $k = 4$) risk of bias classifications. Most studies were classified as having a high risk of bias (45.0%; $k = 9$) for bias arising from deviations from the intended intervention, followed by some concerns (30.0%; $k = 6$) and low risk of bias (25.0%; $k = 5$) classifications. Most studies were classified as having low risk of bias (75.0%; $k = 15$) arising from missing outcome data, followed by high risk of bias (15.0%; $k = 3$) and some concerns (10.0%; $k = 2$). Half the studies were also classified as having some concerns (50.0%; $k = 10$) for bias arising from measurement of the outcome, followed by low (30.0%; $k = 6$) and high (20.0%; $k = 4$) risk of bias classifications. Finally, most studies were classified as having some concerns (80.0%; $k = 16$) for bias arising due to selection of reported results, followed by low risk of bias (20.0%; $k = 4$).

TABLE 1 Characteristics of included studies

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Ager, Yoshioka [39]	Alcohol	USA	55	Spouses (100%)	(1) Unilateral family therapy: individually delivered (2) DTC	Addicted person- and affected other-focused	20	Baseline and 6, 12 and 18 months follow-up	Affected other outcomes: (1) Distress via the LDI (2) Psychological distress via the GSI of the BSI (3) Facilitation of alcohol abuse via the SEI (4) Controlling partner's drinking via the DCS of the SSI Addicted person outcomes: (1) Quantity and frequency of alcohol use via the QFI (2) Treatment entry via a single item Relationship functioning outcomes: (1) relationship happiness via MHS (2) Relationship satisfaction via DAS	n
Barber & Crisp [38]	Alcohol	Australia	23	Partners ^b (100%)	(1) Pressures to change: individually delivered (2) Pressures to change: group delivered (3) WLC	Addicted person-focused	5	Baseline and post-treatment	Affected other outcomes: (1) Wellbeing via LSS (2) Self-esteem via LSS (3) Depression via DPDS. Addicted person outcomes:	NI

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Barber & Gilbertson [48]	Alcohol	Australia	48	Female partners (83.3%), male partners (6.3%), mothers (6.3%) and daughters (4.1%)	(1) Pressures to change: individually delivered (2) Pressures to change: group delivered (3) WLC (4) Referral to Al-Anon	Addicted person-focused	5	Baseline and post-treatment	(4) Behaviour change (treatment seeking, ceasing drinking or reducing drinking to level acceptable by partner) via drink diary by participant. Relationship functioning outcomes: (5) Marital discord via DPDS Affected other outcomes: (1) Wellbeing via LSS (2) Personal problems via a problem checklist Addicted person outcomes: (3) Behaviour change (treatment seeking and drinking cessation or reduction in drinking) via drink diary by participant Relationship functioning outcomes: (4) Marital satisfaction via MCS	NI
Barber & Gilbertson [49]	Alcohol	Australia	38	Female partners (100%)	(1) Pressures to change: individually delivered (2) Pressures to change: self-help	Addicted person-focused	5	Baseline and post-treatment	Affected other outcomes: (1) Wellbeing via LSS (2) Depression via DPDS	NI

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Bischof, Iwen [40]	Alcohol	Germany	78	Spouses (62.8%), co-habiting with CSO (16.7%), adult children (10.3%), parents (6.4%), siblings (2.5%), third-degree relative (1.3%)	(3) WLC (1) CRAFT: individually delivered (2) WLC	Addicted person- and affected other-focused	12	Baseline and 3-, 6- and 12-month follow-ups	Addicted person outcomes: (3) Behaviour change (treatment seeking and drinking cessation or reduction) via drink diary by participant Relationship functioning outcomes: (4) Marital discord via DPDS Affected other outcomes: (1) Depression via BDI (2) Mental health via MHI-5 (3) Psychological symptoms via SCL-90 (4) Satisfaction with life via the SWLS (5) Coherence via SOC (6) Degree of suffering from alcohol consumption of addicted person via PSRISM Addicted person outcomes: (7) Treatment entry via CSO reports (8) Alcohol consumption via the AUDIT (results not reported) (9) Adverse consequences	Y

