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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 quality of specialist treatment for substance use disorders and patient outcomes: A scoping review of the literature****

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 scoping review to systematically map the available literature on the quality of substance use disorders treatment and patient outcomes and is made available as a Conference Room Paper to the Commission for its information at its sixty-sixth session.

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The relationship between quality of specialist treatment for substance use disorders and patient outcomes: A scoping review of the literature

Discussion Paper

This document has not been formally edited

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Abbreviations

| | |
|--------|---|
| COPEs | Community-Oriented Program Environment |
| DALY | Disability Adjusted Life Years |
| ECHO | Experiences of Care and Health Outcomes |
| EMCDDA | European Monitoring Centre for Drugs and Drug Addiction |
| HEDIS | (US) Healthcare Effectiveness Data Information Set |
| LILACS | Latin American and Caribbean Health Sciences Literature |
| LMIC | Low- and Middle-income Country |
| MAT | Medication-Assisted Treatment |
| MeSH | Medical Subject Headings |
| OUD | Opioid Use Disorder |
| PSQH | Patient Safety and Quality Health Care |
| SAATSA | South African Addiction Treatment Services Assessment |
| SDGs | Sustainable Development Goals |
| SUD | Substance Use Disorder |
| UNODC | United Nations Office on Drugs and Crime |
| WHO | World Health Organization |

Background

Substance use disorders (SUDs) affect millions of people, with untreated SUDs contributing significantly to the global burden of disease.^{1,2} In 2016, 4.2% (95% UI: 3.7-4.6) and 1.3% (95% UI: 1.2-1.5) of all disability adjusted life years (DALY) globally were attributable to alcohol and drug use respectively.¹ Although high, these global estimates do not capture the societal impacts of untreated SUDs. These include substantial costs to the healthcare system, the economy, and the criminal justice system.³⁻⁵ In response, calls for a public health approach to reducing the current burden associated with untreated SUDs and preventing future health and societal impacts have intensified.⁶⁻⁷ Improving access to evidence-based SUD treatment and care interventions is a critical component of such an approach.⁸ Accordingly, the United Nations' Sustainable Development Goals (SDGs) for 2030 includes "Strengthen(ing) the prevention and treatment of SUDs" as a priority health target.⁹

Despite the high prevalence of SUDs globally,¹⁰ treatment coverage for these disorders remains low with only a minority of individuals accessing a minimally adequate amount of treatment.¹¹ Overall, only 7.1% of people with past-year SUDs are estimated to receive a minimally adequate amount of treatment, with treatment coverage being considerably poorer in low/ lower-middle income countries (1.0%) compared to upper-middle (4.3%) and high-income countries (10.3%).¹¹ The structural and systemic factors that contribute to this treatment gap include treatment infrastructure constraints, workforce shortages and constraints, and geographic access barriers.¹²⁻¹⁴ In response, several countries have invested in workforce development initiatives and in scaling up pharmacotherapy and other evidence-based interventions for SUD, largely focused on opioid use disorders.¹⁵⁻¹⁷ However, the SUD treatment gap remains substantial, worsening in some countries during the COVID-19 pandemic.¹⁸⁻²⁰

Given scarce treatment resources, SUD treatment systems must strive to optimise the outcomes of people who access treatment by providing high quality services.²¹⁻²³ According to the seminal US Institute of Medicine report, "*Crossing the Quality Chasm*", quality care involves the provision of (i) safe, (ii) effective, (iii) patient-centred, (iv) timely, (v) efficient, (vi) and equitable services.²⁴ Yet there are major discrepancies between the SUD treatment people should receive and the extent to which the treatment

they receive meets care standards.^{17,20,25-28} As a result, funders, treatment advocates and patients are demanding greater accountability among SUD treatment services for the quality of care they provide.²⁶⁻²⁸

In response to these calls-to-action, there has been considerable growth in the development and use of quality assurance frameworks and measures for monitoring the performance of SUD treatment facilities and the broader treatment system.²⁹⁻³³ According to Donabedian, healthcare structure, treatment processes (representing quality of care) and patient outcomes are important elements of quality, with upstream structures and processes thought to influence downstream outcomes.³⁴⁻³⁵ As treatment outcome monitoring is both challenging and costly, the SUD treatment system has prioritised measuring process indicators of treatment quality.²⁹⁻³⁰ The assumption is that higher quality of care will lead to better patient outcomes, and that enhancing performance on these quality measures will further improve outcomes.²⁹⁻³¹ Some researchers have challenged this assumption, citing lack of evidence for the relationship between these process indicators of SUD treatment quality and patient outcomes.³⁰

A better understanding of the relationship between quality of SUD treatment and patient outcomes is needed so that it can be demonstrate to policy makers, service planners and treatment providers that quality of care matters for patient outcomes, and that they will be convinced that investing time and energy in efforts to assure and improve the quality of their services is likely to yield benefits to their patients and the broader community. Yet there are no studies synthesising the evidence on the relationship between diverse aspects of SUD treatment quality and patient outcomes. One scoping review of performance measurement for addiction treatment systems was identified, but this did not report on patient outcomes.³¹ We found three other relevant reviews - these were limited in scope and geographic coverage.³⁶⁻³⁸ Two reviews focused on a single aspect of SUD treatment quality, namely person-centred care³⁶ and structural indicators of quality.³⁸ A third review included a range of quality domains, but only as these related to opioid use disorder treatment in the USA.³⁷ Given the limitations of these prior reviews, a comprehensive synthesis of the global evidence is needed to convince policy makers and service planners of the utility of additional investment in quality assurance, measurement, and improvement activities for the SUD treatment sector.

To address this gap, a scoping review was conducted to systematically map the available literature on SUD treatment quality and patient outcomes. More specifically, this scoping review aimed to describe and critically examine the literature published between 2000 and 2022 on (i) quality domains typically assessed in SUD treatment services research, (ii) associations between performance on indicators of SUD treatment quality and post-treatment outcomes, and (iii) gaps in current knowledge, with a view to outlining directions for future research on the quality of SUD treatment globally.

Conceptual framework for this review

The “*Quality assurance in treatment for drug use disorders: key quality standards for service appraisal*” prepared by the United Nations Office on Drugs and Crime (UNODC) with other international and regional organizations was used as an organising framework for this review due to its global relevance.³⁹ In 2009, the UNODC with the World Health Organization (WHO) launched the “Joint Programme on Drug Dependence Treatment and Care” to encourage member states to develop and adopt appropriate health-care standards and improve the quality of drug dependence treatment. Through this programme, the UNODC and WHO developed, field-tested, and published the “International Standards for the Treatment of Drug Use Disorders” (*The Standards*).⁴⁰ These were recognized by the Commission on Narcotic Drugs (resolution 59/4) and the 2016 United Nations General Assembly Special Session on Drugs.⁴¹ To assist with implementation of *The Standards*, the UNODC then developed standards and a framework for assuring the quality of SUD treatment.³⁷ The development process involved expert meetings, review of the quality assurance standards used by regional and international agencies, and a consensus-driven process to determine the measurement domains of key importance and relevance to assuring the quality of SUD treatment in global settings.³⁹ Four domains were identified: (i) effective management of the service, referring to staffing and organisational characteristics of the service); (ii) individualised, patient-centred treatment and care; (iii) timely access to evidence-based interventions; and (iv) promotion of patient health, safety, and human rights. In this scoping review, this framework was extended to include a fifth domain, continuity of care. This is an important domain of SUD treatment quality that is captured in many other performance measurement frameworks for SUD treatment.³¹ These domains broadly map on to the quality framework of the US Institute of Medicine²⁴ and several performance measurement frameworks for SUD treatment.³¹

Methods

A systematic scoping review was conducted to identify and map the available evidence on the relationship between quality and outcomes of SUD treatment. In conducting this review, five of the six stages of Arksey and O'Malley's framework were applied. These stages involve: (i) identifying the research question; (ii) identifying relevant studies; (iii) study selection; (iv) data extraction; (v) collating, summarising, and reporting results; with an optional (vi) stage involving stakeholder consultation to validate findings.⁴²⁻⁴⁴ The Covidence software was used for systematic reviews to support screening, extraction, monitoring and the synthesis of findings. The review was done in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines. The protocol was registered with the Open Science Foundation before the review was done.

Stage 1: Identifying the Research Question

This scoping review is designed to answer the following broad research question: What is known about the relationship between the quality and outcomes of SUD treatment. The research question was developed as a broad framing of the population (i.e. people with SUDs), the concept (i.e. quality of SUD treatment) and the context (i.e. SUD treatment outcomes). More specifically, this scoping review asks: “*What is the relationship between the quality of SUD treatment and treatment outcomes?*”

Stage 2: Identifying Relevant Studies

A comprehensive search strategy was developed with the aim of identifying all relevant studies for inclusion in this review. A health science librarian assisted the first author in developing this strategy. The identified databases, search strategy and inclusion criteria are described below.

Electronic databases of published literature were searched to identify relevant studies published in English between January 2000 and November 2022. This period was selected as early seminal publications on the importance of addressing the quality chasm in health care and in mental health and substance use services specifically emerged only in the early 2000s.²⁴⁻²⁸

A comprehensive search strategy was developed to identify relevant studies for inclusion in the review. An initial scoping search of Elicit.org and Medline using the keywords of “SUD

treatment”, “quality indicators”, “treatment outcomes” was used to identify relevant articles from which the first author (BM) identified six seed articles. These six seed articles were analysed to gather the keywords from the title and abstract and indexed terms across all databases. This served as a foundation for developing the search strategy.

An expert librarian from Curtin University and BM developed a preliminary search strategy. Decisions were made about time frames, language, search terms and search strategies. Given the absence of a universally accepted definition of SUD treatment quality,²⁶⁻³¹ the initial search strategy was informed by commonly used indicators of SUD treatment quality (timely access, initiation, engagement, retention, satisfaction, perceived quality, safety and non-discrimination) as well as Medical Subject Headings (MeSH) terms from the seed articles and other key papers describing the relationship between SUD treatment quality and outcomes.

The initial search strategy combined terms from the following themes: quality indicators (e.g. quality indicators, performance indicators, performance measures, quality assurance, performance measurement), outcome indicators (patient-reported outcome, outcome assessment), and SUD treatment. Trial searches were conducted to assess whether relevant literature could be identified using the proposed strategy. After an initial trial search, the librarian added MeSH terms, Boolean logic and operators (‘and’, ‘or’, ‘not’), and filters to the search strategy to improve accuracy of searches across various electronic databases.

A single search string query was used to search the databases for transparency and reproducibility. The search strategy for Embase (Ovid) was developed and is presented in *Table 1*. This strategy was adapted for the other electronic databases. These search strategies are presented in Appendix 1.

