Achieving Integrated Treatment: A realist synthesis of service models and systems for co-existing serious mental health and substance use conditions

Jane Harris, PhD[1], Sonia Dalkin, PhD[2], Lisa Jones, BSc[1], Tom Ainscough, PhD[3], Michelle Maden PhD[4], Angela Bate, PhD[2], Professor Alexandre Copello, PhD[5], Professor Gail Gilchrist, PhD[6], Emma Griffith, DClinPsych[7], Luke Mitcheson, DClinPsych[8], Professor Harry Sumnall, PhD[1] and Professor Elizabeth Hughes, PhD[9]

Corresponding author: Liverpool John Moores University, Public Health Institute, Exchange Station, Tithebarn Street Liverpool, L2 2QP. Tel: 0151 231 4511 Email: j.harris@ljmu.ac.uk

1.Public Health Institute, Faculty of Health, Liverpool John Moores University, Liverpool, UK 2. Department of Social Work, Education and Community Wellbeing, Faculty of Health & Life Sciences, Northumbria University, Newcastle, UK 3. School of Healthcare, Faculty of Medicine and Health, University of Leeds, Leeds, UK 4. Liverpool Reviews and Implementation Group, Faculty of Health and Life Sciences, University of Liverpool, Liverpool, UK 5. School of Psychology, College of Life and Environmental Sciences, University of Birmingham, Birmingham, UK 6. National Addiction Centre, Institute of Psychiatry, Psychology and Neuroscience, Kings College London, London, UK 7. Specialised Services, Avon and Wiltshire NHS Partnership Trust, Bristol, UK 8. Department of Psychology and Psychiatry in Addictions, South London and Maudsley NHS Trust, London, UK 9. School of Heath and Social Care, Edinburgh Napier University, Edinburgh, UK

Abstract (195/200 words)

Approximately 30-50% of people with serious mental illness have co-existing drug/alcohol problems (COSMHAD), associated with adverse health/social care outcomes. UK guidelines advocate both co-occurring needs being met within mental health services but uncertainty remains about how to operationalise this to improve outcomes. Various unevaluated service configurations exist in the UK. A realist synthesis was undertaken to identify, test and refine programme theories (PTs) explaining how context shapes the mechanisms through which UK service models for COSMHAD work, for whom, and in what circumstances. Structured and iterative realist searches of 7 databases identified 5,099 records. A two-stage screening process identified 132 papers. Three broad contextual factors shaped COMSHAD services across 11 PTs: committed leadership; clear expectations regarding COSMAHD from mental health and substance use workforces; and clear care coordination processes. These contextual factors led to increased staff empathy, confidence, legitimisation and multidisciplinary ethos which improved care coordination, and increased people with COSMHAD's motivations to work towards their goals. Our synthesis highlights that integrating COSMHAD care is complex and both individual and cultural behavioural shifts in leadership, workforce and service delivery is essential to ensure people with COSMHAD receive compassionate, trauma informed care that meets their needs.

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Introduction

Approximately 30%-50% of people with serious mental illness (SMI) have a co-existing alcohol/drug condition(1, 2). SMI includes conditions that affect daily functioning, quality of life and, require long term support from services(3) such as schizophrenia, paranoid psychosis; schizoaffective disorders; bipolar affective disorders; and long term and severe depression. Co-Occurring SMI and Alcohol/Drug use (COSMHAD) is associated with adverse health/social consequences including: increased risk of suicide, self-harm(4), violence perpetration and victimisation(5, 6); criminal justice system and forensic mental health contact(7), recidivism, crisis care(8); overall service costs (9); co-morbid physical health problems(10), and homelessness(7).

The importance of integrating effective treatments for COSMHAD is internationally recognised(11) however there remains a lack of consensus regarding the most appropriate treatment strategies and settings(12). As a consequence, guidance in many countries has developed without supporting evidence or frameworks for COSMHAD integration(13). COSMHAD treatment research comprises randomised control trials (RCTs) which integrate psychosis and addiction treatment approaches (combining cognitive behavioural therapy, motivational interviewing and relapse prevention)(14, 15); Integrated Treatment models(16), and workforce training evaluation(17). However there remains a lack of high-quality evidence on how psychosocial services should be best delivered to improve outcomes due to small sample sizes, high attrition rates, differing ways psychosocial interventions are delivered and differences in outcome measures(18). Furthermore, the heterogeneous nature of people with COSMHAD, exclusion of those who are currently mentally unwell from research and participation barriers (such as childcare or homelessness) mean existing studies provide only partial evidence from a sub-section of the population with COSMHAD.

In the UK, a policy of "mainstreaming"(19) (that people should have both their COSMHAD needs met primarily within mental health services), has been advocated with the high prevalence of COSMHAD in these services meaning it should be considered part of routine care(20, 21). Mainstreaming advocates the workforce have the appropriate capabilities to offer treatment that addresses mental health and substance use simultaneously and implementation requires support from local clinical leadership. Mainstreaming remains an ambition of the recent mental health strategies (22-25) and drugs strategies(26-28) of all four devolved UK nations.

Recent UK guidance recommends key agencies work together to develop care pathways that ensure people with COSMHAD get the right help, in the right place, at the right time(29) with "no wrong door" for people to access help. However implementing "mainstreaming" in UK mental health services has been variable and hindered by factors including austerity, public spending reductions, competitive commissioning climates with community drug and alcohol treatment provided outside of the National Health Service (NHS) and no ring-fenced budget for drug and alcohol treatment(30). A variety of local models have evolved including senior leadership roles, link workers and staff network models; which require considerable investment but remain unevaluated(31). Significant uncertainty remains about how care should be delivered and under what contexts it works to meet the needs of such a diverse group. A realist synthesis was undertaken to address this gap.

Realist syntheses are a form of theory-based literature review pioneered by Pawson and Tilley(32) with reporting standards developed under the RAMESES (Realist and Meta-Narrative Evidence Synthesis) project(33). Realist approaches are theory driven and attend to the ways complex social interventions may have different effects for different people, depending on the contexts they are introduced in. Realist reviews systematically and transparently synthesise relevant literature to produce an explanatory framework of how programmes lead to their outcomes using context-mechanism-outcome (CMO) configurations which are tested and refined as the synthesis progresses. Data are relevant if they address the theory under test (relevance) and if the inference drawn has sufficient weight to contribute to development, testing and refining of programme theories (PTs, rigour. The worth of studies is thus established during the synthesis rather than through a pre-qualification exercise (34).

Services for people with COSMHAD typically require involvement of multiple agencies who deliver a combination of interventions as part of an individual's treatment pathway. They are complex systems with numerous compounding factors that can impact on outcomes including the severity of mental health or drug/alcohol condition, individual characteristics, previous experience of health seeking and service factors. Realist approaches offer the potential to describe why services for COSMHAD are successful or unsuccessful, in complex social systems(32) through focusing on 'what works, for who, in which circumstances and why'.

The realist synthesis aim was to identify, test and refine PTs to explain how context shapes the mechanisms through which UK service models for COSMHAD work, for whom and in what circumstances (PROSPERO protocol CRD42020168667(35)).

Methods

To develop initial programme theories (IPTs) to be tested and refined in the review, we began our realist synthesis by triangulating findings from articles describing COSMHAD service provision in the UK, key UK policy(20, 29) and a two-hour online workshop with clinicians, policy makers, managers and academic experts (n=14). This produced a COSMHAD programme sketch and 16 potential programme theories in the form of 'if…then' statements.(36). The research team (n=9) worked to refine these 'if…then' statements into 11 Context

(C), Mechanism (M, including resource and reasoning) and Outcome (CMO) statements (referred to as IPTs) by revisiting the key literature, policy and workshop transcript and engagement with formal theory. Mechanisms are a combination of resources offered by the programme under study and the stakeholders reasoning in response.(32) For the purpose of this review, we have disaggregated mechanisms into resource (the component introduced in context) and reasoning as this can assist in with the identification of relevant contexts and mechanisms and avoids conflating programme strategy (resource) with mechanism(37, 38).

