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CONFERENCE ABSTRACTS

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Monash University

Developing an interactive unit delivery model using Articulate 360 for distance-learning postgraduate pharmacy professionals

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Background and Statement of aims: The aim of this Teaching Development Fund project was to develop a model through which distance-learning units could be delivered to improve the learning journey whilst retaining the quality of training, and to evaluate student acceptance of such a model.

Design and Methods: Existing learning material for a single level 7, 15 CAT credit unit was redesigned and presented through an Articulate 360™ platform. Academic teaching staff worked closely with the e-learning technical coordinator and clinical academic intern to decide how to best present the material with interactive features. Original teaching material was also available to students in PDF format so the research team could evaluate acceptance of each format from a student perspective on completion of the unit.

Results and Discussion: The project was evaluated using anonymous student feedback posted on an online comments board. Comments relating to the Articulate 360 package (n=4) included 'I also liked the interactive aspect of the e-learning package. I found that I was much more likely to click [sic] on the links…' and 'I liked the e-learning package as it was easier to read and the interactive nature kept me engaged'. Students also felt there was benefit to having PDF versions of learning material also 'I prefer the e-learning package, as it made it more interactive, but did like having both, as having a print out of the PDF made it easier to make my own notes around the content.'

Conclusion: This project highlighted the acceptance of an interactive platform to deliver distance-learning teaching for postgraduate pharmacy students. The authors continue to evaluate this approach through student feedback.

The application of Kirkpatrick's Evaluation Model (KEM) in the assessment of interprofessional simulation activities involving pharmacy students: A systematic review

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Background: In January 2021, the GPhC released new training Standards for pharmacists, including a prescribing qualification and weighted importance on interprofessional collaboration. As a result, per the role of educators, the future workforce must prepare for the demands of the ever-evolving landscape of pharmacy, which demands IPE and interprofessional socialisation as core components of pre-registration. The extant literature lacks to provide insight to pharmacy educators of the needed integration of IPE simulation activities into curricula. This SR aims to address this knowledge gap and provide evaluative outcomes from existing evidence, thus, a blueprint for IPE implementation.

Methods: This SR (PROSPERO CRD42021244892) of the peer-reviewed articles published after September 2015 was carried out to evaluate the interprofessional education simulation learning outcomes in University. Two reviewers searched MEDLINE, CINAHL, PsycINFO and Web of Science in March 2021, screened titles and abstracts, and full text. Fourteen studies' data was then extracted. The methodological quality

of the studies was critically appraised using MMAT rubric and then assigned Kirkpatrick Level(s) from 1-4.

Results: Student participants across all studies showed a positive reaction toward the IPE simulation experience (level 1). This illustrates that participants were motivated to learn among other professions, yet it does not reflect the acquirement of knowledge. The majority of studies achieved Level 2 in measuring self-reported changes in skills, attitudes, and behaviours pre- and post-simulation. The lack of facilitators' judgement in skill acquisition poses bias in this data. One study illustrated a longitudinal approach where data collection was further timestamped at eight-to-ten months after simulation (Level 3). Interprofessional collaboration was observed in the workplace however the study lacked a transfer design of knowledge and mentorship in the workplace.

Conclusion: These are two key elements that Holton's Human Resource Development Evaluation Research and Measurement Model describes as essential factors for the effective transfer of learned information to the workplace. Although universities invest in guiding students to achieve the first 2 levels, without intermediate guidance to bridge the learning curve between university and work settings, it is unlikely that IPE activities will yield improved patient outcomes (level 4).

National Education Policy (NEP-2020)– Restructuring pharmacy education in India and relevance to the world

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Background: National Education Policy (NEP)-2020, a striving policy of Govt of India to revamp entire education system in India is now in the implementing stage in higher education institutions. The present work highlights the need and process of restructuring pharmacy education in India and its future impact on the world stage.

Methods: The new version of NEP-2020, is based on the five guiding pillars of access, equity, quality, affordability and accountability. The fundamental principle underlying this policy is not only to limit on developing cognitive abilities, including the essential skills of literacy and numeracy, but also to focus on cultivating higher-order cognitive capacities such as critical thinking and problem-solving, along with social, ethical, and emotional capacities and attitudes.

Pharmacy education and pharmacists are an integral part of the healthcare system in India however, to keep up the global scenario, it was felt necessary to periodically revise the curriculum framework of the academic programs.

Results: As per the core objectives of the NEP-2020, pharmacy education in India is likely to bring a massive change which include, multiple entry and exit options, multidisciplinary components, language learning and communication skills, practical and hands-on training, problem solving and critical thinking, continuous assessment mode, social connect and filed visits etc. The deliberations within the pharmacy fraternity are going on to implement the revised curriculum in the coming academic session. Thus, in near future, the pharma professionals will be skilled enough to serve the pharmaceutical industry in India and the world in a much better way.

Conclusion: India is considered as "*Pharmacy*" of the world by providing the affordable medicines to the world. Moreover, India is also progressing fast for providing quality herbal products to the world. The NEP-2020 which is a revolutionising step towards education sector in India could prove to be a boon and could establish pharmacy profession in India at par with developed countries.

Exploring Asian Critical Race Theory (AsianCrit) in pharmacy education

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Background: Asians are the fastest growing minority group in the US, UK, and Australia, but the varied experiences of pharmacy students and faculty from diverse Asian backgrounds are often misunderstood. This research aims to explore the use of AsianCrit – a Critical Race Theory focused on Asians – to better understand how historical policies may influence Asian experiences in pharmacy education.

Methods: A qualitative review was conducted to explore using AsianCrit to understand how historical policies may have influenced Asian experiences in US pharmacy education. Databases were searched using various terms related to Critical Race Theory, Pharmacy, Higher Education, and Asian. Two researchers searched, reviewed, and analysed literature independently for inclusion.

Results: AsianCrit positions Asianisation as the racialisation of Asian Americans into a group of overachieving minorities with educational success. This "*model minority*" stereotype stems, in part, from US immigration laws such as the 1882 Chinese Exclusion Act that prioritised entry for Asian students and scholars. However, research suggests that some Asian subgroups are prevalent in higher education while others are not. In addition, Asians often suffer from "*othering*" and

"*perpetual foreigner*" stereotypes as reflected in 1942 Japanese American incarceration to recent increases in Anti-Asian hate crimes. Research suggests that the vertical progression of Asians in higher education and higher education leadership may be stunted by these false perceptions.

Conclusion: Asians encompass a significant part of pharmacy education. AsianCrit is an essential tool in examining historical policies, acknowledging current challenges, and uplifting the "*Asian experience*" in pharmacy education. Together, the authors must better equip this field with diverse leadership and enhance the sense of belonging for all Asians.

Innovation and novelty: There is no known literature introducing AsianCrit in pharmacy education. This research aims to generate discourse that will fill that gap in literature and promote the inclusion of this critical population.

Empowering students for success in the digital era: Strategies for effective preparation in a technological environment

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Background: Technology has become integral to healthcare and its integration is expanding at an exponential pace 1. However, many programmes do not adequately prepare students for the digital health era. Practice readiness demands a comprehensive spectrum of skills, including domain-specific knowledge, technical proficiency, and a professional attitude. Crucially, graduates must possess an aptitude for collaboration with patients and interdisciplinary teams. Transferring these diverse skills to a digital setting can be challenging for students, especially as remote interactions with patients and other healthcare professionals become increasingly commonplace in daily practice 2.

Methods: To effectively address these challenges, the WCU School of Pharmacy has integrated innovative technology throughout the curriculum. This seamless integration aims not only to enhance student engagement but also to comprehensively prepare them for the technological demands of their future careers in pharmacy. In this hybrid curriculum, the authors incorporate a variety of advanced tools including virtual reality pharmacy, which simulates real-world pharmacy workflows, providing students hands-on experience in a controlled virtual environment and Blast Learning, a dynamic mixed-media tool designed for memorising the top 200 drugs, making the learning process more interactive and engaging. Furthermore, the authors employ Intedashboard, a sophisticated Team-Based Learning platform 3, which fosters collaborative learning and enhances communication skills. These innovative platforms collectively enable students to actively engage in pharmacy-related activities from remote locations, ensuring that they are well-prepared for the modern, digitally enhanced professional setting.

Results: Preliminary data, including first-time NAPLEX pass rates, academic progression, and students' perception on engagement in a virtual environment indicate a positive trend following the implementation of these measures. These encouraging outcomes underscore the effectiveness of this approach in equipping students with the necessary skills and knowledge to thrive in an increasingly technology-driven digital healthcare.

The adverse inpatient medication event and frailty risk prediction tool

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Background: The digitalisation of Australian hospitals provides a novel opportunity to develop electronic medical records (EMR) derived tools to improve medication safety. The Adverse Inpatient Medication Event (AIME) [1] algorithm was previously developed to guide a systematic approach to patient prioritisation, but frailty was not tested as a variable. Frailty is correlated with poor patient outcomes and so was tested prior to developing a digital tool. To evaluate the predictive performance of the AIME algorithm, incorporating frailty, using multisite digital hospital data

Methods: A retrospective study was conducted at two digital Australian hospitals over 4-months. Data were extracted from EMR for medication, pathology and medication harm. Harm was identified using ICD-10 Y-codes and confirmed by senior pharmacist review using digital progress notes. The Hospital Frailty Risk Score (HFRS) was calculated for each admission. Logistic regression was used to construct a modified AIME algorithm. Variables of the AIME algorithm, together with new variables including HFRS were tested. Performance of the algorithm was reported using area under the curve (AUC) and decision curve analysis (DCA).

Results: 4089 adult patient admissions were included, with a mean age of 64 years (± 19 years), 2050 patients were males, and mean HFRS was 6.2 (± 5.9). 184 inpatients experienced one or more medication harm events. The new AIME-Frail algorithm incorporated 5 of original variables: length of stay, anti-psychotics, antiarrhythmics, immunosuppressants, and INR above 3, and 5 new variables: HFRS, anticoagulants,

antibiotics, insulin, and opioid use. The AUC was 0.79 (95% CI: 0.76-0.83) which was superior to the original model (AUC = 0.70) with sensitivity of 69%, specificity of 81%. The DCA identified clinical utility between probability thresholds of 0.05 to 0.4.

Conclusion: Inclusion of frailty improved the predictive performance of the AIME-Frail algorithm, which is in the process of being built into a digital dashboard to guide systematic identification of high-risk patients for pharmacist review. Screening inpatients using the AIME-Frail could identify patients at high-risk, by leveraging digital health data.

Student views on a Medicines Information department simulation for final year MPharm undergraduates

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Background: Medicines Information (MI) departments in the UK provide advice on medication related queries to healthcare professionals and the public. Working in MI requires effective clinical, communication, teamworking and leadership skills to provide timely evidence-based advice which ensures the safe and effective use of medicines. A high-fidelity simulation was developed for final year MPharm students which aimed to mimic a busy MI department with success reliant on utilisation of these skills.

Methods: Students were divided into two teams of 5, each tasked with managing their own MI department. During the 3-hour simulation, each department received 12 enquiries from a variety of health professionals and patients, role-played by staff via telephone, email and in-person. Students were advised in advance to consider how they would organise their team and individual roles and responsibilities, including nominating a team leader. For each enquiry, staff completed a satisfaction survey, and score updates were provided throughout the simulation to introduce a competitive element. A focus group was conducted with student participants to explore opinions on what worked well, what could be improved and the impact on their learning.

Results: A thematic analysis identified three themes: realism, management and teamwork, and preparation for practice. Students liked the variety of problems and the randomness of their timing which they felt was realistic and challenging. They did not see management as integral to the task at the outset, however there was evidence of a change in approach as the simulation progressed. It was felt that the session supported development of research and communication skills and was an opportunity to apply clinical knowledge. Students said they would like more enquiries added.

Conclusion: The MI simulation was well received and has since been developed to include more enquiries, some of which are presented via videocall. Additional guidance is also provided to encourage students to consider team organisation and allocate roles and responsibilities in advance.

Education partnership with community partners for enhancing communication skills to match values of older adults from ethnic minorities

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Background: It is important that healthcare providers including pharmacists to engage effectively with different cultures. While various culture competence programmes have proliferated, there is lack of such training programmes in Asia, where it is most relevant due to the large number of ethnic groups. This paper describes the development and evaluation of a virtual cultural competency module that uses an educational partnership model to increase pharmacy students cultural competency.

Methods: In 2020, the coronavirus disease of 2019 (COVID-19) pandemic has made the in-person instruction impossible, necessitating the need to transition to an alternative method of delivery. Faculty members redeveloped the communication module that was offered in a pharmacy practice unit. To provide an authentic learning experience, an educational partnership model was adopted where faculty members collaborated with community partners to deliver the workshop online. Students, faculty members and older adults completed a survey after the workshop on the content and satisfaction with the workshop.

Results: Students reported satisfaction with the virtual workshop which provided them with an opportunity to practice cultural competency. Qualitative comments clustered on the following four concepts: mastery of language, cultural practice, family and empathy. The results were further supported by comments and response from both older adults and faculty members. Older adults also commented that it was a good exposure for both students and patients alike on the future practice of medicine using telehealth.

Conclusion: The use of an educational partnership model can be effective to train healthcare students on communication and cultural competency. Through the use of a virtual platform, this allows for equitable access to high-quality teaching which can help produce competent healthcare students that will meet the need of a diverse population.

Competence of pharmacy students and community pharmacists within social prescribing in Norway

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Background: Social prescribing links patients to non-clinical community services and is increasingly adopted by healthcare professionals around the world. The role of pharmacists has been largely neglected, which might be due to a lack of knowledge or competence, and practical hindering issues. This is the first study that aims to assess the competence of pharmacy students and community pharmacists in Norway regarding social prescribing.

Methods: A quantitative cross-sectional study was conducted with the aid of an anonymous survey to collect necessary information. The 7-day survey was distributed in a Facebook group for pharmacists to target pharmacists, especially community pharmacists and pharmacy students. The survey consisted of 23 questions to collect both demographic information and participants' general knowledge, attitudes, and potential barriers to the adoption of social prescribing within the pharmacy profession.

Results: Based on the returned questionnaires (N=96), predominantly female (79.2%) and young candidates aged 25-34 years (40.6%) participated, with 91.7% working in pharmacies. 31.3% of the participants have 10 years or more of work experience. Experience, education level, and gender showed no significant correlation with social prescribing competence. Knowledge scored low at 1.98 out of 5, while attitudes scored high at 3.82 out of 5. The overall competence score was 3.4 out of 5.

Conclusion: Both pharmacy students and community pharmacists exhibit limited knowledge but express a keen interest in further education. The study suggests enhancing competence through educational interventions, including integrating social prescribing into pharmacy school programmes and offering continued education for practicing pharmacists.

Innovation and novelty: This pioneering study in Norway revealed a competence gap in social prescribing and innovative methods for training pharmacists in Norway to gain competence in social prescribing for future implementation in the healthcare system. This not only enriches pharmacy practice but also benefits patients and public health.

Exploring gender disparities in pharmacy education and practice in Norway and charting a path to equity

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Background: Norway's pharmacy sector, once dominated by men, opened to women in 1884, leading to periods of female predominance. Today, the field poses challenges due to gender imbalance. This study investigates gender disparities in Norwegian pharmacy education and practice, exploring factors influencing the predominance of women. The authors hypothesise that gender ideology, stereotypes, wage disparities, limited career development, and job satisfaction might impact choices for pharmacy education and practice in Norway.

Methods: A 7-day anonymous quantitative survey with 14 questions, 9 allowing free opinions, was distributed through social media and local networks. It covered demographic information, and educational and professional aspects, explored pharmacy unemployment reasons, and ended with gender-related inquiries. The concluding section invited participants to share additional thoughts on gender disparities in Norwegian pharmacy education and practice.

Results: 124 respondents took part, with 76.6% being women aged 18-24 (29.8%). Of the respondents, 58.1% were pharmacists, and 40.3% were pharmacy students. Despite 87.9% recognising gender imbalance, no notable differences were identified in perceptions, pay experiences, or age-related challenges between male and female participants. Female and male pharmacists reported relatively similar perceptions.

Conclusion: The findings offer insights into the existing gender imbalance in pharmacy education and practice in Norway. Despite study limitations, addressing gender balance in the pharmacy profession is vital. Recommendations include raising awareness, implementing recruitment strategies, and creating an inclusive environment through informational campaigns. Ongoing research, monitoring, and strategic interventions are essential for achieving a more equitable future for the pharmacy profession in Norway.

Innovation and novelty: This study highlighted a crucial need for a change towards balancing gender distribution and creating an inclusive environment. Implementing recruitment strategies and measures supporting equity and diversity are essential for fostering a balanced and enriched working environment in pharmacy, benefiting patients and public health.

Generative AI as a Personal Tutor for Research and Evaluation Skills

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Background: Teaching research and evaluation skills often requires in-depth personalised feedback. While small groups can mitigate these time-consuming tasks, groups also benefit from facilitator feedback, prompting, and support. ChatGPT (genAI) can create humanlike dialogue that may support this teaching need.1 The purpose of this study was to explore the use of ChatGPT for providing feedback to pharmacy and health professions students learning evaluation skills.

Methods: Students from two courses (n=75) participated in a ChatGPT activity within their course. In 14 Zoom breakout groups of 5-7, groups drafted an evaluation plan for a specified health-system problem. Each group entered their evaluation plan into ChatGPT and requested feedback using a template provided by the instructors. Large group debrief followed and students were invited to complete a brief survey. Descriptive statistics were used to analyse Likert-type items and thematic analysis for open-text items.

Results: Half of the respondents (n=32 of 64, 85.3% response rate) indicated having Never used ChatGPT with others used it Weekly (n=15, 23.4%) or Once a Month (n=17, 26.6%). Most agreed or strongly agreed that ChatGPT feedback "*was valuable*" (n=54, 84.4%), "*helped me learn about evaluation*" (n=45, 70.3%), and "*increased my interest in generative AI*" (n=55, 85.9%). When asked about the ChatGPT feedback, participants rarely indicated distrust or disagreement and most described adaptive intentions,2 for example, "*we needed to be more specific and go more in-depth in parts of our evaluation design*." There were no differences between the two courses.

Discussion and Conclusion: Overall, the authors demonstrated favourable perceptions from learners who were relatively novice to ChatGPT. ChatGPT provided immediate individualised feedback to 14 small groups, a feat unattainable by the instructors otherwise. Future research should focus on identifying design principles that assist educators to optimally utilise genAI within their contexts.

Innovation and novelty: This is the first known study using ChatGPT to provide formative feedback to pharmacy and health professions students about their research and evaluation skills.

A portfolio-based workplace learning plan to assess a pre-registrant (intern) pharmacists' advancing competencies

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Background: In Australia, pharmacy practice is underpinned by the National Competency Standards Framework (NCSF) Pre-registrant pharmacists (i.e. interns) complete a year-long supervised programme to meet core competencies of the NCSF.

In 2016, an extension work-integrated learning (WIL) programme was established to fast-track intern development of more advancing NCSF competencies. To evidence this, interns are expected to complete a series of workplace-based assessments (WBA) as part of a year-long workplace learning plan (WLP).

Methods: In 2023, a more overt portfolio-based WLP was established. For each of the five NCSF domains (Domain 1: Professional practice, Domain 2: Communication/Collaboration, Domain 3: Medication management, Domain 4: Leadership and Domain 5: Education), interns were required to select a range of WBAs for their portfolio submission. Interns complete supervised training in either a hospital or community setting and were expected to liaise with their supervisor to select WBAs catered to their development needs and advancement goals.

Results: In 2023, 231 (n=110 hospital, n=121 community) interns were enrolled in the program. For Domain 2, the most commonly performed WBA was "*written communication to a Doctor*" (81%) for community interns and an "*inpatient/progress note*" (58.1%) for hospital interns. For Domain 3, the most commonly performed WBA was a "*primary care case*" (82.6%) for community interns and a "*Best Possible Medication History*" (92.7%) for hospital interns. For Domain 5, the most commonly performed WBA was "*supervision of a learner*" (58.7%) for community interns and a "*continuing education presentation*" (78.2%) for hospital interns.

Discussion: This is the first pre-registrant programme in Australia which uses a portfolio-based WLP to assess advancing competencies.

Conclusion: Utilising portfolio-based WLP evidence allows for structured documentation of development in NCSF domains of competency. Similar portfolio-based WLPs may be adopted by other pre-registrant or early career training programs.

What are employers looking for in future pharmacists? A qualitative study

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Background: Understanding an employer's perspective is crucial for fostering professional growth and personal advancement, even for the community pharmacy industry. Knowing the skills, characteristics, or knowledge that makes an individual employable will benefit intern pharmacists to focus on developing relevant skills.

This research study's aim is to identify certain skills, attributes and knowledge that community pharmacy employers desire in their pharmacy interns, following their extension internship program.

Methods: One semi-structured focus group was conducted to explore community pharmacist employers' perspectives of the desired attributes of interns completing the Intern Foundation Programme (IFP). The entire conversation was transcribed by 2 independent researchers. It was then analysed using a deductive, thematic analysis by 5 team members independently and then discussed to a consensus.

Results: The study explored the perspectives of 4 Australian community pharmacists in a focus group, leading to seven main themes. Communication emerged as the most critical factor for intern pharmacists, encompassing essential components such as establishing effective patient rapport, demonstrating cultural understanding, and interprofessional collaboration. Leadership and future directions for advancing practice were acknowledged as following noteworthy factors.

Conclusion: Additional research is required to gain a better understanding of what employers are seeking in their pharmacy interns. However, these findings are important in not only improving Monash's IFP, but also assists other institutions in creating or improving their own internship programmes to ensure that their graduates have the best opportunities to be employed.

Equipping pharmacy and dental learners in a dental clinic practice rotation to identify social determinants of health

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Background: Innovative partnerships between schools of dentistry, pharmacy, and social work led to the creation of an interprofessional clinical care (IPCC) rotation. Few integrated models involve multiple professions collaboratively addressing physical, oral, and behavioral health and psychosocial supports necessary for patient care in the dental setting. This study assessed the rotation's impact on learners' understanding of identifying social determinants of health (SDoH) and health inequities that were impacting their patients' dental treatment plans and taking a holistic approach to alleviate psychosocial barriers and medication-related problems in underserved populations.

Methods: Third- and fourth-year dental students during 2021-2022 academic year submitted medically complex patient cases active in their care for consultation and were asked to identify pharmacological and psychosocial issues. Social work and pharmacy students and faculty preceptors reviewed and discussed the issues with the dental students and covered the SDoH impacting the patients' health conditions. Pharmacy students completed retrospective chart review on all patient cases. Dental student reflective evaluations were analysed for major themes.

