



Student perspectives of equity, diversity, and inclusion in the curriculum of a UK medical school—A mixed-methods study

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Abstract:

BACKGROUND: Equity, inclusion, and diversity in medical education are increasingly recognized as crucial for enhancing student engagement and improving health outcomes. This paper aims to analyze trends and assess student attitudes toward ethnic equity, inclusion, and diversity within campus-based modules at the University of Buckingham Medical School, UK.

MATERIALS AND METHODS: A mixed-methods approach was employed, involving 97 medical students aged 18–24 years (86.6%) between 2021 and 2023. Quantitative data were gathered through a pretested questionnaire using a five-point Likert scale and analyzed using SPSS software (version 26). Qualitative insights were obtained from five focus group sessions with randomly selected medical students and analyzed thematically.

RESULTS: The findings of this study indicated a significant proportion of Asian descent students (56.7%). First-year and White ethnicity students perceived the curriculum as more representative compared to second-year counterparts and peers from other ethnic backgrounds. Notably, first-year students showed a heightened understanding of social science terms, especially “ethnicity,” and 67% of female students demonstrated a deeper comprehension of sociocultural factors influencing health behaviors. Across demographics, there was consistent recognition of these factors impacting patient care. Qualitative findings underscored the importance of representation in medical education, biases in recruitment, and advocated for greater faculty diversity. Additionally, there is a need for a curriculum reflecting diverse dietary habits and including role models from various ethnic backgrounds.

CONCLUSION: This study emphasizes the critical need for curricular reform in medical education to prepare students for a multicultural society. Addressing disparities in curriculum representation and promoting diversity within faculties are essential for equipping future healthcare professionals with the skills to provide culturally competent care and navigate diverse patient populations effectively.

Keywords:

Cultural competence, curriculum inclusivity, curricular reform, ethnic representation, gender differences, medical education diversity, sociocultural awareness, student perceptions

Background

The discourse on social accountability in medical education has steadily evolved since the 1990s, gaining momentum following

the World Federation for Medical Education's pivotal 1988 declaration.^[1] This landmark declaration marked a significant shift, expanding the focus of medical education beyond mere knowledge acquisition to

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encompass the broader social responsibilities of medical practitioners^[2,3]. Subsequent discussions, such as the 2013 World Summit on Outcomes-Based Accreditation, emphasized the global effort to embed social accountability within medical training frameworks across various nations. In parallel, initiatives like the British Medical Association's 2020 racial harassment charter have underscored the urgency of addressing disparities, particularly those rooted in race and ethnicity^[4].

These developments underscore the growing recognition of equity, diversity, and inclusion (EDI) as fundamental components of medical education. Equity involves ensuring fair treatment, opportunities, and advancement for all individuals while striving to identify and eliminate barriers that have historically impeded the full participation of certain groups. Diversity refers to the presence of differences within a given setting, including race, ethnicity, gender, age, and other characteristics. Inclusion is about creating environments in which every individual feels welcomed, respected, supported, and valued. EDI in medical education is indispensable for enhancing student engagement, healthcare efficacy, and patient outcomes, especially amidst profound global demographic shifts^[3-5].

Persistent inequities within medical education, particularly concerning race and ethnicity, have been well-documented. These inequities manifest as gaps in representation and disparities in how various health conditions are portrayed among different demographic groups^[6-8]. Medical students have frequently expressed concerns regarding their preparedness in crucial areas such as diversity awareness, bias mitigation, and resilience^[9]. Recent study by Louie *et al.* in 2018^[10], highlighted the importance of self-reflection on ethnoracial diversity within personal and professional networks as a means to combat unconscious biases. This proactive approach aligns with students' desires to deepen their understanding of cultural and ethnic diversity as integral elements of their training.

Furthermore, research by Verbree *et al.* in 2023^[11] underscores the ongoing challenges in adequately preparing students for cross-cultural care, despite advancements in certain areas. Studies at institutions like the University of Leeds and across Northern England have revealed student preferences for interactive learning methods and highlighted discomfort and barriers associated with discussing race and ethnicity^[12]. Andrew^[13] further illuminates the barriers faced by Black and Minority Ethnic (BME) graduate-entry medical students, significantly impacting their educational experiences and outcomes.

The literature reveals several gaps in understanding the full impact of EDI initiatives within medical education.

While there is recognition of the need for EDI, there is less clarity on effective methods for integrating these principles into the curriculum and the long-term effects on student preparedness and patient care. Furthermore, the voices of students, particularly those from diverse backgrounds, are often underrepresented in these discussions.

In the context of the United Kingdom, the 2021 Census data for England and Wales^[14] highlights the nation's diverse demographic landscape, providing a critical backdrop for organizations seeking to navigate the complexities of a multicultural population.

This study aims to fill these gaps by analyzing prevailing trends and assessing student attitudes towards ethnic equity, inclusion, and diversity within campus-based modules at the University of Buckingham Medical School, UK. By amplifying the voices of students, this study seeks to provide valuable insights into the effectiveness of current EDI practices and offer recommendations for enhancing the equitable representation of diverse ethnicities in medical education globally. The significance of this study lies in its potential to influence curriculum development, inform policy, and ultimately improve healthcare outcomes by fostering a more inclusive and culturally competent generation of medical practitioners.

Materials and Methods

Study design and setting: In this study, we employed a mixed-methods approach to thoroughly examine the dynamics of ethnic diversity and inclusion within the campus-based years at the University of Buckingham Medical School, UK between 2021 and 2023. This comprehensive methodology involved a sequential process, commencing with a questionnaire phase followed by focused discussions in focus groups.

Study Participants and sampling: The quantitative phase of the study recruited included first and second-year campus-based pretested questionnaire study (Phase I) medical students across various campuses within the University of Buckingham. Alongside their perceptions, we collected demographic information, including age, ethnicity, gender, and year of study, to explore potential correlations. To gain insights into students' perspectives on representation within the curriculum, we utilized the Cultural Competency Scale, a tool comprising 19 questions. Employing Microsoft Forms, we administered the questionnaire to ensure participant anonymity and data confidentiality. Participants were clearly informed of the voluntary nature of their involvement and data confidentiality and anonymity.

The quantitative analysis involved the use of SPSS software (version 26-SPSS. Chicago, USA: IBM), and the

findings were presented as numbers (percentages). In parallel, the qualitative dimension of the study included five focus group sessions with randomly selected medical students. The focus groups were conducted through Microsoft Teams, and these sessions adhered to a structured protocol featuring primary questions and supplementary probes. The intent was to facilitate discussions that elicit participants' viewpoints on ethnic representation and diversity within the curriculum.

Data collection tool and technique: The questionnaire phase served as a tool to gauge student perspectives on the representation of curriculum content and learning resources while simultaneously identifying potential gaps in diversity representation within specific modules.

Derived from the groundwork laid by Sorenson et al. (2019),^[15] our questionnaire was adapted to focus explicitly on learning outcomes associated with cultural competencies within the curriculum. This modified version, featuring 32 questions categorized as “yes,” “partly,” and “no” responses, includes a qualitative component that allows participants to add comments. The original questionnaire was pretested among medical program leaders in European partner institutions. The questionnaire underwent subsequent refinement tailored to the context of this study, with alterations that included significant streamlining for clarity and placing a concentrated emphasis on the curriculum's learning outcomes. It transitioned from a broad evaluation of structures and policies to a direct assessment of cultural competencies. A five-point Likert scale was introduced for more nuanced feedback, and topics were expanded to encompass more diverse learning outcomes, such as the representation of various ethnicities. Additionally, a demographic section was added to understand the influences on a respondent's perspective, and a section was incorporated to gather insights on potential curriculum modifications. The quantitative phase involved administering a pretested questionnaire with a five-point Likert scale, and data analysis employed SPSS software (version 26). The qualitative aspect consisted of five focus group sessions with randomly selected medical students.

For qualitative data analysis, we adopted Clarke and Braun's (2015)^[16] Six-Step Data Analysis Process as a guiding framework. This systematic approach involves familiarizing ourselves with the data, generating codes, consolidating codes into themes, reviewing these identified themes, determining their significance, and ultimately reporting the findings. This process aids in unearthing deeper insights and providing a nuanced understanding of participants' perspectives.

Ethical consideration: Ethical approval was obtained from the University of Buckingham (UBMSEC009).

Results

The questionnaire was sent to all the students, but only 97 students responded to our survey, 65 (67%) were females, 84 (86.6%) were between the ages of 18 and 24, and 60 (61.9%) were first-year students. Table 1 shows that most participants 54 (56.7%) were Asian (mostly from India/Pakistan/China), followed by Arab (15.5%) and students from other ethnicities 15 (15.5%).

Students' representation in the curriculum

First-year students (36.7%, $P = 0.044$), and students of White ethnicity (76.9%, $P = 0.015$) perceived the curriculum to be more representative than second-year students, and students of Asian, Arab, and other ethnicities [Table 2]. Table 2 also shows that first-year students (35%, $P = 0.013$) thought there was a more equitable representation of ethnicities in phase I modules than second-year students (13.5%).

Overview of knowledge domains with EDI

Table 3 shows that first-year students (31.7%) were more knowledgeable about key social science concepts such as “ethnicity” than second-year students (8.1%, $P = 0.009$, while females (64.6%) were more knowledgeable about how social and cultural factors can affect health-related behaviors and health care than males (50%), $P = 0.018$. Table 3 also demonstrates that male students (31.3%) had better knowledge about clinical presentations of patients of different ethnicities through the inclusion of pictorial representation than female students (24.6%), $P = 0.005$. Students aged 25–34 were similarly more knowledgeable (53.8%) than students aged 18–24 (22.6%), $P = 0.045$.

Students' insight into awareness domains with EDI

Second-year students were more aware of implicit attitudes (51.4%) than first-year students (46.6%), a P value of 0.008; additionally, students from Asian ethnic

Table 1: Demographic characteristics of the participants, $n=97$

Variable	<i>n</i> (%)
Gender	
Female	65 (67)
Male	32 (33)
Age groups	
18–24	84 (86.6)
25–34	13 (13.4)
Cohort	
Second year	37 (38.1)
First year	60 (61.9)
Ethnicity	
Asian-(India/Pakistan/China)	54 (56.7)
Arab	15 (15.5)
White	13 (13.3)
Other	15 (15.5)

Table 2: Students representation in the curriculum, equitable representation of ethnicities in phase 1 modules, and equitable representation of gender

Curriculum Item	Variable	Disagree/strongly disagree	Neutral	Agree/strongly agree	<i>P</i>
Do students feel represented in the curriculum	Gender				
	Female	23 (35.4)	21 (32.3)	21 (32.3)	0.117
	Male	5 (15.6)	15 (46.9)	12 (37.5)	
	Age group				
	Age 18–24	23 (27.4)	33 (39.3)	28 (33.3)	0.506
	Age 25–34	5 (38.5)	3 (23.1)	5 (38.5)	
	Cohort				
	Second year	16 (43.3)	10 (27)	11 (29.7)	0.044
	First year	12 (20)	26 (43.3)	22 (36.7)	
	Ethnicity				
	Asia-India/Pakistan/China	19 (35.2)	19 (35.2)	6 (29.6)	0.015
	Arab	3 (20)	8 (53.3)	4 (26.7)	
	White	0 (0)	3 (23.1)	10 (76.9)	
	Other	6 (50)	6 (40)	3 (20)	
Equitable representation of ethnicities in phase I modules"	Gender				
	Female	28 (43.1)	22 (33.8)	15 (23.1)	0.061
	Male	6 (18.8)	15 (46.9)	11 (34.4)	
	Age group				
	18–24	31 (36.9)	30 (35.7)	23 (27.4)	0.436
	25–34	3 (23.1)	7 (53.8)	3 (23.1)	
	Cohort				
	Second year	19 (51.4)	13 (35.1)	5 (13.5)	0.013
	First year	15 (25)	24 (40)	21 (35)	
	Ethnicity				
	Asian (India/Pakistan/China)	18 (33.3)	20 (37.1)	16 (29.6)	0.729
	Arab	5 (33.3)	6 (40)	4 (26.7)	
	White	3 (23.1)	6 (46.2)	4 (30.8)	
	Other	8 (53.3)	5 (33.3)	2 (13.3)	
Equitable representation of gender	Gender				
	Female	15 (23.1)	20 (30.8)	30 (46.2)	0.330
	Male	8 (25)	14 (43.8)	10 (31.2)	
	Age group				
	18–24	20 (23.8)	29 (34.5)	35 (41.7)	0.961
	25–34	3 (23.1)	5 (38.5)	5 (38.5)	
	Cohort				
	Second year	12 (32.4)	11 (29.7)	14 (37.9)	0.277
	First year	11 (18.3)	23 (38.3)	26 (43.4)	
	Ethnicity				
	Asian (India/Pakistan/China)	12 (22.2)	17 (31.5)	25 (46.3)	0.249
	Arab	4 (26.7)	7 (46.6)	4 (26.7)	
	White	3 (23.1)	2 (15.4)	8 (61.5)	
	Other	4 (26.7)	8 (53.3)	3 (20)	

P values in bold are statistically significant.

backgrounds were more aware (59.3%) than students from other ethnicities [Table 4]. The second-year students were more likely to disagree (43.2%) on how culture defined as “the perspective, practices and products of a social group,” shapes individual behavior and thinking compared to first-year students (16.7%) *P* value of 0.004.

Abilities to identify sociocultural factors in patient care

Table 5 demonstrates that there were no significant differences between subcategories of all groups in their

ability to identify and consider sociocultural factors that may influence patient care, *P* > 0.05.

Qualitative results

Significance of representation in medical education and curriculum

The qualitative research results underscore the vital role of representation in shaping medical education and curriculum, as elucidated through the discussions of focus group discussion (FGD). Table 6 presents a summary of

Table 3: Overview of knowledge domains with equity, diversity, and inclusion (EDI)