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
de los Angeles Cruz-Almanza, Gaona-Márquez [50]	Alcohol	Mexico	18	Wives (100%)	1. Group delivered intervention 2. Accidental no treatment control group	Affected other-focused	18	Intervention: Pre-test, post-test, 3-, 6- and 18-month follow-up Control: pre-test and 24-month follow-up	from drinking via scale derived from Health and Daily Living Form Relationship functioning outcomes: (10) relationship happiness via RHS Affected other outcomes: (1) Distress via degree of discomfort scale of AI (2) Likelihood of engaging in specific behaviours via response probability scale of AI (3) Self-esteem via Self-esteem Inventory (4) Coping via Birmingham Coping Inventory Affected other outcomes: (1) Self-concept via the TSCS total positive score (2) Depression via the BDI (3) Anxiety via the TMAS (4) Enabling behaviours via the MEBI	N
Dittrich & Trapold [51]	Alcohol	USA	23	Wives (100%)	(1) Group-delivered intervention with optional support group sessions (2) WLC	Affected other-focused	8 (optional 8)	Baseline, post-treatment, post-support group, 12 months		NI
Eék, Romberg [52]	Alcohol	Sweden	94	Partners (86.2%), child (6.6%), other (4.3%), parents	(1) Internet-delivered CRAFT (2) WLC	Addicted person- and affected	5	Baseline, 6-, 12 and 24 weeks	Affected other outcomes: (1) Anxiety via the GAD-7 and DASS	Y

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Hodgins, Toneatto [53]	Gambling	Canada	186	(2.1%, friend (1.1%) Spouse or common-law (56%), child (18%), sibling (7%), boy/girlfriend (6%), parent (6%), friend (5%), extended family (3%).	(1) CRAFT - Self-help workbook (2) CRAFT - Self-help workbook + telephone support. (3) Control group (resource information package)	other-focused Addicted person and affected other-focused	NR	Baseline, 3 and 6 months	(2) Depression via the MADRS-S and DASS (3) Stress via the DASS (4) Psychological flexibility via the AAQ (5) Quality of life via the SWLS Addicted person outcome: (6) treatment-seeking behaviour Relationship functioning outcome: (7) Relationship satisfaction via the RHS Affected other outcomes: (1) Negative consequences via the ICSG (2) Psychological distress via the GSI of the BSI Addicted person outcomes: (3) Number of days gambled (4) Dollars spent gambling (5) Overall description of level of gambling (6) Negative consequences via the ICSG (7) Treatment entry	ITT analysis

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Hojjat, Rezaei [54]	Drugs	Iran	48	Female partners (100%)	(1) Harm reduction training sessions: group delivered (2) WLC	Addicted person-focused	NR	Baseline: 2 month follow-up (marital satisfaction only); 6-month follow-up (relapse rate of patients only)	Relationship functioning outcomes: (8) Relationship satisfaction via the RHS and the RAS Addicted person outcomes: (1) Relapse via the relapse checklist in methadone maintenance treatment Relationship functioning outcomes: (2) Marital satisfaction via the Enrich Marital Inventory Questionnaire (Short Form)	NI
Howells & Orford [55]	Alcohol	UK	50	Partners (100%)	(1) Guidelines for therapeutic approach: individually delivered (2) WLC	Addicted person and affected other-focused	NR	Intervention: baseline, 6 weeks, 3, 6 and 12 months Control: baseline, 6 weeks, 3 months	Affected other outcomes: (1) Stress via the SRT (2) Coping style with Short CQ (3) Self-esteem, empowerment, locus of control and independence via the Self-esteem and Independence Questionnaire Addicted person outcomes: (4) Drinking-related behaviour via the DRB (5) Number of drinks	NI

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Karimi, Rezaee [56]	Drugs	Iran	80	Spouses (100%)	(1) Quality of life therapy; group delivered (2) No treatment	Affected other-focused	2	Baseline and 12-weeks follow-up	consumed each week; (6) Pattern of drinking behaviour (7) Problem drinker outcomes via the OPD (overall judgement of outcome, fall in DRB score and change in drinks consumed) Affected other outcomes: (1) Stress via the DASS-21 (2) Life Satisfaction via the SWLS	Y
Magnusson, Nilsson [41]	Gambling	Sweden	100	Partner (43.0%), parent (43.0%), other (14.0%)	(1) CBT: self-help (2) WLC	Addicted person and affected other focused	NR	Baseline, post-treatment, 3-, 6- and 12-month follow-up	Affected other outcomes: (1) Gambling-related harm via the ICSG (2) Depression via PHQ-9 (3) Anxiety via GAD-7 (4) Quality of life via the WHOQOL-BREF Addicted person outcomes: (5) Treatment engagement; (6) Gambling behaviour (days gambled and money spent) via the TLLFB Relationship functioning outcomes: (7) Relationship	Y

