

## Review

**Cite this article:** Wall K, Penner F, Wallace Goldman L, Shin JY, Novak E, Lowell A, Day M, Papa L, Wright D, Givrad S and Rutherford HJV (2025). Global variation in the assessment of psychological trauma in pregnancy. *Cambridge Prisms: Global Mental Health*, **12**, e10, 1–10 <https://doi.org/10.1017/gmh.2024.152>

Received: 31 August 2024

Revised: 06 December 2024

Accepted: 16 December 2024

### Keywords:

psychological trauma; post-traumatic stress disorder; pregnancy; global trauma; perinatal trauma

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# Global variation in the assessment of psychological trauma in pregnancy

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## Abstract

A history of psychologically traumatic experiences can impact health outcomes for pregnant people and their infants. The perception and prevalence of traumatic experiences during pregnancy may differ by geographical region. To better understand trends in how and what kinds of psychological trauma are assessed globally, we conducted a secondary analysis on a larger systematic review examining psychological trauma measurement in pregnancy. Through a systematic literature review conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines, completed between July 2021 and September 2023 using Ovid MEDLINE, Ovid EMBASE, Scopus, Web of Science, PsycInfo and Cochrane, we identified 576 research studies assessing psychological trauma during pregnancy that were conducted across nine geopolitical regions. Most of these studies took place in North America, followed by sub-Saharan Africa, Europe, Asia, the Middle East or Northern Africa, Oceania, South America, and Central America. The fewest number of studies was conducted across multiple regions. We found that most studies measuring psychological trauma in pregnancy across the nine geopolitical regions assessed interpersonal trauma, and the fewest number of studies assessed healthcare trauma. Moreover, for each type of psychological trauma assessed, the greatest number of studies was conducted in North America. We also found that Central America, Oceania, sub-Saharan Africa, Asia, Middle East or Northern Africa, Europe, and studies conducted across multiple regions had one-third or more studies that only used in-house assessments, rather than previously validated assessments of psychological trauma. The results of this review emphasize the need for regionally specific and culturally appropriate measures of psychological trauma for pregnant people, which prioritize the types of psychological trauma that are most common in a given region. Newly developed measures can be used for screening and treatment of patients using trauma-informed obstetric care.

## Impact statement

This systematic review examines how psychological trauma is measured in pregnant people globally. Here we assess geographical trends in the measurement of childhood abuse, childhood adversity, crime or violence exposure, environmental trauma, general trauma, healthcare trauma, interpersonal trauma, pregnancy-specific psychological trauma, and assessment of post-traumatic stress disorder in pregnant people. The results presented emphasize a need for the development of regionally specific and culturally appropriate measures of psychological trauma for pregnant people. Newly developed measures should prioritize the types of psychological trauma that are most common in the region they are developed and intended for use, ensuring that such measures can be adapted for clinical practice to screen patients to promote trauma-informed obstetric care.

## Introduction

A history of psychologically traumatic exposures can adversely impact health outcomes for pregnant people and their infants. Research conducted across different geographical regions has identified associations between maternal adverse childhood experiences and decreased birth weight (Smith et al., 2016; Ben Salah et al., 2019); interpersonal violence and preterm birth, intrauterine growth restriction and low birth weight (Hill et al., 2016); and poor maternal health (e.g., lack of prenatal care, increased rate of prenatal substance use and other mental health conditions, and insufficient nutrition) (Alhusen et al., 2015). Psychological trauma in the form of pregnancy loss has also been associated with physical (Ausbeck et al., 2020) and mental (Gong et al., 2013;



Chojenta et al., 2014) health implications in subsequent pregnancies. Moreover, a history of psychological trauma can impact maternal mental health throughout the postnatal period (Choi et al., 2017; Guintivano et al., 2018), which may itself influence infant development (Chong et al., 2016; Madigan et al., 2018). Given extant literature evidencing a link between psychological trauma and adverse perinatal outcomes, there is a strong need for trauma-informed care during the perinatal period (Mendez-Figueroa et al., 2013; Gelaye et al., 2017; Racine et al., 2020). Trauma-informed care “bring[s] to the forefront the belief that trauma can pervasively affect an individual’s well-being, including physical and mental health,” and it may involve enhanced trauma awareness and education among providers, improved screening practices that include assessment of trauma, attempts to prevent retraumatization or secondary trauma in healthcare procedures and interactions, and the implementation of or referral to evidence-based behavioral interventions to address trauma symptoms (Center for Substance Abuse Treatment (US), 2014). The importance of the screening and implementation of trauma-informed care during pregnancy has been further exemplified by professional societies providing guidance on obstetric care (American College of Obstetricians and Gynecologists, 2021).

Psychological trauma, as defined by the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* is the exposure to actual or threatened death, serious injury, or sexual violence (American Psychological Association, 2013). This concise definition encompasses a vast array of experiences, including but not limited to exposure to war, crime, violence, childhood abuse, neglect, maltreatment, adversity, natural disasters, and physical, psychological, and sexual abuse. Worldwide, women are at higher risk for experiencing psychological trauma, particularly in the forms of intimate partner violence (IPV) and sexual violence: the World Health Organization (WHO) estimates that approximately one in three women experience IPV or sexual violence in their lifetime (WHO, 2024b). Further, it is estimated that 3%–9% of women experience physical abuse during pregnancy (Martin et al., 2001; Saltzman et al., 2003). Notably, prevalence rates for exposure to psychologically traumatic experiences may differ by geographical region. For example, individuals living in countries with a recent history of war, such as Israel and Ukraine, are far more likely to experience traumatic exposure to war than individuals in Western Europe and the United States (Pandey et al., 2023). Moreover, a recent review of global rates of IPV among women aged 15–49 years suggests that prevalence rates vary by region: for example, 32% of women in sub-Saharan Africa report experiencing IPV, as compared with 3% of women in Australasia (Sardinha et al., 2022). Another study surveying over 24,000 women found that lifetime physical or sexual partner violence ranged from 71% in Ethiopia to 15% in Japan (Garcia-Moreno et al., 2006). Additional work has found that the rates of IPV are rising in some regions and decreasing in others (Ma et al., 2023), further highlighting global variability in psychological trauma exposure rates.

