

## Barriers to methamphetamine treatment

### Barriers to accessing methamphetamine treatment: A systematic review and meta-analysis

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### Abstract

**Background:** Methamphetamine use is associated with a range of poor health, social and justice outcomes. In many parts of the world increased methamphetamine use has been identified as a major public health concern. Methamphetamine treatment programmes have been effective in reducing and ceasing use, however a range of barriers have prevented these programs being widely adopted by methamphetamine users. This review examines the barriers to accessing meth/amphetamine treatment identified in the literature.

**Methods:** Databases were systematically searched using relevant terms for peer-reviewed articles describing original research exploring the barriers to accessing treatment for meth/amphetamine use. Reviews and grey literature were excluded. Eleven studies conducted in 5 countries were included in data synthesis; this involved a systematic review of all 11 studies, and meta-analysis of the prevalence of barriers reported in 6 studies that published sufficient quantitative data.

**Results:** Psychosocial/internal barriers to accessing methamphetamine treatment were most prevalent across studies (10/11 studies). Meta-analysis confirmed the four most commonly endorsed barriers to treatment access across studies all psychosocial barriers were embarrassment or stigma (60%, 95%CI: 54-67%); belief that treatment was unnecessary (59%, 95%CI:54-65%); preferring to withdraw alone without assistance (55%, 95% CI:45-65); and privacy concerns (51%, 95%CI:44-59%).

**Conclusions:** The primary barriers to accessing methamphetamine treatment are psychosocial/internal. Services and treatment models that address these barriers are urgently required. There is a growing need for methamphetamine-appropriate treatment services. Further research evaluating treatment engagement and effectiveness for methamphetamine and polysubstance use, including the development of effective pharmacotherapies is warranted.

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**Key Words:** barriers to treatment; methamphetamine; treatment; substance use disorder; systematic review

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### **Barriers to accessing methamphetamine treatment: A systematic review and meta-analysis**

#### **1. Introduction**

Methamphetamine dependence has been identified as an area of concern in many parts of the world (De-Carolis et al., 2015; McKetin et al., 2014; UNODC, 2015). In western nations, a range of poor health and social outcomes have been associated with methamphetamine use (McKetin et al., 2014)(Lecomte et al., 2013)(Cherner et al., 2010; Henry et al., 2010; Panenka et al., 2013)(Darke et al., 2008; Marshall et al., 2011)(Callaghan et al., 2012). Similar issues have also been identified in south-east Asia(DiMiceli et al., 2016)(Liao et al., 2014; Liao et al., 2013)(Zhang et al., 2014)(Liao et al., 2014). Additionally, methamphetamine use has been associated with crime in many parts of the world (Pietsch et al., 2013)(Gonzales et al., 2010)(Degenhardt et al., 2008; McKetin et al., 2005). Therefore, recent increases in methamphetamine use (Chomchai and Chomchai, 2015; Degenhardt et al., 2016; Gruenewald et al., 2013) and supply (UNODC, 2015) in many parts of the world have been noted with concern (Chomchai and Chomchai, 2015).

Previous research has established that treatment for methamphetamine use disorders is effective in the reduction and cessation of use (Manning et al., 2016). Additionally, the benefits of substance use treatment generally far outweigh the costs when improvements in health, social and justice outcomes; and related economic costs and savings are considered (Cartwright, 2000; Godfrey et al., 2004). Given the complexities around treating substance use disorders (SUDs) involving methamphetamine (Ling et al., 2014; Pennay and Lee, 2009) and the recent increase in methamphetamine use in places such as Europe (Mounteney et al., 2014), Australia (Degenhardt et al., 2016), and the western part of North America (Davis et al., 2016), engagement with effective treatment for methamphetamine-dependent individuals is likely crucial to prevent harm.

Literature reporting barriers to accessing treatment for SUDs generally (Begun et al., 2016; Browne et al., 2016; Digiusto and Treloar, 2007; Sexton et al., 2008), and those focused on opioid-related SUDs (Bojko et al., 2015; Callon et al., 2005) highlight a range of systemic, practical and psychosocial

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barriers that may prevent individuals from accessing treatment. Given the range and complexity of problems associated with methamphetamine use (Ling et al., 2014; Pennay and Lee, 2009; Quinn et al., 2013c), an exploration of the barriers that prevent people in need of treatment for methamphetamine use from accessing and benefitting from it, is warranted.

Whilst there have been multiple reviews conducted on outcomes associated with methamphetamine use (Cruickshank and Dyer, 2009; Dluzen and Liu, 2008; Homer et al., 2008; Kaye et al., 2007; Marshall and Werb, 2010; Meredith et al., 2005; Nordahl et al., 2003; Scott et al., 2007) and the effectiveness of various treatments for methamphetamine use (Karila et al., 2010; Lee and Rawson, 2008; Rose and Grant, 2008), we are not aware of any published reviews investigating the barriers to accessing methamphetamine treatment. This systematic review and meta-analysis aimed to identify most commonly reported barriers to accessing methamphetamine treatment across the included studies to inform government and non-government agencies in planning new services and adapting existing services. The identification and development of interventions targeted at, these barriers may contribute to improvements in help-seeking behaviour, service utilisation and treatment outcomes.

## **2. Material and methods**

### ***2.1 Information sources***

Systematic searches were performed on five bibliographical databases, selected as the leading databases for research in behavioural and social sciences and medicine: Scopus (Sciverse); Medline (Ovid); PyscINFO (ProQuest); Web of Science (Web of Knowledge); and PubMed, from their inception to 31 March, 2016. In addition, Google Scholar was used in conjunction with other databases as it has previously been shown to be a reliable search tool when conducting systematic reviews (Bramer et al., 2016; Jean-François et al., 2013). Google Scholar was solely used as a secondary search source, using the “cited by” link to search for articles that had cited articles identified as being relevant to the review.

