



# Discrimination, bullying or harassment in undergraduate education in the osteopathic, chiropractic and physiotherapy professions: A systematic review with critical interpretive synthesis



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## ABSTRACT

The objective of this review was to chart, appraise and synthesise the available evidence regarding the experience of discrimination, bullying or harassment in undergraduate manual therapy (MT) education.

We systematically searched 9 databases in accordance with our prospectively registered protocol (PROSPERO CRD42021249305).

English language primary research papers relevant to concepts of discrimination, bullying or harassment in undergraduate MT education, published between 2010 and 2021, were sought. Two independent reviewers screened all titles and abstracts against inclusion criteria, full texts were then retrieved and independently screened and assessed for risk of bias and data extraction. Disagreements were resolved by discussion and the use of a third reviewer. Data were synthesised using a critical interpretive synthesis method.

We identified 407 records in our search, 17 full text articles were included in our final synthesis. We highlighted that bullying is prevalent within undergraduate MT education. This is reported to have a large impact upon learners' wellbeing and attainment. Attainment gaps and higher attrition rates for students from ethnic minority groups and students with disabilities in UK physiotherapy were noted in our review, this may not be applicable to other contexts. Our review was limited to English language and a lack of available primary data may be a limitation of our review. This is the first systematic review on this topic and followed best available methodological guidance.

## 1. Introduction

Discrimination, bullying and harassment have been highlighted within the medical educational literature, as have been attainment gaps for learners from marginalised groups (HESA, 2021; Woolf, Cave, Greenhalgh & Dacre, 2008).

Manual therapies (MT) are professions allied to medicine, primarily comprising of chiropractic, osteopathy and physiotherapy (COP). Various professional identities and standards of regulation exist worldwide ranging from statutory regulation to voluntary registers of members (Foo, Storr & Maloney, 2016). Little is known regarding the extent of discrimination, bullying or harassment within MT education.

Contemporary MT education takes place in a higher education (HE) setting, with learners typically completing bachelors or integrated master's degrees or equivalent. MT education comprises both academic

classroom-based study and supervised clinical skills development and placements. Learners progress from novice practitioner to autonomous emergent professionals. The learning environment and experience of students may have an impact upon the professional identity and future practice of learners as they enter practice as registered professionals. Discrimination, harassment, and bullying have been shown to negatively impact learners personally and professionally and may have long-term ramifications for the future of healthcare professionals' careers; negatively impacting health (Cuevas et al. 2020), increasing absenteeism, lowering job satisfaction, and inducing high levels of stress. As such, these experiences also have the potential to impact patient care (Stubbs & Soundy, 2013).

We define discrimination as abuse or humiliation in which people are treated differently according to their personal characteristics. This may take several forms ranging from overt bullying (Samsudin, Isahak & Rampal, 2018), which consists of patterns of negative be-

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haviour by groups or individuals which harm and victimise (Heffernan & Bosetti, 2021), to incivility (Eka & Chambers, 2019). Harassment encompasses a wide range of behaviours that are perceived to be abusive, humiliating or hostile (Fnais et al., 2014). We use the term marginalised to explicitly call attention to the act of marginalising rather than a passive process of happenstance as implied by the term minority. We acknowledge the limitations of some descriptions within the literature, however to maintain fidelity to our source material we have used the terminology of the original authors. Terms such as Disabled, disability, Black, Asian and Minority Ethnic (BAME) or Black Minority Ethnic (BME) may be problematic (Khunti, Routen, Pareek, Treweek & Platt, 2020). We acknowledge the implied heterogeneity in these terms, which may not be reflective of the individuals within these groups. These terms may not be acceptable to all who are included within or excluded by them or who do not identify with such terms. Similarly, our use of the term disability and disabled is informed by the UK social model language conventions which differ to other geographical regions.

We position our review within a critical theory paradigm of action research, the purpose of which is transforming practice and emancipation of oppressed or disadvantaged groups (Boog, 2003).

### 1.2. Rationale

Our pilot search revealed that no previous systematic reviews had been published regarding discrimination, bullying or harassment in MT education. Considering the human impact of this phenomenon, a systematic review to meticulously chart, summarise and appraise the available primary literature was warranted. This might identify the extent and impact of this phenomenon and assist in planning future research and educational quality improvement.

### 1.3. Objectives

The objective of this review was to chart, appraise and synthesise the available evidence regarding the experience of discrimination, bullying or harassment in undergraduate MT education. We aimed to answer the following research questions.

Primary research question:

What is the extent and experience of discrimination, harassment or bullying for students in undergraduate MT education?

Secondary questions:

What is the extent of, and key themes within, the literature regarding education for people from marginalised groups in undergraduate MT education?

Is student attainment or experience influenced by identity characteristics, such as gender or being a member of a marginalised group?

## 2. Methods

We conducted this systematic review according to a protocol prospectively registered in the PROSPERO database (CRD42021249305), available at: [https://www.crd.york.ac.uk/prospero/display\\_record.php?ID=BLINDED](https://www.crd.york.ac.uk/prospero/display_record.php?ID=BLINDED). The protocol followed the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) (Moher, Stewart & Shekelle, 2016). The review followed the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA 2020) guidelines (Page et al., 2021). Our data analysis was conducted using the critical interpretive synthesis (CIS) method (Dixon-Woods et al., 2006). This allowed for our review to be systematic and reproducible whilst maintaining fidelity to a critical interpretivist paradigm of knowledge construction.