Beyond variability in prevalence rates, there is also variability in how psychologically traumatic exposures are perceived across cultures. For example, while one culture or region might expect a man to be dominant and controlling of all decisions for the family (Ali et al., 2014), another culture might view similar behaviors and dynamics as oppressive or abusive (Ubillos-Landa et al., 2020). Furthermore, the response and receptivity to women reporting psychologically traumatic exposure, particularly IPV, varies across cultures. For instance, marital rape is legal in 36 countries (Banerjee and Rao, 2022), and in 20 countries, rape convictions can be overturned if a male perpetrator were to marry his victim (Toniyo and Manoj, 2021). In contrast, rape allegations can lead to

substantial sentencing in other parts of the world irrespective of the relationship between the perpetrator and victim (“What Is Sexual Assault?” n.d.; “Sexual Abuse,” 2019). Montalvo-Liendo conducted a review of factors contributing to the disclosure of IPV cross-culturally in which perceptions of IPV across numerous countries and cultural groups were examined. While fear was a common factor as a reason to not disclose IPV, there were variations in other factors reported by women. For instance, studies on women from South Asia and Bangladesh found that family honor contributed to not disclosing IPV. Furthermore, among women from Jordan, religious beliefs prevented IPV disclosure. Finally, a study of African American women identified that self-blame for putting another black man in prison influenced IPV reporting. The nuances in the perception of IPV and factors preventing reporting highlight the variability in how women across the globe perceive IPV (Montalvo-Liendo, 2009). Such variability in how IPV behaviors are perceived across cultures may downplay the significance of traumatic experiences, including underreporting or failing to screen for psychological trauma. However, these varied perceptions and beliefs of IPV may also worsen traumatic experiences as violence is often worse when lived in isolation, without social support, and when the healthcare system is not able to respond. Specifically, IPV is often worse in countries with weak or no legislation against sexual assault and harassment (UN Women, n.d.). Furthermore, in many countries, people may have limited or no access to clinical services and/or trauma-informed care, rendering the perception of psychological trauma assessments as having little utility. Similarly, due to varying perceptions of what constitutes a traumatic exposure, researchers in different locations may be examining the same kind of psychological trauma but probing different types of experiences. For example, assessments of IPV likely vary by region due to differences in beliefs about what constitutes IPV – one place may only assess physical violence between partners, while another assesses physical, sexual, mental, emotional, and financial abuse.

Several other factors may affect whether and how researchers and clinicians measure psychological trauma in pregnant people across different cultures. First, access to prenatal care varies globally: previous reports on antenatal care in low- and middle-income countries found that only 50% of pregnant people access sufficient prenatal care (Finlayson and Downe, 2013), and this number is as low as 10% in some regions (Benova et al., 2018). Pregnant people in these low- and middle-income countries report inadequate use of prenatal care due to feeling physiologically healthy, lack of access to resources due to poverty, and report feelings of the antenatal clinic and staff “having not gotten it right the first time” (e.g., poor staff attitude, lack of access to medicine, and inflexibility in appointments) (Finlayson and Downe, 2013). Given the low rates of engagement in prenatal healthcare observed in some regions, it is likely that the assessment of psychological trauma and utilization of trauma-informed care during the prenatal period are even lower. Of note, there have been substantial improvements in prenatal care among low- and middle-income countries. For example, a study examining routine antenatal care in 10 low- and middle-income countries found that the majority of people seeking antenatal care received at least one visit (Benova et al., 2018). Despite this improvement in antenatal care, we believe it is unlikely that pregnant people receiving only one antenatal visit are screened for psychological trauma. This may be due to the maternal and fetal health screening and treatment taking priority over trauma assessment during the antenatal care visit due to the limited time.

Second, government agencies and funding bodies may dictate the kinds of research studies that receive financial support;

therefore, the agenda of these institutions may sway the kinds of psychological trauma studies that are carried out. In regions where specific types of psychological trauma are not considered to be traumatic, or are normalized to an extent, research may be lacking. Relatedly, more research, in general, is conducted in Western, educated, industrialized, rich and democratic (WEIRD) countries (Henrich et al., 2010); therefore, research assessing psychological trauma in pregnancy may be more likely to occur in these WEIRD countries.

Third, although many measures of psychological trauma have been validated for use in pregnant people, it is important to consider where each measure was developed as cultural influences may make measures less reliable and valid in other regions, and the translation of measures to other languages may alter the meaning of questions or items.

Fourth, the use and perceived importance of trauma-informed care may also vary by region, and this would affect whether psychological trauma is routinely assessed. Indeed, trauma-informed principles were developed in Western settings; therefore, such practices may need adaptation and contextualization before being applied in other settings (e.g., adjusting question structure to probe psychologically traumatic experiences common among the culture for which it will be used) (Powell et al., 2023). Moreover, in some cultures, the physician–patient relationship is paternalistic in which the physician has total control of patient healthcare decisions and procedures. In the context of pregnancy and delivery, a physician may make decisions without collaboration with the patient. While this might be the norm in some cultures, it may be perceived as a loss of control and lead to a grief and trauma response in other cultures. In contrast, some cultures value a bidirectional physician–patient relationship. The treatment of one’s health in a collaborative relationship might be more adaptable to trauma-informed care.

Given the potential for significant variability in the perception of psychological trauma across the globe, the purpose of this paper was to examine the assessment of psychological trauma across global regions through a secondary analysis of a larger systematic review examining psychological trauma measurement in pregnancy (Rutherford et al., n.d.). We hypothesized that we would be able to identify patterns of psychological trauma assessment across regions reflective of the types of trauma most common among each region. Understanding how the assessment of psychological trauma during pregnancy varies across different cultures may help to improve screening procedures and identify measurement gaps or where there is need for more culturally sensitive or appropriate screening, with the ultimate goal of enhancing trauma-informed care and leading to more positive outcomes for pregnant people and their children.