Search strategy and selection criteria

Figure 1 details our approach to literature searching. Our search strategy combined terms from five categories 1) SMI, 2) substance use, 3) co-occurrence, 4) service integration and 5) delivery of health services (see appendix page 1). Seven health and social sciences databases (Medline, Cochrane Library, EMBASE, Web of Science all databases, CINAHL, PsycInfo and HMIC) were searched up to 13th March 2020 (n=7640). We adopted an iterative approach to searching through CLUSTER searching for sibling studies, citation tracking and complementary theory searches as the review progressed(39) (n=368). After removal of duplicates, 5,099 manuscripts went through a two-stage screening process. Titles and abstracts were screened by two reviewers (JH, TA) and included if they described services, treatment models or pathways (intervention) for adults (aged over 16 years) with SMI and problematic use of alcohol/drugs (population) in high income countries (context) published in the English language. Due to the large number of papers identified and the contextual differences in specialist services, we excluded studies delivered in specialist settings such as for veterans, prisoners, homeless populations, and people living with HIV. Services providing care to these population within non-specialist mental health and substance use services were still included in the review. Stage one selected 817 manuscripts which were considered an "*initial sampling frame of papers"* (p.151) on service provision for COSMHAD(39).

The 817 full manuscripts were screened against the 11 initial programme theories (IPTs) (see panel) according to their capacity to enable testing and refinement of the IPTs. Papers were selected when they 1) reported on integration of services for COSMHAD 2) described features and functions of integrated service architecture relevant to the IPT 3) provided causal insights into one or more IPT statements. All texts were screened by JH with TA and LJ independently screening 10%. The three reviewers met regularly to discuss their decisions and resolve disagreements. As a result, 132 manuscripts were included in the realist synthesis (summary table in appendix page 4).

Data analysis

The final 132 manuscripts were mapped to the 11 IPT statements using a data extraction form, with some aligning to multiple IPTs. The selected manuscripts were coded to each IPT using the linked memo function in Nvivo (version 12) to create a transparent audit trail of data analysis decisions(40). We identified CMO configurations directly from the literature as dyads (C-M/ M-O/ C-O) or triads (CMO)(41) following data reduction processes described by Byng et al(42) (further detail included on appendix page 3).

Following refinement of the PTs, we undertook purposive searching to identify compatible formal theories to assist in interpreting our realist synthesis at the micro, meso or macro level. Shortlisting of theories according to Shearn et al's guidance (43) identified the Sustainable Integrated Chronic Care Models for multimorbidity (SELFIE) framework. SELFIE is an international taxonomy of promising integrated care for persons with multimorbidity which presents six components at the micro, meso and macro levels(44). Our synthesis found evidence across three contextual components of the SELFIE framework which were used to group our PTs according to 1) leadership: clear, committed leadership across all organisations involved in providing COSMHAD care 2) workforce: clear expectations that staff are responsible for people with COSMHAD 3) service delivery: structured coordination of pathways and protocols across involved organisations to assist in integrating COSMHAD care.

Results

Eleven PTs explaining how care models are integrated were identified (see panel): first contact and assessment (PT1), staff attitudes (PT2), encouraging collaborative case management (PT3), continuous exposure to COSMHAD from undergraduate training (PT4), continuous workforce development (PT5), opinion leaders (PT6), formalised staff networks (PT7), coordinated care pathways (PT8), mental health led services (PT9), evaluation and quality improvement (PT10) and recruiting and retaining skilled staff (PT11). Our overall PT

(figure 2) identified several contextual factors shaping the mechanisms through which services achieved outcomes for people with COSMHAD (e.g., better service engagement, increased motivation towards treatment goals). (44) Our 11 PTs are presented under three contextual headings taken from the SELFIE model.

Leadership theories (PTs 3, 5, 6, 8, 10, 11)

The SELFIE framework proposes supportive leaders with clear accountability, visions and ambitions can stimulate successful integration for multi-morbidities(44). Six PTs demonstrated supportive leadership as an important context for integrating care (PTs 3, 5, 6, 8, 10, 11). These PTs highlighted that integration for COSMHAD requires leaders who were: committed and had authority to implement integrated care (PTs 6, 10), effectively communicating a shared vision for treating COSMHAD (PT6), willing to develop and put formal policies and pathways in place (PTs 3, 6, 8), appreciated the need for continuous workforce development (PTs 5, 11), and committed to work jointly across organisations (PTs 3, 8, 10, 11).

The realist synthesis identified leaders with effective COSMHAD service visions (context) who took action to develop relevant policies, processes and procedures (mechanism- resources) lead staff to feel supported in taking a whole person approach (PTs 3, 6). Seeing interventions work in practice increased staff empathy and reduced scepticism, increased staff confidence in their skills to treat COSMHAD (PTs 5, 8), ensured staff felt valued and secure (PTs 10, 11), and facilitated a multidisciplinary ethos (PT5) (mechanism – reasoning). For example, when leaders implement (context) care protocols (PT3) that clearly describe coordination from initiation of care through to referral/discharge(45-48) (mechanism – resource), staff felt supported in their roles(49) and enabled them to use their skills and knowledge. Furthermore, it provided permission for staff to take a more pre-emptive, preventative, whole-person approach to people with COSMHAD(50) (mechanism – reasoning). Similarly, numerous studies(51-57) highlighted leadership that supports continuous workforce development for COSMHAD (context) (PT5), combining more traditional "classroom-based" methods with sustained supervision and practice-based learning (mechanism resource), can produce lasting changes in staff skills, values and confidence(51-57). However, "*attitudes did not change until staff began to see evidence that clients responded to new interventions"(54)* (p.7) (mechanism reasoning). The literature suggests workforce policies that ensure staff retention (PT11), including clear job descriptions requiring practise-based experience (mechanism resource)(57-60) ensured staff felt encouraged, legitimised and secure in their roles (mechanism – reasoning). These PTs are supported by the SELFIE framework, which highlights that successful collaboration between organisations and professionals requires belief and willingness in the collaboration, trust in one another, and mutual respect(44).

Outcomes commonly associated with the leadership PTs were improved care co-ordination and consistency, leading to better individual engagement and motivation to work towards goals. Collaborative case management (PT3), continuous workforce development (PT5) and recruitment and retention of skilled staff (PT11) lead to improved therapeutic relationships. Retention of skilled staff was also identified as an outcome following the development of workforce policies (PT11). These outcomes are supported by the SELFIE framework, where shared-decision making is key at the micro-level of leadership to ensure care integration for comorbidities. This shared decision making facilitates individualised care planning tailored to complex needs(44), reflected in the synthesis' focus on developing good therapeutic relationships and motivation to achieve individuals' self-identified treatment goals.

Workforce theories (PTs 2, 4)

The SELFIE framework identifies continuous professional development as an important aspect of integrated care for multi-morbidity, including the creation of new professional roles (for example, consultant nurse for COSMHAD) and continuous professional development(61). The two workforce related PTs identify that staff in both mental health and substance use services must accept that offering comprehensive care to people presenting with COSMHAD is part of routine care (and their role). This is facilitated by training to address staff attitudes (PT2) and continuous supervised exposure to working with people with COSMHAD through pre-qualification, post qualification and continuous professional development (PT4).

Mixed attitudes towards COSMHAD were identified among health care professionals, which varied according to health discipline and experience (PT2)(62). For staff working in mental health services, this could be influenced by how much exposure they have to people with COSMHAD during their undergraduate and postgraduate training (PT4)(49, 63, 64). Positive staff attitudes described were: being highly interested in working with people with COSMHAD, expressing non-punitive beliefs about substance use, commitment to therapeutic relationships, and

pragmatic, flexible and individually tailored approaches(49, 62, 65-72). The literature also identified a required desire to reconcile the structural, political and philosophical differences between mental health and substance use services at an organisational level to develop an appropriate and relevant approach to workforce development (mechanism – resource, PTs 2, 4). Differences in use of pharmacotherapies, ontological understandings of health, understandings of aetiology for COSMHAD, symptom classification frameworks and views on client autonomy manifest themselves in how substance use and mental health services structure delivery and set outcomes for treatment(47, 67, 68, 70, 71, 73-76). As Adams et al(62) summarised:

"*mental health professionals and allied workers may have a willingness to work with people with comorbidity, but experience deficiencies in knowing what to offer them, either because of structural problems with services or paucity of training*" (p.106)

The synthesis suggests acknowledging that treatment for people with COSMHAD is part of routine care is required at individual and organisational level (context) and presents fertile ground for workforce development (mechanism – resource). Several studies highlighted that team-based, immersive approaches to workforce development (mechanism – resource, PT2) allow staff to learn through practice. Team-based approaches were described as combining formal education, ongoing training, clear policy and procedure and changes to workplace culture(49, 59, 66, 77, 78). The synthesis highlighted that mental health staff undertaking professional qualifications, needed immersive workforce development from pre-qualification undergraduate level including experience working with people with COSMHAD during clinical placement/rotation (mechanism – resource, PT4)(49, 64, 79-81).

