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Abstract

Background: 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.

Findings: Through a systematic literature review conducted following the Preferred Reporting Items for Systematic reviews and Meta-Analyses' guideline, 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 9 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 were conducted across multiple regions. We found that most studies measuring psychological trauma in pregnancy across the 9 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 were 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.

Implications: The results of this review emphasize the need for regionally-specific, 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.

Key words: psychological trauma; post-traumatic stress disorder; pregnancy; global trauma

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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 such measures can be adapted for clinical practice to screen patients to promote trauma-informed obstetric care.

67 Introduction

68 A history of psychologically traumatic exposures can adversely impact health outcomes
69 for pregnant people and their infants. Research conducted across different geographical regions
70 has identified associations between maternal adverse childhood experiences and decreased birth
71 weight (Ben Salah *et al.* 2019; Smith *et al.* 2016); interpersonal violence and preterm birth,
72 intrauterine growth restriction, low birth weight (Hill *et al.* 2016), and poor maternal health (e.g.,
73 lack of prenatal care, increased rate of prenatal substance use and other mental health conditions,
74 and insufficient nutrition) (Alhusen *et al.* 2015). Psychological trauma in the form of pregnancy
75 loss has also been associated with physical (Ausbeck *et al.* 2020) and mental (Chojenta *et al.* 2014;
76 Gong *et al.* 2013) health implications in subsequent pregnancies. Moreover, a history of
77 psychological trauma can impact maternal mental health throughout the postnatal period (Choi *et*
78 *al.* 2017; Guintivano *et al.* 2018), which may itself influence infant development (Chong *et al.*
79 2016; Madigan *et al.* 2018). Given extant literature evidencing a link between psychological
80 trauma and adverse perinatal outcomes, there is a strong need for trauma-informed care during the
81 perinatal period (Gelaye *et al.* 2017; Mendez-Figueroa *et al.* 2013; Racine *et al.* 2020). Trauma-
82 informed care “bring[s] to the forefront the belief that trauma can pervasively affect an individual’s
83 well-being, including physical and mental health,” and may involve enhanced trauma awareness
84 and education among providers, improved screening practices that include assessment of trauma,
85 attempts to prevent retraumatization or secondary trauma in healthcare procedures and
86 interactions, and implementation of or referral to evidence-based behavioral interventions to
87 address trauma symptoms (Center for Substance Abuse Treatment (US) 2014). The importance of
88 the screening and implementation of trauma-informed care during pregnancy has been further
89 exemplified by professional societies providing guidance on obstetric care (American College of
90 Obstetricians and Gynecologists 2021).

91 Psychological trauma, as defined by the Diagnostic and Statistical Manual of Mental
92 Disorders, Fifth Edition (DSM-5), is the exposure to actual or threatened death, serious injury, or
93 sexual violence (American Psychological Association 2013). This concise definition encompasses
94 a vast array of experiences, including but not limited to exposure to war, crime, violence, childhood
95 abuse, neglect, maltreatment, and adversity, exposure to natural disasters, and physical,
96 psychological, and sexual abuse. Worldwide, women are at higher risk for experiencing

97 psychological trauma, particularly in the forms of intimate partner violence (IPV) and sexual
98 violence: the World Health Organization (WHO) estimates that approximately 1 in 3 women
99 experience IPV or sexual violence in their lifetime (World Health Organization 2024). Further, it
100 is estimated that 3-9% of women experience physical abuse during pregnancy (Martin *et al.* 2001;
101 Saltzman *et al.* 2003). Notably, prevalence rates for exposure to psychologically traumatic
102 experiences may differ by geographical region. For example, individuals living in countries with
103 a recent history of war such as Israel and Ukraine are far more likely to experience traumatic
104 exposure to war than individuals in Western Europe and the United States (Pandey *et al.* 2023).
105 Moreover, a recent review of global rates of IPV among women aged 15 to 49 years suggests that
106 prevalence rates vary by region: for example, 32% of women in sub-Saharan Africa report
107 experiencing IPV, as compared to 3% of women in Australasia (Sardinha *et al.* 2022). Another
108 study surveying over 24,000 women found that lifetime physical or sexual partner violence ranged
109 from 71% in Ethiopia to 15% in Japan (Garcia-Moreno *et al.* 2006). Additional work has found
110 that rates of IPV are rising in some regions and decreasing in others (Ma *et al.* 2023), further
111 highlighting global variability in psychological trauma exposure rates.