## Methods

### Search strategy

This is a secondary analysis of a larger systematic review (Rutherford et al., n.d.). The larger systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Liberati et al., 2009), and the protocol was registered in the International Prospective Register of Systematic Reviews (CRD42022384173). The purpose of the larger systematic review was to identify research studies that included any assessment of psychological trauma in pregnant people. A medical librarian conducted comprehensive systematic searches in Ovid MEDLINE, Ovid EMBASE, Scopus, Web of Science, PsycInfo, and Cochrane to

find studies examining measurement of psychological trauma in pregnancy. The initial search was conducted in July 2021, and updated searches and reference searching/snow-balling were performed in September 2023. Full details regarding the eligibility criteria and search strategy are available on the Open Science Framework (<https://osf.io/356av/>).

### Study selection

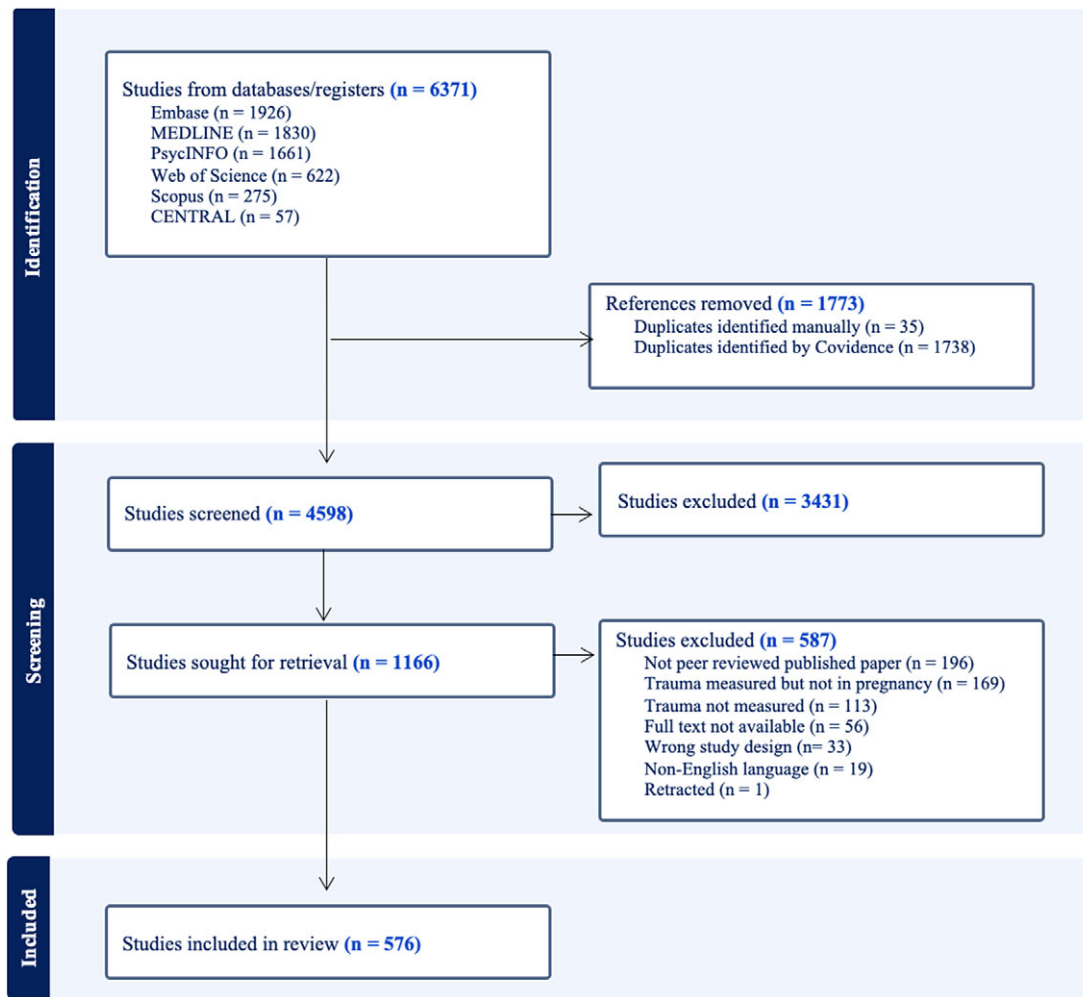
For the review process, each abstract was screened by two independent researchers. When screening conflicts arose, resolution was determined through consensus. The full texts of the abstracts deemed relevant were then reviewed for inclusion by two independent researchers, with conflicts again resolved through group consensus (Figure 1). Screening was conducted using Covidence (“Covidence Systematic Review Software [Internet],” n.d.). A total of 6,371 relevant studies were identified, of which 576 met the inclusion criteria.

### Data analysis

Data were extracted from articles included in the review. Data from each included article were charted in a table by one independent reviewer and checked by a second reviewer. Following data extraction, data were cleaned for uniformity and ease of interpretation. For the current secondary analysis, the following data items were considered and analyzed: country and region of the study, types of psychological trauma assessed including post-traumatic stress disorder (PTSD) diagnosis, whether measures used were previously published or “in-house” measures, and timing of trauma assessment in pregnancy.

In regard to region, the country of each study was recorded and then coded by one reviewer and checked by a second reviewer as part of a larger geopolitical region. The geopolitical regions are Asia, Central America, Europe, Middle East or Northern Africa, North America, Oceania, South America, and sub-Saharan Africa. We also use a ninth category for studies conducted with samples recruited across multiple regions. We chose to categorize studies belonging to geopolitical regions rather than focus on specific countries or continents to aid with data reduction and interpretations (data were collected from 76 countries) and to recognize the substantial cultural differences across large countries. Countries in the Asia category were Bangladesh, China, India, Indonesia, Japan, Korea, Malaysia, Myanmar, Nepal, Pakistan, South Korea, Sri Lanka, Taiwan, Thailand, Timor Leste, and Vietnam. The only country in the Central America category was Guatemala. Countries in Europe were Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom. Countries in the Middle East or Northern Africa category were Afghanistan, Egypt, Israel, Iran, Jordan, Kuwait, Saudi Arabia, Tunisia, and Turkey. Countries in the North America category were Canada, Jamaica, Mexico, and the United States. Countries in the Oceania category were Australia, New Zealand, and Vanuatu. Countries in South America were Brazil, Bolivia, Chile, Colombia, Ecuador, Guyana, and Peru. Finally, countries in the sub-Saharan Africa category were Cameroon, the Democratic Republic of Congo, Ethiopia, Kenya, Liberia, Malawi, Nigeria, South Africa, Tanzania, The Gambia, Uganda, and Zimbabwe.

