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Exploring the perceptions of senior medical students on gender and pain: a qualitative study of the interplay between formal and hidden curricula

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ABSTRACT

Objective Explore the perceptions of senior medical students on the relationship between gender and pain and examine how formal and hidden curricula in medical education shape their experiences.

Design We conducted a cross-sectional qualitative interview study, using individual semistructured interviews and adhering to interpretative description methodology. We used Braun and Clarke's reflexive approach to thematic analysis to analyse our data.

Setting Six medical schools across the UK. Data collection occurred between the autumn of 2022 and the spring of 2023.

Participants 14 senior (penultimate or final year) medical students.

Results We created three themes, which describe key educational forces shaping students' experiences of the relationship between gender and pain. These are (1) the sociocultural influencer, (2) the pedagogical influencer and (3) the professorial influencer. Our findings highlight the influence of both wider societal norms and students' own identities on their experiences. Further, we explore the nature and detrimental role of formal curricular gaps, and negative role modelling as a key mechanism by which a hidden curriculum relating to gender and pain exerts its influence.

Conclusions These findings have several educational implications, including the need for a more holistic, person-centred approach to pain management within medical school curricula. Additionally, we recommend the creation of reflective spaces to engage students in critical thinking around bias and advocacy from the early stages of their training. We present actionable insights for medical educators to address issues of gender bias and pain management.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ By examining the hidden curricula of gender and pain within medical education, our research builds on previous studies noting insufficient formal education by highlighting the nuanced ways in which such gaps may be perpetuated or mitigated through everyday clinical interactions and informal learning experiences.

⇒ The in-depth, qualitative approach of this study has generated rich data and allowed for the consideration of important social and cultural nuances, captured particularly by our first theme: the sociocultural influencer.

⇒ The interview questions were codeveloped with a patient community group to shape and clarify our interview focus and language.

⇒ Though students were prompted to reflect on their experiences throughout medical school, this is a cross-sectional study, so students' perceptions may have changed on recall.

⇒ Convenience sampling may mean that bias awareness appears more prevalent among medical students than it is within the wider medical student population.

INTRODUCTION

Gender bias in healthcare kills. This bias, which can be defined as 'prejudiced actions or thoughts based on the gender-based perception that women are not equal to men',[1] leads to increased mortality for girls and women.[2] For example, in countries with high levels of gender inequality, girls under the age of 5 are more likely to die than boys.[3] In the UK, women often receive poor medical treatment for gynaecological conditions,[4] and poorer care in relation to men for dementia[5] and cardiovascular disease.[6]

Pain—its diagnosis and its management—is an area of healthcare practice where gendered stereotyping leads to poor outcomes for patients. Research indicates that the pain of Black women, for example, is not taken seriously by healthcare professionals, leading to increased morbidity and mortality.[7] Healthcare staff routinely underestimate women's pain, leading to undertreatment and the suggestion of psychological rather than analgesic treatment.[8] Where women are scored with low rates of perceived 'trustworthiness', healthcare professionals are more likely to

believe that they are exaggerating their pain.[9] Not only gender, but ethnicity, age, perceived attractiveness, likeability, manner and the presence or absence of medical diagnoses influence healthcare professionals' perceptions of pain.[9]

Though we know that gender bias exists in how healthcare professionals respond to and manage, pain (eg, women are perceived as more emotional than men), what is less clear are the reasons underlying such biases.[10] One potential explanation for how doctors develop biases is that they do so through the hidden curriculum. Doctors acquire many of their perspectives and professional values during medical school[11] where students are exposed to and experience such gender biases in the clinical workplace and the curriculum. This often happens via the mechanism of the hidden curriculum—'…the attitudes and values conveyed, most often in an implicit and tacit fashion, sometimes unintentionally, via the educational structures, practices and culture of an educational institution'.[12] Influences operating within the hidden curriculum of medicine include clinical experiences, contact with role models, the attitudes of staff and patients, as well as external influences such as family/friends, the media and personal experiences.[11] Experiences within the hidden curriculum shape medical students' views and carry into their future practice as a practising clinician.

While there is a growing clinical body of literature on gender and pain, relatively little attention has been paid to how medical education shapes students' perceptions of gender and pain, and how these perceptions may affect their clinical practice as they become doctors. There is some literature on the presence or absence of pain assessment and management teaching within medical school curricula—one study,[13] for example, reports that pain education in US medical schools is fragmentary, limited and fails to cover key pain topics identified by the International Association for the Study of Pain.[13] While important, this study did not explore teaching on both gender bias and pain.

Another recent international study[14] has focused on gender and chronic pain within the curricula of the 10-top global ranked medical schools (as per the QS World University Rankings 2022). This study's search revealed that the curricula of most medical schools lack comprehensive coverage of gender bias and chronic pain.[14] Our study aims to build on these findings by examining how medical education influences students' attitudes and beliefs about gender and pain. While we know medical education on gender and chronic pain is insufficient, we do not have a detailed picture of UK medical education (only one UK institution was included in the study's sample), we do not have intelligence on pain education beyond chronic pain, and we do not know whether and how that education influences students' beliefs and attitudes towards gender and pain. Developing this understanding could help us reveal the implications of these educational practices. If medical students are not adequately trained to consider gender differences in pain perception and management, they may carry these biases into their professional practice, potentially leading to disparities in patient care and outcomes.