Curriculum Item	Variable	Disagree/strongly disagree	Neutral	Agree/strongly agree	P
Knowledge about key social science concepts including “ethnicity”	Gender				
	Female	25 (38.5)	26 (40)	14 (21.5)	0.781
	Male	10 (31.3)	14 (43.7)	8 (25)	
	Age groups				0.592
	18–24	31 (36.9)	33 (39.3)	20 (23.8)	
	25–34	4 (30.8)	7 (53.8)	2 (15.4)	
	Cohort				0.009
	Second year	19 (51.4)	15 (40.5)	3 (8.1)	
	First year	16 (26.7)	25 (41.7)	19 (31.7)	
	Ethnicity				0.199
Knowledge of how social and cultural factors can affect health-related behaviors and health care	Asian (India/Pakistan/China)	18 (33.3)	20 (37.1)	16 (29.6)	
	Arab	5 (33.3)	7 (46.7)	3 (20)	
	White	3 (23.1)	7 (53.8)	3 (23.1)	
	Other	9 (60)	6 (40)	0 (0)	
	Gender				0.018
	Female	13 (20)	10 (15.4)	42 (64.6)	
	Male	3 (9.4)	13 (40.6)	16 (50)	
	Age groups				0.784
	18–24	13 (15.5)	20 (23.8)	51 (60.7)	
	25–34	3 (23.1)	3 (23.1)	7 (53.8)	
	Cohort				0.005
	Second year	11 (29.7)	4 (10.8)	22 (59.5)	
	First year	5 (8.3)	19 (31.7)	36 (60)	
	Ethnicity				0.293
	Asian (India/Pakistan/China)	10 (18.5)	11 (20.4)	33 (61.1)	
	Arab	2 (13.3)	5 (33.3)	8 (53.4)	
	White	1 (7.7)	1 (7.7)	11 (84.6)	
	Other	3 (20)	6 (40)	6 (40)	
Knowledge about the differing clinical presentations between patients of different ethnicities through the inclusion of pictorial representation	Gender				0.005
	Female	31 (60)	10 (15.4)	16 (24.6)	
	Male	9 (28.1)	13 (40.6)	10 (31.3)	
	Age groups				0.045
	18–24	45 (53.6)	20 (23.8)	19 (22.6)	
	25–34	3 (23.1)	3 (23.1)	7 (53.8)	
	Cohort				0.779
	Second year	20 (54.1)	8 (21.6)	9 (24.3)	
	First year	28 (46.7)	15 (25)	17 (28.3)	
	Ethnicity				0.272

P values in bold are statistically significant; Knowledge domains: Knowledge about key social science concepts including “ethnicity,” understanding the impact of social and cultural factors on health-related behaviors and health care, and comprehension of varied clinical presentations among patients of different ethnicities through pictorial representation

the main themes and sub-themes identified through thematic analysis of qualitative data collected from the focus group discussions. Throughout the focus groups, a consensus emerged among the participants, highlighting the escalating significance of representation within the context of medical education and curriculum. A central aspect of this discourse was the acknowledgment of the ever-evolving diversity within the medical workforce, and the direct implications of this diversity for effectively serving a heterogeneous patient population.

As reported by some of the participants

“We find ourselves in need of a medical workforce that mirrors the diversity of our patient demographic. Moreover, implementing Equality, Diversity, and Inclusion (EDI) is essential for fostering inclusivity and preventing feelings of isolation.”

FGD1 P3

The discussion also underscored the imperative of fostering an inclusive environment for minority students.

Table 4: Insight into awareness domains

Curriculum Item	Variable	Disagree/strongly disagree	Neutral	Agree/strongly agree	P
Awareness of implicit attitudes, including how one's own norms, values and biases may affect healthcare provision	Gender				
	Female	11 (16.9)	21 (32.3)	33 (50.8)	0.625
	Male	8 (25)	10 (31.3)	14 (43.8)	
	Age groups				
	18–24	14 (16.7)	27 (32.1)	43 (51.2)	0.157
	25–34	5 (38.5)	4 (30.8)	4 (30.8)	
	Cohort				
	Second year	12 (32.4)	6 (16.2)	19 (51.4)	0.008
	First year	7 (11.7)	25 (41.7)	28 (46.6)	
	Ethnicity				
Awareness of how culture, defined as "the perspective, practices and products of a social group," shapes individual behavior and thinking	Asia-India/Pakistan/China	9 (16.7)	13 (24.1)	32 (59.3)	<0.001
	Arab	3 (20)	10 (66.7)	2 (13.3)	
	White	0 (0)	6 (46.2)	7 (53.8)	
	Other	7 (46.7)	2 (13.3)	6 (40)	
	Gender				
	Female	17 (26.2)	21 (32.3)	27 (41.5)	0.397
	Male	9 (28.1)	14 (43.8)	9 (28.1)	
	Age groups				
	18–24	22 (26.2)	31 (36.9)	31 (36.9)	0.899
	25–34	4 (30.8)	4 (30.8)	5 (38.5)	
	Cohort				
	Second year	16 (43.2)	7 (18.9)	14 (37.8)	0.004
	First year	10 (16.7)	28 (46.6)	22 (36.7)	
	Ethnicity				
	Asian (India/Pakistan/China)	15 (27.8)	14 (25.9)	25 (46.3)	0.128
	Arab	5 (33.3)	8 (53.4)	2 (13.3)	
	White	2 (15.4)	5 (38.5)	6 (46.1)	
	Other	4 (26.7)	8 (53.3)	3 (20)	

P values in bold are statistically significant; Awareness domain: awareness of implicit attitudes, encompassing the recognition of personal norms, values, and biases' influence on healthcare provision, and awareness of how culture, defined as "the perspective, practices, and products of a social group," shapes individual behavior and thinking

Within this discourse, some students brought into focus the issue of equity within medical education, stressing the importance of ensuring equal access to education and health care irrespective of ethnic backgrounds. This principle, as emphasized by one of the participants, is regarded as fundamental in shaping a just and inclusive medical landscape.

"Ensuring equal availability of education and healthcare is a fundamental principle that should extend universally."

FGD3 P5

During our focus group discussion, we found out that there are hidden ways that people are treated unfairly in healthcare settings, even when language doesn't seem to be the issue. The participants agreed practitioners need to be more careful and pay closer attention to these kinds of biases. They further reported that it is important to find and fix these unfair feelings so that everyone is treated fairly and included in medical places.

"There are hidden ways that people are treated unfairly in healthcare settings, even when language doesn't seem to be the issue."

FGD4 P3

This sentiment was widely agreed upon, with participants emphasizing the need for practitioners to be more attentive to these biases. Another participant added:

"Finding and rectifying these unfair feelings is crucial for ensuring fair treatment and inclusivity for everyone in medical environments."

FGD1 P2

The participants also illuminated the tangible implications of representation within the medical field, as voiced through the experiences and perspectives of most of participants. The discussions unveiled the intricacies inherent in patient–doctor relationships, underlining the pivotal role of healthcare professionals who possess an intricate understanding of their patients' cultural contexts.

"Patients consistently lean towards medical practitioners who can seamlessly navigate and truly understand their distinct cultural nuances. This understanding is pivotal in fostering effective communication and patient-centered care."

Table 5: Students abilities to identify and consider sociocultural factors that may influence patient care

Curriculum Item	Variable	Disagree/strongly disagree	Neutral	Agree/strongly agree	P
Abilities to identify and consider sociocultural factors that may influence patient care	Gender				0.249
	Female	13 (20)	16 (24.6)	36 (55.4)	
	Male	6 (18.8)	13 (40.6)	13 (40.6)	
	Age groups				0.835
	18–24	16 (19)	26 (31)	42 (50)	
	25–34	3 (23.1)	3 (23.1)	7 (53.8)	
	Cohort				0.135
	Second year	11 (29.7)	9 (24.3)	17 (45.9)	
	First year	8 (13.3)	20 (33.3)	32 (53.4)	
	Ethnicity				0.547
	Asian (India/Pakistan/China)	9 (16.7)	15 (27.7)	30 (55.6)	
	Arab	3 (20)	5 (33.3)	7 (46.7)	
	White	2 (15.4)	3 (23.1)	8 (61.5)	
	Other	5 (33.3)	6 (40)	4 (26.7)	

P values in bold are statistically significant

Table 6: Summary of themes, subthemes, codes, and example quotes from the focus group discussions with the students

Theme	Subtheme	Code	Example of Quotes
Significance of Representation in Medical Education and Curriculum	Equity in Medical Education	Equity in education and Health Care	“Ensuring equal availability of education and healthcare is a fundamental principle that should extend universally.”
		Hidden Bias	“There are hidden ways that people are treated unfairly in healthcare settings, even when language doesn’t seem to be the issue.”
	Inclusion in Medical Education	Cultural Context	“Patients consistently lean towards medical practitioners who can seamlessly navigate and truly understand their distinct cultural nuances. This understanding is pivotal in fostering effective communication and patient-centered care.”
		Language Barriers	“Instances of miscommunication often stem from language barriers, which can lead to misinterpretations in patient behavior. Thus, the need for linguistic inclusivity and effective cross-cultural communication remains an essential aspect of patient care.”
		Inclusive Curriculum	“The curriculum should be a reflection of diverse dietary habits and cultural factors, acknowledging their impact on health outcomes and ensuring comprehensive healthcare provision.”
	Diversity in Medical Education	Medical Resources	“Insufficient diversity in medical textbooks can foster misconceptions and contribute to diagnostic errors”
Diversity in Clinical Practice	Diverse Perspectives in practice	Presence of races and ethnicity in the text books	“The absence of a range of images depicting different skin colors, notably those of darker skin tones, could complicate diagnoses for junior graduates.”
		Patient Care	“The presence of diverse backgrounds among healthcare professionals serves as a catalyst for enhancing the quality of patient care, introducing a diverse array of perspectives that enrich healthcare outcomes.”
Tailored Approaches and Inspirational Role Models	Equitable Recruitment Practices	Recruitment Bias	“We believe biased recruitment practices hinder diversity in medicine. There should be a fair balance between skills and representation, with competency coming first.”
	Diverse Workforce Representation	Workforce Diversity	“We find ourselves in need of a medical workforce that mirrors the diversity of our patient demographic. Moreover, implementing Equality, Diversity, and Inclusion (EDI) is essential for fostering inclusivity and preventing feelings of isolation.”
	Inclusion in Medical Education	Role Models	“Seeing people from backgrounds like ours in esteemed positions motivates us. It shows that we can achieve similar success and inspires our future career paths.”

