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Medical school applicants' perceptions of an entrance examination developed through participatory action research: a convergent mixed methods study

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Medical school applicants' perceptions of an entrance examination developed through participatory action research: a convergent mixed methods study

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Abstract

Background

Medical student selection is a topic of considerable public interest. The viewpoint of applicants is important since it has numerous practical consequences. Knowledge about applicants' perceptions of selection methods remains scarce.

Objective

To investigate the perception of medical program applicants regarding a homegrown entrance examination that is continuously developing through action research.

Methods

A convergent mixed methods study design was employed. Quantitative and qualitative data were concurrently collected, using an electronic survey of five-point Likert-type scale and open-ended questions, and independently analysed. Primary inferences from the analyses were merged using the iterative Pillar Integration Process, generating a joint display model.

Results

Out of 382 applicants, 338 responded. The quantitative data analysis revealed a mean overall acceptance score of 68.23 ± 4.29%. The qualitative data analysis generated a conceptual model of five interconnected themes, namely: Strengths, Identity positioning, Perceived performance, External attribution, and Opportunities for improvement. Lastly, four meta-inferences emerged from integrating the data findings: Appraisal, and Sense of self, Personal attributes, and Pressure to perform.

Conclusion

Participatory action research can contribute to strengthening quality culture in medical education. The entrance examination was broadly accepted by medical school applicants; however, acceptance varied by educational background. The findings support specific, actionable improvements. The perception of applicants is affected by personal attributes, sense of self, and pressure to perform. Acknowledging those variables in the design, implementation, and evaluation of applicants' selection methods will likely improve the corresponding tools' construct validity, along with positively influencing the candidates' attitudes and behaviours.

Keywords

Medical education; participatory action research; student selection; entrance examination; applicant perceptions; United Arab Emirates

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Introduction

Quality assurance is a central expectation in higher education, where institutions rely on formal frameworks to monitor, control, and improve educational practices (Stalmeijer et al., 2023). While these systems are essential for accountability and accreditation, they can devolve into bureaucratic 'box-ticking' exercises that generate data disconnected from meaningful improvement (Wong & Headrick, 2021). To counter this, contemporary perspectives emphasize an enhancement-oriented approach, encapsulated in the concept of quality culture: a combination of shared values and commitments to quality alongside structured processes that coordinate improvement efforts. Strengthening such a culture requires thoughtful design of evaluation tools, active stakeholder engagement (Lucander & Christersson, 2020), and iterative cycles of feedback and change (Rohlin et al., 2002; Stalmeijer et al., 2023). Within this landscape, implementation science offers strategies to translate evidence into routine practice (Carney et al., 2016; Holmboe et al., 2023; Price et al., 2015), while action research provides a practical, cyclical framework through which educational interventions can be continuously designed, evaluated, and refined in collaboration with relevant stakeholders (Du Plessis et al., 2021; Du Preez et al., 2025).

A key implication of this perspective is that educational quality must be understood through the eyes of its stakeholders (Lucander & Christersson, 2020). Medical student selection, in particular, is a high-stakes and publicly scrutinized process (Patterson et al., 2016; Singh et al., 2017) involving diverse groups, including applicants, educators, institutions, and society at large (Gottlieb et al., 2025; Hallia et al., 2025). Ensuring the legitimacy and effectiveness of selection systems, therefore, depends not only on psychometric robustness but also on their perceived fairness and acceptability (Stalmeijer et al., 2023). Among these stakeholders, applicants occupy a uniquely important position: their perceptions can influence performance

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(Hallia et al., 2025), motivation, withdrawal decisions, and even the construct validity of selection tools (Singh et al., 2017). Moreover, negative perceptions, especially regarding fairness, may disproportionately discourage individuals from underrepresented or lower socioeconomic backgrounds, with implications for widening access to the medical profession (An et al., 2023; Keadkraichaiwat et al., 2026; Kelly et al., 2018; Perez et al., 2023).

Despite their importance, applicants' perspectives on selection methods remain underexplored (Fikrat-Wevers et al., 2024; Perez et al., 2023). Existing research is dominated by quantitative approaches (Kelly et al., 2018), often overlooking the nuanced meanings applicants assign to their experiences and rarely examining variability within applicant subgroups (Fikrat-Wevers et al., 2023; Kelly et al., 2018). This gap limits understanding of how selection processes are interpreted, accepted, or contested in practice. Qualitative and mixed methods approaches are therefore needed to capture the sophistication of these perceptions, and to inform more equitable and context-sensitive selection practices. In response, the present study investigates how applicants perceive a continuously evolving, homegrown entrance examination developed through participatory action research. This study addressed three research questions corresponding to the quantitative, qualitative, and integration components of a convergent mixed methods design, respectively{as per established mixed methods research reporting standards (Levitt et al., 2018)}:

1. To what extent did applicants accept the entrance examination, and which variables were associated with the level of acceptance?
2. How did applicants appraise the entrance examination and their experience of it?
3. What factors come together to shape the applicants' perception of the entrance examination?

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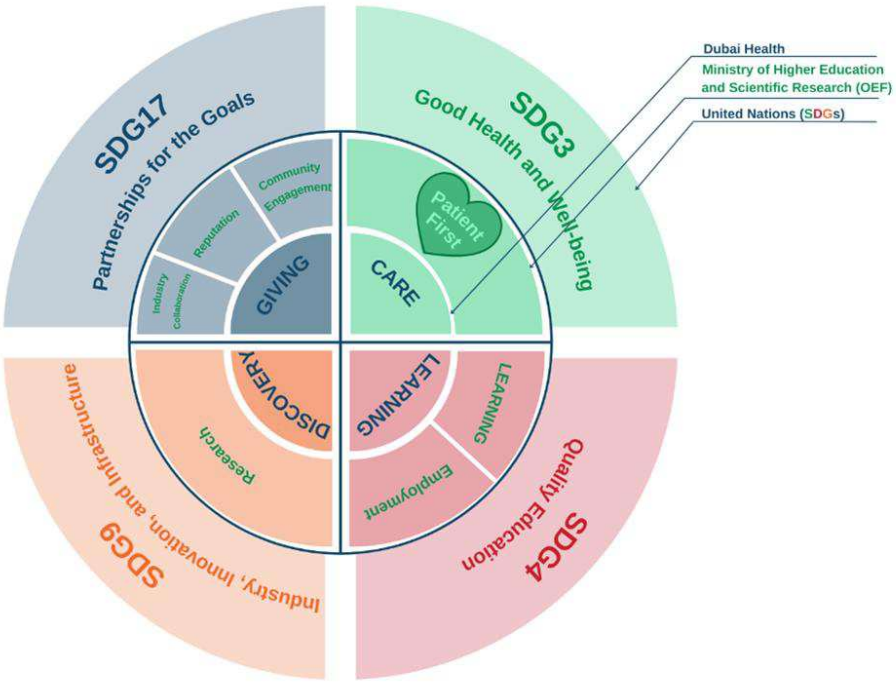
Methods

Context of the study

This study was conducted at Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU), part of Dubai Health, an integrated academic health system (Wartman, 2015) in Dubai, UAE (Health, 2023; Sciences, 2025). MBRU offers a six-year Doctor of Medicine program (previously designated MBBS), structured across preclinical (Years 1–3) and clinical (Years 4–6) phases. The six-year program follows a spiral curriculum (Banerjee et al., 2019), progressing from foundational sciences (Year 1) through systems-based pathology with clinical exposure (Years 2–3) to full-time clinical rotations (Years 4–6) (Al-Jayyousi et al., 2025; Azar et al., 2021).

In addition to sharing its goals with Dubai Health, as illustrated in Figure 1, MBRU aligns its efforts nationally with the Ministry of Higher Education and Scientific Research- Outcome-based Evaluation Framework (OEF) (Research, 2025) and internationally with the United Nations- Sustainable Development Goals (SDGs) (Al-Jayyousi et al., 2025; Nations, 2015).

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120

121 *Figure 1 MBRU's alignment with Dubai Health, Outcome-based Evaluation Framework (OEF), and select Sustainable*
122 *Development Goals (SDGs), as first illustrated in another mixed methods investigation that took place in the same context*
123 *of the current study (Al-Jayyousi et al., 2025). This figure shows how the pillars of Dubai Health (Care, Learning, and*
124 *Discovery, and Giving) are feeding into the pillars of the ministerial Outcome-based Evaluation Framework (OEF), which in*
125 *turn contribute to select Sustainable Development Goals (SDGs). Patient first is the core value of Dubai Health,*
126 *differentiating MBRU from the rest of the Higher Education Institutions governed by the OEF of the UAE Ministry of*
127 *Higher Education and Scientific Research.*

128 MBRU's culture is characterized by continuous improvement, evidence-based decision-
129 making, and effective deployment of ongoing cycles of implementation science, including
130 and not limited to action research (Du Plessis et al., 2021; Du Preez et al., 2025) and design-
131 based research (Al-Jayyousi et al., 2025; Khalaf et al., 2025; Otaki et al., 2025; Farah Otaki et
132 al., 2022). The entrance examination process, that was investigated in the current mixed
133 methods study, is an example of a collective experience that has been following the principles
134 of action research. As for design-based research, it is the means by which MBRU
135 continuously improves the practice (while contributing to the theory of the subject matter)

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around innovative (commonly homegrown and 'greenfield') interventions, learning and teaching or otherwise.

