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ABSTRACT BOOK

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56000 Cheras, Kuala Lumpur, Malaysia.

#AIMEC2025

PLENARY SPEAKER

AI Driven Simulation for Medical Education

PATRICK THEN

Sarawak Artificial Intelligence Centre, Malaysia

then.patrick@sarawak.gov.my

ABSTRACT

The Sarawak Artificial Intelligence Centre (SAIC) proposes a strategic initiative to establish Malaysia as an AI Nation by developing Sovereign Artificial Intelligence (AI) that aligns with local laws, values, and languages. This requires building state-of-the-art GPU infrastructure to support high-performance AI services. The core application focuses on AI-Driven Simulation for Medical Education and healthcare transformation. This involves creating Medical Digital Twins and deploying Agentic AI and Foundation AI Models to enhance clinical training and continuous health monitoring. A comprehensive roadmap addresses R&D, Knowledge, Economy, and Responsible AI, which includes establishing an ethical AI framework and promoting AI literacy to ensure safe and effective adoption of AI tools within the medical ecosystem.

INVITED SYMPOSIUM SPEAKER

Learning Analytic: The Hype, The Reality & The Way Forward

ZAHIRUDDIN FITRI ABU HASSAN

Department of Building Surveying, Faculty of Built Environment, Universiti Malaya

zahiruddin@um.edu.my

ABSTRACT

Learning analytics has long been promoted as a game changer for higher education, promising personalised learning pathways, early identification of at-risk students, and richer feedback at scale. In practice, however, much of the early implementation has fallen short of this hype. In many universities, including my own, analytics are deployed primarily for academic programme management - monitoring sustainability, enrolment trends and staff workload - while the everyday pedagogical questions of educators, such as "Who is quietly struggling this week?" or "What should I change before the next session?", remain largely unanswered. At the same time, where lecturers still treat the learning management system as a repository for lecture notes rather than a space where learning activity actually happens, the data available for meaningful analytics is thin at best. This talk will explore three intertwined tensions: end-point versus in-course analytics, macro-level versus micro-level questions, and infrastructure versus practice. I will argue that the most powerful potential of learning analytics lies in supporting timely intervention while a course is running, yet this requires both institutional commitment and changes in day-to-day teaching practice. I will also suggest that the emergence of agentic AI offers a realistic opportunity to move beyond dashboards, by acting as a "junior analyst" that turns raw traces of student activity into concise, actionable stories for educators, without adding unsustainable workload. The session will conclude with practical proposals at two levels: what institutions can do to reorient learning analytics towards teaching and learning, and what individual lecturers can do within their own courses to harness data and AI in support of more personalised learning, feedback and assessment.

INVITED SYMPOSIUM SPEAKER

Learning Analytics at Higher Education Institution: Data & Beyond

NURBIHA BINTI A. SHUKOR[1,2]

[1]*Director at Center for Advancement in Digital and Flexible Learning, Universiti Teknologi Malaysia*
[2]*School of Education, Department of Educational Science, Mathematics & Creative Multimedia, Universiti Teknologi Malaysia*

nurbiha@utm.my

ABSTRACT

Learning analytics serve as a valuable tool for understanding students learning, triggering feedbacks, and predicting performance. Commonly, Higher Education Institution leverage on the use of Learning Management System to provide personalised learning experience to students. It collects valuable data about student activities which can help both students and teachers understand learning patterns and make better decisions. This sharing session shares the experience of implementing learning analytics at Universiti Teknologi Malaysia through various evolution of using different approaches over time: basic downloadable reports, open-source predictive tools. Each approach offers different benefits for understanding and improving student learning. A case study is also presented to show how learning analytics works in practice. The analysis revealed important connections between student participation, quiz engagement, and academic performance. This information helps identify students who may need additional support and guides timely interventions.

INVITED SYMPOSIUM SPEAKER

Learning Analytics Innovations for Transforming Learning and Teaching

ELIZABETH KOH

Centre for Research in Pedagogy and Practice, National Institute of Education, Nanyang Technological University, Singapore

elizabeth.koh@nie.edu.sg

ABSTRACT

This session introduces learning analytics, including both descriptive analytics and artificial Intelligence –powered analytics, and explores their potential to transform learning and teaching. A particular focus will be placed on formative learning analytics and dashboards, emphasising the pedagogical importance of formative assessment in supporting student learning. Drawing from my research in Singapore's K–12 and higher education settings, I will present examples of learning analytics innovations designed to enhance content mastery and lifelong learning skills. These applications demonstrate how personalised, timely, data-driven insights can empower learners and educators to make more informed learning decisions. The session will conclude with a discussion on how academics and educators can utilise learning analytics to drive meaningful transformation to enhance learning and teaching practices.

Keywords: Artificial Intelligence in education; dashboards; educational innovation; formative assessment; learning analytics

INVITED FORUM DISCUSSION SPEAKER

Advancing AI Integration in Medical Training: Practical Perspective on National Readiness

MOHAMAD FADLI BIN KHARIE

Health Informatic Centre, Planning Division, Ministry of Health Malaysia

m_fadli@moh.gov.my

ABSTRACT

Background: Artificial Intelligence (AI) is rapidly entering all layers of modern healthcare delivery systems and public health workflows. Medical training must evolve to prepare clinicians for AI-enabled environments. The integration of AI in medical training is viewed as a national readiness challenge requiring governance, infrastructure, and workforce literacy to move together.

Objectives: The objective is to address the national challenge of AI integration in medical training by promoting national readiness across key pillars, including Workforce Literacy, Data Interoperability, Ethical Governance, Infrastructure, and Practical Tools. This preparation aims to bridge the gap between optimism and low self-rated readiness among medical students in Malaysia and address practical gaps observed in the field.

Methods: The approach involves assessing the national AI readiness, identifying existing gaps in the training pipeline, and proposing immediate steps for integration. Key steps include integrating AI literacy modules into medical curricula, providing secure AI tools and ecosystems, and advocating for training on AI and Data Analytics. The training pipeline spans from foundational literacy during the Undergrad phase to Discovery & Advance Analytic in Research.

Results: Malaysia is benchmarked as a leader in ASEAN after Singapore. However, significant gaps exist among healthcare professionals, with majority lacking practical experience, having a limited understanding of AI concepts, and only some of them being able to accurately define AI. Practical gaps observed include limited analytical use of AI (Drafting vs Reasoning), very rare exposure to data prediction (Limited Modeling), anxiety over hallucinations and privacy, and a "Curiosity Paradox" (high individual curiosity but low structural support). National readiness measures include establishing a Ministry of Digital, a National AI Office, and national guidelines for governance and ethics.

Conclusion: Advancing AI integration requires a multi-faceted approach focusing on both national readiness (governance, infrastructure) and targeted interventions in the training pipeline to build key competencies. Immediate actions must prioritise integrating AI literacy and providing secure, practical tools to bridge the theory-practice gap and prepare future clinicians for realistic AI use cases, such as Clinical Image Analysis and Outbreak Prediction.

Keywords: AI integration; data analytics; data literacy; medical training

INVITED FORUM DISCUSSION SPEAKER

AI for Clinical Teaching: Advancing Learning, Strengthening Reasoning, Reducing Risk

KASANA RAKSAMANI

Department of Anesthesiology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, 10700, Thailand

kasana.rak@mahidol.ac.th

ABSTRACT

Clinical teaching has undergone significant transformation over the past century. Traditional apprenticeship models - "see one, do one, teach one" - produced skilled clinicians but were limited by inconsistent supervision, variable case exposure, and growing demands for patient safety and standardisation. Today's learners prefer interactive, immersive, technology-supported education, while faculty face increasing clinical workload and reduced teaching time. Simulation emerged as the first major innovation, offering a safe environment for practicing technical and non-technical skills, followed by virtual reality (VR), which added immersion, repeatability, and three-dimensional understanding. Yet both simulation and VR lack adaptiveness and real-time intelligence. Artificial Intelligence (AI) now provides this missing layer, offering personalised learning, scenario generation, real-time feedback, and the ability to visualise clinical reasoning processes. AI's role in medical education can be categorised into five areas: supporting educators, personalised instruction, assessment, clinical reasoning, and administrative automation. Within clinical teaching specifically, AI can (i) reduce workload by generating OSCE cases, simulations, and teaching materials; (ii) enable precision education by identifying knowledge gaps and adapting difficulty; (iii) reveal learners' diagnostic reasoning processes; (iv) transform simulation through intelligent virtual patients and adaptive scenarios; and (v) provide objective assessment and real-time feedback. However, AI adoption also presents new risks. Automation bias may lead learners to accept AI outputs uncritically, while cognitive offloading can reduce mental effort, weaken reasoning, and create dependency. De-skilling-the gradual loss of professional competence when tasks are routinely delegated to AI-poses both individual and systemic threats, especially when tacit knowledge and clinical intuition erode unnoticed. To harness AI responsibly, educators must ensure that technology enhances-not replaces-human judgment. Key recommendations include maintaining cognitive engagement, teaching critical interpretation of AI outputs, integrating AI gradually, pairing AI analytics with human coaching, and prioritising safety, fairness, and transparency. AI will not replace clinical educators; rather, educators who skillfully integrate AI will elevate clinical learning, strengthen reasoning, and advance patient safety.

INVITED FORUM DISCUSSION SPEAKER

AI and Higher Education Leadership: Innovations, Challenges and the Way Forward

VISHNA DEVI V NADARAJAH

Provost and Professor at Newcastle University Medicine Malaysia

vishna.nadarajah@newcastle.edu.my

ABSTRACT

Artificial Intelligence (AI) is emerging as a powerful catalyst for change in health professions education (HPE), with significant implications for higher education leadership. From AI-enabled simulation, assessment, and personalised learning to automation of quality assurance and accreditation workflows, leaders now face unprecedented opportunities to enhance workforce development at scale. At the same time, institutional variability in digital infrastructure, regulatory maturity, faculty readiness, and data governance frameworks presents complex challenges particularly in ensuring safe, ethical, and inclusive adoption of AI within clinical and educational environments. This symposium examines how HPE leaders can navigate this tension between innovation and social accountability while mitigating risks related to equity, professional identity, and public trust. The session proposes a forward-looking, contextually grounded roadmap for HPE leadership, supporting institutions to remain future-ready, socially responsive, and aligned with health system needs.