Research from both the UK and US indicated this immersive approach to workforce development led to increased feelings of ownership and investment among staff who became less sceptical and more invested in the interventions they were developing skills in when they saw people with COSMHAD responding positively to them (mechanism – reasoning, PT2 & PT4)(54, 66, 82, 83). Blakely et al's(54) study of the implementation of a team-based approach to motivational interview (MI) training reported an aptitude-attitude spiral, demonstrated by the quote below;(54)

"*As clinicians became proficient at MI [motivational interviewing] they experienced a positive response from clients that reinforced a belief that clients could change. This attitude led to a desire to learn more about the new technique and to become better at it. The better they became the better the clients responded. Once started, the Attitude-Aptitude spiral became self-reinforcing. Clinicians literally went from being reluctant and fearful, not completing assignments or scheduling supervision, to being inquisitive and impatient to learn more, reading on their own, and actively seeking clinical feedback in groups*" (p.8)

Addressing staff attitudes and values could lead to increased empathy towards the experiences of people with COSMHAD (PT4) as staff become more aware of why individuals have developed a substance use condition alongside SMI (PT2) and work effectively with this group via supervised practice (PT4) (outcomes). In the literature, this was found to increase staff retention. A US comparative study which implemented integrated COSMHAD care across multiple sites, concluded sites that "*emphasized professional growth opportunities…encourage staff to stay…increase empathy and decrease burnout"*(58) (p.482) had increased empathy and investment in approaches to treat COSMHAD, leading to better therapeutic relationships (outcome - PT2), which is recognised as an important facet of successful COSMHAD treatment(47, 49, 62, 68, 84, 85). Wieder et al(78) demonstrated this in their study of implementing integrated dual disorder treatment (IDDT) in Ohio where "*clinicians who were seen to be open and willing to learn the IDDT approaches, enthusiastic about small gains in their clients' progress, and ready to "stick with it for the long haul" were associated with better outcomes related to mastery of those approaches"* (p.160)

Service delivery theories (PTs 1, 7, 9)

The SELFIE framework(44) highlights the importance of organisational and structural integration across health and social care sectors. It requires organisational transparency, ongoing communication and structural flexibility to meet the varied individual needs of those with COSMHAD. Three PTs were concerned with structural aspects of service delivery: ensuring a structured and satisfying first contact with services (PT1), formalised networking opportunities for staff across services to meet, communicate, build relationships and take action (PT7) and mental health clinicians taking the lead in care planning for COSMHAD (PT9).

Staff accepting that COSMAHD is part of routine care (PT1) is seen as a necessary context for ensuring a positive first contact (mechanism – resource). Adams et al(62) describe how *"professional ambivalence towards comorbidity* [context]*…may influence the assessment process and subsequent interactions* [mechanism-resource]*"* (p.102) and numerous studies highlighted the importance of using assessment protocols and screening tools to help the clinician formulate a thorough picture of the person's life circumstances(46, 60, 86-88). This in turn allows the clinician to develop a richer understanding of the person's situation, which promotes compassion. Providing staff with formal network opportunities (PT7) to meet, communicate and build relationships (context) will allow staff from different teams and services to work collaboratively for COSMHAD (mechanism – resource). The evidence suggests these networks work best when they are formal, structured, sustained and responsive to the complexity and variety of needs experienced by people with COSMHAD(89), with numerous examples in the literature including steering committees(45, 90) staff learning groups(91) communities of practice(92), collaborative case conferences(93-95) and large multidisciplinary networks such as those in Leeds(46) and Manchester(96). Studies from Europe and the US found formalised networking opportunities for COSMHAD (context) led to opportunities for multidisciplinary peer support and ethos(93, 97-99). Awareness among mental health staff (PT9) of their responsibilities to care or people with COSMHAD (context) is needed for mental health clinicians to lead care planning for these individuals (mechanism – resource). Graham et al(100) in their study of integrating COSMHAD services through the COMPASS liaison model in the UK, argue this requires "*integration of treatment both at the level of the clinician and service"* (p.184) and will result in *"a conceptual shift within the organisation and those working in it"(101)* (p.586) with a single mainstream clinician simultaneously addressing the needs of people with COSMHAD (mechanism – resource)(100, 101).

Across these three PTs, implementing structured service delivery resources (assessment PT1, formal networks PT7 and mental health led care planning PT9) was seen to increase the motivation, commitment and confidence of staff in providing effective integrated care to people with COSMHAD (mechanism – reasoning). A qualitative study evaluating new assessment procedures for COSMHAD across services (PT1) found that "*assessment developed in-common"* (mechanism – resource) can lead to services becoming "*one service through a process of referral, active communication (not always formal) and education of each other to provide mutual support"* (p.27) (mechanism – reasoning)(50). A UK study of communities of practice for COSMHAD (PT7) described how regular meetings gave staff collective support (mechanism – resource), which provided the energy and motivation to continue coordinating care, for example identifying "*small examples of progress in a client to re-motivate the presenter"* knowing that they were *"doing the right thing"* (p.138) (mechanism - reasoning)(92).

The outcomes associated with these PTs were improved service coordination, which lead to people with COSMHAD receiving more consistent, non-contradictory, unfragmented care. As a result, the synthesis suggested people would be more likely to remain engaged in care and motivated to work towards their individual goals. Engeldhart et al(97) described their experiences of developing a service delivery committee for COSMHAD (PT7), concluding that once members began using their existing resource in a more coordinated manner (mechanism – resource), people with COSMHAD were "*increasingly welcomed, identified and engaged"* (p.115) (outcomes). The outcomes from the synthesis align well with the SELFIE framework. The framework demonstrates that integration at the micro-level requires service delivery to be person-centred, tailored and flexible to the situation of the individual with multi-morbidities. Initial proactive care (e.g. at assessment, PT1) and promotion of self-management (PTs 7, 9) provide the means for individuals with multi-morbidities to become more pro-active, motivated and remain autonomous(44).

Discussion

COSMHAD is associated with adverse outcomes and UK policy advocates an integrated care approach which ensures individuals receive support for their varied and complex needs at the right place and time.(20) Despite this, considerable uncertainty remains on how to integrate COSMHAD care in the UK, with a predominance of unevaluated local models. This realist review sought to develop PTs that increase our understanding of what COSMHAD services might work in the UK, for whom and in what circumstances. Eleven PTs were grouped into three overlapping themes: "leadership"; "workforce" and "service delivery".

UK policy ambitions of "mainstreaming" care for COSMHAD(22) requires staff to have the training and capabilities to offer treatment that addresses mental health and substance use simultaneously. The synthesis highlighted leadership was vital to this ambition. Leaders who communicated a shared vision of COSMHAD integration better facilitated workforce development, joint working, and implementation of pathways and policies.

A recent Health and Social Care Committee inquiry into NHS workforce burnout and resilience(102), recognised the need for compassionate, inclusive and effective leadership to develop staff skills and improve health services(103). Trzeciak et al's(104), Compassionomics framework hypothesises administrative leaders who value compassionate approaches and implement resources to augment and remove the barriers to compassionate care can improve staff wellbeing leading to better patient care and outcomes. Compassionate leadership has been shown to increase staff belonging, autonomy and contribution(44, 105) and our PTs concurred that leadership support gave staff confidence and autonomy to take a compassionate, whole-person approach to treating people with COSMHAD. Staff experiencing compassionate leadership are better able to direct their support, giving higher levels of patient satisfaction and quality of care(105) leading to improved therapeutic relationships between staff and people with COSMHAD and increased retention of staff(104).

In line with the SELFIE framework(44), continuous professional development was an important aspect of integrating care for COSMHAD. Staff attitudes towards COSMHAD influenced the extent to which staff regarded working with people with COSMHAD as part of their role. Our synthesis identified varying attitudes towards COSMHAD at an individual staff member (according to experience and exposure to people with COSMHAD) and organisational level (due to structural, political, and philosophical differences between mental health and substance use services). For example, low knowledge and exposure among mental health staff may lead them to perceive substance use as a "choice" that exacerbates mental health symptomology and poor compliance rather than a health problem deserving of help and compassion. Often the philosophical focus for mental health services is abstinence (a requirement for inpatient settings), with limited attention given to harm reduction strategies. The Health Stigma and Discrimination Framework recognises stigma co-occurs at multiple socio-ecological levels (including interpersonal, organisational and political levels) and can lead to poor outcomes for populations (including access to services, uptake and adherence to treatment) and health organisations (including policies and availability and quality of health services)(106).

