Trauma-informed care for adult survivors of developmental trauma with psychotic and/or dissociative symptoms: a systematic review of intervention studies

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ABSTRACT

Developmental trauma is associated with an increased risk of psychosis and predicts poor prognosis. Despite this, little is known about which treatments work best for survivors of developmental trauma with psychosis. We sought to conduct the first review to investigate treatments for people with psychotic and dissociative symptoms and a history of developmental trauma. We identified twenty-four studies, most of which investigated various modalities of psychotherapy with two case reports of pharmacological treatments. There was preliminary evidence in favour of third wave cognitive therapies. However, due to the low methodological quality and reporting in most of the studies found, it remains unknown which treatments are most effective in this clinical group. Nonetheless, our findings of potential treatment targets including emotion regulation, acceptance, interpersonal skills, trauma re-processing and the integration of dissociated ego states, may guide future work in this area. Methodologically rigorous studies are needed to enable clinicians and patients to collaboratively form evidence-based treatment plans.

Keywords; antipsychotic, developmental trauma, dissociation, psychosis, psychotherapy, treatments

1. INTRODUCTION

Psychosis is a leading global cause of disability and mortality[1]. There is growing evidence that developmental trauma (DT) is a causal factor for psychotic symptoms in adulthood[2]. Although there is no widely agreed definition of developmental trauma, here we focus on more severe experiences and define DT as including emotional, sexual, or physical abuse (including bullying), and neglect in childhood or adolescence[3].

At least one type of DT is reported in half of individuals with psychosis[4], and individuals with psychosis report significantly more DT when compared with those without psychosis, including psychiatric comparison groups[5]. Individuals with first-episode psychosis (FEP) were twice as likely to report pre-adult bullying compared to healthy controls[6] . Neglect and emotional abuse have a prevalence of between 33% and 59% in samples of individuals with psychosis[7]. DT has been estimated to account for approximately a third of cases of psychotic experiences in children[2]. Importantly, DT is associated with both positive[8] and negative symptoms [9]. The hypothesis that the association with DT may be causative is supported by evidence fulfilling Bradford Hill criteria[10], including strong and consistent associations between DT and psychosis[11], temporal relationships[2], plausible biological mechanisms[12] and dose-effects[13]. In total, DT is estimated to be the major contributing factor in approximately one third of cases of psychosis[2].

Despite this, psychosis in adult survivors of DT is under-researched and there is a pressing need to improve treatments for this patient group. This is because adult survivors of DT who experience psychosis (ASDTP) are at a higher risk of poor prognostic outcomes including more severe

illness[14], re-hospitalization[15], and poorer response to treatment[16] including dopamine antagonists[17]. ASDTP are more likely to be prescribed higher doses of antipsychotic and mood stabilizing medications[18]. This may be because of more severe psychotic symptomatology associated with DT, clinicians using escalated doses for symptoms that remain refractory, and/or dissociative symptoms being mistaken for psychotic symptoms. There is also evidence that DT alters emotion regulation[19] and stress reactivity[20] in individuals experiencing psychosis[21]. A recent neuroimaging review has found that ASDTP, compared to individuals with psychosis without trauma exposure, have alterations in brain structure and function including deficits in prefrontal cortex volume and hyper-responsive threat detection system[22]. Together with evidence of poorer prognosis and response to treatment, this suggests that ASDTP may represent a distinct clinical group from idiopathic psychosis[23], broadly consistent with the traumagenic neurodevelopmental model of psychosis[24]. Furthermore, DT strongly predicts low service engagement in individuals with psychosis[25,26]. One factor that could be contributing to poor engagement with services may be patients' dissatisfaction with treatments that ignore subjectively important issues, including trauma history[27]. Many people who use mental health services, especially those with diagnoses of psychosis, are not asked about DT histories[28]. Furthermore, the immediate response to disclosures of DT including low referral rates for trauma-related treatments remains poor[29].