INVITED SYMPOSIUM SPEAKER

From Cloud to Classroom: Implementing Google's AI Ecosystem to Personalise Medical Training

IQMAL IRSYAD MOHAMMAD FUAD[1], ELVIN YUP[2], MUHAMMAD AIMAN BIN SHARUDDIN[2]

[1]Head of Analytics & AI at Awantec
[2]AwanBiru Technology Berhad or Awantec

irsyad.fuad@awantec.my

ABSTRACT

Introduction: The accelerating integration of Artificial Intelligence (AI) into healthcare, exemplified by advanced models for diagnostics and dynamic patient monitoring (e.g., SensorLM for wearables), demands a fundamental shift in medical education. The issue is a growing curriculum gap: future clinicians need fluency in real-world data and cloud-native AI tools, which traditional pedagogy often fails to provide.
Objective: This presentation aims to propose and detail a practical "Cloud to Classroom" framework for medical education, leveraging the Google AI ecosystem to deliver personalised, data-centric training that directly addresses the skills required in the AI-driven clinic.
Methodology: The proposed approach outlines the integration of enterprise-grade cloud tools-including MedGemma for clinical reasoning and geospatial foundation models for population health inference-directly into medical school settings. The methodology focuses on hands-on learning modules and curriculum mapping.
Results and Discussion: The anticipated outcomes include accelerated student proficiency in handling complex data streams and AI-assisted diagnostics. Discussion will center on case studies, such as the use of predictive analytics in chronic disease management (e.g., Type 2 Diabetes examples from Asia), to illustrate how these tools transform public health education, highlight ethical considerations, and address necessary human factors in algorithmic care.
Conclusion: The "Cloud to Classroom" model provides a viable, scalable strategy for future-proofing medical education. It empowers institutions to equip the next generation of doctors with the technical proficiency and ethical insight required to lead in the era of data-driven healthcare

Keywords: Artificial Intelligence; chronic disease management; cloud computing; data-centric curricula; foundation models; health AI; human factors; medical education; personalised learning

INVITED SYMPOSIUM SPEAKER

Reimagining Medical Education for the AI-Driven Healthcare Era: Opportunities, Challenges and Human Factors

QUEK YEK SONG

Moirai Tech Sdn. Bhd.

business@moirai-tech.com

ABSTRACT

The rapid integration of Artificial Intelligence (AI) into clinical practice is reshaping how future physicians must be trained, particularly in imaging, ultrasound, electrocardiogram (ECG) interpretation, and clinical decision support. This presentation explores the opportunities, challenges, and human factors involved in reimagining medical education for an AI-driven healthcare era, with Moirai Tech's MoirAI platform as a case study. Evidence from recent meta-analyses demonstrates that AI systems now achieve radiologist-level performance in imaging interpretation, automate fetal biometry with accuracy comparable to expert sonographers, and detect arrhythmias and cardiomyopathic patterns on ECG with high discriminative ability. Concurrently, large language models have shown promise in synthesising clinical information and enhancing student reasoning when applied within supervised educational environments. Despite these advances, studies from Malaysia and abroad highlight a clear readiness gap: medical trainees demonstrate high interest in AI but limited competency, while regulators emphasise the need for training that prevents over-reliance and safeguards clinical judgement. Moirai's closed-loop predictive health algorithms, emotional-state modelling, and pregnancy-risk summarisation illustrate how multi-modal AI can be embedded into clinical education through longitudinal patient trajectories, AI-supervised reasoning, and safe sandboxes for learning. The presentation proposes structured assessment methods-including AI-integrated Objective Structured Clinical Examination (OSCE) stations, simulation-based encounters with Large Language Model (LLM)-driven virtual patients, workplace-based assessments in AI-enabled wards, and reflective portfolios-to cultivate doctors capable of supervising intelligent systems responsibly. Ultimately, the future clinician must pair timeless bedside skills with AI literacy, ethical grounding, and the discernment needed to override machine outputs when necessary, ensuring technology enhances rather than erodes the art of medicine.

Keywords: Clinical; education; medical AI

INVITED SHARING SESSION A: INDUSTRY SPEAKER

AI-TeachingBot and AI-BuddyBot: A Study Protocol for Developing a Scalable Model to Equip Future Clinicians with AI-Ready Competencies

SYLVIA HII SIEW HIE

DGA Healthcare Group, Kuala Lumpur, Malaysia

sylvia@digitalaplus.com

ABSTRACT

Introduction: Artificial Intelligence (AI) is transforming healthcare delivery through enhanced diagnostics, workflow optimisation, predictive analytics, and remote patient support. However, medical education has not evolved at the same pace, resulting in a skills gap that limits graduates' readiness for AI-enabled clinical environments. In alignment with the Malaysian Medical Council's Guideline on the Ethical Use of AI in Medical Practice (2025)-hich highlights transparency, accountability, bias mitigation, and patient autonomy-DGA Healthcare Group proposes a structured study protocol to evaluate the implementation of two educational platforms: AI-TeachingBot (MEDi) and AI-BuddyBot (DRi).

Objective: To develop, implement, and evaluate a scalable AI learning ecosystem that equips medical students and trainees with foundational AI competencies, ethical reasoning skills, and safe clinical decision-support capabilities.

Methodology: This study adopts a mixed-methods, multi-phase design: (i) Phase 1 - Competency Framework Development: Mapping essential AI literacy, ethics, bias detection, workflow integration, and digital professionalism requirements; (ii) Phase 2 - Platform Design & Iteration: Developing MEDi and DRi using instructional design principles, explainable AI modules, case simulations, and reflective learning workflows; (iii) Phase 3 - Pilot Implementation: Deployment with partner institutions (e.g., AI-MED@UKM) to evaluate feasibility, usability, content validity, and integration within existing curricula; (iv) Phase 4 - Evaluation Strategy: Using pre–post assessments, competency checklists, faculty feedback, and qualitative interviews to examine acceptance, confidence, and readiness; (v) Phase 5 - Refinement: Enhancing models for ASEAN-wide scalability and adaptation.

Anticipated Results & Discussion: We hypothesise increased learner confidence in interpreting AI outputs, identifying potential biases, and applying AI recommendations responsibly. The protocol anticipates improved faculty readiness and alignment with national AI governance, strengthening Malaysia's position in ethical and safe AI-enabled medical education.

Conclusion: This study protocol outlines a structured, ethically aligned approach for integrating AI education into medical training. MEDi and DRi have the potential to become scalable models that support AI-MED@UKM, preventive programmes such as IJN CRRC+, and broader ASEAN workforce transformation initiatives.

Keywords: AI in medical education; clinical decision support; ethical AI; study protocol; workforce readiness

INVITED SHARING SESSION A: INDUSTRY SPEAKER

Future-Proofing Medical Education: From AI Readiness to AI Empowerment

VAIKUNTHAN RAJARATNAM

Khoo Teck Puat Hospital (KTPH), Singapore

vaikunthan@gmail.com

ABSTRACT

The rapid integration of Artificial Intelligence (AI) into healthcare is transforming how medical professionals are trained, assessed, and supported in practice. While enthusiasm for AI is widespread, institutions face challenges in moving from "AI readiness" - limited exposure and basic digital literacy - to "AI empowerment," where faculty, students, and healthcare professionals confidently apply AI to improve learning and patient care. This presentation explores a structured approach to embedding Generative AI in medical education, drawing on insights from multi-institutional programmes conducted in Singapore, Malaysia, Qatar, and beyond. The discussion highlights three critical dimensions: (i) Pedagogical transformation - using AI to design adaptive curricula, simulation-based training, and authentic assessments; (ii) Research empowerment - leveraging AI as a partner in literature reviews, data analysis, and academic writing; and (iii) Professional practice - integrating AI into clinical decision-making, workflow optimisation, and lifelong learning. Emphasis will be placed on ethical governance, contextual adoption in Asian settings, and the need for co-creation between educators, clinicians, and AI systems. Practical case studies from the UNESCO Chair AIDE Programme will illustrate how bottom-up engagement leads to sustainable adoption, avoiding the pitfalls of top-down implementation. By bridging readiness and empowerment, medical education can ensure future clinicians are not only digitally competent but also ethically grounded and globally connected.

Keywords: AI empowerment; ethical governance; generative AI; medical education; pedagogical transformation

FREE ORAL PRESENTATION – O206

An Empirical Analysis of a Trust Ecosystem for AI-Ready Orthopedic Networks in Kuwait

ZEINAB ABDOLZAHRAEI, MAHA ALHAJRI

Department of Health Information and Information Management, Faculty of Allied Health Sciences, Kuwait University, Kuwait City 90805, Kuwait

Maha.alhajeri@ku.edu.kw; Zei.research@gmail.com

ABSTRACT

Introduction: The integration of Artificial Intelligence (AI) into medicine demands a secure, trusted environment to ensure its safe and effective use. This study investigates the readiness for an AI-enabled professional network, conceptualised as a "trust ecosystem," where peer community provides essential oversight for clinical AI tools, using Kuwait's orthopedic sector as a case study.
Objective: This research aims to identify the key determinants of adoption intention for a specialised, AI-ready professional network among orthopedic professionals in Kuwait. It tests an integrated model based on the Technology Acceptance Model (TAM) and Social Identity Theory.
Methodology: A quantitative, cross-sectional survey was administered to 325 orthopedic surgeons, physiotherapists, and residents in Kuwait. The instrument measured Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Trust, Social Identity, and Adoption Intention using validated Likert scales. Data were analysed using confirmatory factor analysis and multiple regression.
Results and Discussion: The research model explained a robust 59.6% of the variance in adoption intention. Trust was the strongest predictor ($\beta = 0.41$, $p < .001$), surpassing the classical TAM constructs of PU and PEOU. Social Identity significantly strengthened both Trust ($\beta = 0.63$, $p < .001$) and adoption intention directly ($\beta = 0.15$, $p = .001$). These results empirically demonstrate that a shared professional identity is the bedrock of the trust required for adopting sensitive technologies like AI. The findings confirm that for AI to be integrated into healthcare, it must be embedded within a community-governed ecosystem.
Conclusion: This study provides a validated framework for building AI-ready professional networks in medicine. The results prove that Trust and Social Identity are the foundational elements, offering policymakers and developers a data-driven blueprint to cultivate platforms that enable safe, ethical, and collaborative AI adoption in healthcare.

Keywords: Artificial Intelligence in medicine; orthopedics; professional networks; technology acceptance; trust

FREE ORAL PRESENTATION – O207

Beyond Grades to Learning Enhancement: Development, Implementation and Evaluation of a Conversational AI Agent in Medical Education

MAJID ALI, AYAD ABDULLAH, ZAKARIA JIJE, HUSSAMELDIN ALABDULKARIM, MOHAMMED SMET, EYAD BASHEER, ALBARAA GHATABAHR

Department of Basic Sciences, College of Medicine, Sulaiman Al-Rajhi University, Al-Bukayriyah, Saudi Arabia

mm.ali@sr.edu.sa

ABSTRACT

Introduction: Artificial Intelligence (AI) is transforming medical education by offering personalised, interactive learning. However, evidence on their educational impact remains limited.

Objective: To evaluate the educational impact of a custom GPT agent for undergraduate medical students.

Methodology: The intervention involved development and deployment of curriculum-aligned custom GPT-4 conversational agent supporting individualised learning in a 4-week pharmacology block in Year 2 of MBBS program at the College of Medicine, Sulaiman Alrajhi University in 2024-2025 academic year. A mixed-methods, sequential-explanatory design was conducted for its evaluation after the block. Phase 1 included a survey with the enrolled students (n = 58) assessing usage, perceptions, and satisfaction, alongside a comparative analysis with two historical cohorts (2022–2023, n = 33; 2023–2024, n = 37). Phase 2 involved semi-structured interviews with nine volunteers. Quantitative data were analysed using SPSS v28, and qualitative data via thematic analysis. Ethical approval was obtained prior to the start of the block. Informed consent was also obtained from all the students at the start of the block.

Results and Discussion: Of 58 students, 52 responded (89.6%), 98.1% used the custom GPT, and 74.5% engaged with it daily. Most found it more effective (92.2%) and engaging (94.1%) than traditional learning methods, with an average recommendation score of 4.65 ± 0.73 out of 5. Frequency of use correlated significantly with perceived improvement in mid-block quiz and the final examination ($p<0.05$). Academic performance (block total percentage) rose slightly but insignificantly [75.5% (average of two historical cohorts) vs. 77.4%; $p>0.05$]. Qualitative analysis revealed six themes that echoed with the quantitative results: learning support, efficiency, supplementary role, strengths, challenges, and improvement suggestions.

Conclusion: The disconnect between user engagement and minimal performance improvements challenges traditional evaluation paradigms. While conversational AI may not directly enhance final scores, it supports metacognitive development, reduces cognitive load, and fosters critical thinking skills essential for modern medical practice, necessitating multidimensional assessment frameworks.

Keywords: Artificial Intelligence literacy; conversational AI; educational technology; medical education; pharmacology

FREE ORAL PRESENTATION - O211

Comparing Virtual Microscopy and Conventional Light Microscopy for Learning Histopathology among Second Year Undergraduate Medical Students

KEVIN MIN YEK LING[1], SHAMSUL AZHAR SHAH[2], NORDASHIMA ABD SHUKOR[1], MUHAMMAD DINIE AFIF JAMALUDIN[1], NUR NATASHA ABD RAZAK[1], REENA RAHAYU MD ZIN[1]

[1]Department of Pathology, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia

[2]Department of Public Health Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia

p132018@siswa.ukm.edu.my

ABSTRACT

Introduction: Histopathology education traditionally uses conventional light microscopy and static images, but digital advances have introduced virtual microscopy, allowing whole slide images to be viewed digitally.

