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TITLE PAGE

Title:

Ethnic disparities in the use of restrictive practices in adult mental health inpatient settings: a scoping review

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Abstract

Purpose: To identify and summarise extant knowledge about patient ethnicity and the use of various types of restrictive practices in adult mental health inpatient settings.

Methods: A scoping review methodological framework recommended by the JBI was used. A systematic search was conducted in APA PsycINFO, CINAHL with Full Text, Embase, PubMed and Scopus. Additionally, grey literature searches were conducted in Google, OpenGrey and selected websites, and the reference lists of included studies were explored.

Results: Altogether 38 studies were included; 34 were primary studies; four, reviews. The geographical settings were as follows: Europe (n=26), Western Pacific (n=8), Americas (n=3) and South-East Asia (n=1). In primary studies, ethnicity was reported according to migrant/national status (n=16), mixed categories (n=12), indigenous vs. non-indigenous (n=5), region of origin (n=1), sub-categories of indigenous people (n=1) and religion (n=1). In reviews, ethnicity was not comparable. The categories of restrictive practices included seclusion, which was widely reported across the studies (n=20), multiple restrictive practices studied concurrently (n=17), mechanical restraint (n=8), rapid tranquillisation (n=7) and manual restraint (n=1).

Conclusions: Ethnic disparities in restrictive practice use in adult mental health inpatient settings has received some scholarly attention. Evidence suggests that certain ethnic minorities were more likely to experience restrictive practices than other groups. However, extant research was characterised by a lack of consensus and continuity. Furthermore, widely different definitions of ethnicity and restrictive practices were used, which hampers researchers' and clinicians' understanding of the issue. Further research in this field may improve mental health practice.

Keywords

Ethnicity. Manual restraint. Mechanical restraint. Psychiatry. Rapid tranquillisation. Seclusion

Statements and declarations

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Data transparency: All data and material generated and analysed in the present review are available in the published paper or in supplementary material.

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1. Introduction

Widespread international efforts have been made to improve mental health practice by reducing the use of restrictive practices, such as manual/mechanical restraint, rapid tranquillisation and seclusion [1-4]; but, so far, with little success [5, 6]. Of concern, ethnic minorities appear to be subject to more restrictive practices than others [7-10]. If mental health practices are to be improved, an enhanced understanding of the relationship between restrictive practices and ethnicity is of crucial importance. This paper presented a scoping review of international research literature, which details ethnicity and the use of restrictive practices in mental health inpatient settings, to summarise current knowledge.

2. Background

The challenges associated with a multicultural society inhabited by people with different ethnic backgrounds have still not been successfully addressed in mental health [11, 12]. In many cases, treatment and care pathways are offered according to ethnic group [11, 13]. Consequently, mental health practice may be considered institutionally racist, meaning that an organisational inability exists to provide the right service to people due to their ethnic background [14]. This inability places ethnic minorities at a disadvantage and may be seen as discriminatory. Racist stereotyping observed in processes, attitudes and behaviour have been reported [14-16]. Institutional racism in mental health further extends beyond the inability to provide appropriate services; it manifests as harm to individuals and worse outcomes relating to mental illness [17]. Cultural competency, such as knowledge of values, beliefs and practices, is thus required in mental health and may improve treatment and care for ethnic groups [18, 19]. Together with implementation of guidelines targeting ethnic disparities and developing responsive practices, this may deliver ethnic equality [11]. Additionally, in recent years, research has highlighted how ethnic disparities and institutional racism still occur in mental health practice [11, 13, 17].

A review of seven quantitative studies showed that compared with those described as White, ethnic minorities, in this case people described as Black, were more likely to be hospitalised by police and less likely to trigger the involvement of a general practitioner at the first episode of psychosis [20]. Furthermore, in a large and more recent review comprising 71 quantitative studies, Barnett et al. [13] showed that ethnic minorities were generally at a greater risk of compulsory detention than were majority populations. Additionally, researchers have identified delay/gaps in access to mental health treatment and care for ethnic minorities; e.g., among first-generation immigrants with psychosis

[21-23]. Several studies have also reported inequalities in the length of mental health hospitalisations among various ethnic groups, with ethnic minorities often experiencing prolonged admissions [24, 25]. Finally, mental health staff have been shown to perceive some ethnic minorities as more dangerously disturbed than others [8, 13, 26]. The above examples of ethnic differences in pathways and mental health practice may contribute to the complex interplay of factors influencing ethnic differences in the rates of different types of restrictive practices that occur in mental health inpatient settings [10].

In mental health inpatient settings, restrictive practices remain common and are largely classified into four main types: manual restraint, mechanical restraint, rapid tranquillisation and seclusion [3, 27]. Although, most mental health acts consider their use to be acceptable as a last resort to prevent people from harming themselves and/or others [28, 29], the practices remain a topic of considerable debate [30, 31]. Their use is considered necessary by some mental health professionals to '*maintain safety for all*' [32]. However, it is traumatising for the people who are subjected to these practices [4, 33]. Furthermore, physical and psychological harm from the use of restrictive practices to both inpatients and staff are well documented [2, 33-37].

