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Nurturing future doctors: Pre-clinical medical student perspectives on holistic mentoring

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Abstract

Introduction: Mentoring plays a crucial role in pre-clinical medical education, providing academic, emotional, personal, and professional support to students during early medical training. Although established in 2015, the impact of the pre-clinical undergraduate mentor-mentee programme at the Kulliyyah of Medicine, International Islamic University Malaysia (KOM, IIUM), has yet to be studied. This study aimed to explore the experiences and perceptions of pre-clinical students participating in the programme to assess its effectiveness and identify areas for improvement.

Methods: A cross-sectional study was conducted using a self-administered online questionnaire distributed to all Year 1 and Year 2 students. The survey included 5-point Likert-scale items measuring satisfaction and perceived helpfulness, alongside open-ended questions for qualitative insights. Quantitative data were analysed using descriptive statistics, while qualitative responses underwent thematic synthesis, involving open, axial, and selective coding.

Results: Results showed high satisfaction (mean score: 4.74 ± 0.74) and perceived helpfulness (mean score: 4.69 ± 0.81), with students praising the programme for fostering academic improvement, mental health support, peer collaboration, and holistic development. Thematic analysis revealed four categories: benefits of sessions, characteristics of effective sessions, challenges, and suggestions for improvement. Key themes included a safe and supportive environment, motivational reassurance, Islamic ethical guidance, and challenges such as infrequent interactions and emotional barriers. Strengthening frequency of interactions, mentor training, and feedback mechanisms was suggested for improvement.

Conclusion: This study highlights the holistic value of the structured mentor-mentee programme at KOM, IIUM in enhancing students' academic and personal growth, providing valuable feedback for improvement.

Keywords: *Feedback, Medical Student, Mentoring, Qualitative Research*

Practice Highlights

- Pre-clinical students were highly satisfied, finding it helpful for academic and personal growth.
- Academic, mental, and peer support with values-based mentorship rooted in Islamic principles.
- Students urged more mentor-mentee interaction, better mentor training, and structured feedback.

I. INTRODUCTION

A. Background

Medical mentoring is crucial in pre-clinical education, as it bridges foundational knowledge and clinical practice, while supporting students both academically and personally. Mentors help students grasp challenging medical concepts, improve performance, and contextualise learning within patient care, which is especially vital during crises like the COVID-19 pandemic (Gaur et al., 2020). Beyond academics, mentoring develops critical thinking, communication, and professionalism essential for healthcare roles (Santiesteban et al., 2022). It also fosters a sense of belonging by connecting students with experienced professionals who offer insights into the culture and ethics of medicine, enhancing motivation, resilience, and mental well-being. Longitudinal mentoring programmes have been shown to improve students' quality of life and

reinforce lifelong learning and service values (Dent et al., 2021).

B. Previous Research on Medical Mentoring

Previous studies have explored mentoring in medical education, emphasising its significance in fostering academic, professional, and personal growth. One study demonstrated how mentorship programmes significantly improved academic performance among first year MBBS students in a medical school in India, alleviating academic pressures during their transition into medical education (Guhan et al., 2020). Similarly, another study highlighted the role of mentoring in enhancing mentees' confidence, academic skills, and emotional resilience at the Universiti Kebangsaan Malaysia Medical Centre during clinical years (Kamarudin et al., 2021). Both studies underline the importance of a structured mentoring approach with clear communication and alignment of goals.

Mentoring also supports a broader sense of well-being and professional preparation by addressing critical gaps in medical education, such as emotional support and skill-building for clinical practice, which are often underemphasised (Bhatnagar et al., 2020). A longitudinal mentorship programme for Brazilian medical students was found to improve their mental health, quality of life, and motivation, underscoring the importance of sustained mentoring efforts (Secchin et al., 2020). Such programmes go beyond academics to strengthen resilience and promote holistic development.