Objective: This study aimed to compare virtual and conventional light microscopy in learning histopathology knowledge among second-year undergraduate medical students.

Methodology: The study was conducted among second-year medical undergraduate students of the Faculty of Medicine, Universiti Kebangsaan Malaysia. Thirty-four students first completed a pre-assessment and attended conventional light microscopy session, followed by a validated five-point Likert scale questionnaire to assess their perceptions. After a one-month washout period, the same students attended virtual microscopy session and completed a second questionnaire. Data were analysed to compare assessment scores and student perceptions of each modality.

Results and discussion: The median post-assessment score for virtual microscopy was 5.00 with an interquartile range (IQR) of 2.00. In contrast, the post-conventional light microscopy assessment showed a median of 5.00 and an IQR of 1.00. Although there was no statistical difference in assessment scores between two modalities ($P > 0.05$), virtual microscopy was favoured by the students (88.24%). Moreover, the majority of students (91.18%) reported that virtual microscopy facilitated collaboration with peers, suggesting that it supports interactive and cooperative learning. All students reported they agreed or strongly agreed that virtual microscopy enabling detailed examination of tissue structures, facilitating learning histopathological concepts, and providing flexibility for use outside scheduled class sessions.

Conclusion: Virtual microscopy is a potentially effective complement to conventional light microscopy in histopathology education. While both modalities support learning, virtual microscopy further promotes engagement, peer interaction and convenience, contributing to a more enjoyable learning experience.

Keywords: Medical students; microscopy

FREE ORAL PRESENTATION – O213

Self-Directed Learning in Digital Smile Design: Student Performance and Satisfaction among Final-Year Dental Student

ANATEE MALEM, WACHIRADA THA-NGAM, PRANCHEEWA SRISUCHAD

Faculty of Dentistry, Khon Kaen University, Nai-Muang, Muang District, Khon Kaen, Thailand 40002

anatee@kkumail.com

ABSTRACT

Introduction: Artificial Intelligence (AI) is reshaping health professional education by enabling technology-enhanced learning and data-driven decision support. In dental education, AI-augmented digital tools such as digital smile design (DSD) offer promising opportunities for esthetic treatment planning and self-directed learning.

Objective: To evaluate the integration of an AI-supported Smilecloud DSD module among final-year dental students by examining the accuracy and quality of their esthetic designs after self-directed learning, comparing these designs with the final restoration outcomes, assessing student satisfaction, and exploring potential gender-based differences in performance.

Methodology: Fifty-nine final-year dental students at Khon Kaen University independently completed a self-directed learning module using Smilecloud software. Esthetic outcomes were measured by calculating the Recurring Esthetic Dental (RED) proportion and the width-to-height (W/H) ratio. Tooth-shape selections were also recorded. After the session, students filled out a satisfaction questionnaire. Statistical tests were used to compare esthetic metrics and satisfaction by gender.

Results and Discussion: Students' RED proportions and W/H ratios did not significantly differ by gender and generally aligned with accepted esthetic norms. Tooth-shape preferences varied, demonstrating that students made individualised design choices. Satisfaction feedback showed that students found the AI-enhanced module easy to follow, helpful for esthetic planning, and supportive of autonomous learning.

Conclusion: Integrating an AI-supported DSD tool with self-directed learning in the final-year curriculum is feasible and well-received. This pedagogical approach supports the development of digital literacy and esthetic planning skills, preparing graduates for AI-driven clinical practice. Embedding such innovations into the curriculum may significantly enhance readiness for the digital era in health care.

Keywords: Artificial Intelligence; dental education; digital smile design; esthetic analysis; self-directed learning

FREE ORAL PRESENTATION – O214

Building Data Literacy for Artificial Intelligence in Medicine: A Comparative Assessment of Students' Perceptions Before versus After Completing the Bioinformatics Course

KHAIRIL MIKDAR

Bachelor of Medicine Study Program, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia

mikdark23c@student.unhas.ac.id

ABSTRACT

Introduction: Artificial Intelligence (AI) has become a vital tool for learning in medical education and a main modality for achieving precision medicine. However, its effective use requires comprehensive knowledge of underlying technology and databases. The bioinformatics course provides this essential data literacy. Therefore, the assessment of students' perceptions regarding this course is crucial for optimising its implementation in the curriculum.
Objective: This study aimed to comparatively assess medical students' perceptions of bioinformatics course and its influencing factors, to provide pedagogical recommendations.
Methodology: A purposive sampling was employed to recruit students from 328 pre-course and 301 post-course candidates. Data collection proceeded until theme saturation was achieved, resulting in a final sample of 12 students in each group. Semi-structured interviews explored students' perception of bioinformatics course, including expectations, concerns, and initial anxiety for the pre-course cohort, compared to real experiences, relevance, and impacts for post-course cohort. Transcripts were analysed using crisp-set qualitative comparative analysis with a consistency threshold of 0.85.
Results and Discussion: Six variables were identified: enrollment status (X1), perceived necessity of bioinformatics course (X2), perceived utility of AI in medicine (X3), initial anxiety (X4), pedagogical critique (X5), and understanding the AI-bioinformatics relationship (Y) as the outcome. Analysis revealed X3 and the absence of X4 (~X4) as necessary conditions (consistency ≥ 0.85). Two pathways achieved the outcome (Y): (i) X3 to Y (consistency = 0.88); and (ii) ~X4 to Y (consistency = 0.92)**.**
Conclusion: Conceptual mastery relies on functional AI literacy and low psychological barriers, rather than mere course exposure or visionary beliefs. Consequently, the bioinformatics course must be explicitly reframed as the essential data literacy foundation for AI in medicine. Pedagogical recommendations include prioritising early demonstrations of AI utility to mitigate anxiety and replacing theoretical assignments with interpretation-focused projects to emphasise functional relevance.

Keywords: Artificial Intelligence; bioinformatics; medical education; precision medicine

FREE ORAL PRESENTATION – O216

Exploration on Information Security Awareness and Risks of Chatbot Utilisation in Medical Education: A Qualitative Study

LUTHFI SAIFUL ARIF[1], PRATIWI RAHADIANI[2], ELIAN DEVINA[3], NORJIHAN BINTI ABDUL GHANI[4], DESAK GEDE BUDI KRISNAMURTI[2,5], ARIA KEKALIH[2,6]*

[1]Medical Education Center Cluster, Indonesian Medical Education and Research Institute, Faculty of Medicine, Universitas Indonesia, DKI Jakarta, Indonesia

[2]Center of e-Learning Cluster, Indonesian Medical Education and Research Institute, Faculty of Medicine, Universitas Indonesia, DKI Jakarta, Indonesia

[3]Medical Education Master Programme, Faculty of Medicine, Universitas Indonesia, DKI Jakarta, Indonesia

[4]Department of Information Systems, FCSIT, Universiti Malaya, Kuala Lumpur, Malaysia

[5]Department of Medical Pharmacy, Faculty of Medicine, Universitas Indonesia

[6]Department of Community Medicine, Faculty of Medicine, Universitas Indonesia

Luthfi.saiful@ui.ac.id

ABSTRACT

Introduction: The use of chatbots is increasing in many sectors, particularly in medical education. However, this trend is unaccompanied by data security awareness, exposing users to threats such as data theft.

Objective: This study aims to explore the lecturer's and medical students' knowledge and comprehension of information security when using a chatbot, the potential risks of chatbot speech-to-text utilisation, and preventive measures and possible ways to strengthen cybersecurity awareness, primarily related to chatbot utilisation.

Methodology: This qualitative study employed a phenomenological approach with in-depth interviews as data collection methods. We invited 16 respondents (eight medical student, six lecturers, and two programmer) to our interview to gain their perspectives. Data collection and analysis occurred concurrently, drawing upon constant comparison and triangulation. Thematic analysis was used to identify themes and sub-themes in the quotes.

Results and Discussion: This study identified seven sub-themes and three themes describing medical students' and lecturers' lack of awareness regarding data security. Low Artificial Intelligence (AI) and data security literacy are the root causes, and although data security incidents occur in medical education, users' ignorance can put them at risk of security threats, including data theft and imitation. Individual and institutional preventive actions were suggested to reduce the risks.

Conclusion: Chatbot adoption in medical education requires strengthened information security awareness and clear usage guidelines to prevent potential risks arising from low AI and data protection literacy.

Keywords: Awareness; chatbot; information; medical education; security

FREE ORAL PRESENTATION – O217

AI-Powered Gamified Virtual Simulation Platform to Improve Global Medical Education

DANIA ABUOBEYDA IBRAHIM[1] **, OMNIA MOHAMMED MEDANI**[2]

[1]*Medical Student, Faculty Of Medicine, Wad Madani University, Madani, Sudan*
[2]*Department Of Anatomy, Faculty of Medicine, Wad Madani University, Madani, Sudan*

daniaali933@gmail.com

ABSTRACT

Introduction: The concept was first developed to help medical students, particularly those in their freshman year, who have trouble comprehending information and encounter delays in their clinical training. Conventional theoretical education impairs knowledge retention and lacks interaction. Additionally, students experience anxiety when taking practical exams. According to studies, gamification promotes long-term memory retention, while simulation lowers anxiety and boosts performance. Nevertheless, there is currently no all-encompassing application that incorporates these methodologies, a necessity underscored by the scarcity of educational resources during the 2023 Sudanese crisis.

Objective: The application aims to introduce the first Artificial Intelligence (AI)-powered digital learning platform that integrates virtual simulation and gamification to promote active learning, simplify difficult medical concepts for improved long-term recall and bridge the gap between theoretical instruction and clinical practice. Additionally, it offers a realistic setting for practical exam preparation to reduce anxiety, it aims to be globally accessible, especially in limited resources.

Methodology: The project is in its design phase, following the user-centered ADDIE framework. Prototypes and AI-generated videos illustrate the application's structure and interactive features. Educational content includes medical cases with AI-supported interactive modules, including animations, simulations, patient lifestyle, and health education. All were designed to be evidence-based to enhance learning. A pilot study will assess usability and student performance pre- and post-use.

Results and Discussion: The application is expected to simplify complex medical concepts, enhance long-term information retention, promote active learning, develop decision-making and communication skills, and increase students' motivation for learning. Virtual training environments are anticipated to help students reduce anxiety during practical exams, build confidence, and prepare for clinical practice. Additionally, AI-driven feedback will contribute to developing essential exam skills, thereby improving academic performance and highlighting the application's effectiveness as a comprehensive educational.

Conclusion: The application seeks to improve the quality of medical education worldwide by offering an innovative, captivating, and all-encompassing educational experience.

Keywords: AI; interactive learning; medical education; practical exam

FREE ORAL PRESENTATION – O219

Navigating Students' and Lecturers' Perspectives on Chatbot use in Medical Academic Settings: A Qualitative Study

ELIAN DEVINA[1], PRATIWI RAHADIANI[2], LUTHFI SAIFUL ARIF[3], NORJIHAN BINTI ABDUL GHANI[4], DESAK GEDE BUDI KRISNAMURTI[2,5], ARIA KEKALIH[2,6]*

[1]Medical Education Master Programme, Faculty of Medicine, Universitas Indonesia, DKI Jakarta, Indonesia

[2]Center of e-Learning Cluster, Indonesian Medical Education and Research Institute, Faculty of Medicine, Universitas Indonesia, DKI Jakarta, Indonesia

[3]Medical Education Center Cluster, Indonesian Medical Education and Research Institute, Faculty of Medicine, Universitas Indonesia, DKI Jakarta, Indonesia

[4]Department of Information Systems, FCSIT, Universiti Malaya, Kuala Lumpur, Federal Territory of Kuala Lumpur, Malaysia

[5]Department of Medical Pharmacy, Faculty of Medicine, Universitas Indonesia

[6]Department of Community Medicine, Faculty of Medicine, Universitas Indonesia

elian.devina@ui.ac.id

ABSTRACT

Introduction: Chatbot presence in medical academic settings raises a polemic, especially on the ethical use. Concerns arise regarding academic integrity and the potential cognitive and psychological impact of Artificial Intelligence (AI) utilisation in learning and assessment.