112 Beyond variability in prevalence rates, there is also variability in how psychologically
113 traumatic exposures are perceived across cultures. For example, while one culture or region
114 might expect a man to be dominant and controlling of all decisions for the family (Ali *et al.*
115 2014), another culture might view similar behaviors and dynamics as oppressive or abusive
116 (Ubillos-Landa *et al.* 2020). Furthermore, the response and receptivity to women reporting
117 psychologically traumatic exposure, particularly IPV, varies across cultures. For instance, marital
118 rape is legal in 36 countries (Banerjee and Rao 2022) and in 20 countries, rape convictions can
119 be overturned if a male perpetrator were to marry his victim (Toniyo and Manoj 2021). In
120 contrast, rape allegations can lead to substantial sentencing in other parts of the world
121 irrespective of the relationship between the perpetrator and victim ('Sexual Abuse' 2019; 'What
122 is sexual assault?' n.d.). Montalvo-Liendo conducted a review of factors contributing to the
123 disclosure of IPV cross-culturally in which perceptions of IPV across numerous countries and
124 cultural groups were examined. While fear was a common factor as a reason to not disclose IPV,
125 there were variations in other factors reported by women. For instance, studies on women from
126 South Asia and Bangladesh found that family honor contributed to not disclosing IPV.

127 Furthermore, among women from Jordan, religious beliefs prevented IPV disclosure. Finally, a
128 study of African American women identified that self-blame for putting another black man in
129 prison influenced IPV reporting. The nuances in the perception of IPV and factors preventing
130 reporting highlight the variability in how women across the globe perceive IPV (Montalvo-
131 Liendo 2009). Such variability in how IPV behaviors are perceived across cultures may
132 downplay the significance of traumatic experiences, including underreporting or failing to screen
133 for psychological trauma. However, these varied perceptions and beliefs of IPV may also worsen
134 traumatic experiences as violence is often worse when lived in isolation, without social support,
135 and when the healthcare system is not able to respond. Specifically, IPV is often worse in
136 countries with weak or no legislation against sexual assault and harassment (UN Women n.d.).
137 Furthermore, in many countries people may have limited or no access to clinical services and/or
138 trauma-informed care, rendering the perception of psychological trauma assessments as having
139 little utility. Similarly, due to varying perceptions of what constitutes a traumatic exposure,
140 researchers in different locations may be examining the same kind of psychological trauma but
141 probing different types of experiences. For example, assessments of IPV likely vary by region
142 due to differences in beliefs about what constitutes IPV - one place may only assess physical
143 violence between partners while another assesses physical, sexual, mental, emotional, and
144 financial abuse.

145 Several other factors may affect whether and how researchers and clinicians measure
146 psychological trauma in pregnant people across different cultures. First, access to prenatal care
147 varies globally: previous reports on antenatal care in low- and middle-income countries found
148 that only 50% of pregnant people access sufficient prenatal care (Finlayson and Downe 2013),
149 and this number is as low as 10% in some regions (Benova *et al.* 2018). Pregnant people in these
150 low and middle-income countries report inadequate use of prenatal care due to feeling
151 physiologically healthy, lack of access to resources due to poverty, and report feelings of the
152 antenatal clinic and staff “having not gotten it right the first time” (e.g., poor staff attitude, lack
153 of access to medicine, inflexibility in appointments) (Finlayson and Downe 2013). Given the low
154 rates of engagement in prenatal healthcare observed in some regions, it is likely that assessment
155 of psychological trauma and utilization of trauma-informed care during the prenatal period is
156 even lower. Of note, there has been substantial improvements in prenatal care among low- and

157 middle-income countries. For example, a study examining routine antenatal care in 10 low- and
158 middle-income countries found that the majority of people seeking antenatal care received at
159 least one visit (Benova *et al.* 2018). Despite this improvement in antenatal care, we believe it is
160 unlikely that pregnant people receiving only one antenatal visit are screened for psychological
161 trauma. This may be due to the maternal and fetal health screening and treatment taking priority
162 over trauma assessment during the antenatal care visit due to the limited time.

163 Second, government agencies and funding bodies may dictate the kinds of research studies
164 that receive financial support; therefore, the agenda of these institutions may sway the kinds of
165 psychological trauma studies that are carried out. In regions where specific types of psychological
166 trauma are not considered to be traumatic, or are normalized to an extent, research may be lacking.
167 Relatedly, more research in general is conducted in Western, educated, industrialized, rich, and
168 democratic (“WEIRD”) countries (Henrich *et al.* 2010), and therefore research assessing
169 psychological trauma in pregnancy may be more likely to occur in these WEIRD countries.

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

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

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

196

197 **Methods**

198

199 **Search Strategy**

200 This is a secondary analysis of a larger systematic review (Rutherford *et al.* in review). The
201 larger systematic review was conducted according to ‘Preferred Reporting Items for Systematic
202 reviews and Meta-Analyses’ (PRISMA) guidelines (Liberati *et al.* 2009) and the protocol was
203 registered in the ‘International Prospective Register of Systematic Reviews’ (PROSPERO)
204 (CRD42022384173). The purpose of the larger systematic review was to identify research studies
205 that included any assessment of psychological trauma in pregnant people. A medical librarian
206 conducted comprehensive systematic searches in Ovid MEDLINE, Ovid EMBASE, Scopus, Web
207 of Science, PsycInfo, and Cochrane, to find studies examining measurement of psychological
208 trauma in pregnancy. The initial search was conducted in July 2021 and updated searches and
209 reference searching/snow-balling was performed in September 2023. Full details regarding the
210 eligibility criteria and search strategy are available on Open Science Framework (osf.io/356av/).