Moreover, mentoring helps clarify professional roles and fosters lifelong learning. Mentoring is distinct from advising or coaching, focusing on personalised guidance that nurtures professional identity formation, clinical reasoning, and ethical values (Santiesteban et al., 2022). This distinction highlights mentoring's unique contribution to developing well-rounded medical professionals capable of adapting to the complexities of healthcare delivery. Together, these findings affirm that mentoring, when carefully designed and implemented, serves as a cornerstone of comprehensive medical education.

Mentoring serves as a foundational element in medical education, providing students with support to navigate the complex demands of their training. It aids in bridging the gap between theoretical knowledge and practical application, especially during critical transitions such as moving from pre-clinical to clinical training. Mentoring helps students adapt to clinical environments by fostering professional development, teamwork, and communication skills (Malau-Aduli et al., 2020). Moreover, mentoring programmes often address stress and mental health challenges faced by medical students. For example, one study highlighted that mentoring interventions could reduce stress levels, improve coping mechanisms, and promote well-being. They also found that pre-clinical mentoring enhances personal development, helping students manage stress, improve time management, and strengthen peer support networks (Dederichs et al., 2020). It also cultivates professional behaviours and provides insights into clinical roles, as seen in mentoring programmes designed to prepare students for placements (Ng et al., 2020). Effective mentorship can bridge the gap between academic knowledge and clinical skills while promoting resilience, empathy, and professionalism (Brown et al., 2021; Corcoran et al., 2020). By providing role models and guidance, mentoring instils essential competencies such as empathy, ethical practice, and lifelong learning.

C. Teacher as Mentor in Medical Education

It is important to distinguish the teacher-as-mentor role from conventional educational supervision or academic advising. Teacher-mentors typically provide longitudinal, holistic support that includes academic coaching, psychosocial reassurance, professional identity formation, and, in our context, ethical and spiritual guidance (Addai et al., 2023). By contrast, academic advisors or educational supervisors more commonly focus on academic progress, curricular navigation, assessment requirements, and administrative or remediation tasks (McKinney et al., 2024; Wenham et al., 2019) Emphasising the lecturer-mentor role targets not only students' study skills but also their well-being, values formation, and early professional socialisation. These components have been associated with improved resilience and professional development in recent studies. (Brown et al., 2021; Kusner et al., 2022; Santiesteban et al., 2022).

Mentoring in medical education is often framed within two key theoretical perspectives. Mentoring is viewed as a complex adaptive system (CAS) in which students learn through participation in a professional community, gradually gaining confidence and internalising professional norms through interaction with experienced faculty (Teo et al., 2024). Professional Identity Formation (PIF) further emphasises the role of mentoring in shaping students' values, behaviours and sense of purpose as future doctors (Krishna et al., 2023). These frameworks clarify how lecturer-led mentoring differs from academic advising, which typically focuses on administrative or academic progress.

D. Specific Challenges of Pre-Clinical Mentoring

Pre-clinical mentoring presents unique challenges. One challenge is maintaining consistent engagement and effective communication, where mismatched expectations between mentors and mentees occasionally hinder the programme's success (Kamarudin et al., 2021). Time constraints and varying mentor availability also pose obstacles to achieving programme objectives (Ng et al., 2020).

Although mentoring in medical education is widely discussed in the literature, the novelty of this study lies in its cultural and institutional context and its emphasis on holistic student development. At the International Islamic University Malaysia (IIUM), mentoring extends beyond academic and emotional support to include ethical and spiritual dimensions in line with the university's educational philosophy. This aspect has received limited attention in existing studies, which largely focus on Western or secular settings. Within this unique context, the programme facilitates academic, professional, and personal growth through structured interactions between students and lecturers, providing a distinctive opportunity to examine the perceived benefits, challenges, and areas for improvement within a formal mentoring framework that has not previously been explored at this institution. The objective of this study is to explore the experiences and perceptions of pre-clinical students in the International Islamic University Malaysia participating in the mentor-mentee programme.