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Makarchuk, Hodgins [57]	Gambling	Canada	31	Spouse or common law (58.0%), boy/girlfriend (13.0%), parent (13.0%), child (13.0%), sibling (3%)	(1) CRAFT: self-help + standard practice (2) Control group (standard practice)	Addicted person and affected other-focused	NR	Baseline and 3-month follow-up	satisfaction via the RAS Affected other outcomes: (1) Personal functioning via the BSI; (2) Number of negative consequences via modified Drinker Inventory of Consequences. Addicted person outcomes: (3) Number of days gambled via TLFB (4) Treatment engagement (5) Negative consequences via modified DrInC Relationship functioning outcomes: (6) Relationship satisfaction via the RHS	NI
Osilla, Trail [58] /Rodriguez, Osilla [59] /Trail, Osilla [60]	Alcohol	USA	312	Partners (100%)	(1) Partners connect WBI adapted from CRAFT (2) WLC	Addicted person and affected other-focused	NR	Baseline and 5-month follow-up	Affected other outcomes: (1) Depression via PHQ-8 (2) Anxiety via GAD-7 (3) Anger via STAXI-2 (4) Social support via MOS Social Support Survey Addicted person outcomes: (5) Alcohol consumption via DNRF and single	N

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Roush & DeBlasie [61]	Alcohol	USA	24	Children (100%)	(1) Structured counselling: group delivered (2) WLC	Affected other-focused	8	Baseline, post-treatment and 1-month follow-up	items assessing days of more than 5 drinks consumed and quantity of drinks Relationship functioning outcomes: (6) Relationship quality via QMI (7) Family conflict via FES Affected other outcomes: (1) Knowledge, attitude, and behaviour related to parental alcoholism via the PAIS	NI
Rychtarik & McGillicuddy [37]	Alcohol	USA	171	Female partners (100%)	(1) CST: group delivered (2) TSF: group delivered (3) DTC	Affected other-focused	8	Baseline, post-treatment, and 3-, 6-, 9- and 12-month follow-ups	Affected other outcomes: (1) Depression via BDI (2) Physical violence via CTS (3) Coping skill acquisition via SSI Addicted person outcomes: (4) Percentage drinking days and standard drinks per drinking day via TLFB (5) Help-seeking (6) Al-Anon attendance Affected other outcome:	Y
Rychtarik & McGillicuddy [62]	Gambling	USA	23	Partners (married or cohabiting with	(1) CST: individually delivered (2) DTC	Affected other-focused	10	Baseline and post-treatment	Affected other outcome:	Y

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Rychtarik, McGillicuddy [63]	Alcohol	USA	89	Female partners married or living with addicted person (100%)	(1) Internet-based CST (2) DTC	Affected other-focused	8	Baseline and post-test	(1) Coping Skill acquisition via Gambler Situation Inventory (2) Coping styles via short form of the CQ, adapted for gambling (3) Depression via BDI-II (4) Anxiety via BAI (5) Anger via STAXI-2 <i>Addicted person outcome:</i> (6) Percentage of non-gambling days and average monetary loss per gambling day via TLFB <i>Affected other outcomes:</i> (1) Depression via BDI-II (2) Anger via State Anger subscale, and Anger Expression Index on the STAXI (3) Anxiety via DASS (4) Stress via DASS (5) Coping skill acquisition via SSI (6) Help-seeking (7) Intimate partner violence via interview <i>Addicted person outcomes:</i> (8) Alcohol and Drug Use via interview	Y

(Continues)

TABLE 1 (Continued)

