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**Follow-up to the implementation at the national, regional, and international levels of all commitments, as reflected in the Ministerial Declaration of 2019, to address and counter the world drug problem****The relationship between person-centred care for substance use disorders and service outcomes: A systematic scoping review\*\***

This Discussion Paper was prepared by UNODC in line with relevant international policy documents, such as resolution 59/4 of the Commission on Narcotic Drugs (CND) on the “Development and dissemination of international standards for the treatment of drug use disorders” and CND resolution 64/3 that calls for “Promoting scientific evidence-based, quality, affordable and comprehensive drug prevention, treatment, sustained recovery and related support services”.

This Discussion Paper provides the results of a systematic scoping review that mapped the existing literature on person-centred care for substance use disorders and service outcomes. The review has been undertaken as a follow-up to E/CN.7/2023/CRP.9 “The relationship between quality of specialist treatment for substance use disorders and patient outcomes: a scoping review of the literature”, which identified patient-centred care as one of the dimensions of quality that is most strongly associated to positive patient outcomes. This Discussion Paper delves deeper in the scientific literature by investigating which of the many components of patient-centred care is associated with positive patient outcomes.

The Discussion Paper is made available as a Conference Room Paper to the Commission for its information at its sixty-seventh session.

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\* [E/CN.7/2024/1](#).

\*\* This document has not been edited.



# The relationship between person-centred care for substance use disorders and service outcomes: a systematic scoping review

Discussion Paper

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## Abbreviations

ART	Antiretroviral Treatment (for HIV)
AUD	Alcohol Use Disorder
CBT	Cognitive Behavioural Therapy
CIFFTA	Culturally Informed and Flexible Family-Based Treatment for Adolescents
COPE	Concurrent treatment for PTSD and SUD using Prolonged Exposure
CUD	Cannabis Use Disorder
CYT	Cannabis Youth Treatment Project
ED	Emergency Department
FT	Family Therapy
HCV	Hepatitis C
LMIC	Low- and Middle-income Country
MAUD	Medication Treatment for Alcohol Use Disorder
MDFT	Multidimensional Family Therapy
MET	Motivational Enhancement Therapy
MH	Mental Health
MOUD	Medication for Opioid Use Disorder
MTP	Marijuana Treatment Project
ODU	Opioid Use Disorder
PCC	Person-Centred Care
PRC	Peer Recovery Coach
PTSD	Post-Traumatic Stress Disorder
RCT	Randomised Controlled Trials
RP	Relapse prevention
SS	Seeking Safety
SUD	Substance Use Disorder
TAU	Treatment as Usual
TIC	Trauma-Informed Care
TSF	Twelve step facilitation Therapy
UNODC	United Nations Office on Drugs and Crime

## Executive summary

**Purpose:** Person-centred care (PCC) within substance use disorder (SUD) treatment has been conceptualized as the provision of (i) holistic, integrated services; (ii) individualised care tailored to patients' needs, goals, and preferences; (iii) opportunities for involvement in treatment decisions; (iv) a strong therapeutic alliance; (v) trauma-informed care; and (vi) culturally informed care. This systematic scoping review synthesizes evidence on the relationship between these dimensions of PCC and the outcomes of interventions across the SUD treatment continuum.

**Method:** This review included 129 articles representing 108 unique studies with an aggregate sample of 658,014 participants. All included studies were conducted in high-income countries.

### Key findings:

- This review found largely positive associations between each dimension of PCC and the outcomes of SUD services across a broad range of treatment types, settings and populations.
- **Therapeutic alliance** (38.8% of included studies). There was strong evidence that patient ratings of the therapeutic alliance had a small direct effect on initial substance use-related treatment outcomes and a larger indirect effect on more distal (>6 months) outcomes by influencing self-efficacy and motivation for change. These findings were evident for a range of populations, treatment types, and settings.
- **Choice and involvement in decision-making** (17.8% of articles). There was strong evidence that providing patients with treatment options (including medication dosing options) increased SUD treatment initiation, engagement and treatment satisfaction. There was less evidence that this dimension of PCC directly impacted SUD-related outcomes.
- **Culturally informed treatment** (7.8% of studies). There was moderate evidence, from both adolescent and adult populations, that culturally accommodated outpatient treatments had superior SUD outcomes compared to standard treatments. Culturally accommodated brief treatments appear to offer little additional benefit. brief interventions. There was evidence that patients with a stronger connection to traditional ethnic identity had better outcomes in culturally informed treatments than those who were more acculturated.
- **Trauma-informed SUD services** (15.5% of articles). Receipt of trauma-informed services was consistently associated with greater reductions in substance use, mental health and trauma-related problem severity than standard SUD treatment. In addition, there was good evidence of better PTSD outcomes for patients who received integrated treatments for SUD and PTSD compared with SUD-only treatment. There was less evidence that integrated PTSD treatment had benefits for SUD-related outcomes.
- **Individualised care** (9.3% of articles). Despite the evidence base being limited to personalised supports for linkage to speciality SUD treatment after a hospital or ED admission, there was good evidence that these personalised interventions led to higher rates of post-hospital SUD treatment initiation and greater reductions in the use of acute health care services compared to standard care.
- **Integrated treatment for SUD and other co-occurring conditions** (14.0% of articles). There was moderate evidence that integrating SUD services into primary health or mental health services, and conversely, integrating primary health and mental health services into SUD treatment led to improvements on outcomes beyond their presenting concern. For example, integration of MH or primary health services into SUD treatment

was consistently associated with better mental health and acute health service utilization outcomes than non-integrated SUD treatment.

**Conclusions:** Given evidence of the importance of these dimensions of PCC for patient outcomes, implementation of PCC across these six dimensions should be monitored as part of routine quality assurance processes for SUD services. Future research should focus on assessing the relative contribution of each component of PCC to patient outcomes and identify patient subgroups that may benefit most from the implementation of specific dimensions of PCC. This information will support evidence-based prioritization of interventions to enhance the delivery of PCC.

## Introduction

Although untreated substance use disorders (SUDs) are a significant contributor to the global burden of disease, [1] access to effective and adequate treatment is limited. Globally, approximately 7% of people with a past-year SUD are estimated to receive a minimally adequate amount of treatment, with rates of treatment initiation and engagement being substantially worse in low/ lower-middle income countries (1%) than upper-middle-income (4%) and high-income countries (10%).[2]

Limited availability, geographic accessibility, and affordability of services, together with the complexity of navigating the SUD treatment system are well-documented structural barriers to initiating and engaging in SUD treatment.[3-6] Even when people overcome these structural barriers to treatment, they report experiencing stigmatising and paternalistic interactions with providers,[5] a misalignment between their treatment goals and those of their providers, SUD services that are mismatched to their needs, and limited involvement in decisions about their treatment.[4, 7] This lack of person-centred care diminishes their satisfaction with the treatment process and impacts their continued engagement in treatment.[8-10] Importantly, patient satisfaction with and engagement in SUD treatment are key indicators of SUD treatment quality.[11, 12] As these quality indicators consistently predict the outcomes of SUD treatment,[13, 14] improving the extent to which patients experience their care as respectful and responsive to their individual needs, goals, and preferences (that is, as person-centred) may lead to better SUD treatment outcomes.

Given the extensively documented gaps in the provision of person-centred care (PCC) within SUD treatment settings, several national and international frameworks for improving the quality of SUD treatment services have included PCC as a key domain.[15-18] For instance, PCC is one of four domains in the United Nations Office of Drugs and Crime (UNODC)'s framework for assuring the quality of SUD treatment services in global settings; a framework used to support the implementation of the *UNODC-WHO International Standards for the Treatment of Drug Use Disorders*.”[19]

These frameworks highlight the importance of prioritising the delivery of PCC to improve patients' experiences of treatment and their treatment outcomes. However, implementation of initiatives to enhance the delivery of PCC in SUD treatment settings has been slow.[16, 20] The implementation of PCC improvement initiatives has been delayed by provider uncertainty about what to target for quality improvement, largely due to the multitude of ways in which PCC within the context of SUD treatment has been defined and a lack of clarity on whether PCC leads to better patient outcomes.[21] A conceptual framework for assessing PCC within the context of SUD treatment has only recently been developed.[22] This framework comprises six components that address both the relational and organisational aspects of care.[22] These components include providing the patient with (i) holistic care that allows for integrated or coordinated delivery of additional health and psychosocial supports to comprehensively address their needs; (ii) individualised or personalised care tailored to their needs, goals, and service preferences; (iii) treatment options and opportunities to be involved in decisions about treatment; (iv) a therapeutic alliance characterised by a strong interpersonal relationship with the provider, agreement on treatment goals, and the plan to achieve those goals; (v) trauma-informed care that includes trauma-informed organisational practices (such as screening for trauma and training providers to work effectively with people who have been traumatized) and provision of integrated trauma-informed SUD treatments;[23-25] and (vi) culturally-informed and



responsive care<sup>1</sup> characterised by culturally-informed organisational practices and culturally accommodated treatments provided in congruent languages and by culturally competent providers.[26, 27]

In addition, the implementation of PCC improvement initiatives has been delayed by a limited understanding of the potential benefits of providing PCC for patient outcomes. Although researchers, service users, and system reform advocates have argued that enhancing the person-centredness of SUD services will improve treatment outcomes,[14, 28-30] evidence to support these claims has not yet been synthesized. Previous systematic and scoping reviews have examined the relationship between individual components of PCC and their relationship with SUD service outcomes, including the therapeutic alliance,[31, 32] treatment choice and involvement in decision-making,[10, 33, 34] culturally accommodated interventions,[35] and integrated treatments for SUD and co-occurring mental health (MH) conditions and/or post-traumatic stress disorder (PTSD).[36, 37] While these earlier reviews provide some insight into associations between individual components of PCC and post-treatment SUD outcomes, these insights were limited to certain populations (e.g. adolescents [31] or specific cultural groups [35]), SUDs (e.g. opiate use disorder [34] or co-occurring mental disorder [33]), and service setting (e.g. speciality SUD services [14]). As such, they fail to capture the heterogeneity of people with SUDs and the continuum of services and settings in which SUD treatment and care is delivered. Most importantly, as none of these earlier reviews examined all six components of PCC as outlined by Marchand's conceptual framework [22], they are unable to provide a complete picture of the relationship between PCC and SUD treatment outcomes.

A comprehensive summary of research findings on how each component of PCC is associated with patient outcomes, across a broad range of populations, types of SUDs, and treatment settings is needed to help service planners and policy makers understand the potential value of investing in initiatives to enhance person-centred SUD care and to inform their decisions about which component of PCC to prioritise for quality improvement. This scoping review aims to respond to this knowledge gap by synthesising global evidence on the relationship between each of the six dimensions of PCC and the outcomes of SUD interventions that span the entire SUD treatment continuum.

## Methods

This scoping review used Arksey and O'Malley's framework [38-41] to identify and map the available evidence on the relationship between receipt of person-centred care and the outcomes of SU services. These stages involved defining the research question; identifying and selecting relevant studies; data extraction; and collating, summarising, and reporting results.[41]

JBI Sumari, a web application for systematic and scoping reviews, supported screening, data extraction, and evidence synthesis.[42] The review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews guidelines.[43] The protocol is pre-registered with the Open Science Foundation.

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<sup>1</sup> Culturally informed and responsive approaches to SUD treatment can involve culturally informed organisational practices (use of culturally competent providers, appropriate languages, outreach to diverse communities, tailored resources for different groups) and/or receipt of culturally accommodated treatments. These treatments adapt the content of standard evidence-based treatments to include content on cultural values, norms, and stressors as well as the delivery format to ensure it is culturally appropriate.

## The Research Question

The review was designed to answer the broad question of “*What is known about the relationship between receipt of person-centred care for people with SUD and the outcomes of these services?*” The research question was developed as a broad framing of the population (i.e., people with SUD), the concept (i.e., person-centred SUD treatment and care), and the context (i.e., outcomes of SUD treatment and care). Specific objectives of the review were to (i) describe and summarise evidence on the relationship between receipt of PCC and patient outcomes; (ii) identify and describe the outcomes of interventions to enhance the delivery person-centred SUD treatment; and (iii) identify gaps in the current evidence-base relating to geographic coverage, types of interventions to enhance PCC, and impact on treatment outcomes.

## Identifying Relevant Studies

The search strategy was guided by the Peer Review of Electronic Search Strategies (PRESS) Checklist [44] and developed in consultation with a health sciences librarian. An initial scoping search of Elicit.org and MEDLINE using the keywords of “SUD treatment”, “person-centred care”, and “treatment outcomes” was used to identify relevant articles from which six seed articles were identified. These articles were analysed to gather the keywords from the title and abstract and indexed terms. This provided the foundation for a preliminary strategy. Given the absence of a universally accepted definition of PCC [21, 45, 46], the search strategy included terms for key components of person-centred treatment for SUDs, as outlined by recent reviews.[14, 22] These include (i) the provision of individualised; (ii) patient choice and involvement in treatment planning; (iii) the therapeutic alliance; (iv) culturally-informed and responsive care, (v) trauma-informed care, and (vi) integrated services for SUD and other co-occurring conditions.[14, 22] Medical Subject Headings (MeSH) terms from previous reviews [10, 14, 22, 31, 33-36] further informed the development of this initial strategy.

The initial search strategy combined terms relating to SUDs, PCC, SUD treatment (including early interventions, brief interventions, treatment, and continuing care) and outcomes. Trial searches were conducted to assess whether this strategy identified relevant literature. After revising the search strategy, MeSH terms, Boolean logic, and operators (‘and’, ‘or’, ‘not’), proximity operators, and filters were added to improve search precision. A single search string query was used to search the databases for transparency and reproducibility. This search strategy (optimised for MEDLINE) is presented in Appendix 1. This strategy was translated to be appropriate for the other databases.

MEDLINE (Ovid), PsycINFO (Ovid), EMBASE (Ovid), Web of Science, CINAHL, and Scopus electronic databases were searched for primary, peer-reviewed texts published in English between 1 January 1993 and 30 November 2023. This period was chosen as a cursory search identified relevant literature on person-centred SU treatment dating back to 1993. In addition, Google Scholar was searched for additional literature, (limiting the search for each term to the first 10 pages of results). Publish or Perish (version 8.4; <https://harzing.com/resources/publish-or-perish>) was used for bulk retrieval of the Google Scholar search results.

Finally, the reference lists of studies that met inclusion criteria were checked for additional studies, and Spidercite (<https://sr-accelerator.com/#/spidercite>), Scopus, and Web of Science were used to conduct forward and backward citation checks of included studies. DeDuplicator, an AI platform (<https://sr-accelerator.com/#/deduplicator>), assisted with removal of duplicate references. The remaining articles were imported into JBI Sumari [42] for screening.

## Study Selection

Study screening and selection occurred in two stages. First, titles and abstracts of all identified studies were double screened against a priori eligibility criteria by two independent researchers.

**Inclusion criteria:** Articles were considered eligible for full-text review if they focused on populations with SUDs (population); (ii) examined at least one component of PCC (the concept); (iii) for any type of intervention along the SUD treatment continuum (including brief and early interventions, outpatient, residential, pharmacological (such as medication for opioid use disorder [MOUD] or alcohol use disorder [MAUD]), detoxification, hospital-based, harm reduction, and recovery management services); and (iv) examined associations between PCC and at least one post-treatment outcome including substance use, mental and physical health, quality of life, crime, employment, and health service utilization (context).

**Exclusion criteria:** Studies were excluded if they (i) were not primary research studies (such as reviews, commentaries), (ii) only focused on tobacco use disorder, (iii) and if the study design did not allow for a comparison with a service or intervention providing non- or less PCC.

Eligible texts, and those where the relevance was unclear after title and abstract screening, were included in the next stage of full-text review. Two reviewers independently assessed each full-text article against the inclusion criteria, retaining those that met the inclusion criteria for data extraction. Discrepancies between reviewers' screening decisions were discussed and resolved by a third senior author.

## Data Charting and Extraction

JBI Sumari software [42] was used to store, organise, extract, and record data. Levac et al.'s [38] recommendations for data charting and extraction were used to systematically capture relevant details from included articles. Data charting forms were developed and piloted with the first five citations identified through the initial search and revised to enhance ease of extraction. This charting form was used to extract information on (a) author(s); (b) title; (c) country; (d) study design; (e) study population and sample size; (f) treatment setting; (e) person-centred care indicator (including description and measure); (f) PCC intervention (if relevant); (g) treatment outcome; and (f) main findings of each included study. For main findings, data were extracted on the association between the PCC indicator and post-treatment outcomes.

## Collating, Summarizing, and Reporting of Results

Extracted data were collated into key themes. First, characteristics of the included studies were summarised, including gaps in their coverage of PCC. Next, findings of the relationship between PCC and the outcomes of SUD services were narratively synthesized conducted. For this, results for each PCC principle described in Marchand et al.'s review [47] were collated and summarised by type of SU service and treatment outcome. Finally, strengths and gaps in the evidence were identified.

## Results

### Characteristics of included studies

**Figure 1** presents the search results. Database searches yielded 5591 articles, of which 4796 remained after duplicate removal. A further 4616 articles were removed after title and abstract screening. Of the remaining 180 articles, two could not be accessed despite repeated emails to authors. The full texts of the remaining 178 articles

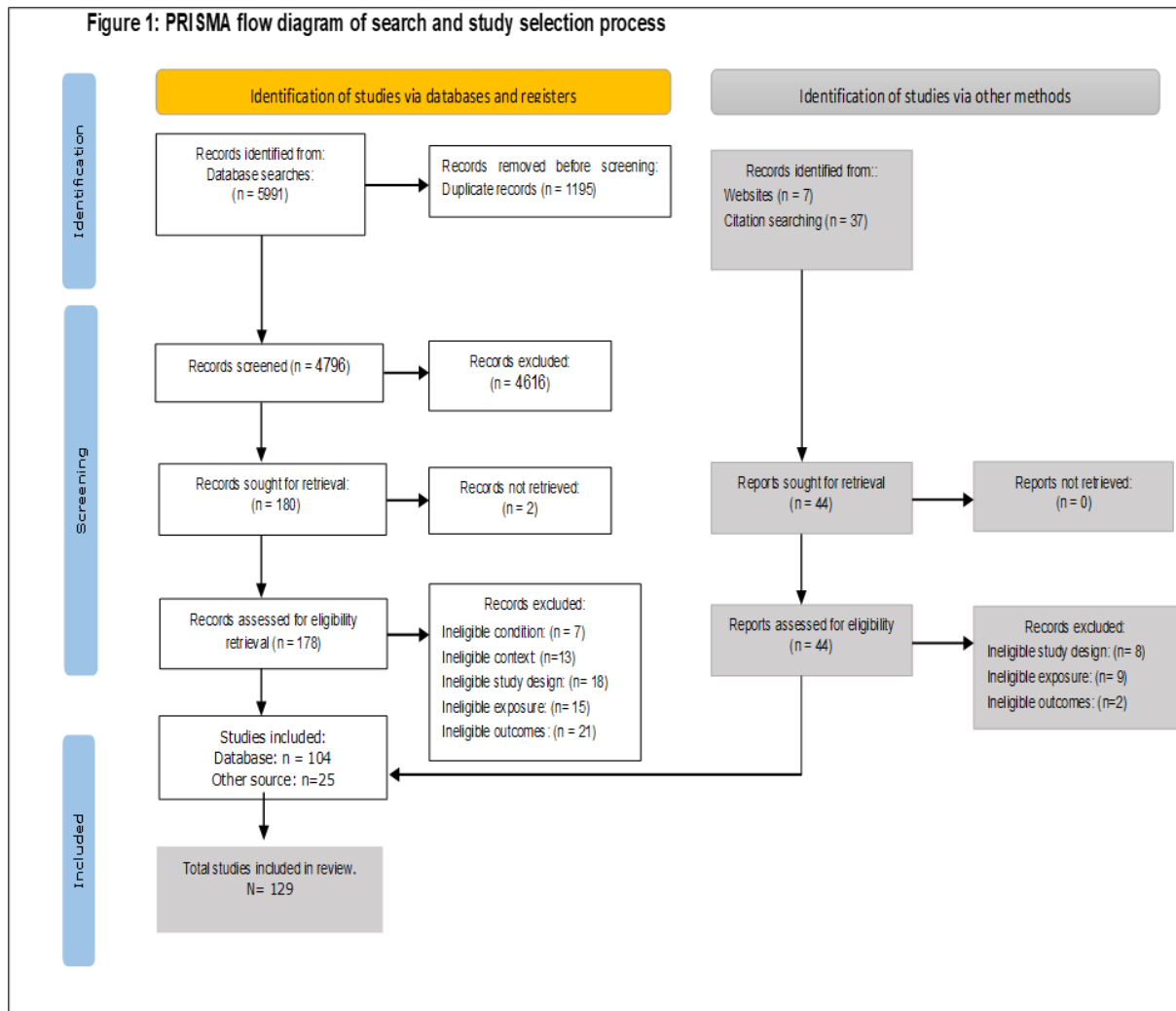
were retrieved and assessed for study eligibility. Of these full-text articles, 74 were excluded after assessing against the inclusion criteria. A further 44 articles were identified after examining the citations of the 104 included articles and websites. Of these 44 articles, 19 were excluded as they did not meet inclusion criteria. In total, 129 articles were included for data extraction.