Interventions must target both the drivers of stigma and shift harmful attitudes once stigma has been applied(106). This is reflected in our PTs which include training to address attitudes towards COSMHAD from pre-registration level to ongoing workforce development. NICE guidance highlights a lack of high-quality evidence on how staff training for COSMHAD can be implemented effectively(29). Our synthesis suggests where there is existing willingness to engage with COSMHAD, team-based, immersive approaches which combine formal training, ongoing supervision and clear policy can allow staff to learn through practice, leading to increased ownership and investment as staff see interventions working(54) Our PTs demonstrated this sense of ownership could lead to increased staff empathy, better therapeutic relationships and increased staff retention. As demonstrated in figure 2, there is considerable overlap in outcomes between the workforce and leadership related programme theories highlighting the multi-level action required to address COSMHAD-related stigma(106) and compassionate leadership to embed continuous professional development into wider organisational structure and culture(104).

In line with the SELFIE framework(44), our PTs proposed integrated care pathways with transparent communication between mental health, substance use and wider services and structural flexibility to meet the needs of people with COSMHAD. Our PTs covered first contact with services, formalised staff networks and mental health clinician led care planning. Formalisation of care pathways increased staff motivation, commitment, and confidence to provide integrated care across collaborating mental health and substance use services. In our PTs this led to consistent and less fragmented care tailored towards individual needs of people with COSMHAD, increasing their engagement and motivation to work towards their goals. This reflects the commitment in UK mental health strategies to developing trauma informed care for people with severe mental health problems.(22-25) Trauma informed approaches aim to provide people with COSMHAD with an environment that is safe, trusted, supportive, collaborative, empowering and responsive to their experiences and needs. Services which are not trauma informed risk excluding those who have experienced trauma as demonstrated in our synthesis where people with COSMHAD were too often perceived as "*system misfits"(60)* experiencing a *"ping pong effect"(70)* between services before *"falling through the net"(62)* completely. As the leadership and workforce themes demonstrate, this requires a cultural rather than behavioural shift. Training to change individual attitudes and practice alone is not sufficient, rather system-level change in service delivery supported by compassionate leadership is required to ensure integrated, effective COSMHAD care.

Realist reviews have several theoretical limitations. There are many stages, theories and settings associated with complex interventions and so the reviewer must prioritise particular processes, theories and settings(107), Initial

decisions formulating our if/then questions for theory testing mean some theoretical perspectives and literature was inevitably omitted. Only English language studies were included and studies delivered exclusively in specialist settings (for example for prisoners or people living with HIV) were excluded. Realist reviews are also limited by the nature of the available empirical evidence, which tends to favour tangible processes and easily measured outcomes(107). Much of the evidence on COSMHAD service models come from the US, and they are not always directly transferable to the UK. Drawing on this international literature allowed us to identify broad contextual areas for successful integration (leadership workforce and service delivery). We have framed our synthesis within the UK context to meet the objectives of this study, however as integration of COSMHAD is an internationally advocated approach(11), we believe they are sufficiently broad to have relevance in other countries. Finally, the intention of realist synthesis is to deliver contextual advice rather than generalizable truths(107). The synthesis focused on how COSMHAD services integrate at a service provider level. While testing these theories led to outcomes related to increased engagement and motivation for people with COSMHAD, there may be other explanations for individuals choosing not to engage with integrated services which were not explored. The expertise of people with lived experience is crucial to understanding what works best in terms of service integration for COSMHAD and is required to further refine the programme theories. This synthesis one phase of a UK wide realist study, and PTs presented here will be tested and refined through qualitative engagement with health and social care staff, people with COSMHAD and their carers.

Conclusion

This realist synthesis of international literature derived explanatory theories to describe how different contextual factors shape the mechanisms through which services for people with COSMHAD can be integrated. The synthesis sheds light on the ongoing challenges of implementing current UK policy, providing insights into how integration could work, for whom and in which circumstances. The review highlights complex challenges defining and integrating care for COSMHAD. The varied, disparate provision of COSMHAD care across the UK means our PTs do not focus on a single model of service provision but consider the context, mechanisms, and outcomes relevant across the UK health system. This includes points along the COSMHAD care pathway (recommended by NICE(29) and PHE(20)) such as assessment, care planning and case management, and activities at workforce and leadership levels. Despite UK policy(22, 26) commitment to "mainstreaming" COSMHAD care, implementation of integrated service models remains fragmentary, compounded by challenges of austerity and competitive commissioning. This realist synthesis highlights that staff willingness to treat COSMHAD remains variable, with comprehensive workforce training, supervision and policy required to increase staff investment in providing integrated care. However, changing staff behaviour is insufficient in isolation, with our synthesis demonstrating a cultural shift in compassionate leadership and system delivery is essential to ensure people with COSMHAD receive compassionate, trauma informed care that meets their needs.

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Panel: Final programme theories (PTs) for integrated services for Co-Occurring Serious Mental Health and Alcohol/Drug (COSMHAD)

Leadership and governance

PT3: encouraging collaborative case management

Collaborative case management between services for people with co-occurring disorders requires both formal coordination (top-down processes and network models) and informal collaboration (willingness to work together) (context). Clear, non-conflicting care coordination protocols and referral pathways with time for collaboration built into staff schedules (mechanism –resource) will help staff feel more supported in their roles and gives them permission to build trusting relationships with other service providers while taking a pre-emptive, preventative and whole person approach to people with COSMHAD (mechanism – reasoning). This will lead to an improved organisational system for people with COSMHAD with improved consistency of care and a more individually focused approach across the continuum of care (outcomes).

PT5: continuous workforce development

If service leaders appreciate the need continuous and comprehensive workforce development (context) by combining didactic training to address knowledge and experiential training to practise skills (mechanism - resource) then staff will internalize compassionate, integrated values, skills and confidence to assess and respond to the needs of people with co-occurring disorders (mechanism - reasoning). This will lead to a better therapeutic

relationship between service users and health professionals leading to improved engagement and motivation to change (outcome).

PT6: opinion leaders

Dedicated, respected leaders with the authority to implement integrated treatment are needed at all levels of the organisation (from commissioning through to team leaders) to communicate a shared vision of co-occurring disorders, prioritise implementation and make and disseminate administrative and policy changes (context). These leaders will sustain awareness and expectations surrounding co-occurring disorders (mechanism – resource) leading to an organisational climate where staff feel enthusiastic, motivated and supported to implement new practices in their work (mechanism – reasoning). As a result, people with co-occurring disorders can engage with consistent, appropriate support for their condition (outcome)

PT 8: coordinated care pathways

Committed and accountable leaders from NHS, Local Authorities and other partner organisations (context) should support, design and consistently advance a collaborative co-ordinated care pathway which uses organisational policies, functional procedures and defined outcomes to allow mental health, substance use and other relevant service providers to support each other in providing care for people with co-occurring disorders (mechanism - resource). This coordinated pathway will lead to increased collaboration between providers through shared goals and formalised relationships (mechanism - reasoning) to deliver accessible, non-contradictory and consistent interventions, services and goal setting which will rouse and maintain people with COSMHAD's motivation to work towards their goals and remain engaged in treatment (outcome)

PT10: evaluation and quality improvement

Leadership across all involved services need to develop and establish accountability (context) in order for meaningful evaluation and quality improvement measures to be put into place to evaluate the structure, process and outcomes of integration and training interventions on service delivery for co-occurring disorders (mechanism – resource). This will ensure that commissioners, service managers and practitioners feel the work they do is valued (mechanism -reasoning) and continue to make incremental progress in improving services by building on existing strengths and identifying priorities leading to better insights into the quality of care (outcome)

PT11: Recruiting and retaining talented staff

Service commissioners from both mental health and substance use services need to work jointly (context) to commit financial resources and organisational workforce policies (mechanism – resource 1) to ensure staff with the requisite skills, knowledge and values for treating those with co-occurring disorders are recruited and retained into services through appropriate selection, supervision and professional development (mechanism – resource 2). This will ensure that skilled staff feel encouraged, secure and legitimised in their posts (mechanism - reasoning) leading to more effective, better quality and undisrupted therapeutic relationships (outcome)

Workforce

PT2: Staff attitudes

Successful collaboration between mental health and substance use services to address judgemental staff attitudes towards people with COSMHAD requires desire to reconcile political, structural, and philosophical differences between services (context). A team wide response to training is needed to address staff beliefs and attitudes supported by clear policies and procedures to shift service philosophy (mechanism – resource). A team-based training approach leads to increased feelings of ownership and involvement among staff who will become less sceptical and more invested as they see people with COSMHAD responding positively to interventions (mechanism – reasoning). This will result in enhanced staff empathy and better therapeutic relationships with people with COSMHAD (outcomes).