Evidence suggests that certain ethnic minorities are more likely to encounter restrictive practices than patients in general; e.g., foreign-born compared with national people [38, 39], indigenous compared with non-indigenous people [9, 40] and people described as Black compared with those described as White [2, 10]. Furthermore, ethnic minorities are more likely to die from restrictive practices [41, 42]. Outcomes for different ethnic groups are therefore an area of interest when implementing programmes to reduce restrictive practices in mental health [10]. Several reviews have identified ethnicity as a risk factor frequently associated with restrictive practices [7, 8]. However, these reviews were limited to acute/intensive mental health inpatient settings and did not focus on ethnicity specifically but on risk factors generally. Therefore, a need exists to create an overview of knowledge concerning restrictive practices and ethnicity across a wide range of mental health inpatient settings.

Considering the above, the purpose of this paper was to conduct a scoping review by covering a broad spectrum of international research literature examining reported ethnicity and the use of common types of restrictive practices to establish a foundation for improving mental health practice and identify knowledge gaps. To the best of our knowledge, no studies have previously synthesised these data.

3. Aim

To review extant international research literature to identify and summarise existing knowledge about patient ethnicity and the use of manual restraint, mechanical restraint, rapid tranquillisation and seclusion in adult mental health inpatient settings.

4. Methods

A scoping review inspired by the JBI framework [43, 44] was chosen to identify, select and summarise existing knowledge about patient ethnicity and the use of different types of restrictive practices in mental health inpatient settings. The interpretive framing of data to summarise existing knowledge was rooted in the epistemology of pragmatism and the methodological approach described by Blumer [45], stressing the need for careful and disciplined data examination using open-ended categories inductively for concepts such as ‘ethnicity’ in order not to skew interpretations into ethnocentrism. In line with this framework, the following were undertaken: identifying the review question, identifying relevant studies, screening and selecting studies, extracting data and analysing and presenting results. The PCC (*Population, Concept, and Context*) elements were incorporated to develop a focused review question [43, 44]: What characterises international research literature on patient ethnicity and the use of manual restraint, mechanical restraint, rapid tranquillisation and seclusion in adult mental health inpatient settings? PCC elements were as follows: (a) *population*: adults (≥ 18 years old) categorised by ethnicity, defined as the ‘social group a person belongs to, and either identifies with or is identified with by others, as a result of a mix of cultural and other factors’ [46]; (b) *concept*: restrictive practices, defined as manual restraint, mechanical restraint, rapid tranquillisation (also known as chemical restraint) and seclusion [3, 27]; and c) *context*: all types of mental health inpatient settings into which a person may be formally admitted, varying in time until discharge depending on treatment and care needs. The Reporting Checklist for Scoping Reviews (PRISMA-ScR) was used for reporting the findings [47, 48].

4.1 Search strategy

To identify relevant studies, the literature search followed a three-step process: initially, a search in CINAHL with Full Text (EBSCO) and PubMed (NCBI) was conducted to identify relevant keywords and search subject headings [43]. Secondly, these relevant keywords and search subject headings were combined using the Boolean operators AND/OR

in a systematic block search strategy, framed by the above review question (PCC elements) and guided by an informatics specialist [43]. The literature search was conducted in CINAHL with Full Text, PubMed, APA PsycINFO (ProQuest), Scopus (Elsevier) and Embase (Elsevier) (between 1 January 2010 and 22 February 2021). This data range was chosen to ensure a contemporary knowledge base in a field in which interest is growing [49, 50]. As an example, the search in CINAHL with Full Text is shown in Table 1, and the full literature search comprising all the selected databases is shown in the supplementary material. The final step of the literature search process was a ‘*citation pearl searching*’ [51], i.e. an examination of the reference lists of all included studies.

To identify grey literature, the following were hand searched by the authors: Google, OpenGrey and selected websites (i.e., Danish Health Authority (sst.dk), National Institute for Health and Care Excellence (nice.org.uk), Substance Abuse and Mental Health Services Administration (samhsa.gov), Race Equality Foundation (raceequalityfoundation.org.uk) and Mind (mind.org.uk) [52]. These websites are run by health authorities and interest organisations and therefore considered relevant to the review topic. The grey literature search was conducted in accordance with the limitations in the database search. The authors’ international research network were also contacted regarding knowledge of relevant literature.

[Table 1 approximately here]

4.2 Source of evidence screening and selection

The literature searches and selection process are documented in a *PRISMA Flow Diagram* [48]. As shown in Fig. 1, initially 6,823 studies were identified across the databases. Hereafter, the number of hits was reduced by using relevant automation tools to limit the number of hits in the databases, as follows: language, English; publication year, 2010 to present. Following removal of duplicates, 2,325 studies were imported into Covidence [53] to ensure a systematic selection process. This process was guided by the following inclusion/exclusion criteria: The inclusion criteria were a) all types of research literature, including reviews, qualitative, quantitative and mixed method studies; b) in English; c) about use of restrictive practices (*concept*) among adults with described ethnicity (*population*) in a mental health inpatient setting (*context*). Studies were excluded based on the following criteria: a) Studies without reported empirical data; b) thesis; c) no full-text available; d) non-mental health setting.

Initially, titles/abstracts were screened, which excluded 2,217 studies. Subsequently, 108 studies were sought for retrieval. Among these, 102 studies were assessed by full-text reading, which excluded an additional 80 studies. The first and last author independently completed the screening and full-text reading. In cases of disagreement, the second author was consulted to reach a final decision. A total of 16 additional studies were identified by other methods (Fig. 1). Finally, 38 studies were included in this review.

