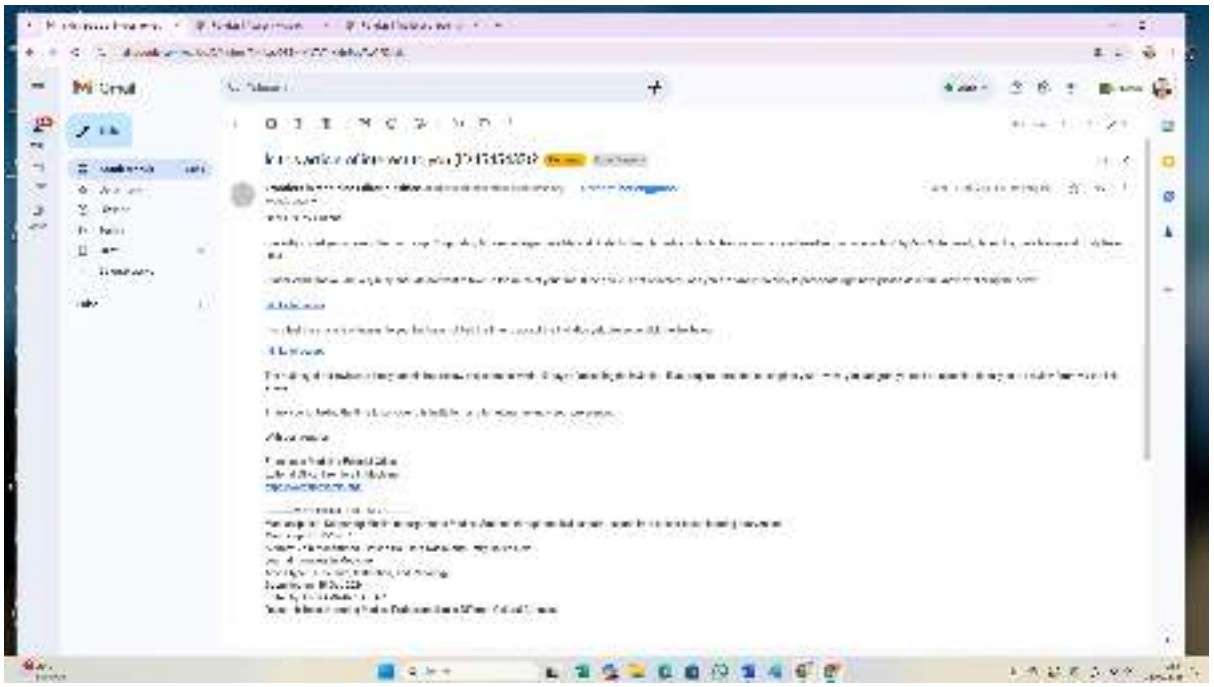

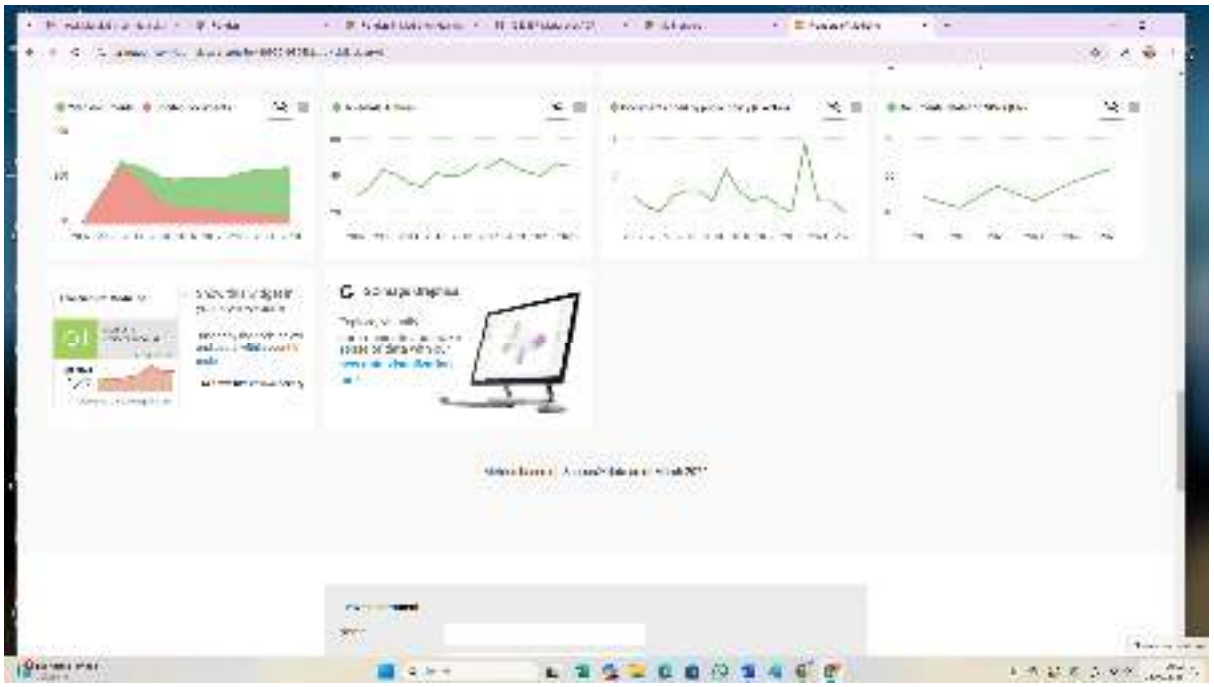

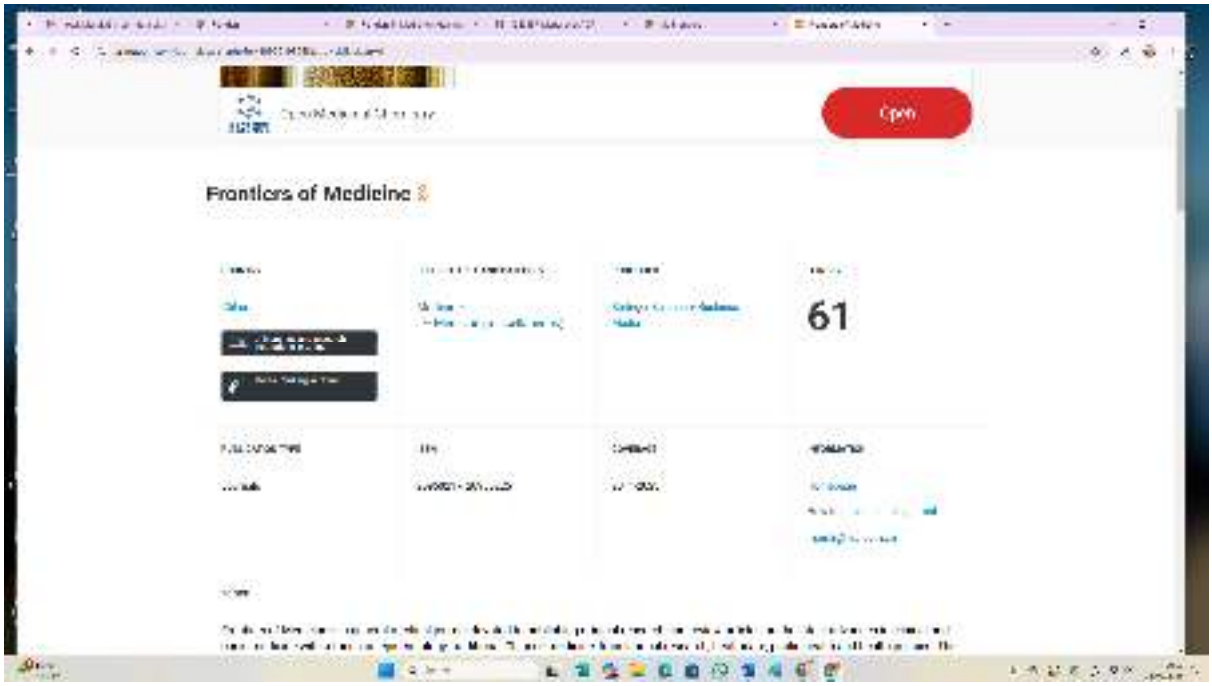
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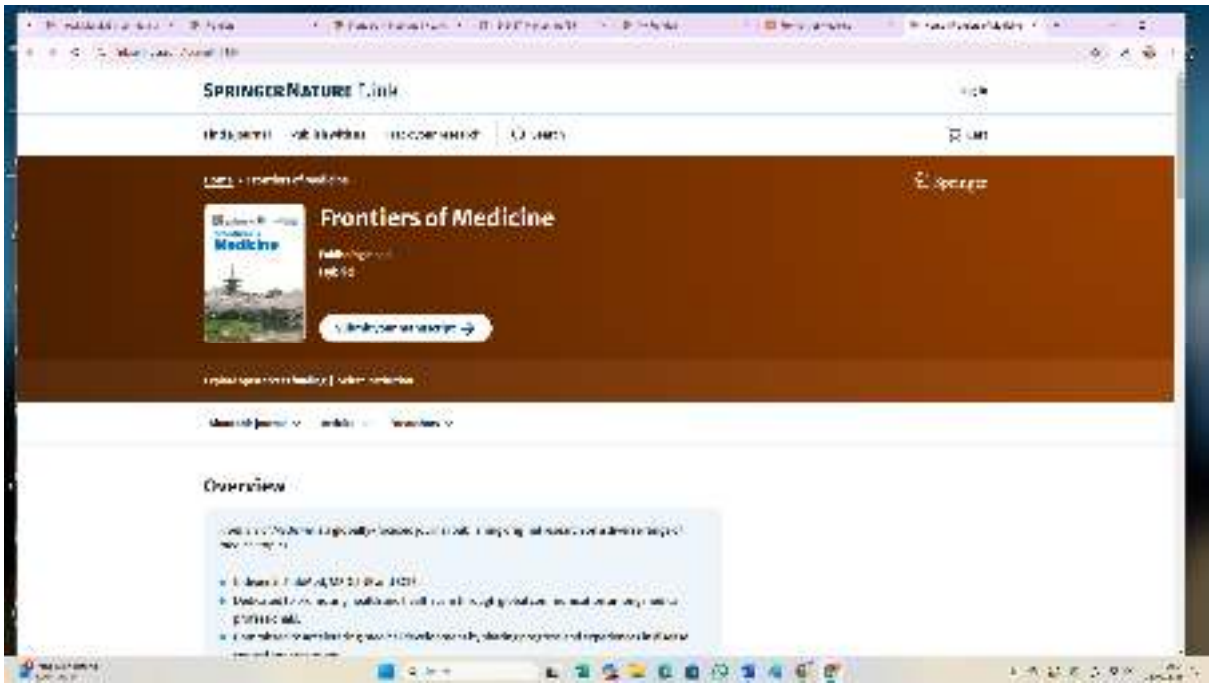
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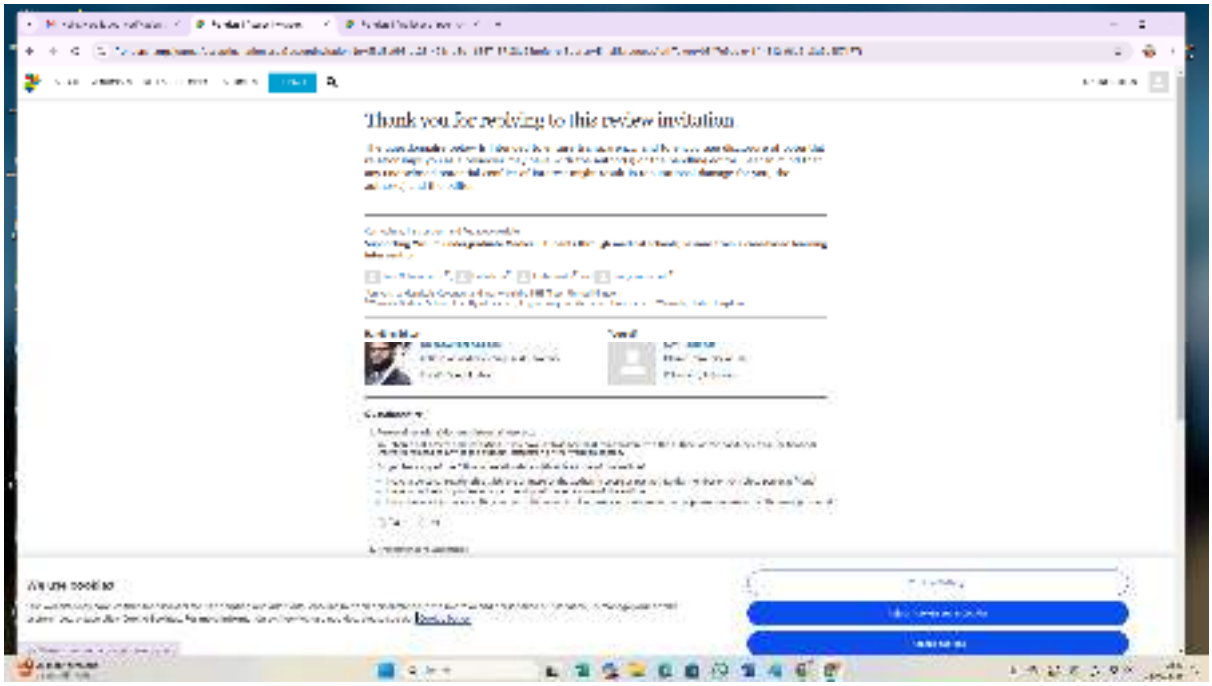