Study ID	Addiction type	Country	n	Affected other(s) recruited	Intervention arms ^a	Intervention aim	Intervention duration (weeks)	Timing of outcome assessments	Outcomes	ITT analysis
Yoshioka, Thomas [64]	Alcohol	USA	68	Wives (100%)	(1) Drinking control modification programme: individually delivered (2) DTC	Addicted person-focused	24	Baseline and follow-up at three successive 6-month intervals	(9) Intimate partner violence via interview (10) Help-seeking Affected other outcomes: (1) Changes in DC behaviours measured by the Spouse Sobriety Influence Inventory	NI

AAQ = Acceptance and Action Questionnaire; AI = assertion inventory; AUDIT = Alcohol Use Disorders Identification Test; BAI = Beck anxiety inventory; BDI = Beck depression inventory; BSI = brief symptom inventory; CQ = Coping Questionnaire; CRAFT = community reinforcement approach and family training; CSO = concerned significant other; CST = coping skills training; CTS = conflict tactics scale; DAS = dyadic adjustment scale; DASS-21 = depression anxiety stress scale; DC = drinking control; DNRF = drinking norms rating form; DPDS = drinker's partner distress scale; DRB = drinking-related behaviour scale; DrlnC = drinker inventory of consequences; DTC = delayed treatment control; FES = family environment scale; GAD-7 = generalized anxiety disorder seven-item scale; GSI = global severity index; ICSG = inventory of consequences scale for the gambler and the CSO; LDI = life distress inventory; LSS = life satisfaction scale; MADRS-S = Montgomery Asberg depression rating scale; MCS = marital consensus scale; MEBI = Memphis enabling behaviors inventory; MHI-5 = mental health inventory; MHS = marital happiness scale; N = no; NI = no information; NR = not reported; OPD = outcome for the problem drinker; PAIS = parental alcoholism information survey; PHQ-9 = patient health questionnaire, nine-item version; QFI = quantity-frequency index; QMI = quality of marriage index; RAS = relationship assessment scale; RCT = randomized controlled trial; RHS = relationship happiness scale; SCL-90 = symptom checklist; SEI = spouse enabling inventory; STAXI-2 = state-trait anger expression inventory; SRT = symptom rating test; SSI = spouse situation inventory; SSL = spouse sobriety influence inventory; SOC = sense of coherence scale; SWLS = satisfaction with life scale; TLFB = time-line follow-back; TMAS = Taylor manifest anxiety scale; TSCS = Tennessee self-concept scale; TSF = 12-Step facilitation; WHOQOL-BREF = World Health Organization quality of life - brief scale; WLC = waiting list control; Y = yes.

^aSome studies included multiple interventions with different modes of delivery, hence percentages in the results do not sum to 100%.

^bPartner is inclusive of spouses, as well as registered or *de-facto* arrangements.

Meta-analysis

See Supporting information, Figures S1–S22 for the forest plots of the meta-analyses and sensitivity analyses.

Post-intervention

Table 2 presents the meta-analytical results for all eight outcomes at post-intervention. Compared to the control groups, the intervention groups demonstrated significantly lower post-intervention affected other depressive symptomatology (SMD = -0.48; 95% CI = -0.67, -0.29; $I^2 = 0\%$) and marital/relationship discord (SMD = -0.40; 95% CI = -0.61, -0.18; $I^2 = 13\%$) and higher post-intervention affected other life satisfaction (SMD = -0.37; 95% CI = -0.71, -0.03; $I^2 = 54\%$), affected other coping skill acquisition (SMD = -1.33; 95% CI = -1.87, -0.79; $I^2 = 44\%$) and addicted person treatment entry (SMD = 0.86; 95% CI = 0.75, 0.98; $I^2 = 58\%$). No other significant differences were identified.

Follow-up time-points

Table 3 presents the meta-analytical results for the six affected other (depressive symptomatology, psychological distress, anxiety symptomatology), addicted person (frequency of use, treatment entry) and relationship functioning (marital/relationship discord) outcomes that had a sufficient number of studies at a short-term follow-up to conduct meta-analyses. No significant differences were identified on any of these outcomes. Despite four studies assessing outcomes at a medium-term follow-up time-point (12 months [37, 39–41] and 18 months [39]), no meta-analyses could be conducted due to the use of waiting-list control groups, in which participants in the control group had received the intervention at this medium-term follow-up.