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### **2.2 Search strategy**

Each database was independently searched by two authors (CC and LT) using the terms: (barrier\* OR obstacle\* OR impediment\*) (access\*) (\*amphetamine OR speed OR goey OR wizz OR whizz OR meth OR ice OR gear) (treatment OR support). The alternate names for meth/amphetamine were sourced from previous literature (Hester et al., 2010; McKetin et al., 2005; Topp et al., 2002).

Each searching author compiled their results and duplicates were removed. Remaining records were screened on title and abstract by both authors to identify relevant articles using the selection criteria. Reference lists of all relevant articles were explored, as well as the “cited by” link in Google Scholar. One author (CC) then assessed the full-text of the relevant articles for suitability for inclusion.

### **2.3 Study selection**

Eligible studies were:

1. Original research studies (qualitative, quantitative or mixed-methods) published in peer-reviewed journals
2. Those investigating the barriers to accessing services that provide treatment for methamphetamine and amphetamine users as a research focus
3. Written in English

There was no limitation placed on the treatment setting (inpatient or outpatient), method of treatment (psychosocial, pharmacological or combination therapy) or research participants (consumers, service providers or both).

We excluded: review articles; technical reports; working papers; conference proceedings; and other 'grey' literature.

### **2.4 Data extraction**

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One author (CC) reviewed the full-text record of all articles meeting the inclusion criteria and extracted the following data, in line with the PRISMA methodology (Moher et al., 2009): author(s) and date of publication; setting; population/sample; observation period (where applicable); study design; measures used; outcome variables; socio-economic factor(s) of interest; significant issues identified as being barriers to accessing meth/amphetamine treatment. A second author (LT) also reviewed the full-text record of all included articles and amended the extracted data, before both authors consulted and reached consensus on the final extracted data for all articles included in analysis.

### ***2.5 Data synthesis and analysis***

Reported barriers to accessing meth/amphetamine treatment were recorded for each study independently by two authors (CC and LT) who then used content analysis to examine the frequency with which individual barriers were reported. Thematic content analysis was utilised to identify broader themes across studies and all authors reached consensus on the thematic categorisation.

Our meta-analysis pooled the proportion of respondents who endorsed various barriers to accessing meth/amphetamine treatment across studies. The meta-analysis was conducted to identify the most commonly reported barriers across studies. Studies were included in the meta-analysis if they reported either the a) count or b) proportion of participants who identified a particular barrier. We calculated an overall proportion for each reported barrier using a random-effects model (DerSimonian and Kacker, 2007). Heterogeneity across studies was assessed using the  $I^2$  statistic (Higgins and Thompson, 2002).

## **3. Results**

### ***3.1 Search results and study selection***

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A flow diagram of search results is presented in Figure 1. In total, 29 relevant studies were initially identified. After applying the study inclusion criteria, 11 studies were included in the systematic review. Excluded studies included those examining the: efficacy of various methamphetamine treatments (n=7); characteristics of meth/amphetamine users (n=6); trends for admission to treatment for methamphetamine use (n=2); impact of methamphetamine use (n=1); barriers to accessing substance treatment generally (n=1); or, different treatments available for methamphetamine (n=1).

**(Suggested insertion, Figure 1)**

### ***3.2 Study setting and design***

Table 1 summarises characteristics of the 11 articles included. Studies were conducted across five countries: Australia (n=4); US (n = 4); United Kingdom (UK) (n=1); China (n=1); and South Africa (n=1).

Six studies employed a quantitative methodology (Kenny et al., 2011; MacMaster, 2013; Quinn et al., 2013b; Semple et al., 2005; Wallace et al., 2009; Wang et al., 2016), using structured interviews and validated tools assessing outcomes such as level of methamphetamine use and willingness to enter treatment. Three studies used a qualitative methodology to generate data from the participants' perspectives (Macmaster et al., 2008; Pennay and Lee, 2009; Woodall and Boeri, 2014) with Woodall and Boeri (2014) using an ethnographic framework to recruit participants. The remaining two studies employed mixed-methods examining quantitative and qualitative data (Meade et al., 2015; Wright et al., 1999).

Seven studies were cross-sectional (Kenny et al., 2011; MacMaster, 2013; Macmaster et al., 2008; Pennay and Lee, 2009; Quinn et al., 2013b; Wallace et al., 2009; Wang et al., 2016), three longitudinal (Semple et al., 2005; Woodall and Boeri, 2014; Wright et al., 1999), and one (Meade et



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al., 2015) was primarily cross-sectional, however incorporated a qualitative follow-up within a small subsample.

**(Suggested insertion, Table 1)**

### ***3.3 Study participants***

Most studies (n=10) involved participants who were either current (n=8) or a combination of current and former (n=2) methamphetamine users, the only exception being Pennay and Lee (2009) who collected data from service providers. One study (Wright et al., 1999) collected data from both methamphetamine users and service providers. Two studies examined only female participants (MacMaster, 2013; Woodall and Boeri, 2014). Sample sizes ranged from 24 (Pennay and Lee (2009)) to 360 (Meade et al. (2015)).

### ***3.4 Aims across reviewed studies***

Aims varied across studies. Five studies stated an aim of exploring barriers to accessing treatment (Kenny et al., 2011; MacMaster, 2013; Pennay and Lee, 2009; Wallace et al., 2009; Wang et al., 2016). Other studies had primary aims of: exploring HIV risk behaviours amongst methamphetamine users (Macmaster et al., 2008); assessing addiction and treatment experiences of methamphetamine users (Meade et al., 2015); exploring self-perceived risk amongst methamphetamine users (Quinn et al., 2013b); investigating specific associations between stigma and accessing treatment in methamphetamine users (Semple et al., 2005); identifying how users access basic services (Woodall and Boeri, 2014); and documenting the attitudes of amphetamine users towards treatment services, as well as the experiences of those utilising treatment (Wright et al., 1999).