**Population:** These 129 articles represent 108 unique studies with an aggregate sample of 658,014 participants. Sample sizes varied from 11 participants in a qualitative study [48] to 56,909 participants in a cohort study.[49] A small proportion of included studies ( $n=12$ , 9.3%) focused on adolescent populations (12-21 years of age), with 37 studies (28.7%) focusing on populations with co-occurring mental health diagnoses (including PTSD) and five (3.9%) on populations with co-occurring health concerns such as HIV and hepatitis C (HCV).

**Design:** Apart from two qualitative articles, the remainder of the included articles ( $n=127$ ) were quantitative studies, comprising randomised controlled trials (RCT;  $n=78$ ), quasi-experimental matched control studies ( $n=13$ ), treatment cohort studies ( $n= 31$ ), and cross-sectional surveys ( $n=5$ ).

**Geographic location:** All the included studies were conducted in high-income countries. These were mostly from the USA ( $n= 92$ , 71.3%), followed by 15 articles from seven countries in Europe (Sweden, Denmark, Finland, Germany, Spain, Netherlands, Ukraine), eight from Oceania (six articles from Australia, two from New Zealand), five articles each from Canada and the UK, and one article from Hong Kong.

**Figure 1. PRISMA flow diagram of search study selection process**



**Setting:** Included studies were conducted in a range of speciality SUD (detoxification, outpatient, residential, MOUD clinics) and non-speciality settings (prisons, primary care, emergency departments and hospitals). Most articles ( $n=106$ , 74.4%) examined PCC within the context of speciality SUD treatment, mainly outpatient services ( $n=60$ ), followed by MOUD ( $n=15$ ), residential ( $n=6$ ), and community case management services ( $n=6$ ). Fewer studies were conducted in early intervention ( $n=5$ ) or detoxification-only services ( $n=3$ ). Eleven of these 106 articles examined PCC across a mix of speciality SUD settings. Non-speciality settings included general hospitals ( $n=8$ ), emergency departments ( $n=3$ ), prisons ( $n=4$ ), and primary health care services ( $n=8$ ). Studies in these settings focused on using PCC approaches to facilitate linkage to speciality SUD services.

## Coverage of the six components of PCC

None of the included articles measured all six components of PCC. Only two studies examined more than one aspect of PCC.[49, 50]

**Therapeutic alliance:** More specifically, 38.8% ( $n=50$ ) of the included articles examined the role of the therapeutic alliance in predicting outcomes (*Appendix 1, Table 2*). These studies measured and conceptualised the therapeutic relationship in various ways. Most studies ( $n=44$ , 88.0%) used validated scales such as the Working Alliance Inventory [51] or Helping Alliance Questionnaire [52] to examine associations between the patient-provider alliance and post-treatment outcomes. These scales provide an overall score based on strength of the patient-provider bond, and degree of agreement on goals and tasks to achieve those goals. A few studies [53-55] measured only one component of the alliance (e.g., bond). A minority used unvalidated measures to assess the patient-provider relationship.[56-59] Notably, only three of these 50 studies (6.0%) tested whether interventions to strengthen or enhance the therapeutic alliance improved patient outcomes.[60-62]

**Patient choice and involvement in decision-making:** Twenty-three (17.8%) of the included articles examined whether this principle of PCC was associated with service outcomes (*Appendix 1, Table 3*). Five studies were in non-speciality SUD settings (typically primary care), with the remainder located in speciality services including detoxification ( $n=1$ ), outpatient ( $n=6$ ), residential ( $n=2$ ) and MOUD ( $n=9$ ) services. Twelve of these 23 articles (52.2%) examined whether outcomes for patients who could choose their treatment goal, service, or medication dose.[48, 50, 63-72] These articles offered patients treatment options without additional support for informed decision-making. A further 10 articles (43.5%) evaluated the effects of interventions that support informed choice about treatment, typically through shared decision-making (SDM) and treatment decision tools.[73-83] Only one article examined whether greater organisational implementation of patient involvement in decision-making was associated with better patient outcomes.[49]

**Culturally informed and responsive SUD treatment:** Ten (7.8%) of the included articles (representing nine studies) examined this aspect of PCC (*Appendix 1, Table 4*). Six of these studies (seven articles) were conducted in SUD outpatient programs [84-91] with the remainder evaluating brief or early interventions conducted in non-specialty health and education settings.[92-94] Most studies compared the outcomes of culturally-accommodated treatment with standard treatment (e.g. un-adapted treatments). Several of these studies assessed how cultural factors (such as commitment to ethnic identity and acculturation) modified the outcomes of these culturally informed treatments.[84-86, 92] Only one study examined associations between organisational implementation of culturally competent practices and patient outcomes.[88]

**Trauma informed SUD treatment:** Twenty (15.5%) of the included articles (representing 16 studies) assessed associations between receipt of trauma-informed SUD services and patient outcomes (*Appendix 1, Table 5*). Only two studies examined trauma-informed care in the context of non-speciality settings, namely a hospital [95] and prison-based service.[96] The remainder of studies were conducted in outpatient and residential SUD services. Eight of the 20 articles assessed trauma-informed care at the level of the organisation.[96-103] Five of these studies used quasi-experimental, non-randomised designs comparing treatment sites implementing comprehensive, trauma-informed care with matched comparison sites.[97-101] The other 12 studies were trials of trauma-informed SUD interventions for people with SUD and PTSD: five tested present-focused<sup>2</sup> [104-108] treatments for SUD and seven evaluated integrated trauma-focused PTSD and SUD treatments.[95, 109-114]

**Individualised and personalised SUD services:** Twelve (9.3%) of the included articles, described in *Appendix 1, Table 6*, examined the provision of services tailored to the personal needs, goals and preferences of individuals.[49, 115-125] These studies were published in the last five years, highlighting an emerging focus on the provision of personalised, tailored support for people with SUDs. All these studies were conducted in non-speciality SUD settings including primary care practices ( $n=2$ ), hospitals ( $n=6$ ), emergency departments ( $n=3$ ) and prisons ( $n=1$ ). Most tested whether personalised interventions to support linkage from non-speciality to speciality SUD treatment settings improved the uptake of speciality SUD services [49, 63, 115-117, 119, 121] or prevented further utilization of acute health care services. [118, 121-123]

**Comprehensive, integrated services for SUD and co-occurring conditions.** Eighteen (14.0%) of the included articles examined integrated service provision (*Appendix 1, Table 6*). Eleven articles evaluated the provision of integrated SUD and mental health treatment.[126-136] The remaining seven articles compared the provision of integrated services for SUDs and co-occurring medical conditions (typically infectious diseases such as HIV and HCV) with non-integrated care from multiple agencies.[137-143] Included studies examined both the integration of SUD treatment into mental health and primary health services ( $n=8$ ) and the integration of mental and other health services into specialty SUD treatment ( $n=10$ ). All studies assessed whether integrated care improved both SUD- and health-related outcomes.

## The therapeutic alliance and its association with SUD treatment outcomes

Overall, findings show that across a broad range of treatment types, settings and populations, the therapeutic alliance has a small, direct effect on initial (but not more distal) treatment outcomes as well as an indirect effect that is mediated through other within-treatment changes in patients (*Appendix 1, Table 2*).

### *Effects of the alliance on outcomes of SUD services for adults*

Across the 20 studies conducted in outpatient services, a strong patient-rated therapeutic alliance was associated with greater reductions in frequency (but not severity) of substance use in the initial three months post-treatment.[58, 144-147] However, the alliance was generally not associated with substance use outcomes six- or 12- months post-treatment.[50, 58, 147-153] Only one study demonstrated that patient-rated alliance predicted alcohol outcomes at 12-month follow up.[154] These findings and those of other modelling studies [57, 59] suggest

<sup>2</sup> Present-focused SUD interventions for people with trauma provide information, tools and skills to help patients cope with distress and trauma symptoms that impact on their substance use. These are also referred to as non-trauma-focused treatments as they do not revisit the original trauma exposure. Trauma-focused treatments provide evidence-based treatment for PTSD that directly address the traumatic experience.

the alliance has a small direct effect on post-treatment SUD outcomes, with the magnitude of this effect diminishing over time.[155] In addition, studies have shown a strong indirect effect of the alliance on substance use outcomes at 6-, 9-, and 12- months post-treatment through its positive effects on patient self-efficacy and motivation for change,[53, 155-157] provider responsiveness to patients' needs [57, 59], and patient satisfaction with treatment [158] – factors that directly affect the outcomes of treatment.

In addition, emerging evidence suggests that the alliance may moderate the effects of provider behaviours and patient characteristics (such as low self-efficacy or motivation for change) on post-treatment outcomes. Studies have shown that a stronger alliance may reduce the negative impact of poor provider adherence to treatment protocols [150, 153] and low patient motivation and self-efficacy for change [157, 159] on post-treatment outcomes.

In contrast, few studies have examined associations between the therapeutic alliance and the outcomes of brief interventions. Only one study found that the therapeutic alliance was associated with post-intervention outcomes, with a stronger alliance predicting fewer days of cannabis use nine months after receipt of brief MET.[150] In contrast, two studies found no evidence that patient-rated alliance predicted the outcomes of brief interventions.[160, 161]

In the context of pharmacological treatment, two studies of MOUD found that patients who reported a strong therapeutic alliance with their provider had better substance use outcomes than those who rated their alliance poorly.[162, 163] In contrast, two studies found that patient-rated alliance did not predict MAUD outcomes irrespective of whether MAUD was provided alone or in combination with another psychosocial intervention.[164] [53]

### ***Effects of the alliance on outcomes of adolescent services***

Nine studies examined the therapeutic alliance in adolescent populations. Similar to studies with adults, the alliance did not influence the outcomes of brief community-based interventions for unhealthy drinking.[165, 166] In contrast, patient-rated alliance was associated with greater reductions in substance use frequency three and six-months after outpatient treatment, [167-170] but not at 9- or 12- months.[169, 170] Further, a study that examined change in the alliance during treatment found better post-treatment substance use outcomes for adolescents whose alliances strengthened during the course of treatment compared to those whose alliances weakened.[171] Only one study found that both patient and provider-rated alliance predicted substance use outcomes after outpatient treatment,[172] although greater discrepancies between youth and provider views of the alliance were associated with worse substance use outcomes in another study.[173]

### ***Effects of the alliance on outcomes of integrated services***

Fewer studies examined the relationship between therapeutic alliance and the outcomes of integrated SUD and mental health (MH) or trauma services. Among studies of *integrated SUD and MH treatments*, two studies (one with youth) found that a stronger patient-rated therapeutic alliance predicted greater improvement in mental health symptom severity and overall functioning but not substance-related outcomes.[174, 175] Another two studies found that alliance predicted reduced substance use but not mental health outcomes.[66, 176] Provider views of the alliance were not associated with mental health or substance use outcomes in two studies,[174, 177] but higher provider ratings of the alliance did predict greater improvements in depression symptom severity in one trial evaluating concurrent pharmacological treatment for depression and AUD.[178]

Similarly, studies conducted in *trauma-informed services* (n=4) found that a stronger patient-rated alliance was associated with greater improvements in PTSD but not substance use problem severity in the initial six-months

post-treatment but and did not predict more distal outcomes.[112] A fourth study found that the therapeutic alliance did not mediate the relationship between prior SUD treatment exposure and integrated care outcomes.[179]

### ***Interventions to enhance the therapeutic alliance.***

Three studies examined whether alliance-strengthening interventions were associated with better patient outcomes. One study found that an alliance-focused intervention was more effective than standard referral to treatment at linking people to treatment after SUD detoxification.[60] In contrast, two trials that provided therapists with feedback on the strength of and ruptures to the patient-provider relationship found that this intervention had no effect on the strength of the patient-provider relationship or patient outcomes.[62, 156]

### **The relationship between patient choice and involvement in decision-making and treatment outcomes**

Among studies included in this review, greater choice and involvement in treatment planning was consistently associated with better uptake of and engagement in SUD care, but there was less evidence of an impact on SUD outcomes (*Appendix 1, Table 3*).

#### ***Treatment options without support for decision-making***

Among the studies ( $n=12$ ) that provided patients with treatment options (without additional support for decision-making), two found that patients who reported more involvement in treatment planning had better 8- and 12-month substance use outcomes than those who reported being less involved.[50, 72] A further five studies (conducted in MOUD settings) found that providing patients with options to choose the setting where they received MOUD (clinic vs home or clinic vs. primary care office), dose, treatment goal, and involvement in counselling had no adverse effects on MOUD outcomes.[65, 67, 69, 71, 180] MOUD dosing according to patient preferences for a high, medium or low dose also did not impact substance use or mental health outcomes, provided that the dose was clinically adequate.[63] While these studies did not demonstrate reductions in substance use as a result of greater patient choice, one cohort study did find fewer opiate-positive toxicology screens among patients who self-regulated their MOUD dose compared to those on a provider-determined fixed dose.[68] In addition, an RCT found better quality of life outcomes among patients assigned to person-centred MOUD services (where patients could choose their treatment goal and medication dosage) compared to standard care.[69]

Findings from two cross-sectional surveys suggest that patients with more choice and involvement in decisions about their MOUD dose were more likely to view their dose as adequate and be satisfied with treatment,[64, 70] a key predictor of MOUD retention and continuing care. This aligns with findings from a qualitative study where patients who self-regulated their MOUD dosing schedule and chose their treatment goals and setting reported improvements to medication side-effect and withdrawal management and quality of life which they perceived as supporting their retention in care.[48]

#### ***Provision of treatment options with additional support for informed decision-making***

Five articles (representing two studies), conducted in *non-speciality services*, examined patient choice, and informed decision-making about speciality SUD services. One study found better uptake of MOUD among patients who used a treatment decision tool to support decisions about post-incarceration use of MOUD compared to those who did not.[73] In a second study, the proportion of primary care patients initiating MOUD was marginally greater amongst those who used a decision tool.[80] A cohort study of 144,511 primary care patients with AUD found that those attending clinics ranked highly on SDM had a higher probability of receiving MAUD than patients at clinics



with low rankings.[49] In addition, primary care patients randomised to a nurse-delivered SDM intervention had greater uptake and engagement in SUD care at 12 month follow-up compared to those who received standard referral to SUD services - although this intervention was not associated with better alcohol-related outcomes despite better treatment uptake.[74, 83]

Only five SDM intervention studies were conducted within *speciality SUD services*. One study, conducted within inpatient alcohol withdrawal clinics, randomised patients to an SDM intervention (that supported them to make an informed choice about AUD treatment options) or standard care (where clinical guidelines guided provider decisions about treatment).[75] Although alcohol outcomes did not differ between the groups, almost a third of patients in the SDM group did not receive their choice of treatment due to limited service availability.[75] Importantly, patients who were matched on their treatment preferences had better outcomes than those who were not matched.[187] A similar trial within outpatient services also found that post-treatment SUD outcomes were no better for the SDM group. However, 80% of the patients within the SDM condition reported satisfaction with being able to self-match to a treatment of their choice whereas only 24% of patients in the control group were satisfied with being expert matched.[76] Another two trials, conducted within residential and intensive outpatient programs, examined whether SDM approaches that supported patients to make informed choices about treatment either at treatment initiation [78] or to support re-engagement in treatment [79] found that the SDM intervention had no effect on substance use [78, 79] or psychosocial outcomes.[78] To date, only one trial has found a positive effect of SDM on post-treatment drug and psychiatric problem severity, but not alcohol problem severity or quality of life.[77] This intervention involved clinicians using MI and a structured SDM intervention to work with patients to co-develop treatment plans tailored to patients' needs, goals, and preferences for treatment prior to the start of residential treatment.

Differences in patient preferences for SDM and involvement in treatment planning could account for some of these contradictory and null findings. One trial found that patients who were more involved than they desired in treatment decision making had poorer retention in care and were more likely to report substance use at six month follow-up than those who were matched according to their level of desired involvement in decision-making.[81]

### **Associations between receipt of culturally informed and responsive SUD treatment services and patient outcomes**

Six [84, 85, 89-91, 93, 94] of the eight studies captured by this review demonstrated that patients who received culturally accommodated SUD services had better post-intervention outcomes than those who received standard (unadapted) treatments (*Appendix 1, Table 4*).

#### ***Culturally informed treatment for adolescent populations***

Among the four studies focused on adolescent populations,[84-86, 90, 94] three found that accommodated treatments outperformed standard care. For example, a trial of culturally accommodated CBT (A-CBT) for Latinx youth found that those who received A-CBT had similar outcomes at three-month follow up but fewer days of substance use at 12-month follow-up compared to those in standard CBT.[84, 85] An initial pilot of this intervention (with a small sample) also did not detect a treatment effect at three month follow-up.[86] Similarly, Hispanic adolescents randomised to culturally accommodated family-based treatment (CIFTA) reported greater reductions in substance use and improvements in the parent-child relationship four months post-treatment compared to those randomised to traditional family therapy.[90] Additionally, a quasi-experimental study reported that Cherokee

youth assigned to a culturally accommodated early intervention reported greater reductions in substance use problems at three-month follow-up compared to peers in standard care.[94]

### ***Culturally informed treatment for adult populations***

Among the four studies conducted with adult populations,[89, 91-93] three reported better SUD outcomes for patients randomised to culturally accommodated treatments. Hispanic patients randomly assigned to culturally adapted web-based CBT plus usual care reported greater reductions in frequency of substance use and more days abstinent over a six month follow-up than those in usual care.[89] Similarly Chinese patients assigned to culturally attuned CBT had greater improvements in drug problem severity and emotional distress four months post-treatment compared to standard CBT.[91] In contrast, results of culturally accommodated brief interventions have been mixed. A pilot trial found greater reductions in drinking frequency and consequences at 2-month follow up for culturally accommodated MI (CAMI) compared to standard MI, with consequences continuing to reduce in CAMI at 6 months.[93] However, a larger RCT did not detect a treatment effect for CAMI.[92]

Studies have shown that patients from culturally diverse groups may not benefit equally from culturally accommodated treatments. Adolescent and adult patients who have more of a traditional cultural identity (that is less acculturation) seem to benefit more from culturally accommodated than standard treatments, whereas culturally informed treatment holds little benefit over standard care for patients who are more acculturated.[85, 86, 92] This highlights the importance of understanding the value that patients assign to their cultural identity.