Sensitivity analyses

The results of the sensitivity analyses are presented in Table 4. Given limited follow-up data, these sensitivity analyses were only conducted at post-intervention. There were insufficient studies to conduct

TABLE 2 Meta-analytical results at post-treatment

Outcome	Meta-analyses						Heterogeneity			
	k	n	SMD	LCI	UCI	P	χ^2	P	I^2	Tau ²
Affected other depressive symptomatology	7	459	-0.48	-0.67	-0.29	< 0.001	4.03	0.67	0%	0.00
Affected other life satisfaction	6	349	-0.37	-0.71	-0.03	0.03	10.98	0.05	54%	0.09
Affected other addiction-related harms	4	307	-0.22	-0.81	0.37	0.46	17.78	< 0.001	83%	0.30
Affected other psychological distress	5	463	-0.23	-0.47	0.00	0.05	6.27	0.18	36%	0.03
Affected other coping	3	219	-1.33	-1.87	-0.79	< 0.001	5.39	0.07	63%	0.14
Affected other anxiety symptomatology	3	203	-0.40	-0.80	0.00	0.05	3.59	0.17	44%	0.06
Addicted person frequency of use	5	372	-0.20	-0.53	0.12	0.22	9.14	0.06	56%	0.07
Addicted person treatment entry ^a	8	454	0.86	0.75	0.98	0.03	16.70	0.02	58%	0.02
Marital/relationship discord	7	437	-0.40	-0.61	-0.18	< 0.001	6.89	0.33	13%	0.01

LCI = lower confidence interval; SMD = standardized mean difference; UCI = upper confidence interval.

Values significant at $p < 0.05$ have been indicated in bold type.

^aRisk ratio was used for this meta-analysis as the outcome was categorical.

TABLE 3 Meta-analytical results at a short-term follow-up (4–11 months post-treatment)

Outcome	Time-point	Meta-analyses						Heterogeneity			
		k	n	SMD	LCI	UCI	P	χ^2	P	I^2	Tau ²
Affected other depressive symptomatology	5–6 months	2	328	-0.04	-0.32	0.23	0.75	1.43	0.23	30%	0.01
Affected other psychological distress	6 months	3	261	-0.07	-0.51	0.37	0.75	5.62	0.06	64%	0.10
Affected other anxiety symptomatology	5–6 months	2	328	-0.14	-0.46	0.18	0.40	1.86	0.17	46%	0.03
Addicted person frequency of use	5–6 months	4	437	-0.21	-0.51	0.09	0.18	6.15	0.10	51%	0.05
Addicted person treatment entry ^a	6 months	2	136	0.81	0.64	1.03	0.09	1.65	0.20	39%	0.01
Marital/relationship discord	5–6 months	4	488	-0.19	-0.50	0.11	0.22	7.30	0.06	59%	0.06

LCI = lower confidence interval; SMD = standardized mean difference; UCI = upper confidence interval.

^aRisk ratio was used for this meta-analysis as the outcome was categorical.

TABLE 4 Sensitivity analyses for post-intervention meta-analytic estimates

Outcome	Sensitivity analysis						Heterogeneity			
	k	n	SMD	LCI	UCI	P	χ^2	P	I^2	Tau ²
Addiction type: alcohol										
Affected other depressive symptomatology	6	436	-0.46	-0.66	-0.27	< 0.001	3.08	0.69	0%	0.00
Affected other life satisfaction	5	269	-0.25	-0.58	0.08	0.13	6.26	0.18	36%	0.05
Addicted person treatment entry ^a	6	355	0.83	0.69	0.98	0.03	16.85	0.005	70%	0.03
Marital/relationship discord	5	269	-0.50	-0.75	-0.25	< 0.001	1.68	0.79	0%	0.00
Mode of intervention delivery: therapist-delivered										
Affected other depressive symptomatology	5	264	-0.42	-0.67	-0.17	< 0.001	3.00	0.56	0%	0.00
Affected other life satisfaction	5	240	-0.27	-0.71	0.16	0.22	9.82	0.04	59%	0.14
Marital/relationship discord	5	210	-0.42	-0.70	-0.14	0.003	2.14	0.71	0%	0.00

LCI = lower confidence interval; SMD = standardized mean difference; UCI = upper confidence interval.

Values significant at $p < 0.05$ have been indicated in bold type.