Description of the process of developing the entrance examination

The process of developing and maintaining the entrance examination has been in alignment with the principles of action research. It involves investigations, reflections, and improvements of practice, through ongoing cycles of planning, acting, observing, and reflecting, as described below, for a single cycle, following Template for Intervention Description and Replication guidelines (TIDieR) (Gadaire & Kilmer, 2020; Hoffmann et al., 2014).

Planning

The UAE Ministry of Higher Education and Scientific Research mandates all medical programs across the UAE [accredited by the Commission for Academic Accreditation (CAA): the UAE federal government quality assurance agency for higher education] to administer entrance examinations that filter applicants based on a minimum threshold of required acumen in the basic science disciplines of biology, chemistry, physics, and mathematics. The aim of this requirement is to assure the quality of admission processes of medical schools across the nation, maximizing chances of learners' success, and minimizing attrition rates, and the corresponding tangible and intangible costs. Accordingly, the CoM Chair of the Student Admission Committee (SAC) appointed a lead and co-lead, who in turn nominated five additional faculty members, based on their experience in the above-mentioned basic science disciplines, in terms of subject matter knowledge and assessment processes. Together, these seven faculty members constituted the MBRU entrance examination core team.

This core team commenced its journey with careful planning, acknowledging that the process is inherently cyclical. The overall objective of this ongoing collective effort is to develop and

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maintain a standardized entrance examination that would effectively assess applicants' comprehension of essential scientific principles relevant to university-level medical sciences. This examination would serve as a screening tool to determine whether applicants progress to the next step in the admissions process (namely: multiple mini-interviews).

The core team envisioned for this examination to be reflective of the country, in general, and the Emirate in which the corresponding medical program is offered: Dubai, more specifically. This is to increase the likelihood that ultimately the graduates of this program are as relevant to and prepared for the context in which they are graduating from as possible, and also to raise their suitability and chances of success in matching for residency programs nationally and internationally. The core team members acknowledged that the UAE is a characteristically multi-cultural, multi-ethnic setting, and is considered the most globalized country in the MENA (Alameddine et al., 2022; Gygli et al., 2019; KOF, 2025). Another unique characteristic of the UAE educational system is the diversity of high school curricula offered within the country.

Additionally, MBRU attracts applicants from diverse backgrounds across the region and internationally (Makki & Khalid, 2025; Tournois, 2024). Therefore, ensuring that the examination will fairly assess the acumen of (at least, most) the applicants was among the core team's top priority. They were intentional about striking a balance between remaining inclusive through representing the various curricula (i.e., covering widest possible range), while leveraging the core team members' respective professional expertise in entry level requirements irrespective of the respective learners' previous exposure/ high school offerings. As such, an informed decision was made to align the examination learning outcomes with International General Certificate of Secondary Education (IGCSE) and to adapt the core team's workflow accordingly.

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The development of a question bank was necessary to ensure sustainability, since the entrance examination will need to be conducted repetitively (on an annual basis), and to allow space for choice. Accordingly, the core team decided to generate more questions than initially required for the first examination cycle.

Acting

A series of meetings were conducted from October 2022 to February 2023, during which the following actions were completed:

- A comprehensive guide, outlining the learning outcomes in the four science domains: biology, chemistry, physics, and mathematics, was developed
- A question bank, with multiple-choice questions aligned with these learning outcomes, was created
- The created questions were vetted for appropriateness and correctness
- Decisions were made regarding the structure, duration, blueprint, and mode of administration of the examination
- Two different versions of the examination for a mixed administration approach: onsite (UAE residents) and online (international applicants, and UAE residents unable to attend physically, such as male students in the military), were constructed
- Detailed implementation schemes for the delivery and conduct of the examination were put in place
- A tailor-made survey to evaluate the extent of applicants' acceptance of the entrance examination was developed

In preparation for Academic Year 2023-2024, the examination and survey were delivered and conducted, onsite (in two sittings) and online, in February 2023. The examination consisted of 60 equally weighted, best-of-four multiple-choice questions. The distribution of questions

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was in favour of biology and chemistry (20 each) whereas physics and mathematics were allocated 10 questions each. The total time allocated was 90 minutes. For the onsite sittings, the applicants were expected to remain seated until the end of the allocated time, when they were requested to complete the post-examination survey, after which they were instructed to exit the examination hall. Following that, the core team assessed and analysed the applicants' performance in the exam, leading to recommendations on the pass/ fail threshold and its contribution to the MBBS program's entry criteria at MBRU.

Observing and reflecting

Throughout these two interconnected phases, the core team closely monitored and evaluated the implementation of their plan. They scrutinized the exam, considering factors like reliability and validity, and its effectiveness. In other words, they assessed how well the examination measured exam-takers' cognitive abilities and its usefulness as a screening tool to determine whether applicants progress to the next step in the admissions process. The exam's sustainability resurfaced in those phases. As laid out in the Planning phase, the decision to always generate more-than-needed questions was reinforced with an acknowledgement that round after round, the selected questions need to be different enough without compromising the integrity of the examination (i.e., test-retest reliability).

Other parameters that were considered included: security (including safeguarding examination content), cost-effectiveness, and adherence to pandemic-related protocols. The core team members also examined trends in participants' performance across individual questions and identified questions that a high proportion of the participants answered incorrectly. They, in turn, reappraised the quality and reusability of those questions. The questions that were deemed 'suboptimal' were either retired or revised.

The core team, as part of those two interconnected phases, also considered means of maximizing the value of their work. The team members viewed the process of developing the

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exam, and the exam, in itself, worth adapting by other medicine and health sciences higher education institutions, especially those dealing with applicants from diverse curricular backgrounds. In addition to reflecting on the process and its output, and patterns of performance, the core team systematically and systemically analysed the data collected through the post-entrance examination survey, that captured the applicants' perception of the entrance exam.

Research Design

A convergent mixed methods study design was employed to gain a systemic understanding of applicants' perception of the entrance examination which constitutes the output of a structured process anchored in principles of action research. Quantitative and qualitative data were concurrently collected using an electronic survey and independently analysed. Merging the primary inferences from the two sources was done to raise the validity of the study's findings, and relied on the iterative Pillar Integration Process (PIP) which generated a unique joint display model (Johnson et al., 2019). This technique provides a structured approach to combining findings from different analyses, facilitating a deeper understanding of the subject under investigation (Hall & Mansfield, 2025).

In its entirety, the research project covered three phases (Figure 2).

<table>
<tr><th>I
Data collection</th><th>II
Data analyses</th><th>III
Integration</th></tr>
<tr><td rowspan="2">Tailor-made survey</td><td>Descriptive and inferential quantitative analyses</td><td rowspan="2">Pillar Integration Process (PIP)</td></tr>
<tr><td>Application of Braun and Clarke six-step approach to qualitative analysis</td></tr>
</table>

Figure 2 Visual representation of the current multi-phased convergent mixed methods reported upon in the current study.

Phase I of the current research work involved the development of a tailor-made survey, conducting face and content validity, and in turn assembling it for data collection. The analyses and identification of key findings were conducted independently in Phase II. The

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quantitative data was analysed through descriptive and inferential analyses. For the qualitative component, the Braun and Clarke six-step approach (Braun & Clarke, 2006) was employed to inductively analyse the data. This multi-staged approach to thematic analysis is commonly deployed in research around health and care professions' education (Buhumaid et al., 2024). NVivo software version 12.0 plus (QSR International Pty. Ltd., Chadstone, Australia) (15, 2025) was used to assign codes to the categories and themes, and in turn, facilitate the categorization of the text fragments highlighted by the data analysers. During Phase III of the current research work, the PIP was utilized to integrate the findings of the quantitative and qualitative analyses, and meta-inferences were generated (Johnson et al., 2019). PIP involves four stages: listing, matching, checking, and pillar-building, with the goal of identifying meta-inferences (Drury et al., 2023; Gauly et al., 2024; Hall & Mansfield, 2025).

Ethical approval for the study was granted by the Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU) Institutional Review Board (Reference # MBRU-IRB-2025-873) and Dubai Scientific Research Ethics Committee (DSREC_GL14-2026).

Data Collection

The data was collected using a tailor-made survey (Appendix), assembled via Explorance Blue (Explorance, 2019): a comprehensive, automated feedback analytics platform designed primarily for higher education (Amir Rad et al., 2021). The survey's overall purpose was to evaluate the extent of applicants' acceptance of the entrance examination.

It was developed taking into account the importance of effectively obtaining evaluation data without burdening the applicants, and to solicit both quantitative and qualitative feedback. The survey was composed of two parts. The first part corresponds to demographics, and inquiries about age; nationality; initiation/ attainment of previous university degree (including specification of major/ degree); and high school country and curriculum (including single

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subjects currently taking/ in final year). The second part includes a five-point Likert-type scale with six components, namely: the Entrance Examination Acceptance Tool (Table 1), reflecting the extent of the applicants' acceptance of the entrance exam, followed by a single selection question, inquiring about the subject that the respective applicant found most difficult, and three open-ended questions: request to indicate strengths and ways to improve the entrance exam, and space for any additional comments or reflections.