PT4: continuous exposure from undergraduate level

Staff are often ill-prepared to treat people with COSMHAD due to a lack of inclusion of bio-psycho-social perspectives as part of formal qualifications in substance use, and lack of supervised exposure on undergraduate/postgraduate curricula. Even where staff have been trained in particular skills (e.g. motivational interviewing), they do not always make use of these skills in practice (context). For those professionals undertaking clinical qualifications an immersion model of training should begin at undergraduate clinical rotation and be maintained through core competencies for professional development and progression (mechanism - resource). This continuous supervision of practice will align educational targets to real-time problems, foster communication between health professionals and allow staff to learn from practice and experience (mechanism - reasoning). This emphasis on professional growth in practice improve empathy for the daily experiences of people with COSMHAD (outcomes).

Service delivery

PT1: first contact and assessment

If staff across all first-contact services for people with co-occurring mental health and substance use issue have clear awareness that people with COSMHAD are the expectation and their responsibility to assess and refer them into suitable treatment (context), then individuals will have a more satisfying and structured first contact with services (mechanism- resource). people with co-occurring disorders will have less difficulties in entering appropriate services (mechanism – reasoning) thus leading to increased optimism, confidence and willingness to engage in treatment (outcome).

PT7: formalised networking opportunities

Formalised, structured and sustained opportunities for practitioners working with people with COSMHAD to meet, communicate and build relationships and take action (e.g. through a network) (context) will lead to increased awareness of other services' collective contributions, opportunities for peer support and a multidisciplinary ethos (mechanism – resource). This will increase staff motivation, confidence and commitment to work collaboratively when treating people with co-occurring disorders (mechanism – reasoning) leading to improved and more welcoming care coordination, better provision of stage appropriate interventions including more immediate referrals, assessments and care planning (outcome).

PT9: mental health led services

High prevalence of people with COSMHAD within mental health services suggests their needs should be addressed in a mental health service setting with additional joint working from other services as needed (context). Having mental health clinicians responsible for individual's care plan (mechanism - resource) means clinicians will increase their skills and competencies in using empirically supported treatment with measurable outcomes for co-occurring disorders. (mechanism - reasoning). By addressing the relationship between substance use and mental health simultaneously, people with COSMHAD will experience a more consistent and flexible approach to symptom reduction with tailored, non-conflicting goals (outcome)

Figure 1: Adapted PRISMA diagram of the realist synthesis searching and screening

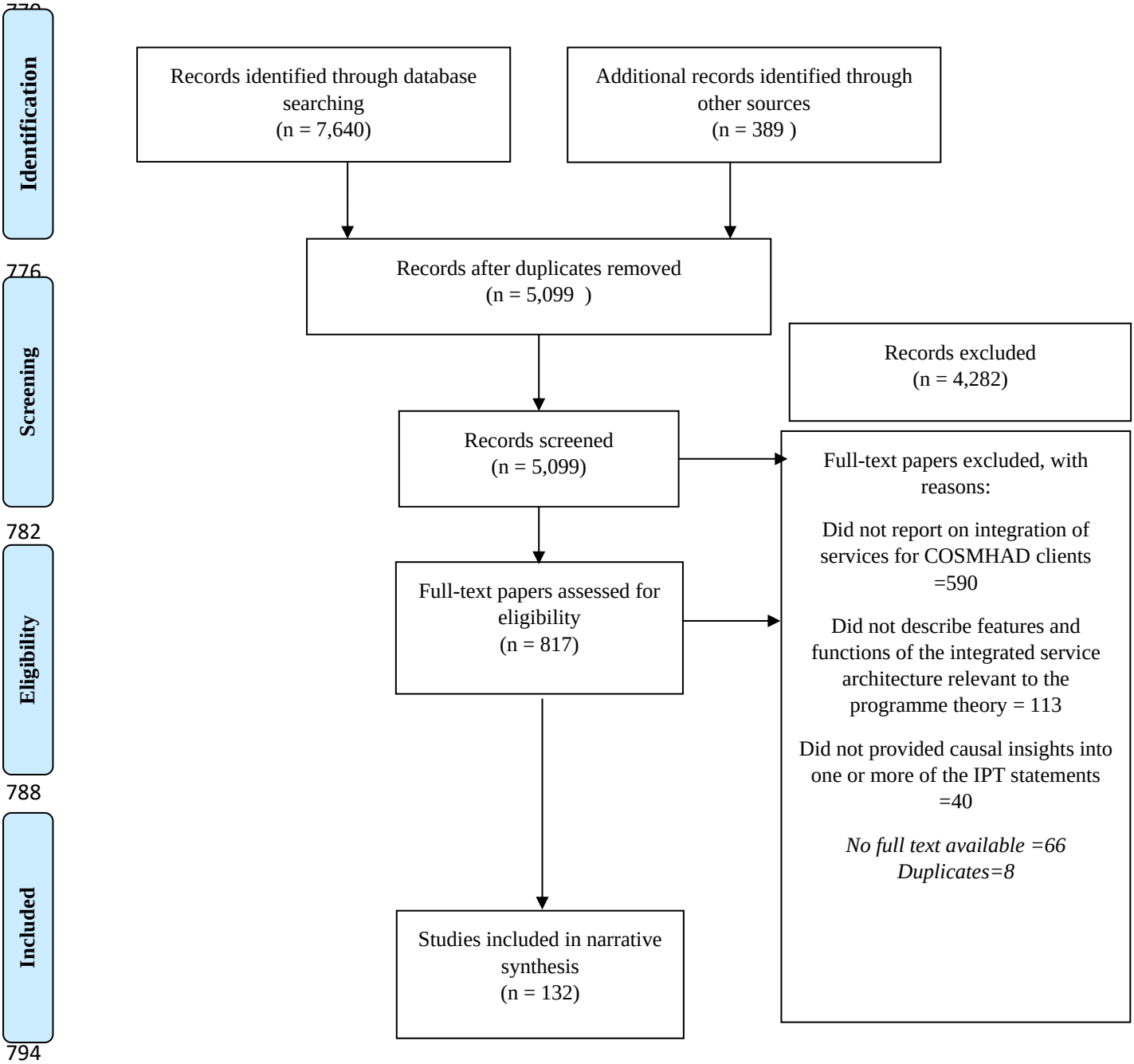
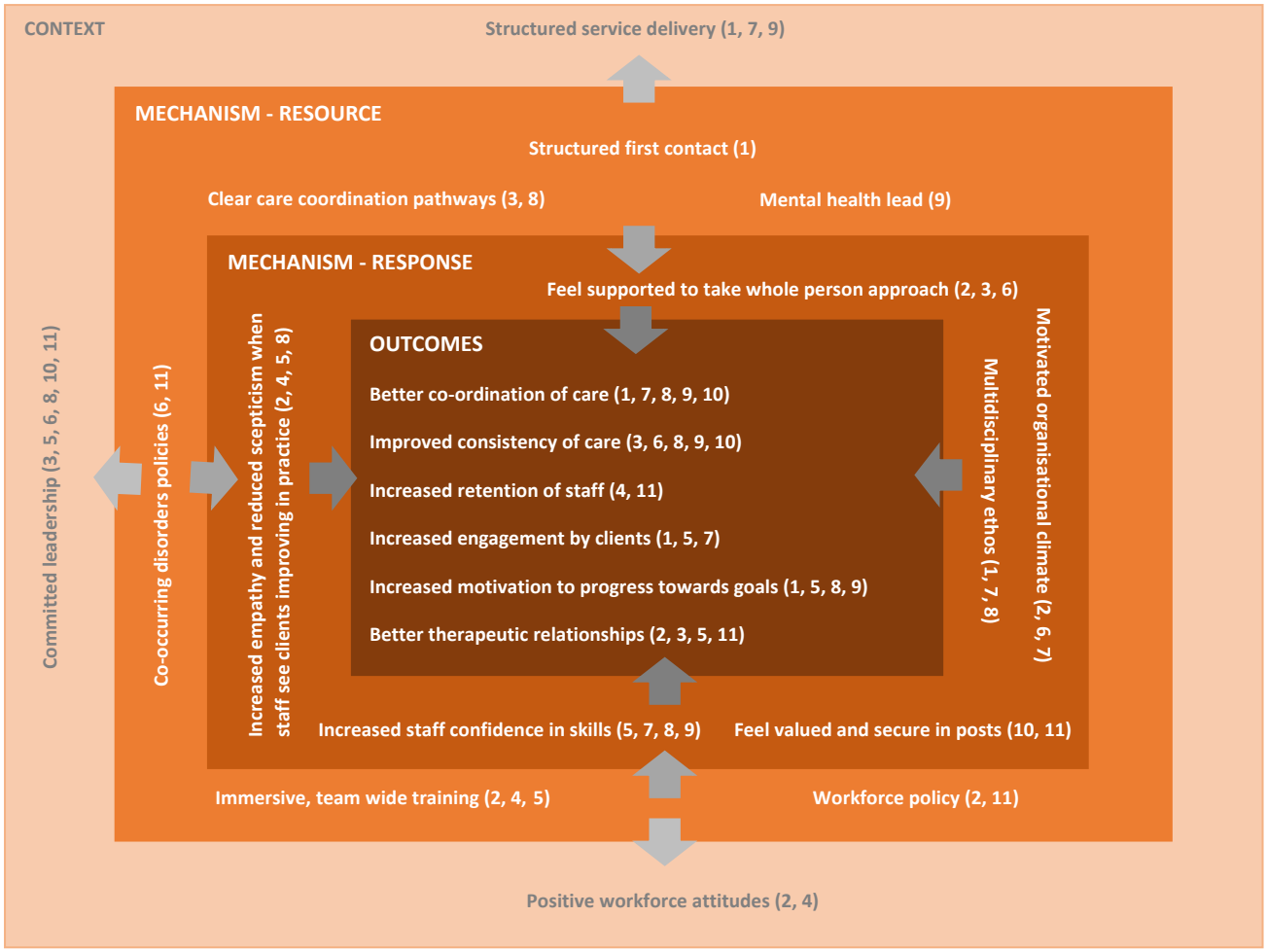