***Culturally informed services:*** One study examined associations between organisational implementation of culturally competent practices and patient outcomes.[88] This large cohort study found better SUD outcomes among homeless patients obtaining services from organisations with greater involvement and outreach to the homeless community and with more resources tailored for people from this community than patients obtaining treatment from services who were less culturally informed and responsive.[88]

## **Receipt of trauma-informed SUD treatment and patient outcomes**

### ***Trauma-informed SUD treatment services***

All included studies reported positive associations between receipt of trauma-informed services and post-treatment outcomes (*Appendix 1, Table 5*).[96-103] Patients who obtained treatment from trauma-informed services had higher drug abstinence rates at 6- and 12-month,[97] greater reductions in drug problem severity at 6-month,[98, 101] and reduced mental health [97, 98, 100] and PTSD symptom severity [97, 98, 100, 101] at 6- and 12-month follow up compared to patients from SUD services not offering trauma-informed care. Further, greater reductions in drug problem severity (at 6 months), and mental health and PTSD symptom severity (at 6 and 12 months) were found among patients who accessed trauma-informed services offering highly integrated SUD, trauma and mental health counselling compared to services where counselling for these difficulties was less integrated.[99, 100] This underscores the importance of providing integrated treatments for PTSD, mental health and SUD as part of trauma-informed care. Another trial of prison-based trauma-informed care reported similar benefits for drug problem severity at six months post-parole as well as lower rates of re-arrest and higher rates of engagement in community-based SUD care for women who received trauma-informed rather than standard SUD treatment.[96] Finally, studies suggest that women with more complex SUD and mental health problems and higher levels of trauma symptomatology benefit most from both community-based and prison-based trauma-informed SUD treatment services.[98-100, 102]

### ***Trauma-informed interventions***

Five articles compared the efficacy of *Seeking Safety*, a present-focused trauma-informed treatment for SUD with SUD-only treatment for patients with SUD and co-occurring PTSD.[104-108] Three other trials comparing *Seeking Safety* to SUD-only treatments found no effect on SUD or PTSD outcomes.[106-108] In contrast, a trial of *Seeking Safety* with military veterans found greater reductions in drug problem severity (but no change on alcohol or PTSD symptoms) at 6 months compared to those who received standard SUD care.[104, 105] In summary, there is no evidence to suggest that present-focused, trauma-informed treatment is superior to standard SUD treatment that is not trauma-informed.

In contrast, receipt of concurrent trauma-focused PTSD and SUD treatment was consistently associated with better SUD and PTSD-related outcomes than SUD-only treatment.[95, 109-114] Most included studies tested integrated treatments that combined prolonged exposure therapy for PTSD with evidence-based SUD treatments such as CBT. [109-113] Overall, these trials reported greater improvements in PTSD symptoms at 3- [109, 112], 6- [95, 109, 111] and 9-month follow-up [110, 113] and higher levels of PTSD remission at 3- and 6-months [111, 114] among patients who received concurrent trauma-focused PTSD and SUD treatment compared to SUD-only treatment. However, there was little evidence of better alcohol and drug outcomes for these that these integrated trauma-focused interventions compared to SUD-only treatment.[95, 109-114] None of these studies examined more distal (>12 months) outcomes.

### **Relationship between receipt of individualised, personalised SUD services and patient outcomes**

Studies included in *Appendix 1, Table 6* depict a largely positive relationship between receipt of personalised supports to facilitate linkage to specialty SUD services and patient outcomes. Nine articles evaluated whether personalised interventions to support post-emergency department (ED), hospital, or prison linkage to SUD treatment improved rates of SUD treatment initiation and engagement compared to standard screening and referral to care.[49, 63, 115-117, 119-122, 125]

#### ***Organisational implementation of personalised care.***

A large cohort study of 568,909 primary care patients found that patients attending clinics rated highly for the provision of individualised care co-ordination and self-management support had a higher probability of accessing alcohol interventions than patients at clinics with low ratings for provision of personalised supports.[49]

#### ***Personalised interventions to support linkage to SUD services***

The remaining studies [115-117, 119-122, 124] evaluated receipt of complex interventions that included some combination of specialist addiction consultation, medication initiation, case management, patient navigation and recovery support service. Patient navigation and recovery support components generally involved the use of trained staff (often people with lived experience of substance use) who provided patients with personalised support to navigate barriers to treatment initiation, SUD recovery and continued health care that is matched to their goals and preferences.

In five of these seven studies, patients who received these interventions had significantly higher rates of *SUD treatment initiation* (including higher rates of medication uptake) compared to patients who received standard referral to services.[115, 117, 119, 121, 122] In addition in one retrospective cohort study, receipt of personalised navigation and recovery support was associated with higher rates of mental, behavioural, and primary health service

utilization, indicating that personalised support resulted in more of the patients' health care needs being met. [122] While three studies [116, 120, 124] found no evidence that these personalised interventions improved rates of post-ED and post-parole SUD treatment initiation, this may be due to weaknesses in design and execution of these studies. These three studies had very low rates of patient participation in the personalised interventions which likely diluted their impact. Further studies only examined the initiation of a narrow range of SUD services and supports (MOUD and participation in mutual help groups) which may have not matched patients' service preferences. [116, 120, 124]

Four articles evaluated whether these personalised interventions were associated with reduced *use of acute health care services* (such as EDs or hospitals). Overall, receipt of personalised interventions was associated with significantly fewer ED visits for mental health or SUD-related reasons [118] or any reason over 6 [122] and 12 months [121] as well as lower rates of hospital readmission and/or mortality [121-123] compared to standard care.

Finally, five articles assessed whether patients who received personalised interventions had better *substance use outcomes* (such as frequency, overdose, problem severity) than those who received standard care in these non-specialty settings. [116, 117, 120, 124, 125] Only one of these studies [116] found a small but significant treatment effect on frequency of non-prescribed opiate use in favour of the personalised intervention group. There is little evidence that personalised interventions to support linkage from non-specialty services to speciality SUD services facilitate better substance use outcomes.

## **Relationship between receipt of integrated treatment for SUD and co-occurring health problems and patient outcomes**

### ***Integrated treatments for SUD and co-occurring mental health (MH) conditions***

There was a largely positive relationship between receipt of integrated treatments for SUD and co-occurring mental health (MH) conditions and patient outcomes (*Appendix 1, Table 6*). Ten of the 11 included studies reported superior outcomes for co-located, integrated SUD and MH services compared to MH-only [126, 127, 132, 133] or SUD-only treatment [128, 129, 131, 134, 135]. Only one study reported no benefits associated with integrated care, however this study only extended SUD treatment to include additional psychoeducation groups focused on enhancing mental health literacy without providing treatment for co-occurring disorders. [130]

When compared to *MH-only treatment*, integrated treatment for SUD and co-occurring MH conditions was consistently associated with better substance use outcomes (including percentage of days abstinent, frequency and quantity of substance use, time to relapse) at 3-, [133] 9-, [126] 12-, [126, 127, 132] and 24-month follow up. [127] However, these treatments were not associated with better MH outcomes compared to MH-only care. [126, 127, 132, 133]

When compared to *SUD-only treatment*, integrated treatment was consistently associated with better MH outcomes at 3-, [129, 131, 135] 6-, [135] and 12-month [128] follow-up. Only two of the five studies [131, 134] found additional benefits of integrated SUD and MH treatment for substance use outcomes over and above those provided by SUD-only care. One study examined the effects of integrated treatment on mortality, noting lower rates of all-cause mortality among patients who received integrated MH and MOUD services. [136]

### ***Integrated treatments for SUD and other co-occurring health conditions***

Five of the six studies that quantitatively evaluated the receipt of integrated care for SUD and other health conditions reported superior substance use and health care utilization outcomes for co-located, integrated services

compared to health-only [138, 141] or SUD-only services.[137, 139, 143] Only one study reported no benefits associated with the integration of SUD services into infectious disease clinics, but this study failed to reach its recruitment target and was underpowered to detect a treatment effect.[140]

When compared to *usual infectious disease-only care* (with outward referral to community-based SUD treatment), co-located and integrated SUD and infectious disease care was associated with significantly greater reductions in drug use and fewer ED visits and hospital admissions for infectious disease-related complications.[141] Similarly, a retrospective cohort study found that integration of SUD services into health settings was associated with fewer ED visits and less time in hospital compared to patients who received non-integrated care.[138] Qualitative findings [142] suggest that people with OUD and co-occurring health conditions prefer integrated MOUD and HIV services as they find it easier and less stigmatising to navigate a single health service.

When compared to *usual SUD-only services*, co-located, integrated treatment for SUD and other health conditions was associated with more appropriate treatment for the health condition [139, 143] and more clinically appropriate MOUD dosing tailored to the health condition.[139, 143] One study [137] found higher rates of abstinence among patients with medical conditions who received integrated, co-located health care, highlighting the importance of providing comprehensive care tailored to the needs of patients entering speciality SUD treatment.

## Discussion

This scoping review systematically mapped and narratively synthesized the global literature on the relationship between each dimension of PCC described in Marchand et al.'s conceptual framework [22] and the outcomes of SUD services along the SUD treatment continuum. While some components of this framework had been better researched than others, overall, a significant amount of evidence pointed to positive associations between each component of PCC and the outcomes of SUD services across a broad range of settings and populations. These findings are discussed below.

### **Key findings on links between person-centred care and SUD treatment outcomes**

There is a large body of evidence describing positive associations between the relational aspect of PCC (that is the *therapeutic alliance* between patients and providers) and post-treatment outcomes for SUD services across the treatment continuum. There was strong evidence of a small but consistently positive direct effect of patients' perceptions of strong therapeutic alliance on substance use outcomes for adult [57-59, 144-147, 155] and adolescent populations [167-170] in the first three months after speciality SUD outpatient treatment. In addition, a smaller number of studies reported positive associations between patient ratings of the therapeutic alliance and the outcomes of other speciality SUD services including MH outcomes of integrated SUD and MH treatment [174-175, 178], PTSD outcomes of trauma-informed treatment [112], and SUD outcomes of MOUD services [162, 163] in the early post-treatment period. While this review identified almost no evidence of a direct effect of the therapeutic alliance on more distal treatment outcomes, there is moderate evidence that the therapeutic alliance indirectly influences more distal treatment outcomes through enhancing patient self-efficacy and motivation for change,[53, 155-157, 159] key factors necessary for supporting reductions in substance use problem severity. Taken together these findings highlight the importance of ensuring that patients are able to build strong collaborative relationships with their providers. Despite this evidence, this review identified only three evaluations of interventions designed to strengthen or leverage the therapeutic alliance in order to enable better treatment outcomes.[60, 62, 156] These

interventions appeared to hold little benefit for the therapeutic alliance or patient outcomes, although they tended to be poorly implemented. Given the centrality of a strong therapeutic alliance for both within-treatment change and post-treatment outcomes, more trials of alliance strengthening interventions are needed to help identify effective strategies for enhancing the therapeutic alliance that providers can implement as part of PCC improvement initiatives.

In addition, the 23 articles that assessed *treatment choice and involvement in decision-making* found modest associations between this dimension of PCC and the outcomes of SUD services offered in both specialty SUD treatment and non-specialty settings. More specifically, there was strong evidence that allowing patients to make their own choices about their SUD treatment (including medication options and dosing) increased the likelihood of patients initiating SUD treatment after referral from non-specialty services [49, 73-74, 83, 89]. In contrast, evidence for the impact of patient choice and decision-making on SUD outcomes was mixed. Studies conducted in MOUD services, traditionally highly controlled environments, consistently found that providing patients with greater autonomy and the choice of self-regulating their medication dose, time of dosing and setting did not lead to worse SUD outcomes than provider-regulated treatment.[65, 67, 69, 71, 180] This is an important finding as MOUD services have been reluctant to provide patients with more autonomy and control of their treatment due to concerns that this would lead to more medication misuse, adverse events, and attrition from services.[65-67] Studies in this review also consistently reported positive associations between patient choice and involvement in treatment decisions and satisfaction with MOUD, positive perceptions of treatment, and quality of life.[48, 63-64, 68-70] These are key predictors of MOUD retention and continuing care.[188]

Evidence of the potential benefits for post-treatment substance use was weaker, with only two studies examining these outcomes (both finding positive effects of greater involvement in decision-making).[50, 72] However, four out of five trials of interventions to enhance involvement of patients in treatment decision-making reported no additional benefits of these interventions for SUD outcomes compared to usual treatment planning approaches. There are several possible explanations for these null findings, including poor implementation of these interventions and difficulties in matching patients to their choice of treatment due to service availability constraints.[75] Differences in patient preferences for involvement in treatment planning also may account for these null findings, with patients who were more involved than they desired in treatment decision-making having poorer retention in care and worse substance use outcomes than those who were involved in decision-making as much as they wanted to be.[81] The one trial that did find a positive effect on post-treatment drug and psychiatric problem severity was able to provide patients in the intervention group with their choice of treatment.[77] Ensuring that patients are able to access their choice of treatment may be particularly important given findings that patients who were matched on their treatment preferences had better SUD outcomes than those who were asked about their treatment preference but were not matched according to their choice.[187] Nonetheless, these interventions do seem to promote better satisfaction with the treatment process.[76-77] In summary, evidence from this review suggests that providing patients with opportunities to choose and self-manage their SUD treatment can support greater initiation of, retention in, and satisfaction with SUD treatment. While these are necessary conditions for supporting positive SUD treatment outcomes,[189] there is a paucity of evidence for the potential benefits of patient involvement in treatment on SUD outcomes. More research is needed to better understand the pathways through which patient involvement in decision-making potentially influences treatment initiation, engagement, and outcomes. Emerging findings suggest that patient preferences for shared decision-making and choice are not

uniform, highlighting the importance of understanding and accommodating patients' preferences for decision-making within the treatment planning and recovery management process.

This review found a relatively small body of evidence from which to draw conclusions about the relationship between *culturally informed treatment* and patient outcomes. There is a moderate amount of evidence (from six of eight studies) to suggest that adolescent and adult patients from minority cultural groups who receive culturally accommodated outpatient treatments are likely to have superior SUD outcomes compared to those who receive standard treatment.[84, 85, 89-91, 93, 94] In contrast, the few studies that tested culturally accommodated brief interventions found mixed results. These findings suggest that patients engaged in more extended SUD treatments (where cultural values and fit are likely to impact engagement in care) are more likely to benefit from culturally informed treatments than those participating in single session brief interventions. Further research is needed to test this hypothesis. Importantly, there is emerging evidence to suggest that culturally accommodated treatments may not be a good fit for all patients from minority cultural groups. Three studies found that culturally informed treatment holds the most benefits for patients who strongly identify with their cultural or ethnic identity but hold little benefit for patients who are more acculturated.[85, 86, 92] This emerging evidence underscores the importance of personalising SUD services to align with the needs, values and preferences of individual patients, rather than assuming that a patient will require a particular type of service based on their demographic characteristics. More research on culturally informed treatment across a broader range of socio-cultural groups is needed to expand the evidence base about the potential benefits of culturally informed care and who benefits most from culturally informed treatment approaches.

In contrast, this review identified a substantial body of evidence on the potential benefits of *trauma-informed SUD services* within community and prison settings. All eight studies evaluating trauma-informed SUD services (which included trauma training for providers, a focus on trauma recovery, and integrated mental health and trauma services) found that receipt of trauma-informed services was associated with better patient outcomes compared to standard SUD services.[96-103] The pattern of additional benefits associated with these services varied across studies and included greater reductions in substance use problem severity [97] [98, 101], mental health symptom severity [97, 98, 100] and PTSD symptom severity [97, 98, 100, 101] at both 6 and 12 months post-treatment. There is also a modest amount of evidence which suggests that patients with more complex treatment needs, characterised by greater MH and PTSD symptom severity and histories of complex trauma may benefit most from trauma-informed SUD services.[98-100, 102] In addition, this review provides good evidence of the benefits of providing integrated treatments for SUD and PTSD as part of trauma-informed SUD services. Two studies found greater reductions of MH and PTSD problem severity among patients accessing trauma-informed services where SUD, MH and trauma counselling was highly integrated compared to sites where this counselling was less integrated. [99, 100] In another seven studies,[95, 109-114] receipt of integrated or concurrent SUD and PTSD treatment was consistently associated with greater improvements in PTSD symptoms compared with SUD-only treatment. Although there was little evidence that integrated treatments for SUD and PTSD were associated with better SUD outcomes compared to SUD-only treatment, none of the included studies examined more distal treatment outcomes, it is plausible that improvements in PTSD symptomatology could reduce risk of relapse to pre-treatment patterns of substance use, but studies with follow ups over more than 12 months are needed to test this hypothesis.

In addition, this review found a largely positive relationship between *personalised care* and patient outcomes. However, the evidence base was small and limited to personalised interventions to support linkage from health services to speciality SUD treatment for adult populations. Nonetheless, included studies demonstrated

significantly higher rates of SUD treatment initiation [115, 117, 119, 121, 122] and reduced use of acute health care services (such as ED or inpatient hospital services) among patients who participated in personalised interventions to support linkage to and navigation of specialty SUD services compared to standard care.[118, 121-123] Although most studies did not identify additional benefits of these interventions or patients' substance use (apart from [116]), this is not surprising as the focus of these interventions was on supporting SUD treatment initiation, rather than ongoing engagement in care. SUD treatment initiation is only predictive of SUD outcomes when it is followed by adequate engagement in treatment.[188, 190, 191] Taken together, these findings provide satisfactory evidence that individualised interventions offered in non-specialty settings can support patients to link to and initiate SUD treatment and can reduce the burden of untreated SUDs on the health system.

Finally, *integrated treatment for SUD and other co-occurring conditions* offered at a single treatment site (i.e., co-located) was associated with better patient outcomes across more outcome domains than non-integrated SUD and health services. Included studies consistently found that when SUD treatments (typically MOUD) were integrated into primary health [138, 141] and MH services,[126, 127, 132, 133] these integrated services were associated with better SUD outcomes up to 12 and 24 months post-treatment compared to standard care where patients were referred to off-site SUD treatment services. This is not surprising as health provider referral to SUD treatment is associated with low rates of treatment initiation.[192-194]. In a qualitative study,[142] participants described how receiving SUD services from their usual health provider helped them overcome practical barriers to referral uptake, including difficulties associated with navigating multiple treatment systems and the stigma associated with accessing SUD treatment. These barriers are consistent with those identified by systematic reviews of factors associated with SUD treatment initiation.[3] In addition, this review found emerging evidence of fewer ED visits and hospitalizations among patients receiving integrated SUD and health services compared to those referred to off-site SUD treatments,[138, 141] but there was little evidence that integrated treatments had superior MH outcomes compared to standard MH care. This is not surprising given that all the included studies conducted in MH services focused on patient populations with severe mental illness. Conversely this review found that integration of MH or primary health services into SUD treatment was consistently associated with better mental health [128, 129, 131, 134, 135] and acute health service utilization outcomes [137, 139, 143] than non-integrated SUD treatment. There was mixed evidence of superior SUD outcomes for integrated SUD and MH or general health services compared to SUD-only treatment. These findings, together with findings from an earlier review,[37] highlight the individual and health system benefits of providing patients with comprehensive SUD treatments that include access to co-located MH and primary health services.

## **Gaps in the evidence base and future directions**

This review identified three major gaps in the literature on PCC within the context of SUD treatment that should be prioritised for future research.