Table 1. Search Strategy for Embase (Ovid)

| |
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| Date of search: 9 November 2022 |
| (exp drug dependence treatment/ or substance abuse treatment centres/ or heroin dependence/ or (((drug-dependence or substance-abuse or substance-'use' or opioid-dependence or alcohol-misuse or addiction)ADJ3(treatment))).ab,ti.) AND (health care quality/ or patient satisfaction/ or total quality management/ OR performance indicator/ or (((quality)ADJ3(measure* or indicator* or care or service* or improvement)) or ((treatment)ADJ3(quality or satisfaction or engagement or initiation)) or performance-indicator* or performance-measure*).ab,ti.) AND (treatment outcome/ or outcome assessment/ or patient-reported outcome/ or (treatment-outcome* or outcome or outcomes).ab,ti.) |
| Limited to English language, Publication year 2000-2022 |

The search was conducted in the following electronic databases: Embase (Ovid), Medline (Ovid), PsycInfo (Ovid), Cochrane Library, CINAHL (Ebsco), Web of Science and Google Scholar. For Google Scholar it was decided a priori to conduct three searches using different variations of key terms (see *Appendix 1*) and to include the first 100 results of each of these searches. Publish or Perish (version 8.4; <https://harzing.com/resources/publish-or-perish>) was used for bulk retrieval of results from the Google Scholar searches. A search for unpublished studies in the grey literature was conducted through hand searching the websites of the following national and international agencies that advocate for quality improvement of SUD treatment such as the UNODC, WHO, European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), and Patient Safety and Quality Health Care (PSQH). The reference lists of studies that meet inclusion criteria were checked for additional studies. Spidercite (<https://sr-accelerator.com/#/spidercite>), Scopus and Web of Science were used to conduct forward and backward citation checks of included studies. Search results were uploaded into Covidence software and duplicates removed before screening commenced.

Stage 3: Study selection

Studies were independently screened and reviewed by two authors (BM and JW) in two stages: (1) title and abstract screening and (2) full-text review. These authors used Covidence systematic review software (<https://www.covidence.org>) for screening titles and abstracts against a priori eligibility criteria. More specifically, articles were considered eligible for inclusion if they were primary research studies that (i) focused on adult

populations with SUDs (population), (ii) referred to SUD treatment quality or an indicator of treatment quality (the concept) including but not limited to: patient satisfaction with care, person-centred care, quality of non-pharmacological treatment, treatment engagement, continuity of care (pharmacological and non-pharmacological), safety, and (iii) reported on at least one outcome of SUD treatment, including but not limited to substance use, quality of life, psychological, crime, employment, and mortality outcomes assessed at treatment exit or at some point after the end of treatment (context). Publications describing the outcomes of any type of specialist SUD treatment were eligible for inclusion (inpatient, outpatient, residential, pharmacological). Publications describing the outcomes of brief interventions or self-help services were excluded.

Articles considered eligible for inclusion were included in the next stage of full-text review. In cases where authors were uncertain of relevance, articles were included for full-text review. Full text articles were independently reviewed by the two reviewers and assessed against the inclusion criteria. Those that met the inclusion criteria were retained for data extraction. At both the title/abstract and full text screening stage, discrepancies between reviewer decisions were discussed and resolved by a third reviewer who had expertise in SUD treatment.

Stage 4: Data Charting and Extraction

Recommended data charting methods were followed to systematically capture relevant details from included articles.⁴³⁻⁴⁴ Data charting forms were 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 the following details from included studies: (a) author(s); (b) title; (c) country; (d) study design; (e) study population and sample size; (f) treatment setting; (e) quality indicator or assessment of quality; (e) outcome measures; (f) main findings. For main findings, results pertaining to the relationship between the quality indicator and treatment outcomes were extracted. Data extraction was led by the first author and checked and revised by a second author.

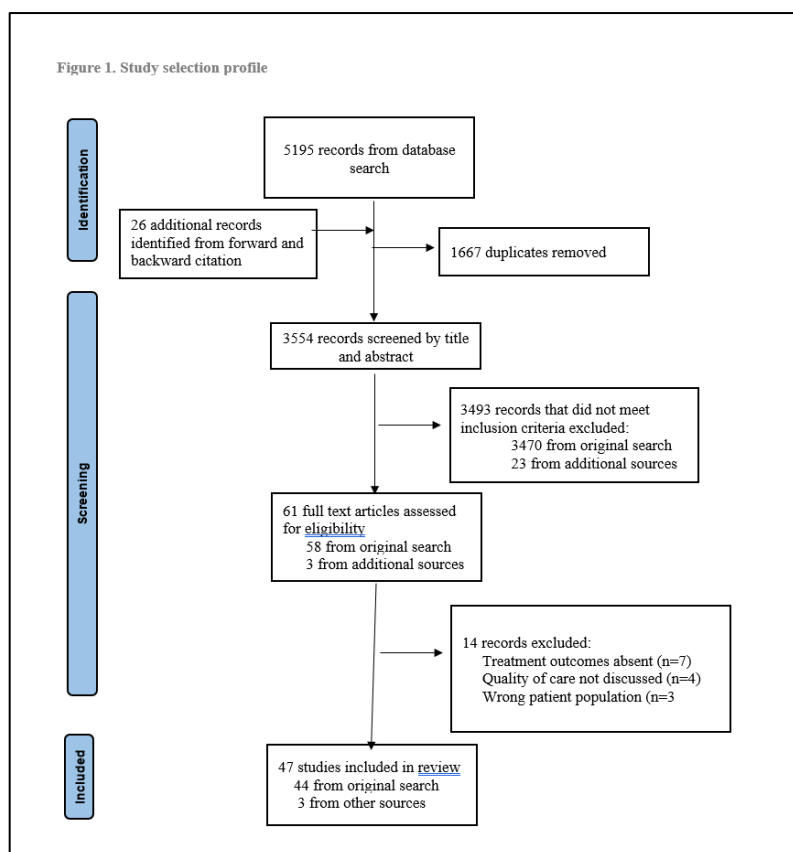
Stage 5: Collating, Summarising, and Reporting of the Results

Extracted data were collated and sorted according to key themes. First, the included studies (represented in a table that presents the key characteristics of included studies) were described. Next, a narrative synthesis of findings of the relationship between SUD treatment quality and outcomes was presented. For this, we collated and summarised results for each of the quality

domains specified in the framework presented in the “*Quality assurance in treatment for drug use disorders: key quality standards for service appraisal*”³⁹ by type of treatment outcome. Finally, strengths and gaps in the evidence were reviewed while recommendations for future research on SUD treatment quality were presented.

Results

This section presents the results of the systematic search of the literature. First, the



characteristics of included studies are described. Next, an overview of how included studies assessed the quality of SUD treatment is provided, along with the indicators used and gaps in the literature. Finally, findings on the relationship between components of SUD treatment quality and patient outcomes are presented. They are organised into three areas considered critical for assuring the quality of SUD treatment and care, namely patient-

centred care, timely access to evidence-based interventions, and continued access to evidence-based interventions.

Study characteristics

The search yielded 5221 articles (5195 from the original database search, and 26 from forward and backward citation searching), of which 3554 remained after duplicates were removed. A further 3493 articles were removed after title and abstract screening. The full texts of the remaining 61 articles were retrieved and assessed for study eligibility. Of these full-text articles, 14 were excluded after assessing against the inclusion criteria. In total, 47 primary research articles were included in this review. The PRISMA flow diagram

(Figure 1) presents these search results and reasons for excluding full text articles from the review.

Table 2 describes the characteristics of the 47 included articles. Two of the articles were from the same study,⁶⁰⁻⁶¹ while another⁸⁷ analysed a sample reported elsewhere (reporting different outcomes).⁸⁴ Taking this into account, the 46 unique studies included an aggregate sample of 892,561 participants. Sample sizes varied from 42 participants in a qualitative study⁶⁴ to 339,966 participants in a retrospective cohort study.⁸⁴ Included articles relied predominantly on quantitative methods (n=46). These mainly comprised longitudinal cohort (n=38), followed by randomised controlled trials (n=4), and cross-sectional designs (n=3). Only one study used qualitative methods.⁶⁴ Included studies originated from a range of geographies, but only two articles⁸⁰⁻⁸¹ (4.3%) originated from a low-and middle-income country. Most of the articles from high-income countries (n=31/45, 68.9%) originated from the USA, followed by five articles from countries in Scandinavia,^{46-48,50,88} and three articles from the UK.^{60-61,78} Outpatient and intensive outpatient treatment services were the most frequently examined treatment setting (n=20, 42.6%). Eleven (23.4%) of the included articles reported on the quality of treatment provided in a particular region and did not focus on a single type of treatment setting (Table 2).

Quality domains, measures, and level of measurement

Included studies varied in which aspects of SUD treatment quality they assessed and the indicators they used to measure these components of treatment quality. Notably, included studies assessed either the provision of patient-centred treatment and care, timely access to and receipt of evidence-based interventions or continued access to evidence-based interventions (Table 2). None of the included studies assessed structural indicators of quality; neither did they assess whether (i) the effective management of services or (ii) promoting patient health, safety and human rights was associated with better patient outcomes. These are two key quality assurance domains captured in the UNODC's guidelines for assuring the quality of SUD treatment globally.³⁹

More specifically, 18 (38.3%) of the included studies^{46-49,51,53-55,58,70,72,74,76,78-9, 81, 88,91} examined some aspect of "*Individualised patient-centred treatment and care*", one of the domains included in the "*Quality assurance in treatment for drug use disorders: key*

quality standards for service appraisal".³⁹ (Tables 2-3). Among these studies, satisfaction with treatment was the most assessed aspect of patient-centred care (n=11/18, 61.1%).^{46,48,51,53-55,70,72,79,88,91} Satisfaction with treatment was assessed using a variety of instruments, most commonly the Client Satisfaction Questionnaire⁹² or the Treatment Perceptions Questionnaire.⁹³ Earlier studies tended to use unvalidated measures of satisfaction.^{36,91} The remaining seven studies used a range of patient-reported experience measures to assess perceived quality^{78,81} and helpfulness of treatment,^{76,78} person-centred communication,^{49,58,74} as well as patient involvement in the treatment process^{47,58,74,78} indicators that map onto principles of patient-centred care.³⁶ Several, but not all studies used validated patient-reported experience measures of SUD treatment such as the South African Addiction Treatment Services Assessment (SAATSA),⁹⁴ Experiences of Care and Health Outcomes (ECHO) questionnaire,⁹⁵ and the Community-Oriented Program Environment (COPEs) scales⁹⁶ (Table 2-3).