Figure 2: The overall programme theory for integrated services for COSMHAD



817 **Table 1: Papers including in the realist synthesis**

Authors (date)	Country	Study type	Co-occurring serious mental illness and drug/alcohol (COSMHAD) model setting, described (if relevant)	Programme Theory (PT) data extracted from paper
Adams (2008) (62)	UK, US, Australia	Literature Review	n/a	PT1: first contact and assessment PT2: staff attitudes PT5: continuous workforce development
Anastas et al (2019) (58)	US	Qualitative (interviews)	Behavioural Health Home Learning Collaborative	PT3: encouraging collaborative case management PT4: continuous exposure from undergraduate level PT5: continuous workforce development PT6: opinion leaders PT7: formalised networking opportunities PT10: evaluation and quality improvement PT11: recruiting and retaining talented staff
Annamalai et al (2018) (45)	US	Implementation processes	The Connecticut Mental Health Center Wellness Center	PT3: encouraging collaborative case management PT4: continuous exposure from undergraduate level PT5: continuous workforce development PT6: opinion leaders PT7: formalised networking opportunities PT8: coordinated care pathways PT10: evaluation and quality improvement
Avery et al (2013) (65)	US	Quantitative (online survey)	n/a	PT2: staff attitudes
Baldacchino (2007) (47)	Scotland	Literature review	n/a	PT5: continuous workforce development
Baldacchino et al (2010) (89)	France, Finland, Scotland, Poland, England, Denmark	Qualitative survey	Integrated Services Aimed at Dual Diagnosis and Optimal Recovery from Addiction (ISADORA) Study	PT7: formalised networking opportunities PT8: coordinated care pathways
Barnes et al (2002) (108)	England	Quantitative (survey)	Hastings Community Mental Health Team	PT1: first contact and assessment PT7: formalised networking opportunities
Barnes and Rudge (2003) (50)	Australia	Qualitative (interviews)	Rural Mental Health Services and Drug and Alcohol services in rural South Australia	PT1: first contact and assessment PT3: encouraging collaborative case management PT6: opinion leaders

Barreira et al (2000) (90)	US	Implementation Processes	The Comprehensive, Continuous and Integrated System of Care (CCISC)	PT3: encouraging collaborative case management PT6: opinion leaders PT7: formalised networking opportunities PT8: coordinated care pathways
Barrett (2009) (109)	England	Practitioner Action Research	Inpatient Mental Health Team	PT1: first contact and assessment PT5: continuous workforce development PT6: opinion leaders
Barrett and Roberts (2010) (91)	England	Practitioner Action Research	Inpatient Mental Health Team	PT7: formalised networking opportunities
Bell (2014) (46)	England	Quantitative (survey)	Leeds Dual Diagnosis Network	PT1: first contact and assessment PT3: encouraging collaborative case management PT6: opinion leaders PT7: formalised networking opportunities PT8: coordinated care pathways
Biegel et al (2003) (93)	US	Implementation Processes	Ohio Integrated Dual Disorders Treatment (IDDT)	PT5: continuous workforce development PT7: formalised networking opportunities
Biegel et al (2007) (110)	US	Implementation Processes	Ohio Integrated Dual Disorders Treatment (IDDT)	PT5: continuous workforce development PT6: opinion leaders PT10: evaluation and quality improvement
Bjorkquist and Hansen (2018) (98)	Norway	Qualitative (interviews)	Home-based mental health services	PT2: staff attitudes PT3: encouraging collaborative case management PT4: continuous exposure from undergraduate level
Bjorkquist and Hansen (2018) (72)	Norway	Qualitative (focus groups)	n/a	PT3: encouraging collaborative case management PT7: formalised networking opportunities PT8: coordinated care pathways
Blakely and Dziadosz (2007) (54)	US	Implementation processes	Community Treatment and Rehabilitation (CT&R)	PT1: first contact and assessment PT2: staff attitudes PT4: continuous exposure from undergraduate level PT5: continuous workforce development PT6: opinion leaders
Bonham et al (2014) (111)	US	Mixed methods (survey and interviews)	New Mexico integrated treatment for cooccurring mental health and substance use disorders	PT3: encouraging collaborative case management PT6: opinion leaders

Boyle and Wieder (2007) (57)	US	Implementation processes	Ohio Integrated Dual Disorders Treatment (IDDT)	PT5: continuous workforce development PT11: Recruiting and retaining talented staff
Boyle and Kroon (2006) (112)	US, Netherlands	Implementation processes	Integrated Dual Disorders Treatment (IDDT)	PT5: continuous workforce development
Brekke et al (2018) (84)	Norway	Qualitative (interviews)	n/a	PT2: staff attitudes
Broner et al (2001) (113)	US	Implementation processes	n/a	PT8: coordinated care pathways
Brown et al (2005) (114)	US	Implementation processes	PROTOTYPES Systems Change Center	PT7: formalised networking opportunities
Brunette (2008) (115)	US	Mixed methods (secondary data and interviews)	Integrated Dual Disorders Treatment (IDDT)	PT5: continuous workforce development PT6: opinion leaders PT11: Recruiting and retaining talented staff
Burnam (2006) (116)	US	Implementation processes	n/a	PT7: formalised networking opportunities
Canaway and Merkes (2010) (68)	Australia	Literature review	n/a	PT2: staff attitudes PT8: coordinated care pathways
Carey et al (2000) (117)	US	Qualitative (focus groups)	n/a	PT2: staff attitudes
Carter et al (2006) (118)	US	Qualitative (interviews)	n/a	PT6: opinion leaders
Chandler (2009) (119)	US	Mixed methods (fidelity scale and interviews)	Integrated Dual Disorders Treatment (IDDT)	PT3: encouraging collaborative case management PT5: continuous workforce development PT6: opinion leaders PT8: coordinated care pathways
Chichester et al (2009) (77)	US	Implementation processes	Co-occurring collaborative service Maine (CCSME)	PT1: first contact and assessment PT2: staff attitudes PT3: encouraging collaborative case management PT5: continuous workforce development PT6: opinion leaders PT10: evaluation and quality improvement
Clodfelter et al (2003) (94)	US	Implementation processes	Mentally Ill Chemically Abusing (MICA) Program, Tewksbury Hospital	PT7: formalised networking opportunities