Henceforth, in this study, we explore the perceptions of senior medical students (penultimate or final year) in the UK on gender and pain, using a qualitative approach to examine how these perceptions relate to their experiences of formal and hidden curricula in medical education. To date, and to our best knowledge, no research exists regarding how the hidden curriculum of medical education relates to perceptions of gender and pain. Exploring this has cast light on the subtle, often unspoken, lessons regarding gender and pain that medical students experience alongside their formal education. By examining these hidden curricula, our research builds on previous studies noting insufficient formal education on gender bias and pain by highlighting the nuanced ways in which such gaps may be perpetuated or mitigated through everyday clinical interactions and informal learning experiences. This approach allows us to contribute to existing literature by capturing the full spectrum of medical student experiences relating to gender and pain.

METHODS

Research questions

1. How do senior medical students perceive the relationship between gender and pain?
2. How do medical students experience the formal and hidden curricula of medical education in relation to gender and pain?
3. What elements of formal and hidden curricula within students' longitudinal experience of medical education have influenced the development of their views on gender and pain?

Research approach

This is a constructivist,[15] cross-sectional qualitative study. We view reality as subjective, and knowledge as constructed uniquely by each individual in response to their interactions in social settings.[16,17] This is appropriate for our study, as we are interested in exploring, through qualitative interviews, students' individual perceptions of pain and gender bias, and the ways in which they make sense and build their understanding of social experiences during medical school.

Methodology

The study methodology is interpretative description. The focus of this methodology is a rich description of participant experiences through the lens of the study research questions. It is aligned with a constructivist approach to qualitative research.[18] To support conclusions regarding the quality of this study, we consider how we designed Lincoln and Guba's qualitative research evaluative criteria throughout, namely: credibility, dependability, transferability and confirmability.[19,20]

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Patient and public involvement

We piloted our interview questions in collaboration with the charity BME (Black and Minority Ethnic) Health Forum. Through the forum, we met with a focus group of four women to shape our interview focus and clarify our interview language. Members of the forum were compensated for their time in line with National Institute of Health and Care Research (NIHR) guidance.[21] This collaboration helped to ensure that our questions were culturally sensitive and accurately captured the experiences of diverse participants, enhancing the credibility of our data collection.

Data collection

We invited senior medical students (students in their penultimate or final year of study) based at any UK medical school to participate in an individual, in-depth semistructured, virtual interview over Microsoft Teams. We employed convenience sampling based on participant interest in the study and availability, given that the medical student population can be difficult to access due to study demands. Pragmatically, we sampled until we reached 14 participants. We selected this figure based on available funding, capacity and our experience as qualitative researchers.

We recruited using social media and local email recruitment at two UK institutions. CC, SBP and MELB completed all interviews with consented volunteers, using the interview questions developed with BME Health Forum as prompts to structure the discussion. The interview schedule is available (online supplemental material). We conducted 1-hour interviews with 14 participants online from 6 UK medical schools. Each participant was offered a £20 food voucher as thanks for their time. The interview audio was transcribed verbatim by a professional transcription company, then anonymised for analysis.

Data analysis

We used Braun and Clarke's reflexive approach to thematic analysis to analyse our data.[22] The six steps of the method were used as a framework for coding, sorting, classifying and describing our data. We worked with the coding software Dedoose (V.9.0) to organise our data. We maintained an audit trail of our data collection and analytical processes, including decisions made and changes implemented, to enhance the confirmability of our findings. The steps of analysis, and what we did within each, are detailed in table 1. By following a structured and well-documented approach to thematic analysis, we ensured that our analytic procedures were systematic and transparent, which supports the dependability of our findings. Further, in providing rich, detailed descriptions of our themes and using participants' own words where possible, we aimed to offer insights that others might be able to apply to similar contexts, supporting the transferability of our findings.

Table 1 The process of reflexive thematic analysis followed in this study

Step 1: familiarisation	Initially, we immersed ourselves in the data, observing and noting our initial impressions following each interview in field notes and on re-review of each transcript.
Step 2: data coding	We then moved on to generating codes based on the language and patterns we observed, focusing on the unique aspects of the participants' experiences. Where possible, we used participants' own language to generate descriptive codes. CC, SBP and MELB were all involved in coding. Six transcripts were coded by at least two researchers to deepen analysis and promote discussion of data among the team. This process of having multiple researchers involved in coding enhances the credibility of the results.
Step 3: generating initial themes	Through discussion and review, CC, SBP and MELB created a set of initial themes to capture the main insights of the data. A map of all codes and initial themes was created to help visualise connections within the data.
Step 4: reviewing and developing themes	Initially, themes were quite descriptive but, on review, we identified higher level connections in the data and used these to develop our themes. We re-reviewed our codes and participant data to ensure the developing themes were representative of the participants' experiences.
Step 5: refining, defining and naming themes	All authors met to discuss and agree on the proposed themes. We created a short written summary for each theme and agreed on the name of each.
Step 6: writing the report	Finally, MELB synthesised the main findings into a written report for discussion and comment from the wider author team.

Reflexivity

The authors met regularly to discuss their own positions and perspectives as researchers involved in the analysis of this study's data. This is a critical component of Braun and Clarke's method,[22] which recognises the active role researchers play in interpretation, how this can add depth to study findings, and the importance of reflecting transparently on these perspectives. Reflexivity statements for each member of the research team are provided in table 2. These statements formalise some of the reflections we shared throughout this project and attuned us to our strengths as a diverse team, and areas where we may have less insight and so need to challenge ourselves to think more deeply. It is important to note that none of the research team had pre-existing educational or personal relationships with any of the study participants.

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Table 2 Team reflexivity statements

Researcher initials	Reflexivity statement
MELB	As I am a disabled researcher who lives with chronic pain, I am acutely aware of the complexities and challenges of living with pain. My lived experience has informed my approach to this study and given me a unique perspective on how pain is perceived and understood within the medical community. I felt readily able to identify gendered assumptions in this data as someone who was assigned female at birth (AFAB) who has experienced some of these assumptions myself, as feminine presenting, when seeking support and treatment for pain. Regarding intersectional considerations, I am disabled and Autistic which I feel has attuned me to comments in the data regarding the dismissal of psychological pain, and ableist assumptions. I am white, and English is my first language, and both of these elements of my identity may act as a limitation in that I might be less likely to identify intersectional considerations relating to ethnicity and language. I have been actively aware of this throughout the process of research, and we have been intentional regarding working with a diverse patient group to co-develop our study focus and recommendations and discussed regularly how culture and ethnicity intersect with our data on gender.
CC	I am a disabled junior doctor in training that suffers with chronic pain and a mental health disability. This experience has been extremely helpful in creating an empathy bond with the patient group and some of the interviewees, as well as see beyond the spoken words. I am also caedsexual/asexual, which has brought an additional layer of uniqueness when it comes to the effects that physical or mental pain can have on someone. Coming from a working-class background, growing up in the post-communist Romania, living the life of an immigrant and with English as my second language after having moved to the UK 7 years ago has offered me the lens of difficulty that these characteristics can bring when it comes to having your pain understood, biases and struggles that I've found easy to unpick between the spoken words of our interviews. I am, however, white, a cisgender woman, heteroromantic, slim built, neurotypical, which have limited the insight that I have, but have hopefully brought me in the position of being able to work on this project and help improve the healthcare that we provide and that our patients deserve
SBP	I am a researcher who does not have the experience of living with chronic pain. The participants' stories around the diagnosis and management of chronic pain have provoked empathy, but not an emotional response. Within this team I have been able to question how researchers who experience pain are bringing their experiences into the interpretation of the data, and this has promoted discussion that ensures the patient stories are foregrounded. I am a White, able-bodied, Middle-classed, English-speaking person who works at a Medical School. I am aware that these identities provide me with privilege that allows me to advocate for myself within a healthcare setting. Throughout the research process I have been mindful to consider whether participants' stories of patient's pain being minimised or disbelieved, may be related to lack of privilege/power.
RP	I have been a doctor for 11 years and have worked within medical education and academia for the past 9 years. I often work with patients in supporting them through their management of chronic pain and see how challenging these experiences can be. I have experienced how limited the options are within our current healthcare system to support patients with chronic pain. I suffer with a chronic health condition myself which can cause chronic pain but have been able to manage this with appropriate treatment. This personal experience of pain makes me aware and empathise with the difficulty of living with unmanaged pain. I am a British born, Asian, heterosexual male from a middle-class background. I have witnessed discrimination within healthcare first hand and feel strongly that I have a role to advocate within my clinical and academic roles, for the need to address health inequality. I acknowledge however my background may limit my understanding of discrimination faced due to sexuality, class and gender, but have been able to explore these areas and the wider importance of taking an intersectional approach in my academic work.
SK	I am a doctor who has worked in clinical medicine and academia for 20 years. I have helped support many patients manage their pain in acute and community settings and have seen first-hand the negative impact of gendered and racial stereotypes of pain on patient care. I am British born, female and from an ethnically minoritized background and have experienced myself and through family how patients from diverse backgrounds are managed and treated differently by health care professionals. These personal and professional experiences have given me a purpose and drive to better understand and explore where we can influence change in the training of our future health care workforce.
WL	I am a GP working in clinical medicine for over 25 years, a medical educator and researcher, particularly in the field of empathy. More recently, I have joined the global medical sciences team at Reckitt, a self-care hygiene and health company that is currently working on a stream of educational material and research to tackle bias in pain, beginning with gender bias. I have had an interest in migraine for over 20 years. The impact of this pain condition is widely under-estimated, and I believe it is no coincidence that it effects 3 times more women than men. I am in my older middle age. I am a white, Caucasian, heterosexual, native English speaking, cisgender man, which puts me in a place of relative privilege in terms of having my own pain taken seriously. I am passionately fascinated by pain as a construct, it being a personal, private experience, devoid of objective signals, and therefore particularly prone to under-appreciation and bias. Since being a medical student, I have consciously observed pain in women being under appreciated and presumed to be a product of the emotions, my main preconception for expected findings in this research.

RESULTS

We interviewed 14 senior medical students and gave each participant the opportunity to select a pseudonym. Where a participant did not wish to select a pseudonym, we selected one for them from a pregenerated list of gender-neutral and non-identifiable names. The list was created

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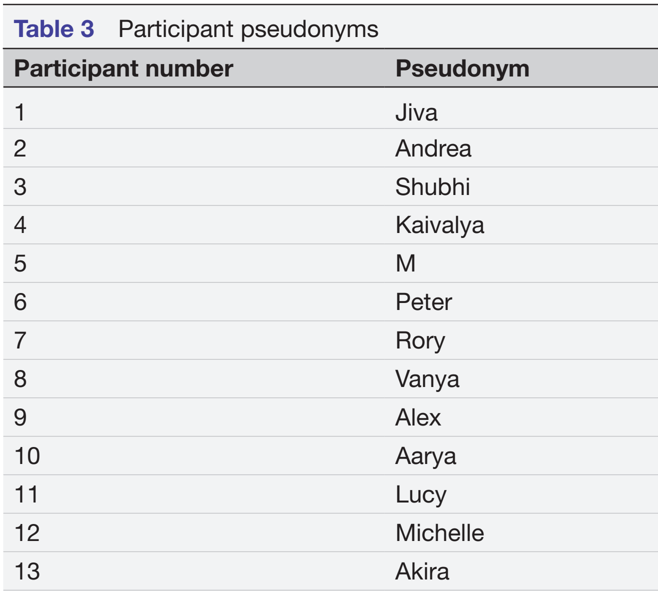

Table 3 Participant pseudonyms

Participant number	Pseudonym
1	Jiva
2	Andrea
3	Shubhi
4	Kaivalya
5	M
6	Peter
7	Rory
8	Vanya
9	Alex
10	Aarya
11	Lucy
12	Michelle
13	Akira
14	Krishna

to be culturally diverse—where participants disclosed their cultural background, we selected a name culturally associated with their background, given the importance of culture in discussions of pain.