Table 2. Characteristics of included studies (n = 47)

| Article | Years of Study | Country | Study Design | Population | SUD Treatment Setting | Data Source | Quality indicators | Measurement Level* |
|---|----------------|-----------|----------------------------------|----------------------------|-----------------------|--|---|--------------------|
| Acevedo et al., 2016 ⁴⁵ | 2005-2008 | USA | Quantitative, cohort | N= 11591 patients with SUD | Outpatient treatment | Administrative data from SUD treatment and health sector | <u>Treatment engagement</u> , defined using the HEDIS specification** | Patient-level |
| Andersson et al. 2020 ⁴⁶ | 2014-2016 | Norway | Quantitative, prospective cohort | N= 236 patients with SUD | Inpatient treatment | Patient self-report | <u>Treatment satisfaction</u> , assessed via the <i>Patient Experiences Questionnaire for Interdisciplinary Treatment for Substance Dependence</i> (PEQ-ITSD) | Patient-level |
| Andersson et al., 2017 ⁴⁷ | 2012-2015 | Norway | Quantitative, cross-sectional | N= 188 patients with SUD | Inpatient treatment | Patient self-report | <u>Person-centred care</u> : <i>Patient involvement</i> in decision-making and own treatment (single item) | Patient-level |
| Bodin et al., 2007 ⁴⁸ | Not reported | Sweden | Quantitative, cohort | N= 244 patients with SUD | Not specified | Patient self-report | <u>Treatment satisfaction</u> , assessed using a single item with scores ranked from 1-5 | Patient-level |
| Brener et al., 2010 ⁴⁹ | Not reported | Australia | Quantitative, cross-sectional | N= 92 patients with OUD | Inpatient treatment | Patient self-report | <u>Patient-centred communication</u> : perceived discrimination by staff, assessed through 5-item scale | Patient-level |

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|--|--------------|-------------|------------------------------------|---------------------------|--|--|---|---------------|
| Bukten et al., 2012. ⁵⁰ | 1997-2003 | Norway | Quantitative, cohort | N=3221 patients with OUD | Medication-assisted treatment (MAT) | Administrative data from SUD treatment and criminal justice sector | <u>MAT continuity</u> , defined as being on MAT throughout observation period | Patient-level |
| Carlson et al., 2001. ⁵¹ | Not reported | USA | Quantitative, cross-sectional | N= 502 patients with SUD | Outpatient and inpatient (residential) treatment | Patient self-report | <u>Treatment satisfaction</u> : single questions assessing satisfaction with treatment access and effectiveness | Patient-level |
| Crevecoeur-MacPhail et al., 2010. ⁵² | 2008-2009 | USA | Quantitative, cohort | N= 1360 patients with SUD | Outpatient treatment | Administrative data from SUD treatment | <u>Treatment engagement</u> (continuous measure defined as number of treatment contacts in first 30 days) | Patient-level |
| Dearing et al., 2005. ⁵³ | 1999-2001 | USA | Quantitative, prospective cohort | N= 208 patients with SUD | Outpatient treatment | Patient self-report | <u>Treatment satisfaction</u> assessed via the <i>Client Satisfaction Questionnaire (CSQ)-8</i> | Patient-level |
| Deering et al., 2012. ⁵⁴ | 2009 | New Zealand | Quantitative, cross-sectional | N= 93 patients with SUD | MAT | Patient self-report | <u>Treatment satisfaction</u> assessed via the <i>Treatment Perceptions Questionnaire</i> | Patient-level |
| Donovan et al., 2002. ⁵⁵ | Not reported | USA | Quantitative, cohort | N= 1726 patients with SUD | Outpatient treatment | Patient self-report, treatment process data | <u>Treatment satisfaction</u> assessed via the <i>Client Satisfaction Questionnaire (CSQ-8)</i> | Patient-level |
| Dunigan et al., 2014. ⁵⁶ | 2008-2009 | USA | Quantitative, retrospective cohort | N= 7570 patients with SUD | Outpatient treatment | Administrative data from SUD treatment, and employment sector | <u>Treatment engagement</u> : defined using HEDIS specifications** | Patient-level |

| | | | | | | | | |
|--|-----------|-----------|--------------------------|---|--------------------------------|--|---|----------------------------|
| Durand et al., 2020. ⁵⁷ | 2010-2015 | Ireland | Quantitative, cohort | N= 2899 patients with OUD | Not specified | SUD treatment and mortality data | <u>MAT continuity</u> , defined as ongoing use of MAT with no interruptions of > than 6 days | Patient-level |
| Gallagher et al., 2017. ⁵⁸ | 2015 | USA | Qualitative | N= 42 patients referred to treatment by drug courts | Intensive outpatient treatment | In-depth interviews | <u>Patient-centred services</u> : Involvement with treatment; Provider communication | Patient-level |
| Garnick et al., 2007. ⁵⁹ | 2001-2002 | USA | Quantitative, cohort | N= 5328 patients with SUD | Outpatient treatment | Administrative data from SUD treatment, patient self-report | <u>Treatment initiation and engagement</u> , based on WC indicators** | Patient-level |
| Garnick et al., 2014. ⁶⁰ | 2008-2009 | USA | Quantitative, cohort | N= 106662 patients with SUD | Outpatient treatment | Administrative data from SUD treatment and criminal justice sector | <u>Treatment engagement</u> based on HEDIS indicator** | Patient and facility-level |
| Gaume et al., 2018. ⁶¹ | 1999-2003 | UK | Quantitative, trial data | N= 376 patients with AUD | Outpatient treatment | Patient self-report, quality assurance data | <u>Quality of psychosocial treatment</u> assessed through UKATT process rating scale | Patient-level |
| Gaume et al., 2022. ⁶² | 1999-2003 | UK | Quantitative, trial data | N= 351 patients with AUD | Outpatient treatment | Patient self-report data, quality assurance data | <u>Quality of psychosocial treatment</u> assessed through UKATT process rating scale | Patient-level |
| Gisev et al., 2019. ⁶³ | 2004-2011 | Australia | Quantitative, cohort | N=10744 patients with OUD. | MAT | SUD treatment, criminal justice and mortality data | <u>MAT continuity</u> : proportion of follow-up time spent in MAT (i.e. no interruptions > than 6 days) | Patient-level |

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|--|--------------|-----|----------------------|---------------------------|--|---|--|----------------------------|
| Greenberg et al., 2002. ⁶⁴ | 1999 | USA | Quantitative, cohort | N=1576 patients with SUD | Inpatient (residential) treatment | Patient self-report; administrative data from SUD treatment | <u>SUD treatment continuity</u> : Number of months with at least one outpatient visit following discharge, outpatient visit within 14 days, 30 days or 3 months of discharge | Patient-level |
| Harris et al., 2007. ⁶⁵ | Not reported | USA | Quantitative, cohort | N= 5723 patients with SUD | Outpatient and inpatient (residential) treatment | Administrative data from SUD treatment, patient self-report | <u>Treatment initiation and engagement</u> , defined using HEDIS specifications** | Facility-level |
| Harris et al., 2009. ⁶⁶ | 2001-2003 | USA | Quantitative, cohort | N=1869 patients with SUD | Outpatient treatment | Administrative data from SUD treatment, patient self-report | <u>SUD treatment continuity</u> : % of patients who maintain continuous treatment involvement for at least 90 days | Patient and facility-level |
| Harris et al., 2010. ⁶⁷ | Not reported | USA | Quantitative, cohort | N= 2789 patients with SUD | Outpatient and inpatient (residential) treatment | Administrative data from SUD treatment, patient self-report | <u>Treatment engagement</u> defined using HEDIS specifications** | Patient-level |
| Harris et al., 2015. ⁶⁸ | 2009-2011 | USA | Quantitative, cohort | N=10064 patients with SUD | Inpatient (residential) treatment | Administrative data linked to mortality data | <u>SUD treatment continuity</u> following index treatment episode, defined using the WC Continuity of Care measure*** | Patient-level |
| Hepner et al., 2017. ⁶⁹ | 2007-2008 | USA | Quantitative, cohort | N= 2074 patients with SUD | Outpatient and inpatient treatment | Administrative data from SUD treatment, | <u>Treatment initiation and engagement</u> , defined using the HEDIS specification** | Patient-level |

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|---|--------------|-----|----------------------------------|----------------------------|--|--|--|----------------------------|
| | | | | | | patient self-report | <u>Receipt of psychosocial treatment</u> | |
| Hser et al., 2004. ⁷⁰ | 2000-2001 | USA | Quantitative, prospective cohort | N= 1939 patients with SUD | Outpatient and inpatient (residential) treatment | Patient self-report, treatment records | <u>Treatment satisfaction</u> as indicated by a measure that assessed satisfaction with the program, services, and counselling relationships | Patient-level |
| Hser et al., 2007. ⁷¹ | 2004 | USA | Quantitative, cohort | N= 1104 patients with SUD | Outpatient treatment | Patient self-report | <u>Treatment engagement:</u> continuous measure, defined as number of days in treatment | Patient-level |
| Kendra et al., 2015. ⁷² | Not reported | USA | Quantitative, cohort | N= 345 patients with SUD | Outpatient treatment | Patient self-report | <u>Treatment satisfaction,</u> 5 items summed to create an overall satisfaction rating, assessed at 6-month post-intake | Patient-level |
| Lee et al., 2014. ⁷³ | 2007-2009 | USA | Quantitative, cohort | N=74515 patients with SUD | Detoxification services | Administrative data from SUD treatment | <u>Treatment continuity after detoxification:</u> defined as continuing onto treatment within 14 days of detoxification | Patient-level |
| Liebmann et al., 2022. ⁷⁴ | 2018-2019 | USA | Quantitative, cohort | N= 2788 patients with SUD | Outpatient treatment | Patient self-report | <u>Person-centred communication:</u> Quality of provider communication; patient perceived quality of treatment assessed through the <i>Experiences of Care and Health Outcomes survey (ECHO)</i> | Patient-level |
| Liu et al., 2022. ⁷⁵ | 2015-2016 | USA | Quantitative, cohort | N =25430 patients with SUD | MAT | Administrative data from SUD treatment | <u>MAT continuity;</u> defined using the HEDIS standards. [#] | Patient and facility-level |

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|--|--------------|--------------|-------------------------------|--|--------------------------------------|---|---|---------------|
| Long et al., 2000. ⁷⁶ | Not reported | USA | Quantitative, cross-sectional | N= 188 patients with SUD | Outpatient treatment | Patient self-report | <u>Perceived helpfulness of treatment</u> , assessed using the <i>Patient Treatment Evaluation Questionnaire</i> <u>Person-centred care</u> assessed using <i>Community Oriented Program Environment Scale</i> | Patient-level |
| Luchansky et al., 2006. ⁷⁷ | 1998-2002 | USA | Quantitative, cohort | N= 8343 patients with SUD and a disability | Unspecified | SUD treatment, criminal justice sector and mortality data | <u>SUD treatment continuity</u> -more than 90 days in treatment | Patient-level |
| Morris et al., 2008. ⁷⁸ | 2001-2003 | UK | Quantitative, cohort | N= 841 patients with SUD | Outpatient, inpatient, MAT treatment | Patient self-report | <u>Patient centred care</u> , Items assessed whether patient informed about treatment decisions and perceived helpfulness of treatment | Patient-level |
| Müller et al., 2020. ⁷⁹ | Not reported | France | Quantitative, trial data | N= 136 patients with SUD | Outpatient treatment | Patient self-report | <u>Treatment satisfaction</u> using the <i>Quality of care satisfaction in outpatient consultation questionnaire</i> , 10 days after first consultation | Patient-level |
| Myers et al., 2018. ⁸⁰ | 2016 | South Africa | Quantitative, cohort | N= 933 patients with SUD | Outpatient and inpatient treatment | Administrative data from SUD treatment | <u>Treatment engagement</u> defined as treatment participation for at least 14 days | Patient-level |
| Myers et al., 2022. ⁸¹ | 2019 | South Africa | Quantitative, cohort | N= 1097 patients with SUD | Outpatient and inpatient treatment | Administrative data and patient self-report | <u>Patient-reported quality of treatment</u> , assessed using the <i>SAATSA</i> . | Patient-level |