Results: Of the 290 patient cases discussed, the top three medical condition categories were hypertension (57.7%), mental health (50.2%), and inflammatory disease (41.7%). Most common pharmacological interventions requested(n=315) included oral health impact of medications (35%) and chronic disease state education (30%). Most common psychosocial interventions requested(n=585) included mental health navigation (17%), patient financial resource strain (14%), medical needs (13%), tobacco use (11%), and dental anxiety (11%). Primary qualitative themes included expanded knowledge of psychosocial factor resources, improved understanding of interprofessional roles, and improved patient-provider and interprofessional communication.

Conclusion: The IPCC rotation can serve as an interprofessional practice model that uses peer-to-peer teaching and encourages deep clinical discussion regarding the holistic needs of dental patients and how to address SDoH and health inequities to help prepare learners for encounters with patients faced with significant health care barriers.

Roles and educational requirements of informatics pharmacists practicing in the Australian healthcare setting: A qualitative study

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Background: The implementation of digital healthcare systems in hospitals globally and in Australia has led to the introduction of the informatics pharmacist as a career in the healthcare system. However, informatics pharmacists are not yet part of routine clinical services in Australia, so their perspective, roles and educational requirements are not well understood. To explore pharmacists' and other health professionals' perspectives of the roles of informatics pharmacists within interprofessional teams in Australian health care.

Methods: This study used semi-structured interviews with experts in pharmacy and/or informatics. They were recruited using convenience sampling and snowballing. The interviews were audio-recorded and transcribed and analysed using inductive thematic techniques to identify major themes. Ethical approval was received from the local institutional Human Research Ethics Committee.

Results: The process of inductive thematic analysis was used to analyse the interview transcriptions of 11 participants. Six themes were identified: (1) a promising future for the informatics pharmacists, (2) educational needs, (3) specific skills, (4) scope of informatics role, (5) impacts, and (6) barriers. Participants described the career of informatics pharmacists as an emerging specialty in today's healthcare systems. The roles of informatics pharmacists in Australian health care are described together with the skills and knowledge required for these roles. Educational requirements including specialist training and qualifications were highlighted as a pivotal step towards establishing these roles.

Discusion: A key role of informatics pharmacists is to facilitate the appropriate use of digital systems to prevent medication errors and improve patients' safety. While international experience has shown the potential scope for an informatics pharmacist, this research shows the use of informatics pharmacists in Australia is in its infancy. There is a pressing need to ensure a digitally prepared pharmacy workforce through implementation of undergraduate curriculum and postgraduate courses.

Preparing an ethical, equitable interprofessional workforce using an unfolding case study on stigma with optional naloxone product and app training/distribution

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Background: To prepare ethical, equitable practitioners, US education accreditation standards for all entry-to-practice health profession programmes require instruction in health ethics, equity, and opportunities to learn about, from, and with one another. In addition, the US Centers for Disease Control and Prevention recommends targeted naloxone distribution as an evidence-based strategy for preventing opioid overdose.

Methods: Dentistry, medicine, nursing, pharmacy, physical therapy, and physician assistant students (n~ 650) in years 1 or 2 of their respective programmes participate in a required 7-week course/unit called Interprofessional Healthcare Ethics and Health Equity (IPHE). The weekly active learning format includes an unfolding, co-designed case study based on an actual patient experience, eight step ethical analysis framework, team-based discussion boards, debate, and mock consultation. In 2023, the authors added an optional harm minimisation component providing naloxone product and OpiRescue™ app training/distribution.

Results: Student reflections show that the IPHE course/unit increased knowledge of ethical frameworks, broadened attitudes about social determinants of health, and supplied tools for approaching stigma, bias, and potential opioid overdose in clinical and nonclinical settings. Qualitative feedback demonstrated maturation in their recognition of potential dissonance between personal and professional values, and how their actions may change when ethical frameworks are applied to their gut reactions. Participants valued learning in an interprofessional environment.Those opting for the naloxone/app training/distribution expressed personal interest in opioid overdose prevention, desire to enhance patient care skills, and interest inspired by the unfolding case study as primary motivators.

Discusion: This project represents a replicable interprofessional education opportunity scaffolding ethical development of future clinicians by emphasising social determinants of health, stigma, bias, and harm minimisation. Programme participants have the tools to become agents of change in their communities.

Pharmacy students' views on the implementation of a pharmacist-led heroin assisted opioid addiction management service: A questionnaire study

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Background: In the UK, opioid substitution therapy (OST) relies on methadone and buprenorphine for the management of heroin addiction. Heroin assisted treatment (HAT), which has been proven beneficial in other countries, could be an extension of OST in the UK when this has proven ineffective. If so, it may well be current undergraduates that will be expected to deliver such a service, and for this reason, it would be important to research this group. The aim of this study was therefore to gather the views and learning needs of pharmacy students on the implementation of a pharmacist-led HAT opioid addiction management service.

Methods: An anonymous self-completion paper-based questionnaire was administered to the cohort of Year 4 (n=84) Master of Pharmacy students at the University of Portsmouth, who were recruited opportunistically at two lectures in the month of November 2022. Responses were coded and analysed using descriptive statistics.

Results: A total of 57 responses were received achieving a response rate of 68%. Only 42% (n=24) agreed that OST manages heroin dependence effectively with 56% (n=32) agreeing HAT should be available for patients who are unsuccessful with OST, and 34% (n=19) that pharmacists could supervise this service. However, 41% (n=23) of respondents were hesitant to lead provision with 91% (n=52) sharing that their current knowledge would not enable them to safely do so.

Discussion and Conclusion: Despite some participants identifying that pharmacist-led HAT could be a beneficial addition to OST, participants reported learning needs was a barrier to positive views about potential implementation. More extensive data collection and a mixed methods approach could further explore whether pharmacists perceive that they could offer HAT services.

Innovation and novelty: This is the first UK study of this type, providing initial findings to inform further research and education provision on this area.

Impact of a pharmacy school operated, pharmacist-led, interdisciplinary chronic pain teaching clinic on referring health provider practice

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Background: The XXXX Chronic Pain Clinic (CPC) is an interdisciplinary teaching clinic operated by the College of Pharmacy (University XXXXX) that was created to offer interprofessional experiential learning opportunities for students, while providing community service. The CPC uses a unique pharmacist-led model of chronic pain care that includes students and health professionals from pharmacy, social work, physiotherapy, and medicine. In addition to providing individual patient care, the CPC aims to increase the capacity of the primary care system to manage chronic pain through a unique mentorship program. Referring health providers are invited to meet with a CPC physician/pharmacist team (including students) to receive education/mentorship on chronic pain management. This study aimed to determine health provider perceptions of the impact of the CPC mentorship programme on their practice.

Methods: A paper-based questionnaire was mailed monthly, from June-December 2023, to providers who participated in CPC mentorship sessions during the previous month. The questionnaire was pre-tested, included 14 Likert-scale and 2 free-text questions, and took approximately 5 minutes to complete. The study was approved by the University XXXX Ethics Board.

Results: Response rate was 36.5% (n=27/74) and respondents were mostly family physicians (n=25/27, 92.6%). About three-quarters (74.1%) reported increased confidence managing patients with chronic pain after the mentorship session and 70.4% reported increased knowledge about opioid prescribing. Most (70.4%) had applied the knowledge acquired to additional patients other than the referral. Many (51.9%) were more confident prescribing buprenorphine/naloxone for chronic pain and 37.0% had prescribed buprenorphine/naloxone for the first time because of the session.

Conclusion: The CPC mentorship service appears to be achieving the goal of increasing capacity of the primary health system to manage chronic pain, making it a valuable community service and student learning experience. Now that clinical effectiveness is known, future research can investigate the impact of the service on student competency.

Brainwave analysis: Exploring its potential in evaluating audiovisual personalised patient education to quit smoking or vaping

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Background: Audiovisual tools can effectively engage individuals seeking to quit smoking or vaping, increasing the likelihood of them staying focused on their cessation journey. However, its success in motivating behavior changes depends on cultural nuances and preference for the digital dissemination format. Research into Artificial intelligence (AI) and brainwave functionality is often used to assess how individuals respond to stimuli. Nevertheless, there is a substantial knowledge gap in its utilisation for evaluating audiovisual patient education personalised to the emotional needs of smokers or vapers.

Methods: Ten participants, comprising cigarette smokers or vapers between the ages of 20 and 30 years, were invited to view videos that showcase smoking or vaping scenarios. Brainwave data was recorded using a portable electroencephalogram (EEG) (Emotiv Epoc X with sensors). The device and sensors were fastened to the participant's head until the completion of video viewing for 15 minutes. This process was repeated twice to ensure non-biased reporting.

The EEG data was partitioned into various sections based on video timelines to obtain a precise analysis of emotion and motivation. Qualitative feedback from both reviewers and participants was included. The parallel-form reliability between self-evaluation assessment and the outcomes of brain wave analysis was done.

Results: A pre-processed EEG dataset was successfully developed to compute a range of metrics for evaluating the model's performance, including accuracy, loss, and other relevant metrics. Graphical representations were generated for each emotion related to smoking or vaping cessation to enhance visualisation and facilitate further development.

Discussion: This preliminary result is a pre-emptive measure toward an AI-based digital health web application framework. Audiovisual contextualised for various stages in smoking or vaping cessation would empower Quitline users to seek assistance from pharmacist counselors. This real-time communication has the potential to improve user support and engagement significantly.

Evaluation of a novel approach to experiential learning within a pharmacy school operated patient care clinic

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Background: The Medication Assessment Centre (MAC) is a patient care clinic operated by the College of Pharmacy (University of XXXX) that was created to offer unique experiential learning opportunities for students, while providing valuable clinical service for the community. To reach more students, the MAC shifted from offering 8-week Advanced Pharmacy Practice Rotations (APPE) for 6 senior students/year to offering short (1/2 day) and repeated (twice/year) immersions for all students in years 1 and 3. Groups of 4 students observed (year 1) or led (year 3) patient interviews, followed by faculty debriefing and individual student summative assessment. This study aimed to evaluate the impact of the immersions on student learning and competency.

Methods: Students were invited in April 2023 to complete a web-based survey following the 2022-23 academic year. The questionnaires contained 12-14 Likert-scale questions (year 1 students had 2 orientation questions) and 2 free-text questions evaluating student experiences with the immersions. The questionnaire was pre-tested and took approximately 10 minutes to complete.

Results: Eighty-four year 1 students and 80 year 3 students completed the immersions and survey response rate was 100%. Almost all students, 98.8% in year 1 and 100% in year 3, agreed or strongly agreed that they were "*Able to connect academic course work with experiential activities*", that preceptors "*Provided thoughtful and actionable feedback*", and that preceptors "*Provided adequate instruction and supervision*". Similarly, 98.8% in year 1 and 97.5% in year 3 agreed or strongly agree that "*Activities enabled me to achieve the care provider competencies*". Free-text comments were consistently complimentary about the positive impact on learning and competency.

Conclusion: The shift away from 8-week APPE rotations for small numbers of senior students, to short and repeated immersion rotations for large numbers of junior students appears to have been received positively and enabled student self-perceived competency achievement.

Revolutionising pharmacy recognition: Evolution of the Australian and New Zealand College of Advanced Pharmacy

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Background: The Australian and New Zealand College of Advanced Pharmacy (ANZCAP) represents a pioneering advancement in pharmacy recognition and career progression. Addressing the limitations of previous models, ANZCAP emerged as a strategic response to bridge the recognition gap within the pharmacy profession. Recognising the need to establish a recognition framework that resonates with pharmacists, aligns with their career journeys, and holds tangible benefits, ANZCAP aims to redefine recognition in a way that is meaningful, inclusive, and motivates pharmacists toward continuous development.

Methods: ANZCAP's development commenced with the acquisition of the existing Australian Advancing Practice (AP) credentialing program. Previous efforts to engage pharmacists with the programme were reassessed, and a comprehensive review process ensued incorporating qualitative surveys, workshops, focus groups, and expert consultations. Through an iterative approach, ANZCAP evolved into a prospective, merit-based system recognising specialty areas and levels of practice in line with existing medical nomenclature.

Three recognition programmes were developed.

•Foundation program: recognition based on evidence of Prior Professional Experience.

•Independent program: development of a portfolio of forty learning experiences subsequently submitted for recognition.

•Training programs: adaptation of existing 2-year intensive workplace-based programmes for pharmacists working towards Resident or Registrar recognition.

All programmes are housed within an intuitive online portal, enhancing accessibility and user experience. This portal serves as a centralised hub, streamlining the portfolio building and recognition process.

Results: To date, through the Foundation program, over 600 pharmacists have been recognised at Resident, Registrar, or Consultant level. Initial portfolio submissions from the Independent programme, launched in November 2023, are expected from mid-late 2024.

Existing training programme candidates are being transitioned to the ANZCAP programme to complete their programmes with new candidates automatically enrolled into the new program.

Discussion: ANZCAP's future involves aligning recognition with promotion and remuneration, enhancing engagement among pharmacists. Work on pharmacy technician competency and recognition frameworks has begun to provide this group with meaningful career opportunities.

The program's evolution will be guided by feedback, research, and a commitment to advancing pharmacy practice.

In the broader landscape, ANZCAP's journey involves cultivating partnerships with international pharmacy associations, leveraging collective expertise, and fostering an inclusive recognition culture.

Student-led development of group working guidance

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Background: Group work is an integral part of pharmacy education. Barriers to successful group work may include different working styles; 'free riders' who appear not to engage or contribute to the work; poor communication, especially in larger groups; and managing individuals that dominate group discussions. Consequently, a student-led project was set-up to produce student guidance to support group work.

Methods: Student views informed the development of the guidance, with focus groups undertaken with current undergraduates, the content of which was informed by the literature on group work barriers. Key teaching staff were interviewed to comment on the draft guidance which informed the version that was shared with Year 1 student groups working on a problem-based learning scenario. After assignment completion, students were invited to complete an online feedback questionnaire on the guidance, including one 5-point Likert scale and two open questions on improvements and further comments.

Results: Of 86 students, 41 (48%) used the guidance, and of these 34 (83%) found the guidance useful. The majority felt it provided clear and precise information and helped improve team communication. Perceived issues included the lack of availability of the guidance; and that it did not resolve all issues some groups experienced, including the issue of 'free riders'. Students requested more guidance on managing power imbalances, organising meetings and tracking progress, and a process for addressing or reporting individuals who did not engage.

Conclusion: Overall, this first iteration of the group work guidance was shown to be of some use to students. By having students lead the development of this guidance, it helped to

keep it relevant to student needs. Further development of the guidance is needed for certain issues including engaging with students perceived as 'free riders' and dealing with power imbalances within the group.

Assessing professional identity formation among year one students using multiple ethical scenarios

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Background: A weak professional identity is associated with an over-reliance on personal values rather than those of the profession. As a result, patient-care decisions may be more reflective of these personal values. In effect, duty-to-self and provider-focused outcomes supplant patient-centred care and duty-of-care. The study aim was to assess changes in duty-to-self versus duty-of-care (individual versus professional identity) among students completing a Professionalism module in a Year 1 course.

Methods: Prior to starting the Professionalism module, and as a regular part of the class, students complete an on-line questionnaire consisting of five ethical scenarios. The scenarios concern a patient presenting with a legal prescription for a clinically appropriate drug that the pharmacist considers morally objectionable. Students are asked to indicate whether it is acceptable for the pharmacist to refuse to dispense; actively prevent the patient from receiving; express an opinion regarding; refer the patient to another pharmacist; or be obliged to dispense the drug. Student responses are aggregated and discussed during the professionalism module. At the end of the module, students are asked to complete a second questionnaire consisting of the same five scenarios.

Results: Twenty-three students (27%) of the 2023 PHARM 110 class provided written consent to the presenting of their responses in aggregate form outside the classroom. Compared to the pre-module questionnaire, the post-module responses indicated significantly greater support for duty-of-care for three of the five scenarios: actively prevent; express an opinion; and refer the patient.

Conclusion: The three scenarios showing substantive and significant changes reflect situations where professional directives clearly set out the pharmacist's professional responsibilities. By including and discussing these directives within the curriculum, and tying these to professionalism, pharmacy educators can play an important role in promoting attitudes and behaviours that support the formation of a strong professional identity.

Digital literacy in undergraduate pharmacy Education: A Scoping Review

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Background: Digital health technologies (DHTs) play a crucial role in enhancing patient care and are an integral part of pharmacy practice. To fully harness the benefits of digital health, the pharmacy workforce must be digitally literate. Despite ongoing efforts to promote digital literacy, there remains a gap in digital health education within many pharmacy schools. This scoping review aims to explore strategies used in the education, training, and assessment of digital literacy among undergraduate pharmacy students and trainees.

Methods: Following the Joanna Briggs Institute (JBI) methodology and guided by a registered protocol. Five electronic databases: MEDLINE (Ovid), PubMed, Embase, Scopus, and CINAHL were searched in June 2022. Three independent reviewers screened all articles; data extraction was conducted by two reviewers. Any discrepancies were arbitrated by two additional reviewers.

Results: 57 studies were identified from an initial search of 624. Four main themes emerged: competencies, skills, and learning objectives, delivery methods, assessment methods, and course development. Key learning objectives for digital literacy included: theoretical understanding of health informatics, familiarity with various DHTs, and applied informatics for patient-centred care and interprofessional collaboration. Blended pedagogical strategies were commonly employed. Assessment approaches included developing a patient plan requiring digital information retrieval, critical appraisal of digital tools, live evaluations of telehealth skills, and written exams on health informatics concepts. Successful digital literacy education often involved external engagement with system developers, suppliers, and other institutes.

Conclusion: This scoping review identifies various learning objectives, teaching, and assessment strategies to incorporate digital literacy in undergraduate pharmacy curricula, with practical suggestions for educators,

professional societies, and managers. These recommendations stress the importance of acknowledging the evolving digital health landscape, ensuring constructive alignment between learning objectives, teaching approach and assessments, co-development of digital literacy courses with stakeholders, and using standardised guidelines for reporting educational interventions.

What is the future of digital literacy education for UK undergraduate pharmacy students? A mixed-methods study

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Background: Digital literacy is increasingly crucial in pharmacy practice, and relevant education and training are required to prepare the future workforce. This study aims to explore the current and planned inclusion of digital literacy education in the Master of Pharmacy (MPharm) curricula of UK pharmacy schools.

Methods: A two-phase study was conducted. Phase 1: a content analysis of curricula from all General Pharmaceutical Council-accredited UK pharmacy schools (n=30) in April 2022. Phase 2: A structured 14-item quantitative survey, informed by the Health Education England (HEE) Digital Capabilities Framework for the Pharmacy Workforce, was emailed to academic representatives across all UK pharmacy schools.

Results: Content analysis documents were obtained from (46.7%; 14/30) of the UK pharmacy schools. Of these, (71.4%; 10/14) included digital literacy education. Themes identified in digital literacy education including: the theoretical understanding of Health Informatics, applied informatics, information technology skills and newly emerging areas such as artificial intelligence, pharmacogenomics, and personalised therapies. A total of (53.3%; 16/30) schools responded to the survey; most schools described including digital literacy into their curricula. Alignment with HEE's framework varied. Digital literacy was typically integrated within other teaching sessions, with evidence of self-directed online learning (66.7%; 12/18). EHRs and remote counselling were primary focus areas (94.4%; 17/18). Challenges in digital literacy education include expertise shortage (68.4%; 13/19), insufficient support from pharmacy organisations (68.4%; 13/19), and limited time (52.6%; 10/19).

Conclusion: UK pharmacy schools commendably integrate digital literacy into MPharm curricula, yet gaps persist - diverse digital literacy topics, HEE framework misalignment, and concerns about adequacy of current provisions. Recommendations to bridge the gaps and equip students with the digital literacy skills focus on: developing a specific competency framework that aligns with professional needs, investment in faculty training and increased sharing of good practice.

Using MyDispense to simulate the Electronic Medical Record (EMR) inpatient medication order verification process

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Background: Electronic Medical Record (EMR) inpatient medication order verification is a complex task requiring the synthesis and evaluation of multiple sources of EMR patient data to make decisions about the appropriateness of medication supply within a hospital setting. Order verification training is usually confined to experiential placements. In 2023, the capacity to simulate the EMR order verification process was built in MyDispense, a well-established pharmacy education simulation software. The aim of this research was to evaluate a MyDispense simulation activity used to teach pharmacy students how to verify EMR inpatient medication orders.

Methods: In October 2023, 301 third-year pharmacy students enrolled in a 12-week acute care course completed a 60-minute formative MyDispense inpatient order verification workshop. Students were tasked to review 8 medication orders for a patient using the MyDispense platform. Students were then invited to complete a voluntary anonymous online survey approved by ethics (MUHREC40482) to evaluate the MyDispense activity via four 5-point Likert scale and two open-ended questions.

Results: Of the 144 (48%) students that completed the survey most students strongly agreed or agreed that: they enjoyed the activity (93%); the activity improved their understanding of the order verification process (97%), MyDispense was a useful tool to simulate this process (95%); and they felt better prepared to verify medication orders (94%). Respondents stated that the platform was realistic and authentic but made practical suggestions for improvement.

Discussion and Conclusion: This is the first time that MyDispense has been used for this purpose and it was positively received by students. Similar to other simulation activities, MyDispense provides an opportunity for learners to practice EMR order verification in a safe environment. Education providers should consider adopting MyDispense for this purpose.

Systems thinking and breaking down interprofessional siloes: Outcomes from a simulation intervention

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Background: Interprofessional collaboration (IPC) is invaluable in delivering patient-centred care in the complex and demanding healthcare environment[1]. However, education to promote IPC and systems thinking is challenging; and demands the consideration of novel interventions, beyond didactic education, to support behaviour change. The authors aim to evaluate the impact of an experiential, low-fidelity simulation, 'serious game' - Friday Night at the ER©, across clinical teams in five hospitals and health services.

Methods: Interprofessional clinical teams were invited to attend a 2.5-3-hour workshop. The workshop structure introduced the rules of the simulation and principles of IPC, conducted the simulation, and concluded with a debrief. Informed consent and demographic data were obtained from participants. Participants completed the following immediately prior to the workshop and at a 6-8 week follow up - Systems Thinking Scale (STS), Attitudes Towards Interprofessional Health Care Teams (ATIHCT) and Adapted Interprofessional Collaboration Scale (ICS). Available pre- and post-intervention data was compared using parametric (STS) and non-parametric tests (ATIHCT and ICS).