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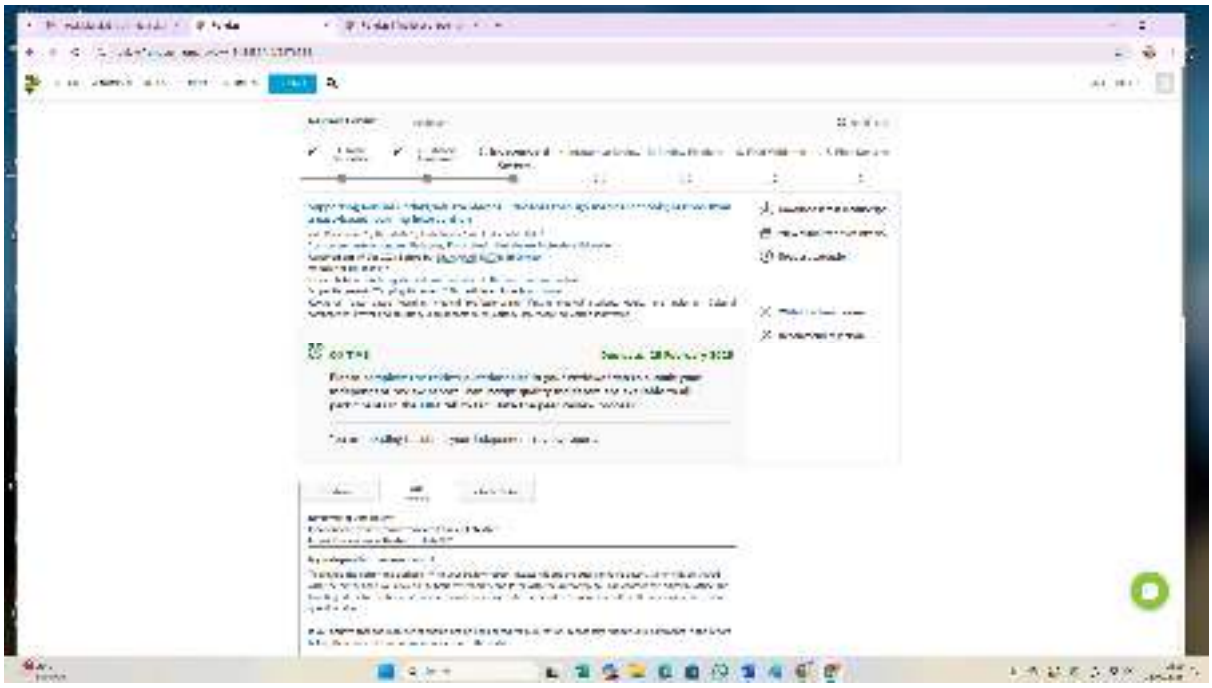
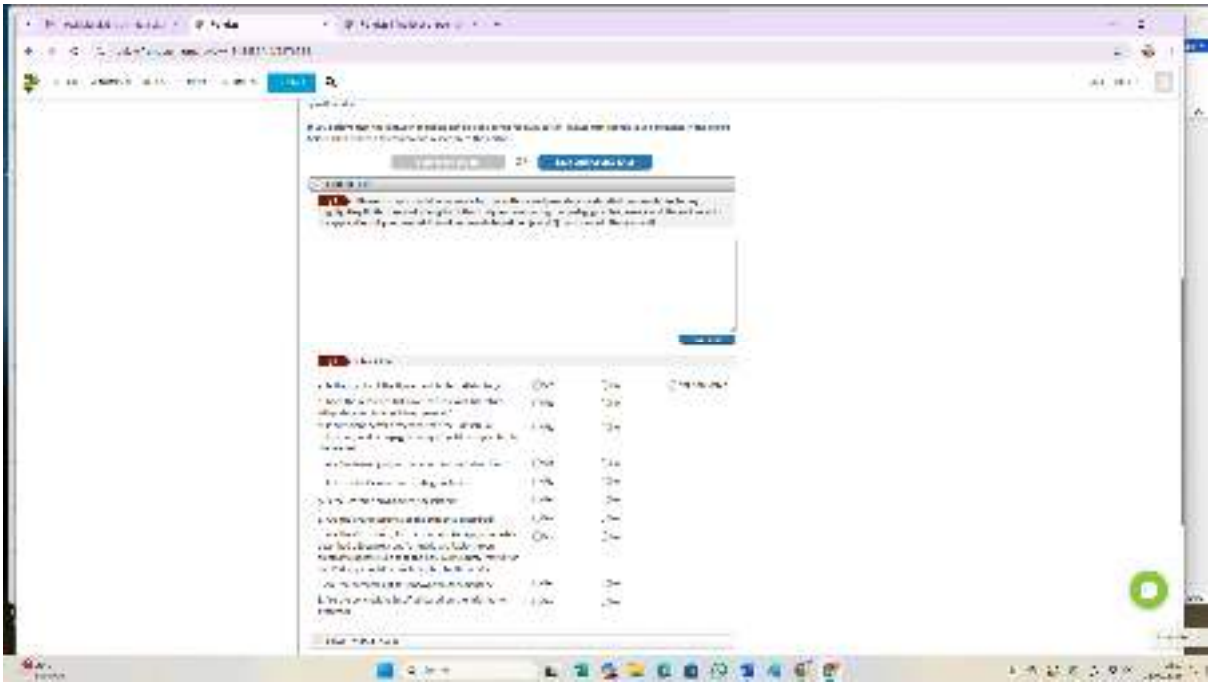




1. In the abstract section: The objectives of the research that will be achieved are not yet visible; The research approach used is also not yet clear.