FGD3 P7

Addressing cultural barriers, especially those related to language, emerged as a key focus of the discussions. The critical role of effective communication and the comprehensive comprehension of patient behavior was highlighted, ensuring a more accurate and holistic approach to healthcare provision. Some participants reported

“Instances of miscommunication often stem from language barriers, which can lead to misinterpretations in patient behavior. Thus, the need for linguistic inclusivity and effective cross-cultural communication remains an essential aspect of patient care.”

FGD2 P5

Moreover, the discussion extended to the realm of diverse representation within medical resources. The absence of diversity, particularly within medical textbooks, was identified as a potential factor contributing to the perpetuation of stereotypes and inaccuracies in diagnoses as agreed by almost all the participants

“Insufficient diversity in medical textbooks can foster misconceptions and contribute to diagnostic errors. For instance, the absence of a range of images depicting different skin colors, notably those of darker skin tones, could complicate diagnoses for junior graduates.”

FGD1 P7

The qualitative research findings also delved into personal experiences and observations, finding profound insights as conveyed by participants. A recurrent theme in these discussions was the notion of a sense of belonging within the medical environment, and its transformative impact on professionals and patient care. The discussion also unveiled a significant connection between inclusion and mental well-being. FGD1 P3 pointed out that fostering an environment of inclusivity plays a crucial role in promoting improved mental health for both patients and healthcare professionals alike. This underscores the holistic and interconnected nature of healthcare provision.

Diversity in clinical practice

The qualitative research outcomes further illuminated the significance of diversity in research and clinical practice, as gleaned from the perspectives of FGD1 participants. A central theme in these discussions was the recognition of diversity and inclusion as essential elements for accurate research representation and the enhancement of patient care through the insights of professionals with diverse backgrounds.

“The presence of diverse backgrounds among healthcare professionals serves as a catalyst for enhancing the quality of patient care, introducing a diverse array of perspectives that enrich healthcare outcomes.”

FGD3 P4

Nonetheless, the discussions also brought to light concerns and challenges associated with diversity and inclusion. Biases in recruitment processes and a lack of representation within medical schools were notably raised as critical issues, with participants advocating for more equitable practices and enhanced diversity in educational institutions.

“Biased recruitment practices act as barriers to diversity within the medical landscape, potentially perpetuating imbalances. Additionally, the representation of different ethnic backgrounds among medical students is a pressing concern, prompting discussions on the imperative of cultivating a more diverse student body.”

FGD4 P7

Delicate equilibrium between fairness based on skills and representing different groups, with participants asserting the need for capability and competency to take precedence over ethnicity.

Tailored approaches and inspirational role models

The qualitative research findings delved into the necessity of tailored strategies to address challenges arising from diversity and inclusion. FGD1 P17 proposed that the curriculum should be thoughtfully designed to encompass diverse dietary habits and cultural factors that wield influence over health outcomes. This tailored approach acknowledges the intricate interplay between culture and health.

“The curriculum should be a reflection of diverse dietary habits and cultural factors, acknowledging their impact on health outcomes and ensuring comprehensive healthcare provision.”

FGD1 P3

Moreover, the inspirational impact of witnessing individuals from similar backgrounds in prominent roles was consistently highlighted as a motivational force for aspiring medical professionals. One participant reported

“Seeing individuals from akin backgrounds succeed in esteemed positions has the power to ignite motivation within students, nurturing a profound sense of attainability and inspiring future career paths.”

FGD1 P1

Furthermore, the discussions revealed another important aspect. The positive influence of observing people from similar backgrounds in significant positions was consistently emphasized as a source of motivation for those who aspire to be medical professionals. One participant shared their perspective, stating, “When we see people who come from backgrounds like ours achieving prestigious positions, it really sparks a sense of motivation in students. It makes us feel that such achievements are possible for us too, and it inspires us to consider similar career paths for our future.” This underscores the vital role representation plays in encouraging and shaping the aspirations of upcoming medical professionals.

Discussion

This study aimed to identify trends and assess campus-based student perceptions of ethnic diversity

and inclusion as taught by course modules through both quantitative and qualitative data collection. The quantitative data suggested that first-year students, some of whom have begun this course immediately after graduation from school, found the curriculum to be more representative and perceived it to have a more equitable distribution of ethnicities compared to second-year. This trend extended to a perceived increased awareness of complex social science concepts, including the impact of cultural and social factors and their contribution to health. This was in sharp contrast to second-year who, while aware of the impact of culture on health, felt they were less aware of the phenomenon of cultural shaping. It was found, however, that second-year students, specifically of the “Asian” minority, were more aware of implicit attitudes at play in health care. The Dunning-Kruger effect, clearly present here, has also been widely demonstrated in other studies in medical education, with one study finding that those who scored in the lowest quarter of assessments of behavior on average had ranked themselves 30–40% higher on self-assessments than peers who scored well.^[17] While it is encouraging to observe a positive shift in students’ attitudes through their campus-based years, fostering greater self-awareness of their knowledge gaps, the systematic review by Lerchenfeldt *et al.*^[18] highlights that integrating self-reflection with structured peer feedback significantly enhances this learning process. This combination effectively prevents the development of inaccurate self-perceptions regarding the understanding of complex cultural phenomena, underlining the critical role of peer evaluations in cultivating a nuanced appreciation of diverse cultural contexts in medical education. Although progress is noted, considering first-year students do interact with patients from their fourth month of medical education, it would be prudent for them to be educated on this effect as it may impact their interactions with, and understanding of, patients from diverse backgrounds.

Interestingly, there was also an effect of gender noted. Female students reported they were more aware of the impact of social and cultural factors and their influence on health and health-related behaviors across both first and second years, while male medical students perceived themselves to have a more sound knowledge of medical presentations based on pictorial representations. This finding corresponds with broader trends in medical education about gender awareness. Research by Rustemi *et al.*^[19] at Lausanne’s Medical School indicates a general trend among female students toward lesser stereotypes in patient care compared to their male peers. Meanwhile, male students reported a stronger grasp of medical presentations through visual representations. These findings suggest varied approaches to learning and understanding in medical education, highlighting

the importance of a curriculum that acknowledges and accommodates these diverse perspectives and experiences.

An issue highlighted during the focus groups was one of “hidden biases” being keenly felt; specifically, that students noted a lack of equity in the distribution of clinical educational opportunities. The importance of equal opportunities irrespective of background was stressed. Affording or not affording students educational opportunities is known to play an important role in the selection of future medical specialties, as well as in shaping the doctor-educators of tomorrow. A study by Zackery *et al.*^[20] revealed that students with mentors sharing their racial/ethnic background reported higher levels of science self-efficacy and felt a greater sense of belonging within the scientific community. A gender effect was also noted; women were encouraged to pursue specific specialties recommended to them due to their gender. This study, despite being nearly thirty years old, has themes that resonate to this day, with students of ethnic or gender minorities feeling a sense of alienation.

Recent findings from Burkhardt *et al.*^[21] support these observations. They demonstrate that women and Underrepresented in Medicine (URiM) students often have distinct specialty interests at the onset of their medical education, which can be influenced by the availability of role models and educational opportunities. Women were found to be less interested in internal medicine and surgery, and more in pediatrics and OB/GYN. URiM students showed a higher interest in surgery and OB/GYN initially, but their specialty plans shifted over time, unlike their non-URiM peers. These trends suggest the influence of educational exposure and mentorship opportunities on specialty choice, reinforcing the idea that unequal opportunities can perpetuate systemic biases in medical education.

Moreover, a study conducted at two campuses of a large public medical school highlighted the deeper societal roots of these biases, including those based on patriarchy, sexism, and sexual violence.^[22] These systemic issues can lead to more negative impacts on social communities, further underlining the necessity for medical education to address and actively work against such entrenched biases.

This was compounded by the observation in focus groups of a sense of belonging being fostered by greater representation and diversity, specifically through mentors and role models of the same backgrounds, and its positive impacts on the mental health and well-being of doctors. This echoes the sentiment that at times, a lack of belonging may be felt by a lack of culturally diverse representation within the medical curriculum. One study

suggested that while inclusion is desirable and should be cultivated, the paradigm of inclusion may at times assume subjugation of identities to conform to the static medical culture cemented by predecessors with historical power and privilege.^[23] It was suggested during the focus groups that a way to foster true inclusivity and visibility would be through the intentional hiring of more culturally diverse staff, especially in the campus-based years, who students can emulate, and who can afford different perspectives on health care as opposed to traditional medical education. Additionally, strategies such as having a safe space for open conversations on topics such as racial bias and prejudices may also contribute toward developing a feeling of belonging.

While the focus groups provided general insights into students' experiences with diversity and inclusion education, there was a critique regarding the curriculum's execution. An anecdote from a student participant about a singular explicit session on culture and stereotypes prompted reflection on the curriculum's depth in addressing these issues. This study acknowledges the possibility that the student perceptions may not fully reflect the curriculum's comprehensive approach to culture and bias, suggesting a need for a more critical examination of how these elements are integrated and perceived by students. It highlights a gap in the discussion: the accuracy of student perceptions of learning opportunities related to culture and bias, which may be more extensive than recalled. This observation calls for a reassessment of how effectively these educational components are communicated and internalized by students, suggesting that the curriculum's approach to diversity and inclusion might benefit from clearer articulation and reinforcement of its diverse elements throughout the educational experience.

Furthermore, an opportunity for further exploration becomes evident, particularly regarding the nuanced experiences of the early years of medical education. While the focus group discussions have provided valuable insights into the perceptions of diversity and inclusion across the student body, a more detailed examination of the unique challenges and experiences encountered during the initial stages of medical education could enhance our understanding.

At the heart of these discussions lies the issue of how the university addresses the topics of equity and inclusion, particularly regarding different cultures and their influence on health care. There was a shared understanding among focus group participants about the vital need for healthcare professionals to develop a deep comprehension of patient context and cultural intricacies to enhance effective care and communication. Despite this consensus, participants voiced thoughtful

reflections on the depth and continuity of education on this subject. Participants noted that the curriculum currently includes a session in the first and second years that explicitly addresses culture, stereotypes, and bias, but observed a lack of continued emphasis on clinical environments.

In response to this observation, the students have suggested an educational model that extends throughout the course, establishing a comprehensive foundation in diversity and equity in health care. This model aims to improve communication skills and deepen understanding of the relationship between culture and health-related behaviors, ultimately contributing to more holistic patient care. It is suggested that to effectively embed these crucial skills and knowledge in future healthcare professionals, there might be a need to consider decoupling education initiatives from patient outcomes and focus more deliberately on social science education. This approach would ensure that medical education not only addresses immediate clinical skills but also equips students with the broader competencies necessary for addressing the complex needs of a diverse patient population.^[24]

Suggestions for future research

1. **Longitudinal Impact Study:** A deeper dive into the longitudinal effects of EDI curricular integration could illuminate how these educational elements influence student attitudes, skills, and professional behaviors over time, not just in preclinical, but extending into clinical years and possibly beyond into practice. This could involve tracking cohorts of students to examine how EDI-focused education translates into improved patient care and reduced healthcare disparities.
2. **Interventional Studies:** Beyond identifying effective teaching strategies, interventional studies should critically assess the pedagogical approaches' adaptability and scalability. For instance, evaluating the efficacy of simulation-based training in fostering empathy and understanding diverse patient backgrounds might also consider the logistical and resource constraints of widespread implementation.
3. **Comparative Analysis:** A comparative analysis could extend to examining systemic barriers to EDI in medical education globally. This involves not just a curriculum comparison but also a critical look at institutional policies, societal norms, and historical contexts that shape medical education's approach to EDI across different cultures and countries.
4. **Faculty Development:** Investigating the impact of faculty training on EDI outcomes should also consider the resistance or challenges faculty may face in adapting to new teaching paradigms. This involves a critical analysis of the support structures necessary

for faculty to effectively integrate EDI principles into their teaching, beyond just the provision of training materials.

5. **Barriers to Implementation:** Identifying barriers to implementing EDI-focused curricular changes requires a nuanced understanding of institutional culture, resources, and stakeholder attitudes. This research should critically assess how medical schools' internal politics, financial constraints, and existing curricular priorities can either facilitate or hinder the adoption of EDI initiatives.

Applied goals

1. **Curriculum Reform:** Advocating for curriculum reform should critically consider the balance between introducing EDI content and ensuring it is effectively integrated into existing medical education frameworks. This includes evaluating how EDI initiatives align with accreditation standards and preparing students for the realities of a diverse healthcare environment.
2. **Educational Policy Change:** Influencing policy changes requires a strategic approach that considers the diverse stakeholders in medical education, including accrediting bodies, faculty, and students. A critical assessment of how policy changes can be advocated for in a way that garners broad support and effectively addresses systemic biases and inequities is essential.
3. **Community Engagement:** Strengthening community engagement should not only involve partnerships but also critically examine the power dynamics between medical institutions and the communities they serve. This involves developing models of engagement that are genuinely collaborative and respect community expertise and perspectives.

Conclusions

This study sheds light on an essential aspect of medical education—the integration of ethnic diversity and inclusion within the campus-based curriculum. It highlights a pressing need for curricular reform to better represent the diverse patient populations that future doctors will serve. The findings suggest that current educational practices may not adequately prepare medical students for the realities of a multicultural society, indicating a gap between the curriculum and the demographic realities of contemporary health care. Addressing this gap requires a proactive approach, integrating more comprehensive educational content that encompasses a wide range of ethnicities and cultural backgrounds. This should be coupled with strategies to promote an inclusive learning environment that recognizes and challenges existing biases in health care. Such reforms are not merely about adding content; they

are about reshaping the ethos of medical education to foster a generation of healthcare professionals who are not only clinically competent but also culturally sensitive and aware. The study thus provides a compelling case for a systemic overhaul of medical education, aligning it with the principles of equality, diversity, and inclusion.

Availability of data and material

Data will be made available on request.

Code availability

Will be available on request.

Authors' contributions

AH, MHA, SJ, JO, JS, MHT, and OP were involved in conception and design. All authors helped in administrative support. All authors contributed to provision of study materials or patients. AH, JS, MHA, and MHT assisted in collection and assembly of data. IM, AH, MHA, and MHT helped in data analysis and interpretations. All authors were involved in manuscript writing. Final approval of manuscript was done by all.

Ethics approval

Ethical approval was obtained from the University of Buckingham, UK. The ethical code number was UBMSEC009.

Consent to participate

All students gave consent to participate in this research.

Consent for publication

All students gave consent for the publication of this research.

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Conflicts of interest

There are no conflicts of interest.

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