Abstract

Objective

Ethnicity is a frequently reported risk factor for rapid tranquillisation (RT) use in mental health. We aimed to investigate the association between ethnicity and RT use in adult mental health emergency settings and explore potential explanations for the relationship between ethnicity and RT use in these settings.

Methods

Studies were included if they reported the association between ethnicity and RT use in adult mental health emergency settings. Searches were conducted across six databases and in grey sources and references until 15 April 2024. A narrative synthesis was performed and, in addition, a random-effects model was used for meta-analysis, with odds ratio as the measure. GRADE was applied to evaluate the overall certainty of evidence. Potential explanations for RT use in relation to ethnicity were also synthesised narratively.

Results

Five studies from Norway (n=1), Spain (n=1) and the United States (n=3) were included (14,777 individuals). Multiple classifications of ethnicity were used, with White, non-Hispanic and native-born serving as the ethnic majority group compared to ethnic minority counterparts. Overall, ethnic minorities in adult mental health emergency settings were non-statistically more likely to receive RT than ethnic majority populations. The overall certainty of evidence was deemed as low according to GRADE.

Conclusion

While RT use was not statistically significantly higher among ethnic minorities overall, Black individuals, as a specific ethnic group, had significantly increased odds of experiencing RT compared to ethnic majority populations. Additional research is necessary to confirm these findings and better understand the reasons behind these disparities through valid explanations.

Keywords: Ethnicity. Chemical restraint. Forced medication. Mental health. Psychiatry. Rapid tranquillisation.

Introduction

Ethnicity is a pivotal factor in mental health [1-3], with evidence suggesting ethnic disparities in rapid tranquillisation (RT, also termed chemical restraint) use [4-6]. RT is a restrictive practice commonly used in emergency settings worldwide to prevent harm [7,8]. It involves coercive administration of medications, such as antipsychotics, benzodiazepines or ketamine, either orally, intramuscularly or intravenously [9-13]. However, emergency settings vary globally and evolve continuously [13-15]. These settings may include general emergency departments, which manage a broad range of medical issues and may evaluate, treat and refer individuals for mental health care [16]; specialised mental health crises sections within emergency services [17]; or dedicated mental health emergency departments [5]. Each setting type (mental health and general emergencies) offers distinct treatment options [15] and responses to RT may vary depending on the individual's condition, which can differ across these settings [13]. Therefore, distinguishing between mental health and general emergency settings is crucial to effectively analyse RT use [13]. RT carries significant risks, including injuries, cardiac arrest, hypotension and extrapyramidal symptoms [13,18]. Consequently, reducing RT use in mental health has been a longstanding international priority [7,19].

Evidence on ethnic disparities in RT use in emergency settings is mixed, with some studies suggesting that ethnic minorities are disproportionately subjected to RT compared with ethnic majority populations [5,16]. However, findings may vary depending on context, indicating that increased RT use may not present the same risk for all ethnic minorities in every setting [4,10]. For instance, in Norway, immigrants were more frequently administered RT during mental health emergencies than native-born individuals, including cases where mechanical restraint (MR) was used concurrently [5]. However, a study from Spain reported higher RT use among North Africa immigrants than among other groups [10]. In US emergency departments, Black individuals had a higher probability of receiving RT than White individuals [16], whereas another study found that Hispanic individuals received fewer RT doses [4]. Factors contributing to such ethnic disparities are likely multifaceted, and the likelihood of RT may be influenced by characteristics such as age, ancestry, language proficiency, mental health conditions, and staff and ward culture [4,5,10,20].

Given these complexities and, to our knowledge, the lack of a systematic review on this topic, we investigated the association between ethnicity and RT use in adult mental health emergency settings and explored potential explanations for the relationship between ethnicity and RT use in these settings. By synthesising data across different settings and countries, we may be able to identify if certain ethnic minority groups are disproportionately affected by RT and whether these patterns persist independently of organisation and national contexts. Addressing this issue is essential to obtain a better understanding of the association between ethnicity and RT use in adult mental health emergency settings, describe reasons for its application and identify knowledge gaps.

Method

This systematic review followed the Cochrane Handbook recommendations [21] and was reported using the Guideline for Reporting Systematic Reviews (PRISMA) [22]. An *a priori* protocol was developed in accordance with the Guideline for Reporting Systematic Review Protocols (PRISMA-P) [23] (PROSPERO: XX).

Search strategy and selection criteria

Studies were included if they reported the association between ethnicity and RT use in adult (≥18 years old) mental health emergency settings. We included only studies that clearly defined the setting as mental health emergencies, understood in a broad sense, that were available in full-text in English or Scandinavian languages and that provided quantitative evidence. We excluded studies combining data for individuals in adult mental health emergency settings with other groups, such as youth or general emergency populations, unless they provided distinct results for each group. Furthermore, we excluded studies that examined multiple restrictive mental health practices (including RT and, e.g., seclusion or restraint) without separately reporting RT findings.