II. METHODS

A. Research Context

This study investigates the experiences of pre-clinical medical students participating in the mentor-mentee programme at the Kulliyyah of Medicine, International Islamic University Malaysia (KOM, IIUM). The programme comprises 67 groups, each with 4 to 5 students and a pre-clinical lecturer from Department of Basic Medical Sciences and Department of Pathology and Laboratory Medicine as the mentor, mandating one meeting every 10 weeks to discuss academic and non-academic issues such as study progress, difficulties encountered while studying, exam results, family issues, financial constraints, emotional and spiritual well-being, and other issues important to each student. While this meeting is mandatory, mentors and students are welcomed to arrange additional informal meetings for ongoing support. Each mentor is provided with general guidelines by the faculty on how to conduct these sessions, ensuring a structured approach while allowing flexibility to address specific mentee needs.

B. Research Design and Approach

This study employed a cross-sectional design.

C. Study Population

The study included all Year 1 and Year 2 medical students (n = 305) enrolled in the mentor–mentee programme during the 2023/2024 academic session. Given that the programme is organised into 67 small groups comprising 4 to 5 students each, and mentoring activities are primarily delivered at the group level rather than through one-to-one interactions, the sampling strategy required at least one response from every mentor–mentee group. This ensured that feedback was obtained from all groups represented within the programme while minimising non-response and reducing the logistical burden of data collection. This approach enabled broad coverage of the diverse experiences and perceptions across the programme's group-based structure. Participation was voluntary, and no incentives were offered.

D. Data Collection Methods

Data were collected using a self-administered online questionnaire distributed through the social media WhatsApp Messenger application designed to capture both quantitative and qualitative feedback, with approval from IIUM Research Ethics Committee (IREC) – IREC 2024-336 from October to November 2024. The questionnaire was developed by the authors, based on the Kulliyyah of Medicine in-house student feedback survey, and adapted specifically for the mentor-mentee programme. It included two Likert-scale questions on satisfaction and perceived helpfulness, and five open-ended questions exploring experiences, challenges, and suggestions (see Appendix A). Content validity was ensured through review by a medical educationist and the mentor-mentee coordinator, with minor revisions made for clarity and relevance. Following their feedback, minor revisions were made to enhance clarity and alignment with the study objectives. As this was a novel adaptation rather than a previously validated instrument, formal reliability testing (Cronbach's alpha) was not conducted; however, pilot feedback confirmed that the questionnaire was clear, appropriate, and capable of capturing the intended information. All students were informed of the study purpose at the start of the questionnaire, and by choosing to complete it, they indicated their understanding and provided implied consent to participate.

To ensure participants' anonymity, the questionnaire was administered using an online survey platform that did not require users to sign in, thereby preventing the capture of email addresses or other identifiable login credentials.

No personal identifiers such as name, student identification number, or contact information were collected however, mentor name was requested to keep track of group submissions. Although the survey link was disseminated through a social media application for convenience and wider reach, all responses were submitted independently and anonymously through the survey platform itself. The research team was therefore unable to trace responses back to individual students or specific devices, maintaining full confidentiality throughout the data collection process.

E. Quantitative Analysis: Data Analysis

Quantitative data from the two 5-point Likert scale questions were analysed using descriptive statistics to summarise participants' satisfaction with and perceived helpfulness of the mentor-mentee programme. The mean scores, standard deviations, and 95% confidence intervals were calculated for each metric to provide insights into the overall trends and the consistency of responses across participants.

F. Qualitative Analysis: Thematic Synthesis

The qualitative data were analysed using thematic analysis, following the six-phase approach outlined by Braun and Clarke (2006, 2021). This method was selected for its flexibility and suitability in identifying patterns across short, open-ended reflections. The analysis was conducted in three stages: open coding, axial coding, and the development of overarching categories (See Table 1). During the initial stage, responses were examined line by line to identify distinct codes representing specific ideas, perceptions, or experiences. For example, phrases such as "felt supported during challenges" and "gained useful feedback on academics" were coded as emotional support and academic guidance, respectively. Then the open codes were grouped into related categories by exploring connections and relationships among them for axial coding. For instance, codes such as confidence-building, peer collaboration, and stress reduction were clustered under the category personal development, while guidance on ethical practice and improved study techniques were grouped under academic and professional growth. Finally, the axial codes were synthesised into four overarching categories to provide a comprehensive structure for interpretation. The researchers reviewed the codes and themes independently, and discrepancies were resolved through discussion to achieve consensus.