### 2.1. Eligibility criteria

Our review followed the Population Concept Context (PCC) framework (Aromataris, 2020), shown in Table 1. Our definitions of discrim-

**Table 1**  
Population Concept Context (PCC).

Participants/ population	This systematic review included studies with adults (18 years or older), in undergraduate MT education (COP).
Concept	Discrimination or harassment or bullying. We aimed to investigate which groups experience this concept and identify any trends or risk factors for discrimination, bullying or harassment. We further aimed to identify barriers and enablers for attainment and attrition for marginalised groups.
Context	Undergraduate manual therapy education.

**Table 2**  
Inclusion and exclusion criteria.

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> <li>Published since 2010.</li> <li>Undergraduate manual therapy education.</li> <li>Pertaining to marginalized groups or discrimination, bullying or harassment.</li> <li>Available in English</li> <li>All primary research designs</li> </ul>	<ul style="list-style-type: none"> <li>Published prior to 2010.</li> <li>Not pertaining to undergraduate manual therapy education.</li> <li>Studies not focused on our specified concept or population.</li> <li>Not available in English</li> <li>Secondary research papers (reviews)</li> </ul>

ination, harassment and bullying were informed by the systematic reviews conducted by Fnais et al. (2014) and Samsudin et al. (2018).

Our inclusion and exclusion criteria are shown in Table 2.

### 2.2. Information sources

We systematically searched the databases; ERIC, OVID (Medline, AMED, Emcare), CINAHL, DOAJ, JASTOR and PsycINFO, in accordance with our predefined criteria. A hand search was performed of key journals in the related professions. All types of primary research designs were sought. Where reviews were retrieved, their reference lists were screened for additional results not captured by our search. To ensure currency of information, results were limited to within the last 10 years. All searches were conducted on the 1/3/2021.

### 2.3. Search strategy

Our search terms were informed by the strings used by (Fnais et al., 2014) for our concept. The Pillastrini et al. (2015) MT search strings were used for our context. Keywords and MeSH terms were used as per our protocol. Our search strategy was reviewed by two expert research librarians to maximize yield. We opted for an inclusive search strategy to avoid omitting papers which may have been incorrectly indexed within databases. A previous scoping review focused on disability in MT education (MacMillan, Corser, & Clark, 2021), indicated a potential lack of published literature within MT regarding discrimination. Therefore, our search aimed to “cast a wide net”. To increase the breadth of our search, reference list screening, citation tracking and consultation with subject matter experts was utilized. Within CIS methodology (Dixon-Woods et al., 2006) theoretical sampling may also be used to include relevant papers not discovered in the primary search, however this was not needed as all additional papers identified by this method were included in our systematic search results. All results were downloaded into Endnote software (version 6.0.1), and duplicates were removed.

### 2.4. Selection process

Two reviewers (out of AMac, JDR, DHS) independently screened titles and abstracts retrieved from the searches and assessed these for eligibility against the criteria in Tables 1 and 2. All papers meeting the inclusion criteria were read in full by two independent reviewers (out of AMac, JDR,DHS). Disagreements between reviewers were resolved

by discussion amongst all reviewers. Additionally, Cohen's kappa test demonstrated substantial agreement ( $k$  0.83) between all reviewers for the screening phase.

### 2.5. Data collection process

Data were extracted independently by two reviewers (out of AMac, JDS, DHS) using a pro-forma data extraction tool, which was piloted by two reviewers prior to use. Extracted data were discussed by the authors as part of the extraction and synthesis in keeping with our CIS methodology. Inevitably, within systematic reviews, reviewer bias and opinion enters the extraction and analysis phase (Piper, 2013). Although efforts were made to minimise this, subjective yet transparent decisions by the researchers are a feature of interpretive synthesis methodology (Dixon-Woods et al., 2006). The research team consisted of experienced educational and MT researchers from a range of backgrounds, including, but not limited to, members of marginalised communities. This will have influenced our positionality regarding the data; it may also offer an insider perspective during our analysis. To ensure transparency and credibility of our work, our ontological and epistemological assumptions regarding analysis have been stated. Consensus and discussion of data, amongst all authors, prevented one perspective framing our analysis.

### 2.6. Data items

All data relevant to our research questions were collected and reported where it met our stated PCC criteria. We collected and reported both qualitative and quantitative data and both types of data informed our interpretive synthesis. Due to the low yield of primary data, we included papers which reported relevant data as secondary outcomes which we deemed relevant to our concepts.

### 2.3. Study risk of bias assessment

Although Risk of Bias (RoB) assessment assumes a positivist framework and a hierarchical view of the quality of knowledge, which is contentious in interpretivist reviews (Scotland, 2012), RoB tools were used to ensure transparency and credibility within our review (Lockwood, Munn & Porritt, 2015; Moola et al., 2017). However, no minimum threshold for inclusion was set.

To enhance the trustworthiness of our findings, two reviewers independently assessed RoB and agreed on a final classification of low, medium, or high RoB Table 3.

### 2.4. Synthesis methods

Data were charted and discussed utilising the CIS methods described by Dixon-Woods et al. (2006). CIS specifically uses the authors interpretation of the data as a key theme within the synthesis, acknowledging that some aspects of the evidence and synthesis may not be strictly reproducible. CIS methodology requires reflexivity on the part of authors. Quality in CIS is maintained by transparent and robust searches, with appropriate selections of materials, seeking disconfirming evidence and challenging the emergent theory. CIS aims to construct a theory that is critically informed, plausible and grounded in evidence.