### ***Focus on a single component of PCC limits understanding of how these aspects of PCC interact to influence outcomes.***

First, almost all included articles examined a single component of PCC and how this related to patient outcomes. This limited focus restricts service planners' understanding of how overall person-centred care (as a multi-dimensional construct) relates to patient outcomes. A more comprehensive understanding of how the overall concept of PCC relates to patient outcomes is needed to assist SUD treatment planners and service users in advocating for investment in initiatives to enhance the person-centredness of SUD services. In addition, the relative



importance of each component of PCC for predicting treatment outcomes cannot be evaluated without incorporating all six components of PCC into SUD treatment outcome studies and examining how these components interact to influence outcomes. Understanding which PCC component (or combination of components) is likely to yield the greatest benefit for patient outcomes (and the patient population subgroups for whom these aspects of PCC are most salient) is an important area for future research. This is key to the evidence-informed prioritization of quality improvement initiatives focused on the delivery of PCC.[195]

***Paucity of evidence for the relationship between key dimensions of PCC and patient outcomes.***

Second, the evidence base for two of the six dimensions of PCC was relatively under-developed. Only ten articles examined associations between culturally informed and responsive SUD treatment and patient outcomes. Included studies were limited to predominantly Latinx populations and brief interventions or outpatient treatments, limiting confidence in the robustness of findings and the extent to which they can reliably inform quality improvement initiatives. More research on culturally informed treatments for a broader range of population groups is needed to strengthen the emerging evidence base of the benefits of culturally informed and responsive services for patient outcomes. In addition, this review identified only 12 articles that studied personalised interventions or supports for people with SUDs. Notably all these studies were conducted in the context of non-specialty health services; this review did not identify any studies examining the provision of personalised care within the context of specialty SUD treatment or that focused on personalised care for adolescent populations. As individualised services tailored to the needs, preferences and goals of patients is a central tenet of PCC,[22] this is a major gap in the research evidence base that must be addressed by future treatment services research.

***Limited assessment of facility-level performance on indicators of person-centred care.***

Third, only 10 (representing 7.8%) of included articles evaluated associations between facility performance on dimensions of PCC and patient outcomes. Facility-level performance on PCC indicators can be used to discriminate between high and low-performing facilities. SUD treatment planners can use these data to support and incentivise facilities with low ratings on specific dimensions of PCC to improve their performance on that dimension. Further evidence of associations between facility-level performance on indicators of PCC and patient outcomes is critical to building a case for investing in facility-level quality improvement initiatives. As such, clarification of the relationship between the degree to SUD services and facilities implement PCC and patient outcomes is an important priority for SUD treatment research in the future.

## **Limitations of this review**

This findings from this review should be considered in the light of several limitations. First, included studies were all conducted in high-income countries. It is unclear whether findings from this review are applicable to relatively less-resourced SUD treatment systems in low- and middle-income countries (LMICs) where there are considerably more structural and systemic barriers to treatment,[3, 6, 196, 197] and in countries where recognition of the rights of people who use drugs to be treated with dignity and respect and to be involved in decisions about their treatment lags behind those of high-income countries.[198]

The exclusion of articles written in languages other than English likely introduced a bias towards well-resourced SUD treatment systems in the global South. Further, the search strategy used by this review focused on

major international databases. For many reasons, including a well-documented geographic publication bias, only a small proportion of research from LMICs is published in indexed journals captured by major databases. [199] Future reviews should consider searching regional databases and repositories of non-indexed, academic work such as African Journals Online, the Database of African Theses and Dissertations-Research, Latin American and Caribbean Health Sciences Literature (LILACS) among others. However, restricting the publication language to English and excluding regional databases from the search strategy is unlikely to have substantially impacted findings,[200] particularly as substance use treatment services research is still in its nascency in many of these settings, with many LMICS yet to develop the infrastructure and capability for routine collection of within- and post-treatment data from patients.[201]

In addition, the heterogeneity of methods, measures used to assess each dimension of PCC, and analyses across the included studies- as recognised by previous reviews [14, 22, 34]- made it difficult to pool findings for each component of PCC or compare the strength of the evidence across PCC components. Finally, this review did not appraise the quality of included studies. While this is in keeping with guidance for conducting systematic scoping reviews this prevented us from commenting on the quality of existing evidence for a relationship between PCC and SUD treatment outcomes.

## Conclusion

This review synthesizes evidence of the relationship between the six dimensions of person-centred care for SUDs, as conceptualised by Marchand et al.,[22] and treatment outcomes. Overall, this review found positive relationships between each component of PCC and patient outcomes. The benefits associated with provision of PCC were evident for a range of outcomes (including substance use, mental health, and health service utilization outcomes), populations, and for SUD services across the treatment continuum including those provided in prisons and health care (non-specialty) settings. These findings suggest that enhancing PCC delivery, and particularly initiatives that enhance the therapeutic alliance, and provide patients with individualised support to link to services, treatment options and opportunities to be involved in treatment decisions, culturally and trauma informed services, and co-located, integrated services to meet any need for PTSD, MH or other health services are likely to yield benefits for patients and the health system (through reducing rates of acute health care utilisation). Given evidence of their importance for patient outcomes, implementation of PCC across these six dimensions should be monitored as part of routine quality assurance processes for SUD services. Future research should focus on generating more evidence for the relationship between personalised and culturally informed SUD treatment and patient outcomes, assessing the relative contribution of each component of PCC to patient outcomes, and identify patient subgroups that might benefit most from the implementation of specific dimensions of PCC. This information is needed to support evidence-based prioritization of interventions to enhance the delivery of PCC.

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Appendix 1, Table 1. Search strategy optimised for Medline (30 November 2023)

Search Line	Concept	Search terms
<b>Patient-centred care</b>		
1	Person/patient-centred care, therapeutic alliance	(“individual* care” or “personal* care” or “therapeutic alliance” or “relational practic*”).mp. or (exp Patient-Centered Care/ or Patient-Centered Care.mp.) or (exp Therapeutic Alliance/ or Therapeutic Alliance.mp.) or (exp Holistic Health/ or Holistic Health.mp. or (exp Holistic Nursing/ or Holistic Nursing.mp.))
2	Shared/patient participation in decision making	((shared or joint or collaborative).mp. adj2 (exp Decision Making/ or Decision Making.mp.)) or (exp Patient Participation/ or Patient Participation.mp.) or (patient or client).mp.) adj1 (autonom* or involve* or control or empower*).mp. adj1 (decision making or care or practic* or treatment* or plan*).mp.
3	Collaborative care	(collaborative adj1 (care or practic* or treatment* or plan*).mp.
4	Patient-provider relationship (alliance)	((physician or doctor or nurse or professional or provider) adj1 (patient or client) adj1 (enhanc* or alliance* or empower* or support*).mp. or (exp Physician-Patient Relations/ or Physician-Patient Relations.mp. or (exp Professional-Patient Relations/ or Professional-Patient Relations.mp.))
5	Patient-provider communication	((physician or doctor or nurse or professional or provider) adj1 (patient or client) adj1 communicat*).mp.
6	Trauma-informed care	(trauma adj1 (cent?red or informed) adj1 (care or approach or treatment* or therap*).mp.
7	Culturally-informed care (cultural safety)	(cultural* adj1 (safe or sensitive) adj1 (care or approach or treatment* or therap*).mp. or Diversity, Equity, Inclusion/ or (exp Cultural Competency/ or Cultural Competency.mp.)
8		1 or 2 or 3 or 4 or 5 or 6 or 7
<b>Population</b>		
9	Substance use disorder	exp Heroin Dependence/ or Heroin Dependence.mp. or (exp Substance-Related Disorders/ or Substance-Related Disorders.mp.) or (exp Opioid-Related Disorders/ or Opioid-Related Disorders.mp.) or (exp Alcoholism/ or Alcoholism.mp.) or (exp Illicit Drugs/ or Illicit Drugs.mp.) or (exp Addiction Medicine/ or Addiction Medicine.mp.)
10	Substance use disorder	((drug* or substance*) adj2 (abus* or dependen* or misus* or disorder* or cessation)).mp.
11	Combine	9 or 10
<b>Substance Use Treatment</b>		
12	Substance use treatment setting	(intervention* or treatment* or program* or clinic* or rehab* or “after care” or aftercare or “continu* care”).mp. or (exp Substance Abuse Treatment Centers/ or Substance Abuse Treatment Centers.mp.) or (exp “Continuity of Patient Care”/ or “Continuity of Patient Care”.mp.) or (brief intervention or brief interventions or brief treatment or brief treatments or intervention, brief or “screening and brief intervention” or treatment, brief).mp. or Residential Treatment.mp.
13	Treatment outcomes	treatment outcome/ or outcome assessment/ or patient-reported outcome/ or (treatment-outcome* or outcome or outcomes).mp.
14	Combine	12 or 13
15	Combine constructs	8 and 11 and 14
16	Limits	limit 15 to (English language and humans and yr=“1993 - Current”)

Appendix 1, Table 2. Studies examining the relationship between therapeutic alliance and SUD service outcomes ( $n=50$ )

Study	Description	Setting	Sample	Outcomes	Results
<b>Auerbach et al., 2008[173]</b>	Discrepancy between patient and therapist-rated alliance.	3 months of IOP followed by 3 months of standard outpatient treatment, USA.	N= 39 youth facing incarceration	<u>SUD outcomes</u> assessed with the GAIN Substance Problem Index (SPI), <u>Mental Health</u> : GAIN Emotional Problem Index <u>Crime</u> : GAIN Illegal Activity. <u>Outcomes</u> at 3- and 6-months.	At six months, patients' view of the alliance was unrelated to any outcomes. Greater discordance between patient and therapist alliance scores were associated with higher GAIN Substance Frequency Index ( $r = 0.34, p < 0.05$ ) and Illegal Activity Scale scores ( $r = 0.35, p < 0.05$ ) indicating worse functioning.
<b>Barber et al., 2006[153]</b>	Moderating effect of the alliance on poor fidelity to behavioural treatments.	Five outpatient programs, USA	N=121 adults with cocaine use disorder	<u>SUD outcomes</u> : Addiction Severity Index (ASI) composite drug scores over six months.	Early alliance did not predict SUD outcome. Early alliance moderated the effect of therapist fidelity to the treatment approach on ASI drug use scores ( $F(1, 82) = 5.06, p = 0.03$ for the CALPAS measure; $F(1, 82) = 3.98, p = 0.05$ for the HAQ-II) such that a strong alliance reduced the negative impact of therapists not adhering to treatment.
<b>Barber et al., 2001[152]</b>	Impact of early alliance on substance use.	Outpatient programs, USA	N=308 adults with cocaine use disorder	<u>SUD outcomes</u> : ASI-D; ASI-A. Outcomes: 6 months post-intake	Neither alliance measure predicted SUD outcomes during or post-treatment.
<b>Barber et al., 1999[151]</b>	Impact of early alliance on substance use and distress.	Outpatient programs, USA	N=119 adults with cocaine use disorder	<u>SUD outcomes</u> : ASI-D; ASI-A. <u>Mental Health</u> : Beck Depression Inventory (BDI). Outcomes: 6-months post-intake	Alliance did not predict SUD. Higher patient early alliance ratings predicted greater reductions in BDI scores (CALPAS: $r = -0.35, p < 0.01$ ; HAQ-II: $r = -0.24, p < 0.05$ ).
<b>Bauer et al., 2022[179]</b>	Mediating effect of alliance on outcomes.	Trauma-informed outpatient and residential programs, USA	N=88 black women with SUD and PTSD	<u>SUD outcomes</u> : (i)ASI-D, ASI-A. <u>PTSD</u> : The Clinician-Administered PTSD Scale (CAPS). Outcomes: 1-week post-treatment.	Alliance did not mediate the relationship between education and prior SUD treatment experiences on post-treatment SUD outcomes for women with SUD and PTSD.

Study	Description	Setting	Sample	Outcomes	Results
<b>Belding et al., 1997[162]</b>	Relationship between alliance and outcomes of MOUD treatment.	MOUD outpatient program	N=57 adults taking methadone for OUD	<u>SUD outcomes:</u> (i)ASI-A; ASI-D (severity); (ii) negative toxicology tests (frequency). <u>Outcomes:</u> 3- and 6-months	In models that adjusted for pre-treatment drug use severity, higher patient ratings of the alliance at 3 months predicted more negative toxicology screens in months 4 to 6 of the program ( $p < 0.05$ ). Higher therapist ratings of the alliance at 3 months predicted lower ASI drug use scores at 6 months ( $p < 0.01$ ).
<b>Berry et al., 2015[177]</b>	Relationship between alliance and outcomes of integrated SUD and MH treatment.	Integrated dual diagnosis outpatient service (MIDAS trial), UK	N=164 adults with SUD and Psychoses.	<u>SUD outcome:</u> number of SU days. <u>Mental health:</u> The Positive and Negative Syndrome Scale (PANSS). The Global Assessment of Functioning Scale (GAF). <u>Outcomes</u> assessed 12- and 24-months post-randomisation.	Alliance ratings were not associated with substance use, PANSS, or GAF scores at 12 or 24 months.
<b>Berry et al., 2016[174]</b>	Relationship between alliance and outcomes of integrated treatment for CUD and mental illness.	Integrated dual diagnosis service, UK (MICBT trial).	N=52 adults with CUD and psychoses.	<u>SUD outcome:</u> PDA from (i) cannabis and (ii) all substances. <u>Mental health:</u> The PANSS assessed symptoms. The GAF assessed functioning. <u>Outcomes</u> assessed 4.5, 9, 18 months post-randomisation.	Therapist alliance ratings were not associated with any of the outcomes. Better patient-rated alliance was associated with better functioning, predicting PANSS scores at 9 ( $\beta = -0.65$ , 95% CI: $-1.62, -0.45$ , $p < 0.001$ ) and 18 months ( $\beta = -0.42$ , 95% CI: $-1.12, -0.09$ , $p = 0.029$ ) and GAF scores at 4.5 ( $\beta = 0.42$ , 95% CI: $0.05, 8.25$ , $p = 0.028$ ), 9 ( $\beta = 0.51$ , 95% CI: $0.16, 1.25$ , $p = 0.014$ ) and 18 months ( $\beta = 0.40$ , 95% CI: $0.70, 1.25$ , $p = 0.012$ ). Alliance ratings did not predict SUD outcomes.
<b>Campbell et al., 2009[60]</b>	Therapeutic alliance as a bridge from detoxification to treatment.	Residential detoxification services, USA.	N= 632 patients who inject drugs	<u>Outcome:</u> Rates of entry into SUD treatment after detoxification, assessed over six months.	After adjusting for baseline differences, patients in the alliance-focused intervention had higher rates of entry into SUD outpatient treatment than those in the usual care group (66% vs 50%, $\chi^2 = 4.96$ , $p = 0.026$ ). Rates of entry into residential or 12-step treatments were similar for both conditions.
<b>Connors et al., 1997[154]</b>	Relationship between alliance and outcomes of behavioural treatments.	12-week or brief AUD outpatient treatment, USA	N = 698 adults with AUD	<u>AUD outcomes:</u> (i) Frequency: percentage days abstinent (PDA), (ii) Severity: drinks per drinking day (DDD). <u>Outcomes:</u> 12 months	After controlling for site, treatment modality and client characteristics, patient alliance ratings predicted greater PDA ( $\beta = 0.002$ , $p < 0.01$ ) and reductions in DDD ( $\beta = -0.006$ , $p < 0.001$ ) 12 months post-treatment.

Study	Description	Setting	Sample	Outcomes	Results
<b>Cook et al., 2015[155]</b>	Explored the pathways through which early alliance can influence drinking outcomes.	12-week outpatient treatment, UK	N= 173 adults with AUD	<u>AUD outcomes:</u> (i) Frequency: PDA, (ii) Severity: DDD; (iii) successful outcome defined as abstinent or nonproblem drinker (with a score of 0 on the Alcohol Problems Questionnaire. <u>Outcomes</u> assessed 9 months post-treatment.	Higher patient-rated (but not therapist-rated) alliance predicted successful treatment outcome (aOR= 1.09 (95% CI: 1.02, 1.17) and DDD (aOR=0.38, 95% CI: 0.65, 0.11).  Patient-rated alliance had an indirect effect on outcomes by reducing within-treatment drinking and enhancing post-treatment motivation for change (indirect effect= 0.03, 95% CI: 0.004, 0.05, $p = 0.03$ ). Similar indirect effects on PDA (effect= 0.43; 95% CI: 0.01, 0.86) and DDD (effect= 0.28, 95% CI: 0.46, 0.10) were found.
<b>Crits-Cristoph et al., 2009[181]</b>	Relationship between alliance and outcomes.	Brief MET in outpatient treatment, USA	N=252 adults with cocaine use disorder	<u>SUD outcomes:</u> number of days of substance use per week over the 4-month post-treatment period.	Patient-rated alliance was not associated with outcome.
<b>Cunningham et al., 2007[66, 165]</b>	Relationship between alliance and case management outcomes.	Community based case management service	N= 162 adults with SUD and severe MH	<u>Mental health:</u> The Brief Psychiatric Rating Scale (BPRS). <u>SUD outcomes:</u> number of SU days. <u>Outcomes:</u> 9 and 18 months.	Higher alliance ratings at 3 months were associated with fewer days of substance use at 9 months ( $\chi^2 (15) = 27.07, p < 0.05$ ) but not mental health symptoms.
<b>Dash et al., 2023[165]</b>	Relationship between alliance and outcomes of brief treatments.	Community-based brief treatments, USA	N= 168 adolescents with hazardous drinking	<u>AUD outcomes:</u> Hazardous drinking on the Rutgers Alcohol Problems Index (RAPI). Assessed at 3-months post-intervention.	After controlling for baseline drinking levels, alliance was not associated with outcomes ( $\beta = 0.27, 95\% \text{ CI}: 1.15, 0.61; p = 0.55$ ).
<b>Dearing et al., 2005[158]</b>	Effect of alliance on outcomes via treatment satisfaction.	Outpatient treatment, USA	N=208 patients with SUD	<u>SUD outcome:</u> percentage days abstinent (PDA), assessed 6 months post-treatment	Stronger patient-rated therapeutic alliance predicted greater satisfaction with treatment ( $\beta = 0.39; p < 0.05$ ), which in turn predicted more days abstinent at 6-month follow-up ( $\beta = 0.36, R^2=0.22; p < 0.05$ ).
<b>Diamond et al., 2006[167]</b>	Therapeutic alliance	Youth outpatient programs, USA	N=400 adolescents with CUD	<u>CUD outcome:</u> (i) number of cannabis use days; (ii) GAIN Substance Use Problem Index (SPI) <u>Outcomes</u> assessed at 3, 6, 9, 12 months post-intake.	In adjusted models, patient-rated alliance predicted reduced cannabis use frequency at 3- ( $\beta = -0.14, p < 0.01$ ) and 6-month ( $\beta = -0.12, p < 0.05$ ) timepoints only. Patient alliance also predicted fewer substance-related problem behaviours at 6 months ( $\beta = -0.10, p < 0.05$ ). Therapist-rated alliance was not associated with post-treatment outcomes.