211 **Study Selection**

212 For the review process, each abstract was screened by two independent researchers. When
213 screening conflicts arose, resolution was determined through consensus. The full-texts of the
214 abstracts deemed relevant were then reviewed for inclusion by two independent researchers, with
215 conflicts again resolved through group consensus (Figure 1). Screening was conducted using

216 Covidence (‘Covidence systematic review software [Internet]’ n.d.). A total of 6371 relevant
217 studies were identified, of which 576 met inclusion criteria.

218 **Data Analysis**

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

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

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

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

262

263 **Results**

264 A total of 576 studies assessing psychological trauma in pregnancy were identified. We
265 then examined the number of papers in each geopolitical region. The majority of studies were
266 conducted in North America, followed by Sub-Saharan Africa, Europe, Asia, the Middle East or
267 Northern Africa, Oceania, South America, Central America, and multiple regions (Figure 2).

268 With respect to the types of psychological trauma measured, studies ranged from assessing
269 one to seven categories of trauma. Interpersonal trauma was assessed by the greatest number of
270 studies, followed by child abuse and general trauma history. Healthcare trauma was assessed in
271 the smallest number of studies. To understand the geopolitical representation in the assessment of
272 each type of psychological trauma, we examined the spread of regions conducting assessments by
273 trauma type. The majority of studies that assessed child abuse, childhood adversity,
274 crime/violence, environmental trauma, general trauma, interpersonal trauma, pregnancy-specific

275 psychological trauma, and PTSD symptoms assessment were conducted in North America. The
276 majority of studies that assessed healthcare trauma were conducted in Europe and they all used the
277 NorVold Abuse Questionnaire (NorAQ). Central America had the smallest number of studies for
278 all psychological trauma types with the exception of interpersonal trauma in which multiple
279 regions were the smallest representation (Figure 3).

280 We next examined the types of psychological trauma assessed in each geopolitical region.
281 In Asia, interpersonal trauma was the most frequently assessed followed by childhood abuse,
282 general trauma, pregnancy-specific psychological trauma, environmental trauma, crime/violence,
283 and childhood adversity. In Europe, interpersonal trauma was the most frequently assessed
284 followed by general trauma, childhood abuse, pregnancy-specific psychological trauma, childhood
285 adversity, healthcare trauma, PTSD assessment alone, crime/violence exposure, and
286 environmental trauma. In Central America, all studies examined only interpersonal trauma. In the
287 Middle East and Northern Africa, interpersonal trauma was the most frequently assessed, followed
288 by childhood abuse, general trauma, childhood adversity, crime/violence exposure, pregnancy-
289 specific psychological trauma, environmental trauma, and healthcare trauma. In North America,
290 the spread of frequency of assessment was more varied with interpersonal trauma being assessed
291 most frequently closely followed by childhood abuse and general trauma, then childhood
292 adversity, crime/violence exposure, environmental trauma, and pregnancy-specific psychological
293 trauma. In Oceania, interpersonal trauma was the most assessed type of trauma followed by
294 childhood abuse, general trauma, childhood adversity, environmental trauma, crime/violence
295 exposure and pregnancy-specific psychological trauma. In South America, nearly half of the
296 studies assessed interpersonal trauma, and more than a quarter assessed childhood abuse, followed
297 by general trauma, crime/violence exposure, environmental trauma, and pregnancy-specific
298 psychological trauma. In Sub-Saharan Africa, almost half of the studies assessed interpersonal
299 trauma and nearly a quarter assessed childhood abuse followed by general trauma, childhood
300 adversity, crime/violence exposure, pregnancy-specific psychological trauma, and environmental
301 trauma. Lastly, in the few studies assessing psychological trauma and pregnancy across multiple
302 regions, interpersonal trauma, pregnancy-specific psychological trauma, crime/violence exposure,
303 and general trauma were each assessed in 25% of the studies. In sum, interpersonal trauma was
304 assessed most frequently in all geopolitical regions, ranging from 25% to 100% of studies within

305 a given region, childhood abuse was the second most frequent in 7 of the 9 regions, and healthcare
306 trauma was assessed the least frequently (Figure 4).

307 We next sought to understand regional differences in the varying assessments of
308 psychological trauma and those categorized as “in-house” (i.e., created for the study). The
309 representation of the percentage of studies using “in-house” measures alone varied. Studies
310 conducted in Central America had the highest percentage of studies utilizing “in-house” measures
311 alone at 100%. This was followed by studies that were conducted across multiple regions (50.0%),
312 Middle East or Northern Africa (39.5%), Oceania (37.0%), Sub-Saharan Africa (37.0%), Europe
313 (35.2%), Asia (33.9%), South America (25.0%), and North America (21.2%) with the lowest
314 percentage of “in-house” measures alone (Figure 5). The full list of the 102 validated psychological
315 trauma measures are listed in Supplemental Table 2.

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

320 Discussion

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

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

347 Second, we examined the breakdown of the type of psychological trauma assessed by each
348 geopolitical region. In all regions, interpersonal trauma (which in our categorization includes
349 physical, sexual, psychological, verbal, economic, and emotional intimate partner or domestic

350 violence, family violence, military sexual violence, loss of a loved one, perceived racism, history
351 of sexual trauma, interpersonal conflict) was most frequently assessed. There may be a few reasons
352 for this finding. Many types of trauma were included in this category, and therefore, the large
353 representation of interpersonal trauma assessment across studies and geopolitical regions may be
354 the result of our operationalized definition of interpersonal trauma. It may also be that these
355 experiences represent the most common types of psychological trauma that pregnant people
356 experience. Regardless, this finding reflects that the high prevalence of interpersonal trauma is not
357 limited to specific geopolitical regions, and is consistent with the notion that interpersonal trauma
358 is the most common form of psychological trauma experienced by women globally (WHO 2024).
359 It might also be that interpersonal trauma, which encapsulates violence, physical, and sexual abuse,
360 may be most frequently studied given the potential for more immediate negative impacts on the
361 health of pregnant women people and the developing fetus as well as the particular vulnerability
362 that the perinatal period creates. Additionally, interpersonal trauma may be more commonly
363 assessed with the goal of identifying those at risk to provide referrals for immediate resources.

364 The second most frequently measured type of psychological trauma assessed in 7 of the 9
365 geopolitical regions was childhood abuse (i.e., physical, sexual, or emotional abuse prior to the
366 age of 18 years), once again highlighting a global trend in assessment and prevalence of childhood
367 abuse. The frequency of childhood trauma assessment may similarly be due to its perceived impact
368 on pregnancy and fetal health (Buss *et al.* 2011) and researchers' desire to understand how these
369 experiences impact pregnancy, fetal development, and maternal-child health, and add to
370 knowledge of the intergenerational transmission of child maltreatment (Greene *et al.* 2020). As
371 such, previous research has identified associations between childhood abuse and perinatal
372 outcomes, including decreased birth weight (Smith *et al.* 2016) and maternal and infant
373 neuroendocrine functioning (Brand *et al.* 2010). Beyond the postpartum period, childhood abuse
374 can have long-lasting impacts on physical and mental health and well-being across development
375 (Bremner 2003; Draper *et al.* 2008; Horwitz *et al.* 2001).

376 We also note that a significant number of studies were noted under the category of general
377 trauma, which included bodily harm and serious injury. This reflects the limited number of
378 assessments of bodily harm and serious injury in the absence of any independent measures of these
379 types of traumatic experiences. Bodily harm and serious injury are traumatic experiences which

380 may be particularly salient during the perinatal period as they may contribute to fear of birth,
381 mistrust in medical care, and mental health conditions during pregnancy and postpartum. Future
382 work should assess maternal physical trauma beyond intimate partner violence and obstetric
383 providers should consider history of bodily harm when providing care.

384 The frequency of assessment of the remaining psychological trauma categories, childhood
385 adversity, crime/violence exposure, environmental trauma, general trauma, pregnancy-specific
386 psychological trauma, and PTSD diagnosis varied from region to region. This variability may
387 reflect differing prevalence rates of these types of psychological trauma by region and may be
388 reflective of cultural perceptions and biases or other sociocultural or institutional influences on
389 types of psychological trauma assessed in research and clinical settings, as well as access to
390 resources. Assessment of these types of psychological trauma on a smaller scale, such as by
391 country or state, might reflect additional trends within geopolitical regions. For example, several
392 studies examining environmental trauma were in response to exposure to hurricanes. Given that
393 large hurricanes are impactful in the southern United States of America and the Caribbean, it is
394 likely that assessment of hurricane impacts are limited to those regions. In regard to pregnancy-
395 specific psychological trauma, rates of assessment varied from 0% to 25%. Given how impactful
396 a history of trauma related to pregnancy and delivery can be on subsequent pregnancies (Gottvall
397 and Waldenström 2002; Greenfield *et al.* 2019), it is surprising that more studies did not examine
398 these experiences. This may in part reflect varied cultural perceptions of pregnancy loss and
399 difficult birth as a traumatic experience, as well as fewer measures that exist dedicated to
400 pregnancy-specific psychological trauma (Givrad *et al.* in review). It is therefore crucial for future
401 work to include assessments of pregnancy-specific psychological trauma, to ensure women receive
402 the most appropriate care without causing retraumatization by their obstetric team.