### 2.5. Reporting bias assessment

Our preliminary search sought grey literature on this topic, including unpublished dissertations, conference abstracts and works in development. No results were returned. The extent of the unpublished literature is not known, yet our review indicates that there is no bias towards positive findings in the available literature. Within a UK context, other channels for mandatory reporting of such data exist and our findings are consistent with the available evidence from other sources (HESA, 2021; OFS, 2021). Therefore, we feel our review has not been significantly impacted by reporting or publication bias.

## 3. Results

Fig. 1 Study selection process.

Appendix 1 (supplementary data file) details the studies excluded at the full text stage and reasons for exclusion.

### 3.1. Results of critical interpretive synthesis

This review retrieved 17 studies, published between 2010 and 2021, regarding bullying, discrimination, or harassment in undergraduate MT education. The results primarily concerned physiotherapy, with 14 of the 16 physiotherapy papers were conducted in a UK context, one was conducted in Nigeria and one in Scandinavia. One paper focused upon chiropractic in Sweden, and no papers were retrieved regarding osteopathy. Our results demonstrate a mix of methods with 8 qualitative studies, 8 quantitative studies and 1 mixed methods. We summarise our key findings in Table 4.

Our review has shown bullying to be prevalent within undergraduate MT education with up to 25% of learners in a UK context and 100% of Nigerian physiotherapy students reporting an experience of bullying. It is important to note the limitations of the UK data, which are from a single UK institution and a small sample in a cross-sectional survey, which may not be generalisable to other contexts. Under-reporting may also be a factor and so the true extent of bullying is largely unknown.

The qualitative data also suggest a culture of bullying exists and is accepted as a tacit element of the community of practice and social norms within the profession. This is reported to have a large impact upon learners' wellbeing and attainment.

It appears that learners from marginalised backgrounds, including ethnic minorities and disabled people, are more likely to have negative experiences and attainment gaps, lower summative grades and higher attrition rates. The additional stress and negative experiences of these learners was supported with qualitative data. Our results revealed the potential for a discriminatory culture both direct, through deliberate actions, and indirectly through institutional practices and norms which may be inaccessible to or disadvantage some learners.

A key theme created from our review was the behaviours and attitudes of staff which marginalised and created barriers for some learners. Up to 62% of the incidents of bullying were from a member of staff to a student and these incidents often go unreported and so under-recorded. These behaviours ranged from unsupportive behaviours to overt sexual harassment or aggression.

There may also be cis-heteronormative cultures which disadvantage female learners, non-heterosexual and gender minority learners. This comprises of female students taking action to desexualise their appearance during training or behaviour which may be intimidating such as harassment or sexual humour. This may also have a strong intersectional impact on learners who occupy multiply marginalised groups, such as young Muslim females. Although incidents suggestive of sexual discrimination were noted, they may not be perceived negatively by participants and may be viewed as part of the culture of the profession.

Social dimensions were also a key theme, strong friendship groups and support form educators were enabling factors which enhance student experience. Students who live off campus demonstrated higher attrition rates and financial challenges were highlighted as a concern for students attending placements. This has implications for widening participation and holds potential for indirect discrimination against students with less financial capital or other sources of financial support.

## 4. Discussion

Discrimination, harassment and bullying are well documented within the wider medical education literature with an estimated prevalence of between 30%(Boog, 2003) and 90% of learners experiencing bullying (Fnais et al., 2014). This prevalence appears to be similar