### ***3.5 Barriers to methamphetamine treatment access***

Table 2 displays key barriers to treatment and the frequency with which these barriers were reported. Four broad categories of barriers to treatment access were identified: psychosocial (internal barriers); practical barriers; suitability of services; service provider barriers.

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### **3.5.1 Psychosocial barriers**

Psychosocial barriers were identified in ten studies (Kenny et al., 2011; MacMaster, 2013; Meade et al., 2015; Pennay and Lee, 2009; Quinn et al., 2013b; Semple et al., 2005; Wallace et al., 2009; Wang et al., 2016; Woodall and Boeri, 2014; Wright et al., 1999). Three studies identified confidentiality and privacy concerns (Wallace et al., 2009; Wang et al., 2016; Wright et al., 1999); and three studies reported participants' concerns around the implications of seeking treatment on child custody arrangements (MacMaster, 2013; Woodall and Boeri, 2014; Wright et al., 1999). Six studies (Meade et al., 2015; Quinn et al., 2013b; Semple et al., 2005; Wallace et al., 2009; Wang et al., 2016; Wright et al., 1999) found that some participants did not believe their methamphetamine use was problematic, and/or enjoyed using and had no desire to stop; both being cited as reasons for the belief that treatment was unnecessary, which was found to be a barrier. Quinn et al. (2013b) in particular found those reporting factors such as: current employment; not regretting decisions made under the influence of methamphetamine; and fewer methamphetamine-related adverse outcomes, predicted avoidance of treatment. Stigma and/or embarrassment were identified in five studies (Kenny et al., 2011; Meade et al., 2015; Pennay and Lee, 2009; Semple et al., 2005; Wright et al., 1999) as reasons for not seeking treatment. Wright et al. (1999) reported some participants to be concerned that meeting other substance users at treatment facilities may trigger them to use again. Privacy/confidentiality and stigma barriers reported in the included studies were perceived barriers from the perspective of methamphetamine users or from service providers based on feedback received from clients who use their service, rather than barriers based on objective outcomes of service provision. Accordingly, they were thematically categorised as psychosocial barriers.

### **3.5.2 Practical barriers**

Practical barriers were cited as reasons that services were not accessed in eight studies (Kenny et al., 2011; MacMaster, 2013; Macmaster et al., 2008; Meade et al., 2015; Pennay and Lee, 2009; Semple et al., 2005; Wallace et al., 2009; Woodall and Boeri, 2014). Four studies identified a lack of available

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places in services (Kenny et al., 2011; MacMaster, 2013; Macmaster et al., 2008; Wallace et al., 2009) and four identified waiting lists/times (Kenny et al., 2011; MacMaster, 2013; Pennay and Lee, 2009; Woodall and Boeri, 2014) as barriers for accessing services. Cost was also identified as a barrier in six studies (MacMaster, 2013; Macmaster et al., 2008; Meade et al., 2015; Semple et al., 2005; Wallace et al., 2009; Woodall and Boeri, 2014), with Woodall and Boeri (2014) also finding that female participants often lacked the social capital required to get into treatment. Additionally, MacMaster (2013) found that some services were unable to accommodate women at all and mothers experienced competing responsibilities in caring for dependent children as practical barriers.

### ***3.5.3 Suitability of services***

Wright et al. (1999) found amphetamine users more reluctant to attend services that also treated heroin users; heroin use being heavily stigmatised from the perspective of these participants. Polysubstance use involving heroin and methamphetamine was also prevalent in participants in the study by Wallace et al. (2009). The issue of treatment services being specifically relevant or effective for methamphetamine was also raised in four studies (Kenny et al., 2011; Macmaster et al., 2008; Pennay and Lee, 2009; Wright et al., 1999), with one study finding that some services were not willing to treat methamphetamine users (MacMaster, 2013). Similarly, a lack of confidence in current treatment options from the perspective of those seeking treatment was noted (Kenny et al., 2011; Meade et al., 2015), with the absence of pharmacological treatment for methamphetamine (comparable to those available for opioid addiction) also raised as an issue in both Australia and the UK by service providers (Pennay and Lee, 2009; Wright et al., 1999). Another barrier identified in the UK (Wright et al., 1999) was the potential for those seeking treatment to be classified as having a mental illness, perceived as carrying substantial stigma.

### ***3.5.4 Barriers relating to service providers***

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Service providers identified the behaviour of those seeking treatment as a barrier to access in some cases, with some people seeking treatment being asked to leave and return once their behaviour was more stable (Pennay and Lee, 2009). Pennay and Lee (2009) found that service providers identified a shortage of clinicians trained to treat co-occurring AOD and mental health issues as a barrier to accessing treatment. Pennay and Lee (2009) also observed there was a general lack of awareness or understanding of what works to treat methamphetamine use amongst service providers. This led to an ad-hoc approach and uncertainty about methamphetamine treatment generally, creating barriers to treatment (Pennay and Lee, 2009). The perception of negative staff attitudes towards methamphetamine-using clients was also indicated as a barrier by methamphetamine users in US (Woodall and Boeri, 2014) and Australian (Kenny et al., 2011) studies. Woodall and Boeri (2014) also identified that service providers not returning calls to those seeking treatment was a barrier to treatment.