Guidelines, including from the UK's National Institute for Health and Care Excellence (NICE), have provided separate treatment recommendations for patients with psychosis or posttraumatic stress disorder (PTSD) [30,31], which include assessing and treating the sequelae of trauma. However, there is a gap in the research literature on treatments for ASDTP. This is because research has typically focused on either studying treatments for psychosis or trauma-related disorders

independently[32], or has studied trauma in the context of psychosis without distinguishing DT from other trauma presentations[33]. Given the evidence to support the role of DT in the aetiology of psychosis, this interventional research gap represents a barrier to advances in treatment. Furthermore, focusing only on one aspect of the clinical presentation, while neglecting others that are very distressing for the patient, may perpetuate other negative outcomes such as reducing therapeutic engagement during recovery and colluding with avoidance of processing traumatic memories that may maintain symptoms.

Within this context, and in light of progress in our understanding of psychological trauma[34], there has been an increasing emphasis in some quarters on the need for trauma-informed care in psychosis. Whilst there is a lack of consensus on a definition of trauma-informed care, broadly speaking this incorporates an understanding of the effects of trauma into service delivery[35]. However, little is known about what are effective treatments for ASDTP. Given that psychosis following DT is likely to be a transdiagnostic phenomenon, in that it does not seem specific to any single diagnosis[36], we have not framed our inclusion criteria in terms of clinical diagnosis. Additionally, there is a large literature on the association between dissociation and trauma, and DT in particular[37]. For almost a century, dissociation has been proposed to be involved in the development of psychotic symptoms following DT[38] and there is growing evidence in support of this [39] Furthermore, dissociation frequently co-occurs with hallucinations across disorders[40] and can be very distressing for patients. We have therefore included dissociative symptoms in this review for both pragmatic and theoretical reasons as these symptoms warrant appropriate treatments and there is conceptual overlap between these domains. Thus, we sought to conduct

the first review the effectiveness of treatments for ASDTP in order to inform clinical recommendations and guide future research.

2. METHODS

We registered the review protocol at PROSPERO (registration number CRD42018104533; http://www.crd.york.ac.uk/prospero/). We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement[41] and Consolidated Standards of Reporting Trials (CONSORT) Statement[42].

2.1. Eligibility criteria

Due to the lack of research in this area, we used broad inclusion criteria to ensure that all relevant studies would be captured. Our inclusion criteria were any psychological or pharmacological treatment study for adult survivors of DT in childhood and/or adolescence [age <18 years] where DT was identified either through the use of structured assessment tools or through being described as trauma in the report. Participants were adults with a history of DT experiencing psychotic symptoms including having a diagnosis of schizophrenia, schizoaffective and bipolar disorder, psychotic depression, and at-risk mental states. In the absence of evidence of different psychobiological mechanisms giving rise to psychotic symptoms in different clinical diagnoses, we also included psychotic symptoms in the context of other diagnoses such as borderline personality disorder and dissociative identity disorder (DID). Studies of survivors of DT with dissociative symptoms were also included given the association between dissociative and psychotic symptoms following DT[39,43]. Any study design that offered a treatment was included, including randomized controlled trials, open trials, non-controlled studies, case series and case

reports. Exclusion criteria were studies investigating non-clinical samples and those not offering any treatment.

2.2. Information sources

Two electronic databases "MEDLINE®" and "PsycINFO" were searched using the OVID interface to find relevant studies. Google Scholar, unpublished journals, and grey literature were hand-searched to identify relevant articles not available on the databases. The reference lists of relevant eligible studies were examined for additional relevant studies.