Table 1 Components of the Entrance Examination Acceptance Tool of a five-point Likert-type scale

Component Number	Component Label
1	The information shared about the Entrance Examination by MBRU was helpful
2	The Guide provided by MBRU was useful in preparing for the Entrance Examination
3	I was previously taught about most of the concepts tested in the Entrance Examination
4	I was well-prepared for the Entrance Examination
5	The level of difficulty of the Entrance Examination was reasonable
6	I was satisfied with my performance in the Entrance Examination

The survey protocol underwent two validation phases. Firstly, four faculty members at CoM and one staff member at the Strategy and Institutional Excellence unit at MBRU were engaged in the content validity. Secondly, the questions of the data collection tool were discussed with two medical students to assess clarity, comprehensibility, and readability, as well as the flow in which they were presented (i.e., face validity). The confidentiality of the participants was maintained throughout the research study.

Since the tool was initially developed for institutional purposes, it was not anonymous and the participants were informed accordingly (Appendix). The secondary use of the corresponding data for the current study was appropriately de-identified to protect the privacy

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of the participants and anonymity of their responses, in alignment with the relevant guidelines followed by the above-mentioned local research authorities.

This ten-minute survey was available online and accessed after the examination concluded. The applicants received an electronic invitation, clearly indicating that their participation is completely voluntary, and that their privacy and data confidentiality would be protected. Since the survey was self-administered, interviewer and assistant biases were avoided (Choi & Pak, 2005).

Data Analysis

Quantitative Analyses

The quantitative data were analysed using SPSS for Windows version 27. The descriptive analysis consisted of computing the proportions for all categorical variables. Additionally, an overall acceptance score of the six components of the Entrance Examination Acceptance Tool was computed. The mean and standard deviation for the overall acceptance score and each component of it were then calculated. Cronbach's Alpha was performed to test the internal consistency of the Entrance Examination Acceptance Tool, and the Principal Component Analysis (PCA) of the Kaiser-Meyer-Olkin (KMO) and Bartlett's test (accompanied by bivariate analysis) was performed to assure its external variance.

To select the appropriate inferential analysis tests, a test of normality (Kolmogorov-Smirnov) was conducted for each of the six components of the Entrance Examination Acceptance Tool and its overall score. The data were all found to be not normally distributed.

Thus, Mann-Whitney tests were used to test potentiality of associations between the overall score of acceptance, and each component independently, and the dichotomous variables: High School Country, and whether, or not, the participating applicant had taken each of the following subjects (independently): Biology, Chemistry, Mathematics, and Physics, in their final year at high school, and also whether the participating applicant belongs to 15-18 or 19-

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22 age range, and is UAE national or not. Kruskal-Wallis one-way analysis of variance test was used to assess the potentiality of associations between the overall score of acceptance, and each component independently, and High School Curriculum and the Most Difficult Subject (among four options: Biology, Chemistry, Mathematics, and Physics).

Qualitative Analysis

After completion of data collection, the data was inductively analysed by four researchers (R.K.J., A.S., I.P., and F.O.). Each entry (corresponding to a single study participant) was assigned a serial identification number (i.e., 1 through 338). The data analysers acknowledged their positionality prior to analysis to enhance reflexivity and analytical integrity. One of the four data analysers (F.O.) assured the rigor of the deployment of the analytical framework throughout the analysis process by ensuring the consistent application of the underpinning assumptions. By displaying rather than avoiding the investigators' personal involvement in the analysis, and by appraising interpretations based on their impact on participants, investigators, and readers (Stiles, 1993), the quality control exercised in this investigation shifted from the objective truth of statements to understanding by the data analysers.

The analysis was based on a constructivist epistemology. This expositional approach enabled the attainment of an in-depth understanding of the subject of investigation. The analysis followed the six-step approach introduced by Braun and Clarke (Braun & Clarke, 2006). This systematic approach to inductive thematic data analysis has been highly supported in the field of health and care professions' education research (Gale et al., 2013).

The first step involved the four researchers familiarizing themselves with the qualitative dataset. The data was segmented into meaningful statements that relate to the overall purpose of the current research work and the corresponding research question. In the second step of the analysis process, text fragments referring to the same aspect of student perception were

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clustered and grouped under one broad label. The dataset was examined line-by-line, until data saturation was attained, and accordingly, a preliminary coding scheme was generated. The dataset was examined line-by-line, generating a preliminary coding scheme. Coding continued iteratively until no new patterns were identified across the dataset [i.e., sufficient thematic coverage was achieved (Braun & Clarke, 2006)].

The multiple ways in which the preliminary codes related to one another were identified. This enabled the generation of categories which covered all the meaningful concepts that surfaced through the discussions that were integral to the analysis process. For the third step of the adapted analysis approach, the categories were examined to identify the best approach to merging them into overarching themes. In the fourth step, the generated themes and categories were reviewed to ensure data grouping was valid and there was sufficient difference between the clusters to justify segregation (Figure 3).

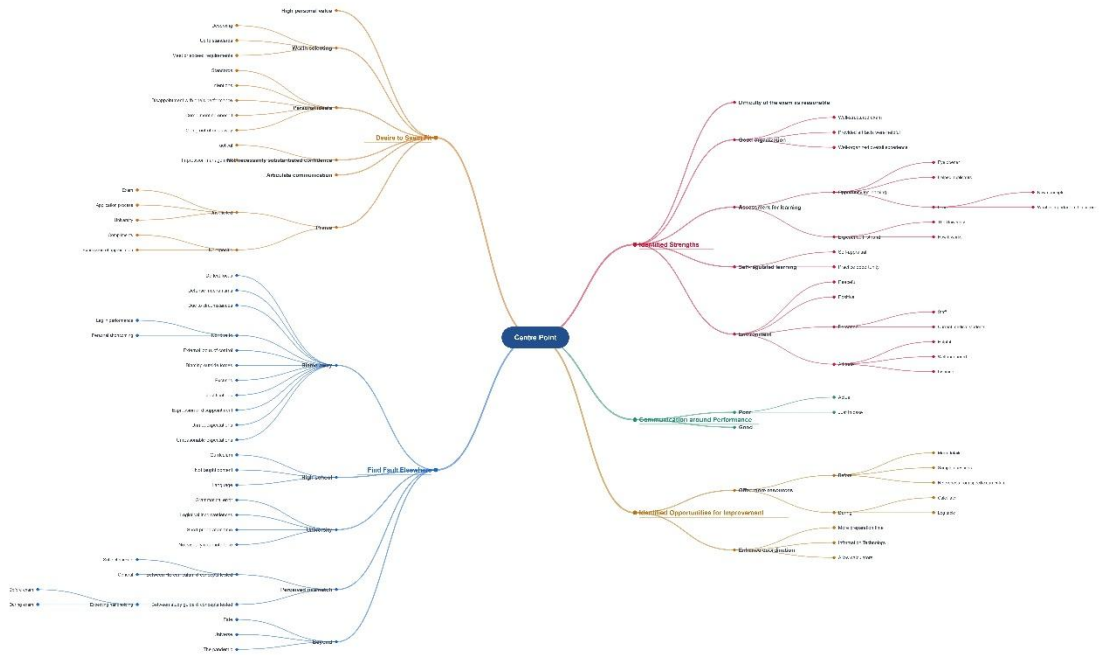


Figure 3 Mind map deployed as a tool to facilitate the qualitative analysis. This figure is meant to demonstrate a steppingstone in the analysis process. The output of the respective analysis is represented in Figure 5.

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To complete stage five, all categories and themes were coded and in turn defined in the context of the study. A respondent validation followed, in which ten randomly selected Year One students were invited to a virtual discussion (eight of whom joined the corresponding Microsoft Teams meeting). During this virtual meeting, one researcher (FO) talked the attendees through the qualitative research questions and analysis process, and in turn, showcased the generated conceptual model. After considering how well their responses resonated with the output of the analysis process (i.e., the generated model), the attendees agreed with all the identified codes, and how the categories and themes relate to one another. The sixth and final step of the approach included reporting narratively on the study findings, as per established qualitative research reporting standards (Levitt et al., 2018).

Information Integration

The findings from the quantitative analysis were merged with those of the qualitative analysis, using the iterative joint display analysis methodology, generating meta-inferences (Guetterman et al., 2015). As part of the joint display analysis, the primary inferences were compared, and areas of similarity and differences were highlighted. Findings that did not overlap between the two sets of findings, and were unique to one of the two outputs of independent analyses were also analysed. Through the integrative process (as opposed to pure triangulation), the researchers were able to emphasize key findings from both analyses, identifying areas of corroboration, as well as discordance. In other words, integration or merging of findings allows going beyond looking at where findings from different data sources confirm each other (i.e., triangulation) to portray areas where findings from different sources refine or expand overall understanding, or even contradict each other (Fetters et al., 2013). Accordingly, the integration of the two sets of findings allowed the researchers to develop a holistic understanding of applicants' perception of the entrance examination which constitutes the output of a structured process anchored in principles of action research.

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Results

Quantitative Analyses

Out of 382 applicants, 338 responded (i.e., response rate = 88.5%).

Among the 338 participating applicants, 51 (15.1%) were 16 years old, 187 (55.3%) were 17 years old, 83 (24.6%) were 18 years old, 11 (3.3%) were 19 years old, 1 (0.3%) was 20 years old, 1 (0.3%) was 21 years old, and 4 (1.2%) were 22 years old. Accordingly, the median age of participants was 17 years (range: 16-22), with the majority (95.0%) aged 16-18. In terms of their nationalities, 98 (29.0%) were United Arab Emirates (UAE) nationals, and the rest were of other nationalities, as shown in Figure 4.