The pseudonyms in use for all participants are listed in table 3. Quotes from participants are indicated in the below discussion of themes using italic text.

We created three themes which capture medical students' perceptions of gender and pain, and experiences of the hidden curriculum. We name three key educational influences students experience, and engage with, in relation to gender and pain: 'the sociocultural influencer'; 'the pedagogical influence' and 'the professorial influencer'. The sociocultural influencer is an educational force relating to societal and cultural norms; the pedagogical influencer is formed of formal educational experiences; and, finally, the professorial influencer relates to the influence of academic and clinical teachers.

Our broad themes have several analytical subthemes, which constitute subheadings within the results narrative. Our themes and subthemes are:

1. The sociocultural influencer: conceptualisations of the relationship between gender and pain are shaped by sociocultural norms.
   a. Understandings of pain and gender are shaped by the replication of gendered stereotypes.
   b. Understandings of pain and gender are shaped by students' personal identities.
2. The pedagogical influencer: formal pain curricula are experienced as deficient.
   a. Students experience tension between the clinical diagnosis and management of pain, and holistic understandings of pain.
   b. Students are motivated to engage in learning about the relationship between gender and pain, and their role in addressing key challenges.
3. The professorial influencer: senior role models, particularly within clinical environments, help create a hidden curriculum of gender bias in relation to pain.
   a. Understandings of pain and gender are shaped by the hidden curriculum's communication of gendered stereotypes.
   b. Senior clinicians often role model biased understandings of pain.

The sociocultural influencer: conceptualisations of the relationship between gender and pain are shaped by sociocultural norms

We asked students to define pain and elaborate on their understanding of its nature, and the relationship between gender and pain. This theme describes senior medical students' responses to these prompts, or their thoughts and opinions regarding the relationship between gender and pain. Interestingly, students explored the sociocultural dimensions of their understanding—namely their knowledge and the impact of societal norms (such as gendered stereotypes) and the influence of their own backgrounds.

These constitute two subthemes within this theme. Taken together, they help to cast light on how sociocultural gender biases are both perpetuated and challenged by medical students when conceptualising the relationship between gender and pain. In sum, this theme provides insight into part of a complex web of sociocultural factors that seem to be influencing learners' perceptions of pain and gender.

We present this theme first to provide a foundation for our exploration of formal and hidden medical school curricula. The thoughts and understandings voiced by students in this theme relate to their experiences of the sociocultural contexts and norms they navigate. This theme sets the stage for a deeper analysis of how formal and hidden curricula interact with broader sociocultural influences regarding pain and gender.

Understandings of pain and gender are shaped by the replication of gendered stereotypes broadly and in clinical practice

This subtheme illuminates the influence of stereotypes, assumptions and biases in this context. During data collection and analysis, it became evident that students' perceptions were multifaceted and shaped by various factors, including societal and clinical norms, medical school teaching and personal experiences. We explore these influences in greater depth in later themes.

Personal identities shape students' understanding of the relationship between gender and pain

In this subtheme, we explore how students' personal experiences, backgrounds and identities play an important role in shaping their understanding of the relationship between gender and pain.

Students noted that where they shared experiences with patients in pain (either experiences of pain personally, or via family and friends' experiences) they could

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better empathise with patients. M, for example, describes women in their family being dismissed when in pain– seeing the distress this causes on a personal level, has meant M aspires to take patients' pain seriously: '*I'm always like, 'oh my God no aunty, I swear I'll take you seriously'…if [a patient] has said, 'so and so' and they're visibly distressed because of it, yes, I think I take that a bit more seriously because I don't want to be another dismissive doctor'* (*M*). Students highlighted that their personal experiences of pain management influenced the recommendations they made to patients: '*That's affected my suggestions for management… I'm often much more inclined to suggest physio, having been through that experience where… [I was] offered painkillers and nothing else' (Krishna*).

Some women noted that being a woman in pain made it easier to sincerely empathise with other women experiencing pain. Andrea, for example, comments on their personal experiences of gynaecological services and pain as a source of empathy for patients with similar pain, interacting with similar services: '*Every single month I'm so much pain that I pass out and being like, oh my god. I'm so sorry to hear that, I'm not reading off a script and just writing, here is your mefenamic acid or whatever they give to them. So, I feel like that impacted myself in a professional way but also in a personal way, because it's like, wow, gynaecological services across the board are bad. Whether you're a medical student or you're a patient yourself' (Andrea*).

Similarly, where students shared a particular characteristic with patients, for example, ethnicity, they were more attuned to the intersectional nature of bias in relation to pain and the needs of patients who were like them for example, patients' cultural norms and how this might influence pain presentation and management. M describes advocating for patients where language barriers are an issue, based on their own experience of this barrier within their family:

> I think for anyone who cannot speak English to some degree, probably because I sometimes have to advocate for my own parents and stuff like that, that I feel like I always take what they're saying seriously… everyone has a bit of unconscious bias when they think, "oh she's being dramatic or he's being dramatic", well that's not right. And it's very easy to get into that mindset, but as soon as they can't speak English I feel like I'm a bit more serious about it, because I feel like I have to be, because I don't think anyone else is going to give them that benefit of the doubt (M).