**Table 3**  
Study Characteristics, Findings and Risk of Bias (ROB).

Study	Method and Risk of Bias		Setting and Participants	Results
	Low	Medium		
<b>Qualitative Studies</b>				
<b>Assessed for ROB using the JBI Qualitative studies checklist</b>				
Cassidy, Norris and Williams (2018)	Thematic analysis	High	UK Physiotherapy This article presents findings from a qualitative study which explored the perceptions of eight recent graduates from one UK university about their experiences. Participants included 6 female students and 2 male students. Participant's ethnicity was described as White (5) and Indian/Asian (3).	Some students reported occasional problems in the relationship between students and practice placement educators. These in turn adversely affected personal well-being as well as overall placement experience, and potentially their overall success. Students reported being aware of a culture of bullying and of some educators who had a reputation for intimidating students. A participant described placements as a fight for survival and of experiences of intimidation and bullying behaviours. Other experiences were positive and discussed mentoring and successful placement experiences. Financial challenges were identified as a potential barrier to success and a cause of social isolation and stress. Strong interpersonal relationships and friendship groups as an enabler.
Dahl-Michelsen and Solbrække (2014)	Ethnographic observation and qualitative interviews	High	Norway Physiotherapy 8 Male 8 Female students in an undergraduate education programme were purposively sampled to investigate gender constructs within physiotherapy.	A culture of heteronormative sexual discrimination was noted although not explicitly identified as negative by the authors as much of the experiences were described as normalised and masked in humour. Some of the female students indicated a preference for same-sex pairs due to the absence of the "male gaze". Female students made attempts to "desexualise" their appearance and wear plain underwear, whilst also removing body hair and conforming to an emphasised expectation of grooming practices. Male students often wore bright colours and used overt sexualised gestures such as "snapping the elastic of their underwear". There was an expectation of certain types of male underwear to be worn. Deviations from these standards of attire would likely draw attention from the cohort. Male students often also "flirted" with female staff and female participants noted this would not be appropriate for them but was considered a normal and humorous transgression. These practices appeared to be an accepted part of the institutional culture.
Frank, McLinden and Douglas (2020)	Multiple case study approach	High	UK Physiotherapy Four visually impaired physiotherapy students.	Students with visual impairments discussed staff attitudes negatively impacted learners. The authors noted unsupportive attitudes towards reasonable adjustments, some negative and some laissez-faire indicating direct and indirect discrimination. Participants experienced barriers to learning within their university setting, despite having disclosed a disability and having access to and provision of reasonable adjustments. There were also positive experiences that enabled learning, particularly when staff and students worked together in an open, supportive, and proactive environment.
Hammond, Williams, Walker and Norris (2019)	Thematic analysis framework	High	UK Physiotherapy 17 pre-registration BSc and MSc students from BAME backgrounds from two UK universities.	The main themes derived from the data included BAME students feeling like outsiders and not belonging. Behaviours by others may marginalise BAME students. BAME students adopted personal strategies to integrate into physiotherapy despite the lack of power and influence. Collectively these themes demonstrate a range of challenges which students from BAME backgrounds face within both an academic and practice learning environment. Participants reported experiences of overt and inadvertent racism were common and responses by staff that are interpreted as dismissive or avoiding race related issues. Possible sub themes of managing the behaviours and expectations of others and socioeconomic disparities were discussed. Physiotherapy was perceived as a white profession and students felt conscious of how they were perceived.
Norris, Hammond, Williams and Walker (2020)	Phenomenology and Thematic analysis	High	UK Physiotherapy 15 students with disabilities (11 Female, 4 Male, 12 BSc, 3 MSc).	Students with specific learning disabilities discussed the suitability of accommodations and highlighted a lack of understanding of their needs. Educational staff were described as displaying "ignorance" and institutional barriers to participation being prevalent. Misconceptions about their conditions were discussed, participants described decisions on adjustments to assessment as being random. Participants displayed a more positive view of placement than of university. Some learners described feeling isolated and confused. Participants also noted that diagnosis was a relief and at times suitable accommodations were made which was an enabler for success.
Thomson et al. (2017)	Thematic analysis participatory action research design	High	UK Physiotherapy 5 final year physiotherapy students who had experienced bullying in the UK.	Students described negative experiences on placement, coping strategies and recommendations for practice, the role of the visiting tutor and the assessment. The students defined varying threat levels (low, medium and high). Low threat consisted of finding themselves placed with educators who took away their sense of autonomy and felt intimidated and lost confidence. Medium threat contained passive aggressive behaviours and a breakdown of trust. High threat were incidents requiring outside intervention or support. High threat appeared to be rare but when it occurred was perceived as very stressful for the students and often resulted in them leaving the placement prematurely. Students discussed the support role of visiting tutors and policies and acknowledged the necessity of a hierarchical structure but with a need for fairness and equality.
Whiteside, Stubbs and Soundy (2014)	Thematic analysis and content analysis	High	UK Physiotherapy 8 final-year undergraduate students undertaking a BSc (Hons) degree, who had experienced bullying.	Student physiotherapists discussed their experiences of being bullied. The students were frequently able to recall the feelings attached to the perpetrator, and reported feelings of isolation, inferiority and unworthiness. Bullying had a range of adverse effects on the students, with many expressing self-doubt in their competence and viewing their supervisor as unapproachable and unsupportive. In addition, students did not feel able to report the experience and use the support mechanisms in place. This may have been a result of having concerns that the problem would escalate if they reported the experience and, as a consequence, have a negative effect on their grade. Students were keen to offer a range of strategies for clinical practice in order to prevent bullying for future generations of students.

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Table 3 (continued)