Objective: This study aims to explore students' and lecturers' perspectives and experiences regarding the use of chatbots in medical academic settings.

Methodology: We employed a descriptive design in this qualitative study. Medical students, lecturers, and health programmers were invited to participate in our research via the snowballing method. Sixteen in-depth interviews were conducted separately, followed by thematic analysis to extract subthemes and themes from the respondents.

Results and Discussion: Eight sub-themes and three themes were extracted from the analysis. Our results showed that the chatbot has been used for many academic purposes, including preparing teaching materials, conducting medical assignments, and writing grant proposals. The boundary between ethical and non-ethical use is blurred without students' and lecturers' awareness. No precise regulation was found at the local and national levels.

Conclusion: Chatbot use in medical academic settings offers benefits but raises ethical ambiguity and cognitive concerns. Clear guidelines are urgently needed to ensure the responsible use of chatbots in educational settings.

Keywords: Academic; chatbot; lecturer; perspective; student

FREE ORAL PRESENTATION – O220

Association between Non-Functional Distractors and Item Performance in Single Best Answer Questions in Undergraduate Family Medicine Assessments

ROHIMAH BINTI MD YUSOFF[1], MOHD NASRI AWANG BESAR[2], MUHAMMAD NAZIM OTHMAN[3]

[1]Department of Medical Education, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia

[2]University of Cyberjaya, Cyberjaya 64000, Malaysia

presenter_p151699@siswa.ukm.edu.my

ABSTRACT

Introduction: High-quality Single Best Answer Questions (SBAQs) are essential for valid and fair cognitive assessment in undergraduate medical education. However, ineffective distractors - known as non-functional distractors (NFDs) - may compromise item performance by altering difficulty and reducing discrimination. While item difficulty (DIF I) and discrimination (DI) measure distinct aspects of item quality, previous studies have shown inconsistent associations between them, suggesting that distractor quality may play a larger role in shaping overall item functioning.

Objective: To examine the association between non-functional distractors (NFDs) and item difficulty (DIF I), NFDs and item discrimination (DI), and to explore the additional association between DIF I and DI in SBAQs used in undergraduate Family Medicine assessments.

Methodology: A cross-sectional item analysis was performed on 160 SBAQs from four examination cohorts at the University of Cyberjaya. Descriptive analysis included mean, frequency distribution, and normality testing (Shapiro–Wilk, skewness, kurtosis). Spearman's rank correlation was used for associations involving NFDs (ordinal data), while Pearson's correlation was used to explore the relationship between DIF I and DI. Linear regression was applied only when statistical assumptions were met.

Results and Discussion: Items were generally easy across all cohorts, with more than 40% exceeding the recommended DIF I > 0.70 threshold. Discrimination was mostly low, with nearly half of all items scoring ≤ 0.20. NFDs were prevalent, with most items containing one or more ineffective distractors. Spearman's analysis showed that higher NFD counts were significantly associated with easier items (higher DIF I) and lower discrimination in most cohorts. Pearson's correlation revealed no significant association between DIF I and DI, indicating that item difficulty alone does not determine an item's ability to differentiate student performance.

Conclusion: NFDs strongly influence item quality and remain a key area for improvement in SBAQ construction. Findings support strengthening item-writing training and systematic review processes to enhance difficulty balance, discrimination performance, and overall assessment validity.

Keywords: Difficulty index; discrimination index; item analysis; non-functional distractors; SBAQs

FREE ORAL PRESENTATION – O221

"Show Me, Tell Me, Teach Me": How Multimodal AI Transform Clinical Skills Education - A Scoping Review

ANDI SITTI NUR FATIMAH MADAENG, KHAIRUL MIFTAH SUMARDIN, KHAIRIL MIKDAR, ACTHASAIN PUTRA SUHARDI

Faculty of Medicine, Hasanuddin University, Jalan Perintis Kemerdekaan KM 10, Tamalanrea, 90245, Makassar, Indonesia

madaengasnf22c@Student.unhas.ac.id

ABSTRACT

Introduction: Clinical education is a fundamental pillar in developing healthcare professionals' competencies, requiring mastery of skills through demonstration, practice, and high-quality feedback. However, this process is often constrained by limited resources and variability in instruction, making the emergence of multimodal Artificial Intelligence (AI) a promising opportunity to enhance the effectiveness and equity of clinical skills training.

Objective: This scoping review aims to map the use of multimodal artificial Intelligence in clinical skills teaching by identifying its characteristics, functional roles, performance outcomes, evaluation approaches, and existing research gaps.

Methodology: This review was conducted over 4 weeks, utilising the Arksey and O'Malley framework and following the STORIES and BEME guidelines. A systematic and comprehensive search was conducted across PubMed, IEEE Xplore, ACM, and ScienceDirect. This review covers studies that highlight the use of multimodal AI in various types of health education for clinical skills development both from original studies and review articles.

Results and Discussion: From of 5,198 screened studies, 34 fulfilled the inclusion criteria and highlighted the application of multimodal AI in clinical skills through integrated text, speech, video, and virtual reality interactions. AI supports history taking, communication, procedural skills, and Objective Structured Clinical Examination (OSCE) evaluation via virtual patients, deep-learning video processing, and real-time feedback systems. AI has been applied into simulation centres and remote training programs to support learners from pre-clinical through residency levels. This technology has improved confidence, communication, procedural accuracy, and training efficiency. Key gaps include limited true multimodal fusion, small samples, and insufficient evaluation of long-term and ethical implications.

Conclusion: Multimodal AI augments clinical skills training by providing enhanced feedback and improved performance. However, it remains in the early stages of development. The future impact relies on achieving true multimodal integration, ethical governance, and implementation at the curriculum level.

Keywords: Artificial Intelligence; clinical skills; health education; multimodal

FREE ORAL PRESENTATION – O222

A Markov Chain-Based Comparative Analysis of Instructor-Led and Self-Paced Learning Modes Learning Pathways in a MOOC: A Pilot Study

PRATIWI RAHADIANI[1]*, DESAK GEDE BUDI KRISNAMURTI[1,2]

[1]Center of e-Learning Cluster, Indonesian Medical Education and Research Institute, Faculty of Medicine, Universitas Indonesia, Central Jakarta, 10430, Jakarta, Indonesia

[2]Department of Medical Pharmacy, Faculty of Medicine, Universitas Indonesia, Central Jakarta, 10430, Jakarta, Indonesia

pratiwi.rahadiani@ui.ac.id

ABSTRACT

Introduction: MOOCs are popular and widely use in medical education as an effective option for continuing medical education strategy. MOOC typically offer two primary delivery modes: instructor-led and self-paced. They may foster distinct learning behaviours and outcomes. However, existing research lacks methodological approaches to quantitatively analyse behavioural learning sequences and identify critical transition patterns between these models.

Objective: The study employed a Markov chain approach to compare learning pathways and identify transition probabilities, detecting critical breakdown points in instructor-led versus self-paced MOOC.

Methodology: Clickstream data were retrieved from a Moodle-based MOOC platform owned by the Center of e-Learning at the Indonesian Medical Education and Research Institute (IMERI) Faculty of Medicine, Universitas Indonesia. Data were analysed to compute transition matrices representing probabilities of moving between learning states. Statistical significance was assessed through effect size calculations and bootstrap validation.

Results and Discussion: The findings indicate instructor-led students has a focused learning pattern with fewer but significantly longer sessions (average: 30.5 mins) compared to the self-paced group (average: 1.0 min). Instructor led students demonstrated coherent learning pathways with high transition from content engagement to assessment success (P = 0.77). In contrast, self-paced students struggled significantly (P = 0.10) and experience learning breakdown with 90% probabilities of remaining in an inactive state. Furthermore, self-paced students exhibited high engagement in forum discussion (P = 0.75) but negligible interaction with core content materials, contrasting with the balanced content-assessment loops observed in the instructor-led group.

Conclusion: The instructor-led learning mode is significantly more effective in maintaining engagement and learning progress compared to the self-paced mode, which relies on complete flexibility. These results have crucial implications for MOOC design and proactive intervention in self-paced MOOC to prevent irreversible learning stagnation.

Keywords: Instructor-led learning; learning pathways; Markov Chain Analysis; MOOC; self-paced learning

FREE ORAL PRESENTATION – O223

Integrating ChatGPT and JavaScript Object Notation-Based Data for Adaptive Airway Management Training Among Anaesthesia Undergraduate Students

NUR FARIZA RAMLY, SUHAILA NANYAN

Department of Anaesthesiology and Intensive Care, Kulliyyah of Medicine, International Islamic University Malaysia, 25250 Kuantan, Pahang, Malaysia.

nurfariza@iium.edu.my

ABSTRACT

Introduction: Airway management is a critical skill in anaesthesiology, yet undergraduate medical students often experience limited opportunities to practise structured assessment and clinical reasoning. Conventional teaching provides supervised exposure with real patients, but the variety of scenarios is limited and restricted by patient safety considerations, limiting the development of clinical competency. To support self-directed learning and strengthen cognitive readiness, an interactive airway management module using ChatGPT as an instructional agent was conceptualised.
Objective: The objective is to conceptualise an Artificial Intelligence (AI)-supported airway management module that enhances decision-making, provides structured simulation, and complements conventional teaching.
Methodology: A design and development research approach was applied. The ASSURE model guided the analysis of learner needs and instructional requirements. A structured dataset was built using JavaScript Object Notation (JSON), a lightweight format that stores information in key-value pairs. In this module, JSON serves as the central database containing airway scenarios, clinical descriptors, available assessment methods, predictors, decision rules, and feedback. Each scenario is organised as nested objects, enabling ChatGPT to retrieve specific information based on student inputs. Students select three out of seven airway assessment methods. ChatGPT interprets these selections, queries the corresponding JSON nodes, and presents the relevant scenario details. If the combined assessment predicts a difficult airway and the selected management pathway is suboptimal, the module highlights areas for improvement and provides guidance to reinforce correct airway management strategies.
Results and Discussion: The prototype shows how ChatGPT and a structured JSON dataset can simulate real-life decision pathways in a safe digital environment. The system supports guided reasoning, immediate feedback, and repeated practice, improving conceptual understanding.
Conclusion: The conceptual design demonstrates the feasibility of using ChatGPT as a structured instructional tool for airway management. The framework has potential for expansion into competency-based assessment, linked with analytic dashboards, and adapted to other anaesthesia topics, as a scalable AI-enhanced simulation model.

Keywords: ChatGPT-assisted instruction; JSON-based data design; simulation in medical education

FREE ORAL PRESENTATION – O226

Machine Learning to Elucidate Health Volunteer Participation: Bridging Digital Health Innovation with Contemporary Medical Education

AFZAL HUSSAIN[1], ROSNAH SUTAN[1], RIZAL ABDUL MANAF[1], ZALEHA MD ISA[1], ASHFAQ HUSSAIN[2]

[1]Department of Public Health Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia

[2]Department of Electronics Engineering, Rajasthan Technical University, Kota, 324010, Rajasthan, India

prof_afzalhussain@ukm.edu.my

ABSTRACT

Introduction: Cancer is a leading global health burden that arises from demographic, behavioural, and genetic factors. Machine learning helps in early detection and improves community awareness. Youth Community Health Volunteers use Artificial Intelligence (AI)-supported education-based interventions to enhance health literacy at the grassroots level. Bibliometric evidence has shown that research output connecting AI to cancer epidemiology and community-based interventions has increased rapidly worldwide.

Objective: To propose a unified machine learning framework for the prediction of cancer risk, identify key contributing factors, and demonstrate how Youth Community Health Volunteers along with AI-driven education can improve the status of prevention at the community level. Bibliometric insights have also been included in the study to bring forth research trends around the globe.