In line with the above aim, we developed a search strategy in collaboration with an informatics specialist [21]. The search encompassed bibliographic databases, grey sources and reference lists [21]. The six databases were APA PsycINFO (Ovid), CINAHL with Full Text (EBSCO), Cochrane Library (Wiley), Embase Classic+Embase (Ovid), PubMed (NCBI) and Scopus (Elsevier). We identified and organised relevant keywords and subject headings into systematic block searches tailored to each database. Detailed search strings are provided in Supplementary Table 1. Additional sources were targeted in accordance with the limitations of the database searches. The grey sources included Google, Google Scholar, GreyGuide (ISTI-CNR), OpenGrey (Inist-CNRS via DANS) and five relevant websites: the Danish Health Authority (sst.dk), Mind (mind.org.uk), the National Institute for Health and Care Excellence (nice.org.uk), the Race Equality Foundation (raceequalityfoundation.org.uk) and the Substance Abuse and Mental Health Services Administration (samhsa.gov). We screened the reference lists of included studies and relevant reviews (i.e., those assessing RT use or, more broadly, the use and management of restrictive practices and violence). The final search date was 15 April 2024.

All identified studies were imported into Endnote [24,25] and de-duplicated by XX using automatic and manual sorting methods. The remaining studies were subsequently uploaded to Covidence [26] for screening to ensure systematic study selection. XX and XX independently screened titles, abstracts and full-text manuscripts against the eligibility criteria above before reaching their final decision. Disagreements were resolved through discussion.

Data extraction and analysis

We extracted the following data from each study, using an Excel spreadsheet for documentation: author(s), year, study design, methods, mental health emergency setting, country, sample size, population type, demographics (i.e., age, gender, diagnosis and ethnicity), RT use (including details concerning doses and classification of drugs, and concurrent use of other restrictive practices or medications) and associated statistical data, and any explanations for RT use in relation to ethnicity. Data extraction was performed by XX and checked by XX. Disagreements were resolved through discussion.

XX and XX independently and critically appraised the included studies. The Mixed Methods Appraisal Tool (MMAT) [27,28] was used to assess each study's methodological quality, offering an efficient means of evaluation across various

study designs by focusing on core criteria. MMAT consists of two screening questions for all study designs and five questions targeting the identified design category [28]. The final categorisation was determined as high, medium or low based on a subsequent discussion of the results [28]. As in other comparable reviews [6,29,30], a methodological quality scoring system [31] was used to assess study quality for ethnic specificity by rating five domains: data source, sample size, adjustment for confounding variables (e.g., age and gender), ethnicity coding quality (e.g., staff or self-reported ethnicity) and ethnicity analysis (e.g., amalgamation of groups). The final categorisation, ranging from high [8-14] to medium [4-7] or low [0-3], was based on the overall quality score [30]. Disagreements were resolved through consultation with XX.

The primary outcome was the association between ethnicity and RT use; the secondary outcome was the association between ethnicity and repeated RT use (more than one dose). We performed a narrative synthesis [21], as pre-specified in our protocol, focusing on outcomes, population, intervention and design, and presented it in text and through visualisations. Additionally, in line with the Cochrane Handbook recommendations for performing systematic reviews, we supplemented it with a meta-analysis [21] to investigate further the association between ethnicity and RT use. We used the unadjusted data in the main analysis, where we attempted, when appropriate, to aggregate data for comparison between individuals from ethnic minority backgrounds and those from ethnic majority backgrounds. When a study reported data using multiple classifications of ethnicity (e.g., both White and non-Hispanic as the ethnic majority group), the classification used for primary reporting in the study was included in the main analysis. Variables of clinical interest (i.e., RT doses, drug classification and concurrent use of other restrictive practices or medications) were also sought from all included studies for the analysis.

In addition, to measure the association for transparency, we conducted a meta-analysis with a random-effects model with maximum likelihood on those included studies (as per the eligibility criteria above) that reported summary estimate data (odds ratio [OR]) and 95% confidence interval (CI) or sufficient data to estimate this for the association between ethnicity and receiving RT, in accordance with the Cochrane Handbook recommendations [21]. OR was used as the measure since the included studies, having a cross-sectional nature, provided statistical data in this format when raw data were unavailable. We used the Meta command in STATA BE 18.0 (StataCorp), and the significance level was set at $p \leq 0.05$. Knowing the prevalence of individuals (aged 18-65 years) with mental health conditions receiving RT (i.e., 9.5%) in any healthcare setting (mental health, acute, intensive or emergency settings) [32], we also present the relative risk (RR) by converting the OR, following the Cochrane Handbook recommendations [21].

Statistical heterogeneity between studies was assessed with the I^2 statistic, ranging from 0% to 100% (indicating no versus high heterogeneity) [33], and further explored through the below subgroup and sensitivity analyses, pre-specified in our protocol. Subgroup analyses were conducted on ethnicity (sample type and geography following the same study division) and publication year. Sensitivity analyses were performed on ethnicity (e.g., specific ethnic groups), unadjusted and adjusted estimates, and by excluding studies with high risk of bias scores (i.e., those categorised as low).