[Fig. 1 approximately here]

4.3 Data extraction

Data were extracted using a charting table inspired by the scoping review framework [43]: (a) general information: author(s) and year of publication; (b) methodological information: study design; (c) context information: mental health inpatient setting and country; (d) sample information: number of participants (primary studies) and number of included studies (reviews); (e) demographic information: gender and ethnicity as defined by the papers; (f) type of restrictive practice(s); (g) key findings relevant to the aim of this review. Data extraction was conducted by the first author and reviewed by the last author. Subsequently, the extracted data were discussed between all authors to ensure a common understanding. If a common understanding of data was not achieved, the authors of the studies reporting the data were contacted for clarification.

4.4 Analysis and presentation of results

According to Krippendorff [54], content analysis is a scientific method for data processing in several type of research, including those that use qualitative and quantitative approaches. The analytic process was initiated by a discussion between the first and last author to determine which applicable data extraction from the included studies should be used for further analysis [54]. Data were assessed for applicability based on the above review question [54]. Then, these data were coded and compared for similarities and differences before being sorted into categories [54]. In keeping with the scope of scoping reviews, the results and ethnic groups are presented descriptively, including tables, and some are described in the supplementary material [43]. Data were included as characterised in the studies. To provide a detailed

answer to the review question, the characteristics of the included studies are first presented; this is followed by an overview of the use of the four different types of restrictive practice in relation to reported ethnicity.

5. Results

5.1 Results of the literature search

As shown in Fig. 1, 38 studies were included in this review. One additional study met the inclusion criteria [55], but it not included as an updated version was included instead [2].

5.2 Description of studies included

Table 2 provides general, methodological, contextual and sample information extracted from the studies, whereas Table 3 provides an overview of the reported ethnic groupings in relation to restrictive practices. In the following, these tables are presented focusing on context and study design.

[Table 2 approximately here]

[Table 3 approximately here]

5.2.1 Context

As shown in Table 2, most studies (n=20) were conducted in mental health inpatient settings in general. More specifically, the remaining studies were conducted in acute/intensive settings (n=15), emergency settings (n=2) and forensic settings (n=1). According to the World Health Organization [56] guidelines, the studies were mainly conducted in Europe (n=26), followed by the Western Pacific (n=8), the Americas (n=3) and South-East Asia (n=1).

5.2.2 Study design

Of the 38 studies, 34 were primary studies, including 33 quantitative and one qualitative study. The remaining four studies were reviews. In total, the studies contain findings based on 491,893 participants (255,342 females and 227,986 males) in the 34 primary studies and 98 studies comprised by the four reviews. However, four primary studies failed to report the number of participants [57-60], whereas nine studies reported incomplete or no gender information (missing data: n=8,565) [1, 39, 57-63]. Reviews were not comparable by gender. Gender information from all studies is reported in the supplementary material.

As shown in Table 3, ethnicity was described and divided into groups in a wide range of manners across the studies, underpinning the heterogeneity of the concept. In two studies, e.g., several ethnic groupings were used [64, 65]. Furthermore, in several studies ethnicity was reported in one way in relation to the description of participants but in different ways in the analysis. The study by Alda Díez et al. [38] may serve to exemplify this; most ethnic minorities participants were categorised as Latin Americans, followed by Sub-Saharan, Maghrebian and Eastern Europeans; however, in the analysis, immigrants as a single group were compared with nationals. A more accurate description of ethnicity information provided in all studies is reported in the supplementary material, whereas main categories are presented in Table 3. Most of the 34 primary studies (n=16) divided ethnicity by migrant/national status (e.g., foreign-born, immigrants or refugees and nationals), followed by indigenous (e.g., Māori, Pasifika or indigenous status) and non-indigenous (n=5), region of origin (n=1), sub-categories of indigenous people (n=1) and religion (n=1). The remaining 12 primary studies used mixed categories (e.g., comparing religion/race and origin). Reviews were not comparable by ethnicity.

5.3 Ethnicity in relation to restrictive practices

As shown in Table 3, restrictive practices were defined and used very differently across the studies. In 12 studies, types of restrictive practices were not defined [8, 9, 38, 39, 49, 61, 63, 66-70]. An overview of definitions of restrictive practices used in the remaining studies is provided in the supplementary material. Moreover, seclusion was the most frequently studied restrictive type (n=20), followed by mechanical restraint (n=8), rapid tranquillisation (n=7) and manual restraint (n=1). In 17 studies, multiple restrictive practices were investigated concurrently (e.g., both mechanical restraint and rapid tranquillisation [71-73]). From these studies, data on individual restrictive practices could not be extracted. Table 4 summaries available relative risk, odds ratio, confidence interval and p-value data, and additional key

findings to highlight important reported associations between ethnicity and restrictive practices. As only one study (a review) investigated manual restraint with no reported findings [2], this restrictive type is not listed below.

[Table 4 approximately here]

5.3.1 Mechanical restraint

As shown in Table 4, four studies reported significant associations between ethnicity and mechanical restraint [25, 38, 74, 75]. People with migrant status, in this case immigrants and non-nationals (Europe-based studies), were significantly more likely to receive mechanical restraint in all but one study where the reverse association was reported after using adjusted analysis [75]. Moreover, a significantly lower frequency of mechanical restraint was identified in one study in those with immigrant backgrounds who had resided in a country for a longer period of time [38]. Proportional (non-significant) findings were reported in one study, where people described as non-White were more likely to receive mechanical restraint [76]. No significant differences in ethnicity were reported in the findings of three studies [25, 57, 58].