Study	Method and Risk of Bias Low Medium High	Setting and Participants	Results
Yeowell (2013a)	Ethnography	UK Physiotherapy 22 physiotherapists (5 students, 7 clinicians and 10 academics) in a clinical or academic setting, recruited from a range of ethnicities.	Participants felt there has been and still is little ethnic diversity within the physiotherapy profession, both in academic courses and practice. Some participants perceive barriers for themselves and other BAME students to enter the profession. Conversely, being in a more mixed cohort made some students feel more at ease and they stated the importance of ethnic diversity and to be able to relate to a diverse patient population (as encountered in practice with the wider UK population). Students highlighted the importance of cultural awareness and that BAME patients may feel more at ease with BAME practitioners but that a BAME therapists would not want to be seen as 'experts' for BAME patients only and that quality in care it about more than just the ethnic background of the therapist, e.g. behaviour in general.
Yeowell (2013b)	Ethnography and Thematic analysis	UK Physiotherapy This study included parents of non-physiotherapy students, registered and student physiotherapists. 5 parents were Muslim females who came to the UK from Pakistan, 1 participant was a parent of an undergraduate physiotherapy student. The other 4 participants were parents of college-aged students (16 to 18 years old) and students on other undergraduate programmes. 2 participants were Black and Minority Ethnic (BME) undergraduate physiotherapy students; one female and one male, from two Higher Education Institutions (HEIs). They described their ethnicity as British Indian, and British Pakistani. 3 BME female physiotherapy clinicians, who were working in three hospital trusts. They described their ethnicity as Indian, and British Pakistani.	The lack of awareness of physiotherapy amongst people from BME backgrounds may act as a barrier to recruiting BME students onto UK physiotherapy courses. There is a potential for professional practice to conflict with religious beliefs and cultural practices, especially inter-sex treatments and having to touch someone physically or dress down to underwear for practical demonstrations, which was a strong theme shared by participants. Parents' opinions were a strong theme as was the prospective students' community perceptions of physiotherapy including viewing it as a low status (prestige) profession creating an additional barrier to recruitment. The authors discuss several culturally competent adaptations to remove barriers to participation for BME students. These included modifications to schedule and mode of dress to accommodate religious requirements. This study identified indirect discrimination via cultural norms and practices within physiotherapy institutions which may exclude Muslim females from applying for and participating in physiotherapy courses and offered strategies to widen participation.
<b>Mixed Methods Studies</b>			
<b>Assessed for ROB using both the JBI cross sectional surveys checklist and JBI qualitative studies checklist</b>			
Palmgren, Chandrati-lake, Nilsson and Laksov (2013)	Mixed Methods quantitative descriptive survey using the Perceived Chilly Climate Scale (PCCS) and qualitative focus groups.	Sweden Chiropractic 105 undergraduate chiropractic students (87 males (70%) and 37 females (30%)) from five cohorts (out of 150 invited) completed an educational environment survey the PCCS.	The score (105/196) indicated the nonexistence of alarming gender-related issues. However, there were statistically significant differences in perceiving the chilly climates among certain demographic groups. The PCCS score was significantly higher among female than male subjects, immigrants than non-immigrants, and minorities than majority ethnic groups. Despite high ratings on the questionnaire quantitative findings, the focus groups indicated a good sense of equality, oppression-free environment, and no obvious signs of discrimination. There were no direct indications of a chilly climate. Jokes with sexual insinuations were reported to have occurred, but this was perceived as done in a non-offensive manner. However, there was a perception that subtle signs of inequality resided. Female students found the climate to be chillier than males. Students whose parents have different ethnic backgrounds or who belong to a minority group perceived the learning environment to be chillier than those who did not.
<b>Quantitative Studies</b>			
<b>Assessed for ROB using either the JBI checklist for cohort studies or cross-sectional surveys</b>			
Naylor, Norris and Williams (2014)	Retrospective analysis of clinical placement assessment marks.	UK Physiotherapy 333 physiotherapy students entering physiotherapy training between 2005 and 2009 in the UK. Of the 333 students 219 (66%) were standard entry (below 21 years), with 114 (34%) mature students (21 years or above). The majority were female (n = 230, 69%), with 103 (31%) male. On self-report, 251 (75%) of the students were White British with 82 (25%) from minority ethnic backgrounds.	Physiotherapy students from minority ethnic backgrounds were awarded a significantly lower mark than their white majority peers in final clinical placements, although the difference was small. No statistically significant differences were observed by age or gender. The mean mark percentage and (SD) for ethnicity was, White British 72%(7.71) vs. ethnic minority 70% (7.01) (p = 0.023). No interaction effects were observed between the independent variables and only ethnicity demonstrated a statistically significant effect (mean difference (MD) 2.4% 95%CI 0.5 to 4.3, F = 5.24, p = 0.023). This difference was maintained in most subcategories of assessment. Significant differences were observed for the interpersonal section (MD 2.21% 95%CI 0.14 to 4.28, F = 4.409, p = 0.03), the clinical reasoning section (MD 2.39% 95%CI 0.53 to 4.25, F = 6.37, p = 0.012) and the treatment section (MD 2.93 95%CI 1.10 to 4.83, F = 9.198, p = 0.003). Ethnic minority students represented 25% of this cohort in comparison to 12% nationally and the results suggest that the performance of these students is judged to be lower than that of white students, yet the reasons for this are unclear.

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Table 3 (continued)