403 Healthcare trauma was only assessed in Europe and the Middle East or Northern Africa
404 and all assessments used the NorVold Abuse Questionnaire (NorAQ) (Swahnberg and Wijma
405 2003), indicating a lack of healthcare trauma questions across measures used in pregnant
406 populations. Even in Europe and the Middle East or Northern Africa, the rate of assessment was
407 low at 1% and 5% of studies. Despite the infrequent assessment of healthcare trauma among
408 pregnant people, healthcare trauma is particularly relevant to this population. History of traumatic
409 experiences in medical settings may contribute to fear of pregnancy and childbirth, lack of

410 willingness to seek sufficient prenatal care, and skepticism of healthcare providers favoring the
411 patient's best interest. Each of these factors can impact the health of pregnant people and the fetus.
412 It is likely that the lower rates of assessment of healthcare trauma are also due to fewer existing
413 measures that address healthcare trauma, and potentially bias and avoidance of assessing the
414 provider's role in traumatization of patients. It is critical for future work to examine healthcare
415 trauma more closely.

416 We next assessed the variability in the use of "in-house" compared to published
417 assessments of psychological trauma by each geopolitical region. Studies in Central America,
418 multiple regions, Oceania, Sub-Saharan Africa, Asia, Middle East or Northern Africa, and Europe
419 had one-third or more studies that used only in-house assessments of psychological trauma. This
420 large number of in-house assessments might be reflective of where existing measures were
421 developed and tested, with most psychological trauma assessments being developed in English-
422 speaking countries and not necessarily being validated for use in populations speaking other
423 languages. This finding might also be confounded by our inclusion criteria as we limited our search
424 to research papers published in the English language. The use of in-house assessments may also
425 be owing to challenges in accessing previously validated assessments, especially when such
426 measures incur a charge. Finally, in-house assessments may be more sensitive to the psychological
427 trauma experienced by the samples in these geopolitical regions, which may be overlooked by
428 measures developed in English-speaking countries where such psychological traumas may be
429 experienced less. Taken together, the higher rates of "in-house" assessments of psychological
430 trauma draw attention to a need for more psychological trauma measures in languages other than
431 English, and with culturally appropriate items, to be published, easily accessible, and validated,
432 particularly as trauma-informed practices continue to grow and be implemented across different
433 cultures (Powell *et al.* 2023). Despite the need for the development of more validated
434 psychological trauma measures, it is important not to dismiss findings from studies utilizing in-
435 house measures and assessments developed in WEIRD populations which are then administered
436 to non-WEIRD populations. These studies provide valuable insights into the prevalence and
437 frequency of psychological trauma, which can be built upon through refinement and or
438 development of new measures.

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

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

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

469 Despite this systematic review, we still lack the data to understand exactly what kind of
470 psychological trauma and which specific traumatic experiences are truly the most common in
471 pregnant women people across different geopolitical regions. Here we present the assessments of
472 psychological trauma that are most commonly included across studies, which might not reflect
473 actual prevalence rates of psychologically traumatic experiences, given that all forms of trauma
474 were not consistently assessed and we were not able to synthesize prevalence rates. Sociocultural
475 differences in what is defined or commonly understood as psychologically traumatic, as well as
476 differences in the openness to communicate about traumatic experiences and the availability of
477 evidence-based treatments for trauma symptoms may greatly influence differences in the
478 assessment of psychological trauma in pregnancy across regions and the extent that this topic is
479 studied in published research. However, understanding definitively the kinds of psychological
480 trauma that are most common and impactful for pregnant people with respect to negative health
481 consequences within countries or geopolitical regions would inform researchers and clinicians on
482 what kinds of assessments should be a priority. The current results can be used to advocate for
483 continued and expanded assessment of psychological trauma in pregnancy, ideally encompassing
484 multiple types of trauma including interpersonal, childhood, healthcare, and pregnancy-specific,
485 and for the publication of psychological trauma measures that are linguistically congruent and that
486 are culturally-specific and sensitive.

487

488 **Conclusion**

489 In sum, the results of this review reflect geopolitical regional differences in the number of
490 studies that have examined psychological trauma in pregnancy as well as the types of
491 psychological trauma measured and the use of previously published versus not yet validated
492 trauma measures. Given that psychological trauma transcends country and cultural borders, it is
493 critical for validated measures of psychological trauma to be developed which are culturally
494 appropriate. This would promote more research on psychological trauma in pregnancy in non-
495 English speaking regions, and low and middle-income countries. Additionally, newly developed
496 measures of psychological trauma should be comprehensive, or at the very least prioritize the types
497 of psychological trauma which are most common in a given country or region among pregnant
498 people. Such newly developed measures, once shown to be reliable and valid, can be used for

499 screening in clinics to identify those that will benefit from culturally-sensitive trauma-informed
500 obstetric practices.

501

Declarations

502 Author contributions:

503 All authors made substantial contributions to the conception or design of the work and the
504 acquisition, analysis, or interpretation of data for the work. KW and FP drafted the work and all
505 other authors contributed to revising. All authors give final approval of the version to be published.

506 All authors agree to be accountable for all aspects of the work in ensuring that questions related to
507 the accuracy or integrity of any part of the work are appropriately investigated and resolved.

508

509 Financial Support: This work was supported by grants from the National Institutes of Health
510 [KW, T32 NS041228 and F31 DA059248; FP F32 DA055389; HR R01 DA050636 and R01
511 HD108218].