To understand the types of psychological trauma assessed by each study and categorize each measure as previously published assessments (i.e., interviews or questionnaires) or “in-house” (e.g., were created for that particular study or yes/no questions on single



**Figure 1.** Preferred Reporting Items for Systematic Reviews and Meta-Analyses flowchart of the larger systematic literature review.

items of trauma history), we examined each trauma measure from every paper.

For each psychological trauma measure, each question or item was examined to determine the type of psychological trauma being probed. The trauma categories used were childhood abuse (e.g., physical, sexual, and emotional abuse), childhood adversity (e.g., early life adversity or loss, and household dysfunction), crime or violence exposure (e.g., witnessing violent events or exposure to crime), environmental trauma (e.g., enduring a natural disaster), general trauma (e.g., survey of general trauma history and serious injury), healthcare trauma (e.g., experiencing a traumatic event in a healthcare setting), interpersonal trauma (e.g., physical, sexual, psychological, verbal, economic, and emotional intimate partner or domestic violence, family violence, military sexual violence, loss of a loved one, perceived racism, history of sexual trauma, and interpersonal conflict), and pregnancy-specific psychological trauma (e.g., history of pregnancy loss, stillbirth, miscarriage, spontaneous or elective abortion, infertility, emergency cesarean section, pregnancy or obstetric complications, diagnosis of fetal anomaly, low birth weight, premature birth, and fear of childbirth). We also coded whether each study included an assessment of PTSD symptoms.

## Results

A total of 576 studies assessing psychological trauma in pregnancy were identified. We then examined the number of papers in each

geopolitical region. The majority of studies were conducted in North America, followed by sub-Saharan Africa, Europe, Asia, the Middle East or Northern Africa, Oceania, South America, Central America, and multiple regions (Figure 2).

With respect to the types of psychological trauma measured, studies ranged from assessing one to seven categories of trauma. Interpersonal trauma was assessed by the greatest number of studies, followed by child abuse and general trauma history. Healthcare trauma was assessed in the smallest number of studies. To understand the geopolitical representation in the assessment of each type of psychological trauma, we examined the spread of regions conducting assessments by trauma type. The majority of studies that assessed child abuse, childhood adversity, crime/violence, environmental trauma, general trauma, interpersonal trauma, pregnancy-specific psychological trauma, and PTSD symptoms assessment were conducted in North America. The majority of studies that assessed healthcare trauma were conducted in Europe, and they all used the NorVold Abuse Questionnaire (NorAQ). Central America had the smallest number of studies for all psychological trauma types with the exception of interpersonal trauma in which multiple regions were the smallest representation (Figure 3).

We next examined the types of psychological trauma assessed in each geopolitical region. In Asia, interpersonal trauma was the most frequently assessed followed by childhood abuse, general trauma, pregnancy-specific psychological trauma, environmental trauma, crime/violence, and childhood adversity. In Europe, interpersonal



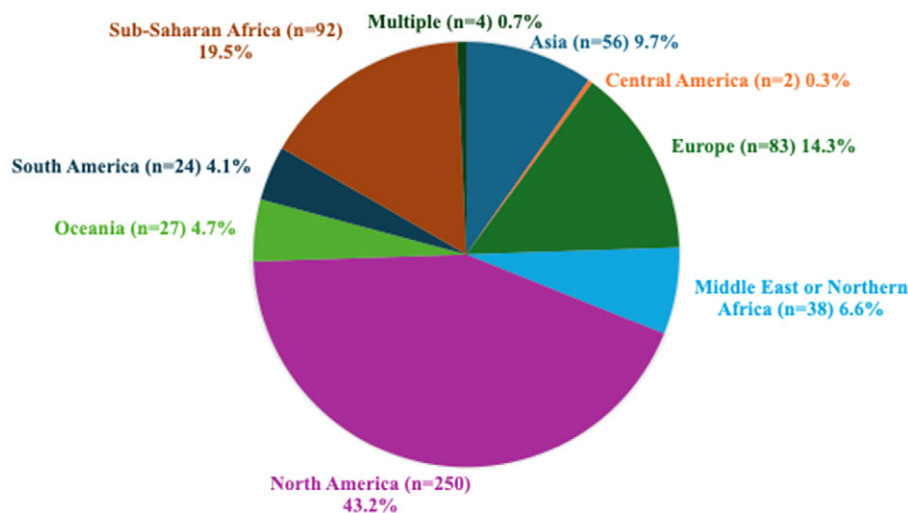


Figure 2. Percentage of studies on the assessment of psychological trauma in pregnancy conducted in each geopolitical region.