5.3.2 Rapid tranquillisation

Three studies reported significant associations between ethnicity and rapid tranquillisation [7, 39, 77], of which there was no further description in one study [77]. Ethnic minorities, in this case people of foreign citizenship (Swiss-based study) or not further described (review study) were significantly more likely to receive rapid tranquillisation in the two remaining studies [7, 39]. However, these associations became non-significant after using adjusted analysis, although, proportionally, ethnic minorities were more likely to receive rapid tranquillisation. Proportional (non-significant) findings were reported in one other study, where non-German people were more likely to receive rapid tranquillisation than Germans [66]. No significant differences in ethnicity were reported in another two studies [74, 78].

5.3.3 Seclusion

Eight studies reported significant associations between ethnicity and seclusion [7, 9, 40, 59, 62, 68, 79, 80]. Ethnic minorities were significantly more likely to receive seclusion in all but one study, where the inverse association was reported [79]. However, after adjusted analysis, the reverse association was reported in one further study [68], whereas associations became non-significant in three studies [7, 59, 62]. In Western Pacific-based studies, ethnic minorities were indigenous (e.g., Māori) or European people [9, 40, 62, 79, 80]. In European-based studies, they were people of non-Western descent or described as non-White [59, 68], while in the remaining (review) study, ethnic minority status was not further described [7]. Moreover, age was identified in two studies as a significant contributor to ethnic disparities between indigenous and non-indigenous people in relation to the use of seclusion [9, 62]. Proportional (non-significant) findings were reported in three studies where ethnic minorities were more likely to receive seclusion [2, 9, 60, 81]. No significant differences in ethnicity were reported in relation to the findings of nine studies [1, 7, 59, 65, 69, 74, 75, 77, 78]. Additionally, seclusion was reported to be experienced as discriminatory and degrading across ethnicities [67, 82].

5.3.4 Multiple restrictive practices investigated concurrently

Eight studies reported significant associations between ethnicity and restrictive practices [7, 8, 61, 63, 64, 69, 73, 74]. Ethnic minorities, in this case people described as Black, with migrant status, of non-European descent or from North Africa (European and US-based studies) or not further defined (review studies) were significantly more likely to receive restrictive practices in all studies, of which the results from two studies were based on adjusted analyses [63, 64]. However, in four studies, associations became non-significant after (further) adjusted analysis [7, 61, 63, 64]. Proportional (non-significant) findings were reported in four studies where foreign nationals were more likely to receive restrictive practices [39, 49, 66, 83]. No significant differences in ethnicity were reported in relation to findings in eleven studies [7, 8, 61, 63, 64, 70-72, 74, 77, 84].

6. Discussion

The present review summarised literature on ethnicity and the use of restrictive practices in adult mental health inpatient settings. It showed that from 2010 to the present, a total of 38 studies were published in this field. The studies were characterised by lacking consensus and continuity, and both ethnicity and restrictive practices were reported with widely differing definitions. Thus, this review provides important understanding of variables that should be considered

in future more rigorous analysis of the influence of ethnicity on rates of restrictive practices to support efforts at reducing restrictive practices in mental health inpatient settings [10].

In extant literature, ethnicity is reported as one of the risk factors most frequently associated with the use of restrictive practices [7, 8]. It may therefore be considered surprising that in some of the included studies, ethnicity was not associated with the use of restrictive practices. However, the fact that this lack of effect is stronger in studies after using adjusted analysis underpins the complex interplay of factors influencing ethnic differences in the rates of restrictive practices [10]. The findings of this review showed, e.g., that factors such as residence time in a country and also age contributed significantly to ethnic disparities in relation to the use of mechanical restraint and seclusion, respectively. These findings potentially suggest the importance of a focus on intersectionality and the social determinants of mental health [85, 86]. This would facilitate recognition of multiple sources of disadvantage and how this may contribute to the use of restrictive practices towards ethnic minorities [86-88]. Furthermore, in many cases, ethnic minorities remain proportionally more likely to receive restrictive practices than the majority population, although some findings in this regard are reported as non-significant. Several international analyses in the field confirm this increased likelihood of restrictive practices among ethnic minorities [10, 89-91].

Consequently, although the picture is mixed, it is of concern if ethnic minorities do not receive treatment and care in a respectful, safe and non-restrictive environment [35]. Therefore, further initiatives are warranted both in clinical practice to improve the care of ethnic minorities and in relation to research to ensure that potential institutional racism in mental health inpatient settings may be overcome [14]. We propose that these initiatives may be focused on staff-related factors affecting the use of restrictive practices for two reasons; first, since such practices are initiated by staff [31, 32, 92]; second, because research is largely unanimous that use of restrictive practices in mental health settings is associated with staff-related factors [8, 93]. Furthermore, research has highlighted that disparities in care based on ethnicity may be maintained by staff-related factors such as a lack of cultural understanding and culturally appropriate services and by communication issues [8, 18]. Research into these factors is important for mental health care to become more sophisticated and person-centred, to learn about and prevent the use of restrictive practices in minority groups and thereby eliminate ethnic inequalities; especially as these inequalities have been further exacerbated by the COVID-19 pandemic [94, 95]. Such research should account for intersectionality and the social determinants of mental health that are known to be important [86-88]; and it should explore the possibility that ethnic disparities in use of restrictive practices may also be influenced by other sources of disadvantage, such as income, living situation and trauma [64, 93].