^aRisk ratio was used for this meta-analysis as the outcome was categorical.

sensitivity analyses based on therapist-delivered intervention modality, intervention approach and risk of bias. Moreover, publication bias was going to be evaluated using funnel plots, but there was an insufficient number of studies [42] to allow for meaningful presentation.

Addiction type

Four outcomes (affected other depressive symptomatology, affected other life satisfaction, addicted person frequency of use, addicted person treatment entry and marital/relationship discord) had a sufficient number of studies to conduct sensitivity analyses based on addiction type. When restricting the meta-analyses to studies that examined the effectiveness of psychosocial interventions for affected others of alcohol use, the intervention group continued to demonstrate better outcomes on affected other depressive symptomatology (SMD = -0.46; 95% CI = -0.66, -0.27; $I^2 = 0\%$), addicted person treatment entry (SMD = 0.83; 95% CI = 0.69, 0.98; $I^2 = 70\%$) and marital/relationship discord (SMD = -0.50; 95% CI = -0.75, -0.25; $I^2 = 0\%$), when compared to the control groups. In contrast, the intervention group was no different to the control group on affected other life satisfaction.

Mode of intervention delivery

Three outcomes (affected other depressive symptomatology, affected other life satisfaction and marital/relationship discord) had a sufficient number of studies to conduct sensitivity analyses based on the mode of intervention delivery. When restricting the meta-analyses to studies that examined the effectiveness of therapist-delivered interventions for affected others, the intervention group continued to demonstrate better outcomes on affected other depressive symptomatology (SMD = -0.42; 95% CI = -0.67, -0.17; $I^2 = 0\%$) and marital/relationship discord (SMD = -0.42; 95% CI = -0.70, -0.14; $I^2 = 0\%$) when compared to the control groups. In

contrast, the intervention group was no different to the control group on affected other life satisfaction.

DISCUSSION

This is the first systematic review, to our knowledge, to evaluate the effectiveness of psychosocial interventions delivered to affected others impacted by problem alcohol use, illicit drug use, gambling and gaming that do not rely upon the presence of the addicted person. Meta-analytical findings from 15 studies, among 17 articles, generally provide support for the use of these interventions, although no studies were identified for gaming. Specifically, this review supports the efficacy of interventions for improving some, but not all, affected other (depressive symptomatology, life satisfaction and coping styles; small to large effect sizes), addicted person (treatment entry; small effect size), and marital/relationship discord (small-to-medium effect size) outcomes at post-intervention. These findings suggest the need for future research to develop and evaluate new psychosocial interventions aimed for affected others across the addictions, that can address each of these outcomes.

Six meta-analyses exploring longer-term effects of psychosocial interventions for affected others could be conducted. These findings highlighted the lack of durability of treatment effects among all affected other, addicted person and relationship functioning outcomes at a short-term follow-up (4–11 months follow-up). Caution, however, should be taken in interpreting these findings, given the limited number of studies evaluating the longer-term effects of these psychosocial interventions, with most these meta-analyses consisting of only two to four studies. Given this, future research with longer-term follow-ups is required to determine the durability of these treatments.

Limited sensitivity analyses exploring the impact of clinically relevant factors and methodological quality on intervention effects could be conducted. These findings highlighted that when analyses were restricted to studies that examined the effectiveness of psychosocial

interventions for affected others of alcohol use, interventions remained effective in improving affected other depressive symptomatology, addicted person treatment entry and marital/relationship discord but not affected other life satisfaction. Similarly, when analyses were restricted to studies that examined the effectiveness of therapist-delivered interventions for affected others, interventions remained effective in improving affected other depressive symptomatology and marital/relationship discord, but not affected other life satisfaction. With the exception of affected other life satisfaction, these findings are consistent with the main meta-analytical findings, which also produced similar effect sizes (ranging from small to medium). Together, these findings suggest that psychosocial interventions can be effective in improving some affected other, addicted person and relationship functioning outcomes for affected others of alcohol use, and that therapist-delivered interventions can be effective in improving some affected other and relationship functioning outcomes. Further research evaluating the available interventions is needed to gain a greater understanding of their effectiveness in supporting individuals affected by different addictions (e.g. gambling and gaming disorder) and across different modes of delivery (e.g. self-directed). As sensitivity analyses could not be conducted on mode of therapist-delivered intervention modality and intervention approach, more research into these clinically relevant factors is also required.