The pedagogical influencer: formal pain curricula are experienced as deficient

Students spoke at length about gaps in their formal medical school curricula in relation to gender, pain and the relationship between them. In this theme, we discuss how gaps in medical school curricula in relation to pain and gender are experienced by medical students.

There were many gaps and curricula needs identified. Common to the suggestions made were the desire for enhanced learning about the relationship between pain and bias across all years of medical school ('*it makes up so much of clinical practice, but so little of our teaching time' (Jiva*)), but with a particular focus on discussing bias early at medical school ('*Bias needs to be introduced really early. We need to learn to accept it. We need to normalise talking about it. And we need to appreciate just because you had a biased action, that doesn't make you evil. It makes you human. And you just need to try and do better next time' (Peter*)).

Students experience tension between the clinical diagnosis and management of pain, and holistic understandings of pain

Students saw existing curricula as focusing only on the pharmacological management of pain: '*at all stages it's generally been focused on the [World Health Organisation] pain ladder' (Krishna*).

This sends a hidden message to students and clinicians—that the focus of clinical practice should be the medical management of pain. This, coupled with a relative lack of holistic teaching on pain management and bias ('*Medicine, at least the way medicine is taught at my university is very much like, if it's not objective, it's too difficult to try to make you conceptualise, so we'll try to avoid that topic' (Jiva*)) leads to an uneasy tension where medical students understand pain both to be objective and physiological, but also to be subjectively experienced by each patient. This causes conflict in clinical practice ('*we have ways of assessing patients' pain by looking at them, by the way they move, how they act. And we quite often hear people say, 'oh, they can't be in that much pain because they're doing this'… I generally try to look at pain as whatever the patient tells you it is' (Rory*)) and is implicated in previously described views regarding catching patients out who aren't 'actually' in pain ('*I've certainly spoken to patients and gone… They've said their pain is a nine out of ten. And I've gone, I don't believe you. Obviously, not to the patient. But I've walked out the room and gone, I don't believe you' (Rory*)).

Further, this hidden message contributes to the focus of clinicians (identified by the students) on treating the underlying cause of pain, rather than managing pain itself ('*Doctors prioritise the particular condition or treatment over exploring the pain' (Aarya*)). This can also be connected to the unease students perceived clinicians as feeling when dealing with chronic pain (where an underlying cause may be illusive) ('*It seems people come in for a recurrent pain and they're just giving you medication and don't really discuss the impact or the hows and the whys or the self-help' (Michelle*)), pain of psychological origin ('*I think that if someone is in pain and physicians perceive that there isn't a visible or diagnosable related physical experience that would cause them that level of pain, I don't think that there is much sympathy for patients' (Alex)*), and subsequent poor management of such patients.

Relatedly, students recognised the need for an enhanced focus on the lived experiences of people who are/have experienced pain. They saw opportunities for an increased focus on patient perspectives (in relation to pain and gender) in case studies, as both a developing

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strand within spiral curricula models, and through engagement with the arts and humanities: '*I think it's best to hear it from and have talked with patients themselves to name their experience. But I think the next best thing would be reading patient accounts, reading poems, reading narratives about what it's actually like to experience these different kinds of pain'* (*Alex*).

Students are motivated to engage in learning about the relationship between gender and pain, and their role in addressing key challenges

Many students who were well-informed about gender bias and pain had engaged in significant self-directed learning in their own time, without opportunity to discuss their learning formally with their peers or tutors: '*All those things I've just picked up from external sources, whether it's on Twitter, or I read a paper on it, it's never been formally taught to me'* (*M*).

Students are motivated to learn about pain and gender in a more holistic way and expressed a desire to be part of a conversation regarding the manifestations of gender bias in relation to pain ('*The most important thing is getting people aware of it… making young medics willing to talk about it. Because we're all educated people. We're all bright. We're all, hopefully, kind and compassionate. And if we just would talk about it, we could probably get a decent way to fixing it without massive intervention' (Peter));* and part of action to challenge identified inequalities ('*The other thing that really is important to me, personally, is what we can do about it…. it gets quite repetitive and quite infuriating… I get the whole point of raising awareness and that it's important that we know. But what is the point of me…going into clinical practice, knowing that women are generally discriminated against… if I can't do anything about it?' (Rory)*)).

The professorial influencer: senior role models, particularly within clinical environments, help create a hidden curriculum of gender bias in relation to pain

Students learnt about pain not only from their formal medical school teaching (which, as above, they see as limited) but also from the hidden curriculum. The hidden curriculum in relation to pain and gender bias manifests in several ways. Prominent in our data is the way in which the hidden curriculum of clinical environments communicates gendered stereotypes, and the significant influence of senior clinicians' role modelling.

Understandings of pain and gender are shaped by the hidden curriculum's communication of gendered stereotypes

Gendered stereotypes were present in students' understanding of pain and were described by students as communicated through the hidden curriculum. Overall, women were perceived *as 'more anxious'* (*Lucy*) than men, and more likely to '*moan'* about pain—*'Even the way I've just said it, moaning about pain, because that's what's ingrained to us'* (*Jiva*).