Study	Method and Risk of Bias Low Medium High	Setting and Participants	Results
Norris et al., 2018)	A retrospective multi site cohort study including pre-registration physiotherapy programmes	UK Physiotherapy Data from 1851 student records were collected from four institutions Anonymised data included background information (age, gender, ethnicity, socio-economic status) and outcomes (assessment marks, type of award and classification of degree). Analysis involved Bayesian regression models and ordinal logistic regression to examine the association of student characteristics on outcomes.	Students from a BME background are predicted to be more likely to receive a lower award than their White peers. The presence of learning disabilities was associated with lower assessment scores. Higher marks for observed and clinical assessments were predicted for White students. There were significantly lower assessment scores for Asian (-11% 95% CI: -13.1 to -9.2), Black (-7%, 95% CI: -9.7 to -4.5) and Other/Mixed ethnicity groups (-5%, 95% CI: -7.1 to -2.4), most notable in clinical and observed assessments, compared to their White British colleagues. All BME groups also demonstrated worse odds for a one step lower overall award or no award (Black OR: 3.35, Asian OR: 3.97, Other OR: 2.03). Associations of learning disability, age and non-traditional entry routes with assessment scores and/or degree classification were also noted.
Moore, Westwater-Wood and Kerry (2016)	Cross sectional Survey	UK Physiotherapy 560 physiotherapy students were enrolled in a longitudinal study based in a UK Higher Education Institute which recorded assessment achievements and surveyed attitudes and beliefs in consecutive Year 1 undergraduates between 2002 and 2012, following a peer coaching strategy.	The primary aim of this study was to assess students' experience of a peer coaching programme; however secondary data was collected which is germane to our research project. These were chiefly reported experiences of division within the group (13%), being let down or feeling of letting others down (12%), dominating personalities (8%) and feelings of inferiority and social isolation (3%). Students generally enjoyed the social dimensions of the model but highlighted disadvantages which were also related to the social dynamics of the learning community.
Mbada et al. (2020)	Cross-sectional design, the Students Perception of Professor Bullying Questionnaire (SPPBQ)	Nigeria Physiotherapy 219 clinical physiotherapy students from three purposively selected Federal Universities. Investigating experiences of bullying.	Lifetime and point prevalence of bullying in Nigerian physiotherapy education were 98.6% and 99.1%. 94.5% of the respondents had witnessed physiotherapy students bullying and there was a 100% rate of 'no attempt' to stop a physiotherapy lecturer from bullying. 38.4% and 44.7% of the respondents believed there was adequate school policy and support available on bullying. There was no significant association between bullying and either; age (2 = 0.117, p = 0.943), gender (2 = 0.001, p = 0.974), level of study (2 = 0.000, p = 0.995) and any specific university (2 = 1.343, p = 0.511). The authors state that the higher rates of bullying observed in this study, compared to the UK, may be an indicator of right abuses that are prevalent in the wider society in Nigeria.
Ryan, Potier, Sherwin, & Cassidy, 2017	Retrospective analysis of attrition rates.	UK Physiotherapy Retrospective audit of 338 student records. Assessing attrition rates and demographic characteristics. The ethnicity of students was; White British 258 (76%) Asian 47 (14%) Black 15 (4%) Other 18 (5%). The Dis/ability status was; None reported 268 (80%) Learning difficulty 59 (17%) Disability, mental health or physical health condition 11 (3%). The gender identity listed was Male 130 (38%) Female 208 (62%).	The percentage drop-out was 17%; 38 students (11%) failed, and 20 students (6%) withdrew voluntarily. Black and Asian students had greater odds of drop-out for any reason (Odds Ratio (OR): 6.23; 95% Confidence Interval (CI) 1.79 to 21.63, and OR: 6.43; 95% CI: 3.03 to 13.68 respectively), and due to failure (OR: 5.50, 95% CI: 1.27 to 23.70, and OR: 7.19; 95% CI: 3.02 to 17.08, respectively) compared to White British students. Students who lived off-campus were more likely to withdraw from the programme irrespective of ethnicity (OR: 4.65; 95% CI: 1.41 to 15.34). A significant number of students from ethnic minority backgrounds fail to progress. The reasons for this disparity remain unclear.
Stubbs and Soundy (2013)	Cross sectional questionnaire	UK Physiotherapy 52 out of 72 final-year physiotherapy students in a single institution completed a questionnaire regarding experiences of bullying.	Twenty-five percent (25%) of students reported at least one incident of bullying behaviour. The perpetrator of the bullying behaviour was most often the clinical educator (8/13, 62%). Despite the negative effects caused, most students (11/13, 84%) did not report this experience to the university. The bullying experiences consisted of: belittling remarks 7 (54%) inaccurate/false accusations 7 (54%), being given an unreasonable workload and unrealistic deadlines 6 (46%), intimidation 5 (38%), persistent criticism 4 (31%), swearing 4 (31%), ignoring a person 4 (31%), being shouted at 3 (23%), excessive/unjustified monitoring of one's work 3 (23%), persistently picked on in front of others or in private 3 (23%), not returning emails/telephone calls 2 (15%), setting up a subordinate to fail by unrealistically overloading them with work or setting impossible expectations 2 (15%), given meaningless tasks beneath an individual's level of competence 1 (8%), withdrawing an individual from key areas of their work 1 (8%), changing work responsibilities unreasonably or without justification and or altering guidelines without warning 1 (8%), extreme examples were also reported consisting of unwelcome sexual advances – touching, standing too close, display of offensive materials, asking for sexual favours, making decisions on the basis of sexual advances being accepted or rejected 1 (7%) and spreading malicious rumours or insulting someone by word or behaviour 1(7%).

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Table 3 (continued)

Study	Method and Risk of Bias Low Medium High	Setting and Participants	Results
Williams et al. (2015)	Retrospective cohort analysis	<p>UK Physiotherapy</p> <p>Data from 461 students were included to assess the relationship between ethnicity and success in a BSc (Hons) Physiotherapy degree. Records from 13 students were removed due to missing ethnicity data. 67% (298/448) participants were under 21 years, 87% (390/448) studied on a full time route, 69% (307/448) students were female and 29% (129/448) students described their ethnicity as from Black minority ethnic (BME) background. Of those, the largest sub-category was Asian (45%, 58/129) followed by Other (33%, 43/129) and Black (22%, 28/129).</p> <p>Asian students had a significantly greater percentage of students aged under 21 (76%, <math>P = 0.005</math>) and studying on a full-time route (97%, <math>P &lt; 0.001</math>) compared with other ethnicities. The Other ethnic background consisted of 81% females, higher than white British, Asian and Black (71%, 53%, and 54% respectively, <math>P = 0.004</math>).</p> <p>There was no statistically significant difference in the number of students from a low educational participation category between ethnicities.</p>	<p>Students from an Asian background had decreased odds of succeeding compared with White British students (adjusted OR 0.43 95%CI 0.24, 0.79 <math>P = 0.006</math>), as had Black students (adjusted OR 0.42 95%CI 0.19, 0.95 <math>P = 0.036</math>) and students from Other ethnic backgrounds (adjusted OR 0.41 95%CI 0.20, 0.87 <math>P = 0.020</math>). Students from Asian backgrounds on average achieve 6% lower marks (95%CI -8.33, -0.78) than White students on modules assessed practically and in contrast to those assessed through written work (-1.44, 95%CI -3.40, 0.53). While students from Black backgrounds on average scored lower in practical assessments (-5.13, 95%CI -8.22, -2.04), their average score in clinical assessments was on average 7% lower (95%CI -9.92, -3.95) than white students.</p>