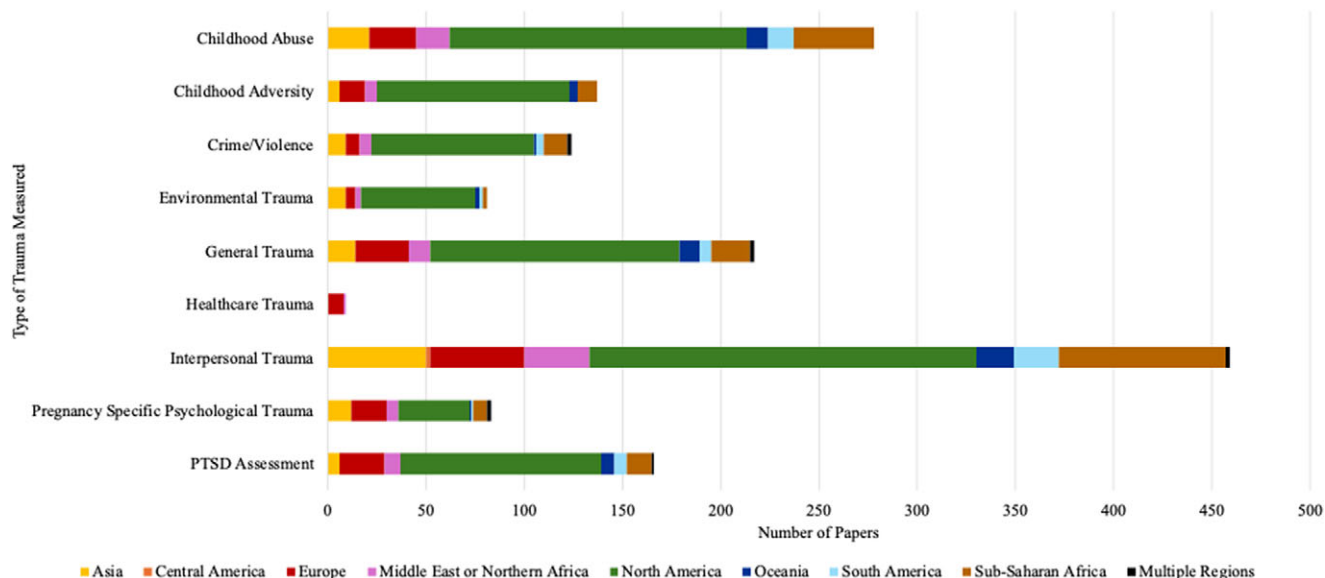


Figure 3. Geopolitical representation of the assessment of each type of psychological trauma.

trauma was the most frequently assessed followed by general trauma, childhood abuse, pregnancy-specific psychological trauma, childhood adversity, healthcare trauma, PTSD assessment alone, crime/violence exposure, and environmental trauma. In Central America, all studies examined only interpersonal trauma. In the Middle East and Northern Africa, interpersonal trauma was the most frequently assessed, followed by childhood abuse, general trauma, childhood adversity, crime/violence exposure, pregnancy-specific psychological trauma, environmental trauma, and healthcare trauma. In North America, the spread of frequency of assessment was more varied with interpersonal trauma being assessed most frequently followed by childhood abuse and general trauma, then childhood adversity, crime/violence exposure, environmental trauma, and pregnancy-specific psychological trauma. In Oceania, interpersonal trauma was the most assessed type of trauma followed by childhood abuse, general trauma, childhood adversity, environmental trauma, crime/violence exposure, and pregnancy-

specific psychological trauma. In South America, nearly half of the studies assessed interpersonal trauma, and more than a quarter assessed childhood abuse, followed by general trauma, crime/violence exposure, environmental trauma, and pregnancy-specific psychological trauma. In sub-Saharan Africa, almost half of the studies assessed interpersonal trauma and nearly a quarter assessed childhood abuse followed by general trauma, childhood adversity, crime/violence exposure, pregnancy-specific psychological trauma, and environmental trauma. Lastly, in the few studies assessing psychological trauma and pregnancy across multiple regions, interpersonal trauma, pregnancy-specific psychological trauma, crime/violence exposure, and general trauma were each assessed in 25% of the studies. In sum, interpersonal trauma was assessed most frequently in all geopolitical regions, ranging from 25% to 100% of studies within a given region, childhood abuse was the second most frequent in seven of the nine regions, and healthcare trauma was assessed the least frequently (Figure 4).

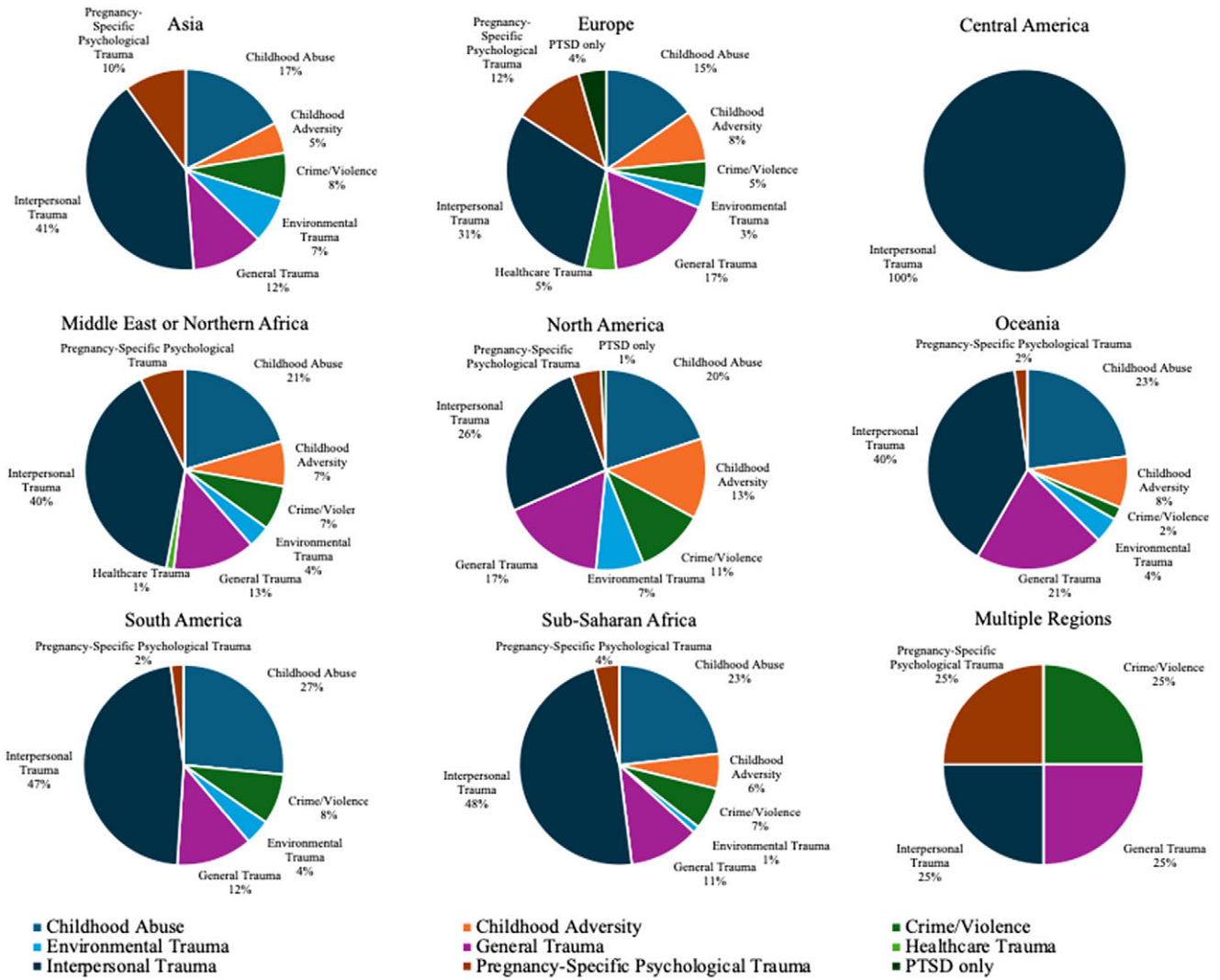


Figure 4. Type of psychological trauma by geopolitical region.

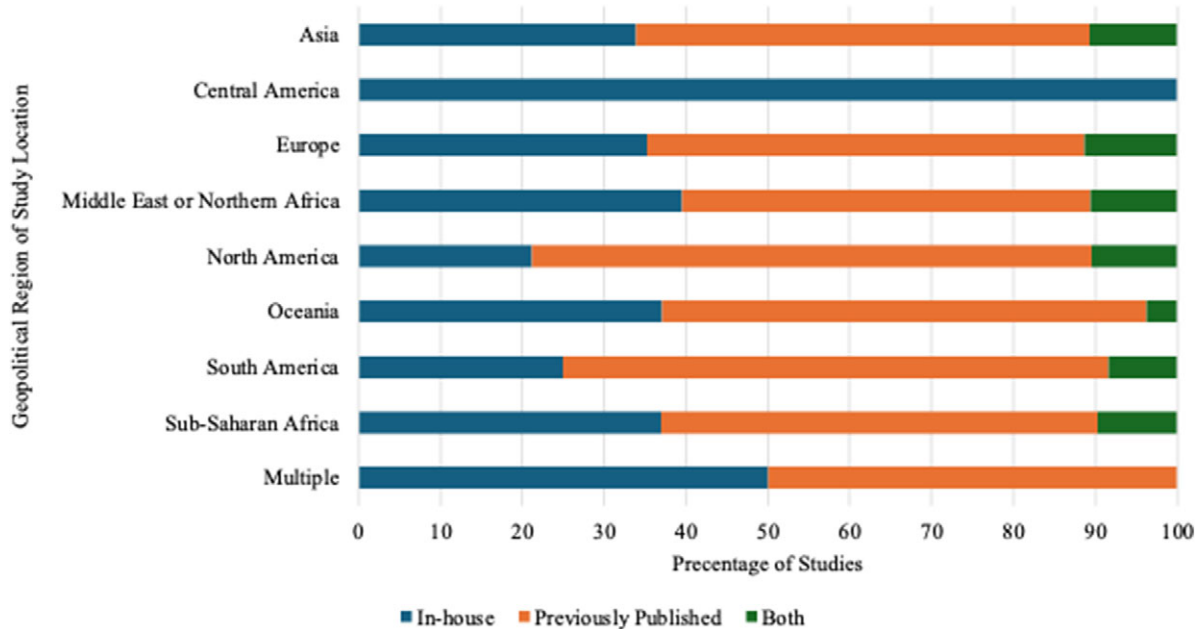


Figure 5. Format of psychological trauma measure by geopolitical region.

We next sought to understand regional differences in the varying assessments of psychological trauma and those categorized as “in-house” (i.e., created for the study). The representation of the percentage of studies using “in-house” measures alone varied. Studies conducted in Central America had the highest percentage of studies using “in-house” measures alone at 100%. This was followed by studies that were conducted across multiple regions (50.0%), Middle East or Northern Africa (39.5%), Oceania (37.0%), sub-Saharan Africa (37.0%), Europe (35.2%), Asia (33.9%), South America (25.0%), and North America (21.2%) - which had the lowest percentage of “in-house” measures (Figure 5). The full list of the 102 validated psychological trauma measures is provided in Supplementary Table 2.

We also examined when psychological trauma was measured in pregnancy by region; however, no patterns emerged as most studies across regions assessed psychological trauma at any point in pregnancy or were not specific in the time of assessment during pregnancy (Supplementary Table 1).

## Discussion

Understanding the psychologically traumatic experiences of pregnant people is critical to reducing the adverse outcomes associated with trauma exposure (Alhusen et al., 2015; Hill et al., 2016; Smith et al., 2016; Ben Salah et al., 2019) and advancing trauma-informed prenatal care practices (Gelaye et al., 2017; Racine et al., 2020). Psychological trauma perception and prevalence vary by country and culture, which carries over into differences in the assessment and treatment of psychological trauma as well as research focused on psychological trauma. Here, we sought to examine geopolitical trends in the assessment of psychologically traumatic exposures in pregnant people globally in previously published research, with a focus on representation (number of studies) across geopolitical regions, types of psychological trauma assessed, and format of measures used. We conducted this study through a secondary analysis of a larger systematic review of studies that assessed psychological trauma during pregnancy (Rutherford et al., n.d.).