2.3. Search terms

Our search strategy involved terms that are related to DT as well as psychotic and/or dissociative symptoms and diagnoses. We applied no limit to the search terms to ensure all relevant studies are retrieved. Each search term within each concept was linked using the Boolean operator "OR" and each concept was combined together with the Boolean operator "AND". The search string was as follows: (child OR childhood OR young OR young people OR young person OR adolescen* OR development*) AND (trauma OR abuse OR maltreatment OR neglect OR bully*) AND (psychotic OR psychosis OR hallucination OR delusion OR schizophrenia OR schizoaffective OR dissociat*) AND (treatment OR intervention OR therapy OR efficacy). We conducted the search on 17th October, 2018. For inclusion of very recently published papers we performed an additional key word search on PubMed for the year 2017/18. We tested our search strategy by ascertaining whether these terms captured key papers known to us in this field.

2.4. Outcome measure

We defined the primary outcome *a priori* as reduction in positive psychotic and/or dissociative symptoms as measured by any validated psychometric tool. We included any measures relevant to mental wellbeing and functioning as secondary outcomes.

2.5. Study selection

We performed a preliminary search using the agreed search strategy and terms on the specified databases. Any duplicates were cross-checked and removed before the record titles and abstracts were screened by one reviewer for inclusion. The full-text records and their respective reference lists were assessed independently with regard to suitability for inclusion in the review. Any discrepancies were resolved in discussion with a second reviewer.

2.6. Data collection process

We developed a proforma based on the CONSORT criteria[42]. For each study, the following data were extracted: 1) study design, 2) participant characteristics, 3) type of treatment and control/comparison, 4) mode and length of treatment, 5) outcomes measures, 6) relevant findings, and 7) adverse effects**.** Treatments were classified according to the use and type of intervention. Within psychotherapies, interventions were classified according to their theoretical orientations. Within cognitive-behavioural therapies (CBT), we classified interventions as "third wave CBT

interventions" if their methods emphasized targets including mindfulness, emotion and emotion-regulation skills, acceptance, interpersonal relationship, values, and meta-cognition[44].

2.7. Risk of bias assessment

For randomised controlled trials, the risk of bias was assessed using the Cochrane Risk of Bias (RoB) tool[45]. The eligible studies were assessed against seven key criteria: 1) random sequence generation for allocation, 2) allocation concealment, 3) blinding of participants, 4) outcomes, 5) extent of incomplete outcome data, 6) selective outcome reporting, and 7) other sources of bias. With each of these criteria, the risk of bias in each study was rated as 'low', 'high', or 'unclear' (due to ambiguity or insufficient information). Any discrepancies were resolved by discussion with a second reviewer and remaining issues were resolved by consensus (M.A.P.B, F.N.I.B.Y, S.R.).

2.8. Quality assessment

The CONSORT Statement[42] was used as the framework for assessing and reporting the quality of the trials included in the review. The CONSORT Statement[42] comprises a checklist of 25 items that focus on how trials were designed, analysed, and interpreted, as well as a flow diagram that shows how the participants progressed through the trials. For case series and case reports we used a newly-developed 8-item checklist[46] covering selection, ascertainment, causality, and reporting domains to assess their quality, separately from the CONSORT criteria[42].

2.9. Strength of evidence

The Oxford Centre for Evidence-based Medicine – Levels of Evidence guideline[47] was used to assign a level of evidence to each study, as presented in Table 1, to facilitate the development of overall clinical recommendations.

3. RESULTS

3.1. Search results

Despite the broad search criteria, we identified 24 studies that investigated treatments for ASDTP. Details of the selection process are presented in our PRISMA flowchart[41].

3.2. Study characteristics

The 24 studies included in this review were published between 1977 and 2018. All studies included clinical samples with diagnoses including schizophrenia, bipolar disorder, psychotic disorder, and "dissociative psychosis". We identified two reports describing "hysterical psychosis" [48,49], and while this is an outdated diagnosis, they described individuals experiencing psychotic symptoms, including hallucinations and delusions, and so these were therefore included.