Students perceived that women's pain was more likely to be dismissed clinically: '*Patients are dismissed based off their pains' (Aarya*); attributed erroneously to gynaecological causes: '*The amount of times I've had to go, 'are you sure it's not your period pain?' I'm pretty sure the 30-year-old who's been having 18 years, 12 periods a month, 18 years, she's had over 200 of these things now. I'm pretty sure she knows it isn't that. Why are we asking?'* (*Peter*); and psychological origin: '*… it really saddens me that so many more women are likely to be misdiagnosed with anxiety* (*Krishna*). Where pain was discussed as psychological, it was sometimes associated with women '*over exaggerating'* (*Jiva*) pain—as Akira puts it '*in the ward you learn how to distract the patients away from their pain… how you could divert their attention. It reveals them as well… a patient came in… they were in agony… distract them and then you can tell it's not too bad'*.

The intersectionality of other characteristics, such as race, socioeconomic status, weight and disability status, also played a role in the students' perceptions of pain. Most students appreciated that bias was intersectional, and that individuals affected by many different types of bias would be most negatively affected in relation to diagnosis, treatment and management of pain: '*I think working class women of colour are probably the most affected when it comes to pain [management]'* (*Jiva); 'People of lower socioeconomic class, [there's] a higher assumption they're drug seeking'* (*Peter*). Students were often aware of harmful bias relating to race, ethnicity and socioeconomic status and saw this manifest in their teaching and clinical experiences: '*We're taught outdated science, like, oh, Black people have a higher tolerance for pain. That's just frankly a lie that came from no science ever. But it's still propagated and people still believe'* (*Peter*).

It is important to note that not all students believed they had encountered gendered stereotypes in relation to pain in clinical practice, or in their university education: '*I haven't picked up on patients being treated differently because of gender… the patient's experiencing pain… you need to give them something to relieve that… their gender or any other specific characteristic isn't important in that'* (*Vanya*). Others recognised their lack of familiarity with gender bias may be due to their own limited awareness: '*Nothing I've seen myself… but often you read about things or hear about things other people have seen'* (*Kaivalya*).

Senior clinicians often role model biased understandings of pain

Senior clinicians' opinions and actions were greatly influential and are an aspect of the hidden curriculum that impacts student perceptions of gender and pain. Through these opinions and behaviours, students are exposed to negative stereotypes and biases regarding pain and its management in the clinical environment. Students reported witnessing a lack of empathy from clinicians that they suspected was a result of taught ('*Medical school teaches you to dissociate, pain-wise'* (*Jiva*)) and necessary ('*It's either detach or let it affect you too much'* (*Jiva*)) detachment, dismissive attitudes regarding patient pain ('*It has to be very, very severe before anyone takes it seriously'* (*Shubhi*)). There were many reports of instances where patient pain was inadequately managed, which students suspected to be as a result of bias—Michelle, for example, describes the following:

> A young Black woman with sickle cell anaemia came in with the crises… she had a PCA [Patient Controlled Analgesia] set up… and was asking nurses again and again throughout the night and saying that she was pushing the button, she wasn't getting pain relief… the nurses had been very dismissive and they came in the next morning and they found that the PCA wasn't connected to the driver, so she'd been pushing this button again and again and obviously it hadn't done anything at all…that really just shocked me, actually, that a ward that's so pro… when given a young Black woman with a known terrible disease that needs adequate pain relief, they seemed to be just disbelieving her (Michelle).

Some students discussed bias in pain relating to disability status and weight and noted negative assumptions among senior clinicians, for example, if someone can mobilise, they are not in pain; if someone is fat, they could be doing more to improve their lifestyle and manage their pain. Akira comments on the management of pain in primary care: '… *they're like, I can walk with a walking stick, and so maybe they [the General Practitioner] perceive their chronic pain less of a major thing';* whilst Alex notes bias regarding patients' weight and doctors' perceptions of lifestyle changes '…. *that culture of, well, if you hadn't let yourself get like this then you wouldn't be in pain'.*

For some students, witnessing the negative role modelling from their seniors motivated them to behave differently: '*My whole experience on that placement made me feel like I would never do that to my patients. I would never, even if I'm so busy and I'm running an hour late in my clinic, I'm never going to rush through a speculum exam. Because it can be traumatic'* (*Andrea*). However, this was not echoed in all student accounts.

DISCUSSION

In this study, we set out to explore senior medical students' perceptions of gender and pain using a qualitative approach, particularly in reference to how these perceptions relate to participants' experiences of formal and hidden curricula within medical education. Our research identifies three key educational forces, which students experience of the relationship between gender and pain as they progress through medical education: the sociocultural influencer, the pedagogical influencer and the professorial influencer.

Our data reinforce existing literature to demonstrate the impact of social norms and diverse identities on perceptions of gender and pain; and significant gaps in formal curricula. Our data build on existing literature by revealing a nuanced hidden curriculum that sends biased messages to students regarding gender and pain. Students perceived the origin of many of these messages to be clinical environments, and the senior clinicians involved in their instruction. The output of these influencers is gendered stereotyping and a lack of focus on the holistic management of women's pain. In this discussion, we explore in greater depth how our findings relate to wider literature and make recommendations for educators which we hope will positively influence educational strategies.