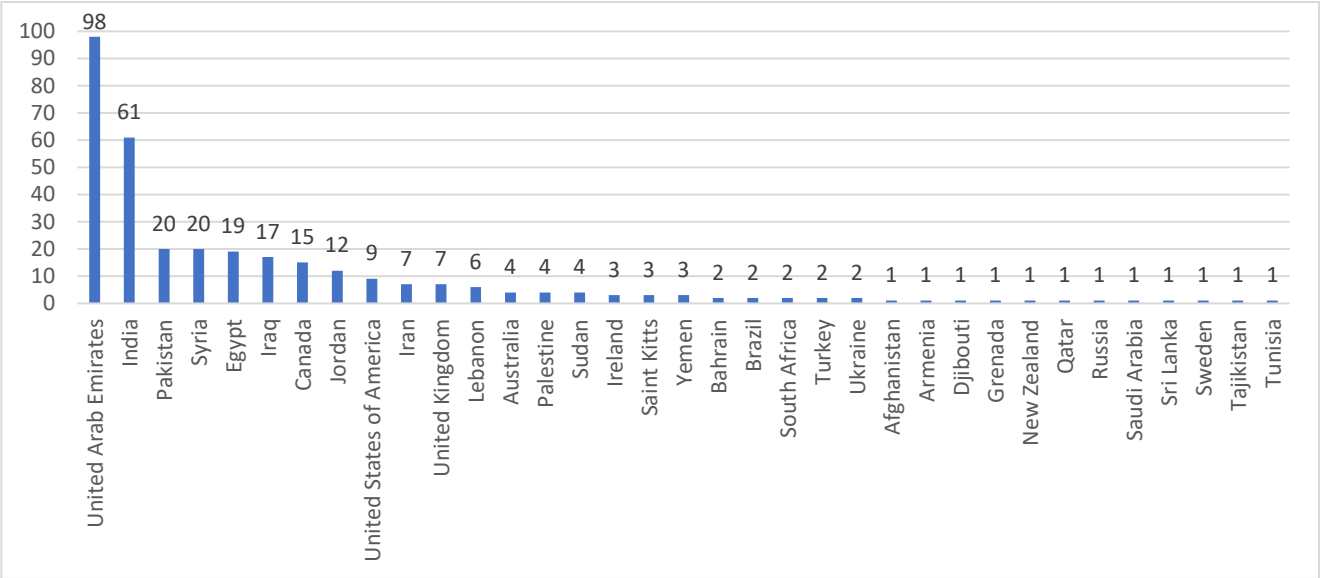


Figure 4 Frequency distribution of participating students' nationalities

Of the 338 participating applicants, 15 participants (4.4%) had previously started a university degree, of whom five participants (33.3%) completed these degrees. In terms of the country in which they completed their high school years, 328 participating applicants (97.0%) indicated that they attended high school in the United Arab Emirates, and 10 participating applicants (3.0%) indicated other countries. As for their high school curriculums, 131 participants (38.8%) indicated they took the American curriculum, 81 (24.0%) indicated British, 34 (10.1%) indicated Indian, 42 (12.4%) indicated International Baccalaureate, 28

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(8.3%) indicated United Arab Emirates (UAE) government, 13 (3.8%) indicated SABIS, and 9 (2.7%) indicated Others. Among the 338 participating applicants, 302 (89.3%) took Chemistry in their final year at high school, 274 (81.1%) took Biology, 266 (78.7%) took Mathematics, and 203 (60.1%) took Physics. Chemistry was perceived as the most difficult subject in the Entrance Examination among 258 (76.3%) of the participating applicants, followed by Physics where 45 participating applicants (13.3%) selected it as the most difficult subject, then Biology selected by 21 participating applicants (6.2%), and lastly, 14 (4.1%) participating applicants selected Mathematics.

The reliability score of the Cronbach's Alpha for Entrance Examination Acceptance Tool was 81%. The percentage of the total average of the overall acceptance of the entrance examination score was 68.23% (Table 2).

The KMO measure of sampling adequacy was 0.81, indicating that the data were suitable for factor analysis. Bartlett's test of sphericity was significant ($\chi^2 = 625.18$, df = 15, $p < 0.001$). PCA revealed one component with an eigenvalue exceeding 1.0, accounting for 51.56% of the total variance. Along the same lines, the Bivariate Spearman Correlations showed how changes in the overall acceptance of the entrance examination score can be explained by changes in all six components.

Table 2 Output of descriptive quantitative analysis of the components and overall score of the Entrance Examination Acceptance Tool

Component	Mean (SD)	Percentage of the Mean	Category
1: The information shared about the Entrance Examination by MBRU was helpful	3.92 (0.96)	78.40%	A
2: The Guide provided by MBRU was useful in preparing for the Entrance Examination	3.66 (1.02)	73.20%	A
3: I was previously taught about most of the concepts tested in the Entrance Examination	2.92 (1.15)	58.40%	N-A

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4: I was well-prepared for the Entrance Examination	3.43 (0.97)	68.60%	N-A
5: The level of difficulty of the Entrance Examination was reasonable	3.37 (0.95)	67.40%	N-A
6: I was satisfied with my performance in the Entrance Examination	3.17 (0.95)	63.40%	N-A
Overall Acceptance of Entrance Examination score	**20.47 (4.29)**	**68.23%**	**N-A**

N= Neutral and A= Agree

The extent of entrance examination acceptance (overall score, and each of the six components of the tool, independently) was not significantly associated with High School Country ($p > 0.05$). For the age range, participating applicants belonging to 19-22 age range rated the following component: 'I was well-prepared for the Entrance Exam' significantly higher than those belonging to 15-18 age range ($p = 0.049$). Regarding the nationality of the participating applicants, non-UAE-nationals seemed to be significantly more accepting of the entrance exam, relative to the UAE-nationals, as measured by the overall score ($p = 0.036$), and also by the following components: 'I was well-prepared for the Entrance Exam' ($p = 0.042$) and 'The level of difficulty of the Entrance Examination was reasonable' ($p < 0.001$). Moreover, the extent of entrance examination acceptance, as measured by the overall score, was significantly higher among participating students from the Indian high school curriculum, followed by those who are in the International Baccalaureate, British, American, UAE Government, SABIS, and then, Others ($p < 0.001$). There were no statistically significant differences between the high school curricula of the participating applicants with regards to the following component: 'I was well-prepared for the Entrance Exam' ($p = 0.432$). However, there were statistically significant differences ($p < 0.001$) in the extent of entrance examination acceptance (as measured by the overall score) across participating applicants depending on what subject they perceived as most difficult; the highest overall acceptance rating was for those who selected Physics, followed by those who selected Mathematics, then Chemistry and lastly, Biology. Again, there was no statistically significant difference ($p =$

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0.369) between the participating applicants' choice of most difficult subject and the following component: 'I was well-prepared for the Entrance Exam'. Another component which revealed no statistically significant differences ($p = 0.071$) across the four choices of most difficult subject is: 'The guide provided by MBRU was useful in preparing for the Entrance Exam'.

Whether, or not, the participating applicants had taken Biology turned out to be not significantly associated with their overall score of entrance examination acceptance ($p = 0.088$). Taking Biology in high school, however, seemed to be significantly associated with higher ratings on the following component: 'I was previously taught about most of the concepts tested in the Entrance Exam' ($p = 0.015$). Whether, or not, the participating applicants had taken Chemistry (in the final year) was not significantly associated with neither their overall score of entrance examination acceptance ($p = 0.616$) nor any of the components independently ($p > 0.05$). Whether, or not, the participating applicants had taken Mathematics turned out to be not significantly associated with their overall score of entrance examination acceptance ($p = 0.177$). Taking Mathematics in high school, however, seemed to be significantly associated with higher rates on the following component: 'I was previously taught about most of the concepts tested in the Entrance Exam' ($p = 0.030$). Lastly, whether, or not, the participating applicants had taken Physics turned out to be not significantly associated with neither their overall score of entrance examination acceptance ($p = 0.584$) nor any of the components independently ($p > 0.05$).

Qualitative Analysis

The qualitative analysis led, as per this study's conceptual model: 'Applicants' Affinity to Entrance Exam' (Figure 5), to five interconnected themes, namely: Strengths, Identity positioning, Perceived performance, External attribution, and Opportunities for improvement. Within Strengths, five categories were identified: Reasonable difficulty, Good organization,

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Personnel's positive attitude, and Assessment for learning. Within the second theme: Identity positioning, the following three categories were identified: Nonspecific praise, Display high personal value, and Unsubstantiated confidence. Within the third theme: Perceived performance, the following two categories were identified: Poor and Good. As for the fourth theme: External attribution, it encapsulated: Perceived mismatch and Beyond. Lastly, within the fifth theme: Opportunities for improvement, the following three categories were recognized: Offer more resources and Enhance coordination.