512

513 Conflict of Interest Statement:

514 Amanda Lowell has received research funding from Alkermes, Inc.

515

516 Data Availability Statement:

517 The data that support the findings of this study are openly available in Open Science Framework
518 at <https://osf.io/356av/>.

519

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List of Figure Captions

Figure 1. PRISMA Flowchart of larger systematic literature review.

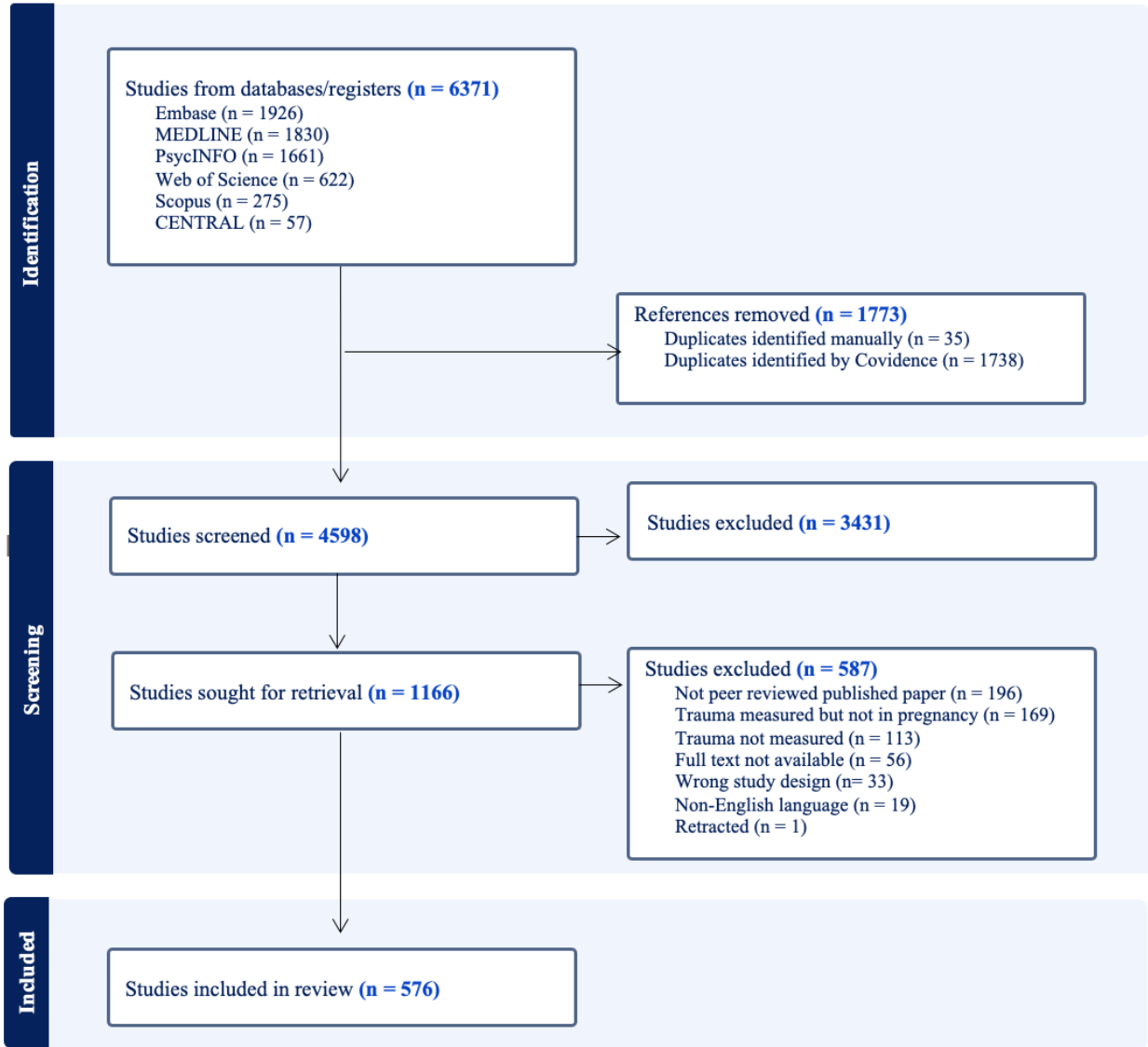
Figure 2. Percentage of studies on the assessment of psychological trauma in pregnancy conducted in each geopolitical region.

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

Figure 4. Type of psychological trauma by geopolitical region.