First, we identified that the majority of studies assessing psychological trauma have taken place in North America, followed by Europe and sub-Saharan Africa. Likewise, when looking at the representation of geopolitical regions examining each psychological trauma type (e.g., childhood abuse and interpersonal trauma), North America, Europe, and sub-Saharan Africa produced the majority of research for each type of psychological trauma assessed. It is important to not interpret this finding as suggesting there is a greater incidence of psychological trauma occurring in these regions, but instead that there may be more studies taking place in these regions more generally explaining this result. This may be particularly true for many North American and European studies given the prevalence of “WEIRD” research in general (Henrich et al., 2010). Sub-Saharan Africa may be among the regions producing the greatest quantity of research in this area, as individuals in sub-Saharan Africa are disproportionately exposed to psychological trauma and are at increased risk for developing PTSD (Ng et al., 2020). Interestingly, of the 576 studies included, only 4 collected data across two or more geographical regions. Yet multi-region studies of psychological trauma during pregnancy may be beneficial to understanding cross-cultural contexts in the assessment of psychological trauma.

Second, we examined the breakdown of the type of psychological trauma assessed by each geopolitical region. In all regions,

interpersonal trauma (which in our categorization includes physical, sexual, psychological, verbal, economic, and emotional intimate partner or domestic violence, family violence, military sexual violence, loss of a loved one, perceived racism, history of sexual trauma, and interpersonal conflict) was most frequently assessed. There may be several reasons for this finding. First, many types of trauma were included in this category; therefore, the large representation of interpersonal trauma assessment across studies and geopolitical regions may be the result of our operationalized definition of interpersonal trauma. It may also be that these experiences represent the most common types of psychological trauma that pregnant people experience. Regardless, this finding reflects that the high prevalence of interpersonal trauma is not limited to specific geopolitical regions, and is consistent with the notion that interpersonal trauma is the most common form of psychological trauma experienced by women globally (WHO, 2024a). It might also be that interpersonal trauma, which encapsulates violence, physical and sexual abuse, may be most frequently studied, given the potential for more immediate negative impacts on the health of pregnant people and the developing fetus as well as the particular vulnerability that the perinatal period creates. Additionally, interpersonal trauma may be more commonly assessed with the goal of identifying those at risk to provide referrals for immediate resources.

The second most frequently measured type of psychological trauma assessed in seven of the nine geopolitical regions was childhood abuse (i.e., physical, sexual, or emotional abuse prior to the age of 18 years), once again highlighting a global trend in assessment and prevalence of childhood abuse. The frequency of childhood trauma assessment may similarly be due to its perceived impact on pregnancy and fetal health (Buss et al., 2011) and researchers’ desire to understand how these experiences impact pregnancy, fetal development, and maternal–child health, and add to knowledge of the intergenerational transmission of child maltreatment (Greene et al., 2020). As such, previous research has identified associations between childhood abuse and perinatal outcomes, including decreased birth weight (Smith et al., 2016) and maternal and infant neuroendocrine functioning (Brand et al., 2010). Beyond the postpartum period, childhood abuse can have long-lasting impacts on physical and mental health and well-being across development (Horwitz et al., 2001; Bremner, 2003; Draper et al., 2008).

We also note that a significant number of studies were incorporated under the category of general trauma, which included bodily harm and serious injury. This reflects the limited number of assessments of bodily harm and serious injury in the absence of any independent measures of these types of traumatic experiences. Bodily harm and serious injury are traumatic experiences, which may be particularly salient during the perinatal period as they may contribute to fear of birth, mistrust in medical care, and mental health conditions during pregnancy and postpartum. Future work should assess maternal physical trauma beyond IPV, and obstetric providers should consider history of bodily harm when providing care.

The frequency of assessment of the remaining psychological trauma categories, childhood adversity, crime/violence exposure, environmental trauma, general trauma, pregnancy-specific psychological trauma, and PTSD diagnosis varied from region to region. This variability may reflect differing prevalence rates of these types of psychological trauma by region and may be reflective of cultural perceptions and biases or other sociocultural or institutional influences on types of psychological trauma assessed in research and clinical settings, as well as access to resources. Assessment of these types of psychological trauma on a smaller scale, such as by country

or state, might reflect additional trends within geopolitical regions. For example, several studies examining environmental trauma were in response to exposure to hurricanes. Given that large hurricanes are impactful in the southern United States and the Caribbean, it is likely that assessments of hurricane impacts are limited to those regions. In regard to pregnancy-specific psychological trauma, rates of assessments varied from 0% to 25%. Given how impactful a history of trauma related to pregnancy and delivery can be on subsequent pregnancies (Gottvall and Waldenström, 2002; Greenfield *et al.*, 2019), it is surprising that more studies did not examine these experiences. This may in part reflect varied cultural perceptions of pregnancy loss and difficult birth as a traumatic experience, as well as fewer measures that exist dedicated to pregnancy-specific psychological trauma (Givrad *et al.*, n.d.). It is therefore crucial for future work to include assessments of pregnancy-specific psychological trauma to ensure that women receive the most appropriate care without causing retraumatization by their obstetric team.

Healthcare trauma was only assessed in Europe and the Middle East or Northern Africa and all assessments used the NorAQ (Swahnberg and Wijma, 2003), indicating a lack of healthcare trauma questions across measures used in pregnant populations. Even in Europe and the Middle East or Northern Africa, the rate of assessment was low at 1% and 5% of studies. Despite the infrequent assessment of healthcare trauma among pregnant people, healthcare trauma is particularly relevant to this population. History of traumatic experiences in medical settings may contribute to fear of pregnancy and childbirth, lack of willingness to seek sufficient prenatal care, and skepticism of healthcare providers favoring the patient's best interest. Each of these factors can impact the health of pregnant people and the fetus. It is likely that the lower rates of assessment of healthcare trauma are also due to fewer existing measures that address healthcare trauma, and potentially bias and avoidance of assessing the provider's role in the traumatization of patients. It is critical for future work to examine healthcare trauma more closely.