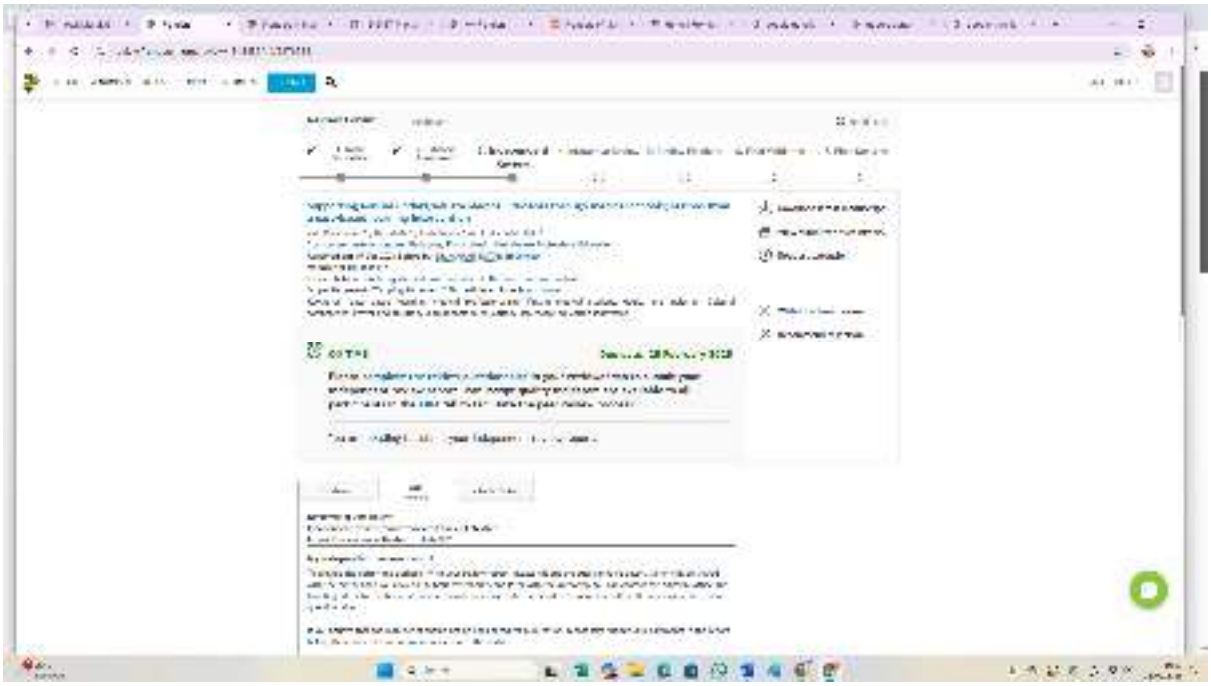
2. In the research background section: The state of the art relating to Muslim medical students in the UK, has been outlined, but needs to be strengthened academically. Including the urgency of this research, it needs to be emphasized to provide an understanding that this research is worth carrying out. It must also be explained what the solution is to overcome the problems of Muslim medical students in the UK: in research it appears to be "case-based learning intervention". This is important, because every research must solve a problem. The focus of the research also needs to be described more systematically so that it is easy to understand, even though this research has emerged, it is not yet neatly structured.

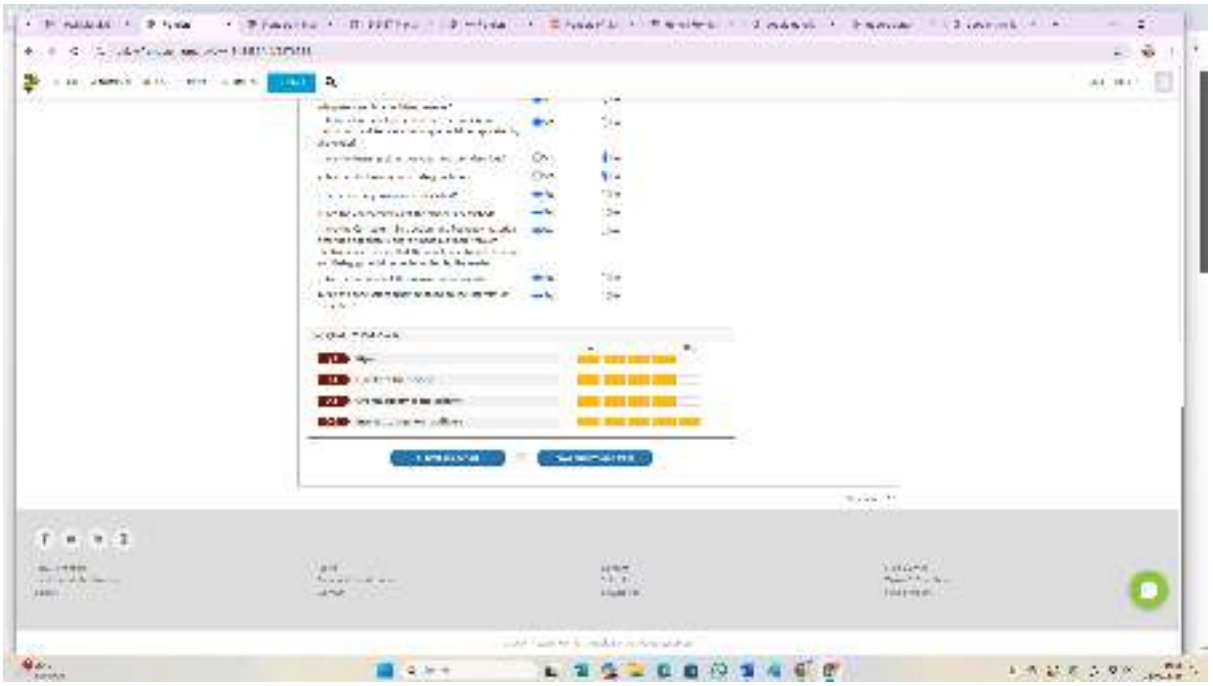
3. In the research method section: This research has not yet developed a constructive and clear method. It is true that the procedures used in carrying out the research are neatly arranged and clear, but the type or approach of the research does not appear to have been written down. This type or research

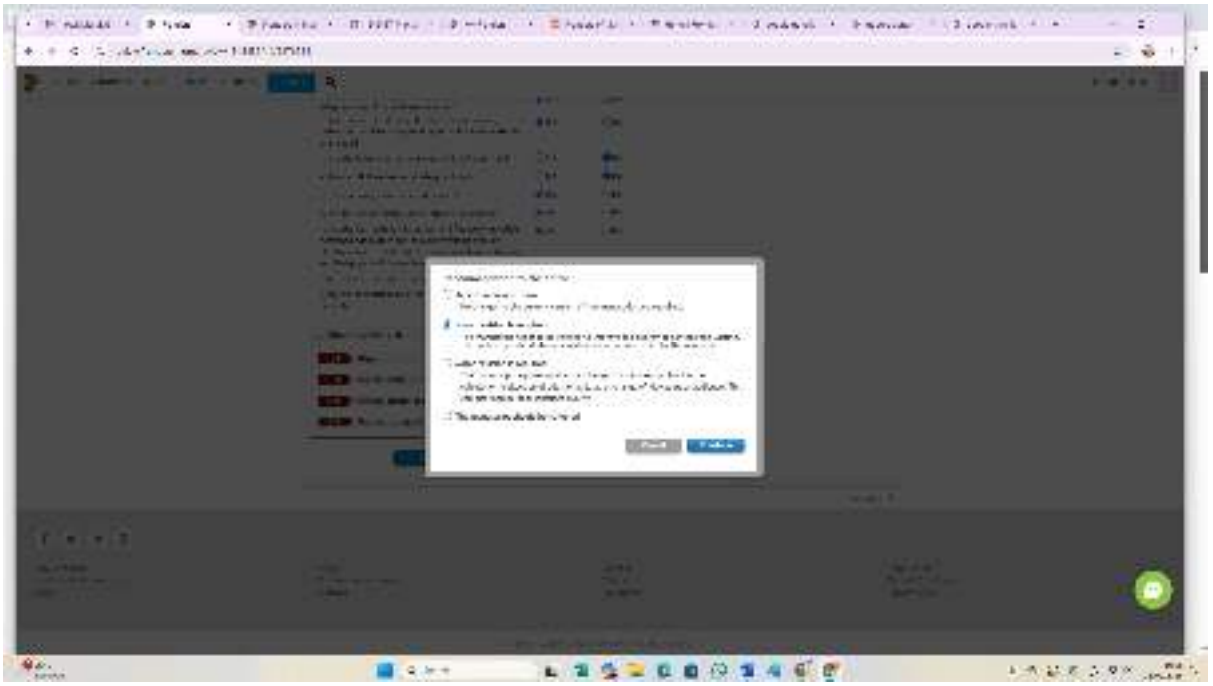
approach is very important in research because it becomes the direction and logical basis for thinking in research. Is this research quantitative with what approach, and/or qualitative with what approach? If we look at the research results, this research tends to be qualitative research with a phenomenological approach. If you look at the title of the research, this research is considered a quasi-experiment. Please researchers explain it more precisely. This includes informants or research populations, data collection techniques and data analysis techniques that have not yet been described.

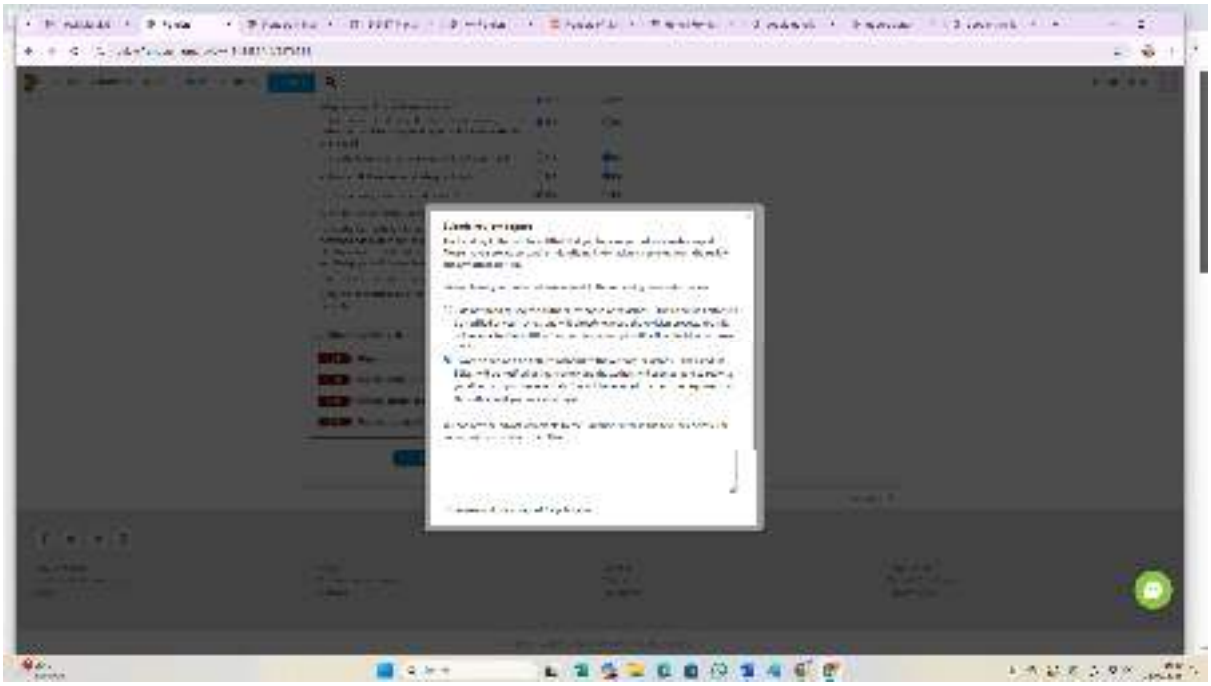
4. In the research results section: The findings of this research are very valuable for the development of campuses in the UK to provide worship facilities for Muslim students. The results of this research that are outlined are the limited conditions of Muslim medical students in carrying out worship in the UK during the lecture process on campus. The findings of this research are still limited in explaining the role of case-based learning and its involvement in developing conditions for perfect experience and implementation of religious worship, especially for Muslim medical students when carrying out lectures on campuses in the UK. This should be strengthened properly.

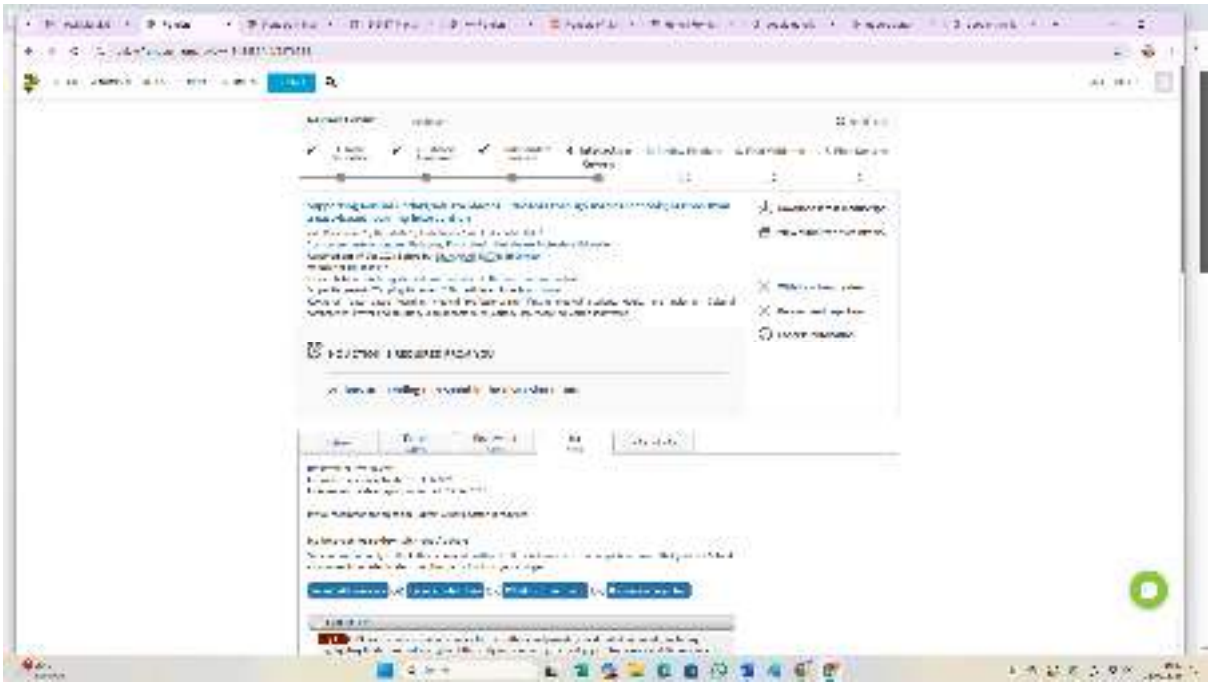
5. In the discussion section, it is still very short. It needs to be strengthened by discussion of various other people's research related to the problem being studied. So that the novelty of this research is discovered, including the position of this research compared to other people's research. It is necessary to add the latest references for the last 5 years.

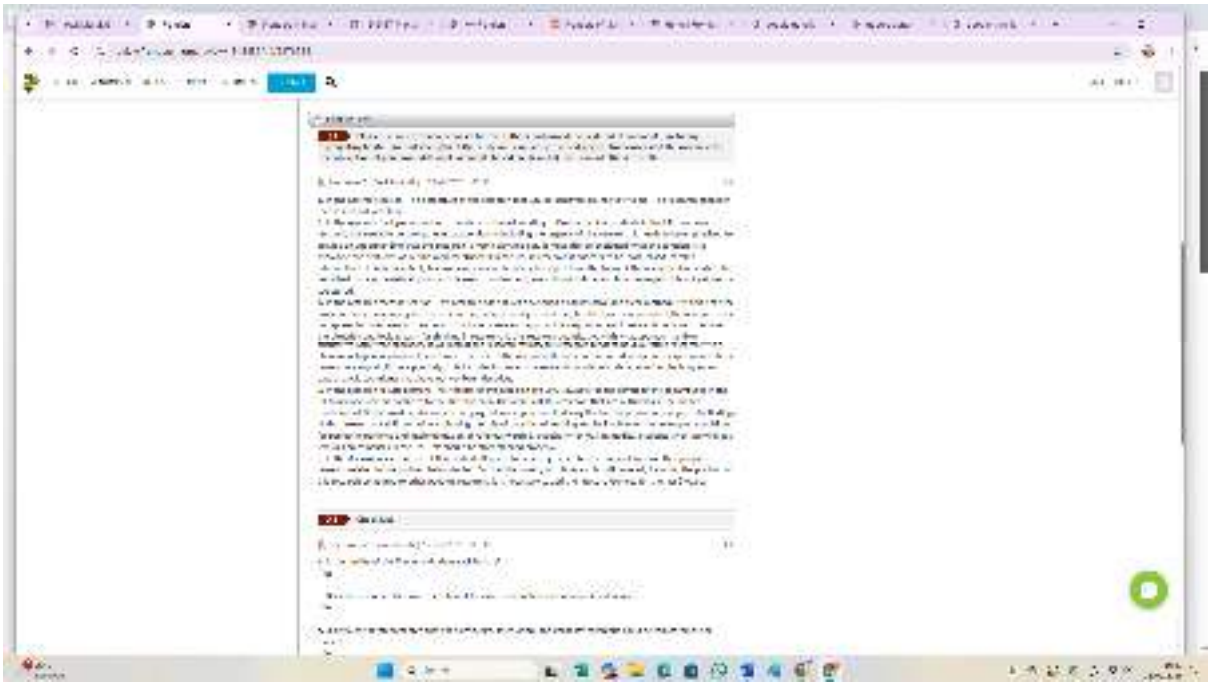


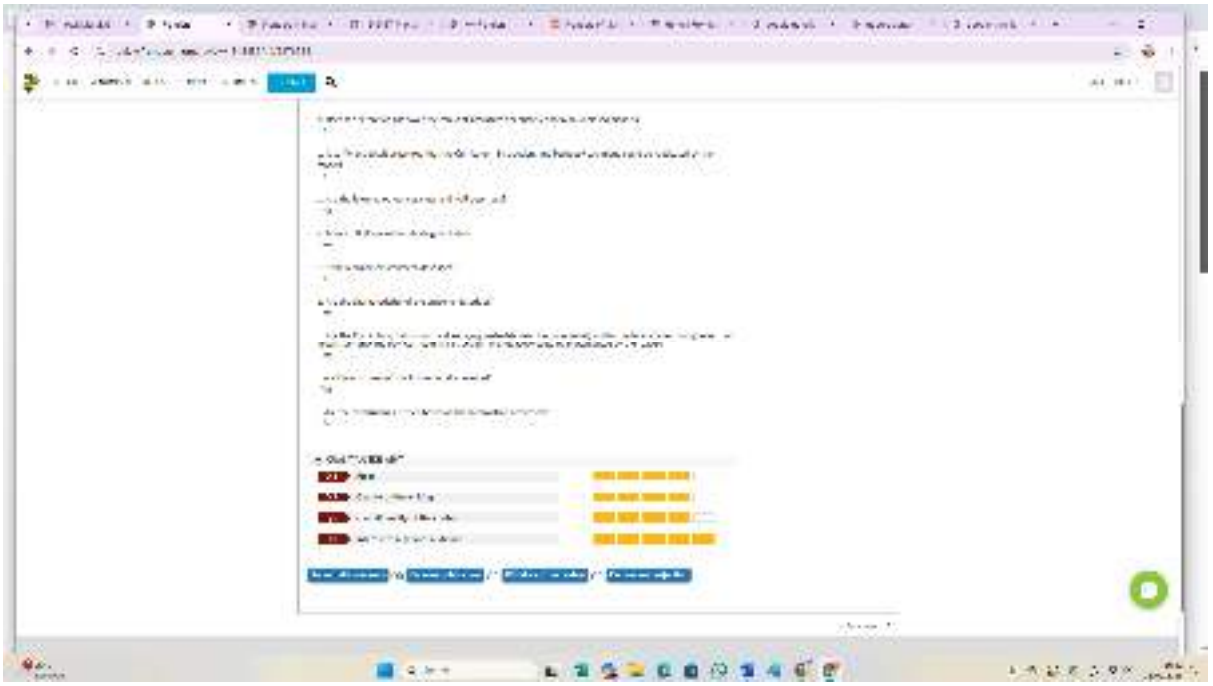


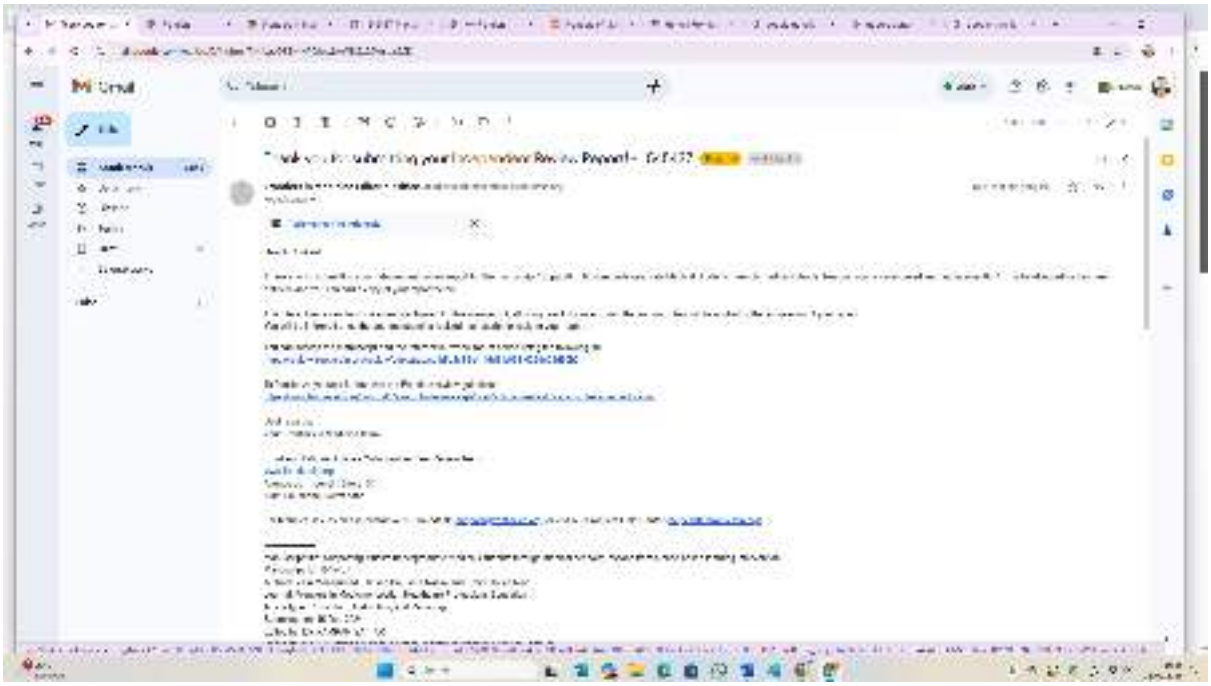


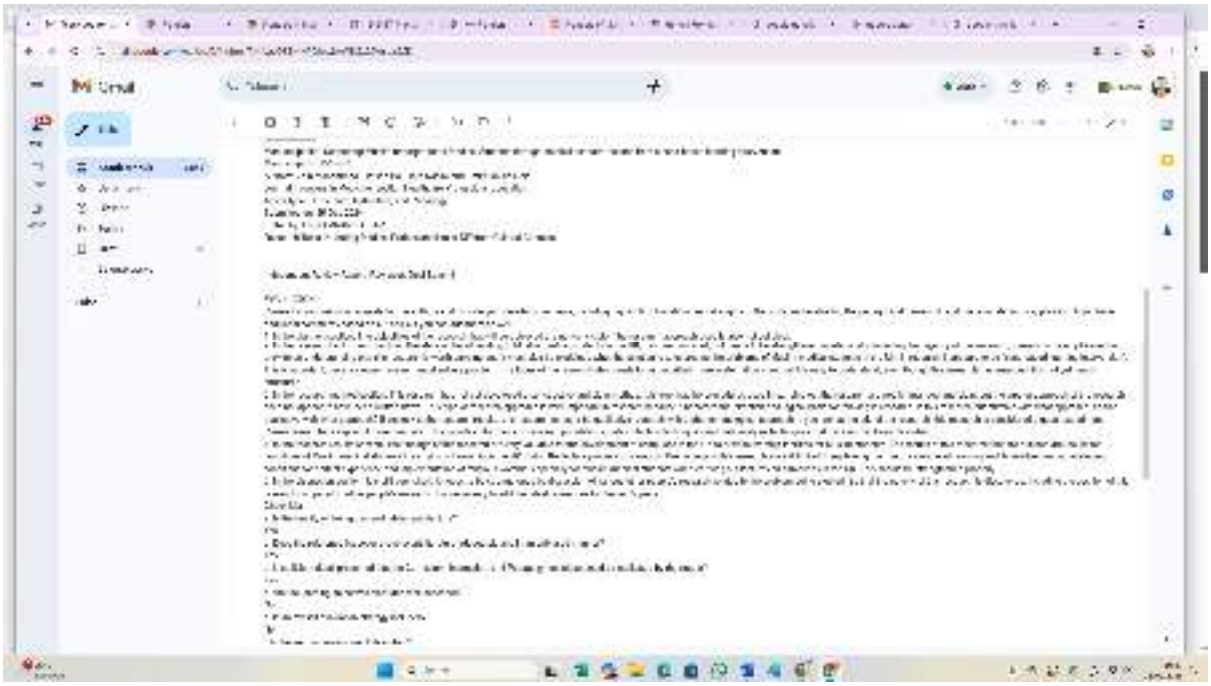












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Supporting Muslim undergraduate Medical Students through medical schools; lessons from a case-based learning intervention

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Scope Statement

Scoping Statement This article explores how Case-Based Learning (CBL) serves as a tool for nurturing medical professionalism in diverse cultural contexts, focusing on the unique experiences of Muslim medical students in the UK. The study addresses critical issues such as discrimination, microaggressions, inadequate institutional support, and the challenges of integrating cultural and religious practices into academic and clinical settings. By applying principles of cultural safety, equity, and intersectionality, the article highlights the importance of fostering inclusive and empathetic learning environments that enable all students to thrive.Through the lens of CBL, the study presents real-world scenarios to facilitate dialogue among educators and students, enhancing cultural humility and equity in medical training. It offers actionable insights for improving institutional policies, such as scheduling adjustments, accessible prayer facilities, and clearer communication about religious accommodations. The findings underscore the need for culturally responsive education to address systemic barriers and create environments where professionalism is aligned with respect for diversity and inclusivity.This work contributes to the evolving conversation on how healthcare education can adapt to increasingly globalised and multicultural healthcare systems.

Conflict of interest statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest

Credit Author Statement

Emily Roisin Reid: Conceptualization, Funding acquisition, Investigation, Resources, Supervision, Writing – review & editing. **Hafsah Ba**: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. **Linta Nasim**: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. **Zain Mohammed**: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Keywords

case based learning, medical professionalism, Muslim medical student, equity and inclusion, Cultural competence, Prayer and ablution, Islamophobia in education, Healthcare education innovation

Abstract

Word count: 262

Introduction: Muslim medical students in the UK face significant challenges, including discrimination, microaggressions, and insufficient institutional support, which negatively impact their academic progression and well-being. These barriers highlight the need for targeted educational interventions to address these issues and foster an inclusive learning environment.Methods: A Case-Based Learning (CBL) intervention was designed to explore the unique challenges faced by Muslim medical students, grounded in constructivist and inquiry-based pedagogical frameworks. The sessions, conducted across four settings, included discussions of real-life scenarios and facilitated dialogue to promote awareness and practical solutions. Feedback was collected through surveys and participant discussions to evaluate the intervention's effectiveness.Results: Participants reported increased awareness of Muslim students' needs, including accommodating prayer times, providing appropriate facilities for *wudhu* and prayer, and addressing biases in clinical and academic settings. Discussions identified actionable solutions, such as incorporating breaks into schedules, creating inclusive prayer spaces, and improving awareness of NHS guidelines on religious attire. Participants rated the sessions highly, citing their educational value and inclusivity.Discussion: The intervention highlighted the importance of fostering cultural safety and addressing intersectionality to promote equity in medical education. While variability in institutional policies and awareness posed challenges, the study demonstrated the potential of CBL in creating meaningful dialogue and encouraging systemic change. Feedback underscored the need for broader implementation and longitudinal evaluation of such initiatives.Conclusion: This study underscores the importance of addressing the unique challenges faced by Muslim medical students through culturally responsive educational interventions. Implementing CBL sessions can enhance inclusivity, reduce biases, and support the holistic well-being of students, ultimately contributing to a more equitable and effective learning environment.

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Ethics statements

Studies involving animal subjects
Generated Statement: No animal studies are presented in this manuscript.

Studies involving human subjects
Generated Statement: No human studies are presented in the manuscript.

Inclusion of identifiable human data
Generated Statement: No potentially identifiable images or data are presented in this study.

Data availability statement

Generated Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Generative AI disclosure

The author(s) verify and take full responsibility for the use of generative AI in the preparation of this manuscript. Generative AI was used

Generative AI was used to make wiritng more concise and for spelling and granmmatical erroras Chat GPT model 4o. This has not been acknowledged in teh manuscript itself but will done so in due course. kindly accept our apoloigies for not completing this intially

Supporting Muslim undergraduate Medical Students through medical schools; lessons from a case-based learning intervention

Table of Contents

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Introduction: Background & Rationale for Educational Activity Innovation

Muslims constitute approximately 6.5% of the UK population yet represent 10% of medical professionals, indicating a significant presence in the healthcare sector. Nearly 250,000 university students in the UK identify as Muslim(1). Despite this, Muslim medical students and trainees face notable challenges that impact their academic and professional progression. Data from the General Medical Council (GMC) reveals that Muslim trainees have the lowest success rates in Annual Review of Competence Progression (ARCP) outcomes and lower postgraduate exam pass rates (66%) compared to their Hindu, Sikh, or non-religious counterparts (70%) (2).

These disparities suggest systemic issues within medical education that may hinder the development and success of Muslim students. Female healthcare professionals have reported experiencing problems when wearing a headscarf in theatre environments. (3)Factors contributing to these challenges include experiences of discrimination, a lack of cultural understanding, and insufficient support mechanisms within educational institutions. A recent mixed methods study exploring university experiences of Muslim Students on campuses broadly categorised concerns into three categories: othering in learning environments, hate incidents on campus and microaggressions (4).

Currently, there is a lack of literature focusing on the specific experiences and challenges faced by Muslim medical students in the UK. While broader studies have examined diversity and inclusion in higher education experiences (4,5) or how students have been affected by counter-terrorism policies,(6) few have delved into Muslim medical students' unique obstacles. This gap necessitates targeted research and educational interventions to understand this demographic better and support it.

The primary aim of this educational innovation is to bridge this gap by highlighting the experiences of Muslim medical students and identifying areas where support is lacking. By providing a platform for students to share their positive and negative experiences, this discussion aimed to rationalise how these factors influence learning opportunities

and outcomes. Ultimately, this initiative strives to inform educators and policymakers, fostering an inclusive and supportive learning environment that addresses the specific needs of Muslim medical students.

Pedagogical Frameworks, Principles, Competencies & Standards Underlying the Educational Activity

Pedagogical Frameworks: The Constructivist Approach, Case-Based and Collaborative Learning

The educational activity was underpinned by established pedagogical theories, incorporating a constructivist approach that emphasises knowledge construction through experiences and social interactions (Box 1). Case-Based Learning (CBL), also known as case study teaching or case method learning, is a well-established pedagogical tool widely used in professional education, including medicine, law, and business (7,8). Grounded in constructivism, CBL facilitates guided inquiry, enabling students to develop new understanding by interacting with their existing knowledge and environment (9,10). Warwick Medical School integrates CBL into its Bachelor of Medicine, Bachelor of Surgery (MBChB) curriculum, describing it as a "directed discovery" method of learning (11).

Box 1. Key Themes of Constructivist Learning (8)

- **Contributions and Co-Construction**
  - Learners' bring their unique prior knowledge, experience and beliefs to a learning situation
  - Knowledge is constructed uniquely and individually in multiple ways, through a variety of authentic tools, resources, experiences, and contexts
  - Learning is a developmental process of accommodation, assimilation, or rejection to construct new conceptual structures, meaningful representations, or new mental models
- **Social Interaction and Collaboration**
  - Learning occurs primarily through social interaction with others (especially those that are more knowledgeable e.g. teachers, peers, mentors)
  - Effective learning occurs when tasks are challenging and can be completed with the guidance of a knowledgeable other, allowing learners to be challenged and supported at the same time
- **Active and Reflective Learning**
  - Learning is both an active and reflective process
  - Learning is internally controlled and mediated by the learner

CBL is recognised for its effectiveness in health professional education, with students reporting enhanced engagement and learning, while educators appreciate its ability to motivate and actively involve learners (12). Given these advantages, the CBL format was employed for this educational exercise, using key criteria outlined in Box 2.

The session applied CBL principles to explore challenges faced by Muslim medical students. Facilitators guided participants through discussions and inquiry, encouraging them to identify and propose their own solutions. Collaborative learning was central to the session, as participants worked in groups to discuss the case, share experiences, and build on existing knowledge while developing collective insights.

Box 2. Case criteria according to the National Centre for Case Study Teaching in Science (Herreid 1997; 1998)

Cases should be:

- Be authentic (based on real stories)
- Involve common scenarios
- Tell a story
- Be aligned with defined learning outcomes
- Have educational value
- Stimulate interest
- Create empathy with the characters
- Include quotations in the patient voice to add drama and realism
- Promote decision making
- Have general applicability

Pedagogical Principles: Inquiry-Based Learning, Reflective Practice, & Inclusivity

Case-Based Learning (CBL) employs an inquiry-based learning model, enabling participants to explore new concepts, such as Islamic practices (e.g., ablution and prayer), while building on existing knowledge, such as recognising that some Muslim women wear the hijab. This approach, which encourages questioning, investigation, and independent inquiry, aligned effectively with the session's objectives.

CBL also fosters reflective practice by prompting facilitators and participants to critically assess biases in teaching and learning, thereby supporting continuous improvement (13). Drawing on lived experiences as Muslim medical students and recognising peer challenges, the authors designed a case study that facilitated discussions to achieve key learning outcomes. This approach prioritised constructive dialogue with institutions, highlighted practical solutions, and ensured the session was balanced, solution-focused, and actionable.

Competencies & Standards: General Medical Council Guidelines and Cultural Competency & Safety in Healthcare

Culture plays a pivotal role in patient care and the integration of colleagues into the healthcare workforce (14). Historically, cultural competency has been the primary framework in medical education, equipping individuals with the skills to interact effectively with patients from diverse cultural, ethnic, and social backgrounds while acknowledging their own biases (15,16). However, cultural competency has faced criticism for its checklist-like approach, overemphasis on acquiring cultural knowledge rather than fostering reflective self-assessment, and a focus on individual rather than systemic processes.

In response, the concept of cultural safety has emerged as a more holistic framework. Defined by Curtis et al. (15), cultural safety requires healthcare professionals and organisations to acknowledge and address their biases, engage in continuous self-reflection, and deliver culturally safe care—measured by progress toward health equity and defined by patients and their communities. This framework also incorporates related principles such as cultural humility and sensitivity, which stress recognising

personal limitations, avoiding assumptions about other cultures, and committing to lifelong self-evaluation and critique (17).

The importance of these skills is underscored by the General Medical Council (GMC), which highlights cultural safety and sensitivity as essential components of professionalism in Good Medical Practice (18) (Box 3).

Equity, Diversity, and Inclusion (EDI) training, conducted through simulation teaching, has been shown to enhance participants' knowledge, insight, self-efficacy, and EDI-related competence (19). Warwick Medical School has effectively implemented a CBL approach for student-led EDI training of medical faculty (20). Thus, the use of CBL was a natural choice to introduce concepts of cultural safety, humility, and sensitivity, addressing the specific needs and challenges faced by Muslim medical students.

Box 3. Selected clauses from Good Medical Practice (2024) relevant to cultural safety and humility development (18)

Domain 1: Knowledge, skills and development

- You must keep your professional knowledge and skills up to date (11)

Domain 2: Patients, partnership and communication

- You must treat patients fairly. You must not discriminate against them or allow your personal views to affect your relationship with them, or the treatment you provide or arrange. You must not refuse or delay treatment because you believe that a patient's actions or choices contributed to their condition (19)
- You must treat patients with kindness, courtesy and respect (23)
    - listening to patients, recognising their knowledge and experience of their health, and acknowledging their concerns (b)

Domain 3: Colleagues, culture and safety

- You must treat colleagues with kindness, courtesy and respect (48)
- You must show respect for, and sensitivity towards, others' life experience, cultures and beliefs (55)
- You must not abuse, discriminate against, bully, or harass anyone based on their personal characteristics (appearance, lifestyle, culture, their social or economic status, or any of the characteristics protected by legislation – age, disability, gender reassignment, race, marriage and civil partnership, pregnancy and maternity, religion or belief, sex and sexual orientation), or for any other reason (56)

Methods and Approach to Innovative Pedagogy

Learning Environment Settings, Participants and Pedagogical Format

The session was delivered in four settings: a senior faculty event at Warwick Medical School in November 2023, a recording of this event shared with faculty unable to attend, a dedicated session for Case-Based Learning (CBL) facilitators, and a workshop at the Association for the Study of Medical Education (ASME) annual conference in July 2024 at the University of Warwick.

The senior faculty session and the CBL facilitators' session focused on small group discussions, fostering direct engagement between participants and facilitators. The ASME workshop involved a diverse audience of educators and students from various institutions and employed a round-table format. Participants, grouped into 5-6 individuals, discussed scenarios with facilitators guiding conversations and later

reconvened to share insights with the larger group. Across all in-person sessions, participants came from diverse cultural and professional backgrounds.

The varying settings highlighted how the environment influenced engagement. Classroom-style settings encouraged participation, while online and theatre formats required additional effort from facilitators to stimulate interaction.

Feedback was gathered through oral discussions and written forms, with facilitators collaboratively identifying recurring themes for evaluation.

Participant consent was obtained to use feedback for activity assessment and reflection.

Box 4. Session Learning Objectives

1. To develop an understanding of the unique challenges Muslim medical students face in clinical and academic settings.
2. To learn practical strategies for supporting Muslim students, including creating inclusive spaces and practices.
3. To foster an inclusive, culturally sensitive learning environment that embraces diversity and encourages equity in medical education.

Cases, Themes and Learning Objectives

Part 1: Building Bridges: Social Interactions in a Diverse World

Scenario:

Maryam joins her new medical school and excels academically and socially. However, she encounters a situation where she is invited to a fresher's party, which she feels uncomfortable attending due to her religious beliefs. Instead of attending, Maryam suggests an alternative—a coffee walk around the campus, which the group accepts. This scenario sets the stage for discussing social inclusivity in medical school.

Learning Objectives:

This segment explores the importance of inclusive social environments that consider students' diverse cultural and religious backgrounds. It challenges educators and peers to

rethink conventional social activities and to recognise the positive outcomes of accommodating suggestions that foster inclusivity. Key questions include:

- Why was this a positive outcome for the group?
- What if Maryam had been more hesitant about her suggestions?
- What would be the implications of her agreeing to attend the fresher's party?
- How can educators facilitate more inclusive environments?

Part 2: Balancing Duties: Integrating Spiritual Practices at School and Work

Scenario:

Maryam's commitment to her religious practices becomes evident when she needs to perform her afternoon prayer during a busy day of teaching at the off-site anatomy building. Faced with finding a suitable place for ablution (wudhu) and prayer, Maryam feels uneasy performing these acts in public spaces, such as sinks and shower facilities, which are not designed with privacy in mind. She eventually finds a private cubicle where she can perform ablution and prayer discreetly.

Learning Objectives:

This section highlights Muslim students' logistical and emotional challenges when fulfilling their religious obligations in academic settings. It emphasises the need for supportive infrastructure and understanding from educational institutions. The discussion aims to explore:

- Why are Maryam's prayers vital to her?
- What prayers need to be performed, and are they time-sensitive?
- What challenges might she have with asking to be excused?
- How is wudhu performed, and what are the logistical challenges?

Part 3: The Hijab and Professional Identity: Integrating Hijab in Professional Settings

Scenario:

The final part of Maryam's story focuses on her experiences in clinical and professional settings while observing the hijab. During a clinical skills session, Maryam feels anxious about the requirement for appropriate exposure while performing examinations, particularly when observing her hijab. She finds relief in the availability of privacy curtains, which allow her to maintain her modesty without compromising her learning experience. The scenario further explores Maryam's experiences in the operating theatre, where her hijab becomes a point of contention. An oversight in understanding the regulations of hijab in theatre by a member of staff, leads to an uncomfortable situation for Maryam, reinforcing the need for greater awareness and accommodation of religious dress codes in clinical settings.

Learning Objectives:

This section emphasises the complexities of maintaining professional standards while respecting religious dress practices. It aims to educate students and staff on integrating religious attire in healthcare environments and promote solutions that support inclusivity. Key questions include:

- Why would Maryam not feel comfortable volunteering for demonstrations?
- Can hijabs be worn in theatre, and what are the guidelines?
- How might the power dynamics between students and staff affect consent?

Part 4: Navigating Bias and Islamophobia in Clinical Settings

Scenario:

Maryam attends a clinical session with a senior consultant alongside another student. She arrives early, prepared and eager to engage. However, from the start, she noticed that the consultant seldom made eye contact with her, directing most questions and attention towards her non-Muslim colleague, who arrived late. During the session, Maryam makes a minor mistake by repeating a question during history taking, leading to the consultant publicly criticising her attentiveness. In contrast, her colleague's errors are met with a supportive tone.

This encounter leaves Maryam feeling undermined and embarrassed, illustrating the subtle dynamics of bias and differential treatment that Muslim students may experience.

Learning Objectives:

This segment aims to illuminate the impact of implicit biases and Islamophobia on the educational experiences of Muslim students. It seeks to foster awareness and encourage educators to adopt fair, supportive, and inclusive teaching approaches that respect the diversity of their students. Key discussion points include:

- How would this scenario affect Maryam's confidence and engagement?
- What is the impact of perceived bias on student performance and mental well-being?
- Who could Maryam turn to for support in this situation?
- How can educators and institutions address bias and support affected students?

Results

Case discussions

The analysis of the case-based learning session revealed several key insights into the challenges faced by Muslim medical students, particularly concerning prayer practices and the associated requirements.

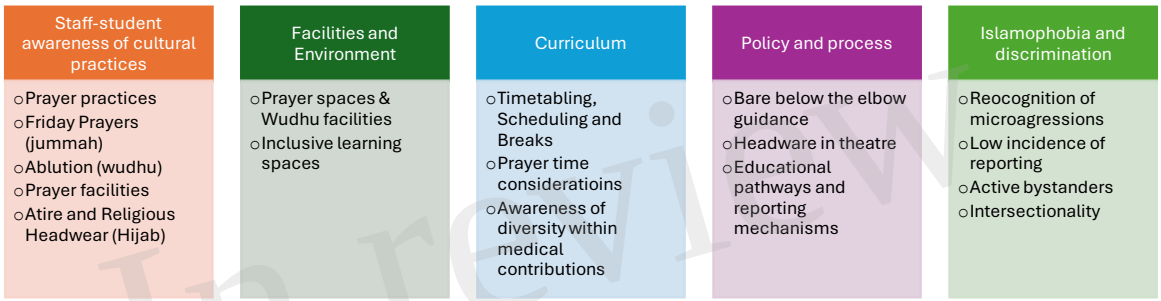


Diagram 1: Themes and Subthemes developed through Muslim Medical Student Experience CBL

Staff-student awareness of cultural practices

Awareness of Prayer Practices

Participants demonstrated limited awareness of Islamic prayer times, their seasonal variations, and the implications of missing prayers. Muslim prayers are performed at specific times dictated by the sun's position, such as Dhuhr (midday) and Asr (afternoon), each within defined periods. Missing these times requires later compensation, which is less ideal. This lack of understanding can lead to scheduling conflicts and unintentional insensitivity toward Muslim students' needs.

Similarly, the concept and practice of *wudhu* (ablution) were unfamiliar to many participants, including its frequency (up to five times daily) and requirements, such as

washing the hands, face, arms, head, and feet, typically taking about five minutes. This knowledge gap may result in insufficient facilities and inadequate support for Muslim students to meet their religious obligations.

The session identified several specific challenges faced by Muslim students in performing wudhu:
- Accessibility Issues: Students with mobility challenges often struggle due to unsuitable facilities. The lack of private spaces for hijab removal and the impracticality of washing feet in sinks were particularly noted, posing barriers to performing *wudhu* with dignity.
- Privacy Concerns: Interruptions during wudhu* often in shared spaces, were reported, highlighting the need for private, designated areas such as cubicles. Without such accommodations, students may feel discouraged from openly practising their faith.

While some UK universities and schools provide wudhu-specific facilities, their availability is inconsistent, leaving many students reliant on public or private toilets, which are less ideal. Addressing these gaps is essential for fostering an inclusive and supportive learning environment.

Understanding of Jummah (Friday Prayer)

There was limited awareness among participants regarding the significance of Jummah, the Friday congregational prayer performed in a larger assembly. This knowledge gap can result in scheduling conflicts and insufficient institutional support for Muslim students wishing to attend Jummah prayers. Attendees acknowledged concerns about students missing optional lunchtime academic activities to participate in the prayer. Moreover, participants recognised that Muslim students often hesitate to request accommodations for Jummah due to fears of being perceived as less committed or facing potential discrimination, highlighting the need for proactive institutional support to address these challenges.

Prayer Room Requirements

Participants lacked awareness of the specific requirements for prayer rooms, including cleanliness, proper orientation toward Mecca, and provisions for wudhu. Understanding these needs is essential for creating spaces that support Muslim students' religious practices. Key elements identified for an inclusive prayer room include adequate space for prayer and wudhu, privacy, cleanliness, clear signage indicating the direction of Mecca, and accessibility for all students. Implementing these features ensures a supportive environment that fosters inclusivity and respect for cultural and religious diversity.

Awareness of guidelines for religious headwear in theatre

Participants demonstrated limited awareness of the rules and regulations regarding religious headwear in theatre. Many were unfamiliar with the 2020 Uniforms and Workwear Guidance for NHS employers, which permits the use of normal cloth headscarves during theatre attendance, provided they are subsequently washed at 60°C, with or without an additional theatre cap (21). Facilitators played a key role in highlighting this guidance, underscoring the importance of raising awareness about diversity in workwear policies across NHS trusts. Such awareness is essential for fostering inclusion and ensuring equitable treatment for all staff.

Curriculum

Scheduling, Breaks and Prayer times

Long teaching sessions without breaks posed challenges for students needing to perform prayers, particularly during winter when prayer times are closely spaced. Participants recommended incorporating brief 5–10-minute breaks every 45–50 minutes to accommodate prayer needs. This adjustment would enable Muslim students to fulfil their obligations without disrupting the session's flow while also benefiting all students by providing rest periods. Such an approach promotes inclusivity and respects the diverse needs of the student body.

The variability of Muslim prayer times, governed by solar movements, presents challenges in aligning with standard academic schedules. While tailoring timetables to specific prayer times may not be feasible, providing designated periods and appropriate facilities for prayer and wudhu is essential. Accessible washing and prayer spaces, along with regular rest intervals, can accommodate students' religious practices without significant modifications. Initiatives such as ‘protected lunch breaks’ for all students have been adopted by some institutions as a potential solution.

Proposals like a four-day working week have also been considered, though faculty discussions have highlighted complexities, including cohort scheduling and daylight-saving adjustments that significantly alter prayer times. Collaboration between scheduling personnel and chaplaincy teams is recommended to coordinate timings or establish consistent year-round prayer periods, ensuring inclusivity while maintaining academic efficiency.

Creating Inclusive Learning Spaces

The scenario presented in this case was derived directly from students’ real-life experiences in medical school, prompting participants to reflect on their own perspectives. There was unanimous agreement that requiring students to perform examinations on one another in an open setting was unacceptable. Privacy measures, such as curtains, were identified as essential to ensure comfort and dignity, benefiting all students alike.

The discussion also raised concerns about students' expectations to examine each other. Participants noted that students might feel pressured to comply, even if uncomfortable, to support their peers' learning. As a solution, using simulated patients or actors in teaching sessions involving physical examinations was proposed as a more inclusive and suitable alternative for medical schools to adopt.

Policy and Process

Clinical Practice Considerations

Clinicians highlighted the importance of clear communication within teams, particularly during handovers, to accommodate the need for prayer breaks. This practice was generally well-received, fostering a supportive environment while ensuring that patient care remained unaffected. There was broad agreement among clinicians to support colleagues' prayer needs, provided these accommodations did not compromise clinical responsibilities.

The discussion also identified a gap in Supporting Trainees Entering Practice (STEP) forms, which currently lack specific questions about religious requirements. Including such considerations in these forms could help address the holistic well-being of medical students and professionals. These findings emphasise the need for greater awareness and proactive measures to accommodate the religious practices of Muslim medical students, fostering an inclusive and supportive learning environment.

Inconsistent Policies on Bare Below the Elbows

Discussions highlighted significant inconsistencies in applying bare-below-the-elbows policies across different NHS trusts. According to NHS guidance, long sleeves may be worn when staff are not in direct contact with patients, and disposable sleeves can be used over clothing when necessary (21). However, participants reported variability in how these policies are enforced, often leading to confusion and conflicting instructions from colleagues. In some cases, students have been reprimanded for wearing long sleeves despite the guidance, further exacerbating their challenges. These inconsistencies underscore the need for clearer communication and uniform enforcement of policies to ensure fairness and understanding across clinical settings.

Educational Pathways and Reporting Mechanisms

Fostering inclusivity requires ensuring that students are aware of the channels available for reporting discrimination or bias within university and NHS Trust environments. It is essential that Muslim students, like Maryam, understand where to seek support and feel confident using these resources without fear of reprisal or minimisation. Educators and administrators must prioritise clear communication about existing support structures to build trust and accessibility.

Comprehensive Equity, Diversity, and Inclusion (EDI) training is a key strategy for reducing bias in clinical settings. Such training should address cultural humility, unconscious bias, and the impact of microaggressions. Additionally, it must consider the intersectionality of identity factors, such as Maryam's experiences as both a Muslim and a female student, to highlight how overlapping biases can intensify their effects. By addressing these complexities, EDI training can create a more inclusive and equitable environment for all.

Islamophobia and Discrimination

Recognition of Islamophobia and Microaggressions

Muslim students, particularly those wearing visible religious symbols such as the hijab, often face Islamophobia and microaggressions, both explicit and implicit. These biases may manifest as differential treatment, disproportionate criticism, or exclusion from educational interactions, as seen in Maryam's case. Rooted in stereotypes and assumptions, such behaviours create an unequal learning environment where Muslim students may feel unwelcome or unfairly scrutinised.

Low Likelihood of Reporting Singular Events

Students are often hesitant to report isolated incidents of bias or Islamophobia, fearing these may be dismissed as minor or unintentional. This reluctance leaves recurring issues unaddressed, as individual events may only appear significant when viewed collectively. Educators and institutions must emphasise the importance of reporting even singular incidents, as they contribute to patterns of discriminatory behaviour. Clear and accessible reporting pathways, combined with normalising their use, can empower students to address these experiences.

Empowering Active Bystanders

Creating a culture where peers and educators act as active bystanders can address Islamophobia and discrimination in real time. Recognising and intervening in subtle instances of bias can prevent such behaviours from continuing unchecked. Active bystanders play a crucial role in fostering mutual respect and accountability in clinical education settings, promoting inclusivity and reducing the risk of harm to students like Maryam.