This review also shows that clarity about institutional racism in mental health inpatient settings is further confused by the very diverse classification of ethnic minorities. For instance, the findings suggested that studies dividing ethnicity into migrant/native status are more likely to report an association between ethnicity and the use of restrictive practices than are studies using mixed categories to describe ethnicity. These conflicting results have meant that frequently discussed comparisons and syntheses are not possible. Like others, we therefore suggest greater standardisation in how ethnicity is categorised [2, 86]. Furthermore, we propose the use of several ethnic divisions, which this review has shown were used only sparingly, in order to help build an overview of the field and to facilitate specific comparisons between different understandings of ethnicity across contexts. Although we know that ethnic definitions, terms and their use change over time and between countries [86], being sensitive to the diversity of concepts such as ethnicity may be more important now than at any other point in time. So that the research has relevance not just in different contexts, but also in the future and to the people in the healthcare system whose conditions we are trying to improve. Additionally, as the number of international migrants is increasing [96] and managing their (mental) health needs may be challenging [12, 97, 98], a stronger focus on ethnicity may be desirable in future systematic reviews. Such focus may help advance our knowledge on one widely reported ethnic grouping (migrants/natives) encountering ethnic disparities in the use of restrictive practices.

Only one study reported data on manual restraint. This is of major concern particularly as death from prone manual restraint is an international issue [41, 42]. Furthermore, manual restraint was typically included in the studies in which several restrictive practices were studied concurrently. Thus, the lack of manual restraint research highlights a problem that exists in many mental health research fields characterised by a trend towards bundling up different types of restrictive practices or coercion [32, 99-101], making it difficult to tease out research on specific restrictive practices such as manual restraint. As argued by several researchers, research designs that distinguish between different restrictive practices is urgently required as both their use and the negative consequences they have for those affected vary [2, 5, 33, 36, 102]. The trend to bundle different types of restrictive practices and coercion may also explain the low number of included studies investigating mechanical restraint (n=8) and rapid tranquillisation (n=7). Therefore, to increase knowledge about the association between ethnicity and the use of restrictive practices, we strongly recommend conducting more research on the association between particular restrictive practices and ethnicity.

6.1 Limitations

Although the use of a broad and systematic search strategy must be considered a strength of this review, inclusion of, e.g., ProQuest Dissertations & Theses Global may potentially have identified additional qualitative studies [103], leading to different findings. Secondly, the language limitations may have impacted the number of identified studies as studies relevant to the purpose of this review have undoubtedly also been drafted in non-English languages. Thirdly, in the context of inclusion/exclusion criteria, the studies by Bak et al. [57] and Verlinde et al. [78] should be mentioned as these only contain minor elements of relevance to this review. Fourthly, it has been argued that the lack of quality assessment is a limitation of scoping reviews [104, 105]. However, quality assessment of studies is beyond the purpose of a scoping review, which should be used to gauge the size and scope of extant research literature in a field [43, 105, 106]. Therefore, it contributes to the validity and reliability of this review that this part of the scoping review framework was adopted. Fifthly, most studies have been conducted in Western countries. Whilst this was not an unexpected finding in this field [2, 7, 13], the geographical variation of studies, with certain regions being underrepresented or absent, suggests that the risk of instructional racism concerning restrictive practices is not addressed in some countries, or that reporting/publication bias may be prominent. Lastly, the studies comprised by our review were conducted in very different settings. Since the goal was to review existing international research literature, this is a strength of the review although it should be noted that laws and acceptable treatment/care cultures may vary between settings [5, 102, 107, 108].

6.2 Conclusion

In this scoping review, we identified the contemporary knowledge about ethnicity and use of restrictive practices. This research is characterised by a lack of consensus and continuity, and widely different definitions of ethnicity and restrictive practices are used in the literature. We conclude that seclusion was most frequently studied, followed by multiple concurrent restrictive practices, mechanical restraint, rapid tranquillisation and, finally, less frequently, manual restraint. Additionally, particular ethnic minorities appeared to be more likely than others to experience restrictive practices. Therefore, further research is warranted exploring how people from different ethnic backgrounds are subjected to restrictive practices in routine care. Standardisation of the language of restrictive practices and ethnicity is vital to truly understand this.

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Table 1 Search subject headings and keywords combined with Boolean operators (OR/AND) in CINAHL with Full Text

<p>Population: Descriptors of ethnicity</p>	<p>MH “Ethnic Groups+” OR MH “Immigrants+” OR Ethnic OR Refugee OR Ethnology OR Migrant OR Transient OR Emigrant OR Immigrant OR Minority OR Race OR Continental population OR Ethnological OR Ethnicity</p>
<p>Concept: Restrictive practices</p>	<p>Seclusion OR Coercion OR Restraint OR Coercive OR Compulsory OR Involuntarily OR Involuntary OR Forced medic* OR Tranquiliz*</p>
<p>Context: Mental health inpatient settings</p>	<p>MH “Forensic psychiatry+” OR Psychiatry OR Psychiatric OR Secure service OR Secure setting OR Forensic service OR Forensic setting OR Mental health</p>

Table 2 General, methodological, context and sample information of the included studies. NR, Not reported. PS, Primary studies (n = participants). RS, Reviews (n = included studies)

Author(s)	Year	Study design	Mental health inpatient settings as described by the papers	Country	Sample (n.)	
					PS	RS
Alda Díez et al.	2010	Case-control	Psychiatric ward	Spain	204	
Bak et al.	2014	Cross-sectional	Psychiatric hospital units	Denmark/Norway	NR	
Bak et al.	2015	Cross-sectional	Psychiatric hospital units	Denmark/Norway	NR	
Beames and Onwumere	2021	Systematic review	Adult acute inpatient or psychiatric intensive care	UK		20
Beghi et al.	2013	Systematic review	Acute psychiatry wards	Italy		49
Bennewith et al.	2010	Cohort	Mental health hospitals	UK	773	
Bilanakis et al.	2010	Cohort	Mental health hospitals	Greece	282	
Bowers et al.	2012	Cross-sectional	Acute psychiatric wards and psychiatric intensive care units	UK	522	
Bowers et al.	2010	Cross-sectional	Acute mental health wards	UK	NR	
Collazos et al.	2021	Cross-sectional	Hospital psychiatry emergency rooms	Spain	397	
Cullen et al.	2018	Case-control	General adult acute wards and psychiatric intensive care unit	UK	4,002	
Currier et al.	2011	Experimental	Psychiatric emergency department	USA	151	
Drown et al.	2018	Survey	Mental health inpatient units	New Zealand	NR	
Flammer et al.	2013	Cohort	Inpatient psychiatric care	Germany	3,389	
Gowda et al.	2018	Cohort	Department of Psychiatry	India	200	
Happell and Koehn	2010	Survey	Mental health inpatient units	Australia	3,244	
Hendryx et al.	2010	Cohort	Adult state psychiatric hospital	USA	1,266	
Hui et al.	2016	Literature review	Forensic psychiatry within secure hospital settings	UK		18
Husum et al.	2010	Cross-sectional	Acute psychiatric wards	Norway	3,462	
Jury et al.	2019	Cohort	Adult mental health inpatient services	New Zealand	11,341	
Knutzen et al.	2013	Cohort	Acute psychiatric wards	Norway	371	
Knutzen et al.	2014	Cohort	Acute psychiatric wards	Norway	373	
Knutzen et al.	2011	Case-control	Acute psychiatric wards	Norway	749	
Lai et al.	2019	Ecological	Mental health inpatient services	New Zealand	10,727	
Lay et al.	2011	Cohort	Psychiatric hospitals	Switzerland	9,698	
McLeod et al.	2017	Cohort	Mental health inpatient units	New Zealand	7,239	
Mellow et al.	2017	Systematic review	Mental health settings	UK		11
Miodownik et al.	2019	Cohort	Acute, closed psychiatric ward	Israel	176	
Norredam et al.	2010	Cohort	Nationwide psychiatry	Denmark	312,300	
Opitz-Welke and Konrad	2012	Cohort	Psychiatric department within a prison hospital	Germany	107	
Sambrano and Cox	2013	Qualitative	Acute mental health facility	Australia	3	
Tarsitani et al.	2013	Case-control	Psychiatric intensive care unit	Italy	200	
Taylor et al.	2012	Cohort	Psychiatric inpatients units	USA	3,758	
Thomsen et al.	2017	Cohort	Nationwide psychiatry	Denmark	112,233	
Trauer et al.	2010	Experimental	Acute psychiatric inpatient ward	Australia	352	
Tyrer et al.	2012	Cohort	General adult acute psychiatric unit	New Zealand	254	
van de Sande et al.	2017	Cohort	Acute psychiatric admission wards	Netherlands	878	
Verlinde et al.	2017	Cohort	Mental health hospitals	Netherlands	3,242	

Table 3 Description of ethnicities by restrictive practices. *Studies dividing ethnicity into more than one category. †Study (a review) investigating restrictive practice; however, no findings were reported

Restrictive practices (n.)	Description of ethnicity Main categories (n.)	References	Definition of the restrictive practice
Manual restraint (n = 1)	Review (n = 1)	Hui et al. (2016) [†]	Yes
Mechanical restraint (n = 8)	Migrants and native nationals (n = 6)	Alda Díez et al. (2010) Bak et al. (2014) Bak et al. (2015) Flammer et al. (2013) Husum et al. (2010) Tarsitani et al. (2013)	No Yes Yes Yes Yes Yes
	Mixed categories (n = 1)	Currier et al. (2011)	Yes
	Review (n = 1)	Hui et al. (2016) [†]	Yes
Rapid tranquillisation (n = 7)	Migrants and native nationals (n = 3)	Flammer et al. (2013) Lay et al. (2011) Opitz-Welke and Konrad (2012)	Yes No No
	Mixed categories (n = 1)	Verlinde et al. (2017)	Yes
	Religion (n = 1)	Gowda et al. (2018)	Yes
	Review (n = 2)	Beames and Onwumere (2021) Hui et al. (2016) [†]	Yes Yes
Seclusion (n = 20)	Indigenous and non-indigenous people (n = 5)	Drown et al. (2018) Happell and Koehn (2010) Lai et al. (2019) McLeod et al. (2017) Trauer et al. (2010)*	Yes No Yes Yes Yes
	Indigenous people (n = 1)	Sambrano and Cox (2013)	No
	Migrants and native nationals (n = 3)	Flammer et al. (2013) Husum et al. (2010) Trauer et al. (2010)*	Yes Yes Yes
	Mixed categories (n = 8)	Bowers et al. (2012) Bowers et al. (2010) Cullen et al. (2018) Hendryx et al. (2010) Jury et al. (2019) Tyrer et al. (2012) van de Sande et al. (2017) Verlinde et al. (2017)	Yes Yes Yes Yes Yes Yes No Yes
	Religion (n = 1)	Gowda et al. (2018)	Yes
	Review (n = 3)	Beames and Onwumere (2021) Hui et al. (2016) Mellow et al. (2017)	Yes Yes Yes
	Geographical categories (n = 1)	Thomsen et al. (2017)*	Yes
Multiple restrictive practices (n = 17)	Migrants and native nationals (n = 10)	Bilanakis et al. (2010) Collazos et al. (2021) Flammer et al. (2013) Knutzen et al. (2013) Knutzen et al. (2014) Knutzen et al. (2011) Lay et al. (2011) Norredam et al. (2010) Opitz-Welke and Konrad (2012) Thomsen et al. (2017)*	Yes No Yes Yes Yes Yes Yes Yes (manual and mechanical restraint only) No Yes
	Mixed categories (n = 4)	Bennewith et al. (2010) Hendryx et al. (2010) Miodownik et al. (2019) Taylor et al. (2012)	No No Yes Yes (seclusion only)
	Religion (n = 1)	Gowda et al. (2018)	Yes
	Review (n = 2)	Beames and Onwumere (2021) Beghi et al. (2013)	Yes No

