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Educational practice of medication treatment management for community pharmacists in China

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Background: Community pharmacists have become suitable candidates for long-term pharmaceutical services for patients with chronic disease in the community due to their accessibility and acceptability. However, they lack the knowledge and skills in pharmaceutical services to practice medication treatment management (MTM) in China. Specific efforts should be taken to improve pharmacist competence by strengthening the training for the continued development of licensed pharmacists.

Objective: This research aimed to explore a suitable MTM training system for community pharmacists in China, analyze the effectiveness of online training of pharmacists' MTM knowledge and skills, and provide suggestions for the implementation and practice of MTM in China.

Methods: MTM training program for licensed pharmacists working in community Pharmacies was conducted from April 2022 to April 2023, which included knowledge of therapeutics and pharmaceutical care, and skill practice of patient care through roleplay. Examinations of the trainees concerning 20 different common diseases and pharmaceutical care skills were collected. A cross-sectional study was designed and distributed to the trainees who signed up to investigate their basic situation, cognitive level, confidence and barriers to MTM implementation before and after training. Qualitative methodology was used to understand further pharmacists' demands for training on MTM and their ideas and suggestions for developing MTM services in real working settings.

Results: Trainees' performance in therapeutics and theoretical knowledge of pharmaceutical care increased significantly (total score: 50) in the comparison before and after training. The skills of pharmacists in terms of information collection and patient education were the weakest among practical training according to the feedback of trainers. 181 pharmacists completed the training, and 167 pharmacists (92.2%) responded effectively. Pharmacy services currently provided by community pharmacists mainly included prescription review (67.1%), patient education (62.9%), while monitoring and following up patients accounted for about 51.5%, and health records were about 47%. Self-perceived understanding of MTM has significantly improved after training compared with it before training. Pharmacists showed confidence percentages on MTM implementation for patients with hypertension (83.7±13.8), diabetes (82.6±15.1), and dyslipidemia (81.6±15.9) through the training program. The lack of effective communication (67.1%) and collaboration (71.3%) with other health professionals were the main self-perceived barriers and problems in implementing MTM services. The qualitative interview results showed that almost all pharmacists preferred the roleplay training and wanted to accept more practice. In addition, some pharmacists showed their demands for standard templates and support to help them implement MTM.

Conclusion: Pharmacotherapy and patient care skills are needed by community pharmacists in China to implement MTM. Continued education should strengthen the training of communication skills and model standards of patient care. The collaboration between pharmacists and other health professionals and related policies for MTM services are key points to promote the implementation of MTM in China.

A collaborative way to gain user feedback for healthcare educational media

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Background: Multimedia-based educational initiatives utilize innovative techniques to promote knowledge transfer. Our educational initiative "Global Classroom: Patient/Medication Safety for Health Care Professionals" is a seven-episode video podcast series of pharmacy student-hosted 30-minute interviews with international subject matter experts. Educational initiatives often require innovative methods to promote their dissemination and feedback acquisition in order to maximize impact and facilitate evaluation.

Purpose: The objective of our pilot project was to explore and implement an innovative way to promote the dissemination of and acquire feedback for our multimedia-based healthcare educational initiatives.

Methods: In July 2022, we engaged and collaborated with a student club in our institution's pharmacy program to promote, disseminate, and invite feedback for our podcast series (i.e., the "event") on their social media page. The podcast episodes were released daily sequentially, each accompanied by a post describing the interviewee(s) and an episode-specific Google Form feedback survey. As an incentive, we awarded pharmacy student society points to viewers who submitted feedback.

Results: A total of 169 individuals were invited to the event on the student club social media platform; 10 individuals attended the event and 11 expressed interests in attending. We received one additional feedback form by the end of the data collection period. The respondent provided adequate answers to our feedback survey. This additional submission increased our total number of feedback entries, through various dissemination efforts, from seven to eight, and facilitated evaluation of our podcast educational initiative. To recognize this new incentive-oriented strategy in promoting and disseminating healthcare educational initiatives to pharmacy students, we created a standard operating procedure (SOP) to document the process. The SOP will serve as a guide to support future marketing or advocating of new educational initiatives through collaboration with student clubs in an educational program.