**(Suggested insertion, Table 2)**

### ***3.6 Meta-analysis***

Seven studies reported counts and/or proportions alongside reported barriers and were included in the meta-analysis (Kenny et al., 2011; MacMaster, 2013; Meade et al., 2015; Pennay and Lee, 2009; Semple et al., 2005; Wallace et al., 2009; Wang et al., 2016). Figure 2 presents a forest plot of the pooled proportion of persons across studies who reported various barriers to treatment. The four most commonly endorsed barriers to treatment access were all psychosocial barriers: embarrassment or stigma (60%, 95%CI: 54-67%); belief that treatment was not needed (59%, 95%CI: 54-65%); self-reliance and/or a desire to withdraw on their own (55%, 95%CI: 45-65); and privacy and confidentiality concerns (51%, 95%CI: 44-59%). In contrast, practical barriers such as: cost (12%, 95%CI: 7-17%); long waiting lists (19%, 95%CI: 3-34%); and limited availability of services (21%,

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95%CI: 9-34%) were reported by a significantly lower proportion of persons across studies. Funnel plots indicated that there was no significant heterogeneity or publication bias observed (Figure S1).

**(Suggested Insertions, Figure 2 and Figure S1)**

### 4. Discussion

Our findings indicate that there are relatively few studies investigating barriers to accessing methamphetamine treatment; only 11 studies met the inclusion criteria for this review. The results suggest that this area has not received as much attention in the published research as the impacts of methamphetamine use and development of pharmacological interventions.

Our meta-analysis showed that the four most commonly reported barriers to treatment access across studies were psychosocial in nature. The most prevalent barriers identified by participants across the studies were: the perception that an individual's substance use did not require treatment (Meade et al., 2015; Quinn et al., 2013b; Semple et al., 2005; Wallace et al., 2009; Wang et al., 2016; Wright et al., 1999); embarrassment or stigma (Kenny et al., 2011; Meade et al., 2015; Semple et al., 2005; Wright et al., 1999); participants preferring to withdraw on their own (Kenny et al., 2011; Meade et al., 2015); and concerns about privacy and confidentiality (Wallace et al., 2009; Wang et al., 2016; Wright et al., 1999). Although meta-analysis has not been commonly used to analyse barriers to treatment, it has been used previously to analyse barriers to participation in clinical trials across studies (Mills et al., 2006).

The perception by individuals that they did not require treatment should be viewed in light of the findings reported by Quinn et al. (2013a), Quinn et al. (2013b) and (Digiusto and Treloar, 2007) which showed an association between level of methamphetamine dependence and associated risky behaviours (such as injecting drug use), and inclination to seek treatment. These data suggest that those engaging in high risk methamphetamine use are the most likely to engage with treatment services, at least in the Australian context.

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Social stigma and shame/embarrassment as barriers to accessing treatment (Kenny et al., 2011; Meade et al., 2015; Wright et al., 1999) is consistent with previous findings that stigma affects health workers' perceptions of clients with SUD (Van Boekel et al., 2013). Stigma could be attributed to: extremely poor health (Lecomte et al., 2013); social issues, such as violence (McKetin et al., 2014); and media campaigns sensationalising the deleterious health, social and justice outcomes associated with methamphetamine use in a way likely to stigmatise, rather than assist methamphetamine users (Australian Government, 2016; Meth Project Foundation, 2016; Multnomah County Sherrif's Office, 2016)(Australian Federation of Aids Organisations, 2015; Kiejda, 2015). Prior literature suggests that campaigns that utilise shock or fear with the aim of changing behaviours, must also emphasise the treatment options available in order to be effective (Bayer and Fairchild, 2016; Soames Job, 1988). Recent psychosocial approaches addressing shame associated with substance use, such as acceptance and commitment therapy, have increased treatment attendance and reduced methamphetamine use (Luoma et al., 2012). Further research evaluating the effectiveness of these approaches in addressing stigma and shame associated with methamphetamine use is warranted. Additionally, media strategies promoting available treatment options for methamphetamine users and that avoid further stigmatisation should be explored.

Our finding that participants preferred to withdraw alone and without treatment may be partly related to issues such as stigma, or a lack of confidence in treatment options. Symptoms individuals withdrawing from meth/amphetamine may experience include: depression and irritability (Cantwell and McBride, 1998; Newton et al., 2004); anhedonia and problems concentrating (Newton et al., 2004); and musculoskeletal pain and impaired social functioning (Cantwell and McBride, 1998). This suggests withdrawing unassisted could be challenging for many methamphetamine users. However, as McGregor et al. (2005) note, symptom severity depends on individual and environmental factors such as the frequency of previous methamphetamine use and the level of social support available. Baker et al. (2005) found that amphetamine users receiving psychosocial support were more likely to abstain, however this research did not specifically address withdrawal. Pennay and Lee (2011) note

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the paucity of research on methamphetamine withdrawal and the related challenges individuals withdrawing face. Recent research found that polysubstance use was prevalent amongst methamphetamine users, with depressants such as cannabis, illicit benzodiazepines and heroin commonly used when 'coming down' from methamphetamine (Quinn et al., 2013c). Polysubstance use involving heroin and/or benzodiazepines has increased the risk of overdose (Riley et al., 2016); both heroin and benzodiazepine use are independently positively associated with overdose (Kerr et al., 2007). Therefore, individuals using these substances whilst ceasing methamphetamine use may be at greater risk of overdose without proper withdrawal management. More research examining substance use patterns during cessation of methamphetamine use is required to further inform intervention planning and harm-reduction strategies when treating people during this period.

Concerns about confidentiality/privacy (Wallace et al., 2009; Wang et al., 2016; Wright et al., 1999), and social service intervention relating to child custody (MacMaster, 2013; Woodall and Boeri, 2014; Wright et al., 1999), suggest possible confusion around what information remains confidential and what is reported to third parties. Greater awareness and education around confidentiality and mandatory reporting requirements when individuals seek treatment may increase confidence in seeking treatment and lead to greater service utilisation.