Given that quantitative evidence alone often fails to capture the full breadth of complex health issues, the second part of the aim was to identify potential explanations for RT use in relation to ethnicity by exploring the included studies. As with other studies [6,29,30], we extracted both such explanations for the relationship and any supporting evidence, i.e., data provided by the studies themselves (primary evidence) and citations referring to others (secondary evidence). We

analysed the extracted information using content analysis inspired by Krippendorff [34], coding the extractions, comparing differences and similarities and categorising them into the following domains: patient-related, illness-related, service-related, culture-related and service-patient interface [29,30].

Certainty of the evidence

Grading of Recommendations Assessment, Development and Evaluation (GRADE) for prognostic studies was used to evaluate the overall certainty of the findings [35]. GRADE is a systematic approach to assessing evidence certainty by examining five domains: methodological flaws in studies (e.g., risk of bias), heterogeneity of results across studies (e.g., inconsistency), generalisability of findings (e.g., indirectness), precision of estimates and risk of publication bias [35]. The certainty in the overall estimate can be categorised into four levels, ranging from high, indicating that additional studies assessing the same research question are unlikely to change the conclusions reached, to moderate, low or very low [35].

Results

As shown in Figure 1, we included five studies [5,10,17,20,36] in this review out of 5,489 identified studies from our searches. An overview of the included studies is provided in Table 1.

[Figure 1]

[Table 1]

Narrative synthesis

The five included studies varied in population, intervention and design, yet all explored the association between ethnicity and receiving RT (Table 1). Four studies reported the association between ethnicity and RT use (our primary outcome) [5,10,17,20]; one study examined the association between ethnicity and repeated RT use (our secondary outcome) [36]. Figure 2 presents an expanded overview of the studies concerning the primary classification of ethnicity used in data sources from the USA (top pie chart) vs. Europe (bottom pie chart) to generate the composite primary outcome of interest, with each chart representing two studies (USA: [17,20]; Europe: [5,10]).

The studies were from European countries, i.e. Norway [5], Spain [10], and the USA [17,20,36], and conducted across only one hospital, covering a relatively narrow geographic range. They were published between 1985 and 2022, though only studies from the 1980s [36], 2000s [5,17], and 2020s [10,20] were represented, leaving notable gaps in research across decades. The studies contained information about 14,777 individuals (range: 159-12,977) and on slightly more males (54%) than females. However, demographic information, such as age and diagnosis, was often not reported in detail (Table 1).

Ethnicity classification varied across studies, reflecting geographical differences in data categorisation. Two USA-based studies used multiple classifications of ethnicity [17,20], with both White and non-Hispanic as the ethnic majority group compared to ethnic minority counterparts. The remaining studies defined the ethnic majority group as White (USA-based) [36] or native-born (Europe-based) [5,10]. Additionally, while three studies went beyond broad minority and majority categories by also considering specific ethnic groups [10,17,20], two studies did not adopt this approach [5,36].

Definitions and application of RT differed between the studies (Table 2). While RT was consistently identified as a restrictive practice, only two studies explicitly referenced external sources to support their understanding [5,36], one of which cited mental health law [5]. The remaining studies did not provide clear references to define RT [10,17,20]. Furthermore, administration routes for RT were inconsistently defined: some studies specified intramuscular injections [10,17], others included both intramuscular and oral administration [5,36], while one study described it more broadly as parenteral administration [20].

The evidence in this review is based on cohort [5,17,20] and cross-sectional study designs [10,36]. Two studies reported adjusted data [10,20], accounting for patient characteristics (e.g., age, gender and language proficiency) and staff approaches, in addition to unadjusted data. The remaining studies did not adjust for potential confounders and relied solely on unadjusted data [5,17,36]. We found variability in study quality, primarily related to bias arising from inadequate consideration of confounding variables, as outlined regarding core criteria in Supplementary Table 2 and scores for ethnic specificity in Supplementary Table 3.

[Figure 2]

[Table 2]

We aimed to explore variables of clinical interest (i.e., RT doses, drug classifications and concurrent use of other restrictive practices or medications) in the analysis. However, a lack of reporting prevented this. One study [5], did provide information comparing RT use, MR use, concurrent use of both RT and MR and the absence of restrictive practices altogether. This study reported a statistically significant association between ethnicity and the type of practice used (p=0.02), including when compared to no use of restrictive practices (p=0.00) (Supplementary Material 4).

Ethnicity and RT use in emergency settings

Only the four studies for the primary outcome of interest were pooled with a meta-analysis [5,10,17,20]. We found that the OR for receiving RT for individuals with ethnic minority backgrounds in adult mental health emergency settings compared to individuals from ethnic majority backgrounds was 1.43 (95% CI: 0.95-2.15; I^2=57.32%), corresponding to an RR of 1.37 (95% CI: 0.95-1.94), assuming a 9.5% prevalence of RT use in adult individuals with mental health

conditions in comparable healthcare settings [32]. However, the 95% CI were wide, and the results therefore did not reach statistical significance. Figure 3 provides the forest plot for the meta-analysis.

[Figure 3]

Subgroup analysis by ethnicity (Supplementary Figure 1) and publication year (Supplementary Figure 2) aligned with the main findings. In sensitivity analyses, we included data from specific ethnic groups, showing that ethnic minorities of Black individuals had statistically significantly higher odds of receiving RT than their majority counterparts (OR=1.57; 95% CI: 1.41-1.74), while this was not observed for Hispanic individuals (OR=0.90; 95% CI: 0.70-1.16) (Supplementary Figure 3-4). Additionally, sensitivity analyses, including data based on alternative classification of ethnicity, revealed a significant difference in the likelihood of RT among ethnic groups when the ethnic majority was defined as native-born rather than non-Hispanic (Supplementary Figure 5-7). Sensitivity analyses of unadjusted versus adjusted estimates (Supplementary Figure 8-9) and omitting studies at high risk of bias (Supplementary Figure 10) did not change the main findings.

Explanations for RT use in relation to ethnicity

We derived explanations for RT use in relation to ethnicity from the included studies. However, only one study [20] reported such explanations (Supplementary Table 5). In this study [20], we identified some explanations supported by primary evidence (data provided by the study). The following domains emerged from the content analysis: 'Patient-related' and 'Service-related'. These explanations are related to patient characteristics (i.e., physical size and mental health conditions) and interpersonal and systemic racism. In the remaining studies [5,10,17,36], explanations were either absent or related to, e.g., restrictive practice use, including RT, as a broader concept. Consequently, the significance of the explanations in relation to RT was uncertain.

Certainty of the evidence

The certainty regarding the overall estimate of the evidence, according to GRADE, for the association between ethnicity and receiving RT in adult mental health emergency settings was deemed low (Supplementary Table 6). We downgraded the overall certainty of the evidence because of the impression and indirectness of the evidence.

Discussion

In this systematic review exploring the association between ethnicity and RT use in adult mental health emergency settings, we found that ethnicity is classified in multiple ways within this field. White, non-Hispanic and native-born were designated as the ethnic majority group, depending on geographical context, compared to ethnic minorities.

Notably, significant differences in ethnicity classification were observed between studies conducted in Europe and the USA. Additionally, although a non-statistically significant difference was observed, suggesting that individuals from ethnic minority backgrounds were more likely to receive RT than ethnic majority populations, statistically significant increased odds of RT were found specifically for Black individuals. This pattern is consistent with patterns observed in other emergency settings [16,37]. Thus, perceptions and definitions of ethnicity potentially influence outcomes, particularly depending on whether broad or specific ethnic group classifications are considered appropriate in analyses. This is further supported by our findings, which show a significant difference in the likelihood of RT when the ethnic majority group was defined as native-born rather than non-Hispanic. While others have suggested that ethnicity is a pivotal factor in mental health [1-3], our study further contributes to the understanding of Black ethnicity in particular as a significant factor in this context of service provision. Therefore, the results provide evidence that deepens our understanding of the association between ethnicity and RT use and how this issue has been explored globally. Furthermore, by contributing to existing knowledge, our study lays a foundation for future research on this topic to bolster efforts aimed at reducing health inequalities and reliance on RT in adult mental health emergency settings.

We included only five studies, a limited number with variations in study quality, which influenced the depth of the narrative synthesis, as well as the additional pooled association in the meta-analysis [38]. Several factors grounded in the eligibility criteria could explain the small number of included studies. For instance, relevant studies were excluded that did not distinguish between age groups (including youth) or types of emergency settings [4,16,37]. However, regarding the latter and as suggested by others [13,15], this distinction between settings may be necessary when analysing RT use because of differences in treatment options and individuals' responses, which may also influence the relationship with ethnicity. Another possible reason why few studies were included is that ethnic data collection is prohibited in some countries [39], limiting opportunities for targeted efforts because of this knowledge gap. However, unlike a recent systematic review on ethnicity and RT use in adult mental health inpatient settings [6], the present study included studies from both Europe and abroad, in this case, the US. Although we had a small number of included studies, a broader geographical representation is essential for understanding these issues on a global scale.

While four of the five included studies reported on the association between ethnicity and RT use, only one examined repeated RT use. While high levels of RT use are challenging in themselves, repeated RT use may be even more problematic. This issue may worsen injuries and adverse events in individuals receiving RT [13,18]. Given that reducing RT use in mental health practices is widely considered necessary [7,19], addressing repeated RT use should be a priority. A limitation is that this area could not be more comprehensively synthesised based on the studies. However, the association between ethnicity and repeated RT use remains an under-researched area in adult mental health settings [6], and this issue is not confined to emergencies.

Beyond grouping populations into ethnic minority and majority backgrounds, our findings show that three studies examined specific ethnic groups. This is a strength of these studies. Perceptions and understandings of ethnicity evolve and vary across settings [39-41], highlighting the need for further attention to adopt standardised yet flexible definitions. These definitions should provide a consistent foundation for analysis while remaining sensitive to the evolving and nuanced interpretations of ethnicity across different contexts. However, as emphasised by leading guidelines and other researchers [30,31,39,40], sensitivity to ethnic diversity is also essential, and aggregated

comparisons may impede a nuanced understanding of disparities. Our findings suggest that not all ethnic minority groups within a country are necessarily at a heightened risk of RT use in adult mental health emergency settings compared with ethnic majority populations. Therefore, greater specificity in ethnicity reporting and definitions of ethnicity may be critical for advancing our understanding in this field.

Of the five included studies, only one provided explanations for RT use in relation to ethnicity [20]. In this study, higher RT use among individuals from ethnic minority backgrounds was attributed to mental health conditions, physical size and interpersonal and systemic racism. However, only some of these explanations were substantiated by the study's data. Moreover, while some explanations align with those reported by other individual studies on RT use in mental health settings [42,43], the lack of comprehensive explanations highlights a critical issue. As suggested by Barnett et al. [30], explanations for potential ethnic disparities in RT use must be explored among comparable ethnic groups, tested within the study and substantiated by its own data to ensure validity. Such rigour may be essential for generating knowledge that informs the development of effective strategies to improve practices and address disparities.

Perspectives

To our knowledge, this systematic review is the first to explore the issue of ethnicity and RT use in adult mental health emergency settings. Therefore, our findings can potentially shape future research, practice and policy development by offering recommendations and directions on key next steps in this line of work that promote culturally sensitive care and reduce RT use in these settings. First, given the limited number of included studies, future research should adopt robust, high-quality approaches to strengthen the evidence base, enabling more comprehensive meta-analyses than those presented in this study. This requires incorporating unadjusted and adjusted estimates and data on specific, well-defined ethnic groups, when appropriate, to facilitate meaningful comparisons and support valid conclusions [30,38-40]. Second, further attention should also be directed towards the underreported outcome variables of interest in our study, focusing on ethnic disparities in these areas, as other health inequalities may exacerbate outcomes for individuals subjected to RT. Third and moreover, other factors, such as intersectionality [39,40], may influence RT use across different ethnic groups, as suggested by our findings. Therefore, understanding ethnic disparities in RT use involves documenting their existence, uncovering the underlying causes, and identifying all potential risk factors to reduce harm and promote equitable mental health practices. Fourth, a deeper understanding of the complex decision-making processes in RT use [44] is essential to address and avoid cultural assumptions and institutional racism in mental healthcare in the future [1,3,45]. Implementing culturally sensitive clinical guidelines and assessment tools can encourage staff to make clinical decisions free from bias, reducing variability in RT practices. Fifth, in mental health practices, cultural changes could be promoted through staff training on culturally appropriate care and cultural safety to mitigate biases influencing clinical decisions [46]. Additionally, supporting reflective practice and supervision in mental health is crucial to ensure that staff critically examine their decision-making processes regarding RT use. Sixth, to minimise RT use in relation to ethnicity, culturally adapted alternative strategies is needed. These could include peer support, integrating trusted community representatives or relatives into care planning, which may reduce RT reliance.

Limitations

Despite conducting a comprehensive search in collaboration with an informatics specialist [21], we identified and included only a limited number of studies. Additional search strategies or removing language restrictions might have increased the number of included studies. Furthermore, like previous reviews [6,30,47], we used unadjusted data in the main analysis. Consequently, residual confounding from age and gender, etc., may influence the results. Similarly, we may have neglected intersectionality, social determinants, and other factors [39,40], along with their potential relationship to the association between ethnicity and RT use. Additionally, RT is regulated differently by mental health laws and cultural norms across contexts, which may have impacted our findings.

Conclusions

Ethnic disparities in RT use in adult mental health emergency settings have received only limited scholarly attention. This systematic review revealed that individuals from ethnic minority backgrounds may be more likely to receive RT than those from ethnic majority backgrounds. However, the association did not reach statistical significance, underscoring the need for further research to explore this issue and deepen our understanding. Since perceptions and definitions of ethnicity may influence findings, using standardised and well-defined terminology is crucial for accurately addressing this topic. Furthermore, the lack of valid explanations for the relationship between ethnicity and RT use may impede efforts to promote equity in emergency mental healthcare, reduce ethnic disparities and decrease RT reliance. Therefore, understanding the reasons behind RT disparities should be a priority in the future.

References

1. Williams DR, Etkins OS. Racism and mental health. World Psychiatry. 2021;20(2):194-5. 10.1002/wps.20845
2. Schouler-Ocak M, Bhugra D, Kastrup MC, Dom G, Heinz A, Küey L, et al. Racism and mental health and the role of mental health professionals. Eur Psychiatry. 2021;64(1):e42. 10.1192/j.eurpsy.2021.2216
3. Hallett N, Dickinson R, Eneje E, Dickens GL. Adverse mental health inpatient experiences: qualitative systematic review of international literature. Int J Nurs Stud. 2025;161:104923. 10.1016/j.ijnurstu.2024.104923
4. Conteh E, Alorda A, Lebowitz D, MacIntosh T. Disparities in the Use of Chemical and Physical Restraints in the Emergency Department by Race/Ethnicity. J Racial Ethn Health Disparities. 2024;11(1):132-6. 10.1007/s40615-022-01504-2
5. Knutzen M, Sandvik L, Hauff E, Opjordsmoen S, Friis S. Association between patients' gender, age and immigrant background and use of restraint–a 2-year retrospective study at a department of emergency psychiatry. Nord J Psychiatry. 2007;61(3):201-6. 10.1080/08039480701352520
6. Pedersen M, Bricca A, Baker J, Schjerning O, Munk-Olsen T, Gildberg FA. Ethnic disparities in rapid tranquillisation use and justifications in adult mental health inpatient settings: a systematic review and meta-analysis. BMJ Mental Health. 2025;28(1):e301399. 10.1136/bmjment-2024-301399
7. National Institute for Health and Care Excellence. Violence and aggression: short term management in mental health, health and community settings. London: National Institute for Health and Care Excellence; 2015.
8. Council of Europe anti-torture Committee. Means of restraint in psychiatric establishments for adults. Strasbourg: Council of Europe; 2017.
9. Bervoets C, Roelant E, De Fruyt J, Demunter H, Dekeyser B, Vandenbussche L, et al. Prescribing preferences in rapid tranquillisation: a survey in Belgian psychiatrists and emergency physicians. BMC Res Notes. 2015;8:218. 10.1186/s13104-015-1172-2
10. Collazos F, Malagón-Amor Á, Falgas-Bague I, Qureshi A, Gines JM, del Mar Ramos M, et al. Treating immigrant patients in psychiatric emergency rooms. Transcultural Psychiatry. 2021;58(1):126-39. 10.1177/1363461520916697
11. Dib JE, Yaacoub HE, Ikdais WH, Atallah E, Merheb TJ, Ajaltouni J, et al. Rapid tranquillisation in a psychiatric emergency hospital in Lebanon: TREC-Lebanon - a pragmatic randomised controlled trial of intramuscular haloperidol and promethazine v. intramuscular haloperidol, promethazine and chlorpromazine. Psychol Med. 2022;52(13):2751-9. 10.1017/s0033291720004869
12. Patel MX, Sethi FN, Barnes TR, Dix R, Dratcu L, Fox B, et al. Joint BAP NAPICU evidence-based consensus guidelines for the clinical management of acute disturbance: de-escalation and rapid tranquillisation. J Psychopharmacol. 2018;32(6):601-40. 10.1177/0269881118776738
13. deSouza IS, Thode HC, Shrestha P, Allen R, Koos J, Singer AJ. Rapid tranquilization of the agitated patient in the emergency department: A systematic review and network meta-analysis. Am J Emerg Med. 2022;51:363-73. 10.1016/j.ajem.2021.11.011
14. Moellekaer A, Duvald I, Obel B, Madsen B, Eskildsen J, Kirkegaard H. The organization of Danish emergency departments. Eur J Emerg Med. 2019;26(4):295-300. 10.1097/mej.0000000000000554
15. Knott JC, Isbister GK. Sedation of agitated patients in the emergency department. Emerg Med Australas. 2008;20(2):97-100. 10.1111/j.1742-6723.2008.01063.x
16. Khatri UG, Delgado MK, South E, Friedman A. Racial disparities in the management of emergency department patients presenting with psychiatric disorders. Ann Epidemiol. 2022;69:9-16. 10.1016/j.annepidem.2022.02.003
17. Schillerstrom TL, Schillerstrom JE, Taylor SE. Laboratory findings in emergently medicated psychiatry patients. Gen Hosp Psychiatry. 2004;26(5):411-4. 10.1016/j.genhosppsych.2004.06.004
18. Muir-Cochrane E, Oster C, Gerace A, Dawson S, Damarell R, Grimmer K. The effectiveness of chemical restraint in managing acute agitation and aggression: a systematic review of randomized controlled trials. Int J Ment Health Nurs. 2020;29(2):110-26. 10.1111/inm.12654
19. Sugiura K, Mahomed F, Saxena S, Patel V. An end to coercion: rights and decision-making in mental health care. Bull World Health Organ. 2020;98(1):52-8. 10.2471/blt.19.234906
20. Smith CM, Turner NA, Thielman NM, Tweedy DS, Egger J, Gagliardi JP. Association of Black race with physical and chemical restraint use among patients undergoing emergency psychiatric evaluation. Psychiatr Serv. 2022;73(7):730-6. 10.1176/appi.ps.202100474

21. Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, et al. Cochrane handbook for systematic reviews of interventions version 6.5 [updated August 2024]. Available from: www.training.cochrane.org/handbook.
22. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. 10.1136/bmj.n71
23. Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. Syst Rev. 2015;4(1):1. 10.1186/2046-4053-4-1
24. Qi X, Yang M, Ren W, Jia J, Wang J, Han G, et al. Find duplicates among the PubMed, EMBASE, and Cochrane Library Databases in systematic review. PLoS One. 2013;8(8):e71838. 10.1371/journal.pone.0071838
25. Rathbone J, Carter M, Hoffmann T, Glasziou P. Better duplicate detection for systematic reviewers: evaluation of Systematic Review Assistant-Deduplication Module. Syst Rev. 2015;4(1):6. 10.1186/2046-4053-4-6
26. Babineau J. Product review: Covidence (systematic review software). Journal of the Canadian Health Libraries Association. 2014;35(2):68-71. 10.5596/c14-016
27. Hong QN, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, et al. The mixed methods appraisal tool (MMAT) version 2018 for information professionals and researchers. Education for Information. 2018;34:285-91. 10.3233/EFI-180221
28. Hong QN, Pluye P, Fábregues S, Bartlett G, Boardman F, Cargo M, et al. Mixed methods appraisal tool (MMAT), version 2018. Montréal: McGill University; 2018.
29. Singh SP, Greenwood N, White S, Churchill R. Ethnicity and the Mental Health Act 1983. Br J Psychiatry. 2007;191:99-105. 10.1192/bjp.bp.106.030346
30. Barnett P, Mackay E, Matthews H, Gate R, Greenwood H, Ariyo K, et al. Ethnic variations in compulsory detention under the Mental Health Act: a systematic review and meta-analysis of international data. Lancet Psychiatry. 2019;6(4):305-17. 10.1016/s2215-0366(19)30027-6
31. Bhui K, Stansfeld S, Hull S, Priebe S, Mole F, Feder G. Ethnic variations in pathways to and use of specialist mental health services in the UK. Systematic review. Br J Psychiatry. 2003;182:105-16. 10.1192/bjp.182.2.105
32. Muir-Cochrane E, Grimmer K, Gerace A, Bastiampillai T, Oster C. Prevalence of the use of chemical restraint in the management of challenging behaviours associated with adult mental health conditions: a meta-synthesis. J Psychiatr Ment Health Nurs. 2020;27(4):425-45. 10.1111/jpm.12585
33. Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. BMJ. 2003;327(7414):557-60. 10.1136/bmj.327.7414.557
34. Krippendorff K. Content analysis: an introduction to its methodology. Thousand Oaks: Sage; 2004.
35. Iorio A, Spencer FA, Falavigna M, Alba C, Lang E, Burnand B, et al. Use of GRADE for assessment of evidence about prognosis: rating confidence in estimates of event rates in broad categories of patients. BMJ. 2015;350:h870. 10.1136/bmj.h870
36. Dubin WR, Waxman HM, Weiss KJ. Rapid tranquilization: The efficacy of oral concentrate. J Clin Psychiatry. 1985;46(11):475-8.
37. Foster AA, Porter JJ, Monuteaux MC, Hoffmann JA, Li J, Lee LK, et al. Disparities in Pharmacologic Restraint Use in Pediatric Emergency Departments. Pediatrics. 2023;151(1):e2022056667. 10.1542/peds.2022-056667
38. Toloui A, Yousefifard M. Observational studies provide insufficient data for a reliable meta-analysis: a call to revise the current guidelines. Syst Rev. 2024;13(1):6. 10.1186/s13643-023-02435-7
39. Chew M, Samuel D, Mullan Z, Kleinert S. The Lancet Group's new guidance to authors on reporting race and ethnicity. Lancet. 2024;403(10442):2360-1. 10.1016/s0140-6736(24)01081-x
40. Flanagin A, Frey T, Christiansen SL. Updated guidance on the reporting of race and ethnicity in medical and science journals. JAMA. 2021;326(7):621-7. 10.1001/jama.2021.13304
41. Pedersen ML, Gildberg F, Baker J, Damsgaard JB, Tingleff EB. Ethnic disparities in the use of restrictive practices in adult mental health inpatient settings: a scoping review. Soc Psychiatry Psychiatr Epidemiol. 2023;58(4):505-22. 10.1007/s00127-022-02387-8
42. Bowers L, Douzenis A, Galeazzi GM, Forghieri M, Tsopelas C, Simpson A, et al. Disruptive and dangerous behaviour by patients on acute psychiatric wards in three European centres. Soc Psychiatry Psychiatr Epidemiol. 2005;40(10):822-8. 10.1007/s00127-005-0967-1
43. Shahpesandy H, Tye N, Hegarty A, Czechovska J, Kwentoh ML, Wood A. Rapid tranquillisation of acutely disturbed and violent patients: a retrospective cohort examination of 24 patients on a psychiatric intensive care unit. Journal of Psychiatric Intensive Care. 2015;11(S1):e1. 10.1017/S1742646415000072