Conclusion: Despite few submitted feedback forms, more students attended or were interested in attending the event. Students might have watched the podcast episodes without submitting feedback. Running future events during regular academic terms, as opposed to during the summer months, may increase student engagement and feedback acquisition. The SOP that standardizes the methods of initiating, planning, and executing promotional activities in collaboration with well-established student clubs in educational programs may be adaptable or beneficial for educators at other institutions. Our proof-of-concept project offers a viable option for pharmacy professionals and educators to engage a student body to facilitate dissemination and seek feedback, supporting continuous quality improvement of healthcare educational initiatives.

Gamification in health profession education: What we learned from the literature and our needs assessment

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Background: Gamification, also known as serious games, in education is shown to facilitate user engagement and knowledge retention. Effective gamification requires application of user experience (UX) elements and incorporation of relevant educational topics. Gamification is a relatively unexplored pedagogical tool in pharmacy education despite uses in medicine and nursing education.

Purpose: This study aim to identify key UX elements in health education gamification, and patient safety topics with the most needs for knowledge reinforcement, to help design educational games for pharmacy students in a patient/medication safety course in our institution's Doctor of Pharmacy (PharmD) program.

Methods: The authors searched on MEDLINE, JSTOR, Web of Science, and IEEE Xplore for literature discussing UX elements of gamification in health profession education. Articles were screened by two independent analysts. A needs assessment questionnaire was disseminated to early-career pharmacists and Year 4 PharmD students who attended the patient/medication safety course in 2021 and 2022, respectively, seeking their input for specific topics and safety competency domains that may benefit from gamification.

Results: Nine articles were included and lessons learned from the literature were subjected to thematic analysis. Key elements of UX in gamification included ease of use, clarity, and affordance; realism and authenticity; feedback mechanism; competition and points system; and complexity and challenge. Our needs assessment revealed that root cause analysis, failure mode and effect analysis, multi-incident analysis, and safety competency domains on "safety, risk, and quality improvement" should be considered for gamification in pharmacy education.

Conclusion: The authors identified several UX elements that must be considered by health profession educators to design engaging games. We also identified that topics related to patient/medication incident analyses may benefit from the application of serious games in teaching pharmacy students/professionals. Our project findings will pilot ventures of educational gamification in pharmacy and other health professions.

A novel platform to introduce veterinary pharmacotherapy principles into the curriculum

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Background: On March 15, 2021, the American Pharmacists Association (APhA) House of Delegates approved a proposal to expand the definition of a "patient" to include both human and non-human species. While this expansion highlights the wide scope of care provided by pharmacists, a paucity in veterinary pharmacotherapy education remains. In two independent surveys, 77% of pharmacists reported that they routinely filled prescriptions for animals. In 2021, only 26.7% of colleges and schools of pharmacy surveyed responded that veterinary pharmacotherapy training was provided in their curricula, implying that almost three-quarters of pharmacist graduates are not trained to care for non-human patients. Surveys of veterinarians indicate that they have a low confidence in pharmacists' ability to fill veterinary prescriptions correctly.

Purpose: The purpose is to highlight the need for veterinary pharmacy training and propose an effective means for doing so.

Methods: Both the National Association of Boards of Pharmacy (NABP) and the American Veterinary Medical Association (AVMA) have expressed resolutions emphasizing the need for pharmacist education in veterinary pharmacotherapy. Amid significant efforts from Delegates representing the American College of Veterinary Pharmacists (ACVP), the APhA House of Delegates approved a proposal in March 2023 encouraging veterinary pharmacy training in schools of pharmacy and pharmacy technician programs. While the vote was unanimous, several faculty instructors expressed concerns about the feasibility of implementing such education and specifically asked for experts in the field of veterinary pharmacology to provide tools to educational programs.

Results: The significant time and resource constraints of adding curricula to educational programs support the integration of short comparative topics within the existing curriculum as a creative way to expose students to core principles of veterinary pharmacotherapy.

Conclusion: The creation of a diverse catalog of subject matter content by veterinary pharmacy experts, and providing access to these materials to faculty instructors, allows for an effective, straightforward way to provide this education in pharmacy programs.