Study	Description	Setting	Sample	Outcomes	Results
<b>Dundon et al., 2008[164]</b>	Effect of alliance on outcomes (MAUD with or without psychosocial interventions).	MAUD clinics	N=194 adults with AUD	<u>AUD outcomes:</u> percentage days abstinent (PDA); assessed at 6 months post-intake.	In the medication-only and medication plus CBT conditions, neither therapist nor patient-rated alliance scores were associated with PDA. In the medication plus BRENDA (intervention to promote medication adherence) condition, therapist-rated (but not patient-rated) alliance predicted greater PDA ( $\beta = 0.377$ ; $p = 0.013$ ).
<b>Edmonds et al., 2022[49]</b>	Quality of patient-provider communication	94 primary care services, USA	568,909 patients with unhealthy alcohol use	Receipt of brief interventions for patients with unhealthy alcohol use.	Patients with unhealthy alcohol use served by clinics highly ranked on communication had higher probabilities of brief intervention receipt (79.9%; 95% CI: 77.8, 81.9) than peers at the lowest-ranked clinics (74.1%, 95% CI: 71.7, 76.4).
<b>Feldstein et al., 2007[166]</b>	Effect of alliance on outcomes	Brief intervention for heavy alcohol use	N=55 underage heavy drinkers	<u>AUD outcomes:</u> (i) $\geq 5$ drinks in a row (binge drinking) and (ii) alcohol problem severity. <u>Outcomes:</u> 2-months post-intervention.	For the intervention group, neither participant nor therapist ratings of the alliance predicted alcohol outcomes.
<b>Gibbons et al., 2010[150]</b>	Effect of alliance on outcomes; interactions between alliance, fidelity and outcome.	Three community-based outpatient services, USA	N=163 adults with CUD	<u>SUD outcomes:</u> (i) ASI-drug composite scores and (ii) frequency (days of cannabis use). <u>Outcomes</u> assessed at 9 months.	In the two-session treatment, patient-rated ( $t = -2.97$ , $p < 0.001$ ) and therapist-rated alliance ( $t = -3.68$ , $p < 0.001$ ) predicted fewer days of cannabis use. In the nine-session treatment, patient-rated alliance did not predict days of cannabis use ( $t = -0.81$ , $p = 0.41$ ). For the 9-session intervention, treatment fidelity interacted with alliance to predict outcomes ( $t = 2.77$ , $p = 0.01$ ). When alliance was high, fidelity had less impact on outcomes.
<b>Gidhagen et al., 2021[146]</b>	Effect of alliance on outcomes	Outpatient treatment, Sweden	N=99 adults with SUD	<u>SUD outcomes:</u> Assessed via change in AUDIT and DUDIT scores at the end of treatment.	Stronger therapist (but not patient)-rated alliance predicted reductions in AUDIT scores ( $\beta = -1.42$ , 95% CI: $-2.73$ , $-0.11$ , $p = 0.03$ ) but did not predict change in DUDIT scores.
<b>Glazer et al., 2003[145]</b>	Effect of alliance on outcomes	Outpatient network therapy, USA	N=21 adults with cocaine use disorder	<u>SUD outcomes:</u> A favourable outcome was defined as 8 consecutive negative toxicology screens for cocaine use.	Patient ratings of the alliance were significantly correlated with % of negative toxicology screens ( $r = 0.629$ , $p < 0.01$ ). Participants who produced at least eight consecutive negative toxicology screens had significantly higher scores on the WAI ( $t = 2.98$ , $p < 0.01$ ) than those who did not.

Study	Description	Setting	Sample	Outcomes	Results
<b>Hartzler et al., 2011[53]</b>	Examined whether self-efficacy mediated associations between alliance and outcomes	MAUD and outpatient treatment, USA	N=1398 adults with AUD	<u>AUD outcomes:</u> (i) PDA, (ii) DDD, (iii) the Drinking Consequences Questionnaire. <u>Mental Health:</u> The Global Severity Index of the Brief Psychiatric Scale (BSI). <u>Outcomes:</u> 12-months post-treatment.	Self-efficacy change during treatment mediated associations between the patient-therapist bond and one-year drinking frequency (-0.06, 95% CI: -0.06, -0.01) drinking consequences (-0.04, 95% CI: -0.20, -0.02) and BSI-Global severity (-0.04, 95% CI: -0.12, -0.01) for the outpatient condition only. Self-efficacy change did not mediate bond-outcome associations among patients receiving MAUD, even if this was combined with outpatient treatment.
<b>Hogue et al., 2006[171]</b>	Examined within-treatment change in youth alliance and parent alliance on outcomes.	Family or individual outpatient treatment, USA	N=100 adolescents with SUD	<u>SUD outcome:</u> Child behaviour checklist (parent completion), <u>Outcomes:</u> post-treatment and 6-months follow up.	For the CBT condition, there was no association between alliance and treatment outcome. For the MDFT condition, adolescents whose alliance strengthened during treatment had a greater reduction of externalizing symptoms at 6 months than those whose alliance weakened $t(23) = -2.27, p < 0.05$ .
<b>Ilggen et al., 2006[157]</b>	Examined interactions between patient motivation to change, alliance and drinking outcomes.	Outpatient treatment for AUD, USA	N=753 adults with AUD	<u>AUD outcome:</u> Combined PDA and DDD into a single AUD outcome measure. <u>Outcomes:</u> 6 and 12-months post-treatment.	Patients who perceived a stronger alliance had better alcohol outcomes at 6- ( $\beta = -0.003, p < 0.01$ ) but not at 12-months ( $\beta = -0.001, p > 0.05$ ). Stronger therapist-rated alliance predicted less alcohol use at the 6-month ( $\beta = -0.005, p < 0.01$ ) and 12-month ( $\beta = -0.072, p < 0.01$ ) timepoints. Therapists' alliance ratings interacted with baseline motivation to influence drinking outcomes ( $\beta = 0.002, p < 0.05$ ). A good alliance ameliorated the negative effects of low motivation on drinking outcomes but made little difference when motivation was high.
<b>Ilggen, Tiet et al., 2006[159]</b>	Examined interactions between self-efficacy for change, alliance and outcomes.	Outpatient treatment for AUD, USA	N=753 adults with AUD	<u>AUD outcome:</u> Combined PDA and DDD into a single AUD outcome measure. Outcomes were assessed at 6 and 12-months post-treatment.	A significant interaction was found between self-efficacy and therapists' perception of the alliance on 12-month outcomes. Patients with low self-efficacy and a strong alliance had better outcomes than patients with low self-efficacy and a weak alliance.
<b>Joe et al., 2001[54]</b>	Counsellor rapport	Outpatient treatment, USA	N= 577 adults with SUD	<u>SUD outcomes:</u> (i) Toxicology screens for opiate and cocaine metabolites, (ii) self-reported heroin and of cocaine use at 12 and 18-months post-treatment.	High rapport was significantly associated with reduced odds of opiate (OR=1.61, $p < 0.04$ ) and cocaine-positive (OR=5.02, $p < 0.001$ ) toxicology screens and self-reported cocaine use (OR=3.20, $p < 0.002$ ) at 12-month follow up. At 18-months, higher rapport predicted greater odds of a cocaine-negative toxicology screen ( $p < 0.05$ ), and lower odds

Study	Description	Setting	Sample	Outcomes	Results
					of self-reported heroin ( $p < 0.004$ ) and cocaine ( $p < 0.027$ ) use.
<b>Kan et al., 2014[147]</b>	Effect of changes in alliance on outcomes.	Outpatient treatment, USA	N=952 adults with AUD	<u>AUD outcome:</u> (i) Drinking frequency (PDA) and (ii) drinking severity (DDD), assessed weekly within treatment and monthly over the 12-month follow-up.	Within-treatment improvements in alliance were not significantly related to DDD outcomes. Improvements in the alliance predicted within-treatment reductions in PDA ( $\beta = 0.07, p < 0.01$ ) and only had a very small, non-significant effect on post-treatment PDA ( $\beta = -.01, p = 0.07$ ).
<b>Kay-Lambkin et al., 2017[182]</b>	Effect of therapist bond on outcomes of two therapist versus e-health treatments	Seven outpatient settings, Australia	N= 274 adults with AUD/ CUD and depression	<u>Mental health:</u> The BDI-II measured depressive symptoms <u>SUD:</u> Assessed with the Opioid treatment index (OTI-q) scores. <u>Outcomes:</u> 3, 6, 12 months	Higher therapist bond early in treatment was associated with reduced cannabis use post-treatment for patients in the e-CBT & MI group ( $p = 0.049$ ), but not for the therapist-delivered interventions ( $p = 0.413$ for MI-CBT and $p = 0.693$ for supportive counselling). Bond was not associated with alcohol or depression outcomes.
<b>Knuuttila et al., 2012[148]</b>	Effects of early and late alliance on outcomes	Outpatient treatment	N=327 adults with SUD	<u>SUD outcome:</u> Substance use frequency, defined as percentage of days abstinent in the month before the six-month follow-up.	Alliance was not significantly associated with percentage days abstinent at follow up- irrespective of whether it was assessed early or later in treatment or from the patient or therapist perspective.
<b>Liebmann et al., 2022[55]</b>	Quality of provider communication	Veterans' Health Administration SUD outpatient specialty care	N= 2788 patients with SUD	<u>SUD outcomes</u> via BAM-R, mental health outcomes via SF-12. <u>Outcomes:</u> 3 months post-intake	After adjusting for perceived quality of treatment and other covariates, poorer patient ratings of provider communication were associated with greater odds of 10 or more days of SU in the past month (OR= 1.35, 95% CI: 1.00, 1.81) and poorer mental well-being (OR= -2.59, 95% CI: -3.59, -1.00).
<b>Long et al., 2000 [50]</b>	Effect of alliance on outcomes	Addiction unit therapy program, UK	N= 188 patients with SUD	<u>SUD outcomes:</u> remitted drinking, 12 months post treatment	Patient ratings of the alliance were not associated with drinking outcomes at follow-up.
<b>Loree et al., 2019[183]</b>	Effect of the alliance on brief intervention	Single session BI offered in-person or electronic	N=88 adults with unhealthy SU	<u>SUD outcome:</u> Total days of use from baseline through the 6-month follow-up (covering 168 days).	Alliance was not associated with frequency of primary substance use across follow-up.
<b>Maisto et al., 2015[156]</b>	Mediating effect of self-efficacy on the relationship between early alliance and	Outpatient programs, USA	N=755 adults with AUD	<u>AUD:</u> (i) Drinking frequency (PDA), (ii) drinking severity (DDD), and (iii) the Drinking Consequences Questionnaire.	Posttreatment self-efficacy mediated the effect of therapist and patient alliance ratings on DDD ( $\beta = -0.005, 95\% \text{ CI: } -0.009, -0.001$ ; $\beta = -0.005, 95\% \text{ CI: } -0.008, -0.001$ ) and alcohol-related problems ( $\beta = -$

Study	Description	Setting	Sample	Outcomes	Results
	drinking outcome.			<u>Outcomes:</u> 3, 6, 9, 12,15-month follow up.	0.005, 95% CI: -0.01, -0.001; $\beta$ =-0.005, 95% CI:-0.01, -0.001).
<b>Maisto et al., 2020[61]</b>	Whether a feedback intervention led to better alliance ratings and outcomes	12-week CBT outpatient program, USA	N=155 adults with AUD	<u>AUD:</u> (i) Drinking frequency (PDA) and (ii) drinking severity (DDD) <u>Outcomes:</u> 12-month follow-up.	Better patient ratings of the alliance score predicted greater PDA ( $b = 0.29$ , $SE = 0.05$ , $p < 0.001$ ) and lower DDD ( $b = 0.19$ , $SE = 0.04$ , $p < 0.001$ ). Participants whose therapist received feedback on the therapeutic alliance did not have better alliance ratings or post-treatment drinking outcomes.
<b>Marcus et al., 2011[168]</b>	Effects of patient and therapist-rated alliance on outcomes.	4 Outpatient programs, USA (CYT project)	N=398 youth with CUD	<u>CUD:</u> Number of cannabis use days. <u>Outcomes:</u> 3 months post-treatment.	Therapists who reported stronger alliances ( $t(11) = 1.11$ , $p = 0.29$ ) and therapists whose clients reported stronger alliances ( $t(9) = -1.39$ , $p = 0.20$ ) did not have better outcomes. Clients who rated their alliance higher than their therapists' typical clients had better outcomes than their therapists' other clients ( $t(366) = -3.00$ , $p = 0.003$ ).
<b>Marsh et al., 2010[184]</b>	Quality of the client-provider relationship and its effects on outcomes	59 treatment programs in USA	N= 3,027 people with SUD	<u>SUD:</u> Number of SU and polydrug use days in the last month. <u>Outcomes:</u> 12-months post-intake.	Quality of the client-provider relationship directly predicted post-treatment drug use in the structural equation model (path coefficient $p < 0.01$ ). A more positive client-provider relationship was associated with more of the client's treatment needs being met ( $p < 0.01$ ) which, in turn, predicted better treatment retention ( $p < 0.05$ ) and post-treatment outcomes ( $p < 0.05$ ).
<b>Østergård et al., 2021[62]</b>	Feedback intervention to enhance the therapeutic alliance	Outpatient treatment for CUD, Denmark	N=100 adults with CUD	<u>SUD:</u> (i) drug use severity as measured by the ASI, (ii) cannabis abstinence, (iii) number of cannabis use days. <u>Outcomes:</u> 3 months post-treatment.	The intervention was poorly implemented. There was no incremental effect of the PCOMS intervention on alliance ratings or cannabis abstinence rate (Wald $\chi^2 = 0.24$ , $p = 0.63$ ) or on the average number of days using cannabis in the last month ( $F(1, 62.91) = 0.017$ , $p = 0.90$ ); or on drug use severity scores ( $F(1, 79.54) = 1.17$ , $p = 0.28$ ) compared to treatment as usual.
<b>Prince et al., 2016 [144]</b>	Effects of high, medium, and low alliance ratings on outcomes.	12-week CBT outpatient program, USA	N=62 adults with AUD	<u>AUD:</u> Drinking frequency (PDA) in the last month. Outcomes assessed at 4 months post-treatment	Patient (but not therapist) alliance rating profiles predicted drinking outcomes. The high-patient alliance (PA) group had significantly more PDA at follow-up compared to the low-PA group, $\chi^2 = 10.14$ , $p = 0.001$ . Medium-PA had more PDA compared to low-PA and less PDA than high-PA (low-PA vs. medium-PA: $\chi^2 = 3.23$ , $p = 0.07$ , medium-PA vs. high-PA: $\chi^2 = 3.41$ , $p = 0.07$ ).

Study	Description	Setting	Sample	Outcomes	Results
<b>Ojehagen et al., 1997[149]</b>	Effect of early alliance on outcomes	Outpatient programs, Sweden	N=35 adults with AUD	<u>AUD</u> : Favourable outcome was defined as a maximum of 7 abuse days ( $\geq 4$ drinks) at 6-month follow-up periods and 14 abuse days at 12-month follow-up.	Patient ratings of the early therapeutic alliance were not associated with post-treatment drinking outcomes in either the Multimodal behaviour therapy or psychodynamic therapy conditions.
<b>Richardson et al., 2018[178]</b>	Effect of early alliance on outcomes	10 outpatient treatment programs in New Zealand	N= 123 adults with AUD and depression	<u>AUD</u> : (i) Drinking frequency (PDA) and (ii) drinking severity (DDD). <u>Depression</u> : Severity of depressive symptoms via the MADRS. <u>Outcomes</u> : 3- and 12-weeks.	Therapist and patient ratings of the alliance did not predict drinking at 12 weeks. Therapist-rated alliance predicted change in MADRS score from baseline to 12-weeks post-treatment ( $\beta = -0.237, p < 0.001$ ).
<b>Richardson et al., 2012[58]</b>	Effect of therapist-rated alliance on outcomes	Outpatient program, New Zealand	N= 69 adults with AUD	<u>AUD</u> : (i) Drinking frequency (PDA) and (ii) drinking severity (DDD), (iii) Alcohol Problem Questionnaire (APQ). <u>Outcomes</u> : 6 weeks and 6 months.	After controlling for treatment assignment, alliance was associated with improvement in PDA between baseline and 6 weeks ( $r=0.24, p=0.05$ ) but not 6 months ( $p=0.08$ ). Alliance was associated with reductions in APQ scores between baseline and 6 months ( $r= -0.26, p=0.04$ ).
<b>Rogers et al., 2008[175]</b>	Effect of youth-rated alliance on outcomes	2 community - based case management services, Australia	N=100 youth with SU problems	<u>SUD outcomes</u> : Severity of dependence scale (SDS). <u>Depression</u> : CES-D scale. <u>Outcomes</u> : 4 months follow up.	Patient alliance ratings predicted changes in CES-D scores, with higher alliance ratings predicting less symptom severity at follow up ( $t=2.26, p < 0.05$ ). Alliance ratings did not predict substance use outcomes at follow up.
<b>Ruglass et al., 2012[185]</b>	Effect of alliance on outcomes of trauma-informed care.	Outpatient treatment	N=223 women with SUD and PTSD	<u>SUD outcomes</u> : (i) ASI drug and alcohol scores. <u>PTSD</u> : Symptom frequency and severity with the CAPS. <u>Outcomes</u> : at 1-week, 3-, 6-, and 12-months post-treatment.	Higher alliance ratings were associated with lower CAPS scores one-week posttreatment ( $\chi^2 (1) = 11.65, p < 0.001$ ). This effect weakened over follow-up and was nonsignificant at 12-month follow-up. Alliance ratings did not predict post-treatment SU outcomes.
<b>Saraiya et al., 2023[186]</b>	Effect of alliance on outcomes of trauma-informed care.	Outpatient integrated treatment for PTSD-SUD.	N= 55 veterans with SUD and PTSD	<u>PTSD outcomes</u> (PTSD symptom scale). <u>SUD outcomes</u> (number of SU days). <u>Outcomes</u> : 6-months post-intake.	A stronger alliance was associated with greater reductions of PTSD symptoms for the trauma-focused treatment (COPE)). A stronger alliance was associated with greater reduction in SU among patients in usual care but not for COPE ( $\beta = -1.55, 95\% \text{ CI: } -3.09, -0.01, p = 0.05$ ).