The sociocultural influencer

Our findings show that many medical students are aware of, and actively perceive, gender bias in relation to the diagnosis and management of pain. Assumptions relating to gender were influenced by social norms and learners' own backgrounds. Interestingly, the likelihood that a student would report witnessing gender bias in patient care appeared to increase when students' personal identities corresponded with those of the patients they were treating. This awareness is consistent with the literature on increased empathy where students and patients share experiences,[23] and literature on bias within healthcare practice more broadly[24] and adds further weight to the need for a diverse clinical workforce.[25] The creation of reflective spaces in which all students can explore their clinical experiences for instances of bias, and develop cultural competence, would be beneficial. This need aligns with a critical consciousness approach to medical education, where students are engaged in open dialogue to encourage critical thinking about personal and societal beliefs.[26]

The pedagogical influencer

Our participants reported several gaps in their formal medical school curricula in relation to gender bias and pain. These gaps represent more than missing content, as curricula gaps inadvertently convey messages to students about the relative unimportance of the content that is missing—[27] for example, the importance of holistic pain management, chronic pain, the significance of patient perspectives regarding pain and the role of bias. This is an important way in which the hidden curriculum manifests in relation to gender bias and pain education. This suggestion has been reported previously in relation to chronic pain,[28] but not beyond this. Interestingly, many students noted a tension these various gaps established—between viewing pain as something which was objective (which they felt the formal curriculum emphasised through its focus on pharmacology, the assigning of numbers to rate the severity of pain and regarding treating underlying causes of pain) and viewing pain as subjectively experienced by each patient (which they had witnessed as important through personal and clinical experiences, given the patient perspective gap in their formal curricula). This tension led to confusion and conflict. To address this, we suggest formal curricula and assessments which emphasise holistic approaches to pain management and explore patients' experiences of pain (eg, through the arts and humanities,[29] and the inclusion of patients (eg, those with chronic pain) in curricula design)[30] would be beneficial. Our data suggest that exploring bias and advocacy in relation to pain is also important and would be valued by

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Table 4 Suggestions for educators and organisations based on these findings

Key finding	Suggestions for educators	Suggestions for organisations
The sociocultural influencer		
Sociocultural norms influence medical students' developing views on the relationship between gender and pain, including gender bias.	▶ Create and support an environment where students can reflect on how sociocultural norms influence their perceptions of gender and pain. ▶ Ensure teaching materials/methods are inclusive and representative of diverse populations. ▶ Work with local and diverse communities to codevelop education regarding gender and pain that is patient centred. Renumerate patients and communities appropriately for their expertise. ▶ Highlight examples of gender bias in clinical practice, including in assessment/management of pain. ▶ Collaborate with colleagues from different disciplines to support students to develop a comprehensive, interdisciplinary understanding of how sociocultural norms influence gender and pain, for example, colleagues from Sociology.	▶ Ensure the curriculum includes comprehensive education on sociocultural norms, gender bias, and their impact on healthcare, including on the assessment and management of pain. Regularly review the curriculum as sociocultural understandings shift through time. ▶ Renumerate patients and communities appropriately for their expertise where they are engaged in the codesign and development of teaching materials or sessions. ▶ Allocate appropriate resources for innovations and initiatives that focus on gender bias and sociocultural influences in medical education. This may include funding for workshops, seminars or continuing professional development. ▶ More broadly, take steps to create an organisational culture that values meaningful diversity and inclusivity. For example, support initiatives that aim to reduce gender bias such as the Athena Swan Charter.
Medical students' personal identities influence their developing views on the relationship between gender and pain, including gender bias.	▶ Encourage medical students to reflect on personal identities including how these may influence biases regarding gender and pain. Support psychological safety prior to opening such discussion and consider use of arts and humanities to encourage meaningful reflection. ▶ Integrate topics related to gender bias, cultural competence, and the influence of personal identities into formal curriculum. ▶ Use diverse case studies and patient accounts that reflect a variety of gender identities, cultural backgrounds and experiences with pain. ▶ Ensure that students are exposed to a diverse range of role models and mentors who can provide varied perspectives on gender and pain management.	▶ Develop policies and practices that support diversity of recruitment (eg, Widening Participation policies; accessible reasonable adjustment policies). ▶ Support retention of diverse staff (eg, develop and sustain inclusive organisational culture; support clear and equitable career opportunities/advancement; provide opportunities for flexible working). ▶ Encourage academic educators and clinical educators to model inclusive behaviour and provide both formal and informal support for students as they navigate their own biases and experiences. Recognise potential training needs and time needs to achieve this aim. ▶ Promote research which considers the intersecting influence of various personal identities on pain education.
The pedagogical influencer		
There are many gaps in formal curricula relating to gender bias and pain.	▶ Review existing educational material, at individual and programme levels, for gaps in relation to gender bias and pain. Work with students and patients with diverse lived experiences to identify shortcomings. ▶ Integrate teaching on gender bias and holistic approaches to pain management into curricula from the beginning of medical school. ▶ Consider both dedicated teaching on gender and pain and integration into existing content, for example, discussing gender bias in assessment and management of cardiac pain.	▶ Where within scope, consider the inclusion of topics and competencies relating to gender bias and pain in accreditation standards. ▶ Provide funding and resources for developing comprehensive curricula, such as the steps included in the educator column. ▶ Establish and maintain partnerships with organisations with expertise in gender bias and pain (eg, advocacy organisations). Work with organisations to improve educational offers.