Stage	Process	Examples	Output
Open Coding	Line-by-line coding of responses to identify specific ideas, perceptions, or experiences	- "Felt supported during challenges" → *Emotional Support* - "Gained useful feedback on academics" → *Academic Guidance*	Initial Codes
Axial Coding	Grouping related codes by identifying patterns and relationships	- *Confidence-building*, *Peer collaboration*, *Stress reduction* → **Personal Development** - *Ethical guidance*, *Study techniques* → **Academic & Professional Growth**	Thematic Categories
Overarching Categories	Synthesising themes into broad, interpretable structures	- **Personal Development** - **Academic & Professional Growth**	Final Thematic Framework

Table 1. Three-Stage Thematic Synthesis Process for Analysing Open-Ended Responses

III. RESULTS

A total of 83 students responded to the survey out of 305 eligible Year 1 and Year 2 students, yielding a response rate of 27.2%. The responses were received from 65 of the 67 mentor–mentee groups, yielding a group response rate of 97.0%. The quantitative results showed high levels of satisfaction and perceived helpfulness among participants in the mentor-mentee programme. The mean satisfaction score was 4.74 ± 0.74 (95% CI: 4.58 – 4.89), while the mean perceived helpfulness score was 4.69 ± 0.81 (95% CI: 4.51– 4.86) on a 5-point Likert scale.

A. Benefits of Mentor-Mentee Sessions

Students consistently highlighted the positive impacts of the mentor-mentee sessions on their academic, personal, and emotional well-being. Many reported that their mentors provided a safe space where they felt acknowledged and supported.

"*I feel safe and acknowledged with my efforts. My mentor would always reassure me and the other mentees even though our results are not exceptional*." – Student 54

"*My mentor always reassures me and believes that I can do well in my exams. It gives me a lot of comfort as a person who always felt anxious about exams*." – Student 49

These statements emphasise the role of mentors in offering motivation and reassurance, particularly to students experiencing academic and emotional challenges. Students also appreciated the academic guidance received during these sessions, which

contributed to their academic performance improvement. Mentors provided study techniques and advice on how to excel in exams, further enhancing students' confidence. They also highlight the impact of Islamic-based spiritual guidance during the session.

"*My mentor's spiritual guidance is invaluable. We get reminded to become a good, safe Muslim doctor in each session. Great supporting and inspiring advice, both mentally and spiritually, for both dunia and akhirat*." – Student 3

The peer collaborative environment was another significant benefit, with one student stating,

"*Whenever I share something or other people sharing (sic), all of us could learn a lot between each other*." – Student 79

This highlights how sessions facilitated collective learning and mutual support among mentees.

B. Characteristics of Effective Mentor-Mentee Sessions

Thematic analysis revealed key characteristics that defined effective mentoring practices (Figure 1). Students emphasised the importance of mentors who provided consistent academic encouragement, empathetic communication, and a sense of trust. Islamic-based encouragement was particularly valued, as it integrated spiritual guidance with professional and academic development. Effective sessions were described as those that fostered holistic well-being and supported mentees emotionally, psychologically, and academically. Mentors who actively listened, offered personalised feedback, and encouraged open communication were viewed as instrumental in creating a positive mentoring experience.