44. Pedersen ML, Gildberg FA, Laulund R, Jorgensen K, Tingleff EB. Nurses' clinical decision-making in the use of rapid tranquillization in adult mental health inpatient settings: An integrative review. Int J Ment Health Nurs. 2023;32(5):1274-88. 10.1111/inm.13181
45. Macpherson W. The Stephen Lawrence inquiry. London: Stationery Office; 1999.
46. McGough S, Wynaden D, Gower S, Duggan R, Wilson R. There is no health without cultural safety: why cultural safety matters. Contemp Nurse. 2022;58(1):33-42. 10.1080/10376178.2022.2027254
47. Belayneh Z, Chavulak J, Lee DA, Petrakis M, Haines TP. Prevalence and variability of restrictive care practice use (physical restraint, seclusion and chemical restraint) in adult mental health inpatient settings: a systematic review and meta-analysis. J Clin Nurs. 2024;33(4):1256-81. 10.1111/jocn.17041

Table 1. Study characteristics of the included studies

Study	Year	Design	Descriptors of rapid tranquillisation	Country	Sample, n	Demographics				Quality appraisal	
						Age range (mean), years	Gender, n (%)	Diagnosis, n (%)	Ethnicity, n (%)	Study quality	Ethnicity checklist
Collazos et al. [10]	2021	Cross-sectional	Intramuscular psychoactive medication	Spain	467	18+ (NR)	199 female (42.6), 170 male (36.4), 98 NR (21)	NR depression (NR), NR anxiety (NR), NR psychosis (including mania symptoms) (NR), NR substance use disorders (NR), NR personality disorder (NR)	180 Latin Americans (38.5), 67 native Spaniards (14.3), 52 North Africans (Maghreb Region) (11.1), 41 Western Europeans (8.8), 34 Eastern Europeans (7.3), 23 Asians (5), 14 Sub-Saharan Africans (3), 56 NR (12)	Medium	High
Dubin et al. [36]	1985	Cross-sectional	Rapid tranquilization	USA	159	18-65 (36.2)	82 female (51.6), 77 male (48.4)	77 schizophrenia (48.4), 37 bipolar disorder, manic (23.3), 25 psychosis, aetiology unknown (15.8), 20 NR (12.6)	91 Black (57.2), 66 White (41.5), 2 Oriental (1.3)	Medium	Medium
Knutzen et al. [5]	2007	Cohort	Pharmacological restraint	Norway	960	18+ (41.5)	501 female (52.2), 459 male (47.8)	NR	835 native-born (87); 125 immigrants (13), i.e., from the Nordic countries (1.6), Europe/non-Nordic countries (2.6), Anglo-America/Latin America (0.8), Asia (4.7), Africa (2.3), others (0.2) and NR (1.1)	Medium	Low
Schillerstrom et al. [17]	2004	Cohort	Emergency intramuscular medication	USA	214	18+ (35.7)	100 female (46.7), 114 male (53.3)	NR	110 Hispanic (51.4), 84 Caucasian (39.3), 19 Black (8.9), 1 NR (0.5)	Medium	Medium
Smith et al. [20]	2022	Cohort	Chemical restraint	USA	12,977	18+ (37.4)	5,816 female (44.8), 7,159 male (55.2), 2 NR (0)	2,045 bipolar disorder (15.8), 4,383 psychotic disorder (33.8), 6,549 NR (50.5)	234 Asian (1.8); 6,287 Black (48.4), 5,263 White (40.6); 682 multiracial (5.3), 326 other (2.5), i.e., American Indian-Alaska native, native Hawaiian-Pacific Islander and others; 185 NR (1.4) 566 Hispanic (4.4), 12,137 non-Hispanic (93.5), 274 NR (2.1)	Medium	High

NR, not reported. The percentages are rounded to the first decimal place and do not always sum to 100% due to rounding inaccuracy.

Table 2. Definitions of rapid tranquillisation in the included studies

First author	Descriptor of rapid tranquillisation	Definition	Page where it is reported
Collazos et al. [10]	Intramuscular psychoactive medication	'(…) coercive measures (…).'	129
Dubin et al. [36]	Rapid tranquilization	'(…) is the strategy of using antipsychotic medication in a compressed time frame, titrating dosage against symptoms to control assaultive, hyperactive, and hostile patients.[1]'	475
Knutzen et al. [5]	Pharmacological restraint	'(…) consisted of anti-psychotic and sedative medications, given by injection or taken orally.'	202
Schillerstrom et al. [17]	Emergency intramuscular medication	'(…) either antipsychotics or benzodiazepines used for controlling violent or psychotic behavior.'	412
Smith et al. [20]	Chemical restraint	'(…) as documentation in the medication administration record of a non–long-acting parenteral formulation of a first- or second-generation antipsychotic available on the hospital formulary (chlorpromazine, fluphenazine, haloperidol, olanzapine, and ziprasidone). (…) in the context of a "behavioral emergency team activation," including nursing staff, psychiatry provider staff, and security.'	731

Figures

Figure 1. PRISMA flow diagram

Figure 2. Overview of the studies concerning the primary classification of ethnicity used in data sources from the USA (top pie chart) vs. Europe (bottom pie chart) in relation to the primary outcome. Each chart is based on two studies.

Figure 3. Main analysis of the association between ethnicity and rapid tranquillisation use