Continued

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Table 4 Continued

Key finding	Suggestions for educators	Suggestions for organisations
Students experience tension between clinical assessment and management of pain and holistic understandings of pain.	▶ Explore this tension with students directly, either through a relevant example or patient case, or through reflection. Consider, with students, ways to explore this tension further, or ways in which steps could be taken by either individuals or organisations to remedy this. ▶ Given a strong focus on the pharmacological management of pain, ensure adequate content on options relating to, and potential benefits of, holistic and person-centred approaches to assessing and managing pain.	▶ Provide opportunities for students to learn from experts in understanding, assessing and managing pain. This may include patients, general practitioners, physiotherapists, anaesthetists, etc. ▶ Regarding opportunities for learning, consider interspersing these throughout medical school curricula and including both academic and clinical experiences. ▶ Provide continuous professional development opportunities focused on holistic approaches to pain assessment and management, to upskill educators in delivering such content.
Students are motivated to engage in self-directed learning about gender bias and pain management.	▶ While this should be coupled with formal curricula, continue to support this enthusiasm and interest by providing access to, and signposting to, a wide variety of learning resources for example, free online courses, webinars, podcasts, literature. ▶ Create a platform for students to share their self-directed learning experiences and findings with peers. ▶ Encourage and support student research projects on gender bias and pain.	▶ Develop a centralised repository of educational resources on gender bias and pain. ▶ Recognise and reward student initiatives and research in this area. ▶ Support the creation of student-led organisations and forums focused on equity, diversity and inclusion. Discuss the possibility of working with these organisations to develop resources or content relating to gender and pain.
The professorial influencer		
Negative role modelling by senior clinicians perpetuates gender bias in clinical practice.	▶ Develop/deliver/support faculty development for senior clinicians on the impact of teaching and role modelling on students' views on gender and pain. ▶ Development may include promoting reflective practice among senior clinicians or opportunities to learn from peers. ▶ Highlight and reward positive role models who demonstrate inclusive attitudes and behaviours. ▶ If you are an educator, and a senior clinician, consider ways in which you might discuss gender bias and pain with colleagues in both formal and informal settings.	▶ Establish clear guidelines and expectations for professional behaviour in the context of role modelling. ▶ Consider ways students might report, including anonymously, when they have witnessed gender bias in clinical practice, including in situations involving pain. Promote a culture of comfort relating to reporting. Have structured processes for managing and dealing with reports made. Approach reports developmentally by default, not punitively, in recognition of significant strain on clinical staff. ▶ Monitor and evaluate the impact of role modelling on student experiences and learning for example, integrate questions relating to the hidden curriculum into formal evaluation and feedback processes.
Negative role modelling in relation to pain is intersectional for example, may also include bias relating to disability or weight	▶ Where faculty development is created, ensure this covers bias which is intersectional in nature—understanding this bias and its negative impact, reflecting on relationship to bias across intersectional identities in relation to pain. ▶ Consider inviting guest speakers who can share their experiences and expertise in providing inclusive care, both broadly, and in relation to pain. This may involve patients, advocates, academics, clinicians. ▶ Regularly update training content to reflect current research and best practices in managing intersectional biases.	▶ Allocate resources to support ongoing education and professional development focused on intersectionality. ▶ Assess implementation and impact of guidelines that prohibit discrimination based on gender, disability, weight and other factors. Evaluate how these could be improved. ▶ Resource and support evaluation/research to explore what can be done to support senior clinicians in becoming more positive role models within the organisation. Address any identified root causes/barriers to positive role modelling.

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students at an early stage of their training. Critically, the students in our study were motivated to learn about bias in relation to pain, many conducting their own self-study. It may also be useful to involve students in the cocreation of formal curricula to ensure educational material meets their learning needs.

The professorial influencer

Another impactful way in which the hidden curriculum manifested in our data was in relation to role modelling. Medical education literature documents the harmful impact of negative role modelling,[31] which our data supports in relation to perceptions of, and behaviours relating to, pain within clinical practice. Negative role modelling can be a result of poor awareness of bias, but also of system-level constraints such as a lack of time or resources.[12] Our data highlight a lack of opportunities for students to reflect on their experiences, consider their own biases and consider both possible reasons for, and how they might act when they witness poor experiences of pain management in practice. Reflection plays a critical role in student sensemaking and subsequent awareness of how to advocate for patients.[32] There is a pressing need to either create these reflective spaces (again, here, a critical consciousness approach would be beneficial), or integrate discussion regarding students' experiences of role modelling and their own perceptions in relation to pain within existing reflective spaces. Critically, educators and practising clinicians represent a key target audience for faculty development relating to gender bias and pain, to increase awareness of the perception of their actions and develop strategies for discussing pain and bias with students, including discussing the impact of resource shortages. Perceptions and practice relating to gender bias and pain across the continuum of medical education careers is an important direction for future research.

Across our findings, we have summarised our recommendations for educational practice (table 4).

Limitations

Though we recruited widely, our convenience sampling approach means that we are likely to have attracted students interested in the topics of gender bias and pain and so there is a risk that our findings overemphasise student awareness of bias. The comments regarding desired developments for formal medical school curricula are based on student perceptions of what is covered by their medical school curricula presently, rather than our own analysis of medical school curricula coverage and, as such, there may be disparities between these reports and actual coverage. Despite this, we believe students' perceptions of their curricula here are important as such perceptions influence engagement and can be inferred to represent students' take-home understandings of teaching. Some students declined to select a pseudonym, meaning that in some instances, selected pseudonyms are researcher generated. This risks some loss of participant voice in our findings, though it does not negate the value of the experiences reported.

Additionally, this cross-sectional research offers a particular, time-bound perspective on students' experiences. Given the participants' descriptions of how early experiences are important, and education on gender and pain is particularly lacking at early stages, future research could longitudinally explore medical students' experiences and perceptions from an early stage of their education.

CONCLUSION

We have explored the ways in which senior medical students perceive the relationship between gender and pain, exploring their experiences of their formal medical school curricula, and the hidden curricula they are exposed to by way of their presence within university and clinical environments. As the first study, to our knowledge, to explore how the hidden curriculum of medical education shapes students' experiences of care in relation to gender and pain, this paper offers important insight for educators and researchers regarding the varied ability of students to identify gender bias in action, the powerful messaging of curricula gaps and impact of negative role modelling. We suggest further integration of curricular content focused on bias and advocacy, patient perspectives, holistic pain management and reflective spaces which encourage critical consciousness development at early stages of medical school curricula might go some way to addressing the gender bias present in many healthcare systems globally.

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