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

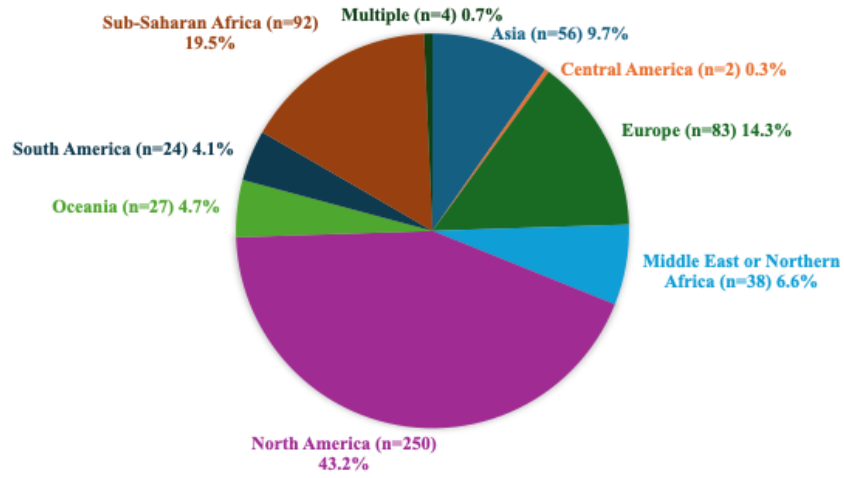
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Figure 1. PRISMA Flowchart of larger systematic literature review.

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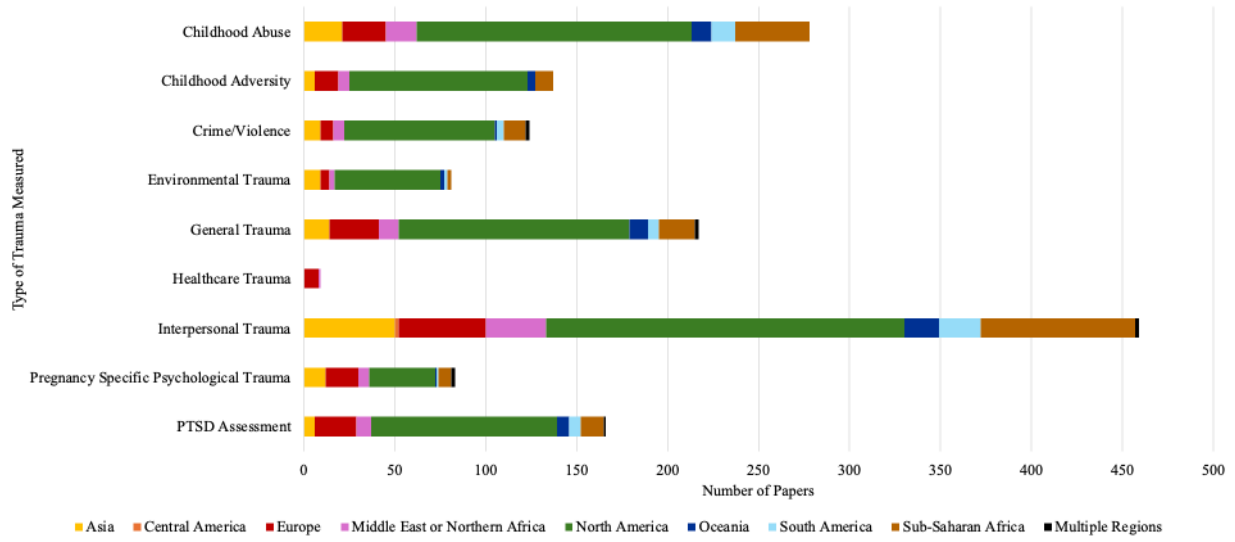
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Figure 2. Percentage of studies on the assessment of psychological trauma in pregnancy conducted in each geopolitical region.