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|--|----------------------------|--------|--------------------------|--|--------------------------------------|---|---|---------------|
| Neighbors et al., 2005. ⁸² | 1987-1995 | USA | Quantitative, cohort | N=15041 | Outpatient and inpatient treatment | patient self-report | <u>SUD treatment continuity</u> following index treatment assessed through questions about participation in aftercare | Patient-level |
| Nosyk et al., 2022. ⁸³ | 1996-2017 | Canada | Quantitative, cohort | N=55470 patients with OUD | MAT | Administrative data from SUD sites | <u>MAT continuity</u> ; defined as retention on MAT for >24 months | Patient-level |
| Paddock et al., 2017. ⁸⁴ | 2006-2009 | USA | Quantitative, cohort | N= 339966 patients with SUD | Inpatient and outpatient treatment | Administrative data from SUD treatment and mortality data | <u>Treatment initiation and engagement</u> , using the HEDIS specifications** <u>Receipt of psychosocial treatment</u> | Patient-level |
| Rawson et al., 2012. ⁸⁵ | 1999-2002 | USA | Quantitative, trial data | N=1016 patients with MA use disorder | Intensive Outpatient treatment | Administrative data from SUD treatment, patient self-report | <u>Monitoring</u> of treatment outcomes via urinalysis <u>Treatment engagement</u> defined using WC/HEDIS measure** | Patient-level |
| Schaefer et al., 2008. ⁸⁶ | Not reported | USA | Quantitative, cohort | N=429 patients with SUD | Outpatient treatment | Patient self-report, administrative data from SUD treatment | <u>SUD treatment continuity</u> assessed by <i>Continuity of Care Practices Survey</i> | Patient-level |
| Schmidt et al., 2017. ⁸⁷ | 2001-2003 2004-2008 | USA | Quantitative, cohort | N= 5436 patients with SUD N = 339887 patients | Intensive outpatient treatment (IOP) | Administrative data from SUD treatment, patient self-report | <u>Treatment engagement</u> . For IOP engagement defined as a minimum of 6 outpatient treatment encounters | Patient-level |

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| Thylstrup et al., 2011. ⁸⁸ | Not reported | Denmark | Quantitative, cohort | N= 186 patients with SUD | Outpatient treatment | Patient self-report | <u>Treatment satisfaction</u> , assessed via the <i>CSQ-8</i> | Patient-level |
| Watkins et al., 2016. ⁸⁹ | 2007-2010 | USA | Quantitative, cohort | N= 144045 patients with a co-occurring SUD and mental disorder | Unspecified | Administrative data from SUD treatment and mortality data | <u>Treatment initiation and engagement</u> , defined using the HEDIS specifications** <u>Receipt of psychosocial treatment</u> | Patient-level |
| Watkins et al., 2017. ⁹⁰ | 2006-2009 | USA | Quantitative, cohort | N= 31016 patients with OUD | Unspecified | Administrative data from SUD treatment | <u>MAT continuity</u> ; defined as retention on MAT for ≥ 3 months <u>Receipt of psychosocial treatment</u> | Patient-level |
| Zhang et al., 2008. ⁹¹ | 1993-1995 | USA | Quantitative, cohort | N= 4939 patients with SUD | Outpatient, inpatient (residential) and MAT | Patient self-report | <u>Treatment Satisfaction</u> assessed using a single question | Patient-level |

Acronyms: AUD = alcohol use disorder, SUD= substance use disorder; OUD= opioid use disorder, MA= methamphetamine; MAT= Medication-assisted treatment

*Measurement level refers to whether quality was assessed at the level of the patient (i.e. quality of care that individual patient's received) or at the level of the facility, or both the patient and facility.

** Washington circle defines initiation as receipt of at least one service within 14 days after the index contact; Treatment engagement is defined as receipt of at least two additional services within 30 days after the initiation visit. These specifications were later adopted by the National Committee for Quality Assurance (NCQA) as Healthcare Effectiveness Data Information Set (HEDIS) measures

*** Washington circle continuity of care measure is a dichotomous measure indicating whether a patient had an outpatient SUD treatment encounter within 14 days after discharge from residential treatment

HEDIS definition of MAT continuity for OUD is the % of adults on MAT who have had >180 days of continuous treatment (i.e. no gaps > 7 days)

Seventeen (36.2%)^{45,52,56,59-62,65,67,69,71,80,84-5,87,89-90} of the 47 included articles examined indicators of “*Timely access to and receipt of evidence-based interventions*”, another domain included in the “*Quality assurance in treatment for drug use disorders: key quality standards for service appraisal*”³⁹ (see *Table 2*). Five of these articles (29.4%)^{59,65,69,84,89} measured *timely initiation* of SUD treatment following assessment and 14 articles (82.4%)^{45,52,56,59-60,65,67,69,71,80,84-5,87,89} measured *timely engagement* in SUD treatment following initiation. All the studies (n=5) assessing SUD treatment initiation and most (n=10/14, 71.4%)^{45,56,59-60,65,67,69,84-5,89} of the studies assessing SUD treatment engagement used the validated US Healthcare Effectiveness Data Information Set (HEDIS) definitions of these indicators.^{29,30} Notably, only four (23.5%) articles examined whether patients had received either SUD-related psychotherapy or psychosocial treatment.^{69,84,89-90} Further, only two (11.8%) articles from the same study⁶¹⁻² measured the quality of psychosocial treatment provided. These studies examined quality of treatment provided in a treatment trial rather than as part of routine service delivery. One (5.9%) article assessed whether monitoring patients’ response to treatment influenced treatment outcomes.⁸⁵ Several of the included articles included multiple indicators of *timely access to evidence-based interventions and care*.

Thirteen (27.7%) of the 47 included articles examined indicators of “*Continued access to evidence-based SUD treatment*”.^{50,57,63-4,66,68,73,75,77,82-3,86,90} This domain measures whether patients received sufficient evidence-based treatment to sustain positive outcomes (*Table 2*). Six of these 13 articles (46.2%) measured continuity of medication-assisted treatment (MAT), generally for opioid use disorder (*Tables 2 & 5*).^{50,57,63,75,83,90} Most of these studies defined MAT continuity as being on MAT for a defined period (usually 180 days) with treatment interruptions lasting no more than six days. A further six articles (46.2%) assessed continuity of SUD treatment more generally.^{64,66,68,77,82,86} The remaining article (7.7%) assessed continuity of SUD care following detoxification.⁷³ SUD treatment continuity was defined in a variety of ways; four (66.7%) of the six articles examined ongoing involvement in SUD care following the index treatment episode.^{64,68,82,86} The remaining two articles defining treatment continuity as remaining in (index) treatment for an extended period (usually 90 days).^{66,77} Differences in the definition of SUD treatment continuity made it difficult to compare and pool findings across studies (*Table 2*).

Table 3. Studies examining the relationship between receipt of person-centred SUD treatment and patient outcomes (n=18)

| Article | Quality indicator | Setting | Sample | Outcome | Results |
|--|-----------------------------------|---|--------------------------|---|--|
| Andersson et al., 2020. ⁴⁶ | Treatment Satisfaction | 5 public inpatient SUD treatment centres, Norway | N= 236 patients with SUD | Quality of life; 12-month post-treatment | Greater satisfaction with treatment at discharge associated with better quality of life 12-month post-treatment (OR= 0.03; 95% CI: 0.01-0.06; p= 0.009). |
| Andersson et al., 2017. ⁴⁷ | Patient involvement in treatment | 2 public inpatient SUD clinics, Norway. | N= 188 patients with SUD | Patient-reported SUD outcomes at discharge | Greater patient involvement in treatment planning predicted better patient reported outcomes ($\beta = 0.25$, 95% CI: 0.42–1.46; p < 0.001) |
| Bodin et al., 2007. ⁴⁸ | Treatment Satisfaction | 1 private SUD treatment clinic, Sweden | N= 244 patients with SUD | Patient-reported SUD outcomes, 24-month post-treatment | Greater satisfaction with treatment increased the odds of abstinence at 24 months (OR= 1.93, 95% CI: 1.10-3.37; p<0.001) |
| Brener et al., 2010. ⁴⁹ | Perceived discrimination by staff | 6 inpatient (residential) SUD treatment facilities in Australia | N= 92 patients with OUD | Treatment completion | Perceived discrimination significantly predicted treatment noncompletion (Wald = 4.15, p < 0.05) |
| Carlson et al., 2001. ⁵¹ | Treatment Satisfaction | 55 residential and outpatient SUD treatment facilities in USA. | N= 502 patients with SUD | SUD outcomes assessed via ASI, 12-month post-treatment | Greater satisfaction with treatment access (OR = 2.13, 95% CI: 1.01-4.51; p<0.05) and effectiveness (OR =2.09, 95% CI: 1.00-4.37; p<0.05) increased the odds of being abstinent 12-month post-treatment. |
| Dearing et al., 2005. ⁵³ | Treatment Satisfaction | Outpatient SUD treatment in New York, USA | N= 208 patients with SUD | SUD outcome: number of days abstinent, 6-month post-treatment | Greater satisfaction with treatment predicted more days abstinent at 6-month follow-up ($\beta = 0.36$, $R^2=0.22$; p < 0.05). |

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| Deering et al., 2012. ⁵⁴ | Treatment Satisfaction | Methadone Treatment Programme, New Zealand | N= 93 patients with SUD | Psychosocial outcomes (via the SF-36) SUD at discharge | Greater satisfaction associated with better general health ($r= 0.3$; $p < 0.05$), social functioning ($r= 0.2$; $p < 0.05$) and emotional wellbeing ($r= 0.3$; $p < 0.05$) as well as greater self-reported SUD improvements ($r = 0.2$, $p < 0.05$) |
| Donovan et al., 2002. ⁵⁵ | Treatment Satisfaction | 5 outpatient SUD treatment sites, USA | N= 1726 patients with SUD | SUD outcomes: percentage days abstinent (PDA), number of drinks per drinking day (DDD) at three months | Patients with low, moderate and high treatment satisfaction differed significantly from one another on PDA (69.5%, 84.2%, 89.4%, respectively, $p < 0.05$). Patients with low, moderate, and high treatment satisfaction differed significantly from one another on DDD (5.78, 3.28, 2.11, respectively, $p < 0.05$). |
| Gallagher et al., 2017. ⁵⁸ | Patient involvement with treatment Provider communication | Intensive outpatient treatment in a US state | N= 42 patients with SUD | SUD outcomes: abstinence | Described how punitive and discriminatory communication and lacking a voice in the treatment process impacted on their willingness to stay in treatment and their SUD outcomes. |
| Hser et al., 2004. ⁷⁰ | Treatment Satisfaction | 36 outpatient and residential treatment programs, USA | N= 1939 patients with SUD | SUD outcomes: abstinence at 9-month post-intake | Greater satisfaction was positively related to retention in treatment (path coefficient=0.36, $p < 0.05$), which was related to being abstinent at 9-month post-intake (path coefficient = 0.12, $p < 0.05$). |
| Kendra et al., 2015. ⁷² | Treatment Satisfaction | Department of Veterans' Affairs (VA) outpatient SUD treatment program, USA | N= 345 patients with SUD | SUD outcomes: ASI severity indices and abstinence, 12-month post-intake | Satisfaction score predicted abstinence (OR=1.50, 95% CI: 1.11–2.03; $p < 0.001$), less alcohol use severity ($\beta = -0.13$; $p < 0.05$) but not drug use severity, 12-month post-intake. |