Table 4 Available relative risk*, odds ratio (OR), confidence interval and p-value data, and additional key findings to highlight important reported associations between ethnicity and restrictive practices. NR, not reported. †Review study

Restrictive practices	Study	Country	Variable	OR	95 % CI	P-value	Notes and additional key findings
Mechanical restraint	Alda Díez et al. (2010)	Spain	Immigrant	2.6	1.9-3.0	NR	Immigrants were significantly balanced with national subjects after three years in Spain.
	Bak et al. (2014)	Denmark/Norway	Ethnicity	NR	NR	NR	No significant difference between countries were reported in relation to ethnicity. However, a small difference was observed in the number of mechanical restraints per unit.
	Bak et al. (2015)	Denmark/Norway	Ethnicity	NR	NR	NR	No significant difference in ethnicity between countries.
	Currier et al. (2011)	USA	Race	NR	NR	0.18	Proportional difference between ethnic groups were reported.
	Tarsitani et al. (2013)	Italy	Immigrant	3.67*	1.05-12.7	0.027	Non-significant results between ethnic groups in relation to rates of repeated mechanical restraints and in the overall duration of restraint.
	Flammer et al. (2013)	Germany	German citizenship	0.56	0.33-0.94	< 0.05	
				0.29	0.17-0.5	< 0.001	Psychotic subgroup results.
Husum et al. (2010)	Norway	Other than Norwegian	0.39	0.16-0.96	< 0.05	Adjusted for patients' individual psychopathology.	
Rapid tranquillisation	Beames and Onwumere (2021)†	UK	Ethnicity	NR	NR	NR	Reporting about significant and non-significant results in the literature.
	Flammer et al. (2013)	Germany	German citizenship	1.17	0.56-2.45	NR	
				0.88	0.31-2.5	NR	Psychotic subgroup results.
	Gowda et al. (2018)	India	Religion	0.43	NR	NR	
	Lay et al. (2011)	Switzerland	Foreign national	1.14	1.1-1.18	NR	
				1.23	0.96-1.5	NR	Adjusted for other sociodemographic variables. However, proportional difference between ethnic groups was reported.
	Opitz-Welke and Konrad (2012)	Germany	German	NR	NR	NR	Proportional difference between ethnic groups was reported.
Verlinde et al. (2017)	Netherlands	Non-western descent	NR	NR	NR	Policy change did not affect the use of rapid tranquillisation.	
Seclusion	Beames and Onwumere (2021)†	UK	Ethnicity	NR	NR	NR	Reporting about significant and non-significant results in the literature.
	Bowers et al. (2012)	UK	Ethnicity	NR	NR	NR	Ethnicity was not reported as being associated with the likelihood of seclusion, number of seclusion episodes or when in the hospital stay seclusion occurs.
	Bowers et al. (2010)	UK	Asian	NR	NR	0.001	Seclusion was not strongly associated with the type of patients. Additional p-values available in the paper. However, the associations were relatively weak and non-significant after adjusted analysis.
	Cullen et al. (2018)	UK	Black African/Caribbean	1.13	0.71–1.79	0.609	Adjusted for all demographic/clinical factors and behavioural precursors. ORs for other ethnic groups are available in the paper. However, all were non-significant. Proportional differences between ethnic groups were reported.
	Drown et al. (2018)	New Zealand	Māori	NR	NR	NR	Seclusion among Māori slightly increased between 2007 and 2013, whereas among other groups seclusion decreased (no significant difference). However, in 2014 Māori received seclusion proportionally more often than non-Māori.