Appropriateness of the University of Namibia bachelor of pharmacy honours degree curriculum to meet the health needs of Namibia

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Background: Since Independence in 1990 Namibia has struggled with a chronic shortage of pharmacists. To address this, the University of Namibia (UNAM), in collaboration with internal and external stakeholders, developed a needs- and competency-based curriculum appropriate for Namibia's health setting. The first intake of UNAM's Bachelor of Pharmacy (BPharm) students was in 2011. Although anecdotal evidence and successful accreditation suggests that the BPharm curriculum is appropriate and relevant, no formal assessment of the appropriateness of the curriculum had been conducted. Furthermore, although the importance of health professional training being relevant to local needs is stressed by international guidelines and recommendations, there are very few published studies that examine appropriateness of training to local health needs.

Purpose: This research aimed to determine the appropriateness of the BPharm honours degree curriculum to meet the health needs of Namibia by 1) quantifying the appropriateness of the pharmacy curriculum from key stakeholder perspectives, and 2) describing the level to which UNAM BPharm graduates demonstrate locally identified and internationally accepted competencies.

Method: A cross-sectional survey was developed, piloted and shared with all registered pharmacists in Namibia, requesting them to rate the appropriateness of the BPharm modules to their field of pharmacy practice. Additionally, all respondents were requested to make any comment on the appropriateness of the current curriculum. Respondents who had experience of working with UNAM BPharm graduates were asked to rate their competence against domains based on the FIP Global Competency Framework. Licensure examination results for 2016-2019 were also analysed to determine competency of UNAM graduates compared to those trained elsewhere.

Results: The survey was completed by 210 of 610 pharmacists registered in Namibia (34%). The mean appropriateness rating for 37 different modules ranged from 3.7 to 4.7 (scale: 1-not appropriate at all to 5-very appropriate). Ninety-five respondents replied that they had worked with UNAM BPharm graduates. The mean rating of graduates' perceived competence for the different domains ranged from 2.8 to 3.7 (scale: 1-not competent at all to 5-highly competent) with highest rating in dispensing and the lowest in budget management. Respondents' comments suggested several enhancements to the current curriculum, with the most frequent suggestions being to strengthen business, management and leadership training. Other

frequently mentioned suggestions included strengthening graduates' pharmaceutics skills, calculation skills, increasing students clinical contact time and introducing students to the specific dispensing software used in Namibia. In relation to professional examinations, interns trained at UNAM performed better on the Legal assessment compared to interns trained elsewhere, but there was no significant difference between the two groups for the Calculation or Observed Structured Clinical Examination (OSCE) assessments.

Conclusion: Results suggest that the current BPharm curriculum is appropriate for Namibia's health needs, though more emphasis needs to be placed on some key areas including management, calculations, pharmaceutics, and clinical practice. These results were used to guide the UNAM BPharm curriculum transformation, which launched in January 2023. This study also demonstrates a cost-effective method for critical assessment of health professions training curricula that can be utilised in resource-limited settings.

Appropriateness of the University of Namibia master of pharmacy clinical degree curriculum in Namibia

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Background: The University of Namibia launched the Bachelor of Pharmacy (Honours) degree in 2011 graduating the first cohort in 2015. From the beginning, the plan was to implement a Master of Pharmacy (Clinical) for practicing pharmacists with a goal of building clinical pharmacy capacity in Namibia. The programme was modelled on the Joint Programmes Board's Post-Graduate Diploma in General Pharmacy Practice from the United Kingdom but was adapted to meet the specific needs of Namibia. The current version of the MPharm was launched in 2016. The programme is a 3-year work-based part-time curriculum that incorporates taught modules, experiential learning, and a written mini-thesis.

Purpose: The purpose of this research was to evaluate the appropriateness of the current MPharm programme from the perspective of current students, graduates, and other pharmacists in Namibia.

Method: This research took a cross-sectional approach to understanding the perspectives of a diverse section of pharmacists in Namibia. An online survey was developed, piloted, and distributed to all registered pharmacists in Namibia with multiple reminders sent to encourage responses. The survey included demographics, self-assessment of MPharm competencies by current/past MPharm students, peer-assessment of MPharm competencies for pharmacists who have worked with

MPharm graduates, ranked appropriateness of each of the current modules, acceptability of various proposed teaching formats, and overall comments on the programme. Data was analysed using a descriptive approach.