Overall, we identified only one RCT[67], four case series[27,51-53] and nineteen case reports[48,49,54-70]. All studies described psychological treatments, apart from two case reports[69,70] which described pharmacological treatments. The one RCT[50] investigated a psychological treatment for ASDTP, with follow-up at 3-months after treatment, and was the only study with a comparison group. One case series reported that insecure attachment and dissociation both reduced during out-patient therapy[51]. A separate case series[27] was a qualitative study that investigated the experiences of young people with FEP of receiving trauma-focused treatment for PTSD. This reported quantitative data as its primary outcome and so was included. Given the low number of quantitative

studies and the small sample sizes of most studies, it was not possible to include the results in a meta-analytic synthesis. A detailed summary of the study characteristics is presented in Table 1.

3.3. Appraisal of studies included

The sole RCT exhibited some biases[45,50] (Table 2) and did not fully meet CONSORT criteria[42]. None of the case reports or case series fully met criteria for quality assessment for case series/reports[46] (Cohen's K=0.96). The detailed description of methodological qualities of the case series/reports included are presented in Table 3. The case reports and series especially constitute weak evidence due to the to the lack of outcome measures, poor reporting of results, studies of a single participant, and lack of placebo controlled or comparison groups. The quality of the findings could be affected due to the discrepancies in outcome measures and the heterogeneity between studies. The only study that had a comparison group used TAU as the control[50], which did not provide an active comparison. There was therefore a high risk of bias due to poorly conducted research and reporting of findings. Moreover, due to insufficient data to conduct meta-analysis, it was not possible to determine the relative superiority of any treatment approaches. There was a lack of clear reporting on the pre- to post-treatment change in primary outcomes as most studies did not use validated outcome measures. Most studies, however, reported on outcomes that were considered as secondary such as improved mental wellbeing and quality of life and/or social relationships, but without the use of validated measures. With the exception of six studies[27, 54, 57, 59, 62, 63], there was a lack of reporting of adverse effects and tolerability of treatments in identified studies. This was a concern given current interest in addressing the past tendency for trials not to report the negative effects of psychological interventions[71]. These limitations call into question the

generalizability of the findings to clinical practice. Nonetheless, all of these studies were still included in this review as they offer insights into current practice in this patient group and provide a starting point for higher quality research in the future.

3.4. Psychological treatments

3.4.1. "Third wave" cognitive-behavioural approaches

Mindfulness-based acceptance and commitment therapy (M-ACT)

A recent RCT[50] investigated the effectiveness of 8 sessions of mindfulness-based acceptance and commitment therapy (M-ACT) for ASDTP. The RCT lacked a placebo treatment group and comparison was made to TAU. The treatment focused on acceptance of present experiences as a tool to regulate emotion, understanding of self, defusion (the meta-cognitive process of separating internal experiences including thoughts and emotions), self-compassion and mindfulness meditation. Thirty participants received the treatment and twenty participants received TAU. Outcomes were measured with validated tools including the Brief Psychiatric Rating Scale-Expanded (BPRS-E)[72], the Trauma Symptom Checklist – 40 (TSC-40)[73], the Cognitive Emotion Regulation Questionnaire (CERQ)[74], the Generalized Anxiety Disorder Scale – 7 (GAD-7)[75], and the Service Engagement Scale (SES)[76]. Compared to baseline, the M-ACT group demonstrated an increase in emotion regulation and acceptance, decrease in psychotic symptoms, reduced anxiety, and better engagement with services , maintained at 3-month follow up. However, there was no significant decrease in PTSD symptoms. Positive quantitative outcomes were supported by the

qualitative component of the study which found that the treatment group had a positive experience. However, participants described feeling that more sessions were required and that the treatment duration was too short. Evidence of treatment efficacy from this study warrants a further placebo-controlled randomized controlled trial (RCT) with a longer follow-up period and work to examine which treatment components are most effective. Further qualitative evidence of the acceptability of the intervention to patients would also inform implementation.