We next assessed the variability in the use of "in-house" compared to published assessments of psychological trauma by each geopolitical region. Studies in Central America, multiple regions, Oceania, sub-Saharan Africa, Asia, Middle East or Northern Africa, and Europe had one-third or more studies that used only in-house assessments of psychological trauma. This large number of in-house assessments might be reflective of where existing measures were developed and tested, with most psychological trauma assessments being developed in English-speaking countries and not necessarily being validated for use in populations speaking other languages. This finding might also be confounded by our inclusion criteria as we limited our search to research papers published in the English language. The use of in-house assessments may also be owing to challenges in accessing previously validated assessments, especially when such measures incur a charge. Finally, in-house assessments may be more sensitive to the psychological trauma experienced by the samples in these geopolitical regions, which may be overlooked by measures developed in English-speaking countries where such psychological traumas may be experienced less. Taken together, the higher rates of "in-house" assessments of psychological trauma draw attention to a need for more psychological trauma measures in languages other than English, and with culturally appropriate items, to be published, easily accessible, and validated, particularly as trauma-informed practices continue to grow and be implemented across different cultures (Powell *et al.*, 2023). Despite the need for the development of more validated psychological trauma measures, it is important not to dismiss findings from studies using in-house

measures and assessments developed in WEIRD populations which are then administered to non-WEIRD populations. These studies provide valuable insights into the prevalence and frequency of psychological trauma, which can be built upon through the refinement and/or development of new measures.

Lastly, we examined when psychological trauma was measured in pregnancy by geopolitical region. No clear patterns emerged, indicating that psychological trauma is measured sporadically regardless of geopolitical region, often "at any point in pregnancy" or without specification of the timing. It is important for future analyses to be clearer about the time period of pregnancy when psychological trauma was assessed and to test whether differences in the timing of psychological trauma assessment and provider response to the assessment impact pregnancy outcomes. For clinicians, examining psychological trauma history as early as possible in prenatal care has the potential to better inform treatment for the duration of the perinatal period.

Our findings examining the assessment of psychological trauma across geopolitical regions further emphasize the need to understand the extent to which psychological trauma is assessed during pregnancy across different cultures as well as how and what types of trauma are assessed, as trauma assessments likely need to vary across, and within, countries to be culturally sensitive to local norms and laws. Notably, the perception of psychological trauma, particularly among pregnant people, has not remained stagnant over time. For example, the perception of a prenatal or infant loss several generations ago was often not as a traumatic occurrence, but rather a way of life. In contrast, fetal and infant losses today are frequently perceived as a substantial loss (Wesselmann and Parris, 2022). This too highlights a need for newly developed measures that evolve with the change in the perception of psychological trauma over time.

It is important to consider that research priorities in low- and middle-income countries reflect the epidemiological profile of each country. As such, a lack of research on assessment of psychological trauma or trauma-informed care may not necessarily reflect a belief among researchers or clinicians that psychological trauma and care are not important, but rather that there are other priorities that take precedence. The need to prioritize the focus of research and clinical efforts within a geopolitical region is also applicable when considering types of psychological trauma. For example, a country with limited assessments of healthcare trauma may not reflect that healthcare trauma is not important and worth researching but rather that other types of trauma, such as IPV, are more common and need to be addressed first to design culturally appropriate intervention and treatment plans. Therefore, while there may be less research into psychological trauma in low- and middle-income countries, this does not imply that researchers and clinicians overlook the importance of addressing psychological trauma.

Despite this systematic review, we still lack the data to understand exactly what kind of psychological trauma and which specific traumatic experiences are truly the most common in pregnant people across different geopolitical regions. Here, we present the assessments of psychological trauma that are most commonly included across studies, which might not reflect actual prevalence rates of psychologically traumatic experiences, given that all forms of trauma were not consistently assessed and we were not able to synthesize prevalence rates. Sociocultural differences in what is defined or commonly understood as psychologically traumatic, as well as differences in the openness to communicate about traumatic experiences and the availability of evidence-based treatments for trauma symptoms, may greatly influence differences in the assessment of psychological trauma in pregnancy across regions and the



extent that this topic is studied in published research. However, understanding definitively the kinds of psychological trauma that are most common and impactful for pregnant people with respect to negative health consequences within countries or geopolitical regions would inform researchers and clinicians on what kinds of assessments should be a priority. The current results can be used to advocate for continued and expanded assessment of psychological trauma in pregnancy, ideally encompassing multiple types of trauma including interpersonal, childhood, healthcare, and pregnancy-specific, and for the publication of psychological trauma measures that are linguistically congruent and that are culturally specific and sensitive.

## Conclusion

In sum, the results of this review reflect geopolitical regional differences in the number of studies that have examined psychological trauma in pregnancy as well as the types of psychological trauma measured and the use of previously published versus not yet validated trauma measures. Given that psychological trauma transcends country and cultural borders, it is critical to develop validated measures of psychological trauma that are culturally appropriate. This would promote more research on psychological trauma in pregnancy in non-English-speaking regions and low- and middle-income countries. Additionally, newly developed measures of psychological trauma should be comprehensive, or at the very least prioritize the types of psychological trauma that are most common in a given country or region among pregnant people. Such newly developed measures, once shown to be reliable and valid, can be used for screening in clinics to identify those that will benefit from culturally sensitive trauma-informed obstetric practices.

**Open peer review.** To view the open peer review materials for this article, please visit <http://doi.org/10.1017/gmh.2024.152>.

**Supplementary material.** The supplementary material for this article can be found at <http://doi.org/10.1017/gmh.2024.152>.

**Data availability statement.** The data that support the findings of this study are openly available on the Open Science Framework at <https://osf.io/356av/>.

**Author contribution.** All authors made substantial contributions to the conception or design of the work and the acquisition, analysis or interpretation of data for the work. K.M.W. and F.P. drafted the work, and all other authors contributed to revising. All authors gave their final approval for the version to be published. All authors agreed to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. S.G. and H.J.V.R. are co-senior authors.

**Financial support.** This work was supported by grants from the National Institutes of Health (K.M.W., T32 NS041228 and F31 DA059248; F.P., F32 DA055389; H.J.V.R., R01 DA050636 and R01 HD108218). A.L. has received research funding from Alkermes, Inc.

**Competing interest.** The authors declare no competing interests.

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