Results: A total of 519 staff, from 35 teams undertook the simulation learning experience between August 2022 and January 2023. All eligible staff were invited to complete the pre-evaluation survey (n=384) and follow up surveys (n=116). The data demonstrated a significant improvement in participant's scores on the STS (mean change 62.6±7.8 to 66±7, p <0.001). There were improvements in the participant's perceptions of the quality of care delivered by the team and the quality of teamwork to accomplish this (ATHCT mean pre 6.29 to post 6.49, p <0.001).

Discussion and Conclusion: Simulation and serious games are an effective and emerging pedagogy within health professional education, and this intervention demonstrated a positive shift in attitudes towards IPC and systems thinking. This educational intervention was successfully implemented at a large-scale across multiple hospital sites and across different clinical teams and can be adopted to promote teamwork and collaboration within the complex healthcare environment.

Start as you mean to go on: Ensuring equality, diversity and inclusion are embedded in an introductory skills module

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Background: The General Pharmaceutical Council's Standards for the initial education and training of pharmacists emphasise equality, diversity and inclusion (EDI) in pharmacist training, aligning with the International Pharmaceutical Federation's Development Goals (such as '8: Working with others' and '10: Equity and equality'). Thus, the effective integration of EDI training during induction into university and pharmacy education is crucial. This study aimed to enhance and evaluate an induction and skills module following the incorporation of additional EDI-related activities.

Methods: Module content was reviewed by the module coordinator and Directors of Education (2022-23), incorporating prior student feedback, and discussions with a member of the School's EDI committee and other staff. The review focused on alignment with relevant learning outcomes within the standards and annual programme changes (January to March 2023). The revised module (non-credit bearing; running during the first two weeks of the semester) was launched in September 2023, and evaluated shortly afterwards.

Results: The module included training activities related to unconscious bias, United Nations Sustainability Development Goals, group work, professional behaviour (including case studies involving non-inclusive behaviour), and support mechanisms for students, including those with disabilities. A social event was also included. Activities removed included CV writing. The module's impact on awareness of EDI issues was supported by 90.7% (n=97) of student respondents considering unconscious bias training as excellent/good, noting it "*...will benefit me...treating everyone equally in whatever field of pharmacy I work in*", and 89% finding that the social event enhanced student familiarity, fostering "*...a good sense of belonging*.".

Discussion/Conclusion: Gaps in current EDI provision were identified (unconscious bias training had been included for a few years) and changes made. The revised module has been well received, but the authors must ensure students are given sufficient opportunities to demonstrate their newly acquired skills and knowledge.

The development of clinical training in the United Arab Emirates pharmacy schools: the impact of international accreditation bodies

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Background: Historically, most pharmacy schools in the Middle East have been following United Kingdom model where much of clinical training CT component is done after graduation from the MPharm degree. Recently, pharmacy schools in America and Canada have advanced their CT element to help graduating students succeed in gaining professional competencies needed to fulfil clinical roles developing in pharmacy profession. Since 2018, national accreditation body in UAE has recommended the implementation of a clinically oriented curriculum. Therefore, the aim is to understand how the North American model of CT has been implemented in the UAE.

Methods: A case study approach following Bartlett and Vavrus (2017) on UAE's pharmacy schools was used and comprised of three main data stages (2,3). First, information from policies and procedures issued by regulatory and accreditation bodies shaping CT practices over the past decade were examined. Second, documents published by pharmacy schools such as course description, curricula, and formalised reports. Third, thirty-three interviews conducted with stakeholders responsible for CT practices and policies such as chancellors, deans, and senior officials.

Results: First, all pharmacy schools have applied to Accreditation Council for Pharmacy Education, and some have been accredited for their BSc and PharmD degrees. Second, increased number of courses related to pharmacy practice and decreased courses in pharmaceutics and pharmaceutical chemistry. Third, implemented early exposure to CT sites in community and hospital pharmacy, and set advance CT frameworks in multiple hospital departments. Four, increased number of credit hours in a clinical setting to 16, and programme length to 4.5 - 5 years.

Conclusion: Pharmacy schools in the UAE have improved quality of their programmes and gained international recognition. Based on world university rankings, schools have become leading institutes within the region. Further collaborative work including main actors is required to advance the CT experience.

Mobile application to assist training and uptake of deprescribing practice: A study exploring perceptions from the aged care workforce

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Background: Deprescribing reduces inappropriate medication during medication review. However, effective deprescribing practice is highly dependent upon effective face-to-face training for healthcare providers, and information processing through deprescribing guidelines can also be time-consuming. Mobile application can offer motivation and support for these healthcare professionals to deprescribe as they save time and effort, as well as promotes sustainable daily healthcare practice. However, their use can be limited by high attrition due to insufficient consideration of end-user's perspectives and requirements. The aim of this study is to conduct a survey with healthcare professionals to assess the requirements and preferences for the deprescribing application.

Methods: A validated online survey was carried out with healthcare professional involved in the prescribing, dispensing, administration and monitoring of medications in aged care homes in Singapore.

Results: Forty-five participants, comprising of 24 (53.3%) nurses, 16 (35.6%) pharmacists and 5 (11.1%) doctors completed the survey. The main reasons for not deprescribing are lack of experience and resources, but most (91.1%) are receptive to using an application to aid in deprescribing. The top functions that the participants wished to see in the application include evidence-based deprescribing guide, medication management, and communication tools. The main concerns when using a deprescribing application include data privacy and security issues, inaccurate information, lack of consideration for individual patient factors, and lack of clinical judgement.

Discussion/Conclusion: As technology advances, there is an increasing role of digital health in pharmacy practice. Pharmacists and other healthcare professionals felt that mobile applications can aid in deprescribing practice, especially where there is a lack of experience and educational resources in the setting. However, end-users' preferences and concerns should be important considerations when developing such applications.

Assessment of disaster management and preparedness among pharmacy practitioners and pharmacy students

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Background: Over the past years, disasters became more frequent, making it crucial for healthcare practitioners, including pharmacists, to be well-prepared for disaster management. Nonetheless, scoping reviews revealed a potential oversight in examining disaster management among pharmacy practitioners and pharmacy students. This gap is partly attributed to the absence of rigorously developed and validated assessment tools.

Objectives: To develop disaster management assessment tools for practitioners and students, and to examine the perception of pharmacy practitioners and students of their disaster management.

Methods: The development of the assessment tools was guided by the four stages of 'disaster management framework'. The assessment tools were developed and evaluated through establishing content validity and internal consistency reliability. The assessment tools were then administered to practitioners and students using SurveyMonkey in a cross-sectional study design. This was followed by conducting descriptive analysis using SPSS.

Results: The mean age of pharmacy practitioners was 38.7 years. The majority of them were females (57%), Egyptians (43%), worked in primary care centers (71%) for 6–10 years (43%). Pharmacy practitioners had a moderate to high level of disaster management knowledge (median= 4/5), attitude (median= 4/5), practice (median= 3.25/ 5), willingness to continue practicing duties, (median= 4/5), and perception of their organisation-based preparedness (median= 4/5). The majority of participating students were female (82%) and in the second professional year (28%). Pharmacy students had a high level of disaster management knowledge (median= 4/5), attitude (median= 4/5), and readiness to practice (median= 4/5).

Conclusion: The developed assessment tools effectively measured the perception of pharmacy practitioners and students of their disaster management. This assessment will allow educational, practice, and policy-making institutions to work collaboratively in developing informed preparedness strategies, which highlight areas for improvement, optimise training programs, and allow resource allocation, in order to ultimately better prepare pharmacists for disasters.

Cultural awareness and competence of pharmacy educators and learners from the perspective of pharmacy students: A mixed-methods approach

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Background: Since healthcare professional educators and practitioners in Qatar are culturally diverse, the impact of this diversity on the education and training of healthcare students should be evaluated. This study, therefore, aims at examining pharmacy students' perspectives on the level of cultural awareness and competence of pharmacy educators and learners at Qatar University and the influence of cultural diversity on pharmacy education in Qatar.

Methods: A convergent mixed-methods design was adopted. The Cultural Awareness Scale (CAS) was utilised in the quantitative phase, which was administered on 122 pharmacy students at Qatar University College of Pharmacy (QU CPH), of whom 70 responded. The qualitative phase comprised four focus groups with a total of 23 students. The quantitative and qualitative data were collected concurrently, and the results were integrated.

Results: The findings suggest that the QU CPH is an institution of a culturally diverse community. Educators and students alike are generally culturally aware and sensitive; however, demonstration of a holistic awareness was hindered by a few barriers. This study suggests curricular changes to reinforce cultural competence, cultural inclusiveness, and the preservation of Qatar's cultural identity and values in the educational environment.

Conclusion: The internationalisation of pharmacy education in Qatar has inspired students and educators alike to achieve new dimensions of cultural awareness. To infuse passion and enthusiasm in learning while maintaining Qatar's cultural values and identity, healthcare professional educators, researchers, and policymakers are required to collaborate to promote culturally sensitive pharmacy education.

Contributing factors for the career goal advancement of pharmacy learners in the black, indigenous, and person of colour community

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Background: Racial matching among providers and patients has been identified as important for the patient experience and outcomes, though only 21% of African American patients have a provider of the same race.[1-3] Though growing, representation of the Black, Indigenous, and Person of Color (BIPOC) community remains low among pharmacy learners relative to the highest need patient populations in the US.[4,5] Pipeline strengthening has been identified as an important step to rectifying this disparity. The purpose of this work was to explore factors influencing career goals and goal attainment for BIPOC pharmacy learners.

Methods: In late 2021 and early 2022, US-based pharmacy learners were invited to participate in two focus groups. Participants were asked to reflect on career goal influences, barriers, and facilitators and were asked to provide suggestions for improvement to support career goal attainment for learners in the BIPOC community. Focus group transcripts were coded using deductive and inductive coding and thematic analysis.

Results: Fifteen learners were included in the first round of focus groups and ten were included in the second. The most common career goal motivators were self-efficacy factors. The most common barriers were financial, lack of representation, and lack of support. Common facilitators included mentorship and informal networking opportunities. Participants suggested multiple strategies for educational institutions and healthcare organisations to improve including genuine investment, representation, financial support, improved access to professional development opportunities, prioritising diversity, equity, and inclusion (DEI) initiatives, and partnering with other professional organisations.

Conclusion: Institutions should prioritise effective, positive mentoring relationships and exposure to BIPOC professionals. Training programmes and associations should consider improving financial support and lowering the cost of involvement to reduce barriers. All stakeholders should prioritise DEI to promote career advancement of BIPOC learners.

Limiting the impact of regenerative AI on clinical academic assessments in postregistration pharmacist training

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Background: Generative Artificial Intelligence (AI) has emerged as a tool for the creation of convincing technical and reflective writing and the use of Large Language Models (LLM) has created opportunity for academic misconduct that is not readily identified by content similarity-matching plagiarism software, with associated impact on the integrity and validity of text-based academic assessment. These difficulties mean that organisational policy makers are seeking robust assessment strategies that minimise AI's risk to academic intergrity but do not create burdensome requirements that impact academic resources. Aims: - Reduce programme reliance on text-based academic assessment in order to limit the opportunities to use generative AI to create summative content. - Net zero impact on the assessment time per piece of work

Methods: Clinical modules with defined learning outcomes tailored to 'Does' based on the hierarchy of Millers Pyramid were identified. Candidates submitted the case details of a patient for whom they had duty of care, with a clinical condition matching the module of study. The template used demanded a high level of detail in order for the assessor to determine whether the full range of module outcomes could be met. Candidates were assessed in 12 minute case based discussions (CBDs) led by an expert clinician, supported by a clinical academic. They explored depth and breadth of knowledge, attitudes, behaviours relating to the scenario as well as posed plausible scenario adaptations. Pass/fail was jointly decided at time of assessment.

Results: The CBD assessment process, compared to written case studies, did not impact negatively on academic resources. Failed candidates lacked depth of knowledge on questioning that was not evident from their submitted, written cases.

Discussion: CBDs are not new, but their use for summative assessment is not universal. In a pass/fail assessment with a skilled facilitator, they can safeguard against some of the concerns relating to AI-generated content and academic integrity without significant resource implications.

Survey at a school of pharmacy to determine time spent in preparation of course material

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Background: Currently, no literature has reported information on lecture preparation time for faculty members in schools of pharmacy. The aim of this study is to evaluate the average length of time it takes for professors to prepare for a didactic lecture and a skills, compounding, or simulation lab.

Methods: An investigational review board approved electronic survey was emailed via Qualtrics to faculty members at a school of pharmacy. The primary outcome was determining the average time spent for creating lecture materials as well as simulation, compounding, and skills labs. Secondary outcomes include differences in preparation time for initial lecture versus annual updates, in addition to the preparation time creating assessment or evaluation questions. Data was collected through the survey questions consisting multiple choice questions and Likert scale items. Descriptive statistics (e.g., mean, median, mode, standard deviation, percentages, etc.) was obtained for demographic data.

Results: A total of 125 emails were sent with a 56 (49%) response rate. Twelve participants were excluded from the study. A 50-75-minute new didactic lecture reported an average of 7-8 hours to prepare, while a lecture more than 75 minutes took more than 15 hours. The time spent on preparing new lab material for skills, stimulation, and compounding lab were 3-4 hours, 3-6 hours, and greater than 15 hours, respectively. The average time spent in creating annual updates for skills/compounding lab took 1-2 hours versus didactic lectures and simulation lab at 3-4 hours. Administrative related responsibilities accounted for an average of 3-4 hours weekly. No correlation was found between number of years teaching and the time spent on preparing lecture material.

Discussion/Conclusion: The survey assesses the overall amount of time it takes faculty members to prepare and update course material yearly as well as reviewing teaching load and improving work-life balance.

When is entrustment achieved in a pre-registrant pharmacist training program?

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Background: Australian pre-registrant pharmacists (interns) are required to complete a year-long practice period directly supervised by a registered pharmacist (preceptor) in either a hospital or community setting alongside an Intern Training Programme (ITP). In 2023, Entrustable Professional Activities (EPAs) for dispensing, compounding and counselling were integrated into the ITP. The aim was to compare the proportion of community and hospital interns entrusted to perform each EPA independently (Level 4) at periodic time points (13-weeks, 26-weeks and conclusion) during their pre-registration year.

Methods: In 2023, 251 interns (community n=133; hospital n=118) were enrolled in the ITP. At 13-weeks, 26-weeks and conclusion of the ITP, preceptors reported the entrustment level for each EPA. This data for each time point were analysed to determine the proportion of interns entrusted at Level 4 for each EPA. A Chi-square statistical test was performed to compare proportions between community and hospital interns ($p < 0.05$).

Results: Statistically significant differences in the proportion of community and hospital interns entrusted at level 4 for dispensing was noted at 13-weeks (49% community; 34% hospital, $p = 0.029$), 26-weeks (73% community; 53% hospital, $p = 0.002$) and final assessment (95% community; 86% hospital, $p = 0.046$). Similar statistically significant differences were observed for compounding at 13-weeks (35% community; 20% hospital, $p < 0.001$), 26-weeks (62% community; 34% hospital, $p < 0.001$) and final assessment (93% community; 80% hospital, $p = 0.011$). For counselling, the results were comparable at 13-weeks (41% community; 30% hospital, $p = 0.306$), 26-weeks (65% community; 52% hospital, $p = 0.098$), and final assessment (95% community; 88% hospital, $p = 0.141$).

Discussion/Conclusion: A significantly higher proportion of community interns were entrusted to dispense and compound independently earlier than hospital interns, but no such difference was observed for counselling. This may in part be explained by differences in hospital and community pharmacy roles and therefore workplace exposures to dispensing and compounding tasks.

Building welcoming classrooms: An interprofessional collaboration to create an inclusive syllabus

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Background: The US healthcare workforce across the health professions does not match the demographics of the general population. As health professional training programmes recruit more diverse and non-traditional student bodies, the educational environment often fails to fully support their needs. One strategy to improve the learning climate and increase a sense of belonging for learners is to have welcoming and inclusive student-facing materials. At one academic health professions campus, the authors sought to develop an inclusive syllabus that was student-centred, focused on equity and inclusive excellence, and implemented campus-wide.

Methods: A team consisting of representatives from 7 health professions programmes (Nursing, Medicine, Dental Medicine, Pharmacy, Physical Therapy, Physician Assistant, Public Health) reviewed syllabus templates from each respective programme and identified common elements. The team reviewed the literature for recommended best practices and accreditation requirements. Incorporating best practices and common elements, a draft syllabus was created and vetted with each program's educational leadership team and student representatives. This iterative process continued through bi-monthly meetings until consensus was reached.

Results: The interprofessional team created a standard, inclusive syllabus template with a faculty implementation guide. The first page of the syllabus includes positionality statements, including land and labor acknowledgements. Instructions to faculty include positive and supportive language, flexibility with assignments to allow for individualisation, and diversified reading lists. The syllabus was also reviewed by the Office of Disability, Access, and Inclusion for accessibility and the Faculty Assembly. The inclusive syllabus template has been fully adopted by the pharmacy programme and partially adopted by another program. Other programmes are in various stages of implementation.

Conclusion: By using an interactive, interprofessional approach to develop and implement a standard, inclusive syllabus, the authors were able to achieve a better product and have allies crucial to overcoming barriers to implementation.

Preparing pharmacy students for advanced diabetes management in a digital health world

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Background: Advanced knowledge and skills in diabetes management, including use of digital health tools and diabetes technologies, are critical in preparing pharmacy graduates for their evolving role in healthcare. However, evidence on effective integration of digital health training in pharmacy education is lacking. The purpose of this study was to evaluate the impact of an advanced diabetes management course on students' knowledge, skills, self-efficacy, and attitudes related to diabetes management and the use of health-related technology.

Methods: The authors developed a course focused on advanced diabetes management and utilisation of digital health tools. The course provided hands-on experience with wearable technology, remote patient monitoring, and virtual visits. Skills related to conducting virtual visits, interpreting continuous glucose monitor data, and developing diabetes management plans were evaluated using a simulated virtual visit OSCE. Knowledge, self-efficacy, and attitudes related to conducting virtual visits, educating patients on diabetes technologies, and making clinical decisions based on data from digital health tools were evaluated through a survey administered before and after the course and to comparator students who did not take the course.

Results: Twenty-three students completed the course; 20 (87%) completed the pre- and post-course survey. 26 comparator students also completed the survey. All 23 students passed the OSCE (average 91±4.5%). Survey results indicated a significant increase in diabetes-related knowledge, self-efficacy, and attitudes in students who completed the course, as well as a significantly higher knowledge of digital health tools compared to students who did not take the course. Students had greater empathy for people with diabetes after completing the course. All students strongly agreed that the course increased their understanding of how pharmacists use digital health tools to provide diabetes care.

Discussion: An advanced practice course that incorporates digital health technology increases students' knowledge, skills, self-efficacy, and attitudes. This course provides guidance for effective integration of digital health into pharmacy education.

The use of artificial intelligence in pharmacy education to create opportunities for change

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Background: Artificial intelligence (AI) is rapidly transforming this world allowing us to rethink how data can be analysed to improve overall decision making and create opportunities for change. However, few studies have been done on how AI can be used in pharmacy education to analyse student data and create opportunities for change to maximise student success. The authors have: 1) collected curricular and co-curricular data related to student outcomes at multiple stages of pharmacy school, and 2) built an AI model called AI-SiPS: Artificial Intelligence - Success in Pharmacy School to identify variables that can help predict student success upon graduation.

Methods: This current AI-SiPS model is based on data from a Doctor of Pharmacy programme in the United States using the classes of 2019 to 2022. Data includes course grades (n=745 students), a survey on perceived readiness for advanced pharmacy practice experience (APPE) rotations (n=261), student rotation assignments (n=740), perceived experience in the APPE year (n=564), and initial professional step upon graduation (also n=564). Student success outcomes were divided into the broad categories of "*Residency*", "*Industry*", "*Community/Hospital*" (RICH).

Results: Analysis indicated that: 1) an early Acute Care APPE led to a higher residency match rate than a late Acute Care APPE (70.2% vs 58.0%), 2) students who performed well in certain therapeutic didactic courses, such as cardiology, had a higher chance of matching for residency than those who did not perform well (77.8% vs 51.7%), and 3) students who felt confident about starting their APPEs had a higher chance of matching for residency than those who reported not feeling confident (77.1% vs 66.7%). Earlier didactic courses focused on practical application of knowledge also showed impact on self-perceived confidence.

Discussion/Conclusion: These results have been used to implement changes in processes, including earlier identification of students with a desire to pursue residency, along with reorganisation of students' APPE rotation order, predicted to lead to higher residency match rates. Future results may allow for educators to advise students on specific actions than can be taken to maximise chances of post-graduate success based on their individual career aspirations.

Exploring the use of ChatGPT to analyse student course evaluation comments

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Background: Since the release of ChatGPT, numerous positive applications for this artificial intelligence (AI) tool in higher education have emerged. Faculty can reduce workload by implementing the use of AI. While course evaluations are a common tool used across higher education, the process of identifying useful information from multiple open-ended comments is often time consuming. The purpose of this study was to explore the use of ChatGPT in analysing course evaluation comments, including the time required to generate themes and the level of agreement between instructor-identified and AI-identified themes.

Methods: Course instructors independently analysed open-ended student course evaluation comments. Five prompts were provided to guide the coding process. Instructors were asked to note the time required to complete the analysis, the general process they used, and how they felt during their analysis. Student comments were also analysed through two independent Open-AI ChatGPT user accounts. Thematic analysis was used to analyse the themes generated by instructors and ChatGPT. Percent agreement between the instructor and ChatGPT themes were calculated for each prompt, along with an overall agreement statistic between the instructor and two ChatGPT themes.

Results: There was high agreement between the instructor and ChatGPT results. The highest agreement was for course-related topics (range .71-.82) and lowest agreement was for weaknesses of the course (range .53-.81). For all prompts except themes related to student experience, the two ChatGPT accounts demonstrated higher agreement with one another than with the instructors. On average, instructors took 27.50 ± 15.00 minutes to analyse their data (range 20-50). The ChatGPT users took 10.50 ± 1.00 minutes (range 10-12) and 12.50 ± 2.89 minutes (range 10-15) to analyse the data. Instructors reported feeling anxiety prior to the process, satisfaction during the process, and frustration related to findings.

Discussion/Conclusion: This study offers valuable insights into the potential of ChatGPT as a tool for analysing open-ended student course evaluation comments in health professions education. However, it is crucial to ensure ChatGPT is used as a tool to assist with the analysis and to avoid relying solely on its outputs for conclusions.

GPT, PharmD: Can large language models pass the NAPLEX?

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Background: Recent advancements in artificial intelligence (AI), including the emergence and availability of Large Language Models (LLMs), have revolutionised the way we utilise technology. Determining the competence of LLMs in answering health-related questions is an important step to understanding the potential use of this technology in educational and healthcare settings. This study aimed to test the accuracy of LLMs on answering standardised pharmacy exam questions for the NAPLEX, the pharmacist licensing exam in the United States.

Methods: The performance of three LLMs —GPT-3.5, GPT-4, and Chatsonic—was evaluated on two independent NAPLEX question sets sourced from McGraw Hill and RxPrep. These question sets were further classified into binary question categories of Adverse Drug Reaction (ADR) Questions, Scenario Questions, Treatment Questions, and Select-All Questions. Python was used to run chi-square tests to compare question type accuracy and model accuracy.

Results: Of the three LLMs tested, GPT-4 achieved the highest accuracy with 87% accuracy on the McGraw Hill question set and 83.5% accuracy on the RxPrep question set. In comparison, GPT-3.5 had 68.0% and 60.0% accuracy on those question sets, respectively and Chatsonic had 60.5% and 62.5% accuracy on those question sets, respectively. All models performed worse on Select-All Questions compared to Non-Select-All Questions (GPT-3: 42.3% vs. 66.2% | GPT-4: 73.1 vs. 87.2% | Chatsonic: 36.5% vs. 71.6%). GPT-4 had statistically higher accuracy in answering ADR Questions (96.1%) compared to Non-ADR Questions (83.9%).

Discussion/Conclusion: This study found that GPT-4 outperformed GPT-3.5 and Chatsonic in answering NAPLEX pharmacy licensure exam questions. While all three models surpassed a hypothetical passing threshold of 60% accuracy, GPT-4 far exceeded this threshold and particularly excelled in answering questions related to ADRs. These results suggest that advanced LLMs like GPT-4 hold promise for a range of applications in pharmacy education and practice.

Preparing students for a diverse workforce using authentic assessment: Objective Structured Practical Examinations (OSPEs) in Pharmaceutical Science degrees

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Background: In response to the increasing diversity of today's workforce across academia, industry, government, and healthcare, this study introduces a pilot trial of a four-station Objective Structured Practical Examination (OSPE). The OSPE was designed to provide an authentic assessment for non-vocational Pharmaceutical Science degree students, simulating real-world application of knowledge and fostering the development of communication, problem-solving, and critical thinking skills. The study evaluates the effectiveness of the OSPE in preparing undergraduate and master's students for diverse career pathways, focusing on the translation of knowledge through authentic assessment.

Methods: The study involved 23 students and four OSPE stations designed to align and simulate four common graduate career pathways and workplace scenarios: higher degree research and academia, healthcare setting, and two industry roles in a pharmaceutical company (media communication and research and development). The validity of the pilot OSPE was assessed using Kane's Validity Framework in a convergent mixed methods design.

Results: The study identified two challenging tasks for students: articulating a lab procedure and communicating drug information to a medical professional. These tasks were marked by common communication errors. In contrast, relaying drug information to a drug company representative was easier for students. Post-OSPE focus group data highlighted the value of OSPEs in non-vocational degrees, emphasising the importance of applying knowledge in a conversational manner, a skill rarely practiced or evaluated, yet crucial for the workforce.

Discussion and Conclusion: The study suggests that OSPEs, due to their authentic simulation-based conversational mode, are more beneficial than vivas and written examinations. These findings may inform the design of an innovative curriculum that prepares non-vocational students for various career pathways, enhancing their employability. The results could also inspire further studies and innovations to improve non-technical skills in students pursuing other STEM degrees, leading to job-ready graduates.

Identification of social determinants of education among pharmacy students within a US-based pharmacy programme

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Background: Social determinants of learning have been described as the contextual conditions and variables that impact students' ability to optimally participate in their education. Currently, there is limited understanding of social determinants that exist within healthcare education, including individuals in pharmacy training programs. The primary study aim was to identify social determinants of education (SDOE) among pharmacy students enrolled in the entry-level Doctor of Pharmacy (PharmD) programme at this institution.

Methods: An original 28-item survey was developed and disseminated to 1st through 4th year students enrolled in the entry-level PharmD programme at this US-based institution during the Spring 2023 semester. The survey evaluated student demographics, educational performance, and SDOE in six categories: physical health, psychosocial health, economic stability, self-motivation, social environment/community, and physical environment/community.

Results: A total of 133 students responded to the survey (31.2%, 133/426 total). Over half of respondents acknowledged difficulties completing errands or self-care tasks due to their physical, mental, or emotional health. Over half of respondents reported concerns about covering expenses at the end of the month. Respondents also reported eating less due to financial restraints (20.0%), worrying about housing (22.9%), feeling unsafe in their neighborhood (29.0%), and feeling lonely or isolated (63.4%). In the secondary analysis, respondents who had concerns with covering expenses, affording food, or losing housing had significantly lower academic performance.

Conclusion: This study identified several SDOE among pharmacy students at this institution, confirming that students at even the highest levels of education may be subject to disparities. Identification of SDOE provides insight into barriers that are potentially hidden but are likely to impact student engagement and success. Efforts toward reducing disparities and promoting equitable opportunities for students are necessary to ensure continued growth and diversification of the pharmacy profession.

Partnering with students to foster diversity, inclusion and belonging in curriculum and culture

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Background: The Pharmacy Diversity Inclusion and Belonging Working Group (PDIBWG) was formed in 2022 in response to staff and student concerns that the Discipline's curriculum and culture did not effectively reflect diversity or foster inclusion. Consisting of staff members and self-nominated current and former students reflecting diversity in sex, sexuality, gender, culture and religion, its focus is on fostering a safer learning environment for all students, improving the representation of diversity within learning materials, and preparing Pharmacy graduates to practice more inclusively upon graduation.

Methods: This presentation will discuss the formation of the PDIBWG, its terms of reference and aims, and achievements to date.

Results: This presentation will cover the outcomes of a curriculum review undertaken as part of the broader PDIBWG activities and the suggestions made about improving diversity, inclusion, and belonging during focus groups conducted with students. Key themes included an appreciation of the need for the course to foster inclusivity, introducing diversity early in the course, and representing people more holistically in clinical cases by providing information about more aspects of diversity.

Discussion: Early achievements of the PDIBWG, including the promotion of training activities for academic staff; changes enacted by academic staff to 'queer' their curriculum; provision of a voice to students to other School and Faculty Committees; and the instigation of conversations regarding scaffolding of inclusive language and person-centred content throughout the Pharmacy curriculum. The PDIBWG collaborated with interdisciplinary and cross-Faculty colleagues in a project to support curriculum review and renewal through a diversity, inclusion and belonging lens.

The relational leadership institute: An interprofessional approach to transform culture and improve belonging in education

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Background: The Relational Leadership Institute is a human-centered and transformational leadership development programme designed to foster inclusive, equitable work and learning environments. This novel interprofessional six-day workshop was created for faculty and staff to enhance psychological safety, encourage team development, and empower participants to stimulate change in health professions education. The purpose of this research was to evaluate the impact of RLI over two years.

Methods: RLI participants (n = 164) across four cohorts (Spring 2021 to Fall 2022) received electronic surveys before, during, and after the experience for programme evaluation. The pre-experience survey collected demographic information and participant goals. Participants received three mid-experience surveys after each two-day event (e.g., "*pod*"), to evaluate satisfaction, perceptions of psychological safety, sense of community, and feedback for improvement. The post-experience survey evaluated programme impact on self-efficacy, probability of behavioral change, and organisational commitment plus an evaluation about the experience collectively.

Results: All participants and 74% completed pre- and post-experience surveys, respectively. Self-efficacy measures to perform RLI strategies increased after the experience and 72% indicated a high probability of enacting behavioral change. Small group facilitation was rated the most impactful feature (93% of respondents)—97% reported a high level of psychological safety among their small groups and 98% endorsed a strong sense of community. Following the experience, participants endorsed a greater desire to stay at the organisation (73% after RLI versus 69% before RLI). Overall, 78% reported RLI was better than all leadership training previously attended and 94% would recommend RLI to colleagues.

Discussion: RLI positively impacted participants' self-efficacy, feelings of psychological safety, and sense of community as they learned to apply impactful practices. Immersive, intergenerational, and interprofessional workshops may be useful strategies to support belonging in health professions education and enhance organisational culture.

Evaluation of a community pharmacy-based seasonal influenza vaccination placement for third-year pharmacy undergraduates

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Background: Seasonal influenza vaccinations in community pharmacies are commissioned by NHS England as an advanced service, aimed at improving healthcare access amongst at-risk individuals. This was an evaluation of a pharmacy undergraduate clinical placement in community pharmacies focused on administration of seasonal influenza vaccinations.

Methods: The placement was delivered in 70 stores of a single community pharmacy chain in England, over five consecutive working days in November 2023. Eighty-one Year 3 pharmacy (MPharm) students attended placements after completing training to administer influenza vaccinations in line with national standards (1,2). Students maintained a log of vaccinations administered during the placement. Placement-evaluation questionnaires, consisting of five-point Likert-scale and open-ended questions, were completed by students and practice educators one week after the placement ended.

Results: Seventy-nine students (98%) and 50 out of 70 practice educators (71%) completed placement-evaluation questionnaires. A total of 524 vaccinations (379 directly supervised) were administered by 71 (88%) students. The placement improved student confidence in administering vaccinations (44 (56%) and 64 (81%) agreed/strongly agreed pre- and post-placement, respectively). The experience furthered student understanding of pharmacists' roles (65 (82%) agreement) and advanced a range of skills, particularly consultation and teamworking abilities (70 (89%) and 67 (85%) agreement, respectively). Most practice educators felt that students integrated well within the team and administered vaccinations safely and effectively (45 (90%) agreement each). Key areas requiring improvement included ensuring that all students were given opportunities to vaccinate, facilitating student engagement in other public health services and securing financial support for travel to remote placement locations.

Conclusion: To the authors' knowledge, this is the first study to demonstrate that pharmacy undergraduates can undergo rapid, nationally approved training to confidently deliver influenza vaccinations in community pharmacies, improving access for patients and reducing workload for pharmacy staff. Barriers such as financial sustainability should be addressed prior to widespread roll-out of similar placements.

From fixed to flourishing: Exploring faculty growth mindset and teaching practices

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Background: Educators in other disciplines with a growth mindset orientation (i.e., believe knowledge is not innate but is cultivated with effort) are shown to embrace innovative teaching practices and adapt their approaches to support learner inclusion and sense of belonging. The purpose of this research was to explore pharmacy faculty mindset and their mindset-oriented teaching practices.

Methods: In this mixed methods study, pharmacy school completed a survey evaluating their mindset (e.g., growth or fixed orientation) and the frequency they used various classroom-based teaching methods connect to mindset development. Participants were invited to a focus group to discuss their understanding of mindset theory and elaborate on the perceived impact of their mindset on teaching and learning.

Results: Forty-four faculty participated—most (68%) demonstrated a growth-mindset orientation, 25% had a mixed orientation, and 7% demonstrated a fixed-mindset orientation. Only 14% of faculty reported a high level of familiarity with Carol Dweck's mindset theory. The most common growth-oriented teaching strategies used by faculty included: having students discuss with peers (68%), having students work in groups (59%), and discussing expected behaviors in class (57%). The least common strategies used included: giving different assignments to different students based on performance/ability (0%), allowing students to retake a test for a grade (5%), evaluating student mindset (7%), and providing examples of student improvement over time (7%). The faculty discussed their intentionality with teaching strategies, however, noted barriers that prohibit optimal teaching in large group spaces. They also discussed how mindset and motivation can manifest among themselves and their learners and whether they have capacity to influence it.

Discussion: Faculty participants were more likely to have a growth mindset orientation and regularly include several strategies that support a growth-orientation in their classroom teaching. Faculty shared it can be difficult to integrate these strategies because they often require more time and resources, but they see value in these techniques.

Diversification of MyDispense in Wales: Improving representation and the student experience

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Background: MyDispense's UK site is currently utilised by institutions offering the MPharm across England, Wales and Scotland. Though it initially only contained English patients, prescribers and prescriptions, a 2020 UK-wide collaboration led to the implementation of Welsh and Scottish prescription forms. This project aimed to further diversify the UK build of MyDispense by creating an array of prescribers and patients based in or along the border of Wales, and to implement them into exportable exercises to supplement UK MPharm teaching across the UK.

Methods: Collaborative work with a community pharmacy partner identified areas of the virtual pharmacy where patients, prescribers and medicines were underrepresented. Identified medicines were imaged for upload to MyDispense. Patients and prescribers were added with a mixture of traditionally Welsh and ethnically diverse names. Utilising these newly developed materials, exercises were developed to complement teaching around dispensing and controlled drug MPharm teaching.

Results: A total of 39 new medicines were uploaded, with the majority failing into four categories: controlled drugs, inhalers/spacers, contraception/HRT and fridge items. 27 new prescribers and 30 new patients were created and added to MyDispense. They were based across Wales and near to the border in England. In doing so, scenarios could be created where a patient presents with a Welsh prescription in England (or vice-versa), allowing tailored learning around differences in prescription law within each nation.

Conclusion: Student uptake of the new exercises has been generally good, with 1,226 completions logged at the time of writing and anecdotal feedback received has been positive. The new materials (medications/prescribers/patients) have also been prepared for export with the aim of implementation by other UK-based users of the software to improve the overall diversity of virtual patients, prescribers and prescriptions within MPharm teaching in the UK. the

authors hope this will allow MyDispense to better mirror the MPharm programme, where students can train and subsequently work anywhere across the UK.

Next-gen healthcare education: Integrating technology, inclusivity and interprofessionalism

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Background: Simulation-based learning (SBL) utilises goal-based role-play for health professional students with simulated patients to replicate the clinical setting but with no risk to a real patient. SBL allows students to participate as the health professional in decision making, application of knowledge and clinical skills in patient care scenarios. Pharmacy Simulator, an Australian 'serious gaming' platform, provides a cost-effective solution for incorporating SBL into health education. The authors used an SBL approach that combined problem-based learning (PBL) and Interprofessional Education (IPE), with care considerations for a vulnerable patient group - Transgender individuals. The study aimed to develop authentic online simulation scenarios for urinary tract infection (UTI) management in general practice and community pharmacy settings; and assess their impact on knowledge, skills, and attitudes to healthcare for Transgender patients in medical and pharmacy students.

Methods: Four UTI scenarios, developed with consumer input, including two scenarios involving Transgender patients, were delivered to medical and Bachelor of Pharmacy students through a structured IPE activity with pre-brief and debrief sessions. Evaluation involved pre- and post-activity questionnaires.

Results: The pilot activity involved 26 participants (18 females/ 8 males; median age of 21 years [range: 18 – 36]) and included 11 medical and 15 pharmacy students. The authors found statistically significant changes in self-reported knowledge, skills and confidence to manage UTI (all $p<0.001$); competence to care for Transgender patients (2.21 vs. 2.74; $p=0.001$) and awareness of specific health needs of Transgender people (3.74 vs. 4.42; $p=0.028$).

Conclusion: This pilot study demonstrated the potential of serious gaming platforms in evaluating and enhancing students' attitudes towards UTI management in Transgender patients, offering a novel and sustainable approach to IPE. SBL is a versatile teaching approach that can be adapted to various fields in health professional education, introducing skills for inclusive and culturally aware care for diverse patient populations.

Longitudinal placements: The gateway to belonging, acquiring responsibilities and preparing trainee pharmacists to transition in their future practice

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Background: Transition shock is experienced by healthcare professionals moving between different clinical/academic environments. Trainee Pharmacists (TP) working in hospitals in England, frequently rotate between clinical areas, often every 2-4 weeks. Frequent transitions can make it difficult for TPs to develop a sense of belonging in clinical teams. Longitudinal placements (LPs), a 13-week placement in one clinical area, have been shown to improve professional development. This research study aimed to establish whether a LP affected transition shock of TPs.

Methods: Each TP in a hospital undertook one LP. Five focus groups were held with TPs (n=6), before (week 0), during (week 4, 10) and after their LP (week 15, 25). The focus groups, were held via MS Teams, recorded, transcribed (using MS-Teams) and accuracy checked by the research team. The 'Transition Conceptual Framework' consisting of five topics: responsibilities, knowledge, roles, relationships, and transition, was used to code the data (framework analysis). Ethical approval was granted by University of Bradford.

Results: The relationship component of the framework revealed the importance of TPs 'belonging' in the team. TPs described how, due to the length of the LP, both themselves and staff were invested in building a meaningful healthy working relationship, which led to the acquisition of more responsibilities and development of skills for TPs. Through having the opportunity to learn how to embed oneself in a team over a longer period of time, TPs felt more prepared when transitioning into new teams and environments following the LP.

Discussion: The LP helped TPs to integrate into teams, fostering a sense of belonging within this environment. This experience better prepared TPs for transitioning between teams and environments, as will be expected of them in their early career.

Caring for our community: Assessing factors that influence burnout and well-being in pharmacy students, faculty, and staff

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Background: Numerous studies describe concerning rates of burnout; however, less is known about factors contributing to burnout and reduced well-being in pharmacy, which may vary by role (eg, faculty, staff, student). Identifying factors that influence burnout is key to establishing strategies to support well-being in pharmacy [1-4]. This study aimed to assess factors influencing burnout and identify strategies to promote well-being in faculty, staff, and students.

Methods: Full-time faculty, staff, and students were recruited to participate in this exploratory study. Focus groups were organised by participant role. A semi-structured interview format was used to discuss factors contributing towards burnout and well-being as well as solicit recommendations for strategies to improve well-being. Inductive coding was used to identify themes.

Results: Fifty-six participants engaged in 18 focus groups: 11 faculty in 4 sessions, 27 staff in 5 sessions, 12 pharmacy students in 6 sessions, and 6 graduate students in 3 sessions. All groups identified workload as a factor impacting their burnout. Factors unique to each group were also identified, including: workplace inefficiencies and unexpected factors (faculty), higher education culture (staff), competitive culture (pharmacy students), and financial stressors (graduate students). While well-being factors varied across groups, each emphasised relational elements (eg, connection, relationships) as notable. Recommendations varied by role: faculty and staff emphasised intentional workplace initiatives, pharmacy students recommended curricular strategies, and graduate students emphasised peer connection and financial support.

Discussion/Conclusion: While workload and relationships impacted all groups, findings suggest factors influencing burnout and well-being differ by role. Insights can inform strategies to promote well-being in pharmacy.

Meeting the needs of postgraduate pharmacists–Developing an andragogical environment for teaching Quality Improvement in Practice

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Background: Quality Improvement (QI) projects have been included in the Cardiff MSc in Clinical Pharmacy since 2013. They can be completed in any area of practice and any sector of pharmacy. To improve pharmacists' knowledge and skills of QI and leadership, and promote QI in the workplace, the module was included as a core part of the curriculum from 2019. However, disparity between academic teaching, individual project design, and workplace support created difficulties. Although projects were completed, participants reported frustration with understanding methodology, project design and support in the workplace. The aim of this work was to improve module delivery to allow participants to develop and apply skills to lead a successful quality improvement project in practice.

Methods: Module delivery was redesigned with the course management team. A structured approach was developed to enhance application to participants' individual projects. Activities included flipped learning, presentation of scoping tools and managing change, group work discussions, coaching groups and individual coaching sessions. Opportunities for formalised peer review were included, as well as academic and workplace feedback during project design, implementation and data analysis. Eight months after completing the module, participants were sent questionnaires regarding the impact of the module on their development and current roles.

Results: Participants reported development and application of skills including confidence, presenting, leadership, time management and team building as well as considering human behaviour and providing evidence for improvement. Areas for development include more face to face elements and individual coaching.

Conclusion: By redesigning the module to allow self-concept and providing active learning opportunities students reported development and application of skills associated with leading a quality improvement project which transferred into the workplace. As changes in pharmacy education progress, consideration of andragogy in structuring curricula will be beneficial in developing confident healthcare professionals.

Experiential Learning as a pathway to success for student pharmacists in Northern Ireland

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Background: This research explores experiential learning (EL) for student pharmacists in Northern Ireland. Learning through action, making meaning from experiences, and applying that meaning to new experiences will empower student pharmacists to apply theoretical knowledge to practical activities within the classroom and the clinical environment. This fundamental understanding of EL informs learning and teaching strategies to develop student pharmacist's professional identity and specific competencies.

Methods: Questionnaires and focus group discussions uncovered insights into perceptions and experience of third year student pharmacists and their practice supervisors within the EL programme from September 2023 to January 2024. Each student pharmacist participated in 5 weeks of EL, three weeks in Primary Care and two weeks in Hospital Pharmacy. Each week student pharmacists undertook entrustable professional activities (EPAs) under direct supervision by their PS.

Results: Exposure emerges as a crucial aspect of EL as student pharmacists are provided with a pathway to explore different services provided in each area of practice enabling students to gain confidence when communicating with and counselling a wide range of patients (1). Bullen et al (2) highlighted the transformative impact of experiential learning on both student pharmacists and PS confidence and capability. The training theme highlights the importance of the initial workshops for PS where role modelling and organising suitable practice activities were outlined. A notable theme is professional identity in that EL has provided student pharmacists with the opportunity to "*think act and feel*" like a pharmacy professional.

Conclusion: This study highlights the importance of EL integration within the MPharm curriculum and how it drives feelings of connection and unification within the profession.

Impact of a faculty development programme on the representation of diversity in written patient cases within a US-based pharmacy programme

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Background: Patient cases in pharmacy education often lack diversity, fail to include social determinants of health (SDOH), or only incorporate information in certain situations.1 These practices may perpetuate student biases.2 This study aimed to implement and evaluate the impact of a faculty development programme on patient case diversity in the curriculum and faculty perceptions.

Methods: An evidence-based faculty development programme consisting of modules on implicit bias and a group workshop was offered to 32 instructors in a Pharmacotherapy course series. A qualitative content analysis of patient characteristics and SDOH in written cases in the course series was completed before and after the program. Instructor perceptions regarding inclusion of race, ethnicity, and SDOH in patient cases were evaluated via a survey before and after the programme using a 5-point Likert scale (1=very uncomfortable or strongly disagree and 5=very comfortable or strongly agree).

Results: Race, ethnicity, and SDOH were undefined in over 90% of patient cases prior to the program, with trends toward an increase in inclusion after. Twenty-eight instructors (87.5%) completed the pre-survey, and 21 (65.6%) completed the post-survey. Instructors were more comfortable including race and ethnicity data in patient cases (4.3 vs. 3.5, $p = 0.01$), leading in-class conversations about race and ethnicity (3.9 vs. 3.1, $p = 0.04$) and felt more likely to discuss race and ethnicity in patient cases (4.3 vs. 3.0, $p < 0.001$) after the program. The programme prompted course directors to modify patient case templates to include prompts for more consistent incorporation of race, ethnicity, and SDOH.