Connolly et al (2015) (120)	Ireland	Participatory Action Research	Dual Diagnosis Service, Cork	PT6: opinion leaders PT7: formalised networking opportunities PT8: coordinated care pathways
Connollly et al (2010) (121)	Ireland	Implementation processes	Dual Diagnosis Service, Cork	PT7: formalised networking opportunities
Copello et al (2001) (101)	England	Implementation processes (RCT)	Combined Psychosis and Substance Misuse Programme (COMPASS)	PT5: continuous workforce development PT9: mental health led services
Curie et al (2005) (122)	US	Implementation processes	Comprehensive Continuous Integrated System of Care (CCISC)	PT1: first contact and assessment PT6: opinion leaders PT7: formalised networking opportunities PT8: coordinated care pathways PT10: evaluation and quality improvement
Danda (2012) (49)	Canada	Literature Review	n/a	PT2: staff attitudes PT3: encouraging collaborative case management PT4: continuous exposure from undergraduate level PT5: continuous workforce development
Dausey et al (2007) (123)	US	Implementation processes	Co-occurring State Incentive Grant (COSIG) initiative	PT7: formalised networking opportunities PT8: coordinated care pathways
Davidson et al (2014) (48)	US	Literature Review	n/a	PT3: encouraging collaborative case management
Davis et al (2012) (124)	US	Implementation processes	Integrated Dual Disorders Treatment (IDDT)	PT5: continuous workforce development
Devitt et al (2009) (53)	US	Implementation processes	Integrated Dual Disorders Treatment (IDDT)	PT5: continuous workforce development PT6: opinion leaders PT10: evaluation and quality improvement
Drake et al (1991) (82)	US	Implementation processes	New Hampshire Specialised Dual Diagnosis Service	PT2: staff attitudes PT5: continuous workforce development
Drake and Bond (2010) (52)	US	Literature Review	n/a	PT5: continuous workforce development
Drake et al (2001) (125)	US	Literature review	n/a	PT2: staff attitudes PT6: opinion leaders PT8: coordinated care pathways
Anderson et al (2013) (92)	England	Implementation processes	Communities of Practise Model	PT7: formalised networking opportunities

Edland-Gryt and Skatvedt (2013) (126)	Norway	Qualitative (participant observation, interviews, focus groups)	n/a	PT1: first contact and assessment
Edwards (2011) (127)	England	Implementation processes	Dual Diagnosis Nurse	PT5: continuous workforce development PT6: opinion leaders PT11: Recruiting and retaining talented staff
Engelhardt et al (2009) (97)	US	Implementation processes	The Comprehensive, Continuous and Integrated System of Care (CCISC)	PT7: formalised networking opportunities PT8: coordinated care pathways
Evans-Lacko and Thornicroft (2010) (128)	UK	Literature Review	n/a	PT2: staff attitudes
Fisher et al (2014) (81)	US	Quantitative (survey)	n/a	PT1: first contact and assessment PT4: continuous exposure from undergraduate level
Georgeson (2009) (129)	England	Implementation processes	The Matrix Model	PT3: encouraging collaborative case management PT8: coordinated care pathways
Graham (2004) (56)	England	Quasi-experimental design	Combined Psychosis and Substance Misuse Programme (COMPASS)	PT2: staff attitudes PT5: continuous workforce development
Graham et al (2006) (130)	England	Quasi-experimental design	Combined Psychosis and Substance Misuse Programme (COMPASS)	PT5: continuous workforce development
Graham et al (2003) (100)	UK	Implementation processes	Combined Psychosis and Substance Misuse Programme (COMPASS)	PT5: continuous workforce development PT9: mental health led services
Groenkjaer et al (2017) (60)	Australia	Qualitative (interviews)	Rural Mental Health Services and Drug and Alcohol Services in Northern Australia	PT1: first contact and assessment PT3: encouraging collaborative case management PT8: coordinated care pathways PT11: Recruiting and retaining talented staff
Guerrero et al (2015) (131)	US	Quantitative (online survey)	n/a	PT5: continuous workforce development PT6: opinion leaders PT8: coordinated care pathways PT11: Recruiting and retaining talented staff
Guest and Chrisp (2015) (132)	England	Mixed methods (interviews and survey)	The Leeds Dual Diagnosis Network	PT3: encouraging collaborative case management PT5: continuous workforce development PT8: coordinated care pathways

Haskell et al (2016) (133)	Canada	Qualitative (interviews)	n/a	PT2: staff attitudes PT8: coordinated care pathways
Heckman et al (2004) (134)	US	Implementation processes	Allies programme for women	PT5: continuous workforce development PT8: coordinated care pathways PT11: Recruiting and retaining talented staff
Hepner et al (2011) (55)	US	Quasi-experimental design	Building Recovery by Improving Goals, Habits and Thoughts (BRIGHT) study	PT5: continuous workforce development
Hill et al (2009) (135)	England	Implementation processes	Substance misuse ward	PT5: continuous workforce development PT8: coordinated care pathways
Hind and Manley (2010) (69)	England	Implementation processes	Stamp out Stigma Campaign in substance misuse services	PT2: staff attitudes
Hodges et al (2006) (47)	Scotland	Qualitative (interviews)	n/a	PT2: staff attitudes PT3: encouraging collaborative case management PT5: continuous workforce development PT8: coordinated care pathways PT11: Recruiting and retaining talented staff
Hoge et al (2009) (80)	US	Implementation processes	Annapolis Coalition	PT4: continuous exposure from undergraduate level PT5: continuous workforce development
Holland (1998) (96)	England	Implementation processes	Manchester Dual Diagnosis Group	PT6: opinion leaders PT7: formalised networking opportunities PT8: coordinated care pathways
Holland et al (2012) (136)	England	Implementation processes	Manchester Dual Diagnosis Group	PT7: formalised networking opportunities
Hughes (2007) (137)	England	Implementation processes	Pan-London Dual Diagnosis Training Project	PT5: continuous workforce development
Hughes et al (2008) (138)	England	Randomised Controlled Trial	Co-morbidity (COMO) dual diagnosis study	PT1: first contact and assessment PT2: staff attitudes
Hunter et al (2005) (73)	US	Implementation processes	Intervention in outpatient substance use programmes	PT1: first contact and assessment PT2: staff attitudes PT5: continuous workforce development PT7: formalised networking opportunities
Huntington et al (2005) (139)	US	Implementation processes	Women, Co-occurring disorders and violence study	PT2: staff attitudes PT3: encouraging collaborative case management PT5: continuous workforce development

				PT7: formalised networking opportunities PT8: coordinated care pathways
Jerrell et al (2000) (140)	US	Implementation processes	Dual Diagnosis Day Treatment Programme (DDDTP)	PT1: first contact and assessment PT11: Recruiting and retaining talented staff
Jones et al (2015) (85)	US	Qualitative (focus groups)	n/a	PT1: first contact and assessment PT2: staff attitudes PT5: continuous workforce development
Kavanagh et al (2000) (141)	Australia	Quantitative (survey)	n/a	PT1: first contact and assessment PT4: continuous exposure from undergraduate level PT7: formalised networking opportunities
Kay-Lambkin et al (2004) (87)	Australia	Literature Review	n/a	PT1: first contact and assessment PT4: continuous exposure from undergraduate level PT8: coordinated care pathways
Kikkert et al (2018) (142)	The Netherlands	Randomised Controlled stepped-wedge cluster trial	Integrated Dual Disorders Treatment (IDDT)	PT2: staff attitudes PT4: continuous exposure from undergraduate level
Kilbourne et al (2010) (143)	US	Literature Review	n/a	PT10: evaluation and quality improvement
Kirst et al (2017) (144)	Canada	Qualitative (interviews)	n/a	PT1: first contact and assessment PT3: encouraging collaborative case management PT4: continuous exposure from undergraduate level PT8: coordinated care pathways PT11: Recruiting and retaining talented staff
Kola and Kruszynski (2010) (74)	US	Implementation processes	Integrated Dual Disorders Treatment (IDDT)	PT2: staff attitudes PT3: encouraging collaborative case management PT11: Recruiting and retaining talented staff
Kruszynski and Boyle (2006) (145)	US	Implementation processes	Integrated Dual Disorders Treatment (IDDT)	PT6: opinion leaders PT8: coordinated care pathways
Lawrence-Jones (2010) (70)	England	Qualitative (interviews)	n/a	PT1: first contact and assessment PT2: staff attitudes
Lee et al (2013) (146)	Australia	Literature review	n/a	PT5: continuous workforce development PT8: coordinated care pathways
Louie et al (2018) (51)	Australia	Implementation processes	Pathways to Comorbidity Care (PCC) training programme	PT5: continuous workforce development