The current findings are somewhat consistent with a previous meta-analysis, whereby affected other interventions were found to be more effective than control groups in engaging the addicted person into treatment at any post-intervention time-point [19]. The current findings, however, were inconsistent with that same review, with no beneficial effect of intervention found for frequency of use of the addiction [19]. The differences in findings may be attributed to the inclusion of all addictions in the current meta-analysis, compared to alcohol only in the previous meta-analysis. Moreover, while this meta-analysis focused upon affected other-directed interventions only, Edwards & Steinglass [19] also included family systems interventions in the same meta-analysis.

These findings, however, need to be interpreted with caution given several limitations of the existing evidence base. First, the risk of bias assessment highlighted methodological limitations throughout the literature with no study categorized as having a low risk of bias. Main methodological limitations related to the randomization procedure (i.e. inappropriate procedures employed or insufficient detail provided) and the selection of reported results (i.e. lack of published protocols and trial registrations). Secondly, few studies evaluated outcomes beyond post-treatment. Where longer-term follow-ups were conducted, most studies employed waiting-list control conditions in which participants in control conditions have received the intervention at these follow-up time-points, therefore limiting the data available for inclusion in meta-analyses. Thirdly, there was substantial variability in the aims of the available affected other interventions, which has led to inconsistency in the outcomes assessed and measurement tools used, making it difficult to compare the results from the included studies. Relatedly, given the limited number of studies, the current review could not conduct separate meta-analyses to tease out the effectiveness of interventions focused upon the affected

other, the addicted person or both, among the various outcomes. This was further complicated by studies that measured outcomes that were not directly addressed by the intervention that was being delivered (e.g. marital discord). Finally, several studies were excluded from the current review as they employed active comparison groups, which involves identifying the comparative efficacy of interventions.

Given the limited findings of the current review, studies exploring the comparative superiority of the available interventions is premature, with further RCTs utilizing a passive control condition needed to first establish the superiority of a particular intervention over a control group. In addition, to ensure greater quality of studies in the addiction field, research evaluating affected other interventions should employ RCT methodologies that conform to the Cochrane risk of bias tool and evaluate outcomes relevant to the aim of the intervention. Moreover, all interventions should be followed-up over longer periods to ascertain the durability of intervention effects.

Notwithstanding these limitations, the current review suggests that people affected by someone else's addiction might benefit from a range of psychosocial interventions, highlighting the need for training and ongoing professional development of clinicians to improve access to evidence-based practice for affected others. Prior to this, there are several areas for future research consideration. First, as most included studies evaluated interventions originally designed for individuals affected by problematic alcohol use and/or illicit drug use, development of new interventions designed specifically to address the needs of individuals affected by behavioural addictions is required. Secondly, as most of the available self-directed interventions were originally designed to be therapist-delivered (e.g. CRAFT, pressures to change), interventions specifically designed to be delivered in a self-directed format are needed. With the rise in on-line and mobile-based interventions in the addictions field [43–47], this research should focus upon internet- and mobile-delivered self-directed interventions that can expand the suite of low-intensity options for affected others. Finally, given the range of intervention aims in this field, future research identifying the active components (i.e. behaviour change techniques) of these interventions that can effectively address each of the varying affected other intervention needs is required [17]. Relatedly, as the field advances, future reviews should focus upon identifying whether the effectiveness of affected other- and/or addicted person-focused interventions differ across the numerous affected other, addicted person and relationship functioning outcomes.

CONCLUSION

This is the first systematic review, to our knowledge, to evaluate the effectiveness of psychosocial interventions for individuals affected by another's problematic alcohol, illicit drug, gambling or gaming use. While further research is still required, this review demonstrated positive (but mixed) findings for the effectiveness of these interventions on some affected other, addicted person and relationship functioning outcomes. Future research should focus on the development and evaluation of tailored interventions that meet the range of affected

other needs and self-directed interventions, especially for affected others of behavioural addictions.

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AUTHOR CONTRIBUTIONS

Stephanie Merkouris: Conceptualization; data curation; formal analysis; funding acquisition; methodology; project administration. **Simone Rodda:** Conceptualization; funding acquisition; methodology. **Nicki Dowling:** Conceptualization; funding acquisition; methodology.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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