Study	Description	Setting	Sample	Outcomes	Results
<b>Shin et al., 2011[59]</b>	Effect of the client-provider relationship on residential and outpatient outcomes.	59 treatment programs in USA	N= 3,027 people with SUD	<u>SUD</u> : Number of SU and polydrug use days in the last month. <u>Outcomes</u> assessed at 12-months post-intake.	For outpatient services, a better client-provider relationship was <i>directly</i> (path coefficient = -0.11, $p < 0.05$ ) and indirectly related to reduced post-treatment substance use through provision of services matched to client needs (path coefficient = 0.28, $p < 0.05$ ). In residential settings, the quality of the client-provider relationship was unrelated to outcomes.
<b>Shelef et al., 2005 [170]</b>	Effect of adolescent and parent alliance on outcomes of MDFT	Four outpatient services, USA	N=100 youth with CUD who received MDFT	<u>CUD outcome</u> : Number of cannabis use days over the past 90 days, (ii) GAIN Substance Use Problem Index (SPI). <u>Outcomes</u> : 3, 6, 9 month follow ups.	Adolescent alliance also predicted reductions in frequency of cannabis use at 3 months ( $\beta = -0.39$ , $p < 0.01$ ), regardless of the strength of the parent alliance. At 6- and 9-month follow-up, alliance did not predict outcomes.
<b>Tetzlaff et al., 2005[169]</b>	Effect of alliance on outcomes	Four outpatient services, USA	N=600 youth with CUD	<u>SUD outcomes</u> : Substance use severity assessed with the GAIN Substance use subscale at 3-, 6-, 9-, 12-, and 30-months post-enrolment	At 3 and 6 months, higher alliance ratings predicted better post-treatment substance use ( $F(3, 451) = 9.13$ , $p < 0.001$ ) after adjusting for baseline substance use severity. Alliance was not associated with outcomes after 6 months.
<b>Tunis et al., 1995[163]</b>	Effect of alliance on outcomes	180-day detoxification program, USA	N=41 adults with OUD	<u>SUD outcomes</u> : self-reported frequency of opiate use and drug-related risk for HIV one-month post-treatment.	Stronger patient-rated alliance was associated with fewer days of opiate use one-month post-treatment ( $t(15) = 2.32$ , $p = 0.03$ ). Stronger alliance was associated with reductions in drug-related risk for HIV at both time points ( $p < 0.05$ ).
<b>Van Benthem et al., 2020[172]</b>	Effect of alliance on outcomes	2 youth outpatient programs, Netherlands	N=127 youth with SUD and/or mental health concerns	<u>SUD outcomes</u> : Favourable outcome defined as use of primary substance for <5 days out of 30. <u>Outcome</u> : 4-month follow-up.	Better youth-rated and therapist-rated alliance was associated with greater odds of a favourable outcome (OR= 3.65, 95% CI: 1.82, 7.29) and (OR=3.07, 95% CI: 1.24, 7.61).
<p><b>Acronyms:</b> AUD: alcohol use disorder; CBT= cognitive behavioural therapy; CUD: cannabis use disorder; CYT: cannabis youth treatment project; MDFT: multidimensional family therapy; MET = motivational enhancement therapy; MOUD: medication treatment for OUD, MAUD= medication treatment for AUD; MH: mental health; MTP: marijuana treatment project; OUD: opiate use disorder; RCT: randomised controlled trial; SUD: substance use disorder; TSF: Twelve step facilitation therapy</p> <p><b>Measures:</b> ASI: Addiction Severity index; BDI: Beck depression inventory; BSI: Brief Psychiatric symptom inventory; CALPAS: California Psychotherapy Alliance Scale; CAP = Clinician administered PTSD scale; DDD= drinks per drinking day; HAQ/HAQ-II: Helping alliance questionnaire; PANSS: The Positive and Negative Syndrome Scale; PDA: percentage days abstinent (frequency); WAI: Working alliance inventory</p> <p><b>OR= Odds ratio, 95% CI= 95% confidence interval</b></p>					

**Appendix 1, Table 3. Studies examining the relationship between patient choice and involvement in treatment decision-making and service outcomes (n=23)**

Article	Description	Setting	Sample	Outcome	Results
<b>Alcaraz et al., 2018[63]</b>	Patient choice of MOUD dose	16 addiction treatment centres, Spain	N= 360 patients taking buprenorphine or naloxone	<u>SUD</u> : heroin and other substance use, Severity of Dependence Scale (SDS). <u>Mental Health</u> : General Health Questionnaire (GHQ-28). <u>Outcomes</u> : 3 months after treatment initiation.	Patients where dose was adjusted according to preferences but was considered clinically inadequate reported more heroin ( $\chi^2=27.79$ (df=3), $p= 0.001$ ) and cocaine use ( $\chi^2=12.82$ (df=3), $p= 0.005$ ), higher SDS scores ( $\chi^2=8.47$ (df=3), $p= 0.001$ ) and poorer psychological adjustment ( $\chi^2=4.29$ (df=3), $p= 0.006$ ) than those whose dose was adjusted to patient preferences but was clinically adequate.
<b>Banta-Green et al., 2020[73]</b>	Evaluated a treatment decision tool (TDR) to facilitate informed choice of MOUD options	Post-incarceration, USA	N= 3742 incarcerated adults	<u>Outcomes</u> : Time to MOUD initiation.	The TDR was associated with increased uptake of MOUD in the exit month (HR 6.27, 95 % CI: 4.20, 9.37) compared to usual services after adjusting for demographics, MOUD and arrest history.
<b>Beaumont et al., 2024[64]</b>	Patients' perceptions of involvement in MOUD treatment decisions	MOUD, Canada	N=131 people.	<u>Outcomes</u> : Satisfaction with strength of dose.	In multivariable models, people who rated their doctor as "excellent" at shared decision making were less likely to also report dissatisfaction with their dose (AOR: 0.65; 95% CI: 0.45, 0.94).
<b>Bradley et al., 2018[74]</b>	Evaluated whether choice of drinking goal, and options for AUD treatment (CHOICE) led to better outcomes.	3 primary care clinics, USA	N=304 patients with frequent heavy drinking at risk for AUD	<u>AUD outcomes</u> : (i) percentage of heavy drinking days (HDD), (ii) good drinking outcomes (GDOs) defined as abstinence or drinking < recommended limits. <u>AUD care engagement</u>	HDD and GDO outcomes did not differ between the conditions at 12 months. For CHOICE, use of AUD care increased from 7.3% (3.8-13.6) to 42.0% (35.0-49.4) at 12 months whereas the usual care group increased from 9.1% (5.6-14.4) to 26.0% (18.8-34.8), $p<0.05$ .
<b>Brands et al., 2003[65]</b>	Patient choice of MOUD: choice of involvement in counselling and	MOUD programs in Canada	3 treatment cohorts (N= 61, 67, 81 respectively)	<u>SUD outcomes</u> : % of days abstinent, % of opiate and cocaine-free drug tests over six months.	About 50% of patients in the person-centred MOUD cohort achieved abstinence from all opioid drugs by the fifth month, similar to the cohort where the program was more controlled. The proportion of patients reporting any drug use did not differ.

Article	Description	Setting	Sample	Outcome	Results
	methadone dosing				
<b>Buccholz et al., 2020[75]</b>	Evaluated whether offering patients an informed choice about AUD treatment options led to better outcomes than patients where experts made the decision.	4 inpatient alcohol withdrawal clinics, Germany	N= 250 patients with AUD	<u>AUD outcomes:</u> number of HDD, percent of HDD, and days of abstinence in the last 30 days. <u>Outcomes:</u> 6 months.	HDD did not differ between the conditions (IRR= 1.09; $p = 0.640$ ). In both groups, 32.3% of patients were under-matched, receiving less treatment than requested or expert-recommended due to limited services. Compared to matched patients, under matched patients reported more heavy drinking days at follow-up (IRR= 2.09, $p = 0.004$ ).
<b>Cunningham et al., 2011[180]</b>	Patients chose office or home-based buprenorphine induction.	MOUD services, USA	N=79 patients initiating MOUD	<u>SUD outcomes:</u> (i) Self-report of opioid use (ii) self-report of any drug use during the 6-month follow-up period.	Participants with standard office-based inductions and patient-centred home-based inductions had similar reductions in opioid use (AOR=0.74, 95% CI: 0.16, 3.50).
<b>Edmonds et al., 2022[49]</b>	Shared decision-making practices in clinics	Primary care	N=568,909 of which 144,511 had past year AUD diagnosis	<u>SUD care:</u> (i) Receipt of brief interventions for patients with unhealthy alcohol use (ii) receipt of speciality treatments for patients with AUD.	Patients in clinics ranked highly for shared decision-making had higher adjusted marginal probabilities of receiving AUD medications (10.4%, 95% CI: 9.0, 11.7) than their peers in the lowest-ranked clinics (7.7%; 95% CI: 6.8, 8.7).
<b>Hell et al., 2021[76]</b>	Compared outcomes of a SDM intervention and informed choice about AUD care (self-matched) with patients matched by experts.	Outpatient treatment, Denmark	N=402 adults with AUD	<u>AUD outcomes:</u> (i) number of drinking days, (ii) HDD and (iii) DDD. <u>Quality of life:</u> WHO-QoL-Bref. <u>Outcomes:</u> 6 months post-treatment.	The self-matched and expert-matched groups did not differ on any of the outcomes. In the self-matched condition, 80% of clients were satisfied with having a choice – only 24% of patients in the usual care condition were satisfied with being expert-matched.
<b>Joosten et al., 2009[77]</b>	Evaluated a 5-session SDM intervention	3-month inpatient	N=220 patients with SUD	<u>SUD outcomes:</u> Number of days of substance use, problem severity via the Europ-ASI	At three months, the groups did not differ on ASI alcohol severity score or quality of life.



Article	Description	Setting	Sample	Outcome	Results
	(SDMI) of a structured procedure to reach a treatment agreement based on goals, needs, and preferences.	treatment, Netherlands		<u>Other outcomes:</u> Quality of life via the EuroQol-5D. <u>Outcomes:</u> 3 months	Compared to the control group, the SDMI group had greater reductions in ASI drug use severity scores ( $F(1, 164) = 7.40, p < 0.01$ ) and psychiatric severity scores ( $F(1, 164) = 5.91, p = 0.02$ ).
<b>Long et al., 2000[50]</b>	Patient choice and involvement in treatment decision-making	Addiction unit therapy program, UK	N= 188 patients with SUD	<u>SUD outcomes:</u> remitted drinking <u>Outcomes:</u> 12 months post-treatment.	Greater patient involvement in treatment decision-making ( $p < 0.01$ ) and lower levels of staff control ( $p < 0.01$ ). were independently associated with remitted drinking.
<b>McKay et al., 1995[78]</b>	Evaluated whether patients who had a choice of treatment had better outcomes than patients assigned to a treatment (no choice).	Residential and day patient programs, USA	N= 144 male veterans with AUD	<u>AUD outcomes:</u> number of days of alcohol intoxication, and alcohol related problems. <u>Psychosocial outcomes:</u> ASI psychiatric, family, employment subscales. <u>Outcomes:</u> 3, 6, 12 months post-treatment	Method of assignment to treatment was not associated with differences on any of the outcome measures.
<b>McKay et al., 2015[79]</b>	Examined whether a SDM intervention for treatment options after outpatient disengagement had better outcomes than standard outreach to support re-engagement in treatment.	Outpatient programs in USA	N=273 patients with alcohol or cocaine use disorder	<u>Alcohol outcomes</u> were any alcohol use days (ii) any HDD, and (iii) percent days alcohol and heavy alcohol use. <u>Cocaine outcomes:</u> any cocaine use and percent days cocaine use, and toxicology screens. <u>Outcomes:</u> 1, 2, 3, 6 months	No evidence that the SDM intervention led to better alcohol or cocaine outcomes.
<b>Maddux et al., 1995[67]</b>	Examined whether patient choice of medication dosage or counselling	MOUD programs, USA	N=300 patients on methadone for OUD	<u>Treatment retention:</u> Months retained on methadone; <u>SUD outcomes:</u> toxicology results, number of days of crime, injection use, incarceration	At 12 months, there were no differences between the groups on months retained on methadone, urine toxicology results, or on any other outcome.

Article	Description	Setting	Sample	Outcome	Results
	affected outcomes.				
<b>Mooney et al., 2020[80]</b>	Evaluated a patient decision aid to facilitate informed choices about MOUD treatment	Primary care services, USA	N= 72 patients with OUD	<u>Outcomes:</u> Proportion of participants inducted on MOUD, number of days used MOUD.	More participants who used the tool were inducted on MOUD (37%) than controls (11%), but this difference was not significant ( $p = 0.12$ ).
<b>Morris et al., 2008[72]</b>	Patient involvement in treatment planning	SUD clinics, Scotland, UK	N= 841 patients with SUD	SUD outcomes at 8 months	Being informed about treatment decisions (OR= 1.3, 95% CI: 1.0, 1.5) was independently associated with better post-treatment SUD outcomes.
<b>Oviedo-Joekes et al., 2023[48]</b>	Patient choice in MOUD	Take-home injectable OAT	N=11 patients with OUD	<u>SUD outcomes:</u> care engagement and SUD recovery	Choice of their OAT dosing schedule and setting helped patients self-manage side effects and improved their quality of life and retention in care.
<b>Robles et al., 2001[68]</b>	Patient choice of fixed or self-regulated MOUD dose	MOUD clinic, USA	N=57 patients on MOUD	<u>Outcome:</u> drug negative toxicology results	There was a decrease in monthly opiate-positive specimens from 5.3% during baseline to 1.6% during the self-selected dose period ( $W=169, p<0.01$ ).
<b>Schwarz et al., 2017[69]</b>	Effects of person-centred MOUD care (where patients chose their treatment goal and counselling) on outcomes	MOUD, USA	N= 295 patients newly initiated on methadone	<u>SUD outcomes:</u> number opiate positive urine screens, self-reported days of heroin use <u>Quality of life</u> <u>Outcomes:</u> 12 months	OUD outcomes did not differ between groups. Those in the person-centred MOUD arm reported better quality of life than those in standard care ( $M=3.70$ vs $M=3.47$ ; mean difference =0.23, 95% CI: 0.01, 0.45, $p=0.04$ ).
<b>Serrano-Perez et al., 2015[81]</b>	Examined whether patients matched on their preferences for SDM had better outcomes than unmatched.	Hospital outpatient treatment, Spain	N=214 adults with SUD	<u>Retention in treatment</u> <u>SUD outcomes:</u> SU assessed with the ASI. <u>Outcomes:</u> 6- and 12-months.	Patients who were more involved than they desired in decision-making had poorer treatment retention (OR =0.33, 95% CI: 0.14, 0.98, $p=0.046$ ) and greater odds of SU at 6 months than patients with matched preferences for SDM (OR=2.63, 95% CI: 0.04, 6.63).

Article	Description	Setting	Sample	Outcome	Results
<b>Sohler et al., 2010[71]</b>	Choice of office or home-based (self-managed) buprenorphine induction	MOUD health centre	N=87 patients with OUD	<u>Outcomes:</u> 30-day retention in care	Thirty-day treatment retention was similar: 78.1% for office-based inductions versus 78.4% for home-based inductions, OR = 0.98, 95% CI: 0.40, 2.40.
<b>Trujols et al, 2017[70]</b>	Patients' perceptions of involvement in treatment decision making	MOUD clinics, Spain	N=122 patients	Perceptions of methadone dose adequacy	Low rates of perceived participation in methadone dosage decisions was independently associated with perception of methadone dose as inadequate (OR=0.54, 95% CI: 0.35, 0.83).
<b>Williams et al., 2019[83]</b>	Evaluated whether choice of drinking goal, and options for AUD treatment (CHOICE) led to better outcomes and engagement in care.	3 primary care clinics, USA	N=304 patients with frequent heavy drinking at risk for AUD- sample stratified by alcohol dependence	<u>AUD outcomes:</u> (i) percentage of HDDs, (ii) good drinking outcomes (GDOs) defined as abstinence or drinking < recommended limits. <u>AUD care engagement:</u> <u>Outcomes:</u> 12 months	For participants with dependence, 12-month outcomes did not differ among groups. For participants without dependence, % HDD did not differ, but the proportion of patients with GDO was higher among usual care participants (26% vs 13%, $p = 0.046$ ). For participants with dependence, the intervention was associated with greater receipt of any alcohol-related care over the 12 months ( $p=0.003$ ).
<p><b>Acronyms:</b> AUD: alcohol use disorder; MOUD: medication treatment for OUD, MAUD= medication treatment for AUD; MH: mental health; OUD: opiate use disorder; RCT: randomised controlled trial; SDM= shared decision making; SUD: substance use disorder.  <b>Measures:</b> ASI: Addiction Severity index; DDD= drinks per drinking day; HDD: heavy drinking days; PDA: percentage days abstinent (frequency)  <b>OR= Odds ratio, 95% CI= 95% confidence interval, HR: Hazard ratio, IRR: incremental risk ratio</b></p>					

**Appendix 1, Table 4. The relationship between receipt of culturally informed and responsive SUD treatment and patient outcomes (n=10 articles)**

Article	Description	Setting	Sample	Outcome	Results
<b>Burrow-Sanchez et al., 2012[86]</b>	Compared culturally accommodated CBT (A-CBT) to standard CBT (S-CBT). Cultural modifications included bilingual therapists (with cultural sensitivity training), cultural themes, family involvement and content on identity and acculturation.	Outpatient programs in USA	35 Latinx youth with SUD	<u>SUD</u> : Number of substance use days. <u>Outcomes</u> : 3-months.	A-CBT and S-CBT had similar substance use outcomes. Two cultural factors moderated these outcomes: ethnic identity ( $\beta = -0.27$ , 95% CI: -0.33, -0.01) and familism, ( $\beta = -0.04$ , 95% CI: -0.08, -0.001). Adolescents in A-CBT with the highest level of ethnic identity and familism had the fewest days of substance use.
<b>Burrow-Sanchez et al., 2015; 2019[84, 85]</b>	Compared A-CBT to standard group CBT (S-CBT). Cultural modifications included bilingual therapists (with cultural sensitivity training), cultural themes, family involvement and content on identity, and acculturation stress.	12-week CBT outpatient program in USA	70 Latinx youth with SUD	<u>SUD</u> : Days of substance use. <u>Outcomes</u> : 3-month and 12-month follow-up.	At 3 months, outcomes were similar. Cultural factors moderated the outcome: adolescents in S-CBT with lower commitment to ( $\beta = -0.29$ , 95% CI: -0.01, -0.50) and less exploration of their cultural identity ( $\beta = -0.66$ , 95% CI: -0.04, -0.35) had fewer substance use days than their peers in A-CBT. Adolescents with higher commitment and exploration had better outcomes in A-CBT. At 12-months, the A-CBT group had better SUD outcomes ( $\beta = -0.24$ , 95% CI: -0.38, -0.10, $p < 0.01$ ).
<b>Guerrero et al., 2018[88]</b>	Examined culturally competent practices including (i) providers with knowledge of minority communities, (ii) personal involvement in minority communities, (iii) resources to serve minorities, (iv) staff with minority backgrounds, v) outreach to minority communities, and (vi) practices to improve access.	59 outpatient programs, USA	2158 patients with SUD and homeless	<u>SUD outcome</u> : Number of drug use days <u>Outcomes</u> : Discharge.	Patients at facilities where providers had more personal involvement in minority communities (IRR = 0.47; 95% CI = 0.22, 0.86) and outreach to minority communities (IRR = 0.67; 95% CI = 0.21, 0.77) had fewer days of drug use. Receiving treatment from programs with resources and linkages to minority communities was associated with fewer drug use days among individuals living outdoors (IRR = 0.36; 95% CI: 0.16, 0.84).
<b>Lee et al., 2013[93]</b>	Compared the effectiveness of culturally accommodated motivational interviewing (CAMI) with standard, unadapted MI. Modifications included use of bilingual therapists, content on	Brief intervention, health services	N=54 Hispanic adults with heavy drinking	<u>AUD</u> : (i) HDD; (ii) Drinkers Inventory of Consequences. <u>Outcomes</u> : 2, 6 months.	At 2-months, patients in CAMI had greater reductions in drinking consequences ( $F(1, 44) = 7.48$ , $p = 0.009$ ) than those in MI, with consequences continuing to reduce in CAMI at six months compared to MI.

Article	Description	Setting	Sample	Outcome	Results
	cultural influences on drinking, and cultural norms.				
<b>Lee et al., 2019[92]</b>	Compared the effectiveness of culturally accommodated motivational interviewing (CAMI) with standard, unadapted MI.	Brief intervention, health services	296 Latinx with heavy drinking	<u>AUD</u> : (i) HDD, (ii) Drinking Consequences <u>Outcomes</u> : 3, 6, 12 months.	Reductions in heavy drinking days and alcohol-related consequences were not significantly different. Acculturation moderated outcomes at 3-months ( $d = 0.22$ , 95% CI: 0.02, 0.41); less acculturated individuals experienced fewer drinking consequences after CAMI than MI ( $d = 0.34$ , 95% CI: -0.60, -0.08).
<b>Lowe et al., 2012[94]</b>	Compared the Cherokee Talking Circle (CTC) intervention with a standard early intervention program. Cultural modifications included use of cultural experts, bilingual language, a focus on cultural identity, norms and values.	Schools in the Cherokee tribal area, USA	N=179 Cherokee students referred for SU problems.	<u>Outcomes</u> : Substance Problem Scale (SPS). <u>Outcomes</u> : 3 months.	Greater reductions in SPS scores ( $F = 14.64$ , $p < 0.001$ ) were found for the CTC group from 2.71 (95% CI: 1.79, 3.62) to 0.65 (95% CI: 0.17, 1.47) compared to 2.44 (95% CI: 1.50, 3.38) to 3.46 (95% CI: 2.61, 4.31) for usual care.
<b>Paris et al., 2018[89]</b>	Compared culturally adapted CBT plus usual care (CBT4CBT) to usual care alone. In CBT4CBT, participants received standard CBT plus a web-based culturally adapted program that incorporated content on cultural norms and addressed cultural barriers to recovery.	3 Outpatient programs in USA	92 Spanish-speaking adults with SUD	<u>SUD</u> : number of days abstinent from primary substance and all substances. <u>Outcomes</u> : 1-, 3-, 6-months.	Patients in CBT4CBT reported significantly greater reductions in primary substance use over the treatment period compared with usual care alone ( $t(1,718) = -2.64$ ; $p < 0.01$ ). A similar treatment effect was noted at the six-month end-point ( $f(1,2706) = 4.2$ ; $p = 0.04$ ). Days of abstinence were higher for those assigned to CBT4CBT throughout follow-up (83.4 vs 65.6 days; $f(1,73) = 6.41$ ; $p = 0.01$ ).
<b>Santisteban et al., 2011[90]</b>	Compared Culturally Informed and Flexible Family-Based Treatment for Adolescents (CIFTA) to traditional family therapy (TFT). CIFTA integrated cultural content relevant to Hispanic families including ethnic and race identity, discrimination, and acculturation.	Outpatient family therapy	N=28 Hispanic youth with SUD	<u>SUD</u> : substance use. <u>Other</u> : (i) behaviour problems, (ii) positive parenting, (iii) parent involvement at 4 months.	CIFTA participants showed more improvement on SUD outcomes than TFT ( $F(1, 22) = 10.59$ , $p < 0.01$ ). No effects were found for adolescent or parent reports of problem behaviours. Adolescent perceptions of the use of positive parenting practices ( $F(1, 22) = 5.64$ , $p < 0.05$ ) and parent involvement, ( $F(1, 22) = 8.63$ , $p < 0.01$ ) improved more in CIFTA.