Discussion: This study increased faculty awareness regarding the representation of race and ethnicity in patient cases and implications of a hidden curriculum. After the program, faculty were more comfortable including and discussing diverse representation in cases.

Thematic analysis of student reflections to explore the Walking in the patients' shoes induction programme

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Background: Healthcare professionals can develop empathy during training by being exposed to patient's experiences, giving them a deeper understanding.

First-year pharmacy students undertake an induction activity to experience the challenges of long-term medication adherence to support their future role. This provides students with the opportunity to meet patients and learn about the challenges of medication adherence. A key component is the 5-day simulation where students take a placebo medicine recording their adherence. Students also speak to a family member/friend taking long-term medications to learn about their experience. They submit a reflective account of these activities. Aim : To explore the effect of the activity on students understanding of taking medicines

Methods: Following ethical approval, a random sample of reflective accounts was generated from those students who to consented to take part. Sampling continued until theoretical saturation was reached. The sample of accounts were thematically analysed and verified. A mixture of inductive and deductive analysis was used, mapping themes to the 'perceptions and practicality framework and Selzer's empathy framework.

Results: 179 (93%) students submitted reflective accounts and 143 agreed to take part in the study. Sampling resulted in 35 accounts being analysed. The reflective accounts showed evidence of changes to students' thinking, feelings and their understanding of their role as future pharmacists. They learned about the challenges related to both perceptions of medicines and practicalities of fitting medicines around their other daily activities. However, as they knew they were taking a placebo, there were more reflections on practicalities than perceptions.

Conclusion: The exercise supported students understanding the challenges of taking medicines and adhering to the dosage instructions. This insight supported them to consider their future role as pharmacists supporting patients to take their medicines.

The FIP-UNESCO-UNITWIN program: Harnessing global diversity to transform pharmacy education

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Background: The International Pharmaceutical Federation (FIP) established FIP Education (FIPEd) to coordinate all activities related to education and workforce development with the goal of transforming pharmacy education. The FIP-UNESCO-UNITWIN programme within FIPEd, grounded in a needs-based approach, is the platform for globalising pharmacy education development that started in 2010 with the African Center for Excellence (CfE). In 2020, the FIP pharmacy education in sub-Saharan Africa report was launched that led to the 2021 FIP UNITWIN Pathfinder Toolkit and globalisation of UNITWIN by establishing regional CfEs in all six WHO regions. This presentation describes this process and results to date.

Methods: In 2021, FIPEd hosted virtual workshops with pharmacy schools in the six WHO regions. Focus group discussions were conducted in workshops to develop priorities for advancing pharmacy education based on FIP's 21 Development Goals (DGs). A global summit was held in December 2021 to share priorities across regions and launch the FIP Global Call to Action for Advancing Pharmacy Education. In 2022, additional regional workshops and a global summit were held. In 2023, the FIPEd UNITWIN team developed and submitted for renewal the UNESCO-UNITWIN Agreement proposal based on success of the summits.

Results: Each WHO region identified 3-5 FIP DGs as priorities and actions for advancing pharmacy education in 2021 and 2022 workshops and summits that led to launch of the FIP Education Transformation Tookit. The UNESCO-UNITWIN Agreement was approved allowing the UNITWIN programme to begin globalisation by forming CfEs in each region. The second regional CfE (after Africa) was established in Southeast Asia region in October 2023.

Conclusion: Expansion of the FIP UNESCO UNITWIN programme promotes diversity on a global scale supporting regional and local priorities, aligning with health-related UN SDGs and stimulating transformation of global pharmacy education. The remaining four WHO regions will establish their CfEs in 2024.

Exploring the views of school of pharmacy students on an Equality, Diversity, and Inclusion (EDI) teaching package

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Background: Teaching, training and understanding of equality, diversity and inclusion (EDI) is a requirement for the UK pharmacy curriculum (GPhC, 2021). A student co-created EDI online teaching package with follow-up workshop were developed, focusing on protected characteristics under the UK Equality Act (2010). The facilitated workshop was designed to develop awareness of EDI priorities, empathy, collaboration and reflection on practice and involved consideration of a range of scenarios focused on disability and including intersectionality.

Our aim was to evaluate the use of the teaching package and workshop from a student perspective.

Methods: Year 1 MPharm students (n=204) were invited to complete a MS Forms questionnaire at the end of the workshop. The questionnaire comprised a mix of closed and open questions, about their experiences. Data analysis consisted of frequency counts with percentages, and a thematic analysis of the open questions.

The School of Pharmacy research ethics committee advised that ethical approval was not required.

Results: 111 students responded (54%), most students were female (78%) and the majority of students were home/EU students (75%).

Students fed back positively, with 92% (n=102) saying that workshop aided their learning following on from the teaching package. Students agreed that the ability to have open discussions during the workshop enabled students to enhance their knowledge of support available (85%, n=94), one student commented:

'I do not come from a place where these things are talked about at all so it makes me happy that there are many support systems in place at the university.' [S35]

Students suggested fewer videos within the teaching package, and an opportunity for more discussion within the workshop.

Conclusion: Students were positive about the EDI teaching package and workshop. Despite the low response rate this has enabled us to revise the content of the teaching package and structure of the workshop for further EDI teaching.

Experiential learning in healthcare consulting to help prepare students for careers in the biopharmaceutical industry

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Background: Students expressing interest in pursuing careers in the biopharmaceutical industry has grown substantially at the institution. The goal was to develop a course that provided real-world experiences in projects that are common in the development and commercialisation of biopharmaceuticals and the healthcare consulting industry. In 2020, a healthcare consulting Enterprise Team Projects (ETP) course was created where students applied knowledge/skills learned from prior coursework to complete real-world company-sponsored projects. Areas of study included product development and commercialisation, healthcare decision analysis, and health policy.

Methods: ETP students were assigned to company-sponsored project teams and worked under the guidance of a faculty advisor for a semester. Feedback from students, faculty advisors, and sponsor companies was collected via online surveys, peer assessments, and sponsor interviews.

Results: From Fall 2020 through Spring 2024, 19 biopharmaceutical, consulting, medical device, and healthcare-system companies have sponsored 24 projects that included 136 students in the Biopharmaceutical Marketing and Healthcare Decision Analysis master's degree programs. Projects included product/pipeline strategy, evaluation of health technology assessment models, disease-specific qualitative and quantitative market research, competitor analysis, payer landscape, budget impact modeling, and patient reported outcomes strategy, amongst other topics. Students reported development of communication, literature search, critical thinking, presentation, team performance, project management, leveraging diversity, and problem-solving skills.

Discussion: ETP is a capstone course providing real-world project-based consulting that helps students prepare for roles in the biopharmaceutical, medical device, healthcare consulting, and health-system segments of the industry. In addition to industry knowledge, students reported development of soft skills that are important for career success.

Opportunities for enhancing the course experience include improved matching of students' skillsets and career aspirations to specific projects, systematic collection of stakeholder feedback, expanded course assessment, and identifying international project sponsors.

Using objective structured clinical examination (OSCE) to access complex thinking in a pharmacy programme

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Background: Although primarily used to measure discrete knowledge and skills, OSCEs have the potential to assess more complex thinking (CT), also referred to as higher-level or critical thinking. With the goal of assessing student application of CT, this research aims included identifying questions within existing OSCEs that might capture CT, as well as student responses that would indicate their level of competency.

Methods: Current third year OSCE scenarios were reviewed to identify those containing at least one question with the potential to assess CT. For the selected scenario question, a small number of video recordings of student responses were reviewed by the authors to determine its potential for capturing different levels of CT. A preliminary rubric of CT categories, criteria and scoring was created. Two experienced OSCE assessors then reviewed all student videos for the selected question to confirm its suitability for assessing CT and, if necessary, suggest changes to the preliminary rubric.

Results: A third year OSCE was identified as containing a question with the potential to assess CT. In the scenario, the standardised patient asks, "*Is this drug addicting?*", to which the student is expected to respond. Initially, the CT response categories and scores included: inadequate (0); growing (1); proficient (2); and exceptional (3). To better reflect the rubric's scoring criteria the categories became: CT not evident (0); CT possible (1); CT apparent (2); and CT confirmed (3). Following a review of all 86 student videos, minor adjustments were made to the rubric in terms of CT categories and criteria descriptors.

Conclusion: By identifying questions within existing OSCE scenarios that might capture CT, as well as student responses that would indicate their level of CT competency, the authors were able to demonstrate that OSCEs have the potential to assess more complex, or higher-level thinking

Students' perceptions towards interprofessional education at Libyan International Medical University

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Background: Today the important concern in health care system is the quality of patient centre care. High quality of patient care can be achieved by effective interprofessional collaborative. As a result, educational institutions need to prepare graduates with interprofessional education (IPE) competencies through specific learning activities. Providing early learning competencies is also important for students in practice and education in the health profession because the students have a responsibility to conduct interactions with other professions involved jointly in providing health services. IPE at the Libyan International Medical University (LIMU), includes collaborative interprofessional learning activities involving students from health-related programs.

Aim: This study assessed students' perceptions of IPE activities at LIMU during academic year 2022-2023. Method: IPE committee at LIMU designed different activities involving students and lecturers from PharmD, Medicine, and Basic Medical Science programs. During the academic year 2022-2023, the LIMU IPE committee conducted four IPE activities and a questionnaire was distributed following each session to assess students' perception. The questionnaire items assessed teamwork/collaboration, negative/positive professional identity, communication and roles/responsibilities.

Results and conclusion: When the IPE session was implemented for the first time, students' attendance was low. However, with the emphasis on the importance of the activity, the number of attendees improved, and the results showed that the majority of students from all LIMU programmes participated in the IPE activities, have a positive perception of IPE as it was always > 3 on the 5-Likert scale for all activities.

The development of an electronic portfolio system for pharmacy students at Libyan International Medical University

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Background: The Advanced Pharmacy Practice Experience (APPE) seeks to engage the students in pharmacy practice activities. As a result, an innovative system is needed to

follow up the students' performance during their APPE. Electronic portfolio system serves as a multifaceted platform for: Monitoring student performance, facilitating student engagement, and enhancing programme evaluation.

Methods: The Experiential Training Committee at Faculty of Pharmacy the collaboration of Information Technology team at Libyan International Medical University (LIMU) has put a proposal to facilitate tracking the students' performance in the hospitals during the APPE. An electronic portfolio (e-Portfolio) system was leveraged to comprehensively track the performance of PharmD students during their APPEs. This system is called Electronic Experiential Logbook and Portfolio System (e-ELPS) where the admin can create the academic year and the rotations, manage the practice sites, and the preceptors, and approve the students' registration into the system in addition to assigning the preceptors, and students to different rotations. The students will be able to choose the appropriate practice site and the preceptor in charge to supervise students and create log on a daily base and document any activities have been done. The chosen preceptor is responsible for approval of the log created by the students and weekly evaluation of the students according to forms created in the system. By the end of rotation, each student is requested to write reflection on his/her experience.

Conclusion: By implementing this e-Portfolio system, LIMU's Faculty of Pharmacy fosters a dynamic and data-driven approach to APPEs, ensuring that PharmD graduates are well-equipped with the necessary skills and knowledge to excel in their chosen careers.

Beyond Grades: Assessing student performance through competencies in a longitudinal laboratory curriculum

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Background: The University of Kentucky College of Pharmacy (UKCOP) launched a new curriculum to enhance student learning and integrate multidisciplinary content delivery. A key component is Patient-Centred Care Experience (PaCE), a six-semester, longitudinal course sequence at UKCOP designed to assist students in developing the knowledge, skills, and attitudes needed to fulfil responsibilities necessary to provide patient-centred care and manage the medication use system. This study seeks to analyse performance of students in the PaCE sequence by evaluating rates of competency achievement across time through two distinct assessments completed over consecutive years.

Methods: A retrospective cohort analysis was conducted from January 2019 to May 2023 to evaluate the outcomes of two competency-based assessments performed during professional year 1 (PY1) and professional year 2 (PY2). Two distinct simulation-based assessments ('self-care' in PY1 year and 'smoking cessation' in PY2 year) were chosen for their alignment on measuring four of the eight Course Outcomes1 essential for direct patient care. Descriptive statistics were used to report the total number of students required to remediate after a first attempt across both assessments. A chi-squared analysis was used to compare remediation rates on each assessment within each cohort with a p value <0.05 considered statistically significant.

Results: A total of 535 students completed the PY1 simulation and 523 students completed the PY2 simulation across four cohorts. An average of 82.8% of students met competency in PY1 compared to 88.5% of students in PY2. Two of four cohorts improved performance (2020-2021, 16.4%, $p < 0.001$; 2022-2023, 8.3%, p = 0.015) while two cohorts did not have statistically significant differences in performance (2019-2020, 1.2%, p = 0.776; 2021-2022, -2.9%, p = 0.534).

Conclusion: Measuring longitudinal assessment performance is key to advancing a competency-based approach to pharmacy education. Further research can identify predictors of success to improve student performance.

Impact of ambulatory care certificate programme on the professional development of student pharmacists

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Background: Pharmacists are crucial members of the interprofessional team and contribute to high-quality primary care1. A two-year Certificate in Ambulatory Care was established to further prepare Doctor of Pharmacy students for team-based, patient-centred practice. Programme competencies were adapted from national ambulatory care standards1-2 and included improving delivery of interprofessional primary care services, advancing ambulatory care pharmacy practice, and establishing new ambulatory care pharmacy services. Simulated patient encounters were utilised to provide hands-on skill development. The Certificate Programme was first offered in 2021 and the original cohort graduates in 2024.

Aim: This study sought to:1) determine the impact of the Certificate Programme on students' professional development; and 2) evaluate students' perceived preparedness to provide ambulatory care services during experiential education.

Methods: A 17-item survey including Likert scale and open-ended questions was created in Qualtrics® and distributed to all Certificate Programme students (n = 18). Students selected one or more options that described their professional identity from a pre-defined list adapted from the literature and rated confidence to provide seven ambulatory care services during experiential education. Analyses included descriptive statistics for quantitative data and inductive coding to identify themes within qualitative data.

Results: Seventeen of 18 students responded (94% response rate) to the survey. The top professional identities selected were clinical practitioner (88%), medicine adviser (71%), and social carer (71%). Six qualitative themes emerged about students' professional development: immersion readiness, relationship building, interprofessional education, hands-on learning, patient-centred care, and post-graduate planning. Respondents reported confidence providing anticoagulation management (93%), naloxone administration (93%), transitions-of-care (92%), hormonal contraception (91%), and Annual Wellness Visits (90%). Fewer students indicated confidence with continuous glucose monitoring (79%) and long-acting injections (70%).

Conclusion: An Ambulatory Care Certificate Programme positively impacted students' professional development. Students described their professional identity as clinical practitioner, medicine advisor, and social carer. Simulated patient encounters prepared students to manage common encounters during experiential education.

Incorporation of inclusive teaching training within a US-based postgraduate residency teaching certificate programme

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Background: Post-graduate pharmacy residency training is necessary to develop the foundational competence needed for direct patient care and should include specific training related to teaching in the education and clinical environments 1,2. A state-wide resident teaching certificate programme (TCP) was established in 2011 to enhance teaching skills in the didactic and clinical practice settings. In the 2022 – 2023, training on inclusive teaching and precepting was added to the established curriculum.

Aim: The aim of this study was to evaluate the impact of incorporating inclusive teaching training on participant's self-rated confidence to teach in the didactic and clinical environments.

Methods: Content delivery and training on being an inclusive teacher was incorporated into the TCP. Participants were asked to evaluate their confidence to teach didactically and provide facilitation in the classroom setting, as well as teach in the clinical setting via survey using a 10-point Likert scale (1- least confident and 10 most confident). The survey is administered at the beginning and end of the programme to evaluate the effectiveness of the program.

Results: A total of 55 residents completed the pre and post survey in 2022-2023. Overall resident confidence in didactic classroom teaching improved from a mean of 5.38 to 6.58($p = < 0.001$), confidence in facilitating in the classroom setting improved from a mean of 5.83 to 7.49 ($p < 0.001$) and confidence in teaching in the clinical environment improved from a mean of 5.45 to 7.76 ($p < 0.001$). These results meet, and in most cases exceed prior academic year results.

Discussion: This study demonstrated the incorporation of training inclusive teaching was well-received and resulted in improved teaching confidence in the didactic and clinical settings. Developing skills related to inclusive teaching in postgraduate trainees has the potential to have a positive impact in creating inclusive learning environments and reducing known healthcare disparities.

A qualitative investigation of Black and Asian Minority Ethnic (BAME) MPharm students' opinions of the MPharm programme

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Background: In 2017, 77.1% white students and 61.7% BAME students received good degrees. This university awarded good degrees to 81% (n = 2914) white and 59% (n = 1365) BAME students; 73% (194) BAME and 84% white students received good degrees in science subjects. In July 2018 the university joined the Race Equality Charter to improve progression of BAME students; building a culture of openness and trust for honest, difficult conversations about inequalities. This study initiated difficult conversations with BAME students.

Aim: This study aimed to investigate BAME students' opinions of the institutional culture and curriculum of the course, identify experiences of BAME students, identify award gap barriers and to determine ways to decolonise the curriculum.

Methods: Qualitative data was collated via eight audio-recorded focus groups with thirty-five BAME MPharm students. Questions included attainment gap, academic/pastoral support and experiences of bias. Transcripts were analysed using thematic analysis; familiarisation with transcripts (Phase 1); reading and re-reading until themes emerged, and coding was developed to organise data and determine themes (Phase 2).

Results: Focus groups identified three themes, 1) institutional culture – concern about limited ethnic representation in staff, reluctance to seek pastoral/academic support from staff who do not understand cultural differences and the lack of understanding translated into decreased performance; 2) cultural influences - BAME students less involved in campus life due to familial pressure to achieve; 3) societal barriers - White peers more involved in activities/societies, meeting in bars, drinking alcohol, isolating BAME students where alcohol is forbidden.

Conclusion: Tutors and modules could facilitate difficult conversations, creating a sense of belonging, increasing cultural awareness and empowering BAME students to share personal issues. Action must focus on barriers and inequalities, opposed to molding students. HEIs must partner with students, demonstrating commitment, addressing attainment gaps.

Virtual advanced pharmacy practice experiences increase international opportunities for more pharmacy students

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Background: Prior to the COVID-19 pandemic, the University of Kentucky sent students to the Centro de Salud Hombro a Hombro (CSHH) in Santo Domingo, Ecuador for Advanced Pharmacy Practice Experiences (APPEs). When travel was restricted, virtual APPEs were developed and have continued even when travel resumed. The aim of this work is to describe the content of this virtual experience.

Methods: Planning between the partners resulted in an experience which allowed for significant learning. If needed, simultaneous interpretation was available. Each morning student pharmacists observed interactions between the CSHH physician and patients with their consent. Each afternoon, students reviewed the patient cases with the physician for in-depth discussion. Students also had discussions with US-based faculty or Ecuadorian staff such as: Ecuadorian primary care resources, immigration and COVID-19 impacts on Ecuadorian healthcare, community engagement, preventative medicine, Ecuadorian political atmosphere, social determinants of health, One Health, Indigenous health, ethics, women's health, and paediatrics. Discussions were supplemented with videos, recorded lectures, and readings. Students prepared disease state presentations and journal clubs and worked on a community-identified project. A "*cultural buffet*" was assembled that allowed students to sample Ecuadoran recipes, music, films, and cultural presentations at their leisure. Each week, students participated in a reflection over the week's activities.

Results: Four students completed the experience; two while COVD-related travel restrictions were in place and two after travel had resumed. The students who completed it after travel was no longer restricted chose a virtual option because of personal restrictions on travel. All students rated the experience and the preceptor highly on evaluations. The average rating for this virtual APPE was very similar to the previous in-person ratings and the overall rates for all APPEs.

Innovation and novelty: Though many institutions developed virtual APPEs during the pandemic, many were not constructed with intentionality, and most were discontinued as soon as restrictions were lifted. This work demonstrates a virtual international APPE can be a rich and rewarding experience. Availability of this option can allow students who are otherwise unable to travel to have a global health experience, exposing them to new cultures and populations.

Improving leadership education: Integrating improv in an online elective course for pharmacy students

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Background: Educators are increasingly acknowledging its dynamic and effective potential as a teaching method, particularly within the context of leadership training. This project aimed to integrate improv within an online undergraduate leadership elective course.

Methods: Development of an improv workshop coincided with course redesign as an online synchronous course. Close collaboration of the lead instructor and an experienced improv professional ensured alignment with course objectives. Anticipating varied student reactions guided the approach. Selection of improv exercises targeted leadership skills of communication, teamwork, and adaptability. Three exercises focused on the collaborative construction of realities, fostering acceptance and support, and enhancing joint narrative development were adapted for online delivery. The course established a foundation of trust through introductory discussions on improv, regular reflective debriefs, and consistent assessment methods. Course

evaluation included Brookfield's critical incident questionnaire.

Results: Eight students completed the three-week course in May 2023 and actively engaged in the improv workshop. Students expressed surprise at their own positive reactions to improv after initially expecting that they would not enjoy or benefit from the experience. The introduction supported acceptance and the debrief following each exercise facilitated individual and group reflection on their experiences with improv. Some students reported a deepened understanding of their leadership philosophies. However, they acknowledged reflection fatigue due to its extensive use throughout the course. Students expressed a desire for additional improv workshops to thoroughly explore this unique learning approach for leadership skills.

Conclusion: Collaboration played a pivotal role in the seamless integration of improv into the elective course. Early introduction proved instrumental, extending the experience beyond a course add-on. This approach not only heightened students' comfort and engagement but also emphasised the relevance of improv as an impactful teaching method and developing leadership skills.

Skills and attributes of research supervisors: Learner and supervisor perspectives

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Background: Research in clinical practice has become an integral component of healthcare professional development and is often scaffolded throughout undergraduate (UG), professional registration (PRP) and post-graduate (PG) learning. Understanding the expectations of the supervisor is key to research success, yet it is still unclear what specific skills and attributes are required in this role[1]. The aims of this study were to identify the important skills and attributes required for pharmacy research supervision from both learner and supervisor perspectives and describe areas for supervisor support and development.

Methods: A mixed methods study design was employed to maximise recruitment. Pharmacy UG, PRP and PG students undertaking research through XX University (and their supervisors) were invited to participate in an anonymous electronic survey. Pharmacists (residents) and supervisors involved in a foundation residency programme at a local tertiary hospital were invited to participate in a Delphi panel. Both methods captured data on demographics, supervisory skills and attributes (from existing literature or participant entry). Supervisors were asked to self-identify supervisory development needs.

Results: In total, 27/353 students (UG:19/103, PRP:4/237, PG:4/13) and 20/175 supervisors completed the survey while 12/14 residents and 10/19 resident supervisors completed the Delphi. 'Prior research experience' and 'methodology expertise' were identified as important skills by both learners and supervisors across both methods. Three attributes were identified as important across all groups: 'approachable and supportive', 'able to provide clear direction', and 'able to provide constructive feedback'. Survey results did not differ significantly when stratified by student group. The most frequently identified areas self-identified for supervisor development were research design and analysis.

Conclusion: Pharmacy learners and supervisors prioritise similar skills and attributes required for research supervision. Outcomes from this study will inform resource development for supervisors and enhance learner-supervisor relationships through understanding of shared expectations.

Improving the effectiveness of workplace-based assessment for Australian pharmacy interns: An evaluation study

Hayley Croft[1], Josephine Maundu[1], Kirstie Galbraith[2], Kichu Nair AM[3], Glenys Wilkinson[1], Bronwyn Clark[1]

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Background: In Australia, pharmacy graduates must complete a period of supervised practice (internship) as part of the requirements for pharmacist registration. A suite of workplace-based assessment (WBA) approaches comprising entrustable professional activities (EPAs), case-based discussion, and in-training assessments on health promotion and reflective practice have been introduced to facilitate effective assessment of pharmacy interns. The authors sought to gather feedback on the content, structure and format of the WBA tools and supporting material; their understandability; and impact on workload, intern learning, provision of feedback and intern/supervisor relationships.

Methods: An interpretive qualitative approach was used to explore the multifaceted experiences of intern pharmacists, preceptors, supervising pharmacists, Intern Training Programme coordinators, professional development managers and lead pharmacists by employing a triangulation of data collection methods, comprising focus groups, semi-structured interviews, and a survey. Data analysis followed a three-phase approach: (i) initial familiarisation of the data following a systematic identification of salient themes within

each transcript; (ii) generation of a coding scheme determined by two investigators; (iii) collation of codes into larger themes by examining relationships between each code. Ethics approval was obtained.

Results: Five focus groups conducted in May 2023 yielded valuable insights from Interns (n=11) and pharmacists (n=13). Feedback from these focus groups indicate that the WBA tools are beneficial in supporting workplace learning and feedback; enhance communication between preceptors and interns and optimise role allocation for interns. Increased workload, lack of time and a perceived deficit in WBA literacy are the key challenges. Findings from other components of the study will be shared.

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Conclusion: The implementation of WBA is providing a nationally consistent approach for assessing the preparedness of intern pharmacists to practise independently. Early findings are already informing enhancements to the current suite of tools, strategies for improving WBA literacy and future expansion of WBA.

Leaders in Indigenous Pharmacy Profession Education (LIPPE) network- transforming pharmacist education and practice in Australia

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[1]Indigenous Health Advisory Group, Australian Pharmacy Council, Canberra, Australia

[2]Australian Pharmacy Council, Canberra, Australia

Background: Education institutions must acknowledge and take responsibility for how structures generate and perpetuate racial disadvantage. The Australian Pharmacy Councill (APC), and the Council of Pharmacy Schools, Australia and New Zealand (CPS) accept this responsibility and are using their position to progress equity, diversity and inclusion in pharmacy education and practice.

Methods: This journey began in 2019 when APC reached out to two Indigenous pharmacists, to yarn about this lived experience within the pharmacy profession. Together the authors built strong relationships and deep connections which have extended beyond APC staff to Board members, committees, and subject matter experts. The authors formalised this relationship with APC and established an Indigenous Health Strategy Group (IHSG) in late 2019. The IHSG has grown to seven members drawing from pharmacist and non-pharmacist Indigenous educators in Australia and Aotearoa (New Zealand). The authors have continued this transformational journey to the wider pharmacist workforce.

Results: In 2022, the authors announced the establishment of the Leaders in Indigenous Pharmacy Profession Education (LIPPE) Network. The Network is a partnership of the APC and CPS under the leadership of APC's Indigenous Health Strategy Group. The authors are generating change by enabling Indigenous leadership within pharmacist education programmes and advocating for Indigenous voices to be amplified across the profession so that Indigenous values can shape the context of pharmacist education and practice. The LIPPE network was conceptualised and has grown with allies. LIPPE mantra is to build capacity – the number of Indigenous pharmacist professionals and students, strengthen capability – knowledge and skills and promote allyship – role of non-Indigenous people.

Conclusion: Addressing historical exclusion of Australia's First Nations People as a priority will benefit everyone and contribute towards eradicating institutionalised racial discrimination in this health system.

Developing collaborative practitioners – perspectives from Australian pharmacy profession academics

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Background: The Health Professions Accreditation Collaborative Forum (the Forum), a coalition of 15 accreditation authorities for the regulated health professions in Australia, works together to improve the delivery of effective education to Australian healthcare students. To enhance the provision of interprofessional education (IPE) the Forum conducted research to identify opportunities for strengthening accreditation processes to support the development of collaborative practitioners.

Objectives: The authors sought to:

a. Explore the understanding of the term 'collaborative practice' from the perspective of consumers, education providers, and health service representatives.

b. Understand how education providers currently work towards achieving the vision of collaborative practice and.

c. Identify opportunities for greater synergies between accreditation and education providers to boost the development of collaborative practitioners.

Methods: A constructivist qualitative research design was used to explore diverse stakeholder views obtained through focus groups. Study participants included consumers, education programmes for the regulated health professions in Australia, and health professionals from diverse settings recruited through an expression of interest. Focus groups were conducted via zoom between October and November 2022 and recorded. Transcripts were generated using an artificial intelligence service and verified by two of the study investigators before analysis. The Monash University Human Research Ethics Committee provided ethics approval.

Results: A total of 62 individuals representing 14 of the 15 health professions in the Forum attended the online focus groups. Participants representing pharmacy profession education providers comprised the largest group (n = 12) of this cohort. These twelve participants provide a good cross section of the pharmacy degree and intern training programmes accredited by the Australian Pharmacy Council. The authors will present the findings of this research obtained for this group.

Conclusion: The Forum seeks to generate practical support for IPE based on a clear understanding of key stakeholder views. Profession-specific perspectives, such as those from the pharmacy profession can contribute to these initiatives.

Virtual learning in the therapy of serious infections: Unleashing the power of game-based learning in simulation-based education

Lisa Tee

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Background: Simulation-based education (SBE) provides safe and effective learning opportunities for health professional students by utilising goal-based role-play with a simulated patient to replicate the clinical setting but with no risk to a real patient. Although the SBEs produced very positive outcomes, the videos produced as part of these activities are costly as they require employment of a professional film crew and actors. A more innovative approach, such as game-based learning (GBL), that has the potential to provide many different authentic clinical scenarios in a virtual environment, is needed to ensure sustainability. Incorporating GBL in SBE is a powerful tool to provide students with opportunities for active learning to deepen their understanding of concepts, better solve clinical problems and enhance collaborative awareness. Given the global rise in antimicrobial resistance, an important area of education for health professional students - including pharmacy, medical and nursing students, is the appropriate use of antimicrobial agents to treat infectious diseases in an interprofessional setting. This is very relevant to students as future pharmacists, doctors and nurses working in hospital setting.

Aim: The study aimed to develop a virtual GBL platform to enhance the student learning experience and provide immediate feedback on clinical decision making through gamification of formative assessment for the management of polymicrobial infection for health sciences interprofessional education.

Methods: A virtual hospital setting was developed using the Unity Game Engine, mirroring the daily tasks of a hospital ward pharmacist. The prototype includes a quiz system for administering pre- and post-tutorial questionnaires. This system not only records the students' answers but also tracks the speed of their responses, allowing for an assessment of their knowledge improvement before and after the game.

Conclusion: The virtual GBL platform has been fully developed and ready for use in an interprofessional setting. The Monash Pharmacy Symposium is an opportunity to showcase this teaching innovation to enhance students learning.

Five years on: Has a Registrar training programme been embraced by the nation?

Joanna Pizza, Kylee Hayward, Erica Marsom

Society of Hospital Pharmacists Australia, Melbourne, Australia

Background: Following the introduction in 2017 of Foundation Residency Program, in 2019 a professional pharmacy organisation introduced Australia's first Registrar Training Programme (previously referred to as Advanced Training Programs) for pharmacists. Unlike Foundation Residencies which are generalist and aim to support early career pharmacist development, the Registrar Training Programme (Reg-TP) aims to support the development of practitioners who are further along the practice continuum and contribute more expert patient care in a defined practice area. The Reg-TP is a two-year structured developmental programme which is primarily workplace-based, and competency focused. As a Reg-TP can be undertaken in any practice area, SHPA developed a common framework which outlines the range of workplace-based assessments required to enable pharmacists to reach the requisite practice level by the end of the program. The adoption of the training

programme has expanded since its conception and as such a review was completed to better understand the contribution of Reg-TPs to professional development, gauge the Registrar candidates' attitude to the programme and determine nation-wide uptake.

Methods: By conducting an overall review of the programme to identify areas for improvement utilising a survey of candidates as well as an internal assessment of site accreditation and candidate enrolment over the past five years, the authors were able to determine trends in adoption and uptake of the programme across Australia.

Results: Site uptake has seen a consistent expansion over the years which aligns with Registrar candidate enrolment. From the initial four sites accredited in 2019, the programme currently has 21 sites accredited to undertake the programme over 22 different practice areas. Across these sites there are total of 60 Registrar candidates currently enrolled.

Discussion: Reviewing patterns of candidate enrolment and site accreditation has allowed the organisation to identify further opportunities for Reg-TP accreditation at new sites, expansion into new practice areas and how better to support candidates completing the program. Incorporating formal recognition of programme completion through the newly launched Australian and New Zealand College of Advanced Pharmacy is also expected to enhance the uptake of the program.

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The perspectives of pharmacy students on the impact of clinical simulation activities in undergraduate education: A qualitative study

Benedita Eguasa, Vilius Savickas, Samuel Taylor, Jeremy Sokhi, Michael Twigg, Emma Marks, James Desborough

University of East Anglia, Norwich, United Kingdom

Background: Simulation-based education (SBE) is a novel pedagogic approach offering students opportunities to practise clinical skills in a controlled environment, which benefits their development as future professionals. This study aimed to ascertain perceived impact of SBE on Year three Pharmacy students.

Methods: Convenience sampling was used to recruit MPharm students who attended at least one clinical simulation activity during 2022 - 2023. Following written informed consent, participants engaged in 20 - 40-minute virtual semi-structured interviews that followed a flexible topic guide exploring the perceived role of SBE within the MPharm degree alongside any highlights/areas for improvement and impact on development. Interviews were transcribed

verbatim, coded, and analysed using an iterative thematic analysis approach.

Results: Six students participated in the study (five females; aged 21-25 years). Three overarching themes were identified: SBE as entertaining challenge in preparation for real-world, personal reflection/feedback as drivers of professional development, and balance between psychological safety and the unknown. Most students perceived SBE as a 'fun' professional challenge, which enhanced professional skills/confidence and guided selection of potential career pathways. They praised SBE in preparation for clinical placements and assessments, both as individuals and within teams. Structured feedback and debriefing sessions were viewed as effective tools in facilitating growth, whilst delivering a degree of personal reward. Several students identified the need to minimise unnecessary stress and ensure psychological safety within simulation environment, for instance by ensuring pre-briefing for specific clinical topics.

Conclusion: These findings suggest that pharmacy undergraduates engaging in SBE activities perceive them as a crucial component of their curriculum, key to professional development. These data highlight possible simulation-induced stress and variation in psychological safety, which had not been previously recognised in undergraduate pharmacy education, requiring further investigation.

Remote extemporaneous compounding practicals for Pharmacy students

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[5]*University of Maryland, Baltimore, United States of America*

Background: Due to COVID-19 movement restrictions, institutes of higher learning had to deliver Pharmacy curriculum remotely. One major challenge is teaching practical lab skills such as extemporaneous compounding remotely due to the need for hands-on learning and its associated logistical requirements. In this study, the authors highlight the implementation of remote extemporaneous compounding practicals across three different institutions of higher learning and compare and contrast their approaches.

Methods: The participating Pharmacy schools were Monash University Malaysia, University of Michigan, and University of Maryland. Prior to delivery, students were either supplied or asked to procure a set of easily accessible ingredients and equipment to conduct the extemporaneous practicals from home. The authors conducted lessons remotely using both synchronous and asynchronous delivery, and demonstrated, taught, and assessed practical lab skills using video conferencing modalities. MyDispense was used as to deliver cases, partially simulate patient interactions, and print labels.

Results: The authors successfully conducted remote teaching of extemporaneous compounding, where similar learning outcomes to the face-to-face implementation were achieved. In Monash University Malaysia, more than 90% of students who responded to the post-activity surveys found the remote extemporaneous sessions useful for their learning, and qualitative comments supported these views. Mean scores from the remote extemporaneous labs in 2021 were similar to those when conducted physically in 2019, supporting the effectiveness of this approach. The different approaches attempted by the three institutions highlighted the flexibility in implementation that can be considered to achieve similar outcomes.

Conclusion: Combining technology-based approaches with synchronous and asynchronous teaching and learning methods can successfully deliver extemporaneous compounding skills remotely. Remote approaches to delivering extemporaneous lab skills demonstrated in this work can be used to provide equitable access to skills education in Pharmacy.

Escaping the mundane: The use of gamification simulation learning in the classroom

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Background: Simulation has been adopted in pharmacy curricula however experience with gamified simulation in learning is limited at a major Pharmacy School in Queensland. Gamified simulated (GS) learning was implemented in tutorials to consolidate content for fourth year students. In this experience, traditional processes for learning may not optimally assess application of knowledge and problem-solving abilities or engage the learner. At this university the authors implemented GS of an Escape Room style tutorial, relay races, a choose your own adventure, and 'Pharmily Feud' to allow students to apply clinical knowledge into practice. Student were provided with the opportunity to demonstrate teamwork, leadership, respect, and problem-solving abilities.

Methods: Classes were conducted in two parts. Firstly, gamified simulated learning task was assigned. The class was

divided into teams of five students for the semester. Weekly, each class utilised a different form of GS learning where the teams were provided with an opportunity to accumulate points. A winning team was appointed during the final tutorial. Following the GS leaning was the problem-solving of case-based content. This allowed students to apply skills and content learned in part one of the tutorial.

Results: Attendance at tutorials for classes containing GS learning was significantly higher than other tutorials for the cohort. All students participated in and contributed to tutorial content. Students reported that GS learning was more engaging.

Discussion: The use of GS learning had not been previously applied in tutorials at this major University. The application of this form of teaching was found to be engaging, and improved student understanding of content. While this process was newly implemented, it was met with positive feedback from both applicants and panellists.

How confident are community pharmacists in diagnosing dermatological conditions on Grade five and six skin?

Helen Hull, Roshni Simmonds, Sureya Ali

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Background: The Fitzpatrick skin type chart uses numerical scales to define different skin tones, which range from one (palest and most susceptible to sun damage) to six (darkest and least affected by the sun). Skin problems are the most common new presentation in primary care. Most skin problems are managed in primary care and dermatology training has been limited, particularly symptom presentation on grade five and six skin tones.

Aim: To determine community pharmacists' confidence in diagnosing dermatological conditions on grade five and six skin tones and to identify factors influencing confidence and ability to diagnose.

Methods: An online questionnaire, with skin condition images on different skin tones, was sent to 100 community pharmacists to determine their confidence and ability in diagnosing skin conditions.

Results: Fifty-three percent (n=32) of participants lacked confidence diagnosing skin conditions, reporting limited undergraduate teaching on grade five and sic skin. All declared a need for further training. The average quiz score was 58%, and chicken pox and shingles on grades one and two skin scored highest, 91% and 88% respectively. Pharmacists with darker skin tones were better at diagnosing conditions on skin tones five and six.

Conclusion: Community pharmacists lack confidence diagnosing conditions on skin tones five and six; and limited undergraduate teaching was reported. This study enabled us to reflect on the diversity of this teaching materials for skin conditions, and the amount of exposure to skin conditions on different skin tones, these students receive. In response to these findings, the authors have reviewed these teaching materials, accessing resources like image banks in Brown Skin Matters, which have influenced how the authors teach general assessment.

Wales Virtual Hospital – A novel online simulation platform to develop clinical decision making and intercultural competency

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[1]Cardiff School of Pharmacy and Pharmaceutical Sciences, United Kingdom

[2]University of Wyoming School of Pharmacy, United States of America

Background: Clinical decision-making with real patients is complex. Novice practitioners often approach decisions in a "*black and white*" manner but need to be confident and adept in working with "*gray/grey*" areas. In an increasingly diverse world, healthcare professionals must not only be adept with clinical knowledge but be aware of cultural nuances that can influence health decisions and outcomes i.e. they must develop cultural competence. The Schools of Pharmacy at Cardiff University and University of Wyoming are undertaking a feasibility study of using a high-fidelity online virtual hospital platform to increase cultural competence and build clinical confidence and decision-making skills in pharmacy students.

Methods: Faculty at Cardiff and Wyoming have collaborated to develop cases for the Wales Virtual Hospital (WVH), a multidisciplinary online virtual medical education tool that provides an immersive online environment. WVH provides a high-tech authentic way for students to encounter unique clinical situations, test their decision-making skills in increasingly complex scenarios, and see the consequences (positive or negative) of those decisions without impacting a live patient. To foster cultural competence, patients and practitioners within WVH cases have been designed to reflect the diversity of these respective societies (Wales and Wyoming) that this student cohorts are unlikely to be exposed to during their clinical rotations. Twenty Year two students from each institution have enrolled in the feasibility study and will collaborate synchronously online to address the cases in the WVH.

Results: Students will provide feedback on cases to determine what aspects of the Wales Virtual Hospital need to be adapted to further support clinical decision making and development of cultural competency.

Discussion: Evaluation of the developed cases within the Wales Virtual Hospital will allow faculty to scale-up delivery to the full student population in both Schools and will provide the springboard to develop a library of simulation cases for the WVH. Ultimately this will allow each school to implement an expanded vision for addressing local and global health challenges.

Methodological review on digital health education and training development for healthcare professionals

Afina Nur Fauziyyah, Ian Bates

University College London, London, United Kingdom

Background: The use of digital health provides opportunities for improving patient care and health outcomes. To deliver the best care to the patient, healthcare professionals must ensure that these technologies are serving them rather than acting as a master to separate them from their patients. Consequently, it is imperative to assess how digital health can be incorporated into current and future healthcare education. This study aims to identify the methods used in developing digital health education and training competencies for healthcare professionals.

Methods: A literature review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. Inclusion criteria were studies focusing on the development of education and training in digital health for health care professionals, with determined competencies or skills to be achieved. A total of eight databases were searched in April 2023. A thematic analysis was also conducted to identify the methods used in developing digital health education and training competencies for the healthcare professionals.

Results: In total, 28 studies were included, with 78% published after 2017. Most of the studies were designed to develop a training programme for healthcare professionals as part of their continuous professional development. Several methods were determined for the development of digital health competencies and skills for the healthcare professionals, including literature reviews, case studies, quantitative studies, qualitative studies, and mixed methods research.

Discussion: This review identified several methods used in developing digital health education and training competencies for healthcare professionals. Future research is needed to adopt and adapt best practices for developing pharmacists' education and training strategies in digital health.

Ambulatory clinical pharmacy training programme for pharmacists in the Qatar Primary Health Care Corporation (PHCC)

Joseph Saseen, Jodie Malhotra

University of Colorado, Aurora, United States

Background: The Qatar Primary Health Care Corporation (PHCC)is the largest Qatari government's primary care branch but need expanded primary care services are needed. Ambulatory clinical pharmacy service did not exist within PHCC prior to 2019. The University of Colorado (CU) created and provided a comprehensive development programme to train PHCC pharmacists to provide direct patient care and disease state management.

Methods: The training programme included theoretical and practical training. The theoretical component was 11 weeks and included primary care topics (e.g., cardiology, endocrinology, pulmonary/smoking cessation, geriatrics, mental health). Seven modules were remotely delivered and included didactic content, case discussions, and standardised patient simulations. Four modules (cardiovascular, diabetes, immunisations, medication-therapy management) were delivered live. Pharmacists were assessed using written evaluations and observed structured clinical exams (OSCEs). The practical component was two months of clinical training where pharmacists provided care in PHCC ambulatory care clinics precepted by a PHCC physician and a CU faculty pharmacist (remotely). Participants spent three hours in clinic three times a week.

Results: Twenty pharmacists were selected and successfully completed the programme in 2019. Overall performance was 87.7-89.3% for the theoretical component, 84.9-96.8% for the practical component, and 88.5-90.7% overall. Global assessments by PHCC physicians indicated performance far exceeded expectations 94% of the time. All 20 participants now provide disease state management services at PHCC. The programme has been modified to expand the use of patient simulation in the theoretical and practical components and a second cohort of pharmacists is planned for 2024.

Conclusion: This innovative training programme provided PHCC pharmacists with the skills necessary to successfully implement ambulatory care clinical pharmacy services throughout PHCC.

Innovation and Novelty: The combination of didactic and experiential training for pharmacists is a unique way to expand the clinical workforce. Incorporation of standardised patients with OSCE increased the relevance and impact.

Relevance: This programme is a strategy to achieve several International Pharmaceutical Federations goals, including early career training, advanced and specialist development, and people-centred care.

Barriers and Enablers to the introduction of Entrustable Professional Activities (EPAs) in undergraduate pharmacy placements in England

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Background: New standards for the Initial Education and Training (IET) of pharmacists were published by the General Pharmaceutical Council (GPhC) in January 2021. Universities are required to expand their clinical placement provision and are seeking innovative ways to ensure equitable access to learning opportunities across a range of practice settings. Entrustable professional activities (EPAs) are defined as 'units of clearly defined professional activity which a learner is entrusted to complete in practice with the appropriate amount of supervision once adequate competencies are demonstrated'. The evidence base for use in undergraduate pharmacy education is limited. A set of EPAs has been developed which may be used to support placement expansion. This study aimed to explore the barriers and enablers to introducing EPAs.

Methods: This qualitative study was conducted using online focus groups. The topic guide was developed drawing on literature and discussion with an expert panel. A model of key phases when implementing EPAs was developed and explored. Participants were recruited using purposive sampling. Discussions were recorded, transcribed and coded using thematic analysis.

Results: Eight focus groups were completed, with a total of 31 participants. Two inductive themes and eight deductive themes were identified. A lack of understanding of EPAs was evident. Issues of accountability, access, workplace pressures and entrustment may be addressed by a clear process for implementation. Concerns about safety and accountability may lead to hesitancy in adopting EPAs but can be managed with supervision and clear entrustment scales. Students working rather than observing was seen as a significant benefit of EPAs.

Conclusion: EPAs can be used to support equitable access to skills development for pharmacy students. Implementation needs clear communication, careful planning and preparation and tools to support use.

An evaluation of a multi-sector MPharm pilot placement across a large rural geographical footprint

Helen Paine, Lyn Hanning, James Groocock

University of Bath, Bath, United Kingdom

Background: The South-West is a large NHS region in England covering 9000 square miles; from rural to urban, from wealthy to deprived, it is highly diverse. The University of Bath is the only school of pharmacy in this large footprint. The University was awarded Health Education England funding to incorporate a new multi-sector (Community Pharmacy and GP Practice) placement into MPharm3 in the 21-22 academic year. The aim was to pilot test and evaluate increasing placement capacity in the MPharm, to introduce students to a new sector (GP practice), test the delivery of a placement across a large and diverse geographical area and support the development of students' clinical skills.

Methods: Students undertook three days in a GP Practice and two days in Community Pharmacy in the academic year 21-22. They were placed according to a student preferencing system with one to four students in each GP Practice; a total of 41 practices were recruited. Following placement completion, qualitative feedback was collected through an online structured questionnaire.

Results: 86 students undertook the week-long placement. Placements were equally distributed across the seven integrated care systems of the South-West. Thirty seven percent (n = 32) of students responded to the questionnaire. Survey results were very positive with 97% (n=31) students stating they enjoyed their placement and met the Intended Learning Outcomes. Students who would consider working in GP Practice in the future increased from 16% (n = 5) before the placement to 84% (n = 27) afterwards. Following analysis, a further placement in GP Practice only was offered for one-week in the year 22-23 with two-weeks in 23-24. Additionally, a 40% increase in students securing Primary Care Foundation Training positions from this cohort through National NHS recruitment scheme was observed.

Conclusion: Following this pilot study, GP Practice Placements are now an established part of the placement programme. Despite the success of the placement there were challenges associated with implementing a placement programme across a rural geography including travel and subsistence and provision of pastoral support.

Undergraduate clinical pharmacy placements: The Wales experience of the development and delivery of Entrustable Professional Activities

Matthew Smith[1], Laura Doyle[2], Robert James[1], Mark Gumbleton[1]

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Background: In 2021, the UK regulator for pharmacy the General Pharmaceutical Council (GPhC) introduced a revised set of standards for the initial education and training of pharmacists. To equip students for the expanding role(s) of the pharmacist these revised standards include an increased requirement for clinical placements and embedding the skills, knowledge and attributes for prescribing in UK MPharm programmes. In 2022/23 working with this statutory education body Health Education and Improvement Wales (HEIW) the authors piloted clinical placements for pharmacy students across Wales in primary, secondary and community care underpinned by Entrustable Professional Activities (EPAs)1. Placements were funded by Welsh Government.

Methods: Working with HEIW and external stakeholders from health and social care the authors developed five EPAs for pilot clinical placements: i) Medication history taking, ii) Responding to patient queries/signs/symptoms, iii) Medicines review, iv) Clinical Checking and v) Patient counselling. Supervised Learning Events (SLEs) were incorporated into all EPAs in the form of Case Based Discussions and Consultation Skills Assessments. Year Three (103 students) and Year Four students (107 students) respectively undertook two and three weeks of clinical placements across Wales. Training was provided to placement supervisors prior to hosting students. An independent evaluation of the pilot placement scheme was undertaken by Cardiff Unit for Research and Evaluation in Medical and Dental Education (CUREMedE).

Results: The independent evaluation demonstrated that students and placement supervisors found the EPAs to be appropriate and relevant to undergraduate students who were supported by both their pharmacist supervisor and wider members of the pharmacy team.

Discussion: Overall, the clinical placements and their underpinning EPAs afforded student pharmacists with opportunities to develop skills and competencies that have traditionally been reserved for their foundation training year. This portfolio of EPAs is now being expanded and the clinical placement scheme is being rolled out to Year One and Year Two students.

Developing a collaborative practice-ready workforce: Assessment considerations for evaluating interprofessional competency in IPE curricula

Jackie Zeeman, Philip Rodgers

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Background: As programmes implement interprofessional education (IPE) activities and curricula, more information is needed on effective strategies to evaluate student IPE competency development. The purpose of this session is to describe assessment considerations for evaluating interprofessional competency development.

Methods: A coordinated assessment strategy evaluating student development of the IPEC Core Competencies in didactic IPE curricular activities was implemented across multiple health professions education programs. Assessment strategies included student self-evaluation of their self-efficacy and observer-based evaluation of individual student competency.

Results: Over 7,500 students across 18 disciplines participated in IPE curricular activities. Students rated increased confidence in several IPEC Competencies after participating in these activities, indicating the IPE curriculum is advancing learning and IPE competency. Observer-based evaluation of student competency rated most students as competent or developing competency; few students were rated as demonstrating minimal competency.

Conclusion: In an era of increasing calls for competency-based education, more information is needed on strategies to assess student competency development in IPE curricular activities. These findings provide insights into considerations for assessing student competency development in didactic IPE curricula.

VitOOLs: Virtual and immersive medical pharmacology

Rima Caccetta, Lisa Tee

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Background: Teaching laboratories are diminishing world-wide and there is increasing strain on hands on training. Further, accessible remote training is becoming more necessary for many different reasons, e.g. training in remote areas. To fill this growing gap whilst adding a unique integrated perspective, VitOOLs was created. VitOOLs is a

virtual platform of clinics, patients and laboratories that take students, clinicians and patients from the signs and symptoms to the cellular level where the disease is evolving, and medications are working.

Methods: This platform has been developed using authentic human data (transformed by modelling) that is programmed in Unity to give the user real-life experiences of the processes that are critical in the deep learning and understanding of pharmacology. The authors evaluated the usability of this completed prototypes for teaching pharmacology and the underlying physiology, specifically to identify benefits and challenges in using the different modules (BODY model and VR Lab) of VitOOLs. The evaluation was conducted in two phases whereby students studying pharmacology and physiology: (1) trialled the prototypes in class followed by voluntarily completing a system usability scale (SUS) questionnaire, and (2) participated in a usability study conducted one-on-one (this was also conducted with teaching teams).

Results: The SUS data showed the BODY model and VR Lab prototypes are acceptable for use and indicated a 95% and 100% positive sentiment in learning experiences, respectively, which were further supported by participant interviews.

Conclusion: Positive user sentiments highlighted the benefits of VitOOLs as a good visual learning tool which is interactive, realistic and useful for remote learning, making it more accessible to a wider audience.

Impact of interprofessional and simulation activities on student pharmacists' professional identity formation and professional development

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Background: Ambulatory care pharmacists work closely with physicians and other healthcare professionals. As such, professional identity formation (PIF)[2] is critical for students anticipating a career in ambulatory care where they will need to understand their role and how to coordinate patient care services with other disciplines. Interprofessional and simulated activities were implemented in an Ambulatory Care Certificate Programme to prepare students to enter such a team-oriented workforce. This study aimed to evaluate the impact of these innovative activities on student pharmacists' PIF and professional development (PD).

Methods: In this retrospective study, ambulatory care courses in fall 2022, spring 2023, and fall 2023 included interprofessional virtual case discussions with medical, nursing, dental, social work, and public health students; in-person high-fidelity manikin simulations of a patient scenario; and/or an interprofessional in-person standardised patient (SP) simulation with medical students. Prompted reflections submitted by student pharmacists for these three activity types underwent thematic analysis via iterative and constant-comparative methods to identify themes related to two domains: PIF and PD.

Results: In total, 31 reflections (16 case discussion, 11 manikin simulation, and four SP simulation) revealed four PIF and three PD themes. PIF themes were pharmacist as educator (42%), medication expert (68%), clinician (71%), and patient advocate (77%). PIF themes most frequently appeared in manikin simulation reflections (91%, 91%, 100%, and 82%, respectively). Three PD themes emerged: knowledge of interdisciplinary roles/perspectives (61%), teamwork/holistic care (58%), and patient-centred care (39%). These were most common in case discussion reflections (100%, 81%, and 69%, respectively).

Conclusion: Interprofessional and simulated activities contributed to student pharmacists' PIF and PD. The pharmacist as patient advocate was the most frequent theme. High-fidelity manikin simulations appeared to have the most influence on PIF, while interprofessional case discussions aided PD related to roles, teamwork, and patient-centred care.

Impact of interprofessional health education for formerly incarcerated individuals on pharmacy and medical students' perceptions and delivery of patient care

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Background: People with histories of incarceration face unique healthcare access barriers, including provider bias which may stem from lack of exposure to correctional health during training. Targeted training is associated with improved attitudes and knowledge to care for this population. The re-entry programme offers students opportunities to provide weekly education to formerly incarcerated individuals (clients). The study aimed to assess the impact of providing client-directed community health education on students' perceptions and delivery of patient care.

Methods: Subjects included medical and pharmacy students delivering a standardised, interprofessional, 45-minute preventive medicine presentation to clients. Student participants (2022-2023) were invited to complete an anonymous, online survey modelled after the Substance Abuse Attitudes Survey and study by English et al. The survey consisted of 13 multiple-choice, Likert scale, and open-ended questions.

Results: Half (26/52) of invited students responded. The majority were 20-24 years old (67%), female (71%), Asian (56%), student pharmacists (77%), and participated in five or more sessions (52%). Most students had no prior experience working with clients (80%), or personal, friend, or family history of incarceration (84%). Overall, the experience increased student comfort and interest in working with this population. Fear of working with clients decreased for 84% of respondents. Knowledge of clients' barriers to accessing care improved the most (88%). Self-reported bias towards clients improved from a 2.5 pre-programme average to 3.4 post-programme [0(very negative); 5(very positive)]. Since participating, 73% reported an impact on patient care, with counselling/patient education, accessibility, literacy, and social determinants of health being the most common areas where students applied their experiences.

Conclusion: Brief interprofessional exposure to individuals with histories of incarceration improves students' attitudes and knowledge of barriers to equitable care. Overall, there was a positive change in students' perceptions based on participation in the community service-learning event.

Linking assessment to real life practice – Comparing work-based assessment (WBAs) and objective structured clinical examinations (OSCEs) using mystery shopping

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Background: An Objective Structured Clinical Examination (OSCE) is an authentic assessment used to prepare students for practice. The purpose of this study was to explore the extrapolation inference in Kane's Validity Framework to determine whether OSCEs translate to real life performance by comparing students' OSCE performance to their performance in real-life using the same clinical scenario, and to understand factors that affect students' performance.

Methods: A sequential explanatory mixed methods approach was used. A quantitative grade comparison between students' performance in their OSCE versus a mystery shopping visit conducted at their student placement (completed as a work-based assessment (WBA)) was performed. Students were marked with the same rubrics and these marks were compared with their OSCE score. The mystery shopping visit was then revealed to all the students and all students were asked to participate in a qualitative follow up semi-structured interview.

Results: Ninety-two mystery shopper (WBA) visits were conducted with third year undergraduate pharmacy students and 36 follow-up interviews were completed. The median mystery shopping score was 39.2% lower compared to the OSCE score in all 92 participants ($p < 0.001$). Semi-structured interviews revealed student were aware they did not perform as well in the WBA; however, students reflected that a real-life patient is easier to manage than in an OSCE; stating in real-life they could speak more freely, real life patients were more open to different treatment options, and the presence of work colleagues eased their nervousness.

Conclusion: Even though OSCE performance was not shown to extrapolate to real-life practice; however, students still appreciate having OSCEs and believe they have a critical role in preparing them for practice.

Healing with words: The 'Oops, Ouch, Woah' method of inclusive pharmacy education

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Background: "*Oops, Ouch, Woah*" is a simple and powerful method for inclusive conversations that supports the creation of a brave space and has utility in facilitating crucial conversations. Within this framework, an individual will say "*oops*" if they accidentally say something inappropriate or realise that their words did not come across as intended. "*Ouch*" is used if someone else's words hurt or offend them. "*Whoa*" is used if the conversation is too quick or confusing, or if the individual needs more information or clarification. This framework fosters an inclusive environment, and yet its utility in pharmacy education has not been explored. This study aimed to explore the impact of the "*Oops, Ouch, Woah*" framework in a first-year pharmacy seminar course.

Methods: At the end of a seminar course, first-year pharmacy students provided written reflections regarding their experiences with and perceptions of the "*Oops, Ouch, Woah*" framework. Consensual Qualitative Research (CQR) methodology was utilised to assess responses. A team of researchers, including both pharmacy education instructors and a CQR expert serving as the auditor, systematically coded and categorised the data to develop themes.

Results: The CQR analysis of student evaluations revealed seven prominent themes: Self-reflection and Growth, Safe and Inclusive Environment, Normalising Making Mistakes, Enhancing Connections, Conflict Resolution, Promoting Understanding and Respect, and Effective Communication.

Conclusion: Course evaluation data revealed that the "*Oops, Ouch, Woah*" framework may be a valuable educational tool in a first-year pharmacy course, contributing to the development of key skills necessary for future healthcare professionals. Its application facilitated personal and social development in first-year pharmacy students, laying a foundation for more effective communication and collaboration in professional settings. This study supports the integration of this framework in educational curricula to enrich student learning experiences and prepare them for more inclusive conversations and the diverse and competing needs found in healthcare environments.

A Spanish language track: The use of patient appointment simulations to support Spanish language skills for student pharmacists

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Background: The Hispanic/Latino population is the second largest ethnic group in the United States. More than 70% of the Hispanic/Latino residents speak a language other than English at home, with almost 30% of those reporting that they are not fluent in English. The number of Spanish-speaking pharmacists has not grown at a sufficient rate to meet the needs of this population. A Spanish Language Track (SLT) was developed to support Spanish language curriculum and language-concordance.

Methods: SLT programming includes patient appointment simulations (PAS), cultural immersion opportunities, and healthcare-related activities to better equip student pharmacists to work in Spanish-speaking communities. Other requirements include completing the Spanish for the Professions minor and an online medical Spanish course. To evaluate the initial SLT cohort, a mixed-methods programme evaluation was conducted. Participants completed pre/post surveys and focus groups. Quantitative data analysis employed descriptive and frequency analysis while qualitative data was thematically analysed.

Results: Participants were first and second year student pharmacists. There were no native speakers and the majority were not of Hispanic/Latino ethnicity. As component of SLT, PAS were offered bi-weekly, both in-person and over videoconference, in small group settings. Native speaking pharmacists led simulations which included a variety of health care themes and opportunities to model the role of translator and pharmacist. Qualitative feedback about PAS was favourable with participants stating: "*I think [PAS] are just a very good way for me to figure out, with other pharmacists, how to talk about health topics and medicine*." The small group model was also appreciated: "*It's also nice to be able to see other students do it too. So, you can kind of learn from them what their mistakes are and things to change on your own*."

Conclusion: Students demonstrated active engagement with SLT while enhancing language skills through immersive experiences. Student cohort connections, SLT leadership, and PAS were key contributors to learning.

Interprofessional education for health profession trainees at a regional campus; navigating barriers for rural and medically underserved populations

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Background: Interprofessional education (IPE) continues to expand, but barriers exist when training occurs across a large, mostly rural region. This regional campus implemented a model bringing together students from different disciplines and Universities to learn about rural and medically underserved populations while working in teams. The authors performed this study to assess how confident learners were in working interprofessionally, and the benefits that learners perceive from this virtual interprofessional training events.

Methods: This is a qualitative study with 181 participants from dentistry, nursing, pharmacy, physical therapy, public health, social work, and medicine that completed one of six interprofessional trainings offered virtually by a regional campus. Students and faculty performed a self-efficacy scale survey and open-ended questions about what they learned at the completion of training.

Results: Mean scores on the self-efficacy scale ranged from 4.85 to 5.32 on a 6-point scale. The highest score was for feeling respected as a member of the team. The main themes regarding what participants learned were the importance of each team member, perspectives of other disciplines, and collaboration.

Conclusion: Learners became more acquainted with the different knowledge each team member brought to the team, such as pharmacists' knowledge about medications and social workers' knowledge about community resources. They felt they had learned better ways to work together as a care team and consider the whole patient in the context of surrounding socioeconomic factors impacted by rurality and limited access to care.

Blue – green – red – yellow: Understanding Whole Brain® preferences of student pharmacists participating in international advanced pharmacy practice experiences

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Background: Student pharmacists participating in international Advanced Pharmacy Practice Experiences (I-APPE), experience different communication styles, problem-solving, and well-being. The Whole Brain® Thinking Model was developed to assess cognitive diversity allowing users, teams, and organisations to establish a culture of acceptance. This activity was designed to create awareness of thought preferences and how to utilise these preferences during I-APPEs.

Methods: Student pharmacists complete pre-departure coursework including intercultural learning, local culture, travel preparation, and pharmacy practice specific to their I-APPE location. During the course, students complete the Hermann Brain Dominance Inventory® (HBDI), a 116-question online survey which evaluates thinking preferences. The HBDI focuses on four quadrants of thinking, characterised by colour: blue (quantitative, fact based, analytical), green (organised, sequential, detailed), red (interpersonal, feelings-based, emotional), and yellow (synthesising, integrating, intuitive). Participants receive a profile score for each quadrant and the higher the score, the more dominant an individual's preference for that quadrant. Students were debriefed on their HBDI and participated in in-class activities to apply preferences in different settings.

Results: A total of 107 student pharmacists completed the HBDI and discussion from 2021-2023. Most students preferred thinking in the green quadrant (n =77, average score = 77), followed by the blue quadrant (n=70 average score = 74), red quadrant (n = 62, average score = 69) and yellow quadrant (n = 41, average score = 63). Thinking preferences changed under pressure. There was an increase in green, blue and red quadrant preferences and a decrease in yellow. The most common preference code was 1-1-2-2 (n = 25) which aligns with high preferences for blue and green.

Conclusion: Students completing the HBDI and activities were able to gain self-awareness which can support belonging within their I-APPE site. Preceptors at the international sites also complete the HBDI to further enhance the learning experience and sense of belonging.

Shining, happy pharmacy - The REM programme to promote staff engagement, support professional development and drive departmental outputs

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Background: Healthcare worker burnout is a global issue. Keeping staff inspired and invested in professional development can be challenging. Quality Use of Medicines (QUM) programmes underpin effective clinical practice and learning in a hospital pharmacy department. Shared commitment to such programs, through collective goal setting, can enhance workplace morale. This pharmacy department has clinical pharmacists dedicated to research, education, and Medicines Use Evaluation (MUE) portfolios. In December 2022, these largely siloed experts were integrated into one specialist team [the Research, Education and MUE (REM) team].

Aim: To develop a cohesive team-based, structured approach to drive capability in, and monitor outputs of, the hospital pharmacy's QUM program.

Methods: Meetings were convened with the department's clinical specialty teams. A structured template facilitated meaningful discussion and goal setting around individual team needs, and captured performance indicators, across the three REM domains. Discussion and outcomes were themed, then used to develop metrics for the REM domains. A baseline snapshot of the department's performance against each metric was generated.

Results: Eleven of twelve clinical speciality teams, representing 95% of clinical staff in the department, participated in the meetings. Five key themes were identified:

1) Publication of audits, research, and narrative reviews

2) Completion of the full quality cycle in MUE undertakings

3) Engagement in postgraduate learning

4) Participation in optional on-the-job training

5) Commitment to teaching

Six metrics to evaluate workforce capability and programme output were developed. Participation rates in residency training programmes and research higher degrees was encouraging. Improvement targets included skills development (foundational quality improvement and academic writing) and increased participation in QUM initiatives (technician workforce and generalist clinical teams).

Conclusion: A collaborative, structured approach to drive and evaluate the hospital QUM programme was developed. Stakeholders were well engaged and highly enthusiastic. Specific targets for staff support and development were identified.

Evaluating social determinants of health content within the PharmD curriculum

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Background: Developing health equity-minded student pharmacists requires longitudinal curricular integration of social determinants of health (SDOH). Currently, there is a lack of student perceptions around this integrated information as well as identified individual curricular gaps. Purdue College of Pharmacy evaluated students' perceived incorporation of SDOH in didactic therapeutic courses.

Aims: Identify the student's perspective about the inclusion of SDOH into the didactic PharmD courses.

Methods: This observational study evaluated the included SDOH concepts in the therapeutic sequence during the 2021-2022 school year. Two trained students from each class (P1, P2, P3) completed a standard survey to collect SDOH content included within lectures. The SDOH concepts evaluated: race, gender, sexual orientation, access to care, language/health literacy, neighbourhood/built environment, and socioeconomic status, and other vulnerable populations. Outcomes were analysed using descriptive statistics including SDOH concept frequency and type included in lectures, courses, and the overall therapeutics sequence

Results: Overall, 261 lectures from five courses were analysed. Students surveyed agreed that 74 (28.4%) lectures included at least one SDOH. When reviewed by year, 43% (P1), 31% (P2) and 18% (P3) of lectures included at least one SDOH. Of the SDOH concepts analysed, "*Vulnerable Populations*" (10%), "*Race*" (5.7%) and "*Access to Care*" (4.6%) were covered most frequently. SDOH content was most frequently identified in: epidemiology (23.3%), pathophysiology (18.6%), therapeutics (34.1%) and patient cases (17.8%). When further evaluated, epidemiology portions only included concepts of gender and race (33%). Additionally, when SDOH were included in patient cases, students perceived their inclusion significantly impacted case discussions.

Conclusion: This study evaluated an entire pharmacy therapeutics sequence for the inclusion of SDOH content. Unfortunately, a minority of therapeutics lectures included any SDOH. However, this study does highlight opportunities for including meaningfully SDOH content inclusion in therapeutics to foster the development of a health equity mindset in future pharmacists.

Game on: Unlocking the power of play in pharmacy education

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Background: As educators navigate supporting pharmacy learners struggling with increasingly high levels of stress and burnout, the authors are compelled to adjust this pedagogy to address changing learner needs and create environments that foster connection and are inviting to all. This study aimed to explore students' perceptions of game-based learning approaches in a seminar-style first-year pharmacy student course. The objective was to identify key themes related to the use of games in class and their impact on student learning, engagement, and connection.