Methodology: The analysis is based on a cancer dataset with 1500 individuals, including demographic, lifestyle, and genetic variables. A total of six different machine learning models were developed using stratified five-fold cross-validation, and the performance of the models was measured by metrics of accuracy, ROC AUC, confusion matrices, and feature importance. A bibliometric scan is performed identifying global trends in AI-driven cancer research and in digital health education. A brief bibliometric scan identified global trends in AI-driven cancer research and digital health education.

Results and Discussion: The study results indicate that Gradient Boosting achieved the highest accuracy of approximately 93 percent along with an AUC of 0.95. Major factors that led to the prediction were cancer history, hereditary risk, alcohol consumption, and BMI. The bibliometric analysis revealed that the worldwide focus on ML-based cancer prediction has risen over time, which is also reflected by the increased participation of the community in the use of AI tools to empower the Youth Community Health Volunteers for early detection and risk communication.

Conclusion: This study provides an effective machine learning framework for cancer risk prediction and has shown how the inclusion of Youth Community Health Volunteers, bibliometric insights, and AI-enhanced education can strengthen community-based cancer prevention strategies.

Keywords: AI in education; bibliometric analysis; cancer risk prediction; digital health; machine learning; youth community health volunteers

FREE ORAL PRESENTATION – O209

Using Digital Health Technologies in Nutrition Education: Comparing Perceptions, Attitudes, Preferences and Self-Perceived Preparedness between Preclinical and Clinical Medical Students

JOSEPHINE ONG CHIN WEY[1], KIRTHANA SARAVANAN[1], KENG JET XI[1], NATALIE GAN PEI SHAN[1], KISHOORE A/L VASU[1], OOI CHEOW PENG[2]

[1]School of Medicine, IMU University, Seremban Clinical Campus, 70300 Seremban, Negeri Sembilan, Malaysia

[2]Department of Internal Medicine, IMU University, Seremban Clinical Campus, 70300 Seremban, Negeri Sembilan, Malaysia

ABSTRACT

Introduction/Background: The rising burden of nutrition-related non-communicable diseases (NCDs) in Malaysia highlights the urgent need for stronger nutrition education among future doctors. Digital health technologies (DHTs) offer tools that may enhance learning, yet their integration into undergraduate medical training remains limited. Understanding students' readiness to adopt such technologies is essential for guiding curriculum transformation.

Objective: To compare the perceptions, attitudes, preferences, and self-perceived preparedness toward the use of DHTs in nutrition learning between preclinical and clinical medical students.

Methodology: A cross-sectional survey was conducted among 300 medical students across IMU campuses*. A validated and pilot-tested questionnaire assessed perceptions of DHTs, self-assessed digital knowledge, and interest in further digital nutrition training. Descriptive statistics and chi-square tests were used to compare responses between preclinical and clinical groups, with significance set at $p<0.05$. Constructs from the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) guided interpretation.

Results and Discussion: The analysis highlights a strong interest among medical students in digital health technology for nutrition education, with no difference between preclinical and clinical students (tables). However, concerns and readiness gaps remain. This aligns with TAM insights, which indicate that perceived usefulness and ease of use are critical factors for adoption. The UTAUT also highlights the importance of social influences and facilitating conditions. Hence, students may have positive views on the potential of digital tools to enhance nutrition education, particularly in the NCD landscape, but are tempered by privacy and other barriers, which influence their behavioral intention towards technology adoption.

Conclusion: Medical students value DHTs as tools to enhance nutrition education but report feeling unprepared and lacking digital literacy. More innovative research is needed to develop a curriculum that equips future physicians for technology-enabled healthcare.

Keywords: Digital health technologies; medical education; medical students; nutrition learning; technology acceptance

FREE ORAL PRESENTATION – O212

Artificial Intelligence and Quality of Life for the Elderly in China's Healthcare Sector: A Systematic Literature Review

LEE LEE THAN, CHENYANG LIU

School of Economics and Management, Xiamen University Malaysia, 43900 Sepang, Selangor, Malaysia

lee2pb@xmu.edu.my; ibu2309394@xmu.edu.my

ABSTRACT

Introduction: China has made great achievements in healthcare systems for the past decades. However, the trend of population aging poses unprecedented challenges, sparking interest in Artificial Intelligence (AI) as a transformative solution. Relevant literature and experiences have been initially accumulated in China.

Objective: This systematic literature review aims to synthesise and evaluate existing evidence to explore the applications of AI in China from three perspectives: medical systems, medical imaging, and high-risk patient identification and intervention affects the quality of life of the elderly.

Methodology: Following the PRISMA framework, relevant literature from PubMed and WanFang Data 2015 to 2025 are collected. After literature filtering, the final literature sample includes 44 articles. Due to significant clinical and methodological heterogeneity, a narrative synthesis approach was used to analyse and summarise the results.

Results and Discussion: Our findings found that medical systems with 10 articles in total, AI applications mainly improve medical quality and satisfaction of patients. In the perspective of medical imaging, with 19 articles in total, AI model and algorithms mainly increase the accuracy of diagnosis and efficiency. In the perspective of identifying and intervening high-risk patients included 15 articles that AI applications can perform well in prediction and can help with deciding on targeted ways of intervening high-risk patients.

Conclusion: AI applications have shown positive impact on elderly (especially those age from 55-65) QoL. This highlights a key idea - translating the "high efficiency" of AI into "high well-being" for patients. Healthcare systems that leverage AI technology as a supplementary tool have certain applicability to global experience. Future study can prioritise prospective designs and using standardised QoL scales as core outcome measures are also potential topic for further research to elaborate more direct connections between AI applications and elderly QoL.

Keywords: Artificial Intelligence; AI-powered healthcare; China; elderly quality of life; medical imaging

FREE ORAL PRESENTATION – O215

AI-Powered Voice Pathology Simulation System for Enhancing Diagnostic Learning in Medical Education

JIARUI KONG[1], MARINA MAT BAKI[2], FAHAD TAHA AL-DHIEF[1]*, YASIR HUSSEIN SHAKIR[3]

[1]Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Malaysia
[2] Department of Otorhinolaryngology, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia
[3]College of Graduate Studies, Universiti Tenaga Nasional, Kajang, Malaysia
P147155@siswa.ukm.edu.my

ABSTRACT

Introduction: Acoustic pathology detection is essential in otolaryngology, speech disorder evaluation, and medical education. However, traditional instructional approaches rely heavily on textbooks and instructor experience, limiting students' ability to visualise pathological acoustic characteristics. Although deep learning methods demonstrate strong diagnostic performance, their limited interpretability restricts their integration into classroom teaching.
Objective: This study aims to develop an explainable Artificial Intelligence (AI) platform that integrates acoustic pathology detection with an interactive educational interface, enabling learners to understand both pathological voice mechanisms and the model's decision-making process.
Methodology: The system utilises sustained vowel /a/ recordings from normal and pathological speakers. All recordings are standardised to a sampling rate of 22,050 Hz, and a 128-dimensional Mel spectrogram is extracted using a 2048 window size and 512 hop length. Additional acoustic features are computed to support interpretability such as MFCC, zero-crossing rate, spectral centroid, and fundamental frequency. An improved ResNet-18 model is designed by modifying the input layer for single-channel data and incorporating ReLU and Dropout after feature extraction to reduce overfitting. Training is conducted using the Adam optimiser across 5, 10, 15, 20, and 25 epochs. The teaching platform is developed using Streamlit, featuring a student mode for listening, discrimination, AI comparison, and automated feedback, and a teacher mode that displays waveform, spectrogram, acoustic parameters, and Grad-CAM heatmaps.
Results and Discussion: The model achieved an average accuracy of approximately 87%. Grad-CAM visualisations highlighted abnormal energy patterns between 400-1500 Hz in pathological voices, corresponding with unstable fundamental frequency and reduced spectral centroid. The automated feedback component effectively translated acoustic deviations into interpretable explanations, enhancing student understanding.
Conclusion: The developed platform integrates AI-based pathology detection with explainable analysis and educational visualisation, supporting both teaching and autonomous learning.

Keywords: Acoustic analysis; acoustic pathology; explainable Artificial Intelligence; resnet-18; teaching platform

FREE ORAL PRESENTATION – O224

Correlation between Splenic Size and Relative Metabolic Uptake in Assessing Splenic Infiltration in Lymphoma Patients Using FDG PET/CT

KRINA DHEVI[1], RIE TSUKADA[2], TASNEEM[3], MOHAMAD NAZRI BIN MD SHAH[4], NG KWAN HOONG[4]

[1]University of Edinburgh, United Kingdom
[2]International Medical University, Malaysia
[3]Lincoln University College, Malaysia
[4]University Malaya Medical Centre Malaysia
riet5370@gmail.com

ABSTRACT

Introduction: Accurate assessment of splenic involvement is critical for staging, prognosis, and treatment planning in lymphoma. Splenomegaly, defined as a craniocaudal length ≥ 12 cm on computed tomography (CT), is commonly used as a surrogate marker, yet its diagnostic accuracy remains uncertain. Functional imaging with ^18F-fluorodeoxyglucose positron emission tomography/computed tomography (FDG-PET/CT) enables quantitative assessment of metabolic activity. The spleen-to-liver SUV ratio (SLR) provides a normalised measure of splenic glucose uptake, with SLR > 1 suggestive of splenic involvement.

Objective: This study aims to evaluate the reliability of splenomegaly as a marker of splenic involvement in lymphoma, using SLR as the reference standard.

Methodology: This retrospective cohort study included 101 patients with histologically confirmed lymphoma who underwent FDG-PET/CT. Splenomegaly and SLR were assessed across staging, interim, end-of-treatment, and surveillance scans. Diagnostic performance of splenomegaly was evaluated using sensitivity, specificity, positive predictive value, and negative predictive value.

Results and Discussion: Splenomegaly was identified in 4.95% of scans, while 22.8% exhibited metabolic splenic involvement (SLR > 1). Of the five patients with splenomegaly, two demonstrated metabolic involvement, corresponding to a positive predictive value of 40.0% and a specificity of 96.2%. In contrast, 21 of the 23 metabolically involved cases had normal spleen size, resulting in a very low sensitivity (8.7%) and a negative predictive value of 78.1%. Overall, although splenomegaly is highly specific when present, most cases of metabolic splenic involvement occur without morphologic enlargement.

Conclusion: An enlarged spleen strongly predicts metabolic involvement, but most cases of splenic disease occur without enlargement. Clinically, a normal-sized spleen should not reassure clinicians that the spleen is uninvolved; PET-based SLR is a more sensitive and reliable marker. Morphologic assessment alone underestimates disease burden, and reliance on splenomegaly may lead to understaging. These findings support routine incorporation of metabolic imaging in lymphoma staging and careful interpretation of normal spleen size in clinical decision-making.

Keywords: Diagnosis; lymphoma; metabolic involvement; PET; splenomegaly

FREE ORAL PRESENTATION – O226

Association between Probiotics Consumption, Constipation Severity, and Perceived Colorectal Cancer (CRC) Risk among Young Adults: A Cross-Sectional Study

CHAN YUN XIN[1], RAEGINA TAVITHA NAIDU[2] , LOW XIN JOE[3]

[1]Faculty of Medicine, Universiti Malaya, 50603, Kuala Lumpur, Malaysia
[2]Faculty of Medicine, University of Cyberjaya, 63000 Cyberjaya, Selangor, Malaysia
[3]Faculty of Medicine, AIMST University, 08100 Bedong, Kedah, Malaysia

s2174107@siswa.um.edu.my

ABSTRACT

Introduction: Colorectal cancer (CRC) is a leading malignancy globally, with rising incidence in young adults under 50 years, including in Malaysia. Lifestyle changes, gut microbiota, and bowel habits such as constipation may influence CRC risk. Probiotics are widely consumed to support gut health, but their relationship with constipation severity and perceived CRC risk among Malaysian youth remains unclear.

Objective: This study aimed to investigate the relationships between probiotic consumption, constipation severity, and perceived CRC risk among young adults in Malaysia.

Methodology: A cross-sectional study was conducted using an online self-administered questionnaire distributed via social media and university networks. A total of 117 participants aged 18–30 years completed the survey. Constipation severity was assessed using the Patient Assessment of Constipation-Symptoms (PAC-SYM) scale, while perceived CRC risk and awareness were measured using a Health Belief Model based questionnaire. Probiotic consumption patterns were also recorded. Descriptive statistics summarised the data, and inferential analyses (Mann–Whitney U test, Spearman's correlation, and independent t-tests) were used to explore associations.

Results and Discussion: Most participants (80.3%) reported prior probiotic consumption, predominantly through yogurt and commercially available drinks, with intermittent rather than daily intake. Probiotic consumption was not significantly associated with constipation severity ($U = 882.00$, $p = 0.167$; $p = -0.096$, $p = 0.366$). Constipation severity did not significantly influence perceived CRC risk ($p > 0.05$). However, probiotic users reported significantly lower perceived severity of CRC compared to non-users ($p = 0.034$). Awareness of gut health was moderate, with digestion and general health being the primary reasons for probiotic use, while specific knowledge of probiotics' role in CRC prevention was limited.

Conclusion: Probiotic consumption is common among young Malaysian adults but does not significantly affect constipation severity or overall perceived CRC risk. Moderate awareness of gut health exists, yet targeted education on the role of gut microbiota and early CRC prevention is needed to promote informed health behaviors in this population.

Keywords: Constipation; colorectal cancer; gut health; probiotics; young adults

ePOSTER PRESENTATION – P101

Synthesis of Qualitative Evidence on Community Experiences and Perceptions of *Plasmodium knowlesi* Malaria and Factors Influencing Prevention and Healthcare-Seeking Behaviours in Malaysia

NIK HAMZAH NIK MOHD[1], MILA NU NU HTAY[2,3], MON MON THAWDA OO[4], LIN PHYO PHYO SAN[5], ADINEGARA LUTFI ABAS[3]

[1]Faculty of Medicine, Lincoln University College, Malaysia

[2]Centre for Population Health, Department of Social and Preventive Medicine, Faculty of Medicine, Universiti Malaya, Kuala Lumpur, Malaysia

[3]Department of Community Medicine, Faculty of Medicine, Manipal University College Malaysia, Malaysia

[4]Faculty of Medicine, Manipal University College Malaysia, Malaysia

[5]Department of Medicine, M. Kandiah Faculty of Medicine & Health Sciences, Universiti Tunku Abdul Rahman, Malaysia

nik.hamzah230@gmail.com

ABSTRACT

Introduction: Malaria remains a significant public health challenge, and *Plasmodium knowlesi* malaria has become the predominant cause of malaria in Malaysia. Despite progress in eliminating nonzoonotic malaria species, Malaysia continues to face challenges in controlling *P. knowlesi*.

Objective: This qualitative evidence synthesis (QES) aims to consolidate existing evidence on community experiences and perceptions related to *P. knowlesi* malaria, as well as the social, cultural, and contextual factors influencing prevention and healthcare-seeking behaviours in Malaysia.

Methodology: This QES protocol has been registered in PROSPERO (CRD 420251045457). A systematic literature search was conducted in electronic databases, and data analysis followed Thomas and Harden's thematic synthesis method.

Results and Discussion: The QES included five qualitative and mixed-method studies published between 2022 and 2024 that explored community perspectives on *P. knowlesi* malaria in Malaysia. Three analytical themes were synthesised: (i) 'Knowledge and Lived Realities Shape Community Risk Perception of Knowlesi Malaria', suggesting community understanding of *P. knowlesi*, fear of hospitalisation and income loss influencing health-seeking behaviours; (ii) 'Environmental, Structural, and Social Barriers Constrain Community Engagement with Malaria Prevention and Healthcare Seeking', where environmental exposure, occupational risks, challenges to the use of personal protection, and access barriers were major determinants; and (iii) 'Malaria Prevention Practices Reflect Local Knowledge, and Availability of Formal Prevention Measures', highlighting the application of natural and household remedies for prevention, while using formal preventive measures.

Conclusion: This QES consolidates the available evidence for *P. knowlesi* malaria control strategies including prevention and healthcare seeking. It highlights that malaria prevention behaviours are shaped not only by knowledge on transmission and diseases, but also by the social, environmental, and cultural realities in local context. Therefore, integrating local community perspectives and challenges into prevention and vector control programs could enhance the sustainability and equity in rural areas in Malaysia.

Keywords: *Plasmodium knowlesi*; malaria; Malaysia; prevention; qualitative evidence synthesis

ePOSTER PRESENTATION – P106

AI-Enhanced Bibliometric Mapping of Dengue Research: Comparative Analysis of IMR and Global Trends

JANICE SUE WEN CHAN[1], TERENCE YEW CHIN TAN[1], ASRUL ANUAR ZULKIFLI[1], NUR AIN ZAHIDAH ZAINUDIN[1], MUHAMMAD AFIF AZIZAN[1], MOHD ZAHARI TAJUL HASSAN[1], YEE LIN VOON[1], YANTI IDAYA ASPURA MOHD KHALID[2]

[1]Institute for Medical Research, National Institutes of Health, Ministry of Health Malaysia, 40170 Shah Alam, Malaysia

[2]Faculty of Social Sciences, University of Malaya, 50603 Kuala Lumpur, Malaysia

janice.cs@moh.gov.my

ABSTRACT

Introduction: Dengue remains a major public health concern in Malaysia and globally. About half of the world population is at risk, with an estimated 100-400 million infections each year. The Institute for Medical Research (IMR) has played a central role in advancing dengue research, yet its overall contribution has not been systematically evaluated. Bibliometric analysis is crucial to guide research funding and strategic planning.

Objective: This study aims to evaluate the landscape of dengue research in IMR in terms of its trends, research priority alignment, and global impact.

Methodology: A systematic keyword search was conducted in Scopus from inception to July 2025 using "dengue", "DENV", "Non-structural protein 1", and "break bone fever". IMR-affiliated publications were identified using institutional filters, yielding 194 documents, of which 181 met the inclusion criteria. Bibliometric data were analysed using VOSviewer to visualise co-authorship and keyword co-occurrence networks. Scopus AI was used to compare IMR's research focus and gaps against global dengue research. Manual categorisation in Microsoft Excel classified publications into the six domains of the Malaysian Research Priority Setting Framework. A parallel search without affiliation filters retrieved 62,010 global dengue-related publications for benchmarking.

Results and Discussion: Co-authorship analysis revealed several collaborative clusters, with the most productive clusters showing high citation impact. Keyword co-occurrence analysis indicated a primary focus on *Aedes aegypti, Aedes albopictus,* and vector control, with emerging interest in Wolbachia, autodissemination, and pyriproxyfen. Post-2020 publications increasingly explored innovative control methods. Alignment with national priorities was strongest in the prevention (n = 51), discovery (n = 44), and monitoring (n = 43) domains. Comparative analysis revealed IMR's predominant focus on virus surveillance and clinical studies, while global research trends emphasised vector control technologies, vaccine development, and diagnostic innovation.

Conclusion: IMR has made significant contributions to dengue research, particularly in vector biology, disease surveillance, and emerging control strategies. Opportunities remain to expand research in vaccine and diagnostic development to enhance global impact.

Keywords: Bibliometric analysis; dengue; Institute for Medical Research (IMR); Malaysia; national health research priorities; Scopus AI

ePOSTER PRESENTATION – P108

Feasibility Virtual Modalities Application as Adjuncts for Enhancing Empathy in Medical Education

AZIZAH ZAFIRA[1], DR. NOOR AKMAL SHAREELA ISMAIL[1,2]

[1]Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia
[2]Department of Biochemistry, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia

nasismail@ukm.edu.my

ABSTRACT

Introduction: Empathy and communication are essential competencies in medical practice, yet multiple studies document a decline in these attributes throughout clinical training. These qualities form the foundation of the Personal and Professional Advancement (PPA) module at Universiti Kebangsaan Malaysia. However, conventional teaching methods often lack immersive realism and structured feedback. Integrating Virtual Reality (VR), Affective Computing (AC), and Wearable Devices (WDs) offers an experiential, data-informed approach to enhance empathy and non-verbal sensitivity**.**

Objective: To systematically evaluate the feasibility of VR, AC, and wearable technologies as adjuncts for empathy and communication training in medical education, guided by the Jefferson Scale of Empathy (JSE) and Interpersonal Reactivity Index (IRI).

Methodology: Following PRISMA 2020 guidelines, seven databases were systematically searched (2014–2025). Thirteen studies met inclusion criteria. Studies were categorised by technology type and evaluated based on their direct impact on empathy using validated scales (JSE/IRI) or physiological/emotional correlates relevant to empathic engagement.

Results and Discussion: VR-based interventions consistently improved cognitive and affective empathy, communication confidence, and perspective-taking as measured by JSE and IRI. AC systems provided real-time emotional feedback, whereas wearable devices, while less frequently linked directly to empathy scales, reliably captured physiological markers (e.g., HRV, EDA, micro expressions) associated with emotional attunement. A triadic framework - VR immersion, wearable-assisted emotional sensing, and reflective debriefing - a baseline to guide the affective domain through PPA module.

Conclusion: VR, AC, and WDs represent feasible, culturally aligned adjuncts to rehumanise medical education. Their integration into the PPA curriculum may nurture emotionally intelligent, compassionate clinicians grounded in knowledge, quality, and virtue.

Keywords: Affective computing; communication skills; empathy; medical education; virtual reality; wearable devices;

ePOSTER PRESENTATION – P109

PBLGradeFlow: A Cost-Effective Digital Solution for Streamlining Problem-Based Learning Assessment Management in Medical Education

WAN MUHAMAD SALAHUDIN WAN SALLEH, NOUR EL HUDA ABD RAHIM

Department of Basic Medical Sciences, Kulliyyah of Medicine, International Islamic University Malaysia, 25200 Kuantan Pahang Malaysia

drsolah@iium.edu.my

ABSTRACT

Introduction: Problem-based learning (PBL) assessment in medical education typically depends on manual mark calculations, which leads to errors, delays in feedback, and extra administrative work. Tracking attendance, mark submissions, and managing facilitators separately creates major challenges for PBL coordinators who manage multiple student groups across different academic years.
Objective: To develop a cost-effective digital system using the free Microsoft 365 Education license that automates PBL assessment tasks, ensures accurate real-time data, and improves administrative efficiency without needing to purchase additional software.
Methodology: PBLGradeFlow was built using Microsoft Power Apps and SharePoint Lists, which are freely available through university education licenses. The system manages 25 PBL groups with approximately 285 students across Year 1 and Year 2 at the Department of Basic Medical Sciences, Kulliyyah of Medicine, International Islamic University Malaysia. It combines automated mark submission and calculation, attendance checking, facilitator management, and real-time dashboards. Important features include different access levels for lecturers and coordinators, tracking of all changes through SharePoint's version history, and Excel dashboard integration for complete monitoring.
Results and Discussion: PBLGradeFlow removed the need for manual mark submission and eliminated calculation errors. It allows instant mark processing for all PBL sessions. The coordinator dashboard shows missing and incomplete submissions in real-time, allowing quick action before semester exams. Lecturers can edit their own entries while coordinators have full control with complete records of all changes. The system uses the free Microsoft 365 tools already available at the institution, proving that digital transformation can be achieved without additional costs.
Conclusion: PBLGradeFlow shows how free Microsoft 365 Education tools can successfully transform PBL assessment management. It offers a practical, low-cost model for institutions that want to reduce administrative work while improving the accuracy and speed of delivering continuous assessments in medical education.
Keywords: Assessment automation; medical education; Microsoft Power Apps; Microsoft 365 education; problem-based learning

ePOSTER PRESENTATION – P110

Harnessing AI Tools for a Comprehensive Systematic Review of *Plectranthus amboinicus* Efficacy and Safety