Lowe and Abou-Saleh (2004) (147)	England	Literature Review	n/a	PT1: first contact and assessment
MacGabhann et al (2010) (148)	Ireland	Literature Review	n/a	PT1: first contact and assessment PT2: staff attitudes
Manley (2005) (75)	England	Implementation processes	Nottingham Dual Diagnosis Team	PT2: staff attitudes PT3: encouraging collaborative case management
Maslin et al (2009) (149)	England	Quantitative (survey)	Combined Psychosis and Substance Misuse Programme (COMPASS)	PT7: formalised networking opportunities PT8: coordinated care pathways
Mason et al (2017) (150)	Canada	Quantitative (survey)	n/a	PT5: continuous workforce development PT7: formalised networking opportunities
McCallum et al (2015) (151)	n/a	Systematic Review	n/a	PT8: coordinated care pathways
Mee-Lee (2001) (63)	US	Commentary	n/a	PT4: continuous exposure from undergraduate level
Mehr (2001) (152)	US	Literature Review	n/a	PT9: mental health led services
Mericle et al (2007) (153)	US	Qualitative (focus groups)	n/a	PT4: continuous exposure from undergraduate level PT5: continuous workforce development
Minkoff (1991) (154)	US	Implementation processes	The Comprehensive, Continuous and Integrated System of Care (CCISC)	PT1: first contact and assessment PT4: continuous exposure from undergraduate level PT9: mental health led services
Minkoff (2001) (155)	US	Implementation processes	The Choate Dual Diagnosis Case Rate Program	PT4: continuous exposure from undergraduate level
Minkoff (2001) (156)	US	Implementation processes	The Choate Dual Diagnosis Case Rate Program	PT1: first contact and assessment PT8: coordinated care pathways PT10: evaluation and quality improvement
Minkoff (2006) (157)	US	Commentary	n/a	PT8: coordinated care pathways
Minkoff and Cline (2004) (158)	US	Implementation processes	The Comprehensive, Continuous and Integrated System of Care (CCISC)	PT1: first contact and assessment PT5: continuous workforce development PT6: opinion leaders PT8: coordinated care pathways
Minkoff and Cline (2005) (159)	US	Implementation processes	The Comprehensive, Continuous and Integrated System of Care (CCISC)	PT1: first contact and assessment PT6: opinion leaders PT8: coordinated care pathways

Minkoff and Cline (2006) (160)	US	Implementation processes	The Comprehensive, Continuous and Integrated System of Care (CCISC)	PT8: coordinated care pathways
Minshall et al (2019) (161)	n/a	Scoping Review	n/a	PT5: continuous workforce development PT6: opinion leaders PT7: formalised networking opportunities PT8: coordinated care pathways
Minyard et al (2019) (162)	Ireland	Rapid realist synthesis	n/a	PT5: continuous workforce development PT6: opinion leaders PT8: coordinated care pathways PT11: Recruiting and retaining talented staff
Ness et al (2014) (163)	Norway	Qualitative (action research)	n/a	PT2: staff attitudes
Novotna (2013) (164)	Canada	Qualitative (interviews)	n/a	PT3: encouraging collaborative case management PT9: mental health led services PT11: Recruiting and retaining talented staff
Page (2011) (165)	England	Qualitative (focus groups and interviews)	n/a	PT6: opinion leaders PT8: coordinated care pathways
Petrakis et al (2018) (17)	n/a	Systematic review	n/a	PT3: encouraging collaborative case management PT5: continuous workforce development
Pinderup (2018) (166)	Denmark	Qualitative (interviews)	n/a	PT3: encouraging collaborative case management PT8: coordinated care pathways PT9: mental health led services
Pinderup et al (2016) (86)	Denmark	Systematic Review	n/a	PT1: first contact and assessment PT5: continuous workforce development
Priester et al (2016) (167)	n/a	Literature Review	n/a	PT2: staff attitudes
Rapp et al (2008) (168)	US	Qualitative (interviews)	Integrated Dual Disorders Treatment (IDDT)	PT5: continuous workforce development PT6: opinion leaders PT7: formalised networking opportunities
Reilly et al (2019) (169)	Australia	Quantitative (secondary data analysis)	n/a	PT1: first contact and assessment

Renner (2007) (79)	US	Implementation processes	Boston University Medical Center Dual Diagnosis Training Model	PT4: continuous exposure from undergraduate level
Renner et al (2005) (64)	US	Implementation processes	Boston University Medical Center Dual Diagnosis Training Model	PT4: continuous exposure from undergraduate level
Ridgely et al (1998) (170)	US	Quantitative (survey)	Maine Interagency Collaboration in Services for People With Co-Occurring Mental Illness and Substance Use Disorder	PT7: formalised networking opportunities PT8: coordinated care pathways
Roberts and Maybery (2014) (67)	Australia	Qualitative (interviews)	n/a	PT2: staff attitudes
Roussy et al (2015) (171)	Australia	Controlled before-and-after study design	Consumer-led training by people with dual diagnosis in Victoria	PT1: first contact and assessment
Saunders and Robinson (2002) (172)	Australia	Literature Review	n/a	PT4: continuous exposure from undergraduate level
Sciacca and Thompson (1996) (173)	US	Implementation processes	Sciacca Treatment Model for Dual Diagnosis (MIDAA)	PT5: continuous workforce development PT6: opinion leaders
Sims et al (2003) (174)	Wales	Implementation processes	Triangular Treatment Paradigm, Gwynedd	PT6: opinion leaders
Sitharthan et al (1999) (175)	Australia	Implementation processes	Integrated Drug and Alcohol Intervention (IDAI), Cumberland	PT1: first contact and assessment PT8: coordinated care pathways
Solomon and Fioritti (2002) (59)	Italy	Implementation processes	n/a	PT1: first contact and assessment PT2: staff attitudes PT7: formalised networking opportunities PT8: coordinated care pathways PT11: Recruiting and retaining talented staff
Sorsa et al (2017) (71)	Finland	Qualitative (interviews)	n/a	PT2: staff attitudes PT5: continuous workforce development PT8: coordinated care pathways PT11: Recruiting and retaining talented staff

Sterling et al (2011) (76)	US	Literature Review	n/a	PT2: staff attitudes PT8: coordinated care pathways
Swinden and Barrett (2008) (95)	UK	Implementation processes	County Durham Dual Diagnosis Worker	PT2: staff attitudes PT6: opinion leaders PT7: formalised networking opportunities
Sylvain and Lamothe (2013) (176)	n/a	Systematic Review	n/a	PT10: evaluation and quality improvement
Szerman et al (2017) (177)	n/a	Systematic Review	n/a	PT4: continuous exposure from undergraduate level
Tippier and Parker (2008) (178)	England	Implementation processes	Dual Diagnosis Specialist Worker Teams, Westminster	PT2: staff attitudes PT6: opinion leaders PT9: mental health led services PT11: Recruiting and retaining talented staff
Tobin and Boulton (2009) (179)	England	Implementation processes	Combined Psychosis and Substance Misuse Programme (COMPASS)	PT1: first contact and assessment
Torrey et al (2002) (180)	US	Implementation processes	Integrated Dual Disorders Treatment (IDDT)	PT6: opinion leaders PT7: formalised networking opportunities
Watt et al (2013) (181)	Australia	Implementation processes	The Complex Needs Assessment Panel and Integrated Support (CNAPIS)	PT7: formalised networking opportunities
Welch and Mooney (2001) (182)	Australia	Implementation processes	Mental Health and Alcohol and Drug Services (MHADS)	PT1: first contact and assessment
Wendler and Murdock (2006) (183)	US	Implementation processes	n/a	PT2: staff attitudes
Wieder et al (2007) (78)	US	Implementation processes	Integrated Dual Disorders Treatment (IDDT)	PT2: staff attitudes PT6: opinion leaders
Wieder and Kruszynski (2007) (83)	US	Implementation processes	Integrated Dual Disorders Treatment (IDDT)	PT2: staff attitudes PT6: opinion leaders
Wiland (2008) (184)	US	Implementation processes	Community Support and Treatment Services (CSTS), Michigan	PT6: opinion leaders PT8: coordinated care pathways

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