Article	Description	Setting	Sample	Outcome	Results
<b>Wong et al., 2020[91]</b>	Evaluated culturally- attuned CBT that involved family and addressed cultural values and norms.	Outpatient service in Hong Kong	77 adults with SUD	ASI outcomes were assessed 4 months post-treatment	Culturally attuned CBT led to greater reductions in drug use ( $\beta = -0.10, p < 0.01$ ) and emotional distress ( $\beta = -0.39, p < 0.01$ ) than standard CBT.
<p><b>Acronyms:</b> AUD: alcohol use disorder; CBT= Cognitive behavioural therapy; FT: family therapy; MET = motivational enhancement t therapy; SUD: substance use disorder.</p> <p><b>Measures:</b> ASI: Addiction Severity index; DDD= drinks per drinking day; HDD: heavy drinking days.</p> <p>OR= Odds ratio, 95% CI= 95% confidence interval</p>					

Appendix 1, Table 5. The relationship between receipt of trauma-informed treatment and patient outcomes ( $n=20$  articles)

Article	Description	Setting	Sample	Outcome	Results
<b>Amaro et al., 2007[97]</b>	Gender-responsive trauma-informed treatment that included the Trauma Recovery and Empowerment program, trauma training and gender-responsive services.	Residential, outpatient, and MOUD programs, USA	N=342 women with SUD and physical or sexual abuse	<u>Substance use:</u> ASI-D and ASI-A. <u>Mental health</u> symptoms with the Global Severity Index (GSI) of the BSI <u>Trauma:</u> Posttraumatic Symptom Scale (PSS). <u>Outcomes:</u> 6,12 months	Significantly higher drug abstinence rates were observed in the trauma-informed care (TIC) group at 6 months (67 vs 38%, $p<0.001$ ) and 12 months (75% vs 40%; $p <0.0001$ ). Participants in TIC reported greater improvements to their mental health; ( $F(2, 556) = 4.55, p = 0.01$ ). Change in severity of PTSD symptoms was significantly different, with greater improvements in TIC ( $F(2, 553) = 4.49, p = 0.01$ ).
<b>Back et al., 2019[111]</b>	Compared an integrated, trauma-focused treatment for PTSD and SUD (COPE) with SUD relapse prevention (RP) treatment.	12-session outpatient treatment, USA	N=81 veterans with current PTSD and SUD	<u>SUD outcomes:</u> (i)ASI-D and ASI-A. <u>PTSD:</u> Symptom and severity with the CAPS. <u>Outcomes:</u> 6 months	COPE led to greater reductions in CAPS ( $p <0.001$ ) and higher rates of PTSD remission (OR = 5.3, 95% CI: 1.8, 8.7, $p < 0.01$ ). Both groups had comparable reductions in SUD severity during treatment. At 6-month follow-up, participants in COPE reported fewer drinks per drinking day than RP (4.5 vs 8.3, $p = 0.05$ ).
<b>Boden et al., 2012, 2014[104, 105]</b>	Compared a trauma-informed treatment (Seeking safety, SS) with SUD-only care	Intensive outpatient	N=98 military veterans with SUD and PTSD symptoms.	<u>Substance use:</u> ASI-D and ASI-A. <u>PTSD:</u> Impact of Event Scale-Revised (IERS) <u>Outcomes:</u> 3, 6 months	For ASI-D, SS was associated with significantly greater improvement over six months ( $p<0.05$ ). SS participants experienced a 2.0 (SD=10.6)-day reduction in drug use days from a baseline of 5.1 (SD=10.1), whereas TAU participants experienced a 0.5 (SD=11.3)-day increase from a baseline of 6.2(SD=13.3). Alcohol and PTSD outcomes did not differ.
<b>Cocozza et al., 2005[98] Outcomes in Morrissey [99, 100]</b>	Compared gender-responsive, trauma-informed (TIC) treatment (comprising women-only services that	SUD outpatient treatment programs, USA	N= 2,006 women with co-occurring SUD and MH concerns and abuse	<u>Substance use:</u> ASI-D and ASI-A. <u>Mental health</u> symptoms with the GSI of the BSI <u>Trauma:</u> PSS scale. <u>Outcomes:</u> 6,12 months	At 6 months, TIC group had greater reductions in drug problem severity ( $p = 0.02$ ), and trauma symptoms ( $p = 0.02$ ). At 12 months, the TIC group had more improvements in mental health ( $\beta=0.18, 95\% CI= 0.09, 0.27$ ) and trauma symptoms ( $\beta=0.16, 95\% CI: 0.07,0.26$ ) than usual care. Improvements to mental health ( $p<0.05$ ), alcohol ( $p<0.01$ ), and drug problem severity ( $p<0.01$ ) at 6 months and mental

Article	Description	Setting	Sample	Outcome	Results
	offered MH, SUD and trauma counselling) with standard SUD care.				health ( $p<0.01$ ) and trauma symptoms ( $p<0.001$ ) at 12 months were significantly greater at TIC sites that offered highly integrated SUD, mental health, and trauma counselling than sites where counselling was less integrated. At both time points, women with more severe SUD, MH and PTSS symptoms benefited more from TIC than those with less severe presentations.
<b>Coffey et al., 2016[109]</b>	Evaluated an integrated, trauma-focused treatment for PTSD and SUD (modified prolonged exposure mPE with or without MET).	Residential SUD treatment	N=126 adults with PTSD and AUD	<u>AUD outcomes:</u> PDA. <u>PTSD and mental health:</u> The IERS measured trauma symptoms. The BDI-II assessed depression. <u>Outcomes:</u> 3, 6 months	Reductions of trauma symptoms at 3 and 6 months were greater in the trauma-focused treatments than in usual care (mPE vs usual care: $p = 0.02$ ; mPE+MET vs usual care: $p = 0.03$ ; $\chi^2 (2, N=126) = 8.93, p = 0.01$ ). Outcomes did not differ between mPE and mPE plus MET. AUD and depression outcomes did not differ between the three conditions at either time point.
<b>Foa et al., 2013[95]</b>	Compared prolonged exposure (PE) plus naltrexone (MAUD)] with (i) PE plus placebo, (ii) MAUD plus supportive alcohol counselling, and (iii) supportive alcohol counselling plus placebo.	Hospital outpatient program, USA	N= 165 adults with PTSD and alcohol dependence	<u>AUD outcomes:</u> <u>Frequency:</u> Percentage days drinking (PDD) <u>PTSD:</u> PTSD Symptom Severity Interview (PSSI). <u>Outcomes:</u> post-treatment (week 24), 6 month follow up.	At 6 month follow-up, there was a significant treatment $\times$ time interaction ( $p = 0.01$ ) such that patients receiving PE and naltrexone had a nonsignificant change in PDD (1.56%, 95% CI: $-0.9\%$ , $3.8\%$ ) and all other groups had a significant 15.9% increase in PDD (95% CI, $8.8\%$ , $23.1\%$ ). At 6 months, 70.0% of participants in PE plus MAUD achieved a low level of PTSD severity ( $\leq 10$ on the PSS-I) vs 55.0% of participants in PE plus placebo, 43.9% of the supportive counselling plus MAUD, and 37.2% of the supportive counselling plus placebo ( $p = 0.02$ ).
<b>Gatz et al., 2007[101]</b>	Compared gender-responsive trauma-informed care sites (Seeking Safety)	SUD outpatient program	N= 402 women with SUD, MH, and abuse	<u>Substance use:</u> ASI-D and ASI-A. <u>Mental health</u> symptoms with the GSI of the BSI <u>Trauma:</u> PSS scale.	SUD outcomes did not differ between the groups. Women in TIC sites had greater PSS score reductions than those in the comparison sites ( $F (1, 311) = 3.99, p < 0.01$ ).



Article	Description	Setting	Sample	Outcome	Results
	with matched comparison sites.			<u>Outcomes:</u> 12 months	PSS scores reduced from 20.4 (10.2) to 13.8 (11.1) for the TIC group and from 19.1 (11.8) to 15.1 (12.9) in the comparison group.
<b>Hien et al., 2004[106]</b>	Compared Seeking Safety, a trauma-informed treatment for SUD with an SUD-focused treatment (RP).	Outpatient program	N=107 women with SUD and PTSD	<u>SUD outcomes:</u> Mean number of days, clinical global impression score. <u>PTSD:</u> The CAPS, IERS <u>Outcomes:</u> 6, 9 months	SS and RP performed equally well, with participants in both SS and RP showing significant reductions in substance use, PTSD, and psychiatric symptoms. Both groups sustained these improvements at 6-month and 9-month follow-ups.
<b>Hien et al., 2009[107]</b>	Compared Seeking Safety in addition to TAU with TAU enhanced with a women's health education intervention	SUD outpatient program	N= 353 women with SUD and PTSD	<u>SUD outcomes:</u> Mean number of days, clinical global impression score, toxicology. <u>PTSD:</u> The CAPS, PSSI <u>Outcomes:</u> 6, 12 months	PTSD and SUD outcomes were not significantly different between the treatment groups, suggesting that the addition of SS to TAU does not yield incremental benefits to women's PTSD or SU outcomes.
<b>Messina et al., 2010 *outcomes also in Saxena [102]</b>	Compared a gender-responsive, trauma-informed pre-parole treatment (comprising a women-only residential program and trauma-focused treatment) with a usual prison-based therapeutic program.	Prison-based treatment for women, USA	N= 115 incarcerated women with SUD, USA	<u>Substance use:</u> ASI composite score <u>Mental health:</u> PSS, ASI psychiatric score <u>Completion of residential aftercare</u> <u>Return to prison</u> <u>Outcomes:</u> 6, 12 months post-parole	<u>6-month outcomes:</u> Participants in the trauma-informed group had significantly lower ASI drug use score (F (1,115)= 4.61, $p<0.01$ ), lower rates of return to prison ( $\beta= -1.11$ , $p <0.05$ ), and higher rates of residential aftercare completion ( $\beta= 1.53$ , $p<0.05$ ) than women in usual care. <u>12-month outcomes:</u> There were no group differences, however women with more trauma had significantly lower odds of depression (OR=0.29,95% CI: 0.10, 0.98) and substance use (IRR =0.52, 95% CI: 0.28, 0.98) if they received trauma-informed care rather than usual treatment.
<b>Mills et al., 2012[110]</b>	Compared an integrated treatment for PTSD and SUD (COPE) with	Outpatient programs, Australia	N=103 adults with PTSD and substance dependence	<u>PTSD:</u> Symptom severity with the CAPS. <u>SUD:</u> (i) number of diagnostic criteria met on	The integrated treatment group demonstrated a significantly greater reduction in PTSD symptom severity (mean difference: -16.09, 95% CI: -29.00, -3.19) than usual care. Change in severity of dependence symptoms was

Article	Description	Setting	Sample	Outcome	Results
	usual SUD treatment.			the CIDI. (ii) SU frequency Mental Health: Depression (BDI-II) and anxiety (BAI) <u>Outcomes:</u> 9 months	similar for both treatments (0.43 vs 0.52; IRR= 0.85, 95% CI: 0.60, 1.21). No between-group differences were found for substance use frequency, depression or anxiety outcomes.
<b>Ruglass et al., 2017[112]</b>	Compared an integrated trauma-focused treatment for PTSD and SUD (COPE) with (i) standard RP for SUD and (ii) a monitoring control	12-week outpatient treatment, USA	N=110 adults with PTSD (full or subthreshold) and SUD	<u>SUD outcomes:</u> (i) ASI-D and ASI-A. <u>PTSD:</u> CAPS and modified PSSI. <u>Outcomes:</u> end-of-treatment and 3 months	At end-of-treatment, COPE and RP had greater reductions in PSSI relative to the control (COPE-MCG = -34.06; 95% CI: -51.36, -16.75; $p < 0.001$ ), (RP-MCG = -22.58; 95% CI: -36.92, -8.24; $p = 0.002$ ). For the full sample, COPE and RP had similar PTSD outcomes ( $p = 0.16$ ). However, COPE outperformed RP in the subsample with full vs subthreshold PTSD (-21.32; 95% CI: -42.37, -0.28; $p = 0.047$ ). Relative to COPE, RP showed significantly more improvement in SUD (-1.10; 95% CI: -2.18, -0.02; $p = 0.047$ ). At 3 months, outcomes for COPE and RP did not differ.
<b>Sacks et al., 2008[103]</b>	Compared provision of trauma-informed SUD care with standard SUD treatment	Outpatient treatment	N=240 patients with SUD and MH symptoms	<u>Mental Health:</u> GAIN emotion scale, BSI, BDI-II (depression). <u>SUD:</u> GAIN SPS scale <u>Outcomes:</u> 12 months	No differences on substance use outcomes. Participants assigned to the trauma-informed condition had significantly lower scores on the GAIN emotional distress ( $\beta = -0.07$ , $p < 0.05$ ), BSI ( $\beta = -3.75$ , $p < 0.01$ ) and BDI ( $\beta = -0.33$ , $p < 0.0001$ ) scales compared to usual care.
<b>Sannibale et al., 2013[113]</b>	Compared integrated CBT (ICBT, trauma-focused treatment for PTSD and AUD) with standard CBT for AUD enhanced with alcohol-focused supportive counselling (AS)	Outpatient clinics, Australia	N=62 adults with current PTSD and AUD	<u>AUD outcomes:</u> alcohol consumption and problems (APQ), alcohol dependence. <u>PTSD:</u> symptom severity via the CAPS <u>Outcomes:</u> 5, 9 months	The rate of change in CAPS severity scores was greater among ICBT participants who received $\geq 1$ session of exposure therapy than AS participants (ICBT=60%, AS=39%, OR: 2.31, 95% CI 1.06, 5.01). AS participants exhibited larger reductions in alcohol consumption, dependence and problems than ICBT participants ( $p < 0.05$ ) but did receive more alcohol-focused treatment.

Article	Description	Setting	Sample	Outcome	Results
<b>Schafer et al., 2019[108]</b>	Compared Seeking Safety plus TAU with RP plus TAU and TAU alone	Outpatient clinics, Germany	N=343 women with PTSD and SUD	<u>Substance use:</u> ASI-D and ASI-A. <u>Mental health:</u> BDI, <u>Trauma:</u> PSSI. <u>Outcomes:</u> 3,6 months	Participants only attended 6 sessions of the SS and RP, on average. The groups showed comparable decreases in PTSD severity. SS plus TAU showed superior efficacy to TAU alone on the mental health outcomes ( $p= 0.004$ ). RP plus TAU was more effective than TAU alone on the substance use outcomes ( $p=0.005$ ). SS and RP did not differ on any outcomes.
<b>Van Dam et al., 2013[114]</b>	Effects of trauma-focused treatment (structured writing for PTSD) integrated with usual SUD treatment.	CBT-based intensive inpatient program, Netherlands	N=34 adults with SUD and PTSD	<u>SUD:</u> abstinence rates, diagnoses <u>PTSD:</u> symptom severity and diagnoses via CAPS <u>Outcomes:</u> 3 months post-treatment	The proportion of remitted PTSD diagnoses was significantly greater in the intervention group at 3 months ( $\chi^2 (1, 19)=8.2, p=0.004$ ). The number of SUD diagnoses decreased in the trauma-informed intervention but not in TAU; $\chi^2 (1, N = 19) = 14.4, p < 0.001$ ). Both treatments had similar abstinence rates.
<p><b>Acronyms:</b> AUD: alcohol use disorder; CBT= Cognitive behavioural therapy; COPE: Concurrent treatment for PTSD and SUD using Prolonged Exposure; MET = motivational enhancement therapy; MAUD= Medication treatment for AUD; MH: mental health; RP: Relapse prevention; SS: seeking safety; SUD: substance use disorder; TAU: treatment as usual; TIC: trauma-informed care</p> <p><b>Measures:</b> ASI: Addiction Severity index; BDI: Beck depression inventory; BSI: Brief Psychiatric symptom inventory; CAP = Clinician administered PTSD scale DDD= drinks per drinking day; HDD: heavy drinking days; PDA: percentage days abstinent (frequency) OR= Odds ratio, 95% CI= 95% confidence interval</p>					

**Appendix 1, Table 6. The relationship between receipt of individualised and comprehensive services and patient outcomes (n=30 articles)**

Article	Quality indicator	Setting	Sample	Outcome	Results
<b>Individualised and personalised care (n= 12 articles)</b>					
<b>Andersson et al., 2023[115]</b>	Individualised care provided by substance use navigators who help patients overcome personal barriers to treatment	Emergency departments (ED), USA	N=1328 patients presenting to EDs	<u>Treatment uptake</u> outcomes: Engagement in SUD treatment within 30 days after ED discharge.	Overall, 50.4% of encounters with the SUN interventions were engaged in treatment within 30 days of ED discharge, vs 15.9% without the intervention (difference in proportions: 34.5%, 95% CI: 25.3%, 43.8%).  The SUN interventions had higher rates of medications prescribed for addiction treatment at discharge compared to those without the intervention (47.1% vs. 20.7%, difference in proportions: 26.3%, 95% CI 17.1%, 35.6%)
<b>Bogenschulz et al., 2022[116]</b>	Individualised strengths-based case management (SBCM) to link patients to post-ED supports.	Hospital-based ED and trauma centre, USA	N=297 adults with untreated OUD	<u>SUD treatment</u> Initiation. <u>Opiate use</u> : A successful outcome was a 3- month negative urine drug screen and no more than 2 days of use. <u>Quality of life</u> : WHO-Qol-Bref	SBCM had no effects on the probability of treatment initiation or successful OUD outcomes.  Across the 6-month follow-up period ( $F(1,297.301) = 4.163; p = 0.042$ ), there was a treatment effect on days of opioid use with the SBCM group reporting fewer opioid use days ( $M = 10.8$ ) than the screening and referral group ( $M = 13.4$ ).
<b>Byrne et al., 2020[117]</b>	Individualised support via peer recovery coach to link to post-hospital SUD services	Hospital, USA	N=98 hospitalised patients with SUD	<u>Outcomes</u> : Engagement in recovery support <u>Substance use</u> : number of SU days in the past month <u>Self-reported health</u> , via the SF-12.	Rates of engagement were significantly higher in the intervention (84%, 95% CI: 78%, 91%) vs the control (34%, 95% CI: 25 %, 44%).  By six months, 80% of intervention participants were still engaged in recovery services vs. 24% in the control (log OR = 28.59, 95 % CI:17.7, 40.1, $p < 0.001$ ).  No significant differences on other outcomes.
<b>Cupp et al., 2022[118]</b>	Individualised support provided by a peer recovery coach who helped patients link to	Hospital, USA	N=193 hospitalised patients with SUD	<u>Outcomes</u> : number and proportion of patients with an acute care encounter 6 months after initiation, compared with preceding 6 months.	The number and proportion of patients with <u>any</u> acute care encounters did not differ between the conditions. There was a significant decrease in mental/behavioural ED visits in favour of the intervention (intervention: 17 to 10 visits vs control: 13 to 16, $p = 0.02$ ).