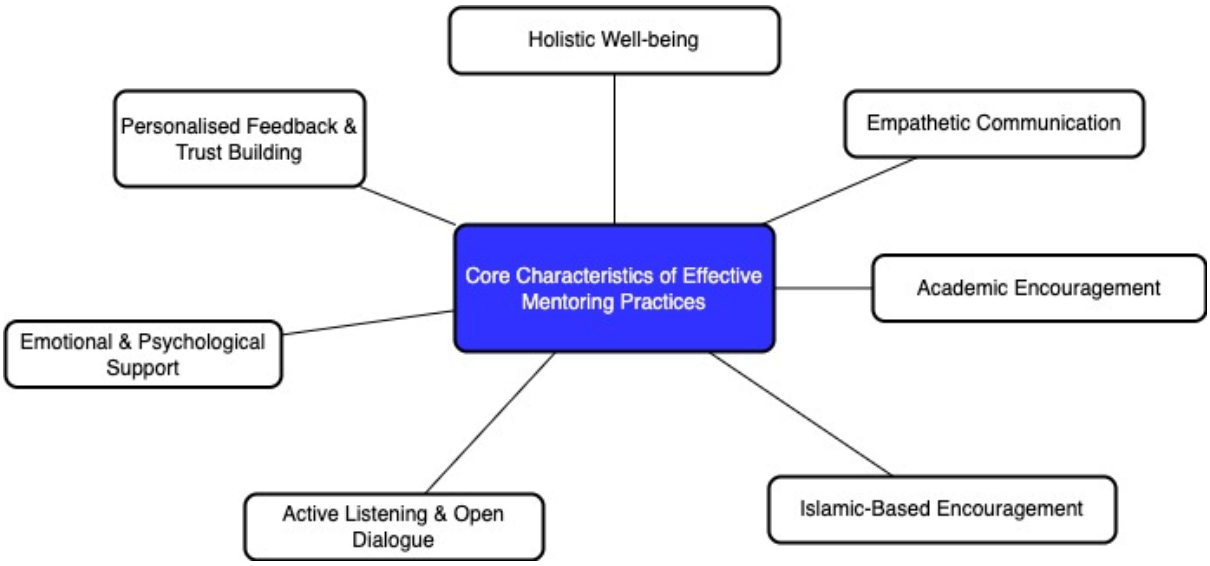

Figure 1. Key characteristics of effective mentoring practices

C. Challenges and Barriers

Despite these benefits, some students reported several challenges, including emotional and psychological barriers that hindered open communication. A few students also mentioned having a language barrier with some mentors. Some felt hesitant to share personal struggles due to anxiety or a lack of rapport with their mentors. Time constraints and limited opportunities for interaction also posed challenges, highlighting the need for more frequent and structured meetings.

D. Suggested Improvements

Students suggested enhancing support structures and improving interaction and communication within the programme. Recommendations included providing additional mentor training to ensure consistent quality across groups, more group activities, and increasing the frequency of sessions to address the emotional and academic needs of mentees more effectively. Focusing on mental health within the sessions was another key recommendation to further align the programme with the students' values and holistic development needs (Table 2).

Recommendations	Quote
Providing additional mentor training	*"Provide comprehensive training for mentors to enhance their coaching, communication, and interpersonal skills, ensuring they are well-equipped to support their mentees effectively."* – Student 67
Additional group activities	*"Maybe we can hold some activities involving our mentor to strengthen the bond like sports or celebrations."* – Student 24 *"Bonding activities with mentor and between the mentees."* – Student 35
Increase frequency of sessions	*"I think the session should be often."* – Student 15 *"Add more session so that we could spend more time together."* – Student 39
Focusing on mental health and emotional well-being	*"Ensure that mentors are trained to recognize signs of stress or mental health issues and can guide mentees to appropriate professional support services."* – Student 67 *"If mentor can focus on mental health issues especially for the year 1 students, I think it would be very beneficial and helpful."* – Student 76

Table 2. Recommendations to improve mentor-mentee system

IV. DISCUSSION

The results of this study emphasise the vital role of holistic mentoring programmes in supporting the academic, personal, and emotional growth of pre-clinical medical students. High satisfaction and perceived helpfulness scores underscore the programme's positive impact, with benefits such as academic encouragement, collaborative peer learning, mental health support, and guidance aligned with Islamic principles. These findings align with broader evidence that mentoring enhances confidence, reduces stress, and improves well-being (Ng et al., 2020; Sonawane et al.2021).