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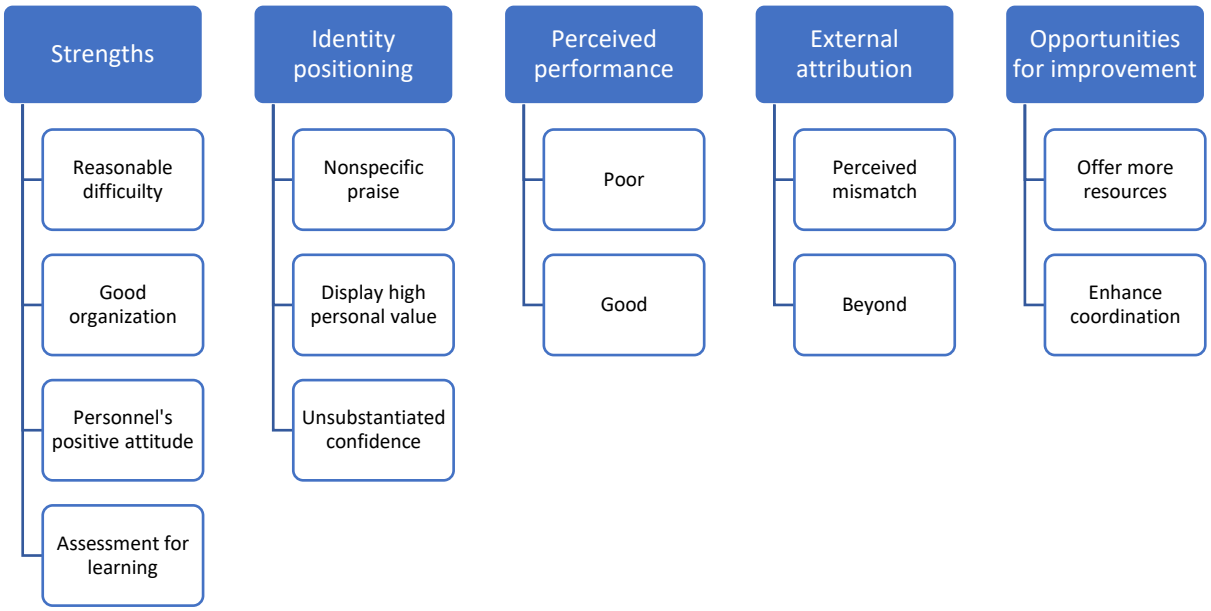


Figure 5 The study's conceptual framework: Applicants' Affinity to Entrance Exam

Strengths

This theme includes the strengths of the respective entrance examination experience as identified by the applicants. Most of the participating applicants described the difficulty of the examination as 'reasonable'.

46: "…It was a well-rounded exam…"

47: "…It was not a very difficult test- it was a reasonable entrance exam, in my opinion…"

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There seemed to be an agreement across the current study participants that the organization of the respective examination was ‘good’.

> 11: “…it was well-structured and all that was provided was helpful…”

> 21: “…the whole experience was well organized…”

The attitudes of the personnel involved were positively appraised by the study participants, where front-line stakeholders were described as ‘helpful’ and ‘well-mannered’.

> 46: “…everyone was friendly and here to help, which reduced stress levels…”

> 113: “…overall, I was satisfied with the test, especially the current medical students’ help…they are indeed so inspiring…”

The participating applicants also highlighted characteristics of the environment that they perceived as constructive (e.g., positive and peaceful).

> 21: “…I overall had a great experience with the examination as the involved staff members and supporting students were very helpful…”

> 85: “…It was a friendly environment; I went through the examination peacefully...”

The majority of the study participants seemed to have benefited from the exam, considering it an opportunity for learning (i.e., an ‘assessment for learning’).

> 63: “…Overall, it was a fantastic learning experience; I was able to see and experience firsthand the University and how it works…”

> 85: “…the entrance examination helped me learn new topics which seem important to the career I care to pursue, whether I obtain my medical degree from this university or otherwise…”

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A good proportion of those participants highlighted that the entrance examination process enabled them to learn new concepts.

> 3: "…the entrance examination was an eye opener. I plan to practice biology-based questions since I realized that my level in biology is not up to the expected level…"

> 23: "…going through the entrance examination process taught me a lot…I learned a lot of new concepts…"

Identity positioning

This theme captures the study participants' self-presentation and impression management, in their responses to the open-ended questions of the survey, including expressions of confidence, aspiration, and alignment with the university's expectations. It includes numerous reflections on personal ideals.

> 3: "…I intend to develop myself in biology; it seems that my current level is below what I would accept for myself…"

> 12: "…In conclusion, I would say I preformed decently well. Thank you…"

There appeared to be a clear desire, among the study participants, to seem fit for and/ or up to the standards of the university. A good proportion of the study participants attempted to appear as though they met (or better yet, exceeded) expectations and/or requirements of the university.

> 18: "…I am delighted to be chosen as one of the many applicants whose application was screened. I managed to teach myself most of the topics indicated in the study guide... I was aware of the concepts that were covered in International General Certificate of Secondary Education… I tried my best…"

> 64: "…Overall, I believe that I could have done better in the entrance exam… I now realize that I have the potential to do better in the examination with proper preparation…"

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Their responses showed that they wanted to seem deserving of and/ or worth selecting for the respective program. Some of the study participants appeared tactical, where they sandwiched suboptimal feedback between two identified strengths of their experience as part of the exam.

> 22: "…I do not think I had any trouble with biology in the exam…"

> 72: "…I am satisfied with my answers to the questions… this is what I know today, I did the best that I can with my current knowledge; when I know more, I will do better…"

Some study participants expressed strong confidence in their performance, which may or may not have been concordant with their actual examination results.

> 6: "…as an Applied Technology High School student, I am used to these types of questions especially the physics and biology ones; they were so easy for me…"

> 18: "…I am expecting to become an MBRU student soon…"

Many comments were complimentary in nature.

> 63: "…I loved it…the experience was fantastic…thank you…"

> 64: "…MBRU is a prestigious university…"

Encapsulated within this theme were plenty of nonspecific praises of the applicants' experience as part of the exam. They frequently expressed appreciation and acknowledgement of the exam, application process, and/ or university.

> 18: "…I highly appreciate this opportunity…"

> 21: "…Thank you for your efforts in organizing such a professional experience…"

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Perceived performance

This theme includes all text segments that depict the applicants' appraisal of their own performance in the exam. Several study participants reported dissatisfaction with their performance. Some may have pre-emptively tempered expectations, a response consistent with self-handicapping strategies documented in high-stakes assessment contexts.

> 30: "…I was confused with many questions relating to chemistry and math, and I did not understand how to use the logarithmic schedule…"

> 40: "…I was not satisfied with my performance as this is not me…"

There were many participants who seemed to believe and in turn have articulated that they performed well in the respective exam.

> 5: "…the examination was not so hard; I hope that I passed it…"

> 10: "…Overall, I am comfortable about my performance in the entrance exam…"

External attribution

This theme includes all the reflections where the applicants seemed to ascribe their (potential) lag in performance in the examination to perceived structural barriers: circumstances, and factors outside their locus of control.

> 2: "…The majority of the content of the entrance examination was not taught to me by my school which put me at a disadvantage, and therefore I had to study some of the content by myself using the entrance examination study guide…"

> 3: "…I believe that is because biology was taught to me only once in the 10th grade…"

Several study participants attributed perceived difficulty to factors they considered outside their control, such as gaps between their school curriculum and the examination content. This

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pattern of external attribution may be reflective of a self-protective response to a high-stakes evaluative situation.

> 4: "…as a student who studies the Ministry of Education curriculum, in Arabic, I found the entrance examination challenging because I am not used to studying these subjects in English. I hope you take this into consideration for all students who might have faced the same issue…"

> 6: "…I did not take most of the chemistry concepts that were tested in the entrance exam, which is why I found the entrance examination difficult…"

The study participants frequently contextualized their perceived performance by referencing their educational background and preparation constraints.

> 7: "…as someone who studied all these subjects in high school in Arabic, I found it difficult to revise and memorize the vocabulary of the whole curriculum in just two weeks…"

> 8: "…chemistry is so hard, most of the concepts were not taught in our schools…"

A substantial proportion of the study participants pointed to structural factors, such as: curriculum differences, language of instruction, and preparation time, as contributors to their examination experience.

> 18: "…I was not taught half of these topics in my high school. I also had taken a gap year which made it even harder for me to prepare for the exam…Majority of the topics were not taught in neither my 11^{th} nor 12^{th} grade…"

The applicants often pointed out factors that they perceived to disadvantage them compared to others.

> 19: "…I have not covered a lot of the content in school, so I had to teach it to myself…"

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595 Some of the corresponding comments revealed unmet expectations and disappointments (e.g.,
596 grammatical error, logistical inconveniences, insufficient preparation time, and visually
597 unclear interface).

598 7: "…I did study, but not unexpectedly, in 2 to 3 weeks, I was not able to cover everything…"

599 36: "…In number 9, I believe there was a mistake, as there was no right answer unless there
600 was a wording mistake…"

601 Some of the study participants' comments revealed their discomfort with uncertainty.

602 28: "…I think that we could have been given practice questions that reflect the difficulty level
603 of the examination because the study guide alone did not cover everything that came up in the
604 exam…"

605 14: "…give us better guidance on what concepts and content will come on the entrance
606 examination as a lot of the questions were not mentioned on the entrance examination study
607 guide…"

608 A perceived mismatch between the examination and what they were taught in high school
609 was often evident in the study participants' comments. The study participants sometimes shed
610 light on a perceived mismatch between the study guide and concepts tested by the exam.
611 Some of these comments were specific to certain subjects (i.e., content not taught) and others
612 were more generic (e.g., language).

613 81: "…The chemistry portion of the examination was said to be International General
614 Certificate of Secondary Education level, but the topics provided in the guide are taught in
615 Advanced Level/ Year 13 which has not been taught to us yet hence the examination was
616 difficult…"

617 90: "…the specificity of the guide could have been increased for us to know the extent of
618 details we need to learn about the included subtopics…"

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Some study participants expressed expectations regarding the degree to which the examination should accommodate differences in prior curricular exposure.

> 13: "…firstly, the entrance examination study guide refers to the reference materials of the International General Certificate of Secondary Education (IGSCE), but IGSCE curriculum does not cover many of the concepts listed in the study guide. It is stated that the study guide is close to the IGCSE curriculum, but that is not true. This might apply for math only, but for other subjects, the concepts tested for are all foreign…"

> 23: "…the university must ensure that all students covered all the topics and material required in school before taking the exam…"

Some applicants seemed to ascribe their (potential) lag in performance in the examination due to factors beyond a mere mismatch. A few applicants reflected on the effects of the pandemic on their performance, and others resorted to fatality and what the universe has in store for them.

> 31. "…I wish to write more in this section but due to time restrain I will make it short. We were taught biology in 10th grade at my school and due to the, at the time, COVID-19 situation we did not get the opportunity to go in-depth into the curriculum…"

> 64: "…and if it is meant to be, I will join the program… I intend to keep trying; if it is not this year, then in upcoming rounds… due to a national competition that I am participating in (National Science Technology and Innovation), I have not had sufficient time to properly prepare for the exam…"

Opportunities for improvement

This theme includes action-oriented feedback from the study participants, where they identified means through which the entrance examination could be enhanced.

> 52: "…It would have been very helpful if the reference books were provided for students who are not taking the International General Certificate of Secondary Education. Since I am

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studying the United Arab Emirates public curriculum; it is very different compared to the reference mentioned…"

76: "…Some questions required answer based on memorization (such as rules of solubility or a periodic table) which would have made the examination better if provided since these cannot be memorized, a formula sheet for physics would have also been good…"

A good proportion of those comments focused on providing more resources, including references and sample questions. Some applicants highlighted a need to provide applicants with additional details regarding the examination in advance. Some requested the allowance of calculators.

1: "…a calculator must be provided for better solving…"

33: "…In future, the guide that is given prior to the examination should be more detailed, clearly highlighting the topics that we may be assessed on. In addition to that, I believe that more sample questions should be provided so students undertaking the examination have a clear idea of the examination questions and style of these…"

Many applicants reflected on the potential of enhancing coordination, including allowing for a longer preparation time.

21: "…and the time we had between receiving the guide and the test date was not enough to self-learn the material that was not covered at school…"

83: "…Moreover, sharing the examination guide on the website (available to everyone) at least two months prior to the examination would give students sufficient time to prepare for the exam…"

A few applicants mentioned opportunities for improvement in information technology.

51: "…I had to leave school early to go for Information Technology support at MBRU and they informed me that the only way I could install lockdown browser would be through a new

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device. I did not have any at home, which meant I had to buy a new one the next day… making it a nerve-wracking experience…"

Information Integration

Four meta-inferences emerged from integrating the data findings, as illustrated in Figure 6 Appraisal, and Sense of self, Personal attributes, and Pressure to perform.

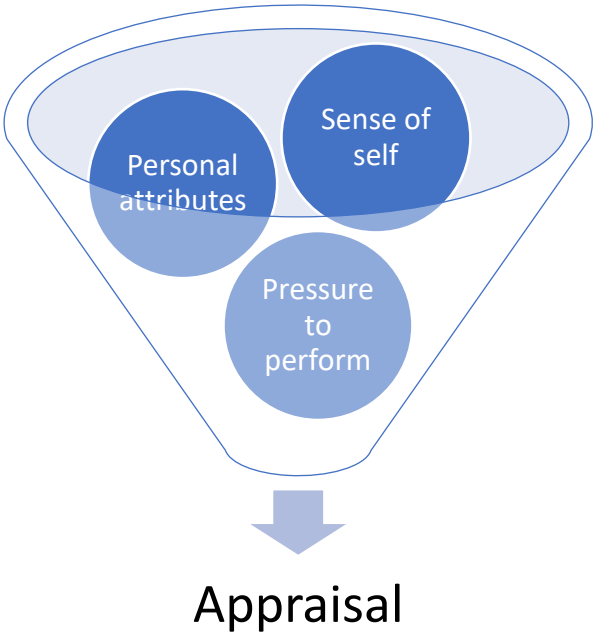


Figure 6 Factors that seem to come together to shape the applicants' appraisal of themselves and of what they experience (in the context of entering a medical school).

According to the output of the PIP, illustrated in Figure 7, the first meta-inference: Appraisal, resulted from a combination of *alignment* and *refinement* of understanding. The quantitative inferences brought forth the positive rating of the experience, as a whole, using the 'Entrance Examination Acceptance' scale. Similarly, the qualitative findings revealed positive self-appraisal, along with indications of strengths and opportunities for improvement of the entrance exam. The second meta-inference: Sense of self, is one of two outputs of findings' integration where the qualitative component of the current study resulted in *enhancement* of understanding by showing how elements such as: self-awareness and sense of entitlement, are coming into the interplay. The third meta-inference: Personal attributes, shows how the

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quantitative analysis resulted in *enhancement* of understanding by showing how the demographics of applicants play a role in their subjective appraisal of their experiences as they are entering medical school. Lastly, the fourth meta-inference: Pressure to perform, is the second output where the qualitative component of this study resulted in *enhancement* of understanding. In the fourth meta-inference, two categories of one of the themes generated from the qualitative analysis, namely: Identity positioning and External attribution, are indicative of the external pressures that the applicants appear to need to manoeuvre through.

Quantitative	**⟶Meta-inferences⟵**	**Qualitative**
Rating of entrance examination and its artifacts (e.g., difficulty of examination and usefulness of study guide), and themselves in relation to it (e.g., sufficiency of preparation and satisfaction with performance) on 'Entrance Examination Acceptance' scale	**Appraisal** *(alignment and refinement)*	• Perceived strengths and opportunities for improvement of entrance examination • Self-appraisal (i.e., display of high personal value and not necessarily substantiated confidence)
-	**Sense of self** *(enhancement)*	• Self-awareness (actual or assumed) • Sense of entitlement (high or low)
Demographics [i.e., age; nationality; initiation/ attainment of previous university degree (including specification of major/ degree); and high school country and curriculum (including single subjects currently taking/ in final year)]	**Personal attributes** *(enhancement)*	-
-	**Pressure to perform** *(enhancement)*	• Identity positioning • External attribution

Figure 7 The iterative side-by-side joint display analysis process (of integrating the data findings) resulted in four meta-inferences: Appraisal, Sense of self, Personal attributes, and Pressure to perform. The secondary colour Green emerged by mixing the primary colour Blue with the primary colour Yellow (symbolising the critical thinking that took place to generate

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the meta-inferences from the integration of two sets of primary inferences). The integration led to enhancement, alignment, and/ or refinement of the researchers' overall understanding of the subject matter.

Discussion

The current study, through its mixed methods research design (Fetters et al., 2013), depicted the factors that seem to come together to shape applicants' appraisal of themselves and of what they experience, in the context of entering a medical school. These factors include applicants' personal attributes, their sense of self, and the pressure to perform. Accordingly, this study did not only show the perception of applicants of an entrance examination of a medical program, it also, more generally, contributed to the understanding of the state-of-mind {i.e., attitudes at a specific point in time (Buchanan, 2025)} of a group of key stakeholders of the field of medicine. Acknowledging the factors that influence applicants' appraisal can contribute to the continuous development of selection methods (Fikrat-Wevers et al., 2024; Fikrat-Wevers et al., 2023; Folkman, Lazarus, Dunkel-Schetter, et al., 1986; Stalmeijer et al., 2023), along with positively influencing the attitudes and motivation, and in turn behaviours and habits of those candidates as they are transitioning from secondary education to tertiary medical education (An et al., 2023; Broks et al., 2023).

The meta-inferences generated by the integration integral to the adapted mixed methods research showed the combined effects of the quantitative and qualitative analyses. 'Appraisal' reflected convergence between acceptance ratings and narratives that simultaneously highlighted strengths and improvement opportunities. 'Personal attributes' emphasized that demographic and curricular background shape subjective appraisal. 'Sense of self' and 'Pressure to perform' revealed identity-related positioning and impression management, as well as attribution of difficulty to external factors (Folkman, Lazarus, Dunkel-Schetter, et al., 1986; Folkman, Lazarus, Gruen, et al., 1986). In alignment with previous research, these findings suggest that feedback about admissions assessments should be interpreted with an awareness that applicants are responding under high-stakes conditions (Baniadam et al.,

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2023; Eames et al., 2024; Folkman, Lazarus, Gruen, et al., 1986; Lazarus & Folkman, 1985), and accordingly, may be motivated to preserve self-image (Abraham et al., 2022), justify performance, and/ or negotiate perceived disadvantage (Chen et al., 2022; Templeton et al., 2022; Zhou et al., 2024). The attained systemic perspective underscores the value of merging quantitative ratings with qualitative narratives to move beyond simple satisfaction metrics for truly understanding applicants' viewpoints (Drury et al., 2023; Gottlieb et al., 2025; Kelly et al., 2018; Stalmeijer et al., 2023).