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| Liebmann et al., 2022. ⁷⁴ | Provider communication Perceived quality of treatment | Veterans' Health Administration SUD outpatient specialty care | N= 2788 patients with SUD | SUD outcomes via BAM-R, mental health outcomes via SF-12-, 3-month post-intake | Ratings of provider communication were associated with reductions in SUD symptoms (OR= - 2.29, 95% CI: - 3.59 - 1.00, p= 0.001). and mental well-being (OR= 1.35, 95% CI: 1.00- 1.81; p = 0.050). Perceived quality of treatment was associated with reductions in SUD symptoms (OR= - 1.54, 95% CI: - 2.85 - 0.24, p= 0.020) and mental well-being (OR= 1.37, 95% CI: 1.02- 1.83, p = 0.037) |
| Long et al.,2000. ⁷⁶ | Perceived helpfulness of treatment Patient involvement | Addiction unit therapy program, USA | N= 188 patients with SUD | SUD outcomes: remitted drinking, 12-month post-treatment | Greater perceptions of treatment being helpful, greater patient involvement were independently associated with remitted drinking (all p <0.01). |
| Morris et al., 2008. ⁷⁸ | Patient involvement in treatment Perceived helpfulness of treatment | SUD treatment clinics, Scotland, UK | N= 841 patients with SUD | SUD outcomes at 8 months | Being informed about decisions (OR= 1.3, 95% CI: 1.0 -1.5); perceived helpfulness of treatment (OR= 1.3, 95% CI: 1.1 -1.6) both independently associated with better SUD outcomes. |
| Müller et al., 2020. ⁷⁹ | Treatment Satisfaction | Specialised addiction treatment centres, France | N= 136 patients with SUD | Health-related quality of life, 3-month post-intake. | Significant increases in the mental health domain of SF-12 were observed among patients with higher treatment satisfaction ($\beta = 0.1$; p = 0.02) |
| Myers et al., 2022. ⁸¹ | Patient-reported quality of treatment | 32 SUD treatment facilities in Western Cape, South Africa | N= 1097 patients with SUD | SUD outcome: Patient-reported SUD improvement | Perceptions of SUD treatment being of suboptimal quality increased the odds of poor outcomes (OR=20.82; 95% CI: 13.59-31.88) |
| Thylstrup et al., 2011. ⁸⁸ | Treatment Satisfaction | 8 outpatient SUD treatment centres, Denmark | N= 186 patients with SUD | SUD outcomes: ASI at 6-month post-intake | Treatment satisfaction associated with reductions in substance use, particularly for patients who were not abstinent on treatment entry (p<0.0001). |

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| Zhang et al., 2008. ⁹¹ | Treatment Satisfaction | 62 methadone, outpatient, residential programs in the US | N= 4939 patients with SUD | SUD outcomes, 12-month post-treatment | Greater satisfaction at discharge associated with drug use improvement (regression coefficient 0.41, p<0.001) |
| Acronyms: ASI = Addiction severity index; SF-12 = Short-Form 12; SUD= substance use disorder; OUD= opioid use disorder | | | | | |
| OR= Odds ratio, 95% CI= 95% confidence interval | | | | | |

Notably, the vast majority of included articles (n=43, 91.5%) evaluated the quality of SUD treatment provided at the level of the patient only, that is whether the patient received an adequate service. Only four articles (8.5%) evaluated treatment facility performance on indicators of treatment quality.^{60,65-66,75} Three of these four articles assessing SUD treatment quality at both the patient and facility level.^{60,66,75} Research on whether high performing SUD treatment facilities generate better patient outcomes than low performing facilities is scant.

Relationship between receipt of individualised patient-centred SUD treatment and outcomes

Overall, there seems to be a significant positive relationship between receipt of patient-centred care and treatment outcomes (*Table 3*). Almost all included studies (n=16/18, 88.9%) examined the relationship between patient-centred care and SUD outcomes,^{47-49,51,53-5, 58,70,72,74,76,78,81,88,91} with mental health (n=2)^{54,74} and quality of life (n=2)^{46,79} outcomes less frequently studied. Some included studies report on multiple outcomes. Criminal justice and employment outcomes were not examined.

Patient-centred care and SUD outcomes

Greater satisfaction with treatment was consistently associated with better SUD outcomes. In a cross-sectional study, greater satisfaction was associated with more self-reported substance use improvements.⁵⁴ In longitudinal studies, satisfaction predicted greater odds of more days abstinent^{53,55} and reductions in drinks per drinking day⁵⁵ and substance use⁸⁸ at 3- and 6-month follow-up. Satisfaction also predicted abstinence at 9-,⁷⁰ 12-^{51,72} and 24-month post-treatment.⁴⁸ One study found satisfaction (rated on a five-item scale) was associated with less alcohol (but not drug) use severity at 12 months.⁷² This is in contrast to an earlier study where satisfaction (rated using a single item) predicted drug use improvements at 12 months.⁹¹ Regardless of how treatment satisfaction was assessed, none of the included studies found a non-significant relationship between treatment satisfaction and post-treatment SUD outcomes.

Similarly, studies examining the relationship between patient-reported experiences of treatment and SUD outcomes demonstrated favourable results. In a cross-sectional study, greater patient involvement in treatment decisions was associated with better patient-reported outcomes on discharge.⁴⁶ In longitudinal studies, greater patient involvement in treatment decisions predicted better SUD outcomes at 8⁷⁸ and 12 months.⁷⁶ Qualitative findings support the importance of patient involvement in the treatment process, describing how greater involvement facilitates retention in care and better outcomes.⁵⁸ Perceived helpfulness of treatment also predicted better

SUD outcomes at 8-,⁷⁸ and 12-month post-treatment.⁷⁶ Similarly, perceived quality of treatment predicted SUD outcomes at discharge⁸¹ and 3-month post-treatment.⁷⁴ Quality of provider communication also predicted better treatment response at three months.⁷⁴ Relatedly, findings from cross-sectional⁴⁹ and qualitative studies⁵⁸ show the negative impact of non-patient-centred provider communication (characterised by punitive and discriminatory responses) on treatment completion and patient outcomes.

Patient-centred care and other outcomes

Only a few studies examined the relationship between patient-centred care and mental health or quality of life outcomes.^{46,54,74,79} A cross-sectional study found positive associations between satisfaction with treatment, general health, emotional well-being and social functioning.⁵⁴ Perceived quality of treatment and quality of provider communication also significantly predicted mental well-being at 3-month post-treatment.⁷⁴ For quality of life outcomes, longitudinal cohort studies reported that satisfaction predicted quality of life at 3-⁷⁹ and 12-month⁸ follow-up.⁴⁶

Relationship between timely access to evidence-based SUD interventions and outcomes

Table 4 depicts a largely positive relationship between indicators of timely access to evidence-based SUD interventions and patient outcomes. These indicators included initiation of and engagement in SUD services, receipt of psychosocial treatment, and quality of psychosocial treatment. Ten of the 17 included studies (58.8%) reported on SUD outcomes^{52,61-2,65,67,69,71,80,85,87}, four (23.5%) reported on criminal justice outcomes^{59,60,67,71}, four (23.5%) reported SUD-related adverse events (such as mortality and readmission for detoxification)^{45,84,88-9}, and one study (5.9%) reported on employment⁵⁶ outcomes. Several studies reported on multiple types of patient outcomes.

Timely access to evidence-based interventions and SUD outcomes

Patient engagement in treatment, but not treatment initiation was consistently associated with better SUD outcomes. In longitudinal studies, only engagement in treatment predicted improvements to alcohol and drug use at 6-⁸⁷ and 7-month follow-up⁶⁷ and in the 12 months after treatment.⁶⁹ Further, studies found that greater levels of engagement predicted higher rates of abstinence at discharge,^{45,80} 3-⁷¹, and 12-month⁸⁵, but not at 36-month follow-up.⁸⁵ One study examined the relationship between facility initiation and engagement rates and SUD outcomes.⁶⁵ Facilities with higher initiation rates had better alcohol (but not drug) outcomes than facilities

with suboptimal performance on this indicator. Facility engagement rates were not associated with SUD outcomes.

Similarly, the handful of studies examining the relationship between receipt, quality and monitoring of SUD psychosocial treatment reported largely favourable results. A trial cohort study⁶¹⁻² reported that better quality treatment predicted more days of alcohol abstinence and fewer drinks per drinking day at 12-month follow-up. Another trial cohort study found that monitoring of patient response to drug treatment significantly predicted negative urinalysis at 12- and 36- month post-treatment.⁸⁵ Finally, one longitudinal cohort study noted that receiving psychosocial treatment (including psychotherapy) within four months of treatment initiation predicted better SUD outcomes in the year following treatment.⁶⁹

Timely access to evidence-based interventions and other outcomes

Fewer studies examined the relationship between timely access to SUD interventions and criminal justice, employment, and SUD-related adverse events (*Table 4*). In longitudinal studies, patients who engaged in treatment had greater improvements to their legal problems at 7-month follow-up⁶⁷ and lower risk of arrest and incarceration in the 12 months following treatment⁵⁹⁻⁶⁰ than patients who did not engage. One study found that less engagement in treatment predicted recidivism.⁷¹ Another study found that being treated in facilities with higher rates of patient engagement predicted lower risk of arrest.⁶⁰

Only one study reported on employment outcomes.⁵⁶ In this study, patients who engaged in treatment had higher rates of employment, worked more hours, and earned more than patients who did not engage.⁵⁶

Similarly favourable outcomes were found for the prevention of adverse events (such as mortality). One longitudinal study found that patients who engaged in treatment were less likely to require readmission for detoxification than those who did not engage.⁴⁵ In other longitudinal studies, treatment initiation,^{84,88} engagement,⁸⁴ and receipt of psychosocial treatment^{84,88-9} decreased the odds of mortality at 12- and 24-month follow-up. None of the included studies explored whether facility-level performance on these indicators predicted fewer adverse events.