In this study, "holistic mentoring" refers to an approach that supports students' academic, personal, professional, and ethical development within a single integrated framework. This aligns with the principles of the Humanistic Mentoring Model, which emphasises attending to the whole person, intellectually, emotionally, socially, and morally to foster well-rounded growth (Schirmer & Osterberg, 2022). In the KOM, IIUM context, holistic mentoring additionally incorporates values-based guidance grounded in the institution's educational philosophy. By nurturing not only academic competence but also character, well-being, and professional identity, the programme reflects a broader conceptualisation of mentoring that other institutions may adapt according to their cultural or pedagogical priorities.

Furthermore, the inclusion of ethical and spiritual dimensions within the IIUM mentoring approach distinguishes it from more conventional models and aligns with recent calls for culturally sensitive mentorship frameworks (Drossard & Härtl, 2024; Whitfield et al., 2024). Studies highlight the importance of tailoring mentorship to students' values and identities, supporting this programme's emphasis on integrating character development with academic and professional guidance (Hill et al., 2022; Vieira et al., 2022). Such culturally aligned mentoring offers a foundation for more inclusive and responsive programmes for diverse student populations. Future research should examine how these approaches function across different cultural settings and their long-term effects on students' academic, psychological, and professional development (Sethia et al., 2020; Whitfield et al., 2024).

Challenges identified include infrequent interactions and emotional barriers that hinder effective communication, a finding consistent with issues reported in other institutions, such as difficulties in rapport-building (Aziz et al., 2020; Sephien et al.,2021; Zainol & Salam, 2021). Enhancing mentor training to improve emotional sensitivity and communication skills, as well as increasing session frequency, could address these challenges and ensure the programme's consistency and effectiveness (Fulton-Ward et al., 2023; Kusner et al., 2022; Sethia et al., 2020).

Despite occasional less favourable feedback, most students positively perceived the mentoring experience, highlighting its potential to improve academic outcomes and engagement. To maximise impact, the programme could increase session frequency, strengthen support structures for mental health and academic development, and implement robust feedback mechanisms to adapt and refine mentoring practices (Brown et al., 2021; Corcoran et al., 2020; Mohd Shafiaai et al., 2020; Sonawane et al., 2020).

The findings of this study offer several practical insights for institutions seeking to strengthen or redesign their mentoring programmes. Although the KOM, IIUM model incorporates Islamic ethical and spiritual elements, its core features of structured group engagement, attention to holistic well-being, and supportive teacher-as-mentor relationships are broadly adaptable across diverse educational settings. Institutions serving culturally or religiously diverse student populations may tailor the framework by embedding their own value systems, such as professional identity formation, character education, or culturally responsive guidance. Implementing small, stable

mentor-mentee groups, equipping mentors with simple communication guidelines, and encouraging regular yet flexible touchpoints can enhance continuity, rapport, and early identification of student needs. Inclusivity can be further strengthened by forming groups with diverse backgrounds, establishing respectful group norms, and providing mentors with training in culturally sensitive communication. Together, these strategies enable other institutions to adopt group mentoring models that are scalable, supportive, and responsive to the needs of diverse learners.

A. Advantages and Limitations

The mixed-methods approach utilised in this study provided a comprehensive understanding of participants' experiences by combining quantitative and qualitative data, allowing for a nuanced exploration of perspectives. The electronic distribution of the questionnaire enhanced accessibility, enabling participants to respond at their convenience and potentially increasing the response rate. A key strength of this study is its novel contribution to the mentoring literature: it examines a group-based, faculty-led mentoring model situated within a non-Western, Islamic educational context and adopts a holistic framework that integrates academic, emotional, ethical, and spiritual support. This culturally grounded perspective is underrepresented in existing literature, which is largely centred on Western or secular models of mentoring.

However, the study has limitations. Requiring only a minimum response per group, rather than from every individual, may have led to less comprehensive data collection. Additionally, the reliance on self-reported data introduces the possibility of response bias, as participants may have been influenced by social desirability or recall limitations. Furthermore, although content validity was established through review by subject-matter experts, the questionnaire was not formally validated for face and construct validity. Additionally, reliability was not assessed using measures like Cronbach's alpha, which may affect the robustness of the findings. The study's focus on a single institution may also limit the generalisability of the findings to other contexts or settings. These factors should be considered when interpreting the results and designing future research.

V. CONCLUSION

Pre-clinical students of KOM, IIUM perceive the mentor mentee programme as highly beneficial and reported high satisfaction. The high satisfaction and perceived helpfulness ratings highlight the programme's success in providing academic guidance, peer collaboration, mental health support, and spiritual and ethical mentoring, which were particularly valued by students. These findings reinforce the importance of a holistic approach to mentoring in medical education. Key aspects of effective mentoring practices included addressing holistic wellbeing, providing targeted academic support, offering personalised feedback, active listening, and fostering open communication between mentors and mentees. Identified areas for improvement include increasing the frequency of meetings, standardising mentor training to enhance empathy and communication skills as well as incorporating spiritual and ethical guidance for the students. To enhance the programme, the Kulliyyah may consider revising existing mentor guidelines to ensure consistency and provide targeted training to address emotional barriers and communication challenges. Structuring meetings more frequently and effectively can facilitate regular feedback and support. Future research should explore the perspectives of mentors, assess long-term impacts through longitudinal studies, and evaluate mentoring in diverse institutional contexts. These efforts will refine the programme and better prepare students for the demands of clinical practice while supporting their holistic development.

Notes on Contributors

Hidayatul Radziah Ismawi was involved in conceptualisation, methodology, investigation, formal analysis, data curation, writing both the original draft and editing, and reviewing the final draft, visualisation of data and project administration.

Wan Fatein Nabeila Wan Omar was involved in conceptualisation, methodology, data curation, editing and reviewing the final draft, and visualisation of data.

Azril Shahreez Abdul Ghani was involved in conceptualisation, methodology, investigation, formal analysis, data curation, editing and reviewing the final draft, and visualisation of data.

Wan Muhamad Salahudin Wan Salleh was involved in conceptualisation, methodology, editing, and reviewing the final draft.

Nurulhasanah Mustapar was involved in conceptualisation, methodology, editing, and reviewing the final draft.

Ethical Approval

Ethical approval from IIUM Research Ethics Committee (IREC) – IREC 2024-336 was obtained for data collection from October to November 2024.

Data Availability

Given the personal nature of the data, all data will only made available upon written request to the corresponding author with the agreement of all authors and IIUM.

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Declaration of Interest

The authors report no conflict of interest. The authors alone are responsible for the content and writing of the paper; a grammar-checking software was used to ensure the language was accurate.

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Appendix A

MENTOR MENTEE SURVEY (23/24)

By completing this survey you agree that the answers may be reviewed for the purposes of improvement as well as research into the effectiveness of the mentor mentee system. All particulars of respondents will be kept anonymous. Thank you for participating.

* Required

1. NAME OF MENTOR *

Enter your answer

2. YEAR *

- ◯ 1 (AUDENTIA)
- ◯ 2 (AETHRA)

3. GENDER *

- ◯ MALE
- ◯ FEMALE

4. Answer the following: *

	Strongly disagree	D	Disagree	Neutral	Agree	Strongly agree
I like my mentor mentee group.	◯	◯	◯	◯	◯	◯
I think mentor mentee meetings are	◯	◯	◯	◯	◯	◯ helpful.

5. How would you describe your overall experience with the mentor-mentee system? *

Enter your answer

1. Can you provide specific examples that highlight positive or negative aspects of your experience? *

Enter your answer

2. In what ways has the mentor-mentee system contributed to your academic, professional & personal development? (Elaborate on particular skills or knowledge areas where you felt your mentor significantly impacted your growth) *

Enter your answer

3. What challenges or obstacles have you encountered in your interactions with your mentor? *

Enter your answer

4. What improvements would you recommend for the mentor-mentee system to better support Phase 1 students? (Resources, structures, or types of support that you think should be added or enhanced) *

Enter your answer