This study showcased applicants' appraisal of an entrance examination continuously developing via participatory action research (Cleland & Durning, 2022; Kember, 2008; Lucko, 2024; Mubuuke & Leibowitz, 2013). With a high response rate (88.5%), the findings provide a robust account of applicants' acceptance of the iteratively developing examination and its associated preparation and delivery processes, within a diverse, multi-curricular applicant context (Otaki et al., 2025). The percentage of the total average of the overall acceptance of entrance examination score, according to the quantitative component of this study, was 68.23%. This is reflective of the applicants' rating of the examination and its artifacts (e.g., difficulty of examination and usefulness of study guide, respectively), and themselves in relation to it (e.g., sufficiency of preparation and satisfaction with performance). The applicants' appraisal was also clear via the qualitative findings that revealed self-appraisal in the context of taking an entrance exam, along with indication of strengths and opportunities for improvement of the entrance exam. The perceptions of applicants, at this high-stakes transition point between secondary and tertiary education (Templeton et al., 2022), can shape application behaviour (An et al., 2023), influence the diversity of the applicant pool, and provide actionable insight into procedural fairness (e.g., clarity of information, perceived consistency, and feasibility of preparation) and potential sources of avoidable disadvantage (e.g., mismatches between tested content and prior

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curricular exposure) (Fikrat-Wevers et al., 2024). This is especially salient in contexts, such as Dubai, UAE, characterized by multicultural applicant pools and multiple coexisting high school curricula, where the same examination may be interpreted differently depending on applicants' educational background.

In practical terms, the findings support several actionable improvements for subsequent cycles of examination implementation (Carney et al., 2016; Price et al., 2015; Stalmeijer et al., 2023). First, the relatively lower endorsement of content familiarity indicates the need to further strengthen alignment between the study guide and examination content, including clearer specification of scope and depth, particularly in chemistry. Second, applicants' requests for additional resources suggest value in the early provision of representative sample questions and/ or structured preparatory materials that reflect the style and cognitive demand of the exam, while maintaining security of the item bank. Third, several comments suggest that clarifying policies around calculator use and provision of key reference materials (e.g., formula sheets or tables, where appropriate) may reduce construct-irrelevant difficulty and increase perceived fairness. Fourth, feedback related to timing and logistics supports strengthening coordination, including earlier release of preparatory guidance and minimizing technology-related burdens for online examinees. Accordingly, through its cyclical nature, that is systematic, structured, and integrated, participatory action research, in the context of the current study, enabled the generated data to result in continuous enhancement of educational quality (Stalmeijer et al., 2023). This study showed that when applied for the continuous development of entrance examinations, participatory action research can support not only examination quality (e.g., blueprinting decisions, and question bank development and refinement), but also responsiveness to stakeholder feedback regarding clarity, equity, and feasibility.

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Component-level results suggest that applicants most strongly endorsed the institutional support surrounding the assessment. The highest acceptance ratings were for institutional communication and preparatory guidance, a pattern corroborated by the qualitative 'Strengths' theme. This convergence, in alignment with the literature around the subject matter, suggests that the implementation processes surrounding the examination, not only the examination content itself, are key determinants of applicant acceptance (Singh et al., 2017). The acceptance profile also revealed areas of friction that have direct implications for improvement. The lowest-rated component was the extent to which applicants reported having been previously taught most of the concepts tested (58.4%), and other components clustered nearer to neutrality, including perceived preparedness (68.6%), judgement of examination difficulty as reasonable (67.4%), and satisfaction with performance (63.4%). The qualitative themes: 'External attribution' and 'Opportunities for improvement', provide explanatory depth for these patterns, highlighting perceived mismatch between tested content and prior schooling, language-of-instruction issues for some applicants, limited time to prepare, and occasional concerns about clarity of scope and logistics (including technology requirements for online delivery) (Weiner, 1985a, 1985b). Importantly, these qualitative findings did not amount to wholesale rejection of the exam; rather, they suggest that applicants can view the examination as legitimate while simultaneously experiencing uncertainty about the breadth and/ or depth of assessed material and variability in preparedness due to curricular differences. In admissions contexts characterized by heterogeneous school curricula, this distinction is critical: acceptability may be sustained by procedural fairness (e.g., organization, communication, and supportive environment), even when content alignment and readiness are not uniform across applicants (Patterson et al., 2016).

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795 The subgroup analyses further emphasize the role of educational background in shaping
796 acceptance (Kelly et al., 2018; Patterson et al., 2016), offering a unique insight that is
797 unlikely to be captured elsewhere (given the breadth of high school curricula in Dubai, UAE).
798 The overall acceptance score differed significantly across high school curricula ($p < 0.001$),
799 with higher acceptance among applicants from the Indian curriculum followed by
800 International Baccalaureate, British, American, UAE Government, SABIS, and other
801 curricula. Notably, there were no statistically significant curriculum differences for the
802 component 'I was well-prepared for the Entrance Exam' ($p = 0.432$), suggesting that
803 curriculum-related differences in acceptance are not explained solely by self-reported
804 preparedness. This may indicate differences in perceived fairness, familiarity with the format
805 of the assessment, alignment between curriculum sequencing and the examination blueprint,
806 or expectations regarding admissions testing. Acceptance also differed by the subject
807 applicants perceived as most difficult ($p < 0.001$). Chemistry was overwhelmingly identified
808 as most difficult (76.3%); nonetheless, those selecting physics reported the highest overall
809 acceptance, while those selecting biology reported the lowest. It is worth noting, however,
810 that perceived preparedness did not differ by 'most difficult subject' ($p = 0.369$), and
811 perceived usefulness of the guide also did not differ significantly ($p = 0.071$). Together, these
812 findings, in alignment with relevant prior studies, suggest that perceived difficulty does not
813 straightforwardly translate into lower acceptability, and that other factors, such as:
814 perceptions of fairness, transparency, and the overall conduct of the examination, may be
815 more influential (Kelly et al., 2018; Patterson et al., 2016). The analysis of subject exposure
816 adds further nuance. While taking Biology or Mathematics in the final year of high school
817 was not significantly associated with overall acceptance, it was associated with higher
818 agreement that applicants had been previously taught most tested concepts (Biology p =
819 0.015; Mathematics p = 0.030). This implies, not unexpectedly, that prior exposure shapes

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perceived content familiarity more directly than it shapes acceptance (BAO & CHO, 2022). From an implementation perspective, this supports the use of targeted preparatory resources and clearer specification of examinable scope to mitigate differential familiarity among applicants without compromising examination integrity.

Among the key findings of the qualitative component of this study is the role that applicants' sense of self plays in shaping their perceptions of learning and teaching interventions (Deci & Ryan, 2012). This variable, according to this study, involves actual or assumed self-awareness, and high or low sense of entitlement. Relevantly, the literature suggests that a medical school applicant's sense of self (encompassing self-awareness, self-concept, and internalized values) plays a significant role in the gradual integration of personal identity with the norms, values, and responsibilities of the physician role, which is known within the context of medical education as professional identity formation (Al-Jayyousi et al., 2025; Deci & Ryan, 2012; Wald, 2015; Wald et al., 2015; Zaher et al., 2022). Professional identity has been described as emerging through reflective meaning-making, whereby individuals interpret experiences in light of their evolving self-concept (Jarvis-Selinger et al., 2012). The literature supports the view that admissions committees are indirectly evaluating not only cognitive achievement but also the clarity and depth with which applicants understand themselves and articulate how their self-awareness aligns with medical professionalism (Nasiri & Shokrpour, 2024; Tamimi et al., 2023). A previously conducted study showed that professional identity development in the stage of basic sciences tends to be influenced by several factors where the personal factor ranked first, followed by socioeconomic, educational, and familial factors, respectively (Nasiri & Shokrpour, 2024).

Among the key findings of the quantitative component of this study is the apparent association between the applicants' personal attributes, such as their demographics, and their appraisal of their experiences as they are entering medical school. Accordingly, this

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accommodated for both differences and similarities within this stakeholder group, recognizing the heterogeneity across applicants. The study showed that the applicants' perceptions are notably influenced by cultural and environmental factors, as well as by the information provided by the medical school. Although choosing to align the examination learning outcomes with primarily IGCSE was considered a 'good decision', by the core team, it may be useful in order to enhance examination representativeness to engage 'informed' high school curricula representatives in all the phases of the entailed cyclical action research. Moreover, it became evident, through this study, that applicants to medical school seem to be under a lot of external pressure to perform, where they invest plenty of energy to seem fit and often deflect blame. Along those lines, several prior studies report a significant prevalence of psychological distress, including anxiety, insomnia, depressive symptoms, social dysfunction, and/ or somatic symptoms among medical program applicants preparing for, or taking written entrance exams (Irfan et al., 2018). Some of these studies highlight how examination pressure affects perceptions of personal well-being and performance expectations. Students selected via rigorous assessments or weighted lottery often report higher perceived stress later in medical training compared with those selected primarily on high academic grades (Broks et al., 2023). This suggests that admissions methods signal expectations that shape ongoing stress experience. The high rates of stress among prospective medical students preparing for and attending entrance exams may be attributable to factors such as family and social pressure, high parental expectations, and/ or parental conflicts (Picton et al., 2022). Therefore, adequate low-intensity interventions such as structured reflective writing, peer reflective circles, and/ or brief self-regulation practices to support medical school applicants as they are proceeding through selection methods should be designed, implemented, and evaluated (Désilets et al., 2022; Heydari & Beigzadeh, 2024; Krishnamurthy et al., 2022; Wong & Trollope-Kumar, 2014).

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This study, through its inductive qualitative analysis, also introduced a novel conceptual framework, namely: 'Applicants' Affinity to Entrance Exam', which can be deployed by other higher education institutions, in general, and more specifically, medicine and health sciences universities. It may assist other institutions in interpreting applicant feedback by distinguishing between perceived strengths, identity-related positioning, perceived performance, external attribution, and improvement-oriented suggestions (Templeton et al., 2022; Weiner, 1991). Effectively deploying this framework can help in better understanding applicants' views and factoring them into the planning, implementation, and evaluation of educational endeavours offered to learners before, during, and right after their admissions to a medicine or health sciences program. This framework also highlights the factors that seem to be affecting how the applicants relate to learning experiences that they are offered as they are transitioning from high school to medical education. Such a detailed interpretation can help in comparing the nuances of this stakeholder group's acceptability, enhancing representativeness and fairness, and contributing to selecting applicants for the 'right' reasons (Kelly et al., 2018; Patterson et al., 2016). Also, the study introduced a quantitative data collection tool (five-point Likert-type scale), namely: 'Entrance Examination Acceptance', which proved to be reliable and valid in the context of the study. This tool can be used by other similar institutions to capture their applicants' perception of an assessment, especially if it is conducted at the secondary-to-tertiary education transition.

Although the integration of data via mixed methods research enabled the development of a thorough, holistic understanding of the subject matter, there were some limitations to the current study that are worth noting. Firstly, the singular nature of the study may raise a concern regarding the external validity (i.e., generalizability) of the findings (Saunders et al., 2019). Correspondingly, the research investigators emphasized transparent reporting, and careful consideration of the transferability of findings to contexts similar to the one under

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895 investigation. This approach aligns with established recommendations that emphasize the
896 importance of insight richness over broad generalizability within the selected research
897 paradigm (Kaddoura et al., 2024; Saunders, 2009). Using the introduced conceptual
898 framework: 'Applicants' Affinity to Entrance Exam', and quantitative data collection tool:
899 'Entrance Examination Acceptance', in future investigations across additional cohorts and
900 wider contexts would strengthen evidence regarding their broader applicability. There
901 remains plenty of opportunities for future investigations of participatory action research in the
902 context of health and care professions' education to include multiple entities, possibly across
903 several environments to investigate potential associations between characteristics of the
904 product(s)/ output(s) (in the case of the application referred to in the current study, it is the
905 entrance examination itself) with contextual variables. Future research could also explore
906 how participatory action research, as a dynamic and reflective process, 'shapes itself' in
907 different organizational settings, industries, and cultural contexts, improving understanding of
908 corresponding definitions and measurements (Hillmann & Guenther, 2021). This would
909 likely highlight that action research is not a one-size-fits-all solution. Secondly, collecting
910 perception data at a single point in time immediately following a high-stakes examination
911 may have introduced social desirability bias, potentially leading to inflated positive ratings.
912 On the other hand, applicants may have been influenced by stress, perceived performance,
913 and/ or the immediate testing environment leading to other biases (Biggs et al., 2017;
914 Folkman & Lazarus, 1988). Thirdly, this study design was also limited in terms of
915 establishing causalities between variables (e.g., applicant characteristics and their
916 perceptions). It is recommended to build on the findings generated from this study through
917 the deployment of longitudinal research designs to investigate possible cause-and-effect
918 relationships between variables, including the inductively identified themes of applicants'
919 affinity to the examination and the applicants' extent of acceptance of the exam. Furthermore,

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given today's accelerated pace of change (F. Otaki et al., 2022; Xiao & Cao, 2017), such longitudinal research designs (across examination cycles) constitute an opportunity to observe and, in turn, investigate how action research sustains and develops itself over time. As such, upcoming studies can investigate how acceptance evolves as examination refinements are implemented, while examining relationships between perceptions, examination performance, subsequent admissions outcomes, and early academic indicators.

Conclusion

The participating medical program applicants seemed accepting of the entrance examination under investigation, especially regarding institutional communication and the usefulness of preparatory guidance. The qualitative findings showed that acceptance coexists with perceived mismatch, variable readiness, and/ or the identity and performance pressures inherent to selection. These results provide a clear basis for targeted refinements that can strengthen transparency, preparation equity, and procedural fairness while maintaining examination integrity. The perception of these applicants of themselves and what they experience seem to be affected by their personal attributes, their sense of self, and the pressure to perform. Acknowledging those variables in the design, implementation, and evaluation of selection methods will likely improve the corresponding tools' construct validity, along with positively influencing applicants' attitudes and behaviours. This study showed a means through which implementation science, in general, and the participatory action research, more specifically, through directing careful attention to the design of the entailed data collection tools and effective engagement of relevant stakeholders, can contribute to strengthening quality culture in health and care professions' education.

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List of abbreviations

CAA: Commission for Academic Accreditation

COM: College of Medicine

IGCSE: International General Certificate of Secondary Education

IRB: Institutional Review Board

KMO: Kaiser-Meyer-Olkin

MBRU: Mohammed Bin Rashid University of Medicine and Health Sciences

MBBS: Bachelor of Medicine and Bachelor of Surgery

MD: Doctor of Medicine

OEF: Outcome-based Evaluation Framework

PCA: Principal Component Analysis

PIP: Pillar Integration Process

SAC: Student Admission Committee

SDGs: Sustainable Development Goals

TIDieR: Template for Intervention Description and Replication guidelines

UAE: United Arab Emirates

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Declarations

Ethics approval and consent to participate

Ethical approval for the study was granted by the Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU) Institutional Review Board (Reference # MBRU-IRB-2025-873) and Dubai Scientific Research Ethics Committee (DSREC_GL14-2026). All methods were performed in accordance with guidelines and regulations on research with human subjects. Participants provided informed consent for participation.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

RKJ- led and contributed to the cycle of the ongoing development process of the entrance examination reported upon in the current research study; maintained the macro perspective of the current research study; contributed to development of the data collection tool; contributed to analysis of the qualitative data; and composed the final submission of the manuscript.

AS- contributed to the cycle of the ongoing development process of the entrance examination reported upon in the current research study; contributed to development of the data collection tool; contributed to analysis of the qualitative data; and composed the final submission of the manuscript.

IJPK- contributed to the cycle of the ongoing development process of the entrance examination reported upon in the current research study; contributed to

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development of the data collection tool; and contributed to analysis of the qualitative data.

HF- engaged in reflections around the conceptual framework that the current study introduced via the inductive analysis of qualitative data.

NN- co-led and contributed to the cycle of the ongoing development process of the entrance examination reported upon in the current research study; and contributed to development of the data collection tool.

RR- contributed to the cycle of the ongoing development process of the entrance examination reported upon in the current research study; and contributed to development of the data collection tool.

YB- contributed to the cycle of the ongoing development process of the entrance examination reported upon in the current research study; and contributed to development of the data collection tool.

LA- oversaw the cycle of the ongoing development process of the entrance examination reported upon in the current research study; and composed the final submission of the manuscript.

FO- maintained the macro perspective of the current research study; contributed to development of the data collection tool; collected the data; analysed the quantitative and contributed to analysis of the qualitative data; performed the information integration; and composed the final version of the manuscript

All authors approved the final manuscript.

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Appendix

MBBS Entrance Examination Evaluation

Dear valued student,

Thank you for completing this survey which asks you to reflect upon the MBBS Entrance Examination (Physics, Chemistry, Biology, and Mathematics) that you have just completed.

We wish to evaluate the appropriateness of the MBBS Entrance Examination in terms of assessing knowledge among prospective students. We are keen to hear your views on how to improve the respective examination.

Your response is not anonymous. Yet, your responses will have no impact on your possible future assessments at MBRU and will not affect (in any way or form) the perception of the University staff and faculty of you.

Kind regards,

Strategy and Institutional Excellence team

Demographics

1. Name:
2. Age:
3. Nationality:
4. Did you undertake a university degree previously? Did you complete the respective university degree? What was your degree/ major?
5. High School Country:
6. High School Curriculum:
   - United Arab Emirates (UAE) Government
   - British Advanced Subsidiary (AS) level
   - British Advanced (A) level
   - American
   - American Advanced Placement (AP)
   - International Baccalaureate
   - Indian
   - Pakistani
   - Other (please specify)
7. Which of the following **single** subjects are you currently taking in your final year at high school?
   Select all that applies
   - Physics
   - Chemistry
   - Biology
   - Mathematics

MBBS Entrance Examination Experience

8. Please rate your extent of agreement with the following statements:

	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
The information shared about the Entrance Examination by MBRU was helpful					
The Guide provided by MBRU was useful in preparing for the Entrance Exam					

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I was previously taught about most of the concepts tested in the Entrance Examination					
I was well-prepared for the Entrance Examination					
The level of difficulty of the Entrance Examination was reasonable					
I was satisfied with my performance in the Entrance Examination					

9. Which subject did you find most difficult in the Entrance Examination?
    - Physics
    - Chemistry
    - Biology
    - Mathematics

10. Highlight strengths of the Entrance Examination:

11. Suggest ways to improve the Entrance Examination:

12. Feel free to share any additional comments that you may have about the Entrance Examination:

Thank you for providing your feedback!

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