Results: A total of 44 respondents completed the survey which included 8 current or graduated MPharm students. This represents a response rate of 7% of the total registered pharmacists in Namibia and 30% of MPharm students and graduates. More than two-thirds of respondents work in either public hospitals (16 respondents) or community pharmacies (17 respondents). Over 30% of respondents had worked with MPharm students and graduates (14 respondents). MPharm students and graduates rated themselves 3.1 to 3.6 (1 = rarely, 2 = sometimes, 3 = consistently, 4 = frequently) for each of the 14 competency domains. Pharmacists who had worked with MPharm students and graduates rated them from 2.4 to 2.9 on the same competencies. For each of the modules evaluated, respondents rated their appropriateness as 4.4 to 4.6 (scale: 1- not appropriate at all to 5- very appropriate). Regarding the preferred programme format, the format with the highest acceptability was 3-contact sessions annually with weekly one-hour synchronous online tutorials; the format with the lowest acceptability was a one-year full-time programme.

Conclusion: Overall, the current programme has high levels of acceptability and appropriateness in terms of taught modules and format. Respondents have a slight preference for fewer contact sessions with weekly synchronous content. Additional comments made included reduction of the programme's duration of study from three years to two years, more time to be dedicated to clinical practice experience, and increased regulatory and management topics. Lower peer assessments of competency suggest a need for increased skill practice in multiple areas of the programme. Further discussion could assist with balancing increased practical skill acquisition with the desire for a shorter programme.

Comparing pharmacy student performance in simulated objective structured clinical exam (OSCE) with work-integrated learning contexts using mystery shopping

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Background: Although a thoughtfully designed Objective Structured Clinical Examination (OSCE) is a robust and valid tool for assessment tool, there is debate exists in the literature about the effectiveness of this simulation-based assessment to authentically mirror real-life scenarios. Implicitly, the lack of veracity in resembling real practice may encourage students to merely memorise and run through the 'motions' of the OSCE checklist rather than

learning and demonstrating deeper understanding of the intended skills, particularly on the more humanistic aspects of the interaction. Limited studies have explored the extrapolation inference in Kane Validity's Framework (a framework which makes inferences about assessment progresses from a single observation to the final decision). Limited studies have linked authentic assessments to real life practice, especially OSCEs.

Purpose: This purpose of this study aims to compare the performance of students in an OSCE to their performance in real-life using the same clinical scenario, and to understand what factors affect a student's performance in a real life community pharmacy settings to inform future assessments.

Methods: A sequential mixed methods approach was used. Mystery shoppers visited pharmacy students on their community pharmacy placement, and simulated the same case scenario the students were given in their primary care station in their recent infectious diseases OSCE. These 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 semi-structured interview to reflect on the experience.

Results: A total of 115 mystery shopper visits were conducted across Monash Australia and Monash Malaysia, and 36 follow-up interviews were completed. The mean mystery shopping score was 36.2% compared to the actual OSCE score of 81.1%. About 93% of students (n=107) scored lower in the mystery shopping encounters compared to their OSCE scores (p <0.001). Four students (3.5%) did better than their OSCE, while 4 other students (3.5%) scored similarly in both the mystery shopping encounters and their OSCEs. In the interviews, students reflected on the differences between the real life and OSCE experience when presented with the same case; these included that on placement they could provide a more holistic approach by showing them the product on the shelf and talking through the different products, they had more autonomy to recommend what they wanted than the OSCE (not always having to choose the most optimal product/first line product but products they have had good experiences with), and they were not as nervous as they felt there was a team of colleagues to support them.

Conclusion: Students scored lower on placement than in OSCEs even though they reflected that it is easier to manage a patient in real-life; outlining challenges to replicate a real-life pharmacy situation in an OSCE. Whilst OSCEs are useful for testing process type skills, authentic clinical problem solving may be best assessed in a workplace environment.