PUSPAWATHY KRISHNAN, JANICE CHAN SUE WEN, KAVITA JETLY A/P JAGJIT KUMAR JETLY, TERENCE TAN YEW CHIN

Herbal Medicine Research Centre, Institute for Medical Research, National Institutes of Health Malaysia, 40170 Setia Alam, Selangor, Malaysia

puspawathy@moh.gov.my

ABSTRACT

Introduction: *Plectranthus amboinicus*, also known by regional names such as Bangun-bangun, French oregano, and Karpurvalli, is a highly aromatic perennial herb with a rich history in traditional medicine across Africa, Asia, and the Indian subcontinent. The herb has a wide spectrum of traditional uses in respiratory ailments, digestive disorders, and postpartum care. Recent pharmacological studies have reported its broad therapeutic potential, ranging from preclinical to human studies.
Objective: This systematic review aimed to synthesise and evaluate the current clinical evidence regarding the therapeutic and pharmacological effects of *Plectranthus amboinicus* using Artificial Intelligence (AI) tools.
Methodology: A systematic search was executed across PubMed, Cochrane CENTRAL, Web of Science, and Scopus, leveraging Elicit.org for keyword optimisation and refinement. Subsequent title and abstract screening occurred via Rayyan AI to identify potentially relevant full-text articles. After full-text screening, restricting the cohort to human studies of *Plectranthus amboinicus*), ChatGPT prompts was employed to facilitate data extraction.
Results and Discussion: A total of ten clinical studies were included. The studies reported the herb's therapeutic potential in treating productive cough, common cold, chronic gingivitis, diabetic foot ulcer, and postpartum perineal healing, due to its anti-inflammatory and antimicrobial properties. *P. amboinicus* also showed pharmacological effects in breast milk production, appetite stimulation, and hypercholesterolemia, and has a potent role as a natural insect repellent. The healing properties of *P. amboinicus* are largely attributable to the presence of key bioactive compounds, including the essential oil constituents carvacrol and thymol, and various flavonoids. The preparations of *P. amboinicus* were generally reported to be well-tolerated across the studies. Adverse events reported were typically mild and temporary, like dry mouth, pharyngeal itching, and epigastric burning.
Conclusion: By utilising the AI tools, it highlighted *P. amboinicus* as a promising medicinal plant with diverse pharmacological properties. Future research should focus on larger-scale, longer-duration trials to gain a better understanding of its efficacy and safety.

Keywords: Bangun-bangun; medicinal plant; pharmacological effects; *Plectranthus amboinicus;* systematic review

ePOSTER PRESENTATION – P111

AI-Assisted Learning Tools in Medical Education: Impact on Students' Understanding, Performance and Engagement

GOH LI LIAN[1], ANTONIE IVAN ANDERSON[2], TAY YEN HAO[3], AZIZAH ZAFIRA[4], DR. NOOR AKMAL SHAREELA ISMAIL[4,5]

[1]School of Medicine, IMU University
[2]Faculty of Medicine, AIMST University
[3]Faculty of Medicine, Manipal University College Malaysia
[4]Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia
[5]Department of Biochemistry, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia

gohlilian10@gmail.com

ABSTRACT

Introduction: Artificial Intelligence (AI)-assisted tools, including large language models, virtual patients, adaptive assessments and AI-enhanced multimedia, are increasingly embedded in medical curricula, yet their educational impact is not fully clear.
Objective: To determine the impact of AI-assisted learning tools on students' understanding, performance, and engagement in selected areas of medical education.
Methodology: A literature search of PubMed, Scopus and Taylor & Francis Online (2020–2025) and connected-paper searching was conducted following PRISMA 2020 guidance. Empirical quantitative, qualitative, or mixed-methods studies in English that evaluated AI in medical education were included; narrative reviews, non-AI and pre-2020 studies were excluded. Thirty studies met the eligibility criteria.
Results and Discussion: Across diverse tools - chatbots, virtual patients, adaptive assessment systems, AI recommenders and AI-processed surgical videos - most studies reported improved or at least non-inferior knowledge, skills and engagement versus traditional teaching. Concerns about accuracy, ethical use and over-reliance were common.
Conclusion: When thoughtfully integrated as adjuncts, AI-assisted tools can positively support learning in medical education.

Keywords: AI-assisted learning; Artificial Intelligence; engagement; large language models; medical education; student performance; virtual patients

ePOSTER PRESENTATION – P112

The Potential Applications, Benefits and Challenges of AI-Powered Simulations in Medical Education

ANITEJ PALUR[1], RAVIKANT PALUR[2]

[1]Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia
[2]School of Medicine, Faculty of Health and Medical Sciences, Taylor's University, 47500 Subang Jaya, Selangor, Malaysia

ani@anipalur.com

ABSTRACT

Introduction: Artificial Intelligence (AI) has caused a significant shift in modern medical education. While simulation-based medical education (SBME) has historically relied on simulated patients and static models, the integration of AI may allow for the creation of immersive, adaptive learning environments while addressing the limitations of traditional approaches.
Objective: This narrative review aims to evaluate the potential applications of AI-powered simulations across various domains of medical training, such as surgical training, anatomy education and clinical skills, whilst assessing the associated challenges and ethical implications.
Methodology: A literature search was conducted by searching three databases (PubMed, Scopus and Web of Science), focusing on English-language publications published from 2022 to 2025. Search keywords included "artificial Intelligence", "medical education", and "simulation". The search focused on publications that covered the potential applications, benefits and challenges of AI-powered simulations in medical education. A total of 13 peer-reviewed publications were included in the review.
Results and Discussion: AI-powered simulations that utilise haptic feedback and motion tracking could be used for surgical training. Such tools could provide objective, standardised assessment and remote training capabilities. Moreover, AI-enhanced virtual dissection tables and three-dimensional (3D) organ modelling could offer alternatives to cadaveric specimens for anatomy education. Clinical skills training could also benefit from AI-powered virtual patients and real-time AI tracking, enhancing diagnostic reasoning and procedural competence among medical students. However, challenges such as resource disparities, data privacy concerns and the potential for AI bias remain. Furthermore, an overreliance on AI-powered simulations risks the underdevelopment of empathetic communication skills essential for patient-doctor interactions.
Conclusion: AI-powered simulations hold great promise in transforming medical education by offering safe and personalised training environments. Future applications should prioritise equitable access and ethical use, ensuring these tools augment rather than replace traditional clinical training.

Keywords: Artificial Intelligence; medical education; medical simulations; medical students; virtual patients

ePOSTER PRESENTATION – P114

From Interest to Aspiration: Evaluating the Impact of Surgical Society Membership on Medical Students

NAING SOE YAN[1], THEINGI MAUNG MAUNG[2], PWINT PHYU HNIN[3], YI XUAN LOW[1], SOH JOE[1], SOE SU YUNN MYAT[4]

[1]Department of Surgery, M. Kandiah Faculty of Medicine and Health Sciences, MK-FMHS, Universiti Tunku Abdul Rahman, 43000 Kajang, Selangor, Malaysia

[2]Community-based department, Faculty of Medicine, Universiti Kuala Lumpur Royal College of Medicine, 30450, Ipoh, Perak, Malaysia

[3]Department of Preclinical Science, MK-FMHS, Universiti Tunku Abdul Rahman, 43000 Kajang, Selangor, Malaysia

[4]School of Medicine, University of Aberdeen, Aberdeen AB25 2ZD, United Kingdom

yanns@utar.edu.my

ABSTRACT

Introduction: Surgical societies play a crucial role in offering medical students early exposure to the surgical field, fostering skill development, and influencing career decisions. By bridging the gap between theory and practical experience, these societies boost students' interest in surgery and build readiness for clinical practice. Understanding their impact on student motivation, skills, and career aspirations is vital for improving early surgical education.

Objective: This study aimed to evaluate the impact of membership in the UTAR Surgical Society (USS) on medical students' interest in surgery, career aspirations, skill development, and engagement with surgical education.

Methodology: A cross-sectional survey was conducted among 149 USS members. Participants provided demographic data, motivations for joining the society, and feedback on their experiences with peer-assisted learning (PAL) and other activities. The survey also identified barriers to participation, such as time constraints and limited clinical shadowing opportunities. Data were analysed to assess the influence of USS membership on motivation, skill acquisition, confidence, and career aspirations.

Results and Discussion: Most of the participants joined the society to gain early clinical exposure, career, and academic enhancement. Workshops emerged as the most favoured activity, offering direct skill acquisition in fundamental surgical techniques. Peer-assisted learning (PAL) was highly valued for its engaging and supportive atmosphere, which empowered participants to build their confidence. Many members credited their increased interest in surgery with enhanced academic achievement and greater confidence in their active involvement in society. However, obstacles included time constraints and limited clinical shadowing opportunities. Despite these challenges, the society had a genuinely positive impact, transforming "interest to aspiration".

Conclusion: Membership in the Surgical Society enhanced skills, motivation, and career exploration.

Future plans address tackling time constraints, strengthening clinical exposure, and integrating Peer-Assisted Learning into the medical curriculum for greater educational value.

Keywords: Medical education; peer-assisted learning; surgical skills; surgical society

ePOSTER PRESENTATION – P115

MedyRush: A Unified AI Platform for Personalised and Predictive Learning in Medical Education

NUR ZARA SOFEA NUR HAKIMIN, NUHA KASYIFAH ROZLAN, ADAM HAIQAL MOHD HAIRIL, MUHAMMAD KAMARULZAHKIAN

Sekolah Menengah Agama Majlis Agama Islam Wilayah Persekutuan, 56000 Kuala Lumpur, Malaysia

m-11132849@moe-dl.edu.my

Traditional medical education often moves at a fixed pace, causing students to feel overwhelmed by the large amount of content they must learn. Many students struggle to keep up because they receive limited personalised support. A 2021 study involving clinical year students (Years 3–5) found a burnout rate of 22.2%, showing that stress and information overload are serious problems. MeddyRush aims to address these challenges by creating an integrated digital learning platform that provides personalised guidance, realistic clinical practice, and timely mentor support. Our goal is to develop a learning platform that provides each student personalised educational support. It quickly finds learning gaps, offers realistic practice through Artificial Intelligence (AI)-created medical situations and ensures easy access to mentors for targeted support. The main goal of MeddyRush is to help students learn more efficiently by identifying their weaknesses, strengthening their understanding, and improving their clinical confidence. The platform is made up of three major components. First, The Smart Private Tutor App studies students' mistakes, identifies the causes, and provides short, simple lessons targeted to those weak areas. This prevents unnecessary revision and helps students master topics faster. Second, The Realistic Medical Video Game App uses AI to create virtual patients that respond realistically to students' clinical decisions. Learners can use tools such as virtual stethoscopes and medication systems while receiving instant feedback. This gives students hands-on experience in a safe environment and helps them build diagnostic skills. Third, The Smart Alert System App monitors repeated errors and privately notifies mentors when students need help. This ensures students receive support at the right moment while allowing mentors to focus on specific problem areas. Student feedback shows that 75% of learners waste over three hours weekly revising material they already understand. MeddyRush aims to reduce study time by 25%, increase diagnostic accuracy by 15%, and provide real-time challenges for the 85% of students who prefer active learning. Overall, MeddyRush offers a practical and scalable solution to improve medical education and develop more confident future doctors.

Keywords: AI-assisted education; clinical simulations; diagnostic accuracy; mentorship support systems; personalised learning

ePOSTER PRESENTATION – P116

Association between Non-Functional Distractors and Item Performance in Single Best Answer Questions in Undergraduate Family Medicine Assessments

ROHIMAH MD YUSOFF[1], MOHD NASRI AWANG BESAR[2], MUHAMMAD NAZIM OTHMAN[2]

[1]University of Cyberjaya, 64000 Cyberjaya, Malaysia

[2]Department of Medical Education, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia

presenter_p151699@siswa.ukm.edu.my

ABSTRACT

Introduction: High-quality Single Best Answer Questions (SBAQs) are essential for valid and fair cognitive assessment in undergraduate medical education. However, ineffective distractors - known as non-functional distractors (NFDs)-may compromise item performance by altering difficulty and reducing discrimination. While item difficulty (DIF I) and discrimination (DI) measure distinct aspects of item quality, previous studies have shown inconsistent associations between them, suggesting that distractor quality may play a larger role in shaping overall item functioning.