	Flammer et al. (2013)	Germany	German citizenship	0.68	0.42-1.11	NR	Psychotic subgroup results.
				0.51	0.25-1.07	NR	
	Gowda et al. (2018)	India	Religion	NR	NR	NR	No significant results were reported.
	Happell and Koehn (2010)	Australia	Indigenous people	NR	NR	0.066	Proportional difference between ethnic groups was reported; with significant results in relation to age group.
	Hendryx et al. (2010)	USA	Black/Hispanic/native	NR	NR	NR	No significant differences in relation to ethnicity between people who received seclusion and people who did not. Ethnicity was not a significant predictor of seclusion.
	Hui et al. (2016) [†]	UK	Ethnicity	NR	NR	NR	Reporting about proportional (non-significant) difference between ethnic groups.
	Husum et al. (2010)	Norway	Other than Norwegian	1.15	0.7-1.88	NR	Adjusted for patients' individual psychopathology.
	Jury et al. (2019)	New Zealand	Pasifika	1.89	1.44-2.47	< 0.001	Additional significant ORs available in the paper in relation to ethnic group.
	Lai et al. (2019)	New Zealand	Māori	NR	NR	< 0.001	Lower seclusion rates association with higher proportion of Māori.
	McLeod et al. (2017)	New Zealand	Māori	1.39*	1.05-1.83	NR	Adjusted for a range of demographic and admission variables. Additional RRs available in the paper, including in relation to various adjustments. Age was reported as an important contributor to the ethnic disparities in seclusion.
				1.33*	0.97-1.81	NR	
	Mellow et al. (2017) [†]	UK	Ethnicity	NR	NR	NR	Reporting about experiences of being in seclusion from the literature.
	Sambrano and Cox (2013)	Australia	Indigenous status	NR	NR	NR	Indigenous people experienced seclusion as discriminatory and degrading.
	Tyrer et al. (2012)	New Zealand	Māori/European	NR	NR	< 0.05	
	Trauer et al. (2010)	Australia	Australian born/ Indigenous people	NR	NR	NR	No significant differences in relation to ethnicity between people who received seclusion and people who did not.
van de Sande et al. (2017)	Netherlands	Non-western	1.68	1.06-2.67	0.022	Adjusted for within-patient variation.	
			0.45	0.24-0.84	0.012		
Verlinde et al. (2017)	Netherlands	Non-western descent	NR	NR	NR	Use of seclusion was slightly reduced after policy change.	
Multiple restrictive practices	Beames and Onwumere (2021) [†]	UK	Ethnicity/migrant status	NR	NR	NR	Reporting of significant and non-significant results in the literature.
	Beghi et al. (2013) [†]	Italy	Non-autochthonous	NR	NR	NR	Reporting of significant and non-significant results in the literature.
	Bennewith et al. (2010)	UK	Black	2.19	1.47-3.27	NR	ORs for ethnicity and other ethnic groups available in the paper. However, all were non-significant.
			Black	1.09	0.66-1.81	NR	Adjusted for age, gender, diagnosis and mental health trust. ORs for ethnicity and other ethnic groups available in the paper. However, all were non-significant.
	Bilanakis et al. (2010)	Greece	Other than Greek	NR	NR	0.470	Proportional (non-significant) association was reported.
	Collazos et al. (2021)	Spain	North African	4.23	1.26-14.17	< 0.05	Adjusted for patient's geographical origin. ORs for other migrant groups available in the paper. However, all were non-significant.
			North African	2.12	0.54-8.32	NR	Adjusted for patient's geographical origin and further demographic and clinical variables. ORs for other migrant groups available in the paper. However, all were non-significant.
Flammer et al. (2013)	Germany	German citizenship	0.75	0.54-1.05	NR	Ethnicity was not related to the number of restrictive practices recorded.	

			0.49	0.32-0.77	NR	Psychotic subgroup.
Gowda et al. (2018)	India	Religion	NR	NR	NR	No significant results reported.
Hendryx et al. (2010)	USA	Black	NR	NR	0.02	No significant differences in relation to ethnicity between people receiving seclusion and people who did not. However, ethnicity was a significant predictor of restrictive practices.
Knutzen et al. (2013)	Norway	Immigrant	NR	NR	NR	Ethnicity was not related with the duration of restrictive practices or the restrictive type received.
Knutzen et al. (2014)	Norway	Immigrant	NR	NR	0.552	Ethnicity was not related with the number of episodes.
Knutzen et al. (2011)	Norway	Immigrant	1.52	1.05-2.17	0.03	
Lay et al. (2011)	Switzerland	Foreign national	1.045	0.838-1.302	NR	Adjusted for other sociodemographic variables. However, before this adjustment, there are no reported significant associations either.
Miodownik et al. (2019)	Israel	Ethnicity	NR	NR	NR	No association found between ethnicity and frequency or length of restrictive practices.
Norredam et al. (2010)	Denmark	Migrant status	NR	NR	NR	Use of restrictive practices were about twice as high for both refugees and immigrants as for non-migrant Danes.
Opitz-Welke and Konrad (2012)	Germany	German	NR	NR	NR	Proportional difference between ethnic groups was reported.
Taylor et al. (2012)	USA	Race	NR	NR	0.115	Ethnicity was not related to the number of restrictive episodes.
Thomsen et al. (2017)	Denmark	Immigrant	1.64	1.54-1.74	< 0.001	Adjusted for sex, age and calendar period. ORs for other migrant group and geographical categories available in the paper. However, both significant and non-significant.
			0.99	0.85-1.17	NR	Adjusted for sex, age, calendar period and further demographic variables.
		Europe	0.43	0.35-0.53	< 0.001	Adjusted for sex, age and calendar period. ORs for other migrant group and geographical categories available in the paper. However, both significant and non-significant.
			0.7	0.51-0.97	< 0.05	Adjusted for sex, age, calendar period and further demographic variables.

Fig. 1 PRISMA Flow Diagram of the study selection process