Cognitive-behavioural therapy (CBT)

We identified one case series and two case reports on the use of cognitive therapy. One study [27] reported the efficacy of trauma-focused cognitive-behavioural therapy (TF-CBT) in FEP. Whilst the treatment was described as "trauma-focused", beyond constructing a timeline of major life events and formulation, the intervention did not deploy the typical elements TF-CBT, including formal memory reprocessing and cognitive restructuring through therapist-assisted imaginal exposure[77]. All seven participants completed the treatment and six participants had reduced psychotic and PTSD symptoms as measured by the BPRS[72] and Clinician Administered PTSD Scale (CAPS)[78] respectively. All except one participant reported having increased distress during the session, and four participants described experiencing symptoms including flashbacks, distress, insomnia, weight loss, suicidal ideation, and hallucinations as reactions to talking about trauma in therapy sessions. Experience of distress would be expected during trauma-focused treatment through exposure and habituation. All participants reported treatment to be useful and worthwhile. However, further qualitative work is warranted on the acceptability of experiencing distress in response to talking about trauma during therapy sessions.

In terms of the two case reports, one was of an individual with diagnoses of PTSD and schizoaffective disorder[54] and the other was of an individual with diagnoses of PTSD and dissociative symptoms[55]. The former [54] focused on cognitive restructuring of mistrust. At the end of treatment the patient no longer met criteria for PTSD on CAPS, had reduced scores on both Beck Depression Inventory (BDI)[79] and the Post-Traumatic Cognitions Inventory (PTCI)[80]. These improvements increased at 6-month follow-up. The second study [55] treated depersonalization and dissociative states with cognitive behavioural therapy (CBT). Treatment addressed insomnia, interpersonal skills and cognitive restructuring of distrust attributions towards others, and shifting blame from the patient to the perpetrator. After dissociative symptoms improved, exposure based therapy was used to treat intrusive thoughts of re-victimization. At treatment termination, the patient reported having reduced dissociative symptoms. Despite the sub-optimal quality of evidence, taken together there is some support for TF-CBT being a potential treatment for this patient group, however more research is needed to further examine its efficacy using RCTs.

Affect & Interpersonal Regulation Treatment with prolonged exposure

In a case series of a phase-based treatment[51] using "Skills Training in Affective and Interpersonal Regulation" (STAIR), patients were sexually abused women with dissociative symptoms. Treatment comprised aspects of both CBT and dialectical behavioural therapy (DBT)[81] and consisted of two phases. The first phase focused on affect and interpersonal regulation. The second phase focused on emotional processing of trauma memories through modified prolonged exposure. At the end of treatment, participants reported reduced dissociation and improved attachment based on the Trauma Symptom Checklist (TSC-33)[82] and the Revised Adult Attachment Scale (RAAS)[83,84]. The findings also suggest that dissociation and attachment may have a reciprocal relationship. However, this study did not have a comparison group, did not measure psychotic symptoms, and did not provide a common treatment manual used by the clinicians at the different treatment centres involved.

3.4.2. Cognitive-analytic approaches

Cognitive analytic therapy (CAT)

There was a case report of cognitive analytic therapy (CAT) for an individual with dissociation and hallucinations[56]. The treatment focused on developing a cognitive-analytic formulation to improve sense of control over the individual's internal mental state and reduce anxiety[85].

Treatment was associated with reduced hallucinatory and dissociative symptoms (measured by the Dissociative Experiences Scale (DES)[86]), return to work and reduced hospital admissions.

3.4.3. Psychoanalytic and psychodynamic approaches

Psychoanalytic and psychodynamic therapies

There were nine case reports of psychoanalytic/psychodynamic therapy[48,49,57-63], all with poor outcome measure reporting. Although they represent weak evidence, we have identified themes of suggested therapeutic targets. We include them here to aid the development of treatment components that can be empirically tested. Every case reported the importance of the therapeutic relationship, setting and transference-countertransference processes[48,49,57-63] particularly in light of the interpersonal and/or attachment difficulties experienced by individuals with psychotic symptoms[48,57,62,63,70]. This may be particularly pertinent in the context of DT where an individual's capacity to be in a therapeutic relationship not dominated by fear and sadomasochism could potentially be targeted[76]. The generalisation of more adaptive interpersonal attachment styles may attenuate paranoia via reduced inter-personal threat anticipation. These processes were proposed to enable reintegration of dissociated ego states[49,60,61] which may then facilitate memory and emotional re-processing[86]. Another common therapeutic target identified in three of these case reports was emotion regulation[57,60,63].