Table 4. Studies examining the relationship between timely access to and receipt of evidence-based SUD treatment and patient outcomes (n= 17)

| Article | Quality indicator | Setting | Sample | Outcome | Results |
|--|-------------------------------------|---|----------------------------|---|--|
| Acevedo et al., 2016. ⁴⁵ | Treatment engagement | 59 public sector outpatient SUD treatment facilities, USA in one US state | N=11591 patients with SUD | SUD adverse event: detoxification admissions; 12-month post-treatment | Treatment engagement reduced the risk of a detoxification admission post-treatment (hazard ratio= 0.87, 95% CI: 0.78, 0.96). |
| Crevecoeur-MacPhail et al., 2010. ⁵² | Treatment engagement | 14 SUD treatment programs in LA county, USA | N=1360 patients with SUD | SUD: Abstinence or reduction in substance use at discharge | Greater engagement associated with more reduction in substance use and higher rates of abstinence (p<0.01). |
| Dunigan et al., 2014. ⁵⁶ | Treatment engagement | Publicly funded outpatient SUD treatment services, USA | N=7570 patients with SUD | Employment outcomes: wages, hours worked, 12-month post-treatment | Compared to those who did not engage, patients who engaged in treatment had higher rates of employment (45% vs 39%, p<0.01) wages (\$12,537 vs \$11,338, p<0.05), and worked more hours (866 vs 776, p<0.05) |
| Garnick et al., 2007. ⁵⁹ | Treatment initiation and engagement | Publicly funded outpatient SUD treatment, USA | N=5328 patients with SUD | Criminal justice outcomes: arrest; 12-month post-treatment | Treatment engagement but not initiation associated with lower risk of arrest and incarceration (hazard ratio= 0.73, 95% CI: 0.62-0.87). |
| Garnick et al., 2014. ⁶⁰ | Treatment engagement | Public sector outpatient SUD treatment centres, USA | N=106662 patients with SUD | Criminal justice outcomes: arrest; 12-month post-treatment | Treatment engagement associated with lower risk of arrest in all states (hazard ratio (HR) range: 0.73-0.83; p's<0.05). Being treated in facilities with higher rates of engagement predicted lower hazards of arrest (HR range: 0.54-0.56; p's <0.05). |

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| Gaume et al., 2018. ⁶¹ | Quality of psychosocial treatment | Multicentre trial cohort, United Kingdom | N= 376 patients with AUD | SUD outcomes: # drinks per drinking day; % days abstinent; 12 months follow-up | Quality of psychosocial treatment associated with higher % of days abstinent ($\beta= 7.65$, $SE=2.88$, $p=0.008$) and fewer drinks per drinking day ($\beta =3.84$, $SE = 1.00$, $p= 0.001$) at 12 months. |
| Gaume et al., 2022. ⁶² | Quality of psychosocial treatment | Multicentre trial cohort, United Kingdom | N= 351 patients with AUD | SUD outcomes: # drinks per drinking day; 12 months follow-up | Quality of psychosocial treatment associated with fewer drinks per drinking day at 12 months (path coefficient = -0.11 , 95% CI: $-0.21- -0.01$, $p=0.02$). |
| Harris et al., 2007. ⁶⁵ | Treatment initiation and engagement | 110 SUD treatment programs offered at 73 Veterans Health Administration facilities, USA | N= 5723 patients with SUD | SUD outcomes: ASI alcohol and ASI drug composite scores; 7-month post-treatment initiation | Facilities with higher <u>rates of initiation</u> had greater improvement on ASI drug score ($\beta = 0.03$, 95% CI: $0.02-0.15$) but not on ASI alcohol score. Facility <u>engagement</u> rates were not associated with changes in ASI composite scores |
| Harris et al., 2010. ⁶⁷ | Treatment engagement | 118 SUD treatment programs offered at 75 Veterans Health Administration facilities, USA | N= 2789 patients with SUD | SUD outcomes: ASI alcohol, drug and legal outcomes, 7-month post-treatment initiation | Patients who engaged in treatment had greater improvement on ASI alcohol score ($\beta =0.03$, 95% CI: $0.01-0.06$), ASI drug score ($\beta =0.02$, 95% CI: $0.00- 0.03$), and the ASI legal score ($\beta= 0.04$; 95% CI: $0.02- 0.07$) than those who did not engage. |
| Hepner et al., 2017. ⁶⁹ | Treatment initiation and engagement, Receipt of SUD psychosocial treatment | SUD treatment programs, Veterans Health Administration USA | N= 2074 patients with SUD | SUD outcomes: Perceived improvement on SUD difficulties | Treatment <u>engagement</u> (but not initiation) (correlation coefficient 0.25 , $p= 0.006$) <u>Psychosocial treatment</u> within four months of treatment initiation (correlation coefficient 0.19 , $p =0.025$) associated with patient-reported outcomes |
| Hser et al., 2007. ⁷¹ | Treatment engagement | Outpatient SUD treatment, USA | N= 1104 patients with SUD | SUD outcomes: Abstinence; Criminal justice: Recidivism; 3-month follow-up | Treatment engagement associated with greater odds of abstinence (OR= 1.01 , 95% CI: $1.00-1.01$). |

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| | | | | | Poorer engagement predicted recidivism ($\beta= 0.99$, 95% CI: 0.98–0.99) |
| Myers et al., 2018. ⁸⁰ | Treatment engagement | 31 SUD treatment facilities in Western Cape, South Africa | N= 933 patients with SUD | SUD outcome: Abstinence at treatment discharge | Treatment engagement associated with greater odds of abstinence at treatment exit (OR=6.43, 95% CI: 4.09–10.12) |
| Paddock et al., 2017. ⁸⁴ | Treatment initiation and engagement Receipt of psychosocial treatment | Inpatient and outpatient SUD treatment programs, Veterans Health Administration, USA | N= 339966 patients with SUD | SUD adverse event: mortality at 12- and 24-months follow-up | <u>Treatment initiation</u> decreased odds of mortality at 12 (AOR=0.86, 95% CI: 0.79, 0.93) and 24 months (AOR= 0.88, 95% CI: 0.84, 0.93). <u>Treatment engagement</u> decreased odds of mortality at 12 (AOR=0.65, 95% CI: 0.58, 0.74) and 24 months (AOR= 0.78, 95% CI: 0.71, 0.85). <u>Psychosocial treatment</u> decreased odds of mortality at 12 (AOR=0.88, 95% CI: 0.84, 0.92) and 24 months (AOR= 0.91, 95% CI: 0.88, 0.94). |
| Rawson et al., 2012. ⁸⁵ | Monitoring of treatment outcomes Treatment engagement | 8 outpatient SUD treatment programs, USA. | N=1016 patients with MA use disorder | SUD outcome: methamphetamine abstinence; 12- and 36- month follow-up | Treatment <u>engagement</u> ($r = 0.08$, $p < 0.05$) and regular <u>monitoring</u> of drug use ($r = 0.22$, $p < 0.001$) during treatment were correlated with MA abstinence at 12 months. Only drug use monitoring was significantly associated with abstinence at 36 months ($r = 0.13$, $p < 0.001$). |
| Schmidt et al., 2017. ⁸⁷ | Treatment engagement | Intensive outpatient SUD treatment, programs, Veterans Health Administration, USA | N= 5436 patients with new SUD diagnoses N = 339887 patients with SUD | SUD outcomes: ASI alcohol and drug use severity score at 6-month post-treatment | Engagement associated with more improvement on ASI alcohol ($\beta=0.47$, 95% CI: 0.28-0.65, $p < 0.001$) and ASI drug use score ($\beta=0.02$, 95% CI: 0.01-0.03, $p=0.002$). |

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| Watkins et al., 2016.⁸⁸ | Treatment initiation and engagement Receipt of SUD psychosocial treatment | Veterans' Health Administration, USA | N= 144045 patients with SUD and a co-occurring mental disorder | SUD adverse events: mortality at 12- and 24- month follow-up | Treatment <u>initiation and engagement</u> associated with a 15% and 31% decrease in 12-month mortality respectively (ps<0.001). Receipt of <u>psychosocial treatment</u> associated with a 21% decrease in 12-month mortality. All measures except treatment engagement (p = 0.056) were associated with lower mortality at 24-month follow-up (ps<0.01). |
| Watkins et al., 2017.⁸⁹ | Receipt of SUD psychosocial treatment | Veterans Health Administration, USA | N= 31016 patients with OUD | SUD adverse events; mortality at 24-month follow-up | Receipt of psychosocial treatment reduced risk of mortality by 18% at 24 months (p <0.0001). |
| Acronyms: ASI = Addiction severity index AUD = alcohol use disorder, SUD= substance use disorder; OUD= opiate use disorder, MA= methamphetamine; MAT= Medication-assisted treatment | | | | | |

Relationship between continued access to evidence-based SUD treatment and outcomes

Overall, there appears to be a positive association between continued access to evidence-based SUD treatment and patient outcomes, as described in *Table 5*. Three of the 13 included studies (23.1%) reported on SUD outcomes^{64,66,86}, three (23.1%) reported on criminal justice outcomes^{50,63,77}, and seven (53.8%) reported SUD-related adverse events (such as mortality and readmission for detoxification or emergency department use).^{57,68,73,75,82,83,90}

Continued access to evidence-based interventions and outcomes

SUD treatment continuity was inconsistently associated with favourable SUD outcomes. Two studies^{66,86} found the continuity of care after the initial treatment episode increased the odds of abstinence. In contrast, one study found no significant associations between continuity of care and clinical outcomes at 3-month post-treatment.⁶⁴ One study found no association between facility-level continuity of care rates and follow-up abstinence rates.⁶⁶

In contrast, MAT continuity appeared to have a protective effect on criminal justice involvement. Two studies found that MAT continuity was associated with lower risk of arrest and lower charge rates than shorter periods of MAT or MAT characterised by treatment interruptions.^{50,63} Similarly, one study found that SUD treatment continuity reduced risk of re-arrest and conviction.⁷⁷

Continued access to evidence-based interventions and adverse events

MAT continuity was consistently associated with decreased risk of adverse events related to SUD use, such as overdose, hospitalisation and emergency department use, and death. MAT continuity was associated with reduced likelihood of readmission for detoxification at 12-month follow-up,⁷³ and lower risk of mortality at 6-⁸³ and 24-month follow-up.⁵⁷ Only one study⁹⁰ did not find an association between MAT continuity and mortality at 12 and 24 months, possibly because continuity was assessed over 90 days rather than the standard 180-day timeframe. Facility-level MAT continuity rates predicted lower rates of patient overdose and detoxification at 12-month follow-up in one study.⁷⁵

Similarly, SUD treatment continuity was associated with lower likelihood of hospitalisation or emergency service use at 12-month follow-up⁸² and lower risk of mortality at 24 months.⁶⁸ None of the included studies explored whether facility-level rates for continuity of SUD care predicted fewer adverse events in the post-treatment period.