Methods: Utilising the Consensual Qualitative Research (CQR) methodology, data were collected through online surveys forms from students enrolled in the course. A team of researchers, including both pharmacy educators and a CQR expert, serving as the auditor, systematically coded and categorised the data to develop themes using a rigorous and iterative approach.

Results: The CQR evaluation of student evaluations resulted in the emergence of four primary themes: student engagement in course material, comfortable classroom environment, successful communication, and teamwork. Engagement was characterised by increased student interest and increased conceptual understanding. The classroom environment theme highlighted the role of games in creating a more comfortable class environment. Communication was identified as a critical skill enhanced by the game-based approach, illustrating the challenges of communication within teams and the importance of clear, effective communication in healthcare. Lastly, teamwork emerged as a significant theme, with games promoting collaboration and connection among students.

Conclusion: The use of games in a first-year pharmacy course positively influenced a number of components of the learning experience. The themes of student engagement in the course material, comfortable classroom environment, successful communication, and teamwork, as identified through CQR, suggest that game-based learning can be an effective pedagogical tool in pharmacy education. These findings provide a foundation for further research and development of game-based learning strategies in pharmacy and other healthcare-related education fields.

Exploring the use of intensifiers and hedges in Objective Structured Clinical Examinations (OSCEs) and its impact on marking

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Background: Effective communication skills are crucial in delivering messages between patients, their families and healthcare professionals. Objective structured clinical examinations (OSCEs) are a common method of assessing pharmacy students' communication skills. The aim of this study was to investigate students' use of hedges and intensifiers for effective shared decision-making and the relationship between their hedge/intensifier use and their grade.

Methods: A review of 30 OSCE videos for final year undergraduate pharmacy students in the shared decision-making station was conducted. This shared decision-making station required students to communicate a recommendation to a simulated doctor then to a simulated carer. Using politeness theory, a content analysis was conducted to code students' use of hedges and intensifiers. Students' hedge and intensifier use were then correlated with their OSCE communication grade categories of poor, adequate or good.

Results: Common hedges used were modal auxiliary verbs, restrictive adverbs, quantity and frequency approximators and evidential stance markers. Overall, the ratio of hedging to intensifiers was greater when students were speaking to the simulated doctor than simulated carer across all grade categories. Students who scored poorly in communication had low hedging and high use of intensifiers.

Conclusion: Pharmacy students used more hedging to soften their recommendations to a simulated doctor but less hedging to explain their recommendations to a simulated carer. OSCE examiners preferred more hedging than intensifiers in student communication.

Know thyself: Enhancing belonging through self-awareness in international advanced pharmacy practice experiences

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Background: Belonging begins with self-knowing so people can authentically share themselves with others. Working in new cultures can be disorienting and stressful due to the many interpersonal and social differences. Experiencing so much difference can impact one's sense of self and ultimately challenge their feelings of belonging. To assist international advanced pharmacy practice experiences (I-APPE) participants feel a sense of belonging while abroad, they enrol in a preparatory elective that provides many opportunities to enhance their self-awareness. They complete assignments designed to identify: their emotional hot buttons (EHB) and intercultural conflict styles (ICS). The study aim was to identify the common conflict styles and EHBs so preceptors and faculty can better support students in the classroom and while abroad.

Methods: This descriptive study included all students enrolled in the I-APPE preparatory course in 2021-2023. Each student completed the Intercultural Conflict Style InventoryTM (ICSI) and an EHB survey within QualtricsTM. The ICSI provides a communication style (direct/indirect) and emotional expression (restraint/expressive) score, yielding four distinct ICS. Descriptive statistics were used to categorise the ICS type and the most common EHBs.

Results: A total of 107 students completed the course during the study period. Within the ICSI, most students (n = 75) preferred the Discussion conflict style (direct communication with emotional restraint). The most common EHB were: interrupting me while I am talking (n = 30), Not responding to me after I stop talking (n = 30), Taking a long time to get to the point during a conversation (n = 22), and Not maintaining confidentiality (n = 22).

Conclusion: The study data reveals the many social differences expressed by these students. This information increases their ability to authentically own these characteristics around others while also providing preceptors and faculty an opportunity to create spaces that allow the students to know these characteristics are welcome.

Working on the system rather than in the system: Developing electronic medical record prescribing alerts for live attenuated vaccines

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Background: Live attenuated vaccines are generally contraindicated for most people who are severely immunocompromised due to potential unchecked replication leading to vaccine-related disease. However, there is a lack of functionality in the hospital Electronic Medical Record (EMR) prescribing system at The Royal Children's Hospital (RCH) to alert clinical hospital staff to the potential harms of charting live vaccines. Following an incident where a live vaccine was inadvertently administered to a patient with severe combined immunodeficiency, an innovative approach was implemented through creation of a novel 'Live Vaccine alert' within EMR, to alert clinicians, pharmacists and nurses where live vaccines have been charted for a patient who is contraindicated such vaccines and increase awareness through utilising digital interventions.

Methods: The 'Live Vaccine alert' is generated based on data pulled from EMR i.e. through medications charted and diagnoses added to the 'problem list'. The alert is generated when live vaccines are ordered if certain medical contraindications are met for patients prescribed these vaccines. The alert appears in the order tab for clinicians, the verification tab for pharmacists and the medication administration tab for nurses. Under the umbrella of 'Live Vaccine alert', vaccine and medication specific alerts have been created, including an alert for corticosteroid therapy, immunoglobulin/ blood products administration and an age alert for rotavirus vaccine.

Results: A 'Live Vaccine alert' was successfully created and implemented within RCH's EMR. It has provided clinicians, pharmacists and nurses with a visual warning for live vaccine ordering, prompting further investigation and discussion with the Immunisation team to determine safety of charted vaccine/s. No further errors involving inadvertent live vaccine administration to contraindicated patients has occurred since this alert has been implemented.

Conclusion: The innovative 'Live Vaccine alert' creation within EMR has allowed for clinical staff to be notified when patients who are contraindicated a live attenuated vaccine are charted such a vaccine and prompt clinical review to ensure medication safety.

Collaborative Online International Learning (COIL): An inclusive method to develop intercultural and transcultural competency in pharmacy students

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Background: The pharmaceutical care of patients is increasingly influenced by cultural diversity and global health challenges, yet pharmacy curricula typically have a country-centric approach and focus primarily on local health issues. In an increasingly globally connected, diverse, and complex world, pharmacy schools seek ways to integrate intercultural and transcultural competence into their curricula. However, a significant challenge for increasing such competencies is offering international student experiences at scale, not just an optional study abroad experience for a few students. Collaborative Online International Learning (COIL) is a more inclusive mechanism by which international experiences can be delivered to large cohorts of students (i.e., internationalisation at home). COIL is defined as "*online learning in an international setting, with interactive involvement of students and faculty from different international and intercultural backgrounds in and outside the classroom*". The Schools of Pharmacy in Wyoming and Cardiff are undertaking a feasibility study of implementing COIL to support the development of intercultural and transcultural competence.

Methods: Faculty at Wyoming and Cardiff have undertaken exchanges to understand health and social care systems and the delivery of pharmaceutical care in their respective territories. This has informed the design of a six-week COIL series piloted with approximately 20 students from each institution. The series components are i) introduction and icebreakers, ii) intercultural activities, iii) comparing and contrasting healthcare in each country, iv) pharmaceutical care cases, and v) COIL reflection. Students are partnered across the two institutions and collaborate both synchronously and asynchronously.

Results: Students will provide reflection and feedback on the COIL series to determine what works well and what must be adapted to support further development of intercultural and transcultural competencies.

Conclusion: Evaluating the COIL series will allow us to expand its delivery to the entire student population in both Schools and include students from other health and social care disciplines. Together, this will offer a truly expansive and inclusive international approach to embedding cultural competencies in these curricula.

Curriculum development for practice-oriented education at the University of Pécs Hungary

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Background: The renewal of pharmacy curricular programme and training is a recurring task for universities and inhibited by their historical traditions and inflexible legal regulations.

Methods: In order to better align pharmacist training and professional competence development with labour market needs, a 7-member Curriculum Reform Working Group (CRWG) was organised with the involvement of three external experts from the pharmaceutical industry, community- and hospital pharmacy, which conducted a review of pharmacy education, labor market needs and national, international best practices.

Results: Intervention points included reviewing and harmonising the content of the curricula by facilitating a guided self-evaluation of course descriptions by course directors (n = 40), reviewing the number of teaching hours and credits for each obligatory course, and examining the interplay between knowledge acquisition and skill development. Reduction of teaching hours affected 17 courses while increased for only six. Change in teaching format from theory/lectures to practice/seminar was initiated in seven courses. The credit value of 17 courses was decreased while minor increase was utilised in case of nine courses. Semester change was initiated for 27 courses. Significant course curriculum/content change affected seven courses, two courses were merged, while two split. Finally, three new subjects were introduced into the curriculum.

Conclusion: As a result of the action plan for training reform defined by the CRWG and the parallel introduction of the Learning Outcomes based curriculum, pharmacy students will gain more up-to-date and internationally competitive knowledge and skills. Evidently, a reform limited to updating and fine-tuning the curricular network, will only deliver the expected learning outcomes and results if it is accompanied by regular curricular modernisation, pedagogical improvements and continuous update performed.

Innovation and novelty: This research can give a valuable tool to other universities to reimagine and optimise their pharmacy training curricula.

Telepractice Education and Interprofessional Module (TEAM)

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Background: The authors are at a unique inflection point in healthcare with the convergence of advanced technology and the changes in healthcare delivery wrought by the COVID pandemic. Preparing these students for interprofessional practice in a healthcare environment where telepractice is becoming routine is an opportunity to overcome some of the attitudinal and logistical barriers associated with interprofessional education. Interprofessional education (IPE) learning competencies are embedded in processes for accreditation of health profession programmes however the increasing asynchronous nature of health care has not been explicitly addressed nor has the opportunity telepractice presents been harnessed. Interprofessional learning through simulation-based IPE has demonstrated positive learning outcomes for allied health as well as nursing and medical students and telepractice and simulation in combination is an innovative model of clinical education for healthcare students. The synthesis of all three modes of teaching and learning practices is a much less explored area of pedagogy.

Aim: The aim of this project was to explore the effectiveness of a telepractice, interprofessional simulation module which emphasises a patient-centred approach and allied health team-based assessment and intervention for an adult with a progressive neurological condition. The module is stackable for context, complexity and focus of learning outcomes. Discipline specific and interprofessional sessions are incorporated into the module. Students' perceived competence and confidence in domains of telepractice, interprofessional practice, clinical skills and knowledge and communication was evaluated using a mixed methods study design

Results: Twenty-five students (across four allied health disciplines) participated in the TEAM module. Quantitative data analysis has shown increases in both student's confidence and perceived knowledge and skills in the four domains of telepractice, interprofessional, clinical and communication

Discussion: The TEAM module is a viable means of teaching and learning and for authentic assessment of telepractice, clinical, professional and interprofessional skills and knowledge (and attributes) for allied health, pharmacy and exercise physiology students and has the potential to be expanded into other disciplines.

Substitution of a traditional face-to-face workshop with virtual escape-room in higher education: A cost-effectiveness analysis

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Background: Online education games are gaining ground in health profession education yet there is limited literature on its costs. This study is an economic evaluation of the substitution of a face-to-face (F2F) workshop with an online escape room game teaching the same content.

Methods: A face-to-face workshop run on 364 students in 2021 on hepatitis management was compared to a virtual self-run escape room game called Hepatitiscape™ by 417 students in 2022. The outcomes were the final exam and objective structured clinical examination (OSCE) scores for hepatitis stations. An incremental cost-effectiveness ratio (ICER) was used to compare costs.

Results: The ICER for the final examination and OSCE scores were AUD 932 and $362 per additional average point gained, respectively, within the first year of delivery. Cost savings were seen to exponentially increase over five years as maintenance costs for Hepatitiscape are estimated to be lower than running F2F workshops. Students' perception data revealed their recall of contents was higher owing to the iterative design of the gaming elements.

Conclusion: Going virtual with an online game was shown to be a dominant long-term cost-saving strategy if the implementation costs of the virtual activity is less than or equal to the first year of F2F costs. Aside from the cost savings, virtual gaming has its logistical advantage over F2F delivery in that it allows students to participate from remote locations, which could be particularly valuable for institutions with physical space constraints in the face of increasing student cohort size.

How to boost achievement of all students without lowering quality standards: Recognising the learning process in pharmacy education

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Background: In the Faculty Development initiatives at a European university, a group focuses on enhancing student performance through educational process transformation aligned with cooperative learning principles. Modern pharmaceutical education faces the dual challenge of declining student motivation and performance, leading to a high dropout rate, while also adapting outcomes to 21st-century pharmaceutical competencies for market-relevant training.

Addressing this, especially for instructors lacking formal teaching qualifications, poses a significant obstacle. In ongoing faculty development, a group aims to enhance student performance without compromising standards or reducing the curriculum. Collaborating with the Higher Education Pedagogy Working Group within the university's Institute of Educational Sciences, the group implemented a transformation in learning communication and process organisation, incorporating not only simple team-based learning but also learning structures based on cooperative paradigm principles.

This study compares results from three academic terms, involving six student groups and three international groups, with similar groups from prior years studying the same subject.

Methods: The methodological foundation ensures consistency in tools measuring performance, curriculum, contact hours, and instructors, ensuring comparable student performances. Even in this initial development stage, results are encouraging for both target groups of students (international and inland students).

Results: In the ANOVA analysis, the F-ratio (6.598) with a P-value of 0.000, critical F-value (2.52010146), and F-test P-value (0.00022760) confirms significant differences among control and experimental groups in both performance and variance. Additional findings indicate that adhering to cooperative principles enhances learning outcomes, with improved group test averages and increased variability (73.75% to 107%), a notable rise from the previous range of 57% to 95%. No significant differences were observed between experimental groups led by different instructors in performance or variability.

Conclusion: The restructured pharmacy education, employing cooperative learning, improved student success

over three terms. Positive outcomes, such as enhanced test averages and increased variability, stemmed from cooperative learning structures. The collaborative faculty development approach, effective across instructors, provides a transformative pedagogy addressing contemporary challenges, ensuring quality standards, enhancing student achievement, and serving as a compelling model for future education.

Evaluating a simulated patient interaction using an artificial intelligence prototype

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Background: Objective structured clinical examinations (OSCEs) are a useful assessment in assessing the knowledge and skills of pharmacy students in preparation for practice. OSCE practice sessions typically involve students role-playing scenarios with their peers. The rise of artificial intelligence (AI) in healthcare education provides students with the opportunity to interact with 'real-world' scenarios. The authors aimed to investigate user experience after undertaking an OSCE practice case which was conducted by using live dialogue with a patient avatar controlled by AI.

Methods: The authors developed and piloted a revolutionary digital ecosystem that offers immersive simulations tailored to individual learning trajectories by using Large Language Models, AI, and intricate agent personas to simulate a community pharmacy setting. The patient avatar's dialogues were based on previous practice OSCE cases. During these interactions students were required to interact with the AI patient with their camera on. A dialogue of text would appear in response to the voice recording generated by the student. The software provided feedback on the interaction. After attempting these simulations, users were asked to provide an open text reflection on their experience. Data was analysed using content analysis.

Results: Thirty students and fifteen pharmacists attempted the prototype. Responses with the patient avatar were similar to responses from OSCE examiners in the live OSCE. Students particularly liked the features of non-verbal assessment, ability to give answers from a lay-person perspective. They also appreciated the online accessibility and how the tool allowed repeated interactions. Disadvantages noted were lag times, misinterpretation of accents or poor pronunciation of drugs/conditions, not being able to see a person face-to-face and their non-verbal reactions.

Conclusion: Use of an artificial intelligence prototype has the potential to build knowledge and skills in pharmacy education. These scenarios were deemed to be effective in preparing graduate entry students for OSCEs and for practice. More work needs to be done before AI tools can be used for assessment purposes to ensure a fair experience for all students. AI feedback is still noted to be limited, and students would still like feedback from a real-life practising pharmacist.

Mapping the core concepts of pharmacology in integrated pharmacy curricula

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Background: The core concepts of pharmacology have been defined and unpacked making it possible to map these in existing and new curricula. The Bachelor of Pharmacy (BPharm) and Master of Pharmacy (MPharm) at The University of Sydney are fully integrated curricula centred around major themes. It is therefore imperative to ensure the core concepts are being taught in these integrated curricula and investigate how they are being reinforced.

Aim: To map the core concepts of pharmacology within foundational units of study in the BPharm and MPharm, and to provide exemplars of learning activities designed to reinforce and apply these core concepts.

Methods: Lesson learning outcomes and slides/notes were obtained for foundational units of study and evaluated for keywords and phrases relating to the published core concepts of pharmacology. Omissions, alignments and deviations were noted.

Results: Results to date show that some core concepts of pharmacology are taught in greater depth than others in foundational BPharm and MPharm units. For example, core concepts of drug targets, drug-target interactions, structure-activity relationships, dose/concentration-response relationship, drug affinity, drug efficacy, drug potency and drug selectivity are substantially reinforced, while those of drug tolerance, adverse drug reactions, drug-drug interactions, and individual variation are not.

Conclusion: The core concepts of pharmacology provide an evidence-based foundation for pharmacology curriculum development and evaluation across a range of programmes in which pharmacology is taught. Critically, ascertaining those core concepts that are most pertinent to further pharmacology training in pharmacy programmes of study, and the most effective learning activities to reinforce these core concepts, is warranted. Further mapping of the core concepts in higher level units of study is required.

Visualising health: A pioneering approach to diabetes awareness through infographic design

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Background: Diabetes Mellitus (DM) is a global health issue with a steadily rising prevalence, even in younger age groups. Despite awareness-raising efforts among the public, awareness about diabetes mellitus remains low.

Methods: A quasi-experimental pilot study was conducted to investigate the differences in efficacy between an infographic medium and a written text medium in educating young adults aged 18 - 35 about diabetes. Participants were alternately assigned to the infographic or the text group in sequential order of participation. The primary objective was to determine if infographics allowed for easier understanding.

Results: A total of 80 participants were recruited, with 40 participants assigned to each intervention group. Both the infographic and text were effective in improving participant diabetes knowledge, as post-test scores were significantly higher compared to the pre-test scores for both mediums. Results from the Wilcoxon signed-rank test showed that in both the infographic (pre-test 13 vs. post-test 21) and written text groups (pre-test 12 vs. post-test 20.5, the increase in scores within each group was statistically significant (p-value = < .001). However, there was no significant difference between the post-test scores of the infographic and the written text groups (the Mann-Whitney U statistic for the infographic group 21 vs written text group 20.5, $p > 0.05$).

Conclusion: The significant increase in scores post-exposure indicated both mediums are effective and should be further investigated in conveying health information to the bigger population. Future studies with a larger sample size and looking at different learning styles among different socio-demographic profiles could be conducted. This would help create better educational tools for the public to improve their awareness of diabetes, hence reducing the burden of the disease on the healthcare system.

Bridging the gap: Developing a tool to enhance methodological understanding in education research

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Background: ER often presents challenges for newcomers, who may struggle to navigate the complexities of choosing appropriate theoretical frameworks, methodologies, and research methods. This research project addresses this gap by proposing the development of a comprehensive tool aimed at aiding novice researchers in selecting the right theoretical framework, methodology, and strategies for their studies. By simplifying and streamlining these processes into a single model (based on Saunder's onion model 1) and using AI, the tool seeks to ensure the consistency between the grand theory, methodology and the range of available methods in the research studies.

Methods: The study adopts a mixed-method exploratory sequential approach. In the qualitative phase, interviews and surveys will be conducted with experienced ER professionals to understand their journey in mastering the intricacies of the field. Similarly, interviews and surveys will be conducted with novice researchers to identify their challenges and needs. This qualitative data will inform the development of the AI tool. Subsequently, the tool will be tested through a quantitative survey, followed by refinement based on additional qualitative feedback.

Results: Preliminary findings from the qualitative phase reveal insights into the experiences and challenges faced by both experienced and novice researchers in education. These findings will inform the development of the tool, ensuring its relevance and effectiveness in addressing the needs of its intended users. The quantitative survey will provide further insights into the usability and effectiveness of the tool, guiding refinements for its final iteration.

Conclusion: The proposed tool represents a novel approach to enhancing methodological understanding in education research, offering a systematic framework based on the onion research model to guide researchers in their decision-making processes. By consolidating resources, explanations, and practical guidance into a single model, the tool aims to demystify the complexities of ER for novice researchers, ultimately fostering greater confidence and competence in applying ER's underlying concepts.

Innovation and novelty: This research project introduces an innovative solution to a common challenge in education research: the lack of guidance and support for novice researchers in navigating methodological choices. By providing a comprehensive tool that addresses theoretical frameworks, methodologies and research methods, the study

has the potential to impact diverse communities of researchers and educators, ultimately advancing the quality and rigour of research in the field of education.

Answer the question: First user feedback on a novel Very Short Answer question assessment system

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Background: Very Short Answer (VSA) questions have been proposed as a potential solution1 to problems associated with Single Best Answer (SBA) multiple choice questions (MCQs)2 and other MCQ variants, such as negatively marked true-false questions. VSA questions allow short answers to be typed directly but require manual checks when inputs do not match preset answers. This study aimed to determine student acceptance and views of a VSA system which produces an automated list of matching options (from pre-populated potential answers), depending on characters typed.

Methods: After receiving ethical approval, final year MPharm students were invited to take part in a short trial VSA assessment using the new VSA system, followed by an online questionnaire. Questions mostly related to user experience and comparisons between VSA questions and MCQs used in previous assessments. Most questions were answered on a 7-point scale, from complete disagreement (1) to complete agreement (7), with average scores reported.

Results: The evaluation of the VSA system was completed by 32/118 students invited; all completed the subsequent questionnaire. Positive feedback was received, with average scores for navigation, layout and functionality all above 6. Compared to SBA and negatively marked true-false MCQs respectively, VSA questions were viewed as a truer reflection of the student's ability (5.59 vs 5.38 vs 2.38), fairer (5.59 vs 5.38 vs 2.41) and easier to understand (5.91 vs 5.28 vs 3.81). There was greater agreement among students that SBA MCQs allowed them to guess the answer, compared with VSA questions (5.09 vs 4.00).

Conclusion: The VSA questions produced enabled fully automated marking and were well accepted by users. The system can add greater validity to assessments, allowing replacement of existing MCQ question types, while avoiding additional marking burden on staff. User feedback is consistent with previous studies highlighting cueing as a problem with SBA MCQs1.