Insufficient resources to treat methamphetamine users was common across different domains, including: insufficient capacity to meet demand in treatment services (Kenny et al., 2011; MacMaster, 2013; Macmaster et al., 2008; Meade et al., 2015; Pennay and Lee, 2009; Wallace et al., 2009; Woodall and Boeri, 2014); affordability (MacMaster, 2013; Macmaster et al., 2008; Meade et al., 2015; Semple et al., 2005; Wallace et al., 2009; Woodall and Boeri, 2014); and deficiencies in current AOD treatments for treating methamphetamine use (Kenny et al., 2011; Macmaster et al., 2008; Meade et al., 2015; Pennay and Lee, 2009; Wright et al., 1999). Issues around treatment location and affordability are likely related to funding. It appears that US Federal government policy addressing methamphetamine use is focused primarily on curbing supply of the drug rather than

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providing treatment (Office of National Drug Control Policy, 2010; US Department of Justice, 2011).

Conversely, recent funding from the Australian government (Turnbull et al., 2015) suggests that treatment services are a key focus for addressing methamphetamine use in Australia.

Past research has found similar barriers for accessing treatment for alcohol (Saunders et al., 2006; Small et al., 2010), cocaine (Wechsberg et al., 2007), opioids (Stöver, 2010; Wu et al., 2011) and cannabis (Gates et al., 2012). However, compared to these other substances, our findings suggest that psychosocial barriers such as the perception that treatment was unnecessary and stigma/embarrassment are particularly important for methamphetamine users. Further research comparing substance-specific barrier profiles is warranted. Given the evidence that tailoring interventions towards addressing barriers to treatment is more likely to lead to improvements in practice (Baker et al., 2010), interventions tailored to address the main barriers we identified here should be considered. In particular, interventions that increase awareness of possible methamphetamine dependence, the benefits of treatment and treatment options available; address and reduce the stigma associated with methamphetamine use; and improve education in users and practitioners around the methamphetamine withdrawal process, may lead to improvements in practice and increase engagement with, and retention in, treatment. Additionally, tailoring services to meet the specific needs of methamphetamine users is crucial to avoid issues raised by Kenny et al. (2011) who found that traditional opioid-focused treatments are not appropriate or effective for methamphetamine users. However, the fact that many methamphetamine users are polysubstance users likely complicates treatment (Quinn et al., 2013c; Wallace et al., 2009; Wright et al., 1999), so service design for polysubstance users requires careful consideration. More research evaluating the effectiveness of treatments for polysubstance use involving methamphetamine is needed.

Another suggestion for improving service delivery is to acknowledge that methamphetamine use is often accompanied by mental health problems (Akindipe et al., 2014; Ling et al., 2014), so greater integration between AOD and mental health services is advisable (Pennay and Lee, 2009). Prior



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evidence has observed that integrated treatment is more effective compared to parallel service models that address mental illness and SUD separately (Drake et al., 1998).

A strength of the data considered here is the fact that all but one study (Pennay and Lee, 2009) gathered data from the perspective of substance users. Future policies should address the issues identified by this marginalised population in order to increase their engagement with services. The information provided by service providers is also useful; this highlights areas that service-provider training could focus on to ameliorate the challenges that treating methamphetamine use presents.

### ***4.1 Limitations***

The selection criteria made it possible that relevant grey literature was not included. However, it is unlikely that this resulted in any meaningful bias as many of the themes identified were repeated in multiple studies, making it likely that thematic saturation was reached. The small number of studies included in the meta-analysis is an additional limitation. The studies included in this review varied in their design and methodology, however despite this heterogeneity, a number of consistent themes were identified that are likely relevant for informing future service planning.

## **5. Conclusions**

There is a growing need for appropriately designed services to treat methamphetamine dependence. Many of the main barriers to accessing methamphetamine services are psychosocial; interventions and treatment models that target these barriers are urgently needed. Improved integration and collaboration between AOD and mental health services is essential to achieving better treatment outcomes for methamphetamine users. Further research evaluating treatment engagement and effectiveness for methamphetamine and polysubstance use is necessary to address the ongoing problems for people who use methamphetamine.

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### **AUTHOR DISCLOSURES:**

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***Contributors:*** CC and LT developed the original methodology, using the PRISMA statement. CC and LT conducted the initial database searches. CC wrote the majority of the initial draft manuscript with input from LT who performed the meta-analysis and drafted part of the methods section. All authors provided significant input into the synthesis and interpretation of the results of the review and meta-analysis and contributed to the final manuscript.

***Conflict of Interest:*** The authors declare no conflicts of interest.

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## Barriers to methamphetamine treatment

Table 1. Study characteristics and findings

Study	Country	Setting	Design/Measures (acronyms listed below table)	Sampling method	Participants	Mean age ± SD	% Female	Outcomes (barriers to access)
Kenny (2011)	Australia	Metropolitan Melbourne, Australia	Cross-sectional survey, structured interviews SDS SCID-I	Purposive., sampling, recruitment from AOD programmes, public health programmes and advertising	126 participants meeting DSM-IV criteria for methamphetamine dependence	32 ± 8.6	29.0	Social stigma associated with seeking treatment Negative perception of treatment effectiveness Treatment more suitable for other substances Perceived negative attitudes of staff towards clients Availability of treatment places Waiting times
MacMaster (2008)	USA	Cumberland Plateau, Rural Tennessee, USA	Qualitative interviews TRBA GAIN AUDIT TAP	Snowball sampling, initiated by approaching known users with a flyer about the study	97 current/former methamphetamine users	30.8 ± 9.2	44.3	Lack of beds at treatment facilities Treatment costs not covered by the state Lack of peer counsellors Lack of methamphetamine-specific treatment services Lack of methamphetamine services in jail
MacMaster (2013)	USA	Cumberland Plateau, Rural Tennessee, USA	Cross sectional survey	Snowball sampling, initiated by posting flyers at sites known to be frequented by users	153 current methamphetamine users	32.4	100.0	Treatment not affordable Lack of space in treatment programmes Being put on a waiting list Health insurance won't cover treatment costs Treatment programme unable to accommodate women with children Fear that children will be removed from custody Some services only treat males Some programmes not treating methamphetamine Already being medicated for co- morbid psychiatric issue
Meade (2015)	South Africa	Delft, near Capetown, South Africa	Cross-sectional survey, and follow up qualitative interviews ASI-L	Snowball sampling, respondent	360 current methamphetamine users	29.0 ± 7.30	44.2	Treatment not viable Treatment not available Treatment not effective



## Barriers to methamphetamine treatment

			CIDI 3.0 SDS	driven using 8 initial 'seeds'				Belief that methamphetamine use under control Treatment costs too high Shame and fear associated with seeking treatment Denial of addiction No desire to quit, enjoy using methamphetamine
Pennay (2009)	Australia	Treatment facilities across Australia	Cross-sectional, Semi- structured qualitative interviews	Purposive sampling, expert panel identified services to recruit from	24 AOD workers	43.0	54.0	Negative view of methamphetamine users' behaviour by practitioners Lack of understanding of 'what works' to treat methamphetamine Low confidence in treatment due to no pharmacotherapy being available Waiting times for treatment Mental health issues complicating methamphetamine withdrawal Lack of coordination between mental health and AOD services Lack of recognised protocols around methamphetamine withdrawal leading to an ad-hoc approach
Semple (2005)	USA	FASTLANE methamphetamine using sexual risk reduction counselling service clients in San Diego, California, USA	Longitudinal, baseline assessment followed by assessments at six, twelve and eighteen months after baseline SSAGA/SSAGA CIDI SCID	Purposive and snowball sampling via community outreach, media campaigns, service provider referrals	292 HIV-negative, heterosexual active methamphetamine users	37.6 ± 8.5	29.3	Perceived stigma of being labelled as a 'drug addict' as a result of using treatment services Belief that treatment not required Belief that meth use can be managed themselves Unaware how to seek treatment Treatment not affordable
Quinn (2013)	Australia	Melbourne, Australia	Cross sectional survey K10 SDS AUDIT-C ESSI OTI	Snowball, respondent driven sampling, initiated by outreach	255 current methamphetamine users	30.0 (median)	36.0	Current employment Low level of regret about decision making in the previous six months when under the influence of methamphetamine Less adverse outcomes experienced Lower frequency of methamphetamine use Riskier alcohol consumption

## Barriers to methamphetamine treatment

Wallace (2009)	Australia	Rural and regional New South Wales, Australia	Cross-sectional survey SF-12 OTI SDS CIDI	Purposive sampling, using flyers, word of mouth and newspaper advertisements	140 regular methamphetamine users	36.0 (median)	37.0	Believed treatment unnecessary Lacked motivation to seek treatment Confidentiality concerns Unawareness of service availability Lack of available places in services Financial and logistical barriers Also being an opioid user
Wang (2015)	China	Changsha, Hunan Province, China	Cohort study, Cross-sectional survey SIP-AD CIDI BTI	Snowball, respondent driven sampling using 20 'seeds' to initiate	303 methamphetamine users who had used at least once in the previous 3 months	29.9 ± 7.62	12.9%	Privacy concerns Denial of methamphetamine problem
Woodall (2013)	USA	South Eastern USA	Ethnographic, longitudinal qualitative survey interviews, focus groups	Purposive and snowball sampling, ethnographic field work used	30 current and former female methamphetamine users	Not reported	100.0	Waiting lists Caps on service use Criminal history Service fees No available formal identification documents limiting access No available phone/communication device to be contacted on by service Fear of loss of child custody Poverty Psychological barriers Lack of social capital Service providers' inappropriate actions, not returning calls
Wright (1999)	UK	Northwest England, treatment facility and community, UK	Matched case-control focus groups and individual semi-structured interviews	Purposive, assistance provided by treatment services and through community outreach	86 amphetamine users, 45 service providers	27.6	23.0	Perceived lack of need for treatment Stigma of being identified as a drug user Confidentiality concerns Having to attend the same facilities as heroin users Being associated with mental health issues A lack of appropriate treatment services for amphetamine users Meeting other amphetamine users at treatment facilities may trigger use Fear of social service intervention impacting child custody

## Barriers to methamphetamine treatment

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Lack of available pharmacotherapy  
“carrot” compared with opioid  
treatment

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Acronyms used: ASI-L – Addiction Severity Index-Lite; AUDIT – Alcohol Use Disorders Identification Test; AUDIT-C – Alcohol Use Disorders Identification Test-C; BTI – Barriers to Treatment Inventory; CIDI – Composite International Diagnostic Interview; ESSI – ENRICHD Social Support Inventory; GAIN – Global Appraisal of Individual Needs; K10 – Kessler 10; OTI – Opiate Treatment Index; SCID-I – Structured Clinical Interview for DSM-IV-TR; SDS – Severity of Dependence Scale; SSAGA - Semi-Structured Assessment for the Genetics of Alcoholism; SF-12 – Short Form-12; SIP-AD – Short Inventory of Problems with Alcohol and Drugs; TRBA – Tennessee Risk Behavior Assessment; TAP – Treatment Attitude Profile

## Barriers to methamphetamine treatment

Table 2. Participant-identified barriers to accessing methamphetamine treatment services

	Quantitative						Qualitative			Mixed methods		Number of studies reporting barrier
	Kenny (2011)	MacMaster (2013)	Quinn (2013)	Semple (2005)	Wallace (2009)	Wang (2015)	MacMaster (2008)	Pennay (2009)	Woodall (2013)	Meade (2015)	Wright (1999)	
<b>Psychosocial barriers</b>	•	•	•	•	•	•		•	•	•	•	10
Self-reliance/withdraw alone	•									•		2
Confidentiality/privacy					•	•					•	3
Implications for child custody arrangements		•						•			•	3
Treatment unnecessary			•	•	•	•				•	•	6
No motivation		•			•			•				3
Stigma	•			•				•		•	•	5
<b>Practical barriers</b>	•	•		•	•		•	•	•	•		8
Insufficient places	•	•			•		•					4
Waiting lists/times	•	•						•	•			4
Affordability/Cost		•		•	•		•		•	•		6
<b>Suitability of services</b>												
Unsuitable/ineffective for meth	•	•					•	•		•	•	6
<b>Barriers relating to service providers</b>												
Staff attitudes	•							•	•			3



### PRISMA 2009 Flow Diagram

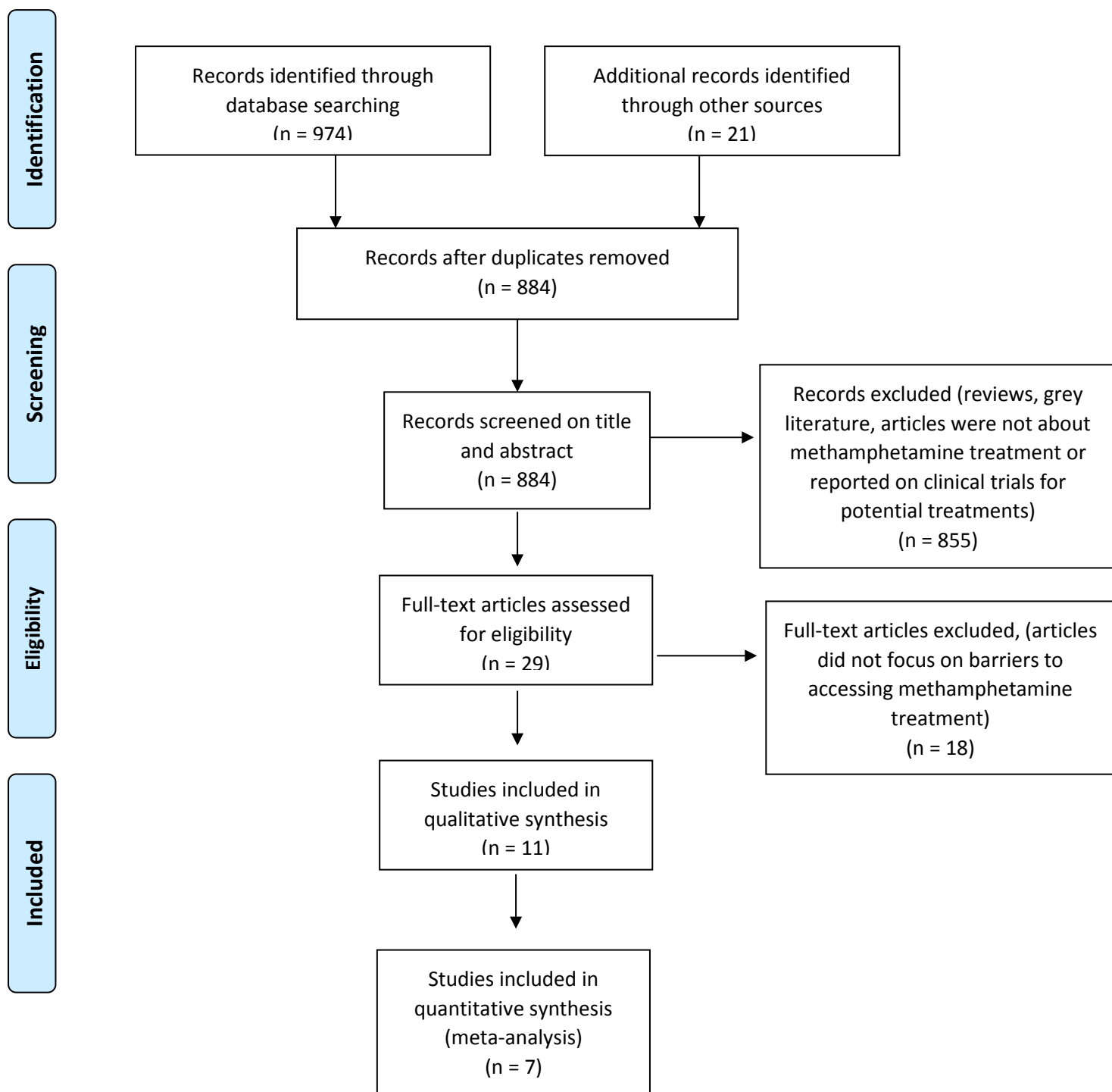


Figure 1. PRISMA flow diagram of study selection process

## Barriers to methamphetamine treatment

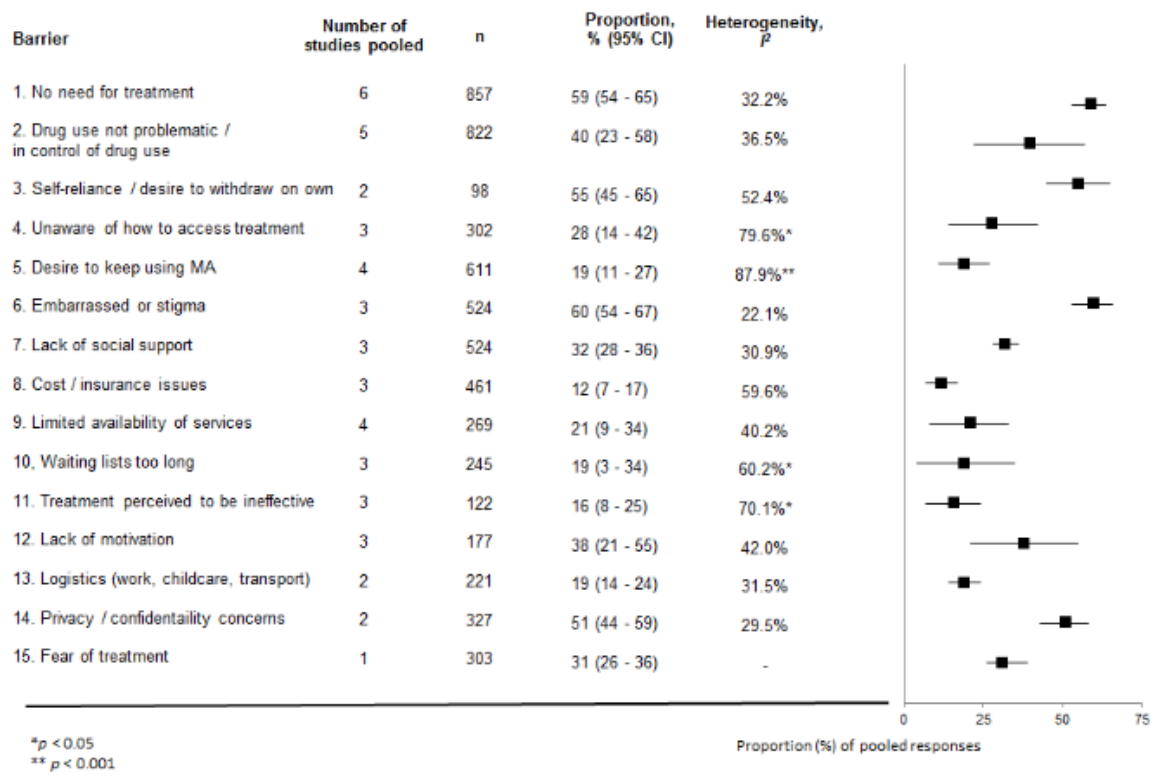


Figure 2. Forest plot of pooled proportions of persons citing various barriers to treatment across studies ( $n = 7$ ).

# Barriers to methamphetamine treatment

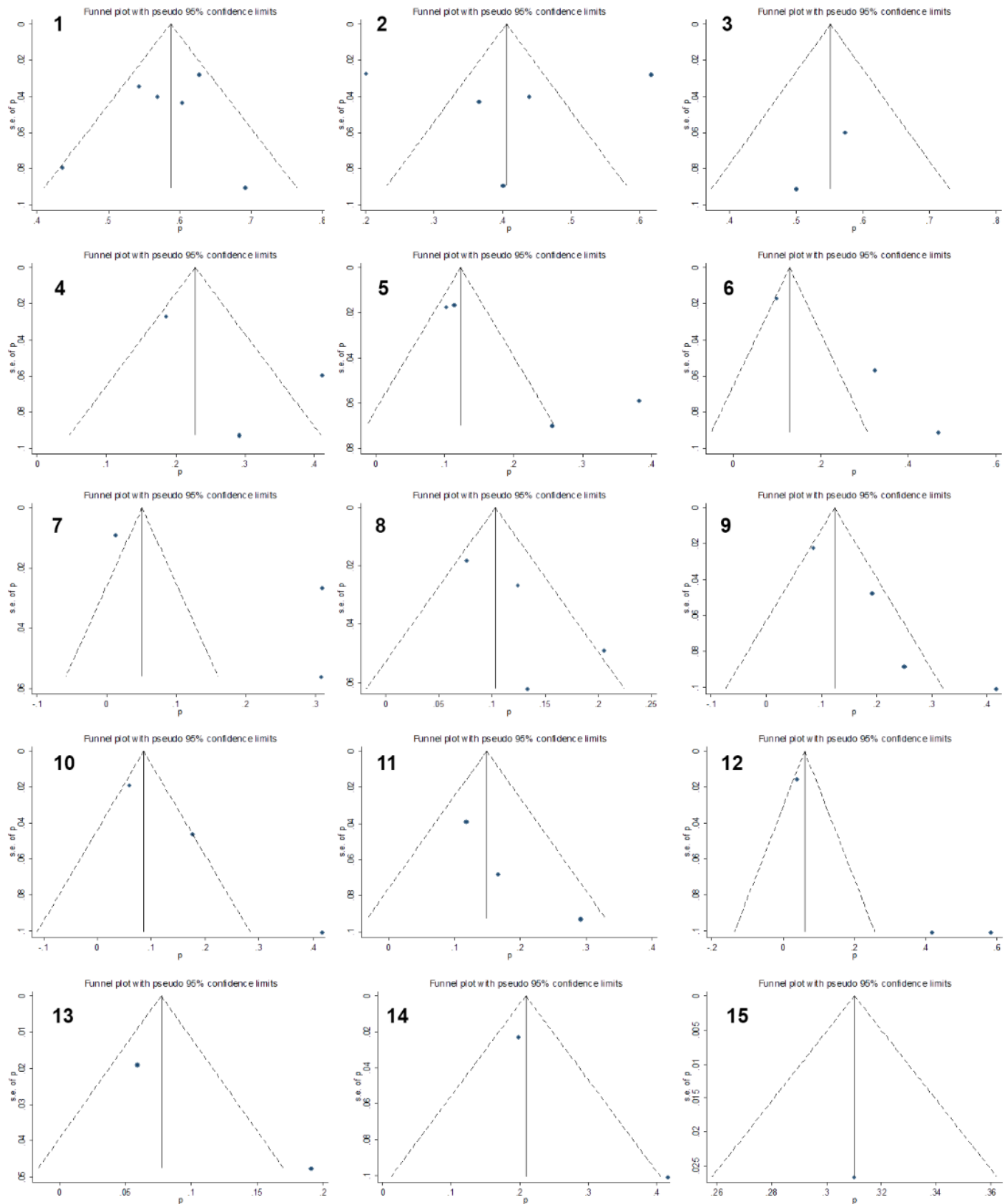


Figure S1. Funnel plots for publication bias corresponding to each numbered barrier in forest plots presented in Figure 2.



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