Table 5. Studies examining the relationship between continued access to evidence-based SUD treatment and patient outcomes (n = 13)

| Article | Quality indicator | Setting | Sample | Outcome | Results |
|--|--------------------------|---|---------------------------|---|---|
| Bukten et al., 2012. ⁵⁰ | MAT Continuity | National MAT program, Norway | N=3221 patients with OUD | Criminal justice outcomes: Conviction rate during treatment | Patients on MAT > 2 years had fewer convictions than those with <1 year of MAT ($\beta = 0.72$, 95% CI: 0.56–0.94; $p=0.014$). Patients with interrupted treatment ($\beta = 2.33$, 95% CI: 1.30-4.18, $p=0.005$) or who left treatment ($\beta = 2.40$, 95% CI: 1.83-3.15; $p<0.001$) had more convictions than those with MAT continuity |
| Durand et al., 2020. ⁵⁷ | MAT Continuity | Specialist addiction services in Dublin, Ireland | N= 2899 patients with OUD | SUD adverse event: mortality | Compared to those in continuous MAT, those in the first 4 weeks out of treatment were at greater risk for mortality (relative risk = 4.04, 95% CI: 1.43–11.43, $p = 0.009$) |
| Gisev et al., 2019. ⁶³ | MAT Continuity | MAT, New South Wales, Australia. | N=10744 patients with OUD | Criminal justice outcomes: charge rates up to 4 years post-initiation | Compared to MAT continuity, more treatment interruptions predicted higher charge rates (IRR=1.13, 95% CI: 1.11–1.15). |
| Greenberg et al., 2002. ⁶⁴ | SUD Treatment Continuity | 22 residential work programs, Veterans' Health, USA | N=1576 veterans with SUD | SUD outcomes; 3-month post-discharge | No significant associations found between continuity of care and clinical outcomes |
| Harris et al., 2009. ⁶⁶ | SUD Treatment Continuity | SUD outpatient treatment, Veterans' Health Administration, USA | N=1869 patients with SUD | SUD outcomes: ASI alcohol and drug composite scores post-discharge | Meeting the continuity of care (CoC) measure was associated with better odds of alcohol abstinence (OR = 1.53, 95% CI: 1.05–1.89) and drug abstinence (OR = 2.29, 95% CI: 1.26–3.49) at follow-up. Facility rates of CoC were not associated with follow-up abstinence rates |
| Harris et al., 2015. ⁶⁸ | SUD Treatment Continuity | 54 SUD Residential Rehabilitation Programs, Veterans' Administration, USA | N=10064 patients with SUD | Adverse events: mortality at 24 months | Patients with better CoC had a lower 2-year mortality rate (OR = 0.77, $p = 0.008$). |

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| Lee et al., 2014. ⁷³ | Continuity of care following detoxification | Publicly funded detoxification services, USA | N=74515 patients with SUD | SUD outcome: Readmission (relapse)- 12-month post-detox | Clients who received SUD treatment within 14-days of detoxification were less likely to be readmitted to detoxification (ORs: 0.79-0.85, p<0.05 in 4 of 5 states). Facility-level CoC rates did not consistently predict readmission to detoxification. |
| Liu et al., 2022. ⁷⁵ | MAT Continuity | MAT clinicians and practices, USA | N =25430 patients with OUD | SUD adverse events: overdose, detox events; 12-month follow-up | Patients attributed to practices with higher rates of MAT continuity had lower risk of adverse events. For a 10-percentage point increase in a practice's continuity rate, the odds of a patient experiencing overdose or detoxification were 0.90 (95% CI 0.85-0.95) and 0.83 (95% CI 0.77-0.89). |
| Luchansky et al., 2006. ⁷⁷ | SUD Treatment Continuity | SUD treatment programs, USA | N= 8343 patients with SUD and a disability | Criminal justice outcomes: arrests; 12-month post-treatment | SUD treatment continuity significantly reduced risk of re-arrest by 30% (p<0.0001) and convictions for any offence by 27% (p<0.0001) |
| Neighbors et al., 2005. ⁸² | SUD Treatment Continuity | SUD treatment facilities from 44 states, USA | N=15041 patients with SUD | SUD adverse events: hospitalisation and emergency use; 6-, 12-month post-treatment | CoC at 6-month post-treatment reduced likelihood of hospitalisations (OR= 0,85, 95% CI: 0.74-0.98) and emergency department use (OR =0.83, 95% CI: 0.79-0.98) at 12 months |
| Nosyk et al., 2022. ⁸³ | MAT Continuity | MAT sites, Canada | N=55470 patients with OUD | SUD adverse events: outcomes: death at 6-month follow-up | Retention on MAT for more than 24 months had protective effects on survival (hazard ratio= 1.16, 95% CI: 1.08-1.23) |
| Schaefer et al., 2008. ⁸⁶ | SUD Treatment Continuity | 18 SUD outpatient programs, USA | N=429 patients with SUD | SUD outcomes: abstinence | For each additional month of CoC, the odds of abstinence increased (OR = 1.28, 95% CI: 1.14-1.33; p<0.001). |

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|--|----------------|---|----------------------------|---|--|
| Watkins et al., 2017. ⁹⁰ | MAT Continuity | MAT, Veterans' Health Administration, USA | N= 31016 patients with OUD | SUD adverse events: mortality at 12 and 24 months | Continuity of MAT at 3 months was not associated with mortality. |
|--|----------------|---|----------------------------|---|--|

Acronyms: ASI = Addiction severity index; AUD = alcohol use disorder, CoC= continuity of care; SUD= substance use disorder; OUD= opioid use disorder, MA= methamphetamine; MAT= Medication-assisted treatment
OR= odds ratio, 95% CI: 95% confidence intervals

Discussion

Healthcare quality,²⁴ and by extension, SUD treatment quality,^{25,31} is widely recognised as a multidimensional rather than unidimensional construct. This scoping review systematically mapped and narratively synthesised the global literature on the relationship between the quality and outcomes of SUD treatment according to the four quality domains specified in the “*Quality assurance in treatment for drug use disorders: key quality standards for service appraisal*”³⁹ and a fifth domain measuring continuity of care. While there has been a proliferation of quality measures and quality assurance systems for SUD treatment over the last two decades and accumulating research on this topic,²⁹⁻³¹ this scoping of the global literature only identified 47 articles for inclusion in this review. This is an important finding, revealing the need for more research on how patterns and processes of SUD treatment influence outcomes. Despite the paucity of research, emerging evidence of a positive relationship were found between performance on three of the five quality domains and treatment outcomes. These findings are discussed below.

Key findings on links between SUD treatment quality and outcomes

Provision of individualised, patient-centred treatment is a key feature of quality SUD treatment.^{24-25,36,39} Consistent with an earlier review,³⁶ the 18 articles that measured indicators of patient-centred treatment found modest but consistent beneficial outcomes for patients who reported greater satisfaction with and more positive experiences of treatment. This pattern of positive findings was most evident for substance use outcomes, with almost all studies showing that receipt of patient-centred care predicted reductions in substance use severity and remission from SUDs.^{47-49,51,53-5,58,70,72,74,76,78,81,88,91} Notably, six studies demonstrated that patient-centred care had lasting benefits for patient recovery, with substance use benefits still evident 12- and 24-month post-treatment.^{48,51,70,72,74,76} This suggests that patient-centred approaches to SUD treatment may hold lasting benefits for SUD outcomes. Additionally, preliminary evidence supporting mental health and quality of life benefits of patient-centred SUD treatment was found.^{46,54,74,79} More studies examining these outcomes are needed to strengthen the evidence base. Finally, like previous reviews,³⁶ most included studies measured treatment satisfaction as an indicator of patient-centred care, with fewer studies relying on patient experience measures of treatment. None of the included studies measured both satisfaction and patient experiences of care. As satisfaction and patient experience of care measures examine different aspects of the care process, future studies should consider using both types of measures when assessing the

quality of SUD treatment. This will provide a fuller picture of how patient-centred SUD treatment may benefit patient outcomes. Nonetheless, findings from this review highlight the benefits of providing individualised, patient-centred SUD treatment for outcomes.

In addition, findings from this review demonstrate a largely positive relationship between timely access to evidence-based SUD treatment and a range of treatment outcomes. The evidence base was strongest for measures of timely engagement in treatment. Included studies consistently demonstrated better SUD, ^{45, 65, 67, 69, 71, 80, 85, 87} criminal justice outcomes^{59-60,67,71} and lower risk of SUD-related adverse events (such as mortality)^{45,84,88-9} among patients who engaged in treatment within 30 days of a treatment initiation visit. One study demonstrated employment and economic benefits for patients who engaged in treatment.⁵⁶ Several studies demonstrated benefits of 12- and 24-month post-treatment, highlighting the lasting impact of timely access to care on SUD recovery and the prevention of SUD-related harms.^{45,59-60,69,84-5,88-80} Although treatment initiation was not associated with patient outcomes, this is not surprising as treatment initiation that is not accompanied by engagement is not a good indication of SUD treatment access.³⁷ Taken together, these findings provide satisfactory evidence that timely receipt of SUD services is predictive of SUD and other socio-economic outcomes.

In contrast, limited evidence was found to support conclusions about the benefits of receipt and quality of psychosocial treatment for patient outcomes. Only five articles assessed these quality indicators.^{61,62,84-5,88-9} There was, however, emerging evidence of lower mortality rates among patients who received psychosocial treatment.^{84,88-9} Comparing findings across SUD outcomes was difficult as choice of quality indicators and outcome measures differed. As psychosocial treatment provision is at the core of most outpatient and intensive outpatient SUD programs,^{30,37-38} the paucity of research on quality measures of psychosocial treatment and patient outcomes is concerning. This may stem from the relatively few quality measures (four out of more than 370 unique measures) designed to evaluate psychosocial treatment for SUDs.³⁰ Notably, none of these measures assess provision of evidence-based treatment. This needs to be rectified so that real-world (rather than trial-based) evidence of the benefits of obtaining evidence-based SUD treatment can be generated and used to support policy efforts to scale up the provision of these treatments.

Finally, the 13 articles that measured continuity of care found mainly beneficial outcomes for patients who reported continuity of care following an index SUD treatment episode and

continuity of MAT. Most of these studies demonstrated benefits for SUD outcomes,^{66,86} criminal justice outcomes^{50,63,77}, and the prevention of SUD-related adverse events (such as mortality and use of detoxification or emergency services).^{57,68,73,75,82,83} While two studies did not find associations between continuity of care and patient outcomes,^{64,66} these studies assessed care continuity over a three rather than six-month time period which possibly contributed to these null findings. Evidence for the benefits of care continuity were strongest for MAT. This is not surprising given that most of the included studies (n=11) examined the effects of uninterrupted MAT on outcomes.³⁷ These findings, together with findings from an earlier review of quality indicators for the OUD treatment cascade,³⁷ strongly support the benefits of MAT continuity for preventing substance-related adverse events among people with OUD.

Gaps in the evidence base and future directions

Through this review, three gaps were identified in the literature on SUD treatment quality and outcomes. First, included articles focused on a single dimension of the quality construct at the expense of the other four dimensions. This is an important limitation of the existing literature as conclusions cannot be made about the overall quality of treatment and how this impacts patient outcomes without measuring all dimensions of quality.²⁶⁻²⁷ Without this information, SUD treatment planners are unable to build a case for why assuring the quality of SUD treatment matters for patient outcomes. Relatedly, the relative importance of each quality domain for predicting treatment outcomes cannot be evaluated without incorporating all five quality dimensions in a study and considering how these dimensions interact to affect outcomes.³¹ Knowing which aspects of treatment quality are most likely to influence patient outcomes is key to the evidence-informed prioritisation of activities for treatment quality improvement.