Article	Quality indicator	Setting	Sample	Outcome	Results
	post-hospital SUD treatment services.				
<b>Edmonds et al., 2022[49]</b>	Individualised support to manage treatment barriers and coordinate care so patients can achieve their personal treatment goals	94 primary care practices, USA	N=568,909 of which 144,511 had past year AUD diagnosis	<u>Outcomes:</u> Receipt of brief interventions for patients with unhealthy alcohol use; (ii) receipt of speciality AOD treatment and medications for patients with AUD.	Patients with unhealthy alcohol use served by clinics highly ranked on self-management support had higher probabilities (77.2%, 95% CI: 74.9%, 79.4%) of receiving a brief intervention than their peers in the lowest-ranked clinics (73.0%, 95% CI: 70.0% to 76.0%).  For care coordination, probabilities of receiving a BI for patients in the lowest ranked clinics were 72.9% (95% CI: 67.8%, 75.9%) compared to 79.4% (95% CI: 76.8%, 81.9%) in the highest-ranked clinics.
<b>Englander et al., 2019[119]</b>	The IMPACT addictions team provided personalised post-hospital pathways to SUD care, tailored to personal goals, needs, and preferences.	Hospitals, USA	N=624 hospitalised patients with an SUD	Post-discharge SUD treatment engagement defined using the HEDIS measure	IMPACT patients had greater odds of engaging in SUD treatment post- discharge than controls (38.9% vs. 23.3%, $p < 0.01$ ; aOR 2.15, 95% CI: 1.29, 3.58). Analysis limiting the sample to those without pre-hospital SUD treatment showed similar results (aOR 2.63, 95% CI: 1.46, 4.72).
<b>Farabee et al., 2020[120]</b>	Patient navigation services to support post-incarceration access to SUD care in addition to MOUD	Post-incarceration SUD services	N=135 adults on parole with OUD	<u>SUD outcomes:</u> opioid use. <u>Other:</u> MOUD adherence, recidivism.	There was a low participation rate for the navigation condition: 64% had no post-release visits. At 12 months, the proportion of participants reporting opioid use did not differ significantly between the MOUD only groups (23%) and the MOUD plus navigator group (18%).

Article	Quality indicator	Setting	Sample	Outcome	Results
<b>Gryzynski et al., 2021[121]</b>	Individualised, support to navigate access to post-hospital SUD services	Hospital	N=404 hospitalised patients with SUD	<u>Acute care outcomes:</u> Rates of hospital inpatient readmission, ED visits <u>SUD care engagement:</u> access to and uptake of community-based SUD services, <u>Outcomes:</u> over 12 months.	Compared to TAU, patients in Navstar had fewer inpatient admissions (HR: 0.74, 95% CI: 0.58, 0.96, $p = 0.020$ ) and ED visits (HR: 0.66, 95% CI: 0.49, 0.89, $p = 0.006$ ). Compared to TAU, patients in NavSTAR were more likely to enter SUD treatment after discharge (Hazard ratio = 1.43, 95% CI: 1.07, 1.91, $p = 0.014$ ) and enter SUD treatment within 3 months of discharge (50.3% vs 35.3%, $p = 0.013$ ).
<b>Magidson et al., 2021[122]</b>	Individualised, peer recovery coach (PRC) program	Primary care practices, USA	N =1171 patients who had a PRC encounter	<u>Acute care outcomes:</u> Rates of hospital inpatient readmission, ED visits <u>Health care use:</u> rates of outpatient and primary care encounters for the six months pre- and post-initiation of the PRC program.	The percent of patients hospitalized decreased from 40.7% in the pre- to 22.6% in the post-PRC period (rate ratio: 0.56, 95% CI: 0.50, 0.62; $p < 0.001$ ). The total number of hospitalizations decreased by 46.1% ( $p < 0.001$ ). The percent of patients with an ED visit decreased by 9.2% (rate ratio: 0.91, 95% CI: 0.84, 0.98; $p = 0.01$ ). The number of mental health-related outpatient visits increased by 58%, and the number of primary care visits increased by 77% ( $p < 0.001$ )
<b>Serota et al., 2022[123]</b>	Integrated care for infections and SUD tailored to individual needs (SIRI)	Hospitals, USA	N=624 adults who injected drugs	<u>Health service use:</u> hospital readmission or death within 90 days of discharge. <u>Secondary outcomes,</u> initiation of MOUD,	In adjusted models, SIRI patients had a 45% reduced risk (aRR: 0.55, 95% CI: 0.32, 0.95) of being readmitted or dying compared to the control condition. SIRI patients were significantly more likely to be prescribed MOUD on discharge (98.3% vs 13.2%, $p < 0.001$ ).
<b>Wakeman et al., 2022[124]</b>	Patient navigation services based on strengths-based case management with personalised support to link to SUD treatment.	Hospitals, USA	N=395 hospitalised adults with SUD	<u>SUD outcome:</u> Self-reported number of SU days at 30-day and 60-day follow-up; past 30-day history of overdose <u>Services:</u> mutual help attendance	Outcomes did not differ between the groups. Engagement with the navigator intervention was poor. In exploratory analyses, participants who received all four navigator calls had a greater decrease in days of alcohol or drug use compared to controls (8.6 days vs 4.2 days; difference= 4.4 days, 95% CI: 2.0, 6.9, $p < 0.001$ ).

Article	Quality indicator	Setting	Sample	Outcome	Results
<b>Whiteside et al., 2022[125]</b>	ED-LINC involved person-centred review of medication options; MH and SUD care plan development based on personal needs and preferences, and navigation services.	Emergency department, USA	N=395 adults with OUD	<u>SUD</u> : Self-reported days of illicit opioid use in the last 30 days <u>Outcomes</u> : 1, 3, 6 months.	At the end of the 3-month intervention, patients randomized to ED-LINC had on average 3.5 fewer days of heroin use compared to patients randomized to the control group. This difference was not statistically significant (IRR 0.46, 95% CI 0.13, 1.58, $p = 0.22$ ). There were no group differences at 6-month follow-up.
<b>Comprehensive integrated treatment for SUD and co-occurring health conditions (n=18)</b>					
<b>Bachireddy et al., 2014[139]</b>	Integration of HIV and SUD care for people who inject drugs	Integrated and co-located (ICL); non-co-located (NCL); harm reduction and outreach (HRO) sites, Ukraine	N=296 adults with HIV and OUD	<u>HIV</u> : receipt of Antiretroviral therapy (ART), receipt of ART when $CD4 \leq 200$ . <u>SUD</u> : receipt of WHO-recommended OST dosing.	Significantly more ICL participants (49.5%) were prescribed ART compared to NCL (19.2%) or HRO (26.3%) participants ( $p < 0.001$ ). Nearly all (93.8%) ICL participants with $CD4 \leq 200$ received ART compared with significantly fewer NCL (62.5%) and HRO (54.6%) participants ( $p < 0.001$ ). The ICL group was most likely to receive recommended OST dosing (57.3% versus 41.4% in NCL, $p < 0.05$ ).
<b>Barrowclough et al., 2001[126]</b>	Integrated SUD and MH treatment for patients with psychoses	Community-based mental health services, UK	N=36 patient-carer dyads	<u>SUD outcomes</u> : (i) ASI-D and ASI-A scores, (ii) frequency and quantity of substance use. <u>Mental health</u> : PANSS assessed symptoms. Functioning assessed with the GAF. <u>Outcomes</u> : 9, 12 months	The integrated group had better improvements in functioning (GAF) than usual care group at 9 months ( $F(1, 30)=13.11, p<0.001$ ) and 12 months ( $F(1, 30)=15.06, p=0.001$ ). PDA from all substances was greater for the integrated care group compared to usual care ( $U=86.5, p<0.03$ ). Mental health outcomes did not differ between the groups.
<b>Barrowclough et al., 2010[127]</b>	Integrated SUD and MH treatment for patients with psychoses	Mental health outpatient services, UK	N=327 adults with psychoses and SUD	<u>Health use</u> : Admission to hospital for a reason related to psychosis or death from any cause, frequency of hospital admissions and relapses.	Compared with controls, patients in the integrated therapy significantly increased their motivation to reduce substances at 12 months (aOR= 2.05, 95% CI 1.26, 3.31; $p=0.004$ ), although this effect was not seen at 24 months. The integrated therapy had a statistically significant effect on quantity of substance used

Article	Quality indicator	Setting	Sample	Outcome	Results
				<p><u>Substance use</u>: Motivation to change, frequency and quantity of substance use.</p> <p><u>Mental health</u>: PANSS, GAF.</p>	<p>(aOR=1.50, 95% CI 1.08, 2.09; <math>p=0.016</math>) – this was maintained at 24 months.</p> <p>No other differences were observed.</p>
<b>Brooner et al., 2013[128]</b>	Integrated and co-located mental health treatment and MOUD vs off-site mental health services	MOUD programs, USA	N=318 adults with dual diagnoses	<p><u>SUD outcomes</u>: Toxicology screen</p> <p><u>Mental health</u>: Global Severity Index (GSI).</p> <p><u>Outcomes</u>: 12-months</p>	<p>On-site participants were more likely to initiate psychiatric care (96.9% vs. 79.5%, <math>p &lt; 0.001</math>), remain in treatment longer (195.9 vs. 101.9 days; <math>p &lt; 0.001</math>), attend more psychiatrist appointments (12.9 vs. 2.7; <math>p &lt; 0.001</math>), and have more reductions in GSI scores (4.2 vs. 1.7; <math>p = 0.003</math>) than off-site participants. No differences were observed for drug use.</p>
<b>Craig et al., 2008[129]</b>	Integrated care: MH and SUD case management	79 community case managers, UK	N= 238 patients with SUD and MH	<p><u>Mental Health</u>: BPRS.</p> <p><u>Substance Use</u>: Use and problems in past month via Maudsley Addiction Profile.</p> <p><u>Quality of life</u>: The Manchester Short Assessment of Quality of Life.</p> <p><u>Outcomes</u>: 18-months</p>	<p>Patients in the integrated care condition had less severity of psychiatric symptoms than those in usual care (adjusted mean difference = -4.20, 95% CI: -7.30, -1.20, <math>p &lt; 0.001</math>).</p> <p>Patients in the integrated condition had significantly less unmet need for care than those in the usual care condition (adjusted difference: -0.84, 95% CI: -1.60, -0.40, <math>p = 0.040</math>).</p> <p>No other differences were noted.</p>
<b>DiNitto et al., 2002[130]</b>	Integrated psychoeducation groups for dual diagnoses	28-day Residential SUD program, USA	N=97 adults with SUD and MH	<p><u>SUD outcomes</u>: use of alcohol or other drugs post-treatment; ASI-A, ASI-D problem severity scale</p> <p><u>Mental Health</u>: ASI Psychiatric severity scale.</p>	<p>No statistically significant differences were observed between the Integrated and Usual Care Groups on any of the outcomes.</p>
<b>Edelman et al., 2019[140]</b>	Integration of stepped alcohol treatment (ISAT) into infectious disease clinics	Infectious disease clinics, USA	N=95 adults with HIV, liver disease with unhealthy alcohol use	<p><u>AUD</u>: Past 30-day alcohol abstinence; HDD; DDD, PDA.</p> <p><u>Infectious disease biomarkers</u>: VACS Index score, HIV viral load; liver markers</p> <p><u>Outcomes</u>: 6 months.</p>	<p>No statistically significant differences were observed between the groups on any of the outcomes.</p> <p>Notably, this trial failed to recruit the required sample size and was underpowered to detect an intervention effect.</p>



Article	Quality indicator	Setting	Sample	Outcome	Results
<b>Falade-Nwulia et al., 2023[141]</b>	Integrated low-threshold SUD care into infectious disease service	Infectious disease clinic, USA	N=137 adults with HIV/HCV and SUD	<u>SUD outcomes</u> : Proportion of patients reporting any drug use <u>Health service utilization</u> : rates of ED visits, hospitalizations.	Past month drug use reduced from baseline (52.0%) to 6-month follow-up (32.3%, $p<0.001$ ). Decreases were noted for emergency department visits (23.0% to 8.7%; $p=0.002$ ), and inpatient hospitalizations (14.5% to 6.5%; $p=0.025$ ).
<b>Hides et al., 2011[131]</b>	Integrated treatment for SUD and depression	2 youth outpatient SUD services, Australia	N=88 youth with SUD and co-occurring depression	<u>Depression</u> : Centre for epidemiological studies on depression scale (CES-D). <u>Substance use</u> : DSM criteria for SUD, quantity and frequency of substance use.	Participants in the integrated care group had greater reductions in CES-D scores at three months compared to usual care ( $p=0.027$ ), but there were no group differences at 6 months. The proportion of participants with SUD diagnoses was significantly lower in the integrated condition compared to usual care at 3 and 6 months ( $p = 0.003$ and $p = 0.037$ ). Participants in the integrated condition demonstrated greater reductions in the frequency ( $p = 0.046$ ) and quantity of cannabis use ( $p = 0.033$ ) at 3 but not 6 months.
<b>Kikkert et al., 2018[132]</b>	Integrated treatment for MH and SUD	6 outpatient teams, Netherlands	N=154 adults with SUD and serious mental illness	<u>SUD</u> : (i) Number of alcohol or other drug use days. <u>Mental health</u> : The BPRS, the GAF. <u>Outcomes</u> : 12 months	After implementation of the integrated treatment approach, there was a decline in the total number of days in which patients used substances ( $p < 0.01$ ). No differences on secondary mental health outcomes were noted.
<b>Korthuis et al., 2010[142]</b>	Integrated MOUD delivery into HIV primary care services	HIV services, USA	N=29 people with HIV and OUD	Engagement in care, SUD recovery, harm reduction	Explored patients' reasons for preferring buprenorphine delivered by their HIV care provider over MOUD clinics. Participants perceived the primary care settings to offer a more person-centred approach. They felt primary care practices were more convenient to access, had less stigma, and prioritised harm reduction compared to MOUD clinics. They felt this supported sustained engagement in care.

Article	Quality indicator	Setting	Sample	Outcome	Results
<b>Krans et al., 2018[143]</b>	Integrated women-centred sexual and reproductive health (SRH) services (including pre- and post-partum care) with MOUD	OUD treatment program, USA	N=248 pregnant women receiving MOUD	<u>SRH outcomes:</u> Engagement in prenatal and postpartum care, breastfeeding, and family planning <u>SUD outcome:</u> receipt of pregnancy-specific buprenorphine dosing.	Patients receiving integrated care were significantly more likely to have a higher buprenorphine dose at the time of delivery (16.0 mg vs. 14.1 mg; $p=0.02$ ). They were also significantly more likely to attend their postpartum visit (67.9% vs. 52.6%; $p=0.05$ ) and receive a long-acting reversible contraceptive (23.9% vs. 13.0%; $p=0.03$ ) within 6 weeks post-delivery compared to patients who received standard OUD treatment.
<b>Morley et al., 2016[133]</b>	Integrated dual diagnosis treatment (MH and SUD)	Hospital outpatient program, Australia	N=86 patients with AUD and anxiety/ mood disorders	<u>SUD:</u> Time to consumption of any alcohol; Time to relapse; PDA, HDD <u>Mental Health:</u> improvement in symptoms (DASS-21) <u>Outcomes:</u> 12-week follow up	The IDDT group had a longer time to consumption and relapse compared to the usual care group ( $\chi^2 = 6.42$ , $p < 0.05$ ; $\chi^2 = 10.73$ , $p < 0.01$ respectively). For PDA, there was a significant treatment $\times$ time interaction effect ( $F(1,35) = 5.44$ , $p < 0.05$ ) from baseline to follow-up, with the IDDT group having a higher PDA than the usual care group.
<b>Morin et al., 2020[136]</b>	Integration of MH services into MOUD	MOUD, Canada	N= 48,676 first time MOUD users with MH concerns	<u>Health service outcomes:</u> all-cause mortality	Mental health services from a psychiatrist or a primary care physician were associated with decreased likelihood of all-cause mortality (OR = 0.4, 95% CI 0.4–0.6; OR = 0.4, 95% CI 0.3–0.5) as were services from a psychiatrist and a primary care physician concurrently while in OAT (OR = 0.5, 95% CI 0.5–0.6).
<b>Samokhvalov et al., 2018[134]</b>	Integrated SUD and mental health (MH) care versus siloed care	Outpatient services, Canada	N=237 patients with SUD and MH concerns	<u>Alcohol outcome:</u> Reduction in alcohol consumption (number of standard drinks per drinking day)	Receiving integrated treatment was associated with greater reduction in drinking in adjusted models (beta=27.23, 95% CI 12.47, 41.99), $p < 0.001$ ).
<b>Wakeman et al., 2019[138]</b>	Integrated SUD care into primary medical services compared to referral to SUD services.	Primary care practices, USA	N= 2706 adult primary care patients	<u>Acute care outcomes:</u> Rates of hospital inpatient readmission, ED visits, number of hospital days for the 9 months pre and post-program initiation.	Compared to usual care, there were fewer inpatient days among the intervention group (mean difference: 7.3 days per 100 patients, $p = 0.03$ ) and fewer ED visits (36.2 vs. 42.9 per 100 patients, $p = 0.005$ ). Addiction pharmacotherapy use was higher among the intervention group ( $p < 0.001$ ).

Article	Quality indicator	Setting	Sample	Outcome	Results
<b>Watkins et al., 2012[135]</b>	Compared integration of CBT for depression into SUD residential care with TAU for SUD and referral to external agencies for MH care	Residential SUD programs, USA	N=135 patients with SUD and depression	SUD and mental health outcomes at 3- and 6- months post-enrolment	<u>Mental health</u> : Greater improvement in depression and mental health symptom severity for patients receiving integrated care at 3 and 6 months (all p's <0.05). Proportion of patients with minimal mental health symptoms was greater in integrated care at 6 months (65% vs 41%, p<0.05). <u>SUD</u> : % of substance use days was 14% lower in integrated condition (p<0.05)
<b>Weisner et al., 2001[137]</b>	Compared integration of primary medical care into SUD treatment versus siloed medical and SUD care	Outpatient programs, USA	N= 592 adults with SUD	SUD outcomes at 6 months- rates of alcohol and drug abstinence	For full sample, abstinence rates did not differ between the groups. For the subsample with SUD-related medical conditions, patients were more likely to be abstinent in the integrated model (69% vs 55%, aOR= 1.90, 95% CI: 1.22, 2.97; p= 0.006)

**Acronyms:** ART: antiretroviral treatment for HIV, AUD: alcohol use disorder; CBT= Cognitive behavioural therapy; ED: emergency department; HCV: hepatitis C; MOUD: medication treatment for OUD, MAUD= Medication treatment for AUD; MH: mental health; OUD: opiate use disorder; PRC: peer recovery coach; SUD: substance use disorder; TAU: treatment as usual

**Measures:** ASI: Addiction Severity index; BDI: Beck depression inventory; BSI: Brief Psychiatric symptom inventory; DDD= drinks per drinking day; GAF: global assessment of functioning HDD: heavy drinking days; PANSS: Positive and Negative Symptom screener; PDA: percentage days abstinent (frequency)

**HR: hazard ratio; OR= Odds ratio, 95% CI= 95% confidence interval; RR: risk ratio**