Intersectionality and the Attainment Gap

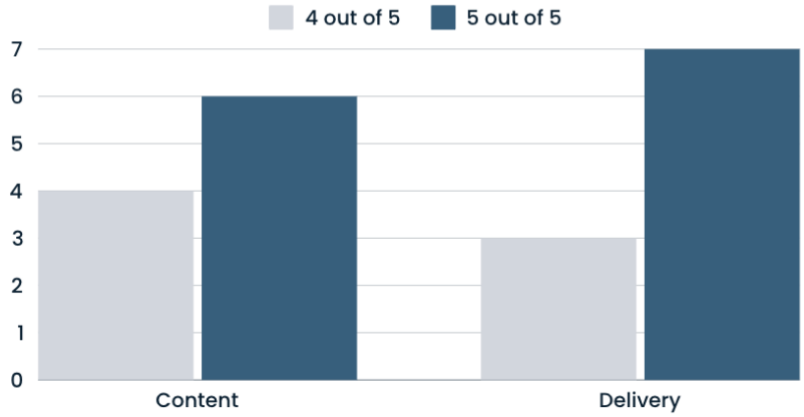
The session underscored how intersecting identities, such as race, gender, and religion, can amplify biases. For Maryam, being both a Muslim and a woman heightens her vulnerability to implicit biases in clinical settings. These compounded biases contribute to the attainment gap observed among minority students, negatively affecting their learning experiences and subsequent academic performance. Recognising and addressing intersectionality is vital to creating equitable educational environments.

Session evaluation and feedback

The analysis of participant feedback from the teaching session revealed several significant themes and trends, illustrating the session's impact on attendees' perceptions, knowledge, and inclusivity. The content of the session consistently garnered high ratings, averaging 4.63 out of 5 on a Likert scale, with 100% of participants rating it either a 4 or a 5. Similarly, the delivery was exceptionally well received, achieving an average score of 4.75.

QUANTITATIVE FEEDBACK

Participants responses when asked about the content and delivery of the CBL session.



The qualitative feedback provided valuable insights into the session's effectiveness, highlighting its inclusivity, educational value, and potential for fostering interfaith understanding, while also identifying areas for improvement. Participants consistently praised the respectful and inclusive environment created during the session, noting the sensitivity shown toward different faiths and the openness to diverse perspectives. Comments such as "Thoughtful, inclusive, and kind leading of this session" underscored the positive atmosphere.

The session was recognised for its educational impact, particularly in increasing awareness of Islamic practices and the challenges faced by Muslim students. Key takeaways included the importance of respecting prayer times, understanding modesty, and acknowledging daily rituals. Feedback such as "Very clear and concise answers to questions" and "Interactive Islamic awareness" highlighted the session's role in enhancing understanding.

Attendees also appreciated the practical elements of the session, including the use of the CBL approach and visual aids, which were effective in engaging participants. Furthermore, the session facilitated meaningful interfaith dialogue, with one participant remarking, "As a Catholic/Christian, it reaffirmed how much we have in common, and our journey is very similar," demonstrating the session's ability to bridge gaps and foster shared understanding among participants from different faiths.

Suggestions for improvement focused on reducing the number of slides to allow more time for discussion, providing supplementary materials such as handouts, glossaries of key terms, and prayer schedules to reinforce learning, and expanding participation to include students of various faiths to encourage broader interfaith dialogue.
Overall, post-session evaluations indicated a significant increase in participants' awareness of Muslim identity and empathy towards the challenges faced by Muslim students. Open-ended responses emphasised the session's effectiveness in addressing biases and fostering inclusivity within an educational framework, highlighting its potential for promoting broader understanding and cultural sensitivity.

Discussion

Integrating cultural safety within medical education is essential for fostering an inclusive environment that accommodates the diverse needs of students. This study contributes to the existing literature by highlighting the unique challenges faced by Muslim medical students and proposing evidence-based interventions to address these issues(22).
Implementing CBL sessions has significantly enhanced cultural humility and intelligence among educators and faculty. Participants reported a heightened awareness of Muslim students' experiences, leading to the development of more inclusive policies and practices. Notably, 100% of participants rated the sessions highly, indicating the effectiveness of CBL in fostering awareness and empathy.
Alternative approaches have enhanced cultural safety among multi-disciplinary healthcare professionals, particularly through online and simulation-based exercises. Virtual patient scenarios and simulation training have proven effective tools for fostering cultural competence, enabling clinicians to engage in realistic, interactive learning experiences. These methods allow for exploring diverse patient interactions in a controlled environment, promoting critical reflection and applying culturally sensitive practices. These approaches complement traditional methods by offering flexible and scalable solutions for embedding cultural safety in healthcare education (23–25).

Objectives and Lessons Learned

A primary objective of this initiative was to integrate cultural humility and intelligence training into the regular curriculum. The sessions provided safe spaces for discussing sensitive issues, facilitating open dialogue and continuous feedback essential for refining educational activities. Collaboration between students and faculty emerged as crucial for developing effective support mechanisms, highlighting the need for ongoing partnerships to address cultural challenges in medical education.

Explored Topics

The CBL sessions addressed several critical areas:

- **Socialisation Challenges:** Discussions centred on discomfort in alcohol-related social settings and strategies to create inclusive environments. Recognising that such discomfort is not unique to Muslim students, the sessions emphasised the importance of accommodating diverse social preferences.
- **Prayer Logistics:** The challenges of balancing prayer times with a demanding medical curriculum were explored, considering the variability of prayer times due to seasonal changes. Solutions included timetable adjustments and ensuring accessible prayer spaces.
- **Ablution and Prayer:** The necessity of accommodating students' needs for performing ablution (wudhu) and prayers was discussed, emphasising the provision of appropriate facilities and break times.
- **Clinical Modesty and Attire:** Modesty in clinical skills sessions and appropriate attire in sterile environments were examined, highlighting the need for guidelines that respect religious practices while maintaining professional standards.
- **Dignity during Examination:** The appropriateness of mixed-gender sessions and maintaining dignity during examinations were addressed, advocating for options that respect students' cultural and religious beliefs.
- **Onboarding and Induction:** Encouraging clinicians to recognise and support the religious needs of incoming doctors was emphasised, promoting the inclusion of religious considerations in onboarding processes.

- **Head Coverings in Theatre:** The specific requirements for maintaining aseptic conditions while respecting religious dress codes were discussed, leading to recommendations for accommodating head coverings in surgical settings.
- **Combatting Discrimination:** Issues of Islamophobia in clinical environments were highlighted, underscoring the importance of reporting systems and the role of active bystanders in addressing discrimination.

Proposed Solutions

The study proposes several solutions to enhance inclusivity:

- **Flexible Scheduling and Timetabling:** Implementing regular breaks and adjusting lecture times to accommodate prayer schedules can benefit students of all faiths, promoting a more inclusive teaching schedule.
- **Awareness and Education:** Improving understanding of the contributions of diverse voices in medicine, such as historical Muslim figures like Ibn Sīnā (Avicenna) and Abū al-Qāsim al-Zahrāwī (Abulcasis), may help students and educators appreciate the diversity of thought that shapes contemporary medical practice and can foster a more inclusive educational environment (26).
- **Muslim student networks:** Supporting the growth of a Muslim student body that can advocate for itself and provide mentorship and guidance to other Muslim students. Having visible role models and a support community can empower students to navigate challenging environments. Establishing partnerships with organisations such as BIMA and university chaplaincies, which offer structured support for Muslim students and help address their unique needs within clinical and academic settings. Additionally, establishing a within-cohort Muslim student body would help provide students with familiarity and safe spaces to discuss concerns. Reported success with these bodies and faculty has resulted in the formulation of 'Muslim Student Guidebooks', EDI training and community cohesion projects.

- **Robust and Transparent Reporting Mechanisms:** Alongside fostering awareness and encouraging diverse representation, visible and effective reporting mechanisms are essential for addressing bias in clinical settings (27). Muslim students and other minorities must feel empowered that when they report instances of discrimination or prejudice, their concerns will be taken seriously and addressed promptly. Establishing transparent protocols for reporting, with clear, visible consequences for discriminatory actions, is critical for cultivating trust within medical education. When students see that reported incidents result in fair and consistent action, it can foster a safer and more inclusive learning environment. In addition, providing regular feedback on reported outcomes and processes—without compromising confidentiality—could further strengthen students' confidence in these systems. By making reporting mechanisms more accessible and maintaining transparency in response procedures, institutions can demonstrate their commitment to upholding equity, diversity, and inclusivity within medical training environments.

Acknowledgement of Constraints in Implementing CBL for Muslim Medical Students

Implementing Case-Based Learning (CBL) sessions to support Muslim medical students involves several conceptual, material, methodological, and environmental challenges that must be addressed to ensure inclusivity and effectiveness.

A lack of comprehensive longitudinal data on the experiences of Muslim medical students limits the development of targeted interventions. Institutional variability in supporting culturally focused CBL further complicates implementation, as disparities in resources and commitment affect program consistency. The sensitive nature of topics such as identity, discrimination, and cultural bias may deter participants from engaging

fully, necessitating skilled facilitation to create a safe and non-judgmental discussion environment.

While the scenarios are grounded in real-life experiences of Muslim students, their diverse cultural and personal backgrounds present challenges in ensuring universal relevance. This diversity highlights the need for adaptable content and the potential for developing a broader range of cases.

A limited availability of Muslim facilitators with authentic perspectives may require additional training sessions, increasing resource demands. Furthermore, the limited contexts in which these cases have been delivered affect the generalisability of findings to other educational or healthcare settings. Facilitators may need to adapt materials to suit their institution's cultural demographics and time constraints.
Due to limited follow-up opportunities, feedback was primarily collected through oral discussions and end-of-session surveys. For deeper insights, future evaluations may require extended interviews or focus groups, which were not feasible in this instance.

Participation in the sessions was voluntary, potentially attracting individuals already engaged with equity, diversity, and inclusion (EDI) or those more confident in voicing their perspectives. This self-selection bias may have limited diversity of input, excluding those who could benefit most from cultural competence training. Additionally, quieter participants may have felt overshadowed, emphasising the need for facilitators to ensure equitable participation.

Conclusion

In conclusion, this study adds to the literature by providing evidence-based strategies to support Muslim medical students, emphasising the importance of cultural competence in medical education. The findings advocate for systemic changes to create inclusive environments that respect and accommodate the diverse needs of all students.

Integrating cultural safety training into medical education has the potential to significantly impact Muslim students' professional growth and retention in the field. By fostering an inclusive environment, educational institutions can support the development of culturally aware healthcare professionals, ultimately improving patient care. This approach contributes to a more inclusive environment for all students, aligning with broader efforts to enhance cultural safety and humility in medical education.

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