Development of an online objective structured clinical examination (OSCE) case writing programme MyOSCE™

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Background: The Objective Structured Clinical Examination (OSCE) is a highly valued performance-based competency assessment that is widely used in pharmacy education. Conducting an OSCE is a rigorous process that begins with development of case scenarios, which is the most labour intensive step. The two biggest factors that contribute to the heavy workload are the ability to create a variety of medication related problems and also ensuring the case checklists capture all the up to date recommendations in our standard pharmaceutical references. Human error and intra-writer/inter-writer variability can also lead to inaccurate cases/information being tested. It can also be time consuming creating the documents associated with each case (case guide, analytical checklists, props). Finding existing cases and keeping track of used cases is also challenging. While there are numerous software systems available in the market to support OSCE assessments in terms of logistics management and marking standardisation, to date, there is a lack of an application to facilitate the writing of OSCE scenarios.

Purpose: This purpose of this study was to build a customized OSCE software for case writing and to pioneer a streamlined design in the manner OSCE cases are formulated and stored for future reference and easier retrieval.

Methods: The software was developed in consultation with the three academic staff members and a team of software developers.

Results: The developed program MyOSCE™ has the following features: a web-based application that can be accessed by any enrolled educator online from any location; significantly speeds up the process of creating new OSCE cases by automating and streamlining text fields and having pre-set criteria fields that export into set checklists and templates; reduces human error and variability by having fixed fields and checking steps; allows for filtering, storing and version control of cases as well as enabling variations of cases; ensures information used in OSCE cases is up to date through importing mechanisms that upload content from current guidelines; enables sharing cases with other universities; standardises the difficulty of the case based on our standard setting scoring, and data analysis following case use by students; identifies essential criteria that students must fulfil to pass the checklist; a central repository that facilitates authoring, filtering and archiving of OSCE cases; a comprehensive metadata structure that allows the easy retrieval of cases; the automatic generation of case assets for use in the delivery of the assessment. such as simulated patient script, assessment criteria, examiner's

notes, case overview, stem statement, and also props, such as prescriptions, doctor's letters, labels etc; and provides an efficient way of storing ideas on medication related problems to keep in a repository before they can be converted into cases.

Conclusion: An online and sustainable OSCE writing programme MyOSCE™ has been successfully developed and is ready to be piloted and shared.

A Interprofessional education and practice at a COVID-19 vaccination center at the University of Puerto Rico Medical Sciences Campus

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Background: When the COVID-19 vaccine became available, there was a need to establish a strategy to immunize the academic campus health professionals. The Medical Sciences Campus leadership established a COVID-19 vaccination center that could serve as an interprofessional practice and education model.

Purpose: Describe the implementation of an interprofessional COVID-19 Vaccination Center at the University of Puerto Rico Medical Sciences Campus.

Methods: The Schools of Nursing, Pharmacy, and Medicine partnered to establish the COVID Vaccination Center to serve the Medical Sciences Campus academic community and the general Puerto Rico community. The center began its operation on December 28, 2020, with the volunteer participation of faculty and students from the Campus' professional schools. The School of Pharmacy was responsible for preparing the Pfizer/BioNTech COVID-19 Vaccine doses. Nurses, pharmacists, physicians, and students from these programs have participated in administering the vaccine. The School of Medicine has provided the staff physicians for the post-vaccination observation process. The School of Nursing and its infrastructure installations serve as the Center's clinic site.

Results: Nurses, pharmacists, physicians, and respective professional students have participated in administering the vaccine. Faculty from the different professional programs have collaborated with the registration process and the entry of patient information into the Puerto Rico Health Department electronic database. Over 16,000 vaccine doses have been administered at the clinic to adult and pediatric patients from the campus and the general population.

Conclusions: The clinic has become an exemplary interprofessional practice scenario with participation from the faculty and students from the professional schools on campus.

Examining the perceptions of faculty members at Qatar university of the undergraduate research in pharmacy courses

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Background: The constant development in pharmacy practice requires a pharmacy workforce that is experienced in pharmacy practice research. The literature suggests that the involvement of pharmacists in research falls short, which hinders the ultimate incorporation of evidence-based practice into pharmacy practice. The inadequate participation of pharmacists in research can be linked to several barriers, such as insufficient time and funding and lack of exposure to research experience during the pharmacists' undergraduate training. Furