



Perceived Unmet Need for Care and Barriers to Care Among Individuals with Mental Health Issues: A Meta-analysis

Bahram Armoon¹ · Alain Lesage^{2,3} · Rasool Mohammadi⁴ · Zahedeh Khoshnazar⁵ · Mehran Rostami Varnosfaderani⁵ · Aida Hosseini⁶ · Fatemeh Fotovvati⁶ · Fatemeh Mohammadjani⁶ · Leila khosravi⁶ · Mehran Beigzadeh⁶ · Mark D. Griffiths⁷

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Abstract

Unmet needs refer to the gap between the health services individuals require and what they receive. Individuals with mental health issues often face barriers preventing them from accessing the care they need. A meta-analysis was conducted to estimate the pooled prevalence of unmet needs for care and barriers to care among individuals with mental health issues. The databases *PubMed*, *Scopus*, *Web of Science*, and *Cochrane Library* were searched for relevant studies published from December 1, 1985 to August 1, 2024. Following the screening process, 204 included studies remained for meta-analysis. Individuals with mental health issues reported significant pooled prevalence rate of unmet care needs over the past year, with the most common being related to work/occupation (43%), dental care (41%), counseling (40%), social intervention (37%), mental health (34%), physical health needs (33%), skills training (32%), social network (32%), psychological distress (31%), information (27%), intimate relationships (27%), benefits (26%), harm reduction (25%), psychotic symptoms (24%), housing (24%), money and food (21%), education (20%), sexual expression (19%), home care (16%), safety (15%), self-care (15%), telephone support (9%), and child care (8%). The pooled prevalence rates of barriers to accessing care were motivational (38%), structural (37%), financial (31%), and stigmatization (25%). The findings indicated that patients with substance use disorders experienced a significantly higher prevalence of unmet care needs and barriers to accessing care compared to those with mental health disorders and homeless individuals. The results showed that unmet care needs were highest among those in established adulthood, while harm reduction was more common among adolescents and emerging adults. Physical health and food needs were most prevalent among midlife adults. Barriers to care were most common among adolescents and emerging adults, except for structural barriers, which were most frequent among midlife adults. To address the unmet employment needs of Individuals with mental health issues, comprehensive training in essential skills is recommended. Enhancing dentists' mental health understanding and fostering collaboration among healthcare providers is crucial. Government-funded, low-barrier service models for substance use disorder patients is suggested to enhance accessibility and effectiveness, while improving health service affordability and acceptability is essential.

Keywords Unmet needs for care · Barriers to care · Mental health disorders · Substance use disorders · Homelessness

Introduction

Research has shown that individuals who experience mental health disorders, substance use disorders, and homelessness often have multiple health conditions (Castro-de-Araujo et al., 2022; Han et al., 2018). They also tend to have more unmet needs for care (Danek et al., 2023; Hayes, 2023), meaning they may not receive adequate access to services such as prescription and pharmacy services, counseling services, and health and social services (Hyshka et al., 2017; Kosteniuk et al., 2022). In Western countries, studies have indicated that 35%-55% of individuals with mental health disorders and substance use disorders do not seek out the necessary services to address their health issues (Apsley et al., 2023; Coombs et al., 2021; Szlyk et al., 2023).

Additionally, individuals with more unmet needs have higher levels of disability and distress, and once their care needs are met, their situations improve (Meadows et al., 2009).

Perceived needs for care encompass various types of care (e.g., information, counseling) that patients believe they require to address their issues, irrespective of whether they have previously accessed or been offered such care (Meadows et al., 2000). Previous studies have shown that the consumer-reported needs approach considers participants' needs, whether they are met or unmet (Hyshka et al., 2017; Kosteniuk et al., 2022). Moreover, it provides first-hand knowledge of participants' needs that clinicians and researchers do not identify (Kosteniuk et al., 2022) and it could be considered as a benchmark for quality of care (Werner, 2012). Unmet needs refer to the gap between the required health services for an individual and the actual services they receive (Spiers et al., 2022). Individuals with mental health issues face many barriers in addressing their care needs (Apsley et al., 2023; Reid et al., 2022; Shchetinina et al., 2024; Szlyk et al., 2023; Terefe et al., 2022). These barriers to care could be motivational or attitudinal barriers (e.g., preferring to self-manage symptoms rather than seek professional intervention) (Apsley et al., 2023; Szlyk et al., 2023), structural barriers (e.g., difficulties in accessing the healthcare system) (Pfeifer et al., 2021; Shchetinina et al., 2024), financial barriers (e.g., costs of services being too expensive) (Reid et al., 2022; Shchetinina et al., 2024) and barriers related to stigmatization (Addorisio et al., 2022; Terefe et al., 2022).

Studies have identified unmet needs and barriers to care among individuals with mental health issues such as mental health disorders (Nasol et al., 2019; Reid et al., 2022), substance use disorders (Shchetinina et al., 2024; Szlyk et al., 2023), and homelessness (Armoon et al., 2024a; Kertesz et al., 2009; Verheul et al., 2020). These studies have found that unmet needs were associated with being female (Kozloff et al., 2016; Reid et al., 2022), being younger (Walker et al., 2015), being unemployed (Gomez-Sanchez-Lafuente et al., 2021), having low self-esteem (Armoon et al., 2024a), experiencing housing instability (Hyshka et al., 2017), having a history of incarceration (Jaworsky et al., 2016), having mental health disorders (Nasol et al., 2019; Reid et al., 2022) or substance use disorders (Urbanoski et al., 2017), having a disability (Duhoux et al., 2017), having a low quality of life (Armoon et al., 2024a), and experiencing psychological distress (Armoon et al., 2024a; Urbanoski et al., 2017). Some studies among individuals with mental health disorders (Reid et al., 2022) or substance use disorders (Shchetinina et al., 2024; Szlyk et al., 2023), or who are homeless (Kertesz et al., 2009; Verheul et al., 2020), have reported more financial barriers to care compared to other types of barrier.

Although barriers and facilitators in accessing substance use disorder treatment have been explored in three previous systematic reviews (Al-Ghafri et al., 2023; Farhoudian et al., 2022; Priester et al., 2016), and one meta-analysis on unmet needs for mental health care among adolescents (Ghafari et al., 2022), to the best of the authors' knowledge, no previous meta-analysis has ever examined the prevalence of unmet needs for care—encompassing any type of unmet needs (e.g., information, counseling)—and the associated barriers to care among individuals with mental health issues. Previous systematic reviews have either categorized barriers and facilitators in accessing substance use disorder treatment as individual, social and structural barriers (Farhoudian et al., 2022; Priester et al., 2016) or psychosocial and organizational barriers in accessing substance use disorder treatment (Al-Ghafri et al., 2023).

The first review reported that the most prevalent barriers to care were structural, individual, and social, while the most common facilitators identified were structural, social, and individual

(Farhoudian et al., 2022). The second review identified two broad categories of barriers to service access: personal characteristics barriers (e.g., personal vulnerabilities, beliefs) and structural barriers (e.g., service availability, provider training) (Priester et al., 2016). The final review identified two themes of barriers and facilitators for people who use drugs in accessing drug treatment and harm reduction services: psychosocial barriers (e.g., denial of the problem's severity, lack of trust in the treatment system) and organizational barriers (e.g., affordability, treatment service characteristics) (Al-Ghafri et al., 2023). Moreover, it should also be noted that previous reviews only focused on patients with substance use disorder, and that the previous meta-analysis only estimated the pooled prevalence of unmet needs for mental health care (e.g., they did not report the prevalence of other unmet needs) and focused specifically on adolescents as their participants (Ghafari et al., 2022).

It is still not well understood which individuals with mental health issues might have more unmet needs or face more barriers to care. For example, do individuals with mental health disorders or substance use disorders have more unmet needs or barriers to care than individuals who experience homelessness? Answering such questions would be helpful because individuals with mental health issues experience different adverse consequences due to the varying severities of their conditions, and they have diverse needs that require different services. Additionally, no previous meta-analyses have ever examined the pooled prevalence of unmet care needs and barriers to care among individuals with mental health issues. Therefore, the novelty of the present study is the estimation of the pooled prevalence of perceived unmet care needs and barriers to care among this population.

Methods

Registration and protocol

The present systematic review and meta-analysis was conducted following the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Page et al., 2021). The review protocol was registered in the PROSPERO database (Reference: CRD42024583188).

Search strategy

A comprehensive search for English-language papers and abstracts published between December 1, 1985 and August 1, 2024, was conducted using four databases (i.e., Scopus, PubMed, Web of Science, and the Cochrane Library). To identify any other relevant studies a search was on *Google Scholar* was also performed. The search strategy, incorporating essential Boolean operators (AND/OR), was tailored for each database using a set of initial keywords: “(mental disorders), (psychotic disorders), (mentally ill persons), (substance-related disorders) (homeless persons), (unmet need), (care barriers), (motivational barriers), (structural barriers), (stigmatization barriers), (financial barriers).” Moreover, the reference lists of the studies included in the meta-analysis were reviewed to identify any further relevant studies. When multiple studies reported findings on the same sample of individuals with mental health issues, the analysis prioritized the data providing the most detailed information on the prevalence of unmet care needs and barriers to care. Detailed information on the search strategy, including the combination of keywords used across different electronic databases, is provided in **Supplementary File 1**.

Inclusion and exclusion criteria

The eligibility criteria for inclusion were as follows: (i) individuals with mental health issues included those with substance use disorders or those requiring specialized addiction treatments (e.g., methadone, buprenorphine, naloxone), as well as individuals with mental health disorders based on established criteria, such as those in the *Diagnostic and Statistical Manual of Mental Disorders* or the *International Classification of Diseases*, or those experiencing homelessness; (ii) original prevalence data on unmet needs for care and barriers to care among individuals with mental health issues over the past 12 months. Unmet need for care was defined as identifying a need for help but either not receiving any assistance or not receiving sufficient assistance (Al Juboori et al., 2023; Armoon et al., 2024a; Xie et al., 2022). Barriers to care were categorized as motivational (e.g., “*I prefer to rely on family or friends for help*”), structural (e.g., “*Help was not available*”), stigmatization-related (e.g., “*You didn’t want others to find out that you needed treatment*”), or financial (e.g., “*You couldn’t afford the cost*”) (Chen et al., 2013; Haney, 2020; Kaufmann et al., 2014). For a comprehensive list of all barriers to care, see **Supplementary File 2**; and (iii) any type of quantitative empirical studies, such as cross-sectional, cohort, case-control, mixed-methods, and interventions with baseline data. Excluded from the review and analysis were qualitative papers, secondary analyses without primary data, systematic reviews, meta-analyses, and unpublished theses (e.g., non-peer-reviewed PhD and Master’s theses). Moreover, studies reporting overall prevalence without specifying the time frame or lifetime prevalence were excluded from the meta-analysis.

Data extraction process

EndNote X7 software was used to remove duplicate papers. Then, two authors (BA and AL) independently screened the titles and abstracts based on the study’s inclusion and exclusion criteria. In cases of any disagreements, a third author (RM) resolved the discrepancies. The full texts of the selected studies were reviewed for eligibility according to the study criteria. Two authors (BA and AL) independently extracted data from the studies chosen for the meta-analysis. The extracted data included details such as study authors, participants’ ages, publication year, country of data collection, study design, sample size, population characteristics, quality assessment of studies, and criteria for identifying individuals with mental health issues. When needed, the authors of the selected studies were contacted for additional information. Agreement between the two authors was evaluated using Cohen’s Kappa statistic, which categorizes the level of agreement as poor, slight, fair, moderate, substantial, or almost perfect. The corresponding numerical ranges were 0, 0.01–0.02, 0.021–0.04, 0.041–0.06, 0.061–0.08, and 0.081–1.00, respectively (Landis et al., 1977). Disagreements between the two authors (which accounted for less than 10% of the total) were resolved with the help of a third author.

Risk of bias of studies

The quality of the studies was assessed using the Newcastle-Ottawa Scale (Peterson et al., 2011), which considers three criteria: (i) the selection domain, that evaluates the representativeness of the exposed group, the selection of the non-exposed group, and the ascertainment of exposure (three items for cross-sectional studies and four items for cohort studies); (ii) the comparability domain, which assesses group comparability based on study design or analysis (one item each for both cross-sectional and cohort studies); and (iii) the exposure/outcome domain, which is the outcome assessment (one item for cross-sectional studies and three items for cohort studies) (**Supplementary File 3**). Studies were categorized into four quality levels: unsatisfactory, satisfactory, good, or very good, with a maximum possible score of 8 for cohort and case-control

studies. Studies scoring 0-2 were rated as “unsatisfactory,” those scoring 3-4 were “satisfactory,” scores of 5-6 were “good,” and scores of 7-8 were considered “very good.” Overall, 40 studies were rated as high quality, 84 as good quality, and 80 as satisfactory quality.

Data synthesis and statistical analysis

The analysis focused on the 12-month prevalence of unmet needs for care and barriers to care. Pooled prevalence estimates were calculated using a robust random-effects model (DerSimonian et al., 1986), which accounted for variations in sampling methods across studies. A random-effects model with restricted maximum likelihood (REML) was then used for model selection in the meta-analysis. To assess heterogeneity among studies, Cochran’s Q and I^2 tests were applied. Subgroup analyses were conducted to identify sources of heterogeneity, considering factors such as participants’ age, publication year, geographical region, study quality, mental health diagnosis criteria, and sample size. Each subgroup analysis required data from at least two studies on the variable of interest. Sensitivity analysis was performed using Baujat plots to evaluate the impact of the most influential study on overall heterogeneity and to determine each study’s effect on the overall estimate after excluding it. A multivariate meta-regression analysis was then conducted to explore the primary sources of heterogeneity. Statistical significance was set at a p -value of less than 0.05, and the meta-analysis was conducted using R version 3.5.1 with the “meta” package.

Results

Study selection process

Initially, 8,051 papers were identified through searches in four databases. After removing duplicate papers ($n = 4,252$), 3,799 papers’ titles and abstracts were screened (**Figure 1**). Among these, 760 were found to be relevant to the study’s aim. After a thorough review of the full texts, 556 studies were excluded. The primary reasons for exclusion were as follows: 39 studies did not meet the quality appraisal score (7%), 49 studies did not have an appropriate population (9%), and 468 studies did not have quantitative methodologies or did not report prevalence of study outcomes or unmet need for care (84%). Following these exclusions, 204 studies remained for the meta-analysis (Abdul-Hamid, 1997; Addorisio et al., 2022; Al Juboori et al., 2023; Alang, 2015; Alvarado et al., 2012; Anderson et al., 2005; Apantaku-Olajide et al., 2018; Apsley et al., 2023; Argintaru et al., 2013; Armoon et al., 2024a; Baggett et al., 2010; Baksheev et al., 2010; Best et al., 2021; Boden et al., 2018; Bommersbach et al., 2023; Brewin et al., 2009; Brubaker et al., 2013; Bruce et al., 2012; Cadigan et al., 2019; Carroll et al., 2021; Che et al., 2022; Chen et al., 2013; Choi et al., 2014, 2015; Cleary et al., 2006; Clignet et al., 2019; Cooper et al., 2024; Cornelius et al., 2001; Craske et al., 2005; Currie et al., 2014; Danek et al., 2023; Dasgupta et al., 2021; Dautzenberg et al., 2016; Desai et al., 2005; DeVlylder et al., 2014; Dezetter et al., 2015; Drukker et al., 2008; Duhoux et al., 2017; Durbin et al., 2014, 2017; Edlund et al., 2009; Edlund et al., 2006; Etheridge et al., 2001; Evans et al., 2004; Ezpeleta et al., 2011; Fekadu et al., 2014; Field et al., 2005; Fleury et al., 2021; Flisher et al., 1997; Forman–Hoffman et al., 2018; Fortuna et al., 2019; Fox et al., 2023; Freeman et al., 2004; Fulginiti et al., 2022; Goldstein et al., 2006; Golub et al., 2013; Gomez-Sanchez-Lafuente et al., 2021; Goossens et al., 2007; Grella et al., 2009; Grinshpoon et al., 2008; Grotts et al., 2022; Haley et al., 2017; Han et al., 2017; Hancock et al., 2003; Hancock et al., 2018; Handanagic et al., 2024; Haney, 2020; Hardie et al., 1998; Harris et al., 2005; Harty et al., 2012; Harty, 2003; Harvey et al., 2012; Hayward et al., 2006; Heaton et al., 2013; Heslin et al., 2003; Hogg et al., 2009; Houtjes et al., 2011; Hyshka et al., 2017; Isaacs et al.,

2019a; Isaacs et al., 2019b; Jakobowitz et al., 2017; Jaworsky et al., 2016; Jenabi Ghods et al., 2023; Joe et al., 1991; Johnson et al., 1995; Jones et al., 2014; Jorquera et al., 2015; Kallert et al., 2004; Kaufmann et al., 2014; Kertesz et al., 2009; Kertesz et al., 2014; Kosteniuk et al., 2022; Kozloff et al., 2016; Kulhara et al., 2010; Lambdin et al., 2018; Leese et al., 2018; Lemons et al., 2019; Lewis et al., 2003; Lewis et al., 2020; Lorvick et al., 2018; MacPherson et al., 2007; Macpherson et al., 2003; Manuel et al., 2018; Marks et al., 2023; Martin et al., 2020a, 2020b; McCrone et al., 2001; Meacham et al., 2019; Meadows et al., 2002; Medeiros-Ferreira et al., 2016; Melchior et al., 2014; Metsch et al., 2002; Milaney et al., 2020; Moallem et al., 2021; Mohebbi et al., 2024; Mojtabai, 2005; Mojtabai, 2009; Mojtabai et al., 2014; Mojtabai et al., 2002; Myers et al., 2014; Nasol et al., 2019; Neogi et al., 2016; Novak et al., 2011; Ochoa et al., 2003; Ochoa et al., 2005; Ojeda et al., 2008; Ott et al., 2003; Owens et al., 2020; Pagura et al., 2009; Palepu et al., 2013; Park et al., 2017; Parslow et al., 2001; Pasli et al., 2022; Perron et al., 2009; Pfeifer et al., 2021; Powelson et al., 2014; Pringle et al., 2006; Prins et al., 2011; Prins et al., 2009; Ramana et al., 2003; Reid et al., 2022; Riley et al., 2022; Riley et al., 2011; Robertson et al., 1997; Rockett et al., 2005; Rockett et al., 2003; Saab et al., 2016; Saini et al., 2022; Salem et al., 2015; Salina et al., 2011; Salize et al., 2001; Salize et al., 1999; Seid et al., 2024; Semborski et al., 2022; Semere et al., 2022; Shchetinina et al., 2024; Shepard et al., 2005; Sheppard et al., 2017; Sirotich et al., 2016; Skinner et al., 1999; Slade et al., 1998; Smith et al., 2017; Smith et al., 2009; Starkes et al., 2005; Stein et al., 2016; Stein et al., 2002; Stobbe et al., 2015; Szlyk et al., 2023; Terefe et al., 2022; Thompson et al., 1998; Tidemalm et al., 2005; Tomita et al., 2016; Tomko et al., 2022; Tommasello et al., 2006; Troberg et al., 2019; Tsai et al., 2023; Tucker et al., 2011; Upshur et al., 2018; Urbanoski et al., 2017; Urbanoski et al., 2008; Urbanoski et al., 2007; van Beljouw et al., 2010; van der Laan et al., 2018; van Dongen et al., 2019; van Everdingen et al., 2023; Van Haaster et al., 1994; Vazan et al., 2013; Verheul et al., 2020; Vijverberg et al., 2021; Vuillermoz et al., 2017; Walker et al., 2015; Weaver et al., 2001; Wells et al., 2001; Westenberg et al., 2021; Wiersma et al., 1998; Wilson et al., 2023; Wix et al., 2023; Wojtusik et al., 1998; Wright et al., 2016; Wu et al., 2011; Xie et al., 2022; Young et al., 2005; Zahid et al., 2013; Zur et al., 2014).

Figure 1 here

Study characteristics

Of the 204 studies selected, 134 were from the American region (n=27,719,684 participants), four from the African region (n=1,200 participants), 49 from the European region (n=72,734 participants), two from the Eastern Mediterranean region (n=242 participants), 13 from the Western Pacific region (n=27,368 participants) and two from the South-East Asian region (n=325 participants) (**Table 1**). Considering the income levels of the countries where the paper was published, based on the Word Bank (2024) criteria, the USA had the highest number of included studies, with 107 studies (n=27,614,406). Considering country income level, 197 studies were conducted in high-income countries (n=27,819,916), three studies were conducted in an upper-middle income country (n=889), two studies were conducted in lower-middle income countries (n=325), and two studies were conducted in low-income countries (n=423). The sample sizes ranged from 29 (Jorquera et al., 2015) to 26,400,000 (Manuel et al., 2018). The mean study sample size was 7,715 participants (excluding the study by Manuel et al. [2018]). Response rates between the studies varied from 33% to 100%. Participants had a mean age of 38.84 years and were more likely to be male (mean 51.86%), varying from 0% to 100%. Moreover, 46% had individuals with mental health disorders as participants, 30% had had individuals with substance use disorders, and 24% had homeless individuals as participants. Over four-fifth of studies were

cross-sectional (84%). A total of 129 studies were published between 2010 and 2024 (63%), 149 studies used a standard scale/questionnaire to determine individuals with mental health issues (73%), with the *Diagnostic and Statistical Manual of Mental Disorders* being the most prevalent (35%), followed by the *International Classification of Diseases* (9%). Finally, two-thirds of the studies (67%) used a simple question for assessing unmet need and or barriers to care among individuals with mental health issues (e.g., “During the past 12 months, was there any time that you needed any type of help or need (for example mental health/substance use treatment, information, counseling) for yourself but you did not get it?”) and 66 studies used a standard scale/questionnaire to assess unmet need and or barriers to care among individuals with mental health issues (32%), with the Camberwell Assessment of Needs (60%) being the most popular, followed by the Perceived Need for Care Questionnaire (17%).

Table 1 here

Pooled prevalence of unmet needs in the past 12 months for care and barriers to care among individuals with mental health issues

The analysis indicated that the prevalence of unmet needs in the past 12 months for care most frequently reported by individuals with mental health issues were work/occupation (e.g., not receiving help for problems related to work) (43%), dental care (e.g., not receiving dental care when needed) (41%), counseling (e.g., not receiving counseling when needed) (40%), social intervention (e.g., not receiving assistance from community outreach programs or public health campaigns) (37%), mental health (e.g., not receiving help for mental health needs) (34%), physical health needs (e.g., not receiving help for physical health needs) (33%), skills training (e.g., not receiving help for issues related to job skills training) (32%), social network (e.g., not having enough social connections) (32%), psychological distress (31%), information (e.g., not having condition and/or treatment explained) (27%), intimate relationships (e.g., not having support from loved ones) (27%), benefits (e.g., not receiving financial or social benefits) (26%), harm reduction (e.g., not receiving help to better manage drugs or alcohol use) (25%), psychotic symptoms (e.g., not receiving help when hearing voices) (24%), housing (e.g., not receiving help with housing problems) (24%), money (e.g., not receiving help with money problems) (23%), food (e.g., not having enough food) (21%), education (e.g., not receiving help for problems relating to education) (20%), sexual expression (e.g., not receiving help for sexual difficulties) (19%), looking after home (e.g., not receiving help to take care of home or room) (16%), safety to self (e.g., not receiving help after having thoughts of self-harm) (15%), self-care (e.g., not receiving help for self-care problems) (15%), telephone (e.g., needing a telephone but not having one) (9%), and child care (e.g., not receiving any help for children under 18 years) (8%) (**Tables 2 and 3 and Supplementary Files 4-31**). Also, the data showed that the barriers to care most frequently reported by individuals with mental health issues were motivational barriers (38%), followed by structural barriers (37%), financial barriers (31%), and stigmatization barriers (25%).

Tables 2 and 3 here

Subgroup analysis

Several subgroup analyses were run to determine the main source of heterogeneity in the pooled prevalence of unmet needs for care and barriers to care among individuals with mental health issues (**Supplementary Files 32–220**). The factors considered included participants’ age (12-29 years [adolescence and emerging adulthood], (ii) 30-45 years [established adulthood], (iii) 46-59 years [midlife adulthood], and (iv) 60 years and above [older adulthood]), type of

participants with mental health issues, year of study publication, country, risk of bias of studies, diagnostic criteria for mental health issues, instruments used for assessing unmet needs for care and/or barriers to care, and study sample size. Although several subgroup analyses were conducted, they were unable to identify the main sources of heterogeneity between studies.

Subgroup analyses of pooled prevalence of unmet needs in the past 12 months for care and barriers to care based on type of participants with mental health issues

The participants were divided into three groups with mental health issues and a subgroup analysis was conducted: (i) homeless individuals, (ii) patients with mental health disorders and (iii) substance use disorders patients (**Tables 2 and 3 and Supplementary Files 32-48**). The analysis indicated that patients with substance use disorders most commonly reported unmet needs for social intervention (57%), counseling (50%), skills training (50%), physical health care (50%), work/occupation support (44%), mental health care (38%), information (33%), and education (28%) in comparison to homeless individuals and patients with mental health disorders. On the other hand, homeless individuals most commonly reported unmet needs for dental care (47%), food (44%), housing (40%), harm reduction (31%), and self-care (28%) in comparison to patients with mental health disorders and substance use disorders. Regarding barriers to care, results showed that patients with substance use disorders faced the highest barriers to care, including motivational (44%), structural (40%), financial (32%), and stigmatization (28%) barriers when compared to homeless individuals and patients with mental health disorders.

Subgroup analyses of pooled prevalence of unmet needs in the past 12 months for care and barriers to care based on age of participants among individuals with mental health issues

The participants were divided into four groups based on their age, and a subgroup analysis was run with those aged: (i) 12-29 years (adolescents and emerging adulthood) and (ii) 30-45 years (established adulthood), (iii) 46-59 years (midlife adulthood) and (iv) 60 years and above (older adulthood) (Wright et al., 2024) (**Tables 2 and 3 and Supplementary Files 49-69**). The analysis indicated that unmet care needs were mostly common among adults in established adulthood, while harm reduction was more prevalent among adolescents and emerging adults. Additionally, physical health and food needs were more prevalent among midlife adults. The analysis also confirmed that all barriers to care were more common among adolescents and emerging adults, with the exception of structural barriers, which were the most common among midlife adults.

Sensitivity analysis

Sensitivity analysis using Baujat plots was performed to determine influential effects. Effects on the right-hand side of the plots show studies with higher levels of heterogeneity (**Supplementary Files 221-276**). Sensitivity analysis was not able to reduce the heterogeneity between studies for all unmet needs for care and/or barriers to care.

Meta-regression and moderator analysis

Multivariate meta-regression analysis was run to further investigate the sources of heterogeneity (**Supplementary File 277**). The meta-regression results and subgroup analyses indicated that (i) the age of participants may contribute to the heterogeneity between the included studies and was a statistically significant moderator in terms of the past 12 months of unmet needs for harm reduction and past 12 months of financial barriers to care; (ii) the year of study publication may contribute to the heterogeneity between the included studies and it was a statistically significant moderator for past 12 months of physical health unmet needs; (iii) country of

publication may contribute to the heterogeneity between the included studies and it was a statistically significant moderator for past 12 months of unmet needs for foods, housing, intimate relationship, and self-care; (iv) study sample size may contribute to the heterogeneity between the included studies and it was a statistically significant moderator for past 12 months of mental health unmet needs; (v) type of participants with mental health issues may contribute to the heterogeneity between the included studies and it was a statistically significant moderator for past 12 months of unmet needs for housing, social interventions; (vi) risk of bias of studies may contribute to the heterogeneity between the included studies and it was a statistically significant moderator for past 12 months of stigmatization barriers to care; (vii) diagnostic criteria for mental health issues may contribute to the heterogeneity among the included studies and it was a statistically significant moderator for past 12 months of intimate relationship and self-care unmet needs; and (viii) instruments used for assessing unmet needs for care and/or barriers to care may contribute to the heterogeneity among the included studies and it was a statistically significant moderator for past 12 months of counselling unmet needs and financial barriers to care.

Multivariate meta-regression analysis found that older age (midlife individuals) was associated with a lower prevalence of harm reduction unmet needs and financial barriers to care ($p<.05$). Studies published before 2010 were associated with a lower prevalence of physical health unmet needs ($p<.05$). Studies with a sample size of less than 1000 participants were associated with a higher prevalence of unmet needs in mental health and harm reduction ($p<.05$). Publishing studies conducted in America and Asia were associated with a higher prevalence of unmet needs in food and intimate relationships, while studies conducted in Europe were associated with a lower prevalence of unmet needs in housing ($p<.05$). Studies involving individuals with substance use disorders were associated with a higher prevalence of unmet needs for housing and social interventions ($p<.05$). Studies of high quality were associated with a lower prevalence of stigmatization barriers to care ($p<.05$). The Mini-International Neuropsychiatric Interview criteria for mental health issues were associated with a lower prevalence of unmet needs in intimate relationships, whereas diagnostic criteria for mental health issues other than the Diagnostic and Statistical Manual of Mental Disorders and the Mini-International Neuropsychiatric Interview were associated with a higher prevalence of unmet needs in self-care ($p<.05$). The Perceived Need for Care Questionnaire instrument used to assess unmet needs for care and barriers was associated with a higher prevalence of unmet counseling needs, and a lower prevalence of financial barriers to care ($p<.05$).

Discussion

The present meta-analysis aimed to estimate the pooled prevalence of perceived unmet needs for care and barriers to care among individuals with mental health issues. To the best of the authors' knowledge, no previous meta-analyses have been conducted to estimate the pooled prevalence of perceived unmet needs for care and barriers to care among this population. Findings from the present study indicated that the 12-month pooled prevalence of perceived unmet needs for care among individuals with mental health issues ranged from 8% to 43%. Although the most common unmet need was related to work/occupation (43%), caution should be taken in interpreting these results because only five studies reported on this need.

A previous study have reported that severe depressive symptoms contributed to a 25.6% increase in subsequent non-employment rates, a 20.7% increase in non-participation rates, and a 34.2% increase in unemployment rates (Bubonya et al., 2019). It has also been reported that five years after the initial diagnosis, only 10% of individuals with schizophrenia and 34% of individuals

with bipolar disorder were employed (Holm et al., 2021), while approximately one-quarter of individuals with severe mental illness (27.9%) are engaged in competitive employment and 25.9% remain unemployed (Gühne et al., 2021). Other studies have shown that individuals with serious mental illness are also more likely to miss or skip work, with 40.7% reporting absenteeism, compared to 21.5% of those with no mental illness, 30.5% with mild mental illness, and 37.9% with moderate mental illness (Luciano et al., 2014), and 45% of individuals with substance use disorders are unemployed (Eddie et al., 2020).

Evidence also shows that specific employment skills are necessary for job success, including job-specific “hard” skills (e.g., how to work with tools), general skills (e.g., problem-solving), computing (the ability to work on a personal computer), and information and technology literacy (Sigurdsson et al., 2012). These skills are often less developed among individuals with mental health issues, resulting in greater unmet work needs for this population. Additionally, individuals with mental health issues may lack general soft skills that are not job-specific, such as pre-employment behaviors such as interviewing skills, as well as on-the-job behaviors, including punctuality, consistent work attendance, appropriate dress, personal grooming, and hygiene (Ginexi et al., 2003; Lidz et al., 2004). Interpersonal or social skills are another set of soft skills documented in previous studies, including getting along with supervisors and peers, knowing where to turn when difficult issues arise, communicating clearly and professionally, and understanding the employer’s perspective (Sigurdsson et al., 2012), all factors that can contribute to unemployment. Finally, these individuals may face specific challenges such as unstable housing (Marçal et al., 2023), incarceration (Emmert, 2018), and substance abuse (El Haddad et al., 2022; Holtyn et al., 2021), which further contribute to their unmet work needs.

Additionally, dental care needs (41%) and counseling needs (40%) were the most common unmet needs following work/occupation, both of which had a sufficient number of studies. Previous reviews have shown that individuals with severe mental illness are nearly three times more likely to have lost all their teeth compared to the general population (Choi et al., 2021). Those with depression are 1.17 to 1.32 times more likely to have lost all of their teeth compared to the general population (Choi et al., 2021). Additionally, individuals who use drugs have four times the likelihood of having a higher number of decayed, missing, and filled teeth compared to the general population (Yazdanian et al., 2020). Although there is no meta-analysis for comparing the results, previous studies conducted among homeless individuals reported that dental care was the most prevalent unmet needs for care (Tsai et al., 2023; van Dongen et al., 2019), while other studies comprising individuals with mental health disorders (Dezetter et al., 2015; Migliorini et al., 2022), substance use disorders (Kosteniuk et al., 2022), homelessness (Addorisio et al., 2022; Armoon et al., 2024a), and the general population (Sunderland et al., 2013) have indicated that counseling is the most common unmet need for care. There are several explanations for these results. First, it may be due to the fact that individuals with mental health issues experience stigma, shame (Ahad et al., 2023), and low self-esteem (Hofer et al., 2023), along with several co-morbidities (e.g., chronic coronary heart disease, diabetes, obesity) (Onyeka et al., 2019), which can lead to more unmet needs for dental care. Second, these individuals may be of low socioeconomic status (Kivimäki et al., 2020), be unemployed (Wang et al., 2020), and lack income and health insurance (Meiselbach et al., 2024). Third, access to dental services may be poor for individuals with mental health issues, and they may miss appointments or drop out of active treatment (Slack-Smith et al., 2017), contributing to more unmet dental care needs.

Regarding unmet counseling needs among individuals with mental health issues, counseling services may be offered by psychologists in the private sector but are often not covered

by public health insurance (Bartram, 2019). As a result, many individuals with mental health issues lack access to psychologists or do not have any insurance (Rayner et al., 2021). Although some counseling services are available through public community healthcare centers, there are often long waiting lists, which may discourage individuals from seeking these services (Fleury et al., 2016). Another explanation could be the structural barriers to care because the number of counseling sessions is limited, and many general practitioners do not offer psychotherapy sessions (Desrosiers, 2012). Additionally, other community-based organizations tend to provide only crisis resolution services (Holgerson et al., 2022), contributing to high unmet counseling needs.

Concerning barriers to care, the present study found that unmet care needs were primarily due to motivational barriers (e.g., *“Did not think treatment was needed”* or *“I do not believe I have a drug problem”*) compared to other barriers among individuals with mental health issues. These results align with previous studies (Apsley et al., 2023; Oleski et al., 2010; Szlyk et al., 2023), which show that motivational barriers (e.g., *“Did not think treatment was needed”* or *“I do not believe I have a drug problem”*) are a major reason for not seeking treatment or help (Mojtabai et al., 2010).

Another of the novel findings is that almost all unmet care needs were prevalent among individuals with substance use disorders. These individuals are highly vulnerable because their substance use frequently exacerbates mental health symptoms, leads to psychosocial instability, reduces motivation, hampers their ability to seek and access treatment (Barrowclough et al., 2006), and contributes to more unmet needs. Additionally, individuals with substance use disorders may experience cognitive impairments, struggle with social interaction skills, and exhibit low energy and motivation (Little, 2001), resulting in increased unmet needs. The results also confirm that all barriers to care are much more common among individuals with substance use disorder than among patients with mental health disorders or homeless individuals, with motivational barriers being the most prevalent.

Some reasons for these motivational barriers, such as *“Did not think treatment was needed”* and *“I do not believe I have a drug problem”*, are related to self-esteem. Therefore, one explanation for these results may be that patients with substance use disorders have low self-esteem (Bartsch et al., 2017; Sehlikoğlu et al., 2023), which leads them to use maladaptive coping mechanisms and escape from stressors (Wu et al., 2014), resulting in more motivational barriers. Another explanation might be that patients with substance use disorders, who often have multiple comorbidities, are significantly more likely to report motivational and structural barriers than those with less severe disorders (Mojtabai et al., 2010). These findings align with previous studies indicating that those with greater illness severity may face more barriers related to the availability, ineffectiveness, and affordability of services (Andrade et al., 2013b; Mojtabai et al., 2010).

Finally, the present study’s results showed another novel finding that individuals in established adulthood were more likely than other ages to report the majority of unmet needs. Moreover, all barriers to care were more common among adolescents and emerging adults, with the exception of structural barriers, which were the most common among midlife adults. Some studies have shown that the perception of needs is more prevalent among patients with mental health disorders aged 25-34 years compared to those aged under 24 years (Codony et al., 2009; Mojtabai et al., 2002; Sareen et al., 2007). This may be due to the fact that individuals in established adulthood are less likely to recognize their need for treatment (Doblyte et al., 2016), which could be linked to fears of judgment, and a lack of prior help-seeking experiences (Sareen et al., 2007; Van Voorhees et al., 2006).

Adolescents are less likely to access harm reduction resources and often rely on social networks to mitigate risk, such as using substances in the presence of others (Kimmel et al., 2021). Barriers to accessing harm reduction services include the presence of older participants, fear of law enforcement, and age restrictions (Krug et al., 2015). Therefore, harm reduction services need to be specifically tailored to meet the unique needs of adolescents (Bagot et al., 2018). Adolescents represent a challenging and hard-to-reach population in addiction medicine, facing multiple barriers to using harm reduction services. These barriers include the lack of youth-specific services, fear of law enforcement, stigma, insufficient outreach, and a lack of perceived need for such services (Krug et al., 2015). Additionally, adolescents and emerging adults may feel embarrassment, lack mental health knowledge, and have negative perceptions of help-seeking, leading to more barriers to care (Radez et al., 2021). Furthermore, adolescents and emerging adults may prefer to rely on themselves when facing difficulties in seeking help (Radez et al., 2021). Although the present study's results contrast with previous studies that identified structural barriers to care as the most common due to time constraints and lower use of primary healthcare among younger patients (Andrade et al., 2013b; Mojtabai et al., 2010; Roxo et al., 2022), other research suggests that middle-aged adults tend to encounter more structural barriers to treatment (Andrade et al., 2013a). One possible explanation for these findings is that midlife adults may be delaying necessary medical care, which can lead to more serious consequences and increased unmet needs later on (Sun et al., 2017).

Finally, the meta-analysis identified various sources of heterogeneity between studies through meta-regression and moderator analysis. Similar levels of heterogeneity have been observed in previous meta-analyses focusing on mental health (Armoon et al., 2025) or suicide behaviors (Armoon et al., 2024b) among homeless youth. Several factors, such as country differences, mean age, sex, population type, treatment status, sample size, publication year, diagnostic criteria, and study quality, can contribute to heightened heterogeneity. These factors present methodological challenges and should be considered in future research.

In the present study, a lower estimate of unmet needs related to harm reduction and financial barriers to care was found among midlife individuals. This is consistent with prior meta-analyses examining older populations, which found that unmet healthcare needs are largely due to treatment costs (Rahman et al., 2022). To address this issue, it is crucial to strengthen financial protection policies in the studied countries to reduce financial barriers to care and promote equitable service coverage (Rahman et al., 2022). It was also found that studies published after 2010 were associated with a lower prevalence of unmet physical health needs. This finding may be explained by the shift in the needs of this vulnerable population towards mental healthcare in recent years. The results suggest that policymakers and decision-makers should prioritize and expand mental healthcare services over physical healthcare services to better address these emerging needs. The present study found that studies with a sample size of fewer than 1,000 participants were associated with a higher prevalence of unmet mental health and harm reduction needs. Generally, smaller sample sizes can lead to higher variability and more volatile prevalence estimates. Additionally, smaller sample sizes often have larger margins of error, which can sometimes result in exaggerated or less reliable prevalence estimates (Cao et al., 2024).

The present study also found that research conducted in America and Asia was associated with a higher prevalence of unmet needs in food and intimate relationships, while studies conducted in Europe were associated with a lower prevalence of unmet needs in housing. One possible explanation for this pattern could be that both Asia and America face socio-economic and cultural challenges related to food security and relationship stability. These challenges might result

in limited access to essential resources and social support systems in these regions, which contribute to the higher prevalence of unmet needs. Conversely, Europe may have more robust systems in place, such as stronger social safety nets (e.g., permanent supportive housing program), that help address housing needs more effectively (Aubry et al., 2020). Studies involving individuals with substance use disorders were associated with a higher prevalence of unmet needs for housing and social interventions. This suggests that individuals with substance use disorders may face considerable difficulties in securing stable housing and accessing essential social services. Moreover, substance use is often a significant barrier to overcoming homelessness and can further intensify social marginalization (Palepu et al., 2013). These unmet needs may stem from factors such as stigma, economic hardship, and the absence of integrated support systems (Bayat et al., 2020) that address both housing and social intervention needs in a holistic manner.

There were also variations in the diagnostic criteria, which may have contributed to discrepancies in the prevalence rates, consistent with findings from previous meta-analyses (Armoon et al., 2025; Bronsard et al., 2016). For instance, earlier meta-analyses have shown that diagnostic criteria for mental health disorders other than those outlined in the Diagnostic and Statistical Manual of Mental Disorders and the Mini-International Neuropsychiatric Interview were associated with a higher prevalence of lifetime bipolar and obsessive-compulsive disorders (Armoon et al., 2025). Moreover, it has been observed that high-quality studies have a lower prevalence of stigmatization barriers to care. Additionally, the Perceived Need for Care Questionnaire instrument, used to assess unmet needs for care and barriers, was associated with a higher prevalence of unmet counseling needs and a lower prevalence of financial barriers to care. This highlights the importance of acknowledging that both higher-quality studies and the Perceived Need for Care Questionnaire instrument may yield lower prevalence rates of unmet care needs compared to studies with lower-quality data or those using different instruments to assess unmet needs or barriers. This consideration should be taken into account in future epidemiological research.

Limitations

The current meta-analysis has several limitations that should be acknowledged. First, nearly all studies (97%) were conducted in high-income countries, which may limit the generalizability of the findings to other contexts. Second, it is possible that relevant studies were omitted due to the search strategy and inclusion criteria (Priester et al., 2016). Third, there was inconsistency in how unmet needs for care and barriers to care were defined across different studies. For example, some studies relied on self-reporting rather than standardized criteria. Fourth, several important data points regarding unmet needs for care and barriers were not reported in the studies, such as the prevalence of unmet needs for males and females separately or their treatment status. As a result, conducting subgroup analyses or meta-regressions to identify the main sources of heterogeneity related to these critical covariates was not possible. Fifth, some studies reported unmet needs or barriers to care in general terms without categorizing them into specific types, preventing their inclusion in the final analysis. Sixth, some papers referred to “other barriers” without clarifying what these entailed, leading to their exclusion from the analysis.

Sixth, studies reporting overall prevalence of unmet needs for care or barriers to care without specifying a timeframe or those focused on lifetime prevalence of unmet needs for care or barriers to care were excluded from the meta-analysis. Seventh, specific unmet needs, such as HIV peer group support, HIV case management services, legal support, family needs, chronic pain, and reproductive health care, were not assessed due to the limited availability of studies focusing on these variables. As a result, these were excluded from the final analysis. Eighth, publications that

were not in English were also excluded from the analysis. Ninth, given that so few studies had focused on children and adolescents aged 12-20 years, for the purpose of sub-group analysis, these few studies were included in a bigger grouping of ‘adolescence and emerging adulthood’. Clearly, service needs for children and adolescents are a lot different from those for adults but there were no meta-analytic findings for minors. Finally, many gray literature sources, including dissertations, research reports, government documents, conference papers, ongoing studies, manuscripts, and unpublished or non-English review articles, were excluded from the present study. This decision was based on the research team’s inability to adequately assess their quality and the fact that they had not undergone peer review.

Implications for research, policy, and practice

The findings of the present study highlight the need for further research to explore key areas, particularly in estimating unmet needs for care and barriers to care among individuals with mental health issues. The results indicated that the 12-month prevalence rates of unmet needs and barriers to care were higher among individuals with substance use disorders compared to those with mental health disorders and homeless individuals. Evidence suggests that motivational barriers among individuals with substance use disorders can be addressed through interventions such as motivational interviewing (Smedslund et al., 2011), integrated care models (Isaacs et al., 2024), and peer support programs (Tracy et al., 2016). Motivational interviewing has been shown to enhance motivation and improve engagement in care (Smedslund et al., 2011). Integrated care models, which may include elements such as care managers, adequate staff training, a supportive organizational culture, and regular supervision, can provide more accessible and coordinated treatment (Isaacs et al., 2024). Policy changes that support the integration of mental health and substance use treatment into primary care settings can reduce barriers to care by offering services in less stigmatizing, more accessible environments (Isaacs et al., 2024). Additionally, peer support programs can provide positive role models and reduce feelings of isolation, helping to increase motivation and engagement in treatment (Tracy et al., 2016).

Additionally, established adults were more likely than younger individuals to report unmet needs, while nearly all barriers to care were more common among adolescents and emerging adults. Therefore, it is important to validate these findings in future comparative research involving three groups: individuals with mental health disorders, individuals with substance use disorders, and homeless individuals.

Identifying prevalent unmet needs and barriers to care based on age and treatment status is crucial, as well as exploring potential gender differences in treatment experiences. The present study was unable to clarify the influence of gender or treatment status on unmet needs and barriers, underscoring the necessity for comprehensive investigations into possible gender-specific patterns. Another important area for future research is the operationalization of unmet needs and barriers to care, which requires clear criteria and behaviors that can be objectively identified and assessed. Utilizing standardized questionnaires or interviews, such as the Camberwell Assessment of Needs and Perceived Need for Care Questionnaire, is essential for effectively operationalizing these concepts.

Conclusion

The present study is the first meta-analysis to estimate the 12-month pooled prevalence rate of unmet need for care and barriers to care among individuals with mental health issues. Several innovative subgroup analyses, including comparisons of unmet need for care and barriers to care among individuals with substance use disorder, mental health disorders, homeless individuals, and different age groups, were conducted. The findings indicated that the three most

prevalent unmet needs for care were related to work/occupation, dental care, and counseling, while the most common barrier to care was motivational barriers. To address the unmet employment needs of individuals with mental health issues, it is recommended that they are provided with more comprehensive training in essential skills, such as basic computer proficiency and interpersonal relationship management (Sigurdsson et al., 2012). While all mental health disorders significantly impair work functioning, specific interventions—such as Individual Placement and Support—have been shown to effectively increase labor market participation (Burns et al., 2007; Modini et al., 2018). The role of work in enhancing quality of life for individuals with severe mental disorders should be recognized within the treatment system, with patients being actively referred to vocational rehabilitation, particularly early in the course of the illness (Holm et al., 2021). Additionally, employment outcomes should be considered a key measure when evaluating treatment or rehabilitation efforts (Holm et al., 2021). Mental health professionals should regularly assess both the employment status and work aspirations of their patients. Given that the desire to work may change over time and can be influenced (Choi et al., 2013), motivation to engage in work should be actively fostered throughout treatment. Additionally, the attitudes of mental health professionals are important, and work-life balance concerns should be addressed throughout the treatment process (Gühne et al., 2021).

Enhancing dentists' understanding of mental health is crucial for bridging the gap between patients' dental healthcare needs and available services (Bjørkvik et al., 2022). This requires strengthening collaboration among various healthcare providers to identify and address patients' needs for both practical and personal support. Improving access to counseling should be prioritized to help address the unmet needs of individuals with mental health issues. Motivational barriers are the most common obstacles to care, so distributing pamphlets with information on substance effects and guidelines for monitoring unmet needs among individuals with mental health disorders is recommended (Sobell et al., 2002). Such an initiative aims to boost help-seeking behaviors and enhance public perceptions of mental health issues.

Additionally, the findings indicated that patients with substance use disorders experience a significantly higher prevalence of unmet care needs and barriers to accessing care compared to those with mental health disorders and homeless individuals. Recommendations include creating a government-funded, low-barrier, integrated service delivery model that includes patients with substance use disorders as collaborators (Russell et al., 2021). This aims to make services more accessible and effective, ultimately reducing unmet needs.

Finally, ensuring the affordability of health services and improving their acceptability will be critical in reducing unmet needs among established adults with mental health disorders. Interventions should be delivered in schools and colleges to target mental health knowledge among adolescents and emerging adults and improve the accessibility of evidence-based support within settings for them and their families, thereby reducing barriers to care (Radez et al., 2021).

Abbreviations

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Fig. 1 PRISMA flow diagram

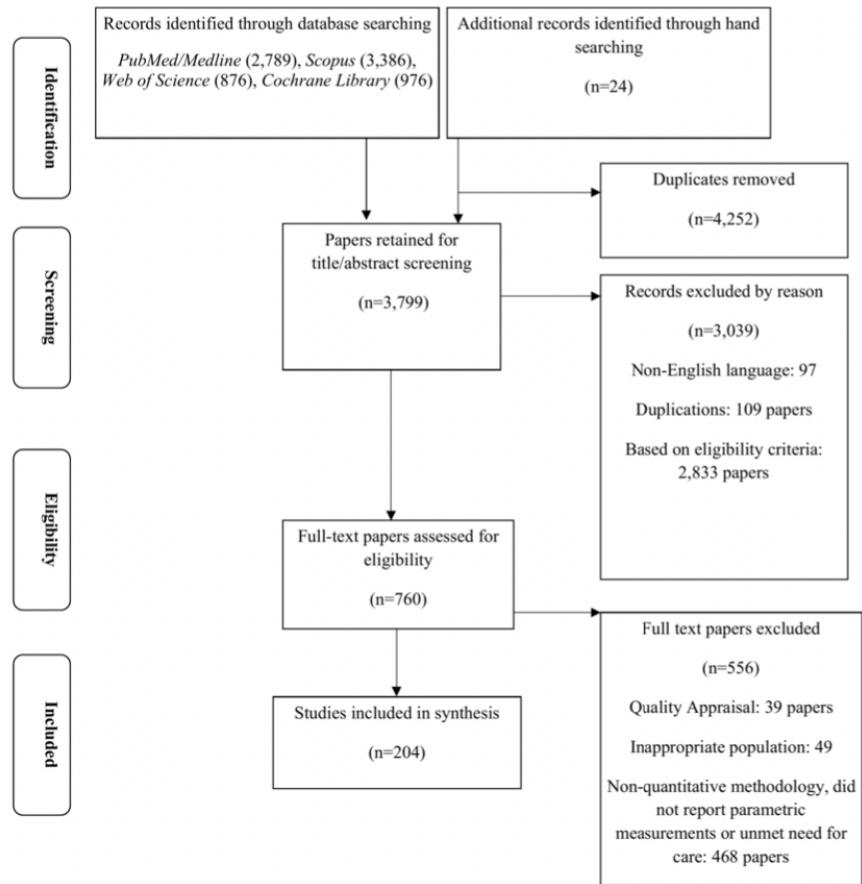


Table 1 Characteristics of the 204 studies identified for review

Authors (year)	Country	Sample at baseline	Final sample size (response rate%)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Shchetinina and Slopen (2024)	USA	12,703	12,703 (100)	Cross-section	Very good	30	0	100		SUD ^a	DSM-IV ^c	One question for unmet need
Handanagic et al. (2024)	USA	10,879	10,879 (100)	Cross-section	Very good	44	68.8	32.2		SUD ^a	DSM-IV ^c	One question for unmet need
Seid et al. (2024)	Denmark	49,330	49,330 (100)	Cohort	Very good	36.1	92	8		SUD ^a	ICD-10 ^d	One question for unmet need
Arnoon et al., (2024a, 2024b)	Canada	345	308 (89)	Cross-section	Very good	54.82	67	33		Homeless	Valid definition	One question for unmet need
Danek et al. (2023)	USA	12,211	12,211 (100)	Cross-section	Very good	42	31	69		MD ^b	DSM-IV ^c	PNCQ ^{aa}
Bommersbach et al. (2023)	USA	40,782	40,782 (100)	Cohort	Good	41	33	66		MD ^b	DSM-IV ^c	One question for unmet need
Fox and Hanes (2023)	USA	2098	2098 (100)	Cross-section	Very good	14.5	29	71		MD ^b	NR ^e	One question for unmet need
Jenabi Ghods et al. (2023)	Iran	112	112 (100)	Cross-section	Satisfactory	71.18	65	35		MD ^b	NR ^e	One question for unmet need
Apsley et al. (2023)	USA	114,736	114,736 (100)	Cohort	Very good	35	0	100		SUD ^a	DSM-IV ^c	CANSAS ^{ab}
Marks et al. (2023)	USA	1845	1042 (56)	Cross-section	Very good	37	48	52		SUD ^a	DSM-IV ^c	One question for unmet need
Wilson et al. (2023)	Canada	103	34 (33)	Cross-section	Satisfactory	34	44	53	3	SUD ^a	SU-SMS ^f	One question for unmet need
Cooper et al. (2024)	USA	19,946	19,946 (100)	Cross-section	Very good	44.27	69	30	1	SUD ^a	DSM-IV ^c	PNCQ ^{aa}
Szlyk et al. (2023)	USA	1095	1017 (93)	Cross-section	Good	36	59	41		SUD ^a	DSM-IV ^c	One question for unmet need
Tsai et al. (2023)	USA	7040	7040 (100)	Cross-section	Very good	NR	89	11		Homeless	Valid definition	One question for unmet need
van Everdingen et al. (2023)	Netherlands	436	436 (100)	Cross-section	Good	42.4	81	29		Homeless	NR ^e	CAN ^{ac}
Al Juboori et al. (2023)	USA	42,567	42,567 (100)	Cross-section	Very good	21	56	44		MD ^b	DSM-V ^g	One question for unmet need
Pasli and Tumin (2022)	USA	13,021	13,201 (100)	Cross-section	Good	12	NR	NR		MD ^b	NR ^e	One question for unmet need
Xie et al. (2022)	USA	12,532	12,532 (100)	Cohort	Good	41	34	66		MD ^b	DSM-IV ^c	One question for unmet need
Reid and Palamar (2022)	USA	33,104	33,104 (100)	Cross-section	Very good	50	37	63		MD ^b	DSM-IV ^c	One question for unmet need
Wix and Spigt (2023)	Netherlands	538	538 (100)	Cross-section	Good	41.7	34	66		MD ^b	NR ^e	One question for unmet need
Saini et al. (2022)	USA	2183	2183 (100)	Cross-section	Very good	52	58	42		SUD ^a	DSM-IV ^c	GHQ-12 ^{ad}
												One question for unmet need

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate%)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Tomko et al. (2022)	USA	563	563 (100)	Cross-section	Very good	48	60	40		SUD ^a	NR ^e	One question for unmet need
Riley et al. (2022)	USA	245	245 (100)	Cross-section	Good	53	0	100		Homeless	Valid definition	One question for unmet need
Grotts et al. (2022)	USA	442	373 (84)	Cross-section	Very good	34.5	80	20		Homeless	NR ^e	One question for unmet need
Terefe et al. (2022)	Ethiopia	225	206 (91.5)	Cross-section	Good	27	0	100		Homeless	Valid definition	One question for unmet need
Semborski et al. (2022)	USA	192	192 (100)	Cross-section	Good	22	52	35	13	Homeless	Valid definition	One question for unmet need
Semere et al. (2022)	USA	303	303 (100)	Cross-section	Good	61.3	73	27		Homeless	NR ^e	One question for unmet need
Vijverberg et al. (2021)	Netherlands	244	244 (100)	Cross-section	Very good	12.7	56	44		MD ^b	MINI-KID ^h	One question for unmet need
Gomez-Sanchez-Lafuente et al. (2021)	Spain	150	150 (100)	Cross-section	Good	42.54	59	61		MD ^b	ICD-10 ^d	CAN ^{ac}
Houtjes et al. (2011)	Netherlands	99	99 (100)	Cross-section	Good	72.7	33	66		MD ^b	MADRS ⁱ	CANE ^{ac}
Dasgupta et al. (2021)	USA	340	340 (100)	Cross-section	Satisfactory	NR	92	8		SUD ^a	DSM-IV ^c	One question for unmet need
Pfeifer and Haile (2021)	USA	10,516	10,516 (100)	Cross-section	Good	29	0	100		SUD ^a	DSM-IV ^c	One question for unmet need
Moallef et al. (2021)	Canada	1000	889 (88.9)	Cross-section	Very good	50.4	58.5	41.5		SUD ^a	NR ^e	One question for unmet need
Kosteniuk et al. (2022)	Canada	285	285 (100)	Cross-section	Very good	39	60	40		SUD ^a	NR ^e	One question for unmet need
Best et al. (2021)	Australia	210	210 (100)	Cross-section	Satisfactory	28	0	100		SUD ^a	NR ^e	PNCQ ^{aa}
Addorizio et al. (2022)	Canada	150	142 (95)	Cross-section	Very good	42	73	27		Homeless	Valid definition	One question for unmet need
Westenberg et al. (2021)	Canada	150	150 (100)	Cross-section	Satisfactory	46.28	83	17		Homeless	Valid definition	PNCQ ^{aa}
Che et al. (2022)	Republic of Korea	551	551 (100)	Cross-section	Satisfactory	52	75	25		Homeless	NR ^e	One question for unmet need
Carroll et al. (2021)	USA	97	97 (100)	Cross-section	Satisfactory	39	67	33		Homeless	NR ^e	One question for unmet need
Fleury et al. (2021)	Canada	497	452 (92)	Cross-section	Good	48	60	40		Homeless	Valid definition	One question for unmet need
Lewis et al. (2020)	USA	9957	9957 (100)	Cohort	Good	41	67	33		SUD ^a	NR ^e	One question for unmet need

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate %)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Martin et al., (2020a, 2020b)	USA	124,188	124,188 (100)	Cross-section	Very good	35	0	100		SUD ^a	DSM-IV ^c	One question for unmet need
Haney (2020)	USA	988	988 (100)	Cross-section	Good	26.5	60.4	39.6		SUD ^a	DSM-IV ^c	One question for unmet need
Owens et al. (2020)	USA	144	144 (100)	Cross-section	Satisfactory	39	0	100		SUD ^a	DSM-IV ^c	One question for unmet need
Verheul et al. (2020)	Netherlands	157	157 (100)	Cross-section	Satisfactory	44	89	11		Homeless	Valid definition	One question for unmet need
Fulginiti et al. (2022)	USA	527	527 (100)	Cross-section	Good	21	55	33	12	Homeless	Valid definition	One question for unmet need
Fortuna et al. (2019)	USA	267	267 (100)	Cross-section	Satisfactory	50.9	27	73		MD ^b	NR ^e	One question for unmet need
Isaacs et al., (2019a, 2019b)	Australia	171	171 (100)	Cross-section	Good	45.5	42	58		MD ^b	NR ^e	One question for unmet need
Nasol et al. (2019)	USA	2406	2406 (100)	Cross-section	Good	13	70	30		MD ^b	NR ^e	One question for unmet need
Isaacs et al., (2019a, 2019b)	Australia	337	337 (100)	Cohort	Good	45.7	44	56		MD ^b	NR ^e	One question for unmet need
Clignet et al. (2019)	Netherlands	99	99 (100)	Cross-section	Satisfactory	72.2	33	67		MD ^b	MADRS ⁱ	CANE ^{ae}
Troberg et al. (2019)	Sweden	280	280 (100)	Cross-section	Satisfactory	43	72	28		SUD ^a	NR ^e	One question for unmet need
Martin et al. (2019)	USA	118,587	118,587 (100)	Cross-section	Very good	29	0	100		SUD ^a	DSM-IV ^c	One question for unmet need
lemons et al. (2019)	USA	975	975 (100)	Cross-section	Good	52	78	21	1	SUD ^a	NR ^e	One question for unmet need
Meacham et al. (2019)	USA	283	283 (100)	Cross-section	Good	48	0	100		Homeless	Valid definition	One question for unmet need
Forman-Hoffman et al. (2018)	USA	8629	5653 (65.5)	Cross-section	Good	NR	NR	NR		MD ^b	SCID-IV ^j	One question for unmet need
Cadigan et al. (2019)	USA	779	622 (79.8)	Cross-section	Very good	20.68	NR	NR		SUD ^a	AUDIT ^k	One question for unmet need
Lambdin et al. (2018)	USA	624	624 (100)	Cross-section	Good	44	0	100		SUD ^a	NR ^e	One question for unmet need
Boden and Hoggatt (2018)	USA	3119	3119 (100)	Cross-section	Satisfactory	NR	NR	NR		SUD ^a	DSM-IV ^c	One question for unmet need
Lorvick et al. (2018)	USA	624	624 (100)	Cross-section	Very good	46	0	100		SUD ^a	DSM-IV ^c	One question for unmet need
Manuel et al. (2018)	USA	26,400,000	26,400,000 (100)	Cross-section	Very good	41.5	54	46		SUD ^a	DSM-IV ^c	One question for unmet need

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate%)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Upshur et al. (2018)	USA	241	241 (100)	Cross-section	Good	41.79	0	100		Homeless	Valid definition	One question for unmet need
van der Laan et al. (2018)	Netherlands	328	328 (100)	Cohort	Very good	37.96	74	26		Homeless	Valid definition	INCSR ^{af}
van Dongen et al. (2018)	Netherlands	513	378 (73.7)	Cross-section	Good	45.3	74	26		Homeless	Valid definition	One question for unmet need
Sheppard et al. (2017)	Australia	1599	1599 (100)	Cross-section	Satisfactory	17.7	51	49		MD ^b	SCID-IV ^j	PNCQ ^{aa}
Hancock et al. (2018)	Australia	305	305 (100)	Cross-section	Satisfactory	42.7	50	50		MD ^b	NR ^c	CANSAS ^{ab}
Urbanoski et al. (2017)	Canada	25,133	25,133 (100)	Cohort	Very good	40	NR	NR		MD ^b	DSM-IV ^c	PNCQ ^{aa}
Han et al. (2017)	USA	325,800	325,800 (100)	Cohort	Good	NR	NR	NR		SUD ^a	DSM-IV ^c	One question for unmet need
Park and Wu (2017)	USA	15,440	15,440 (100)	Cross-section	Very good	34	61	39		SUD ^a	DSM-IV ^c	One question for unmet need
Smith et al. (2017)	USA	13,096	13,096 (100)	Cross-section	Good	21	48	52		SUD ^a	NR ^c	One question for unmet need
Vuillermoz et al. (2017)	France	761	656 (86)	Cross-section	Very good	33	0	100		Homeless	Valid definition	One question for unmet need
Duhoux et al. (2017)	Canada	277	277 (100)	Cross-section	Satisfactory	NR	NR	NR		Homeless	Valid definition	One question for unmet need
Haley et al. (2017)	USA	172	172 (100)	Cross-section	Satisfactory	43	56	44		Homeless	NR ^e	One question for unmet need
Stein et al. (2016)	Germany	363	363 (100)	Cross-section	Very good	81.4	28	72		MD ^b	GDS ^l	CANE ^{ac}
Jakobowitz et al. (2017)	UK	517	362 (70)	Cross-section	Satisfactory	NR	54	46		MD ^b	DSM-IV ^c	NFCAS ^{ag}
Durbin et al. (2017)	Canada	1472	1449 (98)	Cross-section	Satisfactory	46.7	46	54		MD ^b	NR ^c	CANSAS ^{ab}
Siroich et al. (2016)	Canada	2274	2274 (100)	Cohort	Good	47.11	49	51		MD ^b	NR ^c	OCAN ^{ah}
Medeiros-Ferreira et al. (2016)	Spain	60	60 (100)	Cross-section	Satisfactory	43.85	58	42		MD ^b	PANSS ^m	CAN ^{ac}
Neogi et al. (2016)	India	225	225 (100)	Cross-section	Satisfactory	34.75	64	36		MD ^b	MINI ⁿ	CAN ^{ac}
Tomita et al. (2016)	South Africa	57	57 (100)	Cross-section	Satisfactory	25	67	33		MD ^b	NR ^e	CAN ^{ac}
Hyshka et al. (2017)	Canada	324	320 (99)	Cross-section	Very good	42	65	35		SUD ^a	DUDIT ^o	PNCQ ^{aa}
Kozloff et al. (2016)	Canada	2255	2255 (100)	Cross-section	Good	32	68	32		Homeless	NR ^e	One question for unmet need
Javorsky et al. (2016)	Canada	1190	1173 (98)	Cross-section	Good	42.26	67	33		Homeless	Valid definition	One question for unmet need

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate%)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Wright et al. (2016)	USA	103	98 (95)	Cross-section	Satisfactory	49	44	56		Homeless	NR ^e	One question for unmet need
Saab et al. (2016)	Canada	504	504 (100)	Cohort	Good	40.9	57	43		Homeless	Valid definition	One question for unmet need
Jorquera et al. (2015)	Chile	29	29 (100)	Cross-section	Satisfactory	21.9	79	21		MD ^b	PANSS ^m	One question for unmet need
Walker et al. (2015)	USA	11,881	11,881 (100)	Cohort	Good	41	38	62		MD ^b	DSM-IV ^c	One question for unmet need
Dezetter et al. (2015)	Canada	1288	1288 (100)	Cohort	Very good	44	25	75		MD ^b	HADS ^p	One question for unmet need
Dautzenberg et al. (2016)	Netherlands	78	78 (100)	Cross-section	Satisfactory	68.9	51	49		MD ^b	DSM-IV ^c	PNCQ ^{aa}
Alang (2015)	USA	2564	2564 (100)	Cross-section	Good	27	33	67		MD ^b	NR ^e	CANE ^{ae}
Salem et al. (2015)	USA	422	422 (100)	Cross-section	Very good	34.38	100	0		SUD ^a	DSM-IV ^c	SAMHSA ^{ai}
Choi et al. (2015)	USA	29,634	29,634 (100)	Cohort	Very good	57	53	47		SUD ^a	DSM-IV ^c	One question for unmet need
Choi et al. (2014)	USA	16,974	16,974 (100)	Cohort	Very good	42	38	62		MD ^b	DSM-IV ^c	One question for unmet need
Mojtabai et al. (2014)	USA	393	393 (100)	Cross-section	Good	21.5	44	56		MD ^b	DSM-IV ^c	One question for unmet need
Jones et al. (2014)	USA	4562	3949 (86.5)	Cross-section	Satisfactory	34	38	62		MD ^b	NR ^e	One question for unmet need
Durbin et al. (2014)	USA	1172	994 (85)	Cross-section	Good	38.19	72	29		MD ^b	NR ^e	One question for unmet need
DeVylder et al. (2014)	USA	10,541	10,541 (100)	Cohort	Good	23.3	48	52		MD ^b	DSM-IV ^c	One question for unmet need
Kaufmann et al. (2014)	USA	11,737	11,737 (100)	Cohort	Very good	35	50	50		SUD ^a	DSM-IV ^c	One question for unmet need
Melchior et al. (2014)	USA	1114	1114 (100)	Cross-section	Very good	37.5	60	40		SUD ^a	DSM-IV ^c	One question for unmet need
Choi et al. (2014)	USA	8331	8331 (100)	Cohort	Very good	42	63	33		SUD ^a	DSM-IV ^c	One question for unmet need
Myers et al. (2014)	South Africa	1098	720 (65)	Cross-section	Good	23	0	100		SUD ^a	RRBA ^q	One question for unmet need
Zur and Jones (2014)	USA	471	471 (100)	Cross-section	Good	39	53	47		Homeless	Valid definition	One question for unmet need
Fekadu et al. (2014)	Ethiopia	217	217 (100)	Cross-section	Good	32.6	90	10		Homeless	Valid definition	CANSAS ^{ab}
Currie et al. (2014)	Canada	497	497 (100)	Cross-section	Good	41	73	27		Homeless	Valid definition	One question for unmet need

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate ^a %)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Kertesz et al. (2014)	UK	266	200 (75.2)	Cross-section	Good	45	60	40		Homeless	Valid definition	One question for unmet need
Heaton et al. (2013)	USA	19,368	19,368 (100)	Cohort	Good	47.6	49	51		MD ^b	NR ^e	One question for unmet need
Vazan et al. (2013)	USA	269	269 (100)	Cross-section	Good	24	88	12		SUD ^a	DSM-IV ^c	One question for unmet need
Golub et al. (2013)	USA	118,625	118,625 (100)	Cohort	Very good	27.4	50	50		SUD ^a	DSM-IV ^c	One question for unmet need
Chen et al. (2013)	USA	32,916	32,916 (100)	Cohort	Very good	NR	61	39		SUD ^a	DSM-IV ^c	One question for unmet need
Powelson et al. (2014)	USA	298	298 (100)	Cross-section	Good	40	0	100		SUD ^a	NR ^e	One question for unmet need
Brubaker et al. (2013)	USA	145	145 (100)	Cross-section	Satisfactory	42.06	67	33		Homeless	NR ^e	One question for unmet need
Argintaru et al. (2013)	Canada	1181	1181 (100)	Cross-section	Good	40	66	33	1	Homeless	Valid definition	One question for unmet need
Palepu et al. (2013)	Canada	1191	1191 (100)	Cross-section	Good	42.2	65	35		Homeless	Valid definition	One question for unmet need
Bruce et al. (2012)	USA	202	165 (82)	Cross-section	Satisfactory	38.5	100	0		MD ^b	ICD-10 ^d	One question for unmet need
Alvarado et al. (2012)	Chile	178	141 (79)	Cross-section	Satisfactory	27.2	68	32		MD ^b	ICD-10 ^d	CANSAS ^{ab} CAN ^{ac}
Harty et al. (2012)	UK	151	151 (100)	Cross-section	Satisfactory	35.24	100	0		MD ^b	DSM-IV ^c	One question for unmet need
Zahid and Ohaeri (2013)	Kuwait	130	130 (100)	Cross-section	Satisfactory	36.8	68	32		MD ^b	ICD-10 ^d	CAN ^{ac}
Harvey et al. (2012)	Australia	1825	1825 (100)	Cross-section	Good	47	60	40		MD ^b	ICD-11 ^r	One question for unmet need
Apantaku-Olajide et al. (2018)	Ireland	191	107 (56)	Cross-section	Satisfactory	32.8	67	33		SUD ^a	NR ^e	CANSAS-P ^{aj}
Stobbe et al. (2015)	Netherlands	70	70 (100)	Cohort	Satisfactory	72.1	44	56		MD ^b	DSM-IV ^c	CANE ^{ac}
Salina et al. (2011)	USA	281	281 (100)	Cross-section	Satisfactory	36.8	0	100		MD ^b	DSM-IV ^c	One question for unmet need
Prins et al. (2011)	Australia	372	372 (100)	Cross-section	Good	41	33	67		MD ^b	DSM-IV ^c	PNCQ ^{aa}
Novak and Kral (2011)	USA	6023	6023 (100)	Cross-section	Good	27	48	52		SUD ^a	DSM-IV ^c	One question for unmet need
Wu et al. (2011)	USA	1816	1816 (100)	Cross-section	Good	NR	51	49		SUD ^a	DSM-IV ^c	One question for unmet need
Tucker et al. (2011)	USA	273	273 (100)	Cross-section	Good	35.94	0	100		Homeless	Valid definition	One question for unmet need

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate%)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Riley et al. (2011)	USA	330	330 (100)	Cross-section	Good	41	81	19		Homeless	Valid definition	One question for unmet need
Baksteev et al. (2010)	Australia	259	150 (57.9)	Cross-section	Satisfactory	30.4	91	9		MD ^b	DSM-IV ^c	CAN ^{ac}
van Beljouw et al. (2010)	Netherlands	743	743 (100)	Cross-section	Good	44.9	29	71		MD ^b	DSM-IV ^c	PNCQ ^{aa}
Baggett et al. (2010)	USA	1017	966 (95)	Cross-section	Good	41	48	52		Homeless	NR ^e	One question for unmet need
Smith et al. (2009)	USA	465	465 (100)	Cohort	Good	NR	0	100		MD ^b	MINI ⁿ	One question for unmet need
Erpeleta et al. (2011)	Spain	151	151 (100)	Cohort	Satisfactory	11	52	48		MD ^b	DSM-IV ^c	One question for unmet need
Kulhara et al. (2010)	India	100	100 (100)	Cross-section	Satisfactory	34.09	61	39		MD ^b	ICD-10 ^d	One question for unmet need
Mojtabai (2009)	USA	6510	6510 (100)	Cross-section	Good	41	30	70		MD ^b	DSM-IV ^c	CAN ^{ac}
Pagura et al. (2009)	Canada	6336	6336 (100)	Cross-section	Satisfactory	40	NR	NR		MD ^b	CIDI ^s	One question for unmet need
Prins et al. (2009)	Netherlands	743	662 (100)	Cross-section	Good	44.9	29	71		MD ^b	DSM-IV ^c	One question for unmet need
Perron et al. (2009)	USA	3887	3887 (100)	Cross-section	Good	44	NR	NR		SUD ^a	DSM-IV ^c	PNCQ ^{aa}
Edlund et al. (2009)	USA	7009	7009 (100)	Cross-section	Good	NR	67.8	32.2		SUD ^a	AUDADIS-IV ^t	One question for unmet need
Grella et al. (2009)	USA	1602	1602 (100)	Cross-section	Very good	39	64	36		SUD ^a	AUDADIS-IV ^t	One question for unmet need
Kertesz et al. (2009)	UK	322	322 (100)	Cohort	Good	39	65	35		Homeless	Valid definition	One question for unmet need
Ojeda and Berg-stresser (2008)	USA	2680	2680 (100)	Cohort	Good	34	NR	NR		MD ^b	DSM-IV ^c	One question for unmet need
Grinshpoon and Ponizovsky (2008)	Israel	52	52 (100)	Cross-section	Satisfactory	38.1	65	35		MD ^b	ICD-10 ^d	CAN ^{ac}
Urbanoski et al. (2008)	Canada	4052	4052 (100)	Cross-section	Good	43	47	53		SUD ^a	DSM-IV ^c	One question for unmet need
Drukker et al. (2008)	Netherlands	1017	1017 (100)	Cross-section	Satisfactory	54	62	38		MD ^b	DSM-IV ^c	CAN ^{ac}
MacPherson et al. (2007)	UK	82	79 (96)	Cross-section	Satisfactory	38	76	24		MD ^b	NR ^e	CANSAS ^{ab}
Salize et al. (1999)	Germany	66	66 (100)	Cross-section	Satisfactory	35	61	39		MD ^b	ICD-10 ^d	NCQ ^{ak}
Goossens et al. (2007)	Netherlands	157	157 (100)	Cross-section	Satisfactory	47.24	35	65		MD ^b	DSM-IV ^c	NCQ ^{ak}
Urbanoski et al. (2007)	Canada	36,984	36,984 (100)	Cross-section	Very good	43.7	49	51		SUD ^a	DSM-IV ^c	One question for unmet need

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate%)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Hayward et al. (2006)	UK	153	153 (100)	Cross-section	Satisfactory	39.1	61	39	MD ^b	MD ^b	SCID-IV ^j	CANSAS ^{ab}
Goldstein et al. (2006)	USA	295	208 (70)	Cross-section	Satisfactory	11	48	52	MD ^b	MD ^b	SADS-LA ^u	One question for unmet need
Edlund et al. (2006)	USA	14,985	9585 (64)	Cross-section	Good	NR	NR	NR	MD ^b	MD ^b	CIDI ^s	One question for unmet need
Cleary et al. (2006)	Australia	407	407 (100)	Cross-section	Satisfactory	39.5	64	36	MD ^b	MD ^b	NR ^e	CANSAS ^{ab}
Pringle et al. (2006)	USA	1709	1709 (100)	Cohort	Satisfactory	34	63	37	SUD ^a	SUD ^a	NR ^e	One question for unmet need
Tommasello et al. (2006)	USA	110	110 (100)	Cross-section	Good	39.73	75	25	Homeless	Homeless	NR ^e	One question for unmet need
Harris and Edlund (2005)	USA	18,849	18,849 (100)	Cohort	Good	41	NR	NR	MD ^b	MD ^b	DSM-IV ^c	One question for unmet need
Craske et al. (2005)	USA	231	231 (100)	Cross-section	Good	41.1	33	67	MD ^b	MD ^b	DSM-IV ^c	One question for unmet need
Starkes et al. (2005)	Canada	17,836	17,836 (100)	Cohort	Good	32	51	49	MD ^b	MD ^b	CIDI ^s	ABMHCU ^{al}
Anderson and Gittler (2005)	USA	177	177 (100)	Cross-section	Satisfactory	15.5	66	34	MD ^b	MD ^b	DSM-IV ^c	CANS ^{an}
Tidemalm et al. (2005)	Sweden	12,247	12,247 (100)	Cohort	Good	46	48	52	MD ^b	MD ^b	ICD-9 ^w	One question for unmet need
Young et al. (2005)	USA	294	294 (100)	Cross-section	Satisfactory	40.8	70	30	MD ^b	MD ^b	NR ^e	One question for unmet need
Rockett et al. (2005)	USA	1890	1073 (57)	Cross-section	Good	34	39	61	SUD ^a	SUD ^a	DSM-IV ^c	One question for unmet need
Mojtabaei (2005)	USA	5568	5568 (100)	Cross-section	Good	22	62	38	SUD ^a	SUD ^a	DSM-IV ^c	One question for unmet need
Shepard et al. (2005)	USA	7250	4640 (64)	Cross-section	Good	44.3	42	58	SUD ^a	SUD ^a	DSM-IV ^c	One question for unmet need
Desai et al. (2005)	USA	7530	7213 (96)	Cohort	Good	NR	62	38	Homeless	Homeless	Valid definition	One question for unmet need
Field et al. (2005)	UK	138	138 (100)	Cross-section	Satisfactory	79.2	37	63	Homeless	Homeless	NR ^e	CANE ^{ac}
Arangua et al. (2005)	USA	974	974 (100)	Cross-section	Good	32.9	0	100	Homeless	Homeless	NR ^e	One question for unmet need
Kallert et al. (2004)	Germany	115	115 (100)	Cohort	Satisfactory	42	53	47	MD ^b	MD ^b	ICD-10 ^d	NCQ ^{ak}
Ochoa et al. (2005)	Spain	231	194 (84)	Cross-section	Good	39	64	36	MD ^b	MD ^b	DSM-IV ^c	CAN ^{ac}
Freeman et al. (2004)	Australia	159	159 (100)	Cross-section	Satisfactory	43	66	33	MD ^b	MD ^b	NR ^e	CAN ^{ac}
Evans et al. (2004)	USA	65	65 (100)	Cross-section	Satisfactory	42	63	37	MD ^b	MD ^b	CIDI ^s	ISRSQ ^{an}
Hancock et al. (2003)	UK	101	101 (100)	Cross-section	Satisfactory	73.8	52	48	MD ^b	MD ^b	DSM-IV ^c	CANE ^{ac}

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate%)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Ramana et al. (2003)	UK	102	102 (100)	Cross-section	Satisfactory	40	32	68	MD ^b	MD ^b	RDC ^v	NFCAS ^{ag}
Ott et al. (2003)	USA	114	114 (100)	Cross-section	Satisfactory	10.5	47	53	MD ^b	MD ^b	DSM-IV ^e	One question for unmet need
Ochoa et al. (2003)	Spain	231	231 (100)	Cross-section	Satisfactory	39	64	36	MD ^b	MD ^b	DSM-IV ^e	CAN ^{ac}
Macpherson et al. (2003)	UK	403	225 (47.5)	Cross-section	Satisfactory	NR	58	42	MD ^b	MD ^b	NR ^e	CANSAS ^{ab}
Harty et al. (2003)	UK	132	126 (95.45)	Cross-section	Satisfactory	31.2	100	0	MD ^b	MD ^b	ICD-10 ^d	CAN ^{ac}
Rockett et al. (2003)	USA	1890	1502 (79.5)	Cross-section	Good	31	56	44	SUD ^a	SUD ^a	DSM-IV ^e	One question for unmet need
Lewis et al. (2003)	USA	974	974 (100)	Cross-section	Good	30	0	100	Homeless	Homeless	Valid definition	One question for unmet need
Heslin et al. (2003)	USA	974	974 (100)	Cross-section	Good	33	0	100	Homeless	Homeless	NR ^e	One question for unmet need
Mojtabaei et al. (2002)	USA	1792	1792 (100)	Cross-section	Good	34	46	54	MD ^b	MD ^b	DSM-III ^x	One question for unmet need
Stein and Friedmann (2002)	USA	563	563 (100)	Cross-section	Good	41	56	34	SUD ^a	SUD ^a	DSM-IV ^e	One question for unmet need
Metsch et al. (2002)	USA	594	594 (100)	Cross-section	Good	37.3	53	47	SUD ^a	SUD ^a	NR ^e	One question for unmet need
Cornelius et al. (2001)	USA	196	196 (100)	Cross-section	Good	16	100	0	MD	MD	DSM-III ^x	One question for unmet need
Parslow et al. (2001)	Australia	13,600	10,641 (100)	Cross-section	Satisfactory	NR	NR	NR	MD ^b	MD ^b	CIDI ^s	One question for unmet need
McCrone et al. (2001)	Multi countries	404	404 (100)	Cross-section	Satisfactory	41.8	57	43	MD ^b	MD ^b	ICD-10 ^d	CAN-EU ^{ao}
Meadows et al. (2002)	Australia	13,642	10,641 (78)	Cross-section	Satisfactory	NR	NR	NR	MD ^b	MD ^b	ICD-10 ^d	One question for unmet need
Wells et al. (2001)	USA	9019	9019 (100)	Cohort	Good	44	47	53	SUD ^a	SUD ^a	CIDI ^s	One question for unmet need
Etheridge et al. (2001)	USA	1780	1780 (100)	Cross-section	Good	15	75	25	SUD ^a	SUD ^a	ASI ^y	One question for unmet need
Weaver et al. (2001)	UK	368	368 (100)	Cross-section	Satisfactory	42	62	38	SUD ^a	SUD ^a	DSM-IV ^e	One question for unmet need
Salize et al. (2001)	Germany	102	102 (100)	Cross-section	Satisfactory	40	86	14	Homeless	Homeless	Valid definition	One question for unmet need
Skinner et al. (1999)	USA	576	576 (100)	Cross-section	Satisfactory	42	40	60	MD ^b	MD ^b	NR ^e	One question for unmet need
Hardie et al. (1998)	UK	277	277 (100)	Cross-section	Satisfactory	31.9	100	0	MD ^b	MD ^b	ICD-10 ^d	One question for unmet need
Slade et al. (1998)	UK	137	137 (100)	Cross-section	Satisfactory	43	47	63	MD ^b	MD ^b	ICD-10 ^d	CAN ^{ac}