Mentalization-based therapy

There was a report of mentalization-based therapy (MbT) for an individual diagnosed with schizophrenia[64]. During therapy, the patient was prescribed a dopamine antagonist (Risperidone, 3mg daily). Mentalization refers to one's capacity to psychologically represent and process mental states in oneself and others, and is proposed to be crucial in emotional regulation and the organization of self-experience[87]. Following treatment, the participant was reported to have remission of psychotic symptoms and improved distress tolerance. However, no outcome measures were reported.

Ego-state therapy

There was a report of ego-state therapy[65] for an individual with diagnoses of schizophrenia and multiple personality disorder. The therapy's reported aims included accessing and understanding the "self-state' and "discussing and negotiating between ego states". After one year of treatment with the patient was reported to have had remission of abuse flashbacks and developed ego-integration[88]. However, psychotic symptoms were not clearly reported and no structured outcome measures were used.

3.4.4. Humanistic approaches

Phenomenological treatment

There was a report on phenomenological treatment for an individual diagnosed with paranoid schizophrenia and DID who experienced incest[66]. The treatment involved the therapist adopting an *'as if'* position when relating to dissociated ego states. Psychotic symptoms were not clearly reported and there was lack of reporting of outcome measures. The individual reported a reduction in the frequency and intensity of dissociation experienced and improved self-esteem. Reliving of traumatic memories triggered behaviours such as binge drinking, self-injury, and treatment absences.

3.4.5. Systemic approaches

Contextual therapy

A case series [52] reported that contextual therapy was helpful for ASDTP. The treatment focused on developing effective emotional coping skills. All participants reported decreased dissociative, trauma, and depressive symptoms on the DES[86], Impact of Events Scale (IES)[89], and BDI[90]. Participants also reported reduced panic and improved self-esteem, social life, and motivation to gain employment in the community. However, the study did not use a psychotic symptoms scale.

3.4.6. Other approaches

Art therapy

There was one case report of art therapy[67] for an individual with DID and PTSD. The treatment, lasting three years and comprised of 250 artworks, focused on understanding the meaning of each artwork and proposed to help symbolize pre-verbal imagery. No quantitative outcome measures were reported. There was a narrative report of improvement in symptoms, self-acceptance and self-confidence, and integration of dissociated ego states.

In-patient therapy

There was a report of an eclectic inpatient treatment[53] programme approach in treating two females diagnosed with schizophrenia and schizoaffective disorder. The first patient underwent intensive individual "trauma-informed" therapy while the second patient received a multimodal approach which included individual, group, and family therapy as well as art therapy with an emphasis on music. Both patients were reported to have benefited from the treatment, which was associated with a sense of safety and becoming more assertive in their communication of their thoughts and feelings. However, no outcome measures were reported.

Electroencephalography neurofeedback (EEG NFB) assisted psychotherapy

One case study[68] described the treatment of an individual with complex DT and dissociative symptoms, who had failed to respond to various medicines and psychotherapies, by targeting affect-regulation through electroencephalography neurofeedback (EEG NFB) assisted psychotherapy. This was on the supposition that EEG frequency bands are associated with cognitive-affective processes. The treatment involved presenting the individual with a visual or auditory feedback of targeted EEG amplitudes in real time, and the individual learned to increase or decrease their EEG amplitudes in the right temporal and parietal lobes at EEG frequencies associated with subjective calm. No outcome measures were reported. The authors described the patient having experienced reduced dissociation, anxiety, nightmares, and improved sleep, emotional regulation and social functioning.

3.5. Pharmacological treatments

We identified two case studies of pharmacological treatments[69,70]. In one[69], lithium monotherapy was used to treat an individual diagnosed with schizophrenia. No clear outcome measures were reported, but the case described reports from the patient and their spouse of reduced psychotic and dissociative symptoms and violent behaviours. The second treated an individual with DID and hallucinations with perospirone over 9 months. This was reported to be associated with reduced auditory hallucinations, identity dissociation, and anxiety. There were no outcome measures.

3.6 Sex/gender effects in response to interventions

The RCT and case series did not report whether were differences in response to intervention related to sex/gender.

4. DISCUSSION

In the first systematic review of interventions for ASDTP, we have found that the majority of the literature is of low quality due to a lack of controls, use of unvalidated or subjective outcomes, and small sample sizes. We identified only one controlled study (an RCT) out of 24 studies identified. This trial of therapy-ACT[50] therefore represented the highest level of evidence amongst all treatments. There was poor evidence for pharmacotherapy used in this group, represented by two case reports[69,70]. This review therefore identifies no evidence to support specific pharmacotherapy for ASDTP beyond existing trials that do not differentiate between those who have survived DT and those who have not. Taken together, there is very little in the way of an existing evidence-base for trauma-informed care.

Whilst progress has been made in treating PTSD symptoms in patients with psychosis[91], our review demonstrates that this area is vastly under-researched, which could be due to the exclusion of individuals with psychosis from trauma research and *vice versa*[91,92], a lack of confidence in treatment utility in individuals with psychosis[93], and/or ongoing concerns regarding the reliability of abuse reports from individuals with psychosis despite evidence of reliability[94]. Although the level and quality of evidence is limited at the moment, our review nonetheless does find some evidence of effectiveness which warrants future research (please see extended discussion).

4.1. Strengths and limitations

A major strength of this review is the use of broad search criteria to ensure all relevant studies were included. The studies included were not limited in terms of language, location, or year of publication. Although transdiagnostic approaches suggesting that psychotic symptoms are on a continuum remain controversial, due to the potential for confusion in understanding the nature of psychosis[95], we chose to be inclusive in including individuals with a DT history with psychotic and/or dissociative symptoms regardless of their psychiatric diagnoses. A major limitation of our review resides in clinical diagnostic difficulties and problems in classification of symptoms (dissociative *vs.* psychotic), especially given the lack of phenomenological rigour in many of the included studies.

The limitations of this review are that, despite our best efforts, our search for unpublished studies may have been incomplete, thereby reflecting publication bias. We acknowledge the possibility of inductive bias in our conceptual approach to this review in assuming a direct association between childhood trauma and adult psychosis, and therefore we may be assuming a construct that may not be valid. Whilst concepts like 'developmental trauma', 'childhood trauma' or similar are often used in the literature, research is needed to assess whether or not they are useful categories for guiding treatment in themselves. Some studies[96] on childhood trauma in psychosis use scales that have an even wider scope and therefore include a range of adverse events including types of emotional distress or hardship that might raise the risk of mental health problems but might not be

regarded as traumatic in the generally accepted sense. Nevertheless, we felt that a broad review was warranted because of the importance of recognising the diversity of difficulties that occur during and after DT, particularly as many people survive potentially traumatic events without any adverse effects on their mental health and for those that do suffer poor mental health, the effects are far wider-ranging than PTSD[97].

4.2. Future directions

Our research highlights that, despite strong associations between DT and psychosis, there is a marked lack of high quality research on treatments. It remains unknown if targeting dissociation may reduce psychotic symptoms and/or be effective in its own right in treating dissociation if the two symptoms co-exist. It is also essential that we reach a precise understanding of the biopsychosocial mechanisms underlying psychotic symptoms in ASDTP. We also call on the field to develop more effective interventions. Studies that provide higher strength of evidence are needed first before head-to-head trials are done. We need more randomized controlled trials of trauma-focused cognitive therapy in psychosis following DT, using validated measures, including adverse effects. In the case of most of the psychoanalytic research, significant increases in the strength of evidence are required, addressing bias and improving reporting of outcomes. Further, research is needed to address which pharmacological treatments are most effective in this group and potentially explore the efficacy of combinations of medications and psychotherapies in treatments.

The studies we identified used diverse jargon reflecting different schools of psychotherapy, including that which often describes the same or similar concepts. This can function as a barrier to understanding these mechanisms from an integrated neurocognitive perspective. Therefore, consensus is needed in psychotherapy nomenclature. We must also improve our understanding of the effects of moving between inpatient and outpatient settings during treatment, as this reflects clinical reality i.e. it is often extremely difficult for inpatients to access therapy that will continue as outpatients and *vice versa*. Given that we have found some evidence that trauma-focussed interventions can reduce psychotic symptoms[50], there is also a need to develop trauma-informed services for these patients, conduct evaluation of their clinical and cost-effectiveness[27] and use qualitative approaches to assess acceptability. Future studies should look at whether this group of individuals may need longer duration of treatment or higher frequency of treatment sessions. Since our review was concerned with interventions for adult survivors, we did not include paediatric cases and future research is encouraged in children and young people. Additionally, it is important to explore potential adverse effects of having intense psychotic or dissociative symptoms while meditating during mindfulness-based treatments[50,98]. Future studies should have longer follow up period with adequate reporting of both therapeutic and adverse effects of treatments as well as its tolerability, alongside including adequate placebo-controlled groups[50] to examine which component(s) of the treatment was responsible for the effect. Finally, future avenues of research should explore drug-assisted psychotherapy.

4.3. Clinical recommendation

Due to the limited and low quality evidence, including limited knowledge on tolerability, it is not possible to determine the comparative effectiveness of the treatments in this review and we are therefore unable to recommend significant changes to current clinical practice. Clinicians should follow best practice and existing clinical guidelines, essentially extrapolating guidance from NICE guidelines on PTSD[30] and psychosis[31]. This will include screening for symptoms of PTSD and therefore, importantly, obtaining trauma histories. Nonetheless, our review suggests that it may be helpful for clinicians to assess and incorporate the following areas into treatment plans: emotion regulation, psychological acceptance, interpersonal skills, attachment, dissociation, and trauma memory re-processing. In view of the weak evidence, this should be considered a grade C recommendation[47]. Given this, and high levels of risk in this group, patients will likely benefit from additional symptom and side-effect monitoring during treatment in specialist settings. There is also a need for appropriate clinical supervision in trauma services[99], especially given the risk of vicarious trauma in therapists[100].

4.4. Conclusions

There is insufficient evidence to answer the question of what good trauma-informed psychosis care actually is. We must move beyond simply acknowledging the importance of trauma as a risk factor for psychosis and build an evidence base to help ASDTP. Our findings may be helpful for the design of future observational (mechanistic) and interventional research. It remains unclear which treatment works best for ASDTP and research is needed to establish which elements are most effective for whom. It is also important to understand patients' experiences in their developmental and systemic context to enable clinicians to have a more comprehensive and

holistic view of their patient's presentation. This review highlights the urgent need for methodologically sound, high quality research to enable evidence-based and shared decision-making between clinicians and patients.

5. Conflict of interest

We declare that we have no conflicts of interest.

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7. Publication statement

This paper has not been submitted to another journal, and has not been published in whole or in part elsewhere previously.

8. Contributors

M.A.P.B. conceptualised and designed the study. The literature search was performed by M.A.P.B, F.I.B.Y. and R.S. All authors contributed intellectually to the study and the writing of the manuscript.

9. Role of the funding sources

The funding source had no role in the writing of the manuscript. We have not been paid to write this article by a pharmaceutical company or other agency. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

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