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources

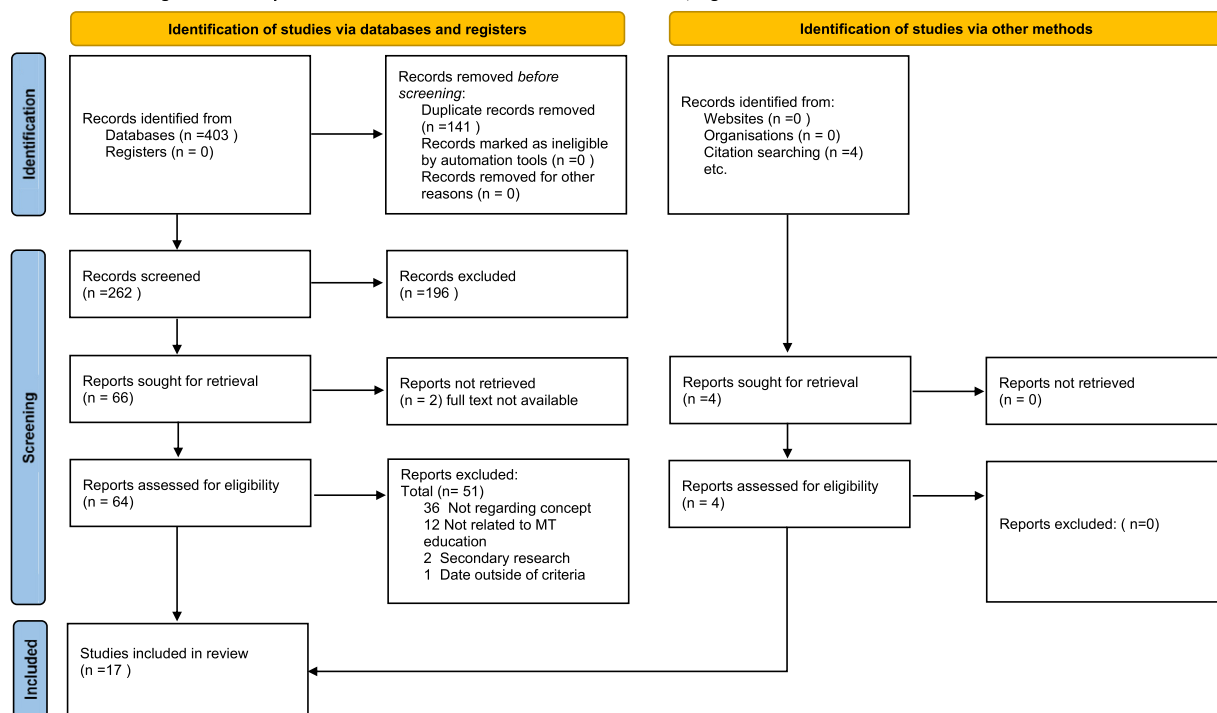


Fig. 1.

**Table 4**  
Summary of CIS.

Discrimination	Discrimination may be indirect or direct. Indirect, via cultural practices of institutions and normative behaviours, assumptions, lack of accessibility and barriers to participation for some groups. Direct, via lower attainment for marginalised learners and higher attrition rates or via overt acts of unequal treatment of some learners. Staff were implicated as frequent perpetrators of bullying, harassment and discrimination as well as having a larger role in supporting students and shaping student experience. A lack of inclusion was noted with some students feeling isolated and like outsiders, experiencing a lack of social support, which also negatively impacted attainment.
Bullying	Bullying appears to be prevalent within this educational context. The extent of bullying ranged from incivility to severe incidents resulting in discontinuation of study. This appears to be present in multiple settings and embedded within the culture of manual therapy institutions.
Harassment	A concerning theme of sexual harassment was present. This ranged from humour and differing standards to overt sexual exploitation.
At-risk groups	Disabled, Black or Asian learners reported negative experiences and quantitatively lower attainment and higher attrition. Female students may also be at risk of harassment, but this appeared to be less frequent within the quantitative data. Although the qualitative data suggests these incidents may be underreported and common.
	Students with less financial capital or from lower socioeconomic status backgrounds were also highlighted as at risk of attrition and experiencing greater barriers to participation.

within our review. The deleterious effects of bullying impact learners and compromise patient safety (Samsudin et al., 2018).