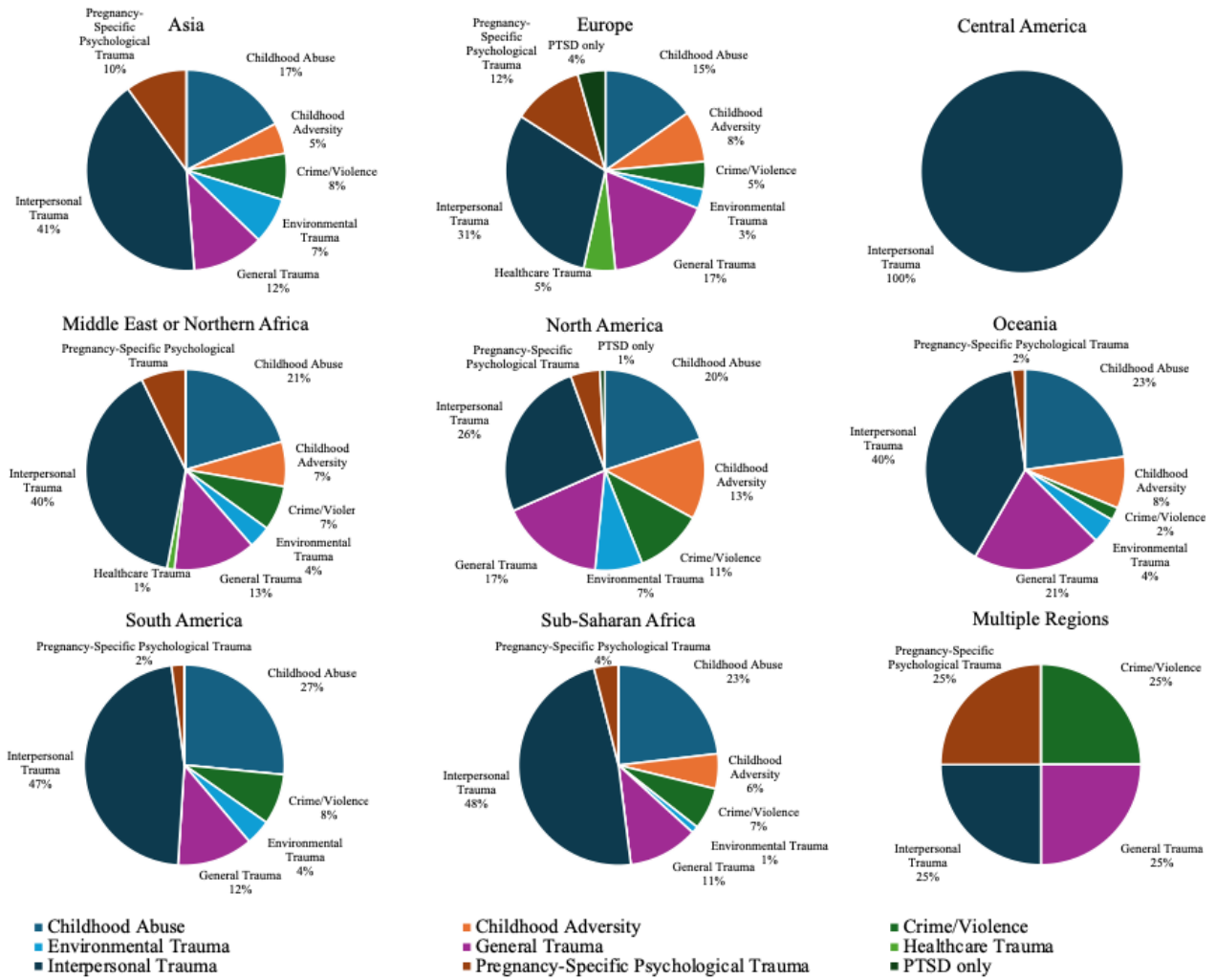
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Figure 3. Geopolitical representation of the assessment of each type of psychological trauma.

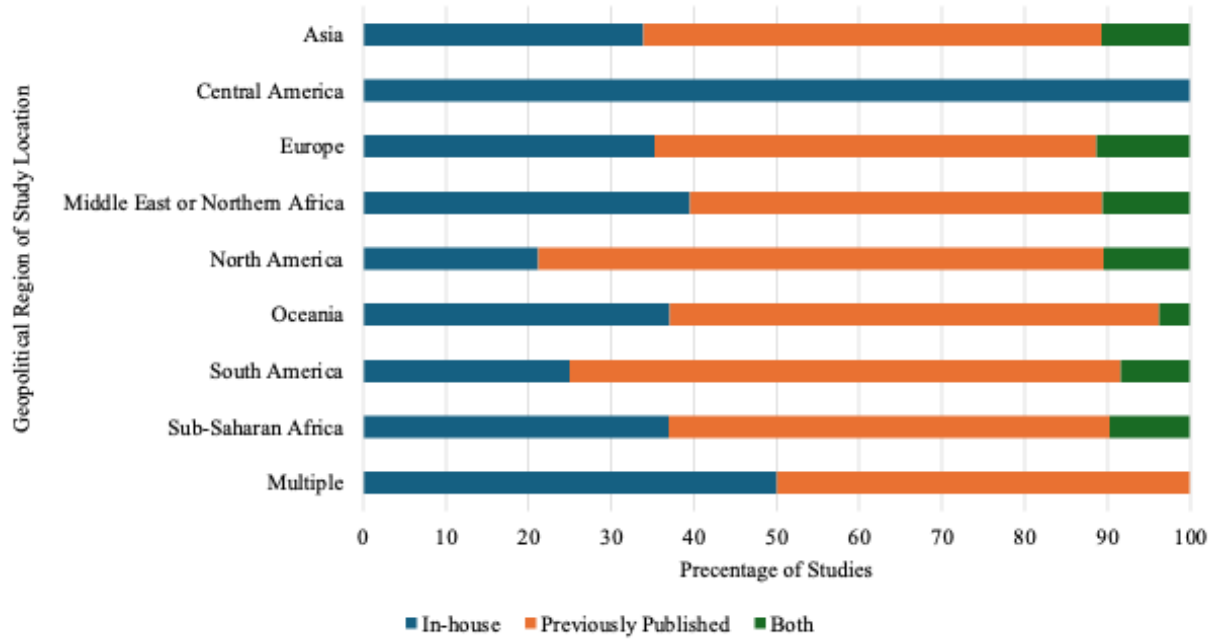
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Figure 4. Type of psychological trauma by geopolitical region.

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