Objective: To examine the association between non-functional distractors (NFDs) and item difficulty (DIF I), NFDs and item discrimination (DI), and to explore the additional association between DIF I and DI in SBAQs used in undergraduate Family Medicine assessments.

Methodology: A cross-sectional item analysis was performed on 160 SBAQs from four examination cohorts at the University of Cyberjaya. Descriptive analysis included mean, frequency distribution, and normality testing (Shapiro–Wilk, skewness, kurtosis). Spearman's rank correlation was used for associations involving NFDs (ordinal data), while Pearson's correlation was used to explore the relationship between DIF I and DI. Linear regression was applied only when statistical assumptions were met.

Results and Discussion: Items were generally easy across all cohorts, with more than 40% exceeding the recommended DIF I >0.70 threshold. Discrimination was mostly low, with nearly half of all items scoring ≤0.20. NFDs were prevalent, with most items containing one or more ineffective distractors. Spearman's analysis showed that higher NFD counts were significantly associated with easier items (higher DIF I) and lower discrimination in most cohorts. Pearson's correlation revealed no significant association between DIF I and DI, indicating that item difficulty alone does not determine an item's ability to differentiate student performance.

Conclusion: NFDs strongly influence item quality and remain a key area for improvement in SBAQ construction. Findings support strengthening item-writing training and systematic review processes to enhance difficulty balance, discrimination performance, and overall assessment validity.

Keywords: Difficulty index; discrimination index; item analysis; non-functional distractors; SBAQs

ePOSTER PRESENTATION – P117

Learning Management System Activation and Accreditation Status in Indonesian Undergraduate Medical Programs: A National Cross-Sectional Analysis

KHAIRUL MIFTAH SUMARDIN[1], ACTHASAIN PUTRA SUHARDIN[1], ANDI SITTI NUR FATIMAH MADAENG[1], KHAIRIL MIKDAR[1], LAODE MUHAMAD FITRAH RAMADHAN[2]

[1]Faculty of Medicine, Hasanuddin University, Makassar, South Sulawesi, 90245, Indonesia
[2]Department of Computer and Network Engineering, Faculty of Engineering, Politeknik Negeri Ujung Pandang, Makassar, South Sulawesi, 90245, Indonesia
khairulmiftahsumardin@gmail.com

ABSTRACT

Introduction: Indonesian undergraduate medical programs are accredited through the Independent Accreditation Agency for Health Higher Education (LAM-PTKes) and the National Accreditation Board for Higher Education (BAN-PT). The "A" or "Unggul" represents the highest level in this system. Recent adjustments to the Program Study Accreditation Instrument (IAPS) and the Self-Evaluation Report (LED) have placed greater emphasis on traceable instructional evidence, which has increased attention on the learning management system (LMS). LMS activation varies considerably across programs, and its relationship to accreditation outcomes has not been assessed nationally.
Objective: To determine whether LMS readiness is associated with achieving "A" or "Unggul" accreditation after accounting for institutional sector and structural academic characteristics.
Methodology: We created a cross-sectional dataset of 113 undergraduate medical programs using the national Higher Education Database (PDDikti) API, extracted between 20 and 27 November 2025. Four researchers reviewed institutional records for completeness and staffing consistency, and a coder resolved discrepancies. Variables included accreditation level, institutional sector, enrolment, lecturer and teaching-lecturer counts, lecturer–student ratios, and a three-level LMS status measure (none, inactive, active). Analyses used chi-square tests, Pearson correlations, and logistic regression with cluster-robust standard errors.
Results and Discussion: The "A" or "Unggul" accreditation occurred in 46.9% of programs. LMS readiness varied: 35.4% had no LMS, 5.31% had inactive systems, and 59.29% operated active platforms. Accreditation varied across these groups (22.5%, 0.0%, 65.7%; $\chi^2 = 24.34$, $p < 0.001$; Cramér's V = 0.46). Public institutions showed higher unadjusted rates (57.4% vs 37.3%), though this difference narrowed after adjustment. Structural indicators were highly intercorrelated (r = 0.73-0.99) and not independently predictive. LMS readiness remained significant (OR 2.23; 95% CI 0.92-5.39). Area under the curve (AUC) values of 0.72–0.93 indicated strong discrimination.
Conclusion: Active LMS use was associated with higher accreditation, though longitudinal evidence is needed to clarify directionality.
Keywords: Accreditation; digital readiness; Indonesia; Learning Management System; medical education

ePOSTER PRESENTATION – P118

Beyond Grades to Learning Enhancement: Development, Implementation and Evaluation of a Conversational AI Agent in Medical Education

ALBARAA GHATABAHR, MAJID ALI, AYAD ABDULLAH, ZAKARIA JIJE, HUSSAMELDIN ALABDULKARIM, MOHAMMED SMET, EYAD BASHEER

Department of Basic Sciences, College of Medicine, Sulaiman Al-Rajhi University, Al-Bukayriyah, Saudi Arabia

221110048@srcolleges.org

ABSTRACT

Introduction: Artificial Intelligence (AI) is transforming medical education by offering personalised, interactive learning. However, evidence on their educational impact remains limited.

Objective: To evaluate the educational impact of a custom GPT agent for undergraduate medical students.

Methodology: The intervention involved development and deployment of curriculum-aligned custom GPT-4 conversational agent supporting individualised learning in a 4-week pharmacology block in Year 2 of MBBS program at the College of Medicine, Sulaiman Alrajhi University in 2024-2025 academic year. A mixed-methods, sequential-explanatory design was conducted for its evaluation after the block. Phase 1 included a survey with the enrolled students (n = 58) assessing usage, perceptions, and satisfaction, alongside a comparative analysis with two historical cohorts (2022–2023, n = 33; 2023-2024, n = 37). Phase 2 involved semi-structured interviews with nine volunteers. Quantitative data were analysed using SPSS v28, and qualitative data via thematic analysis. Ethical approval was obtained prior to the start of the block. Informed consent was also obtained from all the students at the start of the block.

Results and Discussion: Of 58 students, 52 responded (89.6%), 98.1% used the custom GPT, and 74.5% engaged with it daily. Most found it more effective (92.2%) and engaging (94.1%) than traditional learning methods, with an average recommendation score of 4.65 ± 0.73 out of 5. Frequency of use correlated significantly with perceived improvement in mid-block quiz and the final examination ($p<0.05$). Academic performance (block total percentage) rose slightly but insignificantly [75.5% (average of two historical cohorts) vs. 77.4%; $p > 0.05$]. Qualitative analysis revealed six themes that echoed with the quantitative results: learning support, efficiency, supplementary role, strengths, challenges, and improvement suggestions.

Conclusion: The disconnect between user engagement and minimal performance improvements challenges traditional evaluation paradigms. While conversational AI may not directly enhance final scores, it supports metacognitive development, reduces cognitive load, and fosters critical thinking skills essential for modern medical practice, necessitating multidimensional assessment frameworks.

Keywords: Artificial Intelligence literacy; conversational AI; educational technology; medical education; pharmacology

ePOSTER PRESENTATION – P119

Exploring Lecturers' Perceptions of Artificial Intelligence and Learning Management System Integration in the Development of a Module for Medical Education

DESAK GEDE BUDI KRISNAMURTI[1,2], PRATIWI RAHADIANI[1]

[1]Center of e-Learning Cluster, Indonesian Medical Education and Research Institute, Faculty of Medicine, Universitas Indonesia, 10430, Jakarta, Indonesia

[2]Department of Medical Pharmacy, Faculty of Medicine, Universitas Indonesia, 10430, Jakarta, Indonesia

desak.gede@ui.ac.id

ABSTRACT

Introduction: The integration of Artificial Intelligence (AI)-powered tools into Learning Management System (LMS) brings significant advantages by creating more personalised, dynamic, and effective learning experiences for both students and educators. However, the widespread adoption of AI-based LMS in medical education not yet fully implemented especially in developing countries like Indonesia.

Objective: The aim of this study is to understand lecturer's perceptions in terms of driving factors (benefits, convenience, social influence) and inhibiting factors (risk, ethics, competence) of AI adoption, so that the results can be used to develop effective implementation strategies.

Methodology: The study employed mix-methods using quantitative and qualitative approaches. A total of 31 subjects from different Universities participated in this study voluntarily. For, quantitative approach, questionnaire was developed by adopting established Unified Theory of Acceptance and Use of Technology (UTAUT) questionnaire to gather insight from lecturer. Thematics analysis was conducted to explore AI features needed and challenges in AI-LMS implementation as a qualitative approach.

Results and Discussion: Most subjects have experience teaching online courses or MOOCs and utilising AI. Their understanding of AI features within LMS was found to be moderate (3.13 ± 0.922). They understand the function of features in LMS such as Learning analytics (27.4%) and AI chatbot for feedback (20.2%). The Perception of ethical concerns has a significant positive impact on lecturers' level of understanding regarding AI features in LMS. This means lectures are more motivated to learn more about AI features. Meanwhile, perceived risk creates physiological challenges that hinder lectures from learning more about AI features. These findings are consistent with qualitative results indicate that lecturers are more concerned with human factors, specifically academic integrity and digital literacy, rather than the technology itself.

Conclusion: This study highlights the need for a dual implementation strategy in AI-LMS by leveraging motivating role of ethical concerns while actively mitigating the negative impact of perceived risk.

Keywords: Artificial Intelligence; learning management system; lecturer's perception; medical education

ePOSTER PRESENTATION – P121

AIQUE Framework for AI-Generated Single Best Answer Questions

SUHAILA NANYAN, NUR FARIZA RAMLY

Department of Anaesthesiology and Intensive Care, Kulliyyah of Medicine, International Islamic University Malaysia, 25250, Kuantan, Pahang, Malaysia

suhailananyan@iium.edu.my

ABSTRACT

Introduction: The Single Best Answer (SBA) question is one of the widely used Multiple Choice Question (MCQ) formats in medical education. Creating SBA questions is challenging and labour-intensive. Large language models (LLMs) such as ChatGPT have demonstrated the ability to produce a structured question format. Currently, there is no established framework for educators to guide the integration of Artificial Intelligence (AI) into valid and reliable SBA question design. Despite increasing AI adoption, the absence of guidelines may lead to variable standards.

Objective: To propose the AIQUE Framework, a theoretically grounded model for quality-assured AI-generated SBA question development in medical education.

Methodology: This conceptual paper is developed based on an integrative conceptual synthesis of four evidence streams: Classical validity theory, national AI governance standards, guidelines on SBA construction and literature on AI-generated examination questions. Concepts were extracted, clustered, aligned, and reorganised into a framework that guides ethical use of AI and production of high-quality AI-assisted SBA questions.

Results and discussion: AIQUE Framework comprises five interdependent domains: Alignment, Integrity, Quality, User-moderated Iteration and Ethical Governance. The framework integrates key principles of assessment validity and reliability. Alignment ensures each question matches the blueprint, learning outcomes and required cognitive level. Integrity focuses on factual accuracy and avoidance of AI hallucinations. Quality emphasises proper SBA structure, functional distractors, clarity and sound psychometric characteristics. User-moderated iteration involves expert review, refinement and content validation process that improves overall validity and reliability. Ethical governance ensures transparency, accountability and responsible AI usage supporting fair and defensible assessment items.

Conclusion: AIQUE Framework offers a systematic approach for integrating AI into SBA question development. It outlines best practices, mitigates risks associated with AI-generated questions and provides a theoretical foundation for future research and institutional policy development.

Keywords: Artificial Intelligence; medical education; question design; single best answer