Our review captured data largely from a UK physiotherapy context and our findings largely align with what is known regarding the experiences of other healthcare professionals operating within a similar framework. Broad et al. (2018) conducted a cross-sectional survey of 259 UK medical students, reporting similar findings to our review. They found harassment and discrimination to be prevalent and often unreported. This was directed towards females, marginalised ethnic groups and disabled learners. This survey also demonstrated a lack of accommodation regarding religious beliefs. Discrimination against non-heterosexual students was identified and this often was masked in humour, aligning with our findings regarding gendered norms and a cis-heteronormative male-dominated culture with sexualised humour. Our review did not capture any data regarding the experiences of lesbian, gay, bisexual, transgender, queer (or questioning), intersex, and asexual (or allies) (LGBTQIA+) learners indicating this as an area of priority for future research. Ross and Setchell (2019) report in their cross-sectional survey of 108 Australian physiotherapy patients that people who identify as LGBTQ+ can experience assumptions and discrimination from physiotherapists. Although this was not related to an educational context, it may elucidate cultures and behaviours within the community of practice of physiotherapy. These findings are also present within other HE contexts (Stonewall, 2021).

Our review found that educators are often perpetrators of discrimination, harassment or bullying, through overt acts. The hidden curriculum may inculcate learners into the community of MT practice and the normative behaviours and discourses associated with the professions, including those which are pejorative towards marginalised groups. Samsudin et al. (2018) demonstrated in their systematic review of junior doctors' workplace bullying that a hierarchical structure contributes to the prevalent bullying culture within medicine. This may also somewhat explain the underreporting discussed by participants in the qualitative papers included in our review and within the wider literature (Qutishat, 2019). As bullying and teaching by humiliation are considered the norm, students fear reprisals and do not expect the reporting of abuse to have a positive outcome. Male and in particularly students from minority groups have also been shown to be less likely to report bullying (Lai & Kao, 2018).

The most extreme examples of abuses of power were sexual harassment and exploitation of learners by educators, such as asking for sexual favours in by clinical educators (Stubbs & Soundy, 2013). This is a significant problem which has been reported in the wider educational literature. Schoenefeld et al. (2021) report that 58% of 623 medical students surveyed within a German medical school had been sexually harassed, 31.8% had been sexually harassed involving unwanted physical contact, 15% of the perpetrators were senior male colleagues and 8.5% of learners having been sexually assaulted, involving forced intercourse. The reported forced sexual intercourse was largely perpetrated by se-

nior male colleagues and educators (75%). The extent of this problem within MT education is not known and represents a significant research priority.

Attainment gaps and higher attrition rates for BME students and students with disabilities in UK physiotherapy were noted in our review. This is supported by available data for other HE institutions within the UK. The Higher Education Statistics Agency (HESA, 2018) and UK government data (Gov.UK, 2020) demonstrates lower attainment for BME learners compared to white learners overall, with Black learners being awarded first class degrees at half the rate of white learners. Disabled students and BME Students also report lower satisfaction with their courses after adjustment for confounding factors (OFS, 2019). A statistically significant difference was found between BME learners and white learners' perceptions of the fairness of marking (OFS, 2021). Indicating that the findings of our review are consistent with available data from other contexts and may be reflective of wider societal problems within the UK and HE institutions.

Our review identified widespread discrimination, harassment and bullying within MT education. The studies, by necessity of a positivist paradigm, investigated learners based upon identifiable characteristics such as gender, Dis/ability status or ethnicity. Individuals may occupy multiple identities and face multiple marginalisation or may not identify with the descriptions of characteristics available. There is a clear need for further research to focus upon the intersection of the characteristics identified as being linked to these experiences (Cho, Crenshaw & McCall, 2013).

## 5. Limitations

The available literature consists largely of physiotherapy studies within the UK. This limits the transferability of our review to other contexts. Only one study focused on the chiropractic profession and no results were returned for the osteopathic profession, which signifies a substantial gap within the literature and a need for further primary research.

Our review was open to all geographical locations, albeit limited to the English language which may account for our UK-centric results. There was heterogeneity within the methodologies, locations and included populations within our results, yet similar themes were reported. Therefore, cultural differences in locations and professional practices may be thought to have had a large impact on our findings, despite this language bias.

Due to the nature of our review and the lack of primary literature, publication bias may have influenced our results with unpublished works not being returned by our searches, although grey literature was actively sought.

We have conducted RoB assessments on the included papers and followed PRISMA guidance (Page et al., 2021). Whilst this is not wholly consistent with CIS methodology (Dixon-Woods et al., 2006), we feel



this meets the requirements for a reproducible and robust method whilst allowing for meaningful, transparent construction and synthesis of qualitative evidence in keeping with our critical interpretive paradigm and potentially furthering the methodology.

## 6. Conclusion

Our review followed best available guidelines for conducting a robust systematic literature review (Aromataris, 2020; Page et al., 2021), whilst allowing for a critical voice and interpretive synthesis (Dixon-Woods et al., 2006). We retrieved and appraised 17 papers regarding discrimination, bullying or harassment in undergraduate MT education, addressing an important need for synthesising relevant literature. We have highlighted several areas of concern and several urgent research priorities, the most notable of which is the prevalence of and ingrained culture of oppression and disenfranchisement of marginalised groups. These incidents frequently go unreported, so that the true extent of the problem remains unidentified. We identified some concerning themes regarding discrimination against BAME learners and learners with disability, consistent with the wider evidence base. Gender-based harassment and potential serious abuses were raised as a possibility and represents an area of urgent enquiry.

## Declaration of Competing Interest

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No other conflicts of interest are declared.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.ijedro.2021.100105](https://doi.org/10.1016/j.ijedro.2021.100105).

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