Second, the evidence-base for two of the five quality domains specified in this conceptual framework was non-existent. No articles describing how the organisation of SUD treatment services or provision of safe and rights-based care are related to patient outcomes were found. Measures of treatment structure (including workforce characteristics, organisational infrastructure, treatment climate, and resources availability) are needed to assess performance on these domains.^{31,38-9} These kind of quality measures are much less common than measures of process and outcome in the literature, likely contributing to this gap.²⁹⁻³⁰ As treatment structures are further upstream on the pathway to outcomes than process indicators (reflecting organisational capacity for rather than actual provision of high-quality treatment),³¹ they are likely to have mainly indirect effects on patient outcomes. Understanding the pathways through which treatment structures influence processes of care and ultimately patient

outcomes is an important avenue for future research. Globally the SUD treatment sector is grappling with chronic workforce and resource challenges that impact on care provision and quality.¹²⁻¹⁵ Robust evidence of a relationship between treatment structures and patient outcomes can inform advocacy for SUD treatment policy and system reform for overcoming structural barriers to high quality, effective treatment provision.

Third, almost all included studies were limited to patient-level analyses. Only four articles that evaluated associations between facility performance on the quality dimensions of “timely access to evidence-based interventions” and “continuity of access to evidence-based intervention” were located.^{60,65-66,75} In keeping with an earlier review,³⁶ none of these studies examined facility-level performance on measures of patient-centred care. In addition, studies that did report facility-level analyses varied in their methods, and the quality domains and outcomes measured. This makes it difficult to interpret and generalise findings, particularly as studies had mixed findings. The clinical utility of ascertaining patient-level links between quality-of-care measures and outcomes are recognised, particularly if this encourages providers to collect and use real-time data on quality indicators to enhance care quality for individual patients.⁹⁷⁻⁸ However, quality measures are designed for facility- or system-level application.^{26-27,65-66} Facility-level analyses of treatment quality are essential for discriminating between high and low-performing facilities so that SUD treatment planners can support and incentivise low-performing facilities to improve their performance. Given substantial resource constraints, SUD treatment funders and facilities will need to be convinced there are benefits to implementing quality assurance and improvement initiatives. Evidence of associations between facility-level performance on treatment quality indicators and patient outcomes is critical to building this case, but is absent from the SUD treatment literature. Clarification of the relationship between facility-level quality of care and patient outcomes should be a key priority for the SUD treatment sector.

Limitations

This review has some limitations. Most of the articles reviewed were produced by high-income countries and generated by relatively well-resourced treatment systems. It is unclear whether findings from this review are applicable to SUD treatment systems in lower income countries where there are considerably fewer resources and more structural and systemic barriers to treatment provision.^{14,99} We identified only two articles from a low- and middle-income country (LMIC), namely South Africa⁸⁰⁻⁸¹ and no articles from Asia, the rest of Africa or South America.

This is somewhat surprising as both the African Union and the Inter-American Drug Abuse Control Commission have produced quality standards for the treatment of drug use disorders.¹⁰⁰⁻¹⁰¹ The exclusion of articles written in languages other than English likely introduced a bias towards well-resourced SUD treatment systems in Western countries. Further, only major international databases were searched. For many reasons, including a well-documented geographic publication bias, only a small proportion of research from LMICs is published in indexed journals and captured by major databases.¹⁰² 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. Nonetheless, SUD treatment services research is less common in LMICs,³¹ and many of these countries may still need to develop the infrastructure and capability for routine collection of within-treatment process data and patient outcomes data.^{33,99,103}

Other limitations include the heterogeneity of methods, follow-up periods, and analyses among included studies- as recognised by other reviews.³⁶⁻³⁸ This restricted the ability to compare and pool findings within each of the identified quality domains. Should national and international agencies implement recommendations for the harmonisation of SUD treatment quality and outcome measures by national and international agencies,²⁹⁻³⁰ this is likely to become less of an issue. Another limitation is the exclusion of adolescent populations from this review. This was deliberate with the view to ensuring a manageable review, but likely restricted results. A separate review of the literature in this area is warranted. Finally, the quality of included studies was not appraised. While this is in keeping with guidance for conducting systematic scoping reviews,¹⁰⁴ this hindered commenting on the quality of existing evidence for a relationship between SUD treatment quality and treatment outcomes.

Conclusion

This review provides a valuable synthesis of how aspects of SUD treatment quality relate to patient outcomes. Despite a plethora of quality measures and assurance frameworks for the SUD treatment field, research linking indicators of treatment quality to patient outcomes is in its nascency. Only 47 articles were included in this review, with almost all failing to examine more than one dimension of treatment quality. Notably there was an absence of literature on the relationship between treatment

structures, patient safety and outcomes. More evidence on the relationship between treatment structures and patient outcomes is needed to inform advocacy for SUD treatment policy and system reform and facilitate the provision of high quality, effective treatment provision. Additionally, few studies examined whether facility performance on these quality domains impacted patient outcomes. Evidence of differences in patient outcomes between high- and low-performing facilities is needed to convince treatment providers of the benefits of monitoring and improving the quality of their service.

Despite these gaps, consistent, positive relationships were found between patient receipt of patient-centred treatment, timely access to evidence-based SUD treatment and continuity of evidence-based SUD treatment and patient outcomes. These benefits were evident for a range of outcomes including substance use outcomes, criminal justice outcomes, and powerfully, the prevention of SUD-related adverse events such as mortality or emergency service use. These findings suggest that efforts to ensure that SUD treatment facilities provide timely access to person-centred SUD treatment and opportunities for patients to receive continued care (should this be indicated) are likely to yield benefits for patient outcomes. Given evidence of their importance for patient outcomes, these domains should be assessed as part of quality assurance processes.

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Appendix 1: Search strategies

Date of all database searches: 9th November 2022

Medline (Ovid) MEDALL

(exp Substance-Related Disorders/ or Substance Abuse Treatment Centers/ or Heroin Dependence/ or (((drug-dependence or substance-abuse or substance-'use' or opioid-dependence or alcohol-misuse or addiction)ADJ3(treatment))).ab,ti.) AND (Quality Indicators, Health Care/ or Quality Assurance, Health Care/ or "Quality of Health Care"/ or Patient satisfaction/ or (((quality)ADJ3(measure* or indicator* or care or service* or improvement)) or ((treatment)ADJ3(quality or satisfaction or engagement or initiation)) or performance-indicator* or performance-measure*).ab,ti.) AND (Treatment Outcome/ or outcome-assessment/ or patient-reported-outcome/ or (treatment-outcome* or outcome or outcomes).ab,ti.)

Limited to English Language, Publication year 2000-2022 & Adults = 1066

Embase (Ovid)

(exp drug dependence treatment/ or substance abuse treatment centers/ or heroin dependence/ or (((drug-dependence or substance-abuse or substance-'use' or opioid-dependence or alcohol-misuse or addiction)ADJ3(treatment))).ab,ti.) AND (health care quality/ or patient satisfaction/ or total quality management/ OR performance indicator/ or (((quality)ADJ3(measure* or indicator* or care or service* or improvement)) or ((treatment)ADJ3(quality or satisfaction or engagement or initiation)) or performance-indicator* or performance-measure*).ab,ti.) AND (treatment outcome/ or outcome assessment/ or patient-reported outcome/ or (treatment-outcome* or outcome or outcomes).ab,ti.)

Limited to English language, Publication year 2000-2022 and Adults = 707

PsycInfo (Ovid)

(exp "substance use disorder"/ or "substance use treatment"/ or addiction treatment/ or alcohol abuse/ or drug addiction/ or (((drug-dependence or substance-abuse or substance-'use' or opioid-dependence or alcohol-misuse or addiction)ADJ3(treatment))).ab,ti.) AND (exp "quality of care"/ or exp client satisfaction/ or (((quality)ADJ3(measure* or indicator* or care or service* or improvement)) or ((treatment)ADJ3(quality or satisfaction or engagement or initiation)) or performance-indicator* or performance-measure*).ab,ti.) AND (Treatment Outcomes/ or Treatment Effectiveness Evaluation/ or Patient-Reported-Outcome Measures/ or (treatment-outcome* or outcome or outcomes).ab,ti.)

Limited to English Language, Publication year 2000-2022 =694

Cochrane Library

(((drug-dependence or substance-abuse or substance-use or opioid-dependence or alcohol-misuse or addiction)NEAR/3(treatment)):ab,ti) AND (((quality)NEAR/3(measure* or indicator* or care or service* or improvement)) or ((treatment)NEAR/3(quality or satisfaction or engagement or initiation)) or performance-indicator* or performance-measure*):ab,ti) AND ((treatment-outcome* or outcome or outcomes):ab,ti)

Limited to publication date from Jan 2000 to Nov 2022, in Cochrane Reviews and Cochrane Protocols=3

Web of Science Core Collection

TS=((((drug-dependence or substance-abuse or substance-use or opioid-dependence or alcohol-misuse or addiction)NEAR/2(treatment)))) AND (((quality)NEAR/2(measure* or indicator* or care or service* or improvement)) or ((treatment)NEAR/2(quality or satisfaction or engagement or initiation)) or performance-indicator* or performance-measure*)) AND ((treatment-outcome* or outcome or outcomes))

Limited to Publication year 2000-2022 = 629

CINAHL (Ebsco)

(MH Substance Use Disorders+ or MH Substance Use Rehabilitation Programs+ or TI (((drug-dependence or substance-abuse or substance-'use' or opioid-dependence or alcohol-misuse or addiction) N3 (treatment)))) AND (MH Quality of Health Care+ or MH Quality Improvement+ or MH Patient satisfaction+ or TI (((quality) N3 (measure* or indicator* or care or service* or improvement)) or TI ((treatment) N3 (quality or satisfaction or engagement or initiation)) or performance-indicator* or performance-measure*)) AND (MH Treatment Outcome+ or TI (treatment-outcome* or outcome or outcomes)) AND (MH Substance Use Disorders+ or MH Substance Use Rehabilitation Programs+ or AB (((drug-dependence or substance-abuse or substance-'use' or opioid-dependence or alcohol-misuse or addiction) N3 (treatment)))) AND (MH Quality of Health Care+ or MH Quality Improvement+ or MH Patient satisfaction+ or AB (((quality) N3 (measure* or indicator* or care or service* or improvement)) or AB ((treatment) N3 (quality or satisfaction or engagement or initiation)) or performance-indicator* or performance-measure*)) AND (MH Treatment Outcome+ or AB (treatment-outcome* or outcome or outcomes))

Limited to Published Date: 20000101-20231231; English Language; Exclude MEDLINE records; Human; Age Groups: Adult: 19-44 years, Middle Aged: 45-64 years, Aged: 65+ years, Aged, 80 and over; Language: English =1162

Google Scholar search conducted via Publish or Perish (version 8.4)

Date of Google Scholar search : 18th November 2022

GoogleScholar1

‘drug|substance|opioid|alcohol dependence|abuse|use |misuse’ +treatment quality Limited to 2000-2022, First 100 hits

GoogleScholar2

‘drug|substance|opioid|alcohol dependence|abuse|use |misuse’ +quality +treatment outcome* Limited to 2000-2022, First 100 hits

GoogleScholar3

substance related disorder|substance abuse|substance use|drug dependence|drug addiction|alcohol misuse +quality treatment Limited to 2000-2022, First 100 hits