Table 1 (continued)

Authors (year)	Country	Sample at baseline	Final sample size (response rate%)	Design	Quality assessment	Mean age (yrs)	N male %	N female %	N trans/other	Participants	Diagnosis criteria used	Unmet need and/or barriers to care measure
Wiersma et al. (1998)	Netherlands	82	50 (60.9)	Cohort	Satisfactory	40.2	54	48	MD ^b	MD ^b	ICD-9 ^w	NFCAS ^{ag} and CAN ^{ac}
Leese et al. (2018)	UK	131	131 (100)	Cross-section	Satisfactory	41.3	67	33	MD ^b	MD ^b	NR ^e	CAN ^{ac}
Thompson et al. (1998)	USA	111	111 (100)	Cross-section	Satisfactory	35	0	100	SUD ^a	SUD ^a	NR ^e	One question for unmet need
Abdul-Hamid (1997)	UK	110	101 (100)	Cross-section	Satisfactory	65	100	0	Homeless	Homeless	NR ^e	One question for unmet need
Wojtusik and White (1998)	USA	128	128 (100)	Cross-section	Satisfactory	39.5	88	12	Homeless	Homeless	Valid definition	One question for unmet need
Fisher et al. (1997)	USA	1285	1285 (100)	Cross-section	Satisfactory	12.9	47	53	MD ^b	MD ^b	DSM-III ^x	DISC-2.3 ^{ap}
Robertson et al. (1997)	USA	564	564 (100)	Cross-section	Satisfactory	37	68	32	Homeless	Homeless	NR ^e	One question for unmet need
Johnson and Barrett (1995)	USA	481	481 (100)	Cross-section	Satisfactory	39.2	62	38	SUD ^a	SUD ^a	DAST ^z	One question for unmet need
Haaster et al. (1994)	Canada	98	98 (100)	Cross-section	Satisfactory	39.9	48	52	MD ^b	MD ^b	ICD-9 ^w	One question for unmet need
Hogg and Marshall (2009)	UK	46	46 (100)	Cross-section	Satisfactory	48.1	NR	NR	Homeless	Homeless	NR ^e	One question for unmet need
Joe et al. (1991)	USA	590	590 (100)	Cross-section	Satisfactory	NR	NR	NR	SUD ^a	SUD ^a	NR ^e	One question for unmet need
Brewin et al. (2009)	UK	145	145 (100)	Cross-section	Satisfactory	NR	NR	NR	MD ^b	MD ^b	NR ^e	NFCAS ^{ag}

^a Substance use disorders; ^b Mental disorders; ^c Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition; ^d International Classification of Diseases, Tenth Revision; ^e Not reported; ^f The Substance Use Stigma Mechanisms Scale; ^g Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; ^h The Neuropsychiatric Interview for Children and Adolescent; ⁱ The Dutch version of the Montgomery Åsberg Depression Rating Scale; ^j The Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders-IV-Test Revision; ^k Alcohol Use Disorders Identification Test; ^l The short German-language version of the Geriatric Depression Scale; ^m Positive And Negative Syndrome Scale; ⁿ The Mini International Neuropsychiatric Interview; ^o Drug Use Disorders Identification Test; ^p Hospital Anxiety and Depression Scale; ^q A modified Revised Risk Behavior Assessment; ^r International Classification of Diseases, Eleventh Revision; ^s The Composite International Diagnostic Interview; ^t Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version; ^u Schedule for Affective Disorders and Schizophrenia-Lifetime Version for Anxiety Disorders; ^v Research Diagnostic Criteria; ^w International Classification of Diseases, Ninth Revision; ^x The Diagnostic and Statistical Manual of Mental Disorders, Third Edition; ^y Addiction Severity Index; ^z Drug Abuse Screening Test; ^{aa} The Perceived Need for Care Questionnaire; ^{ab} The Camberwell Assessment of Need Short Appraisal Schedule; ^{ac} The Camberwell Assessment of Needs; ^{ad} The General Health Questionnaire-12; ^{ae} The Camberwell Assessment of Need for the Elderly; ^{af} Impuls—Netherlands Center for Social Care Research, with response categories based on the Short Form Quality of Life and Care questionnaire; ^{ag} The MRC Needs for Care Assessment; ^{ah} The Ontario Common Assessment of Need; ^{ai} Cost/affordability, stigma, minimization of symptoms or low perceived need, low perceived effectiveness of treatment, and structural barriers; ^{aj} The Camberwell Assessment of Need Short Appraisal Schedule, patient-rated version; ^{ak} The Need for Care Questionnaire; ^{al} Andersen's Behavioural Model of Health Care Use; ^{am} The Child and Adolescent Needs and Strengths; ^{an} The Integrated Service Referral Screening Questionnaire; ^{ao} The Camberwell Assessment of Need — European Version; ^{ap} The NIMH Diagnostic Interview Schedule for Children Version 2.3.

Table 2 Pooled prevalence and subgroup analyses of unmet needs for care by type of participants and age of participants among individuals with mental health issues over past 12 months

Pooled prevalence (95% CI)	Type of unmet needs for care	Number of studies	N	Pooled prevalence (95% CI)	Homeless individuals	Mental disor- ders patients	Substance use disorders patients	Emerging adulthood	Established adulthood	Midlife	Older adulthood
Past twelve months pooled prevalence (95% CI)	Mental health needs	88	873,918	34% (29–38%)	36% (27–45%)	30% (25–36%)	38% (27–50%)	33% (24–41%)	37% (30–43%)	27% (14–39%)	NA*
	Harm reduction needs	81	27,489,096	25% (20–31%)	31% (17–45%)	20% (12–27%)	26% (19–33%)	34% (16–52%)	28% (21–35%)	11% (8–15%)	28% (15–41%)
	Physical health needs	78	46,246	33% (28–39%)	42% (31–52%)	22% (16–27%)	50% (37–63%)	39% (12–67%)	31% (25–38%)	46% (24–67%)	32% (13–51%)
	Dental care needs	15	32,041	41% (30–52%)	47% (39–56%)	NA*	34% (4–65%)	NA*	49% (36–63%)	19% (0–42%)	NA*
	Psychological distress	35	9699	31% (24–38%)	NA*	31% (24–38%)	NA*	NA*	35% (26–44%)	32% (10–53%)	23% (9–36%)
	Psychotic symptoms	39	10,067	24% (17–31%)	NA*	24% (17–31%)	NA*	7% (3–11%)	28% (19–38%)	26% (10–42%)	12% (0–24%)
	Information	45	38,078	27% (21–33%)	14% (6–22%)	27% (21–34%)	33% (20–46%)	21% (0–43%)	30% (24–36%)	NA*	23% (5–41%)
	Counselling	14	21,471	40% (28–52%)	36% (24–48%)	37% (16–58%)	50% (19–81%)	NA*	NA*	NA*	NA*
	Skills training	15	24,435	32% (20–44%)	39% (16–63%)	19% (11–27%)	50% (13–87%)	NA*	39% (22–56%)	38% (11–65%)	20% (0–47%)
	Benefit	31	8672	26% (17–34%)	NA*	26% (17–34%)	NA*	NA*	30% (20–40%)	13% (3–24%)	22% (0–50%)
	Child care	19	3691	8% (5–11%)	NA*	8% (5–11%)	NA*	NA*	NA*	NA*	NA*
	Education	34	28,147	20% (15–26%)	16% (9–23%)	20% (14–27%)	28% (14–43%)	NA*	18% (12–24%)	17% (9–25%)	NA*
	Food	45	20,013	21% (15–26%)	44% (27–61%)	15% (10–19%)	25% (12–39%)	7% (3–10%)	23% (15–30%)	32% (14–50%)	12% (2–23%)
	Housing	55	39,046	24% (18–30%)	40% (22–59%)	18% (13–23%)	32% (2–62%)	4% (2–7%)	30% (21–38%)	12% (7–17%)	14% (4–23%)
	Intimate relationship	29	5192	27% (20–34%)	NA*	27% (20–34%)	NA*	6% (2–10%)	30% (23–37%)	NA*	24% (3–45%)
	Looking after home	19	7100	16% (9–23%)	NA*	16% (9–23%)	NA*	NA*	NA*	NA*	NA*
	Money	37	7339	23% (16–30%)	NA*	23% (16–30%)	NA*	4% (0–9%)	25% (18–32%)	NA*	25% (1–49%)
	Safety to self	21	5597	15% (11–20%)	NA*	15% (11–20%)	NA*	NA*	NA*	NA*	NA*
	Self-care	35	16,385	15% (10–21%)	28% (0–59%)	13% (9–17%)	NA*	NA*	16% (8–25%)	15% (11–19%)	15% (1–28%)
	Sexual expression	22	3893	19% (13–26%)	NA*	19% (13–26%)	NA*	3% (0–5%)	21% (14–28%)	NA*	NA*
	Social intervention	5	17,616	37% (11–63%)	NA*	6% (0–12%)	57% (48–66%)	NA*	NA*	NA*	NA*
	Social network	37	32,618	32% (25–38%)	NA*	32% (25–38%)	NA*	14% (7–21%)	37% (29–44%)	35% (5–66%)	26% (9–44%)
	Telephone	19	3615	9% (4–15%)	NA*	9% (4–15%)	NA*	NA*	NA*	NA*	NA*
	Work/occupation	5	9584	43% (18–68%)	43% (0–88%)	NA*	44% (37–51%)	NA*	NA*	NA*	NA*

* Not applicable

Table 3 Pooled prevalence and subgroup analyses of barriers to care by type of participants and age of participants among individuals with mental health issues over past 12 months

Pooled prevalence (95% CI)	Type of barriers to care	Number of studies	N	Pooled prevalence (95% CI)	Homeless individuals	Mental disorders patients	Substance use disorders patients	Emerging adulthood	Established adulthood	Midlife	Older adulthood
Past twelve months pooled prevalence (95% CI)	Motivational barriers	40	335,187	38% (31–44%)	25% (11–39%)	36% (25–46%)	44% (35–54%)	44% (30–57%)	35% (27–43%)	26% (0–73%)	NA*
	Structural barriers	46	329,133	37% (31–42%)	36% (26–45%)	34% (23–44%)	40% (31–49%)	37% (25–49%)	35% (29–41%)	51% (2–100%)	NA*
	Financial barriers	41	280,317	31% (25–36%)	30% (16–43%)	30% (20–41%)	32% (25–39%)	36% (25–47%)	32% (25–39%)	10% (9–10%)	NA*
	Stigmatization barriers	32	312,202	25% (20–30%)	13% (10–15%)	23% (17–29%)	28% (20–37%)	29% (21–36%)	23% (16–30%)	15% (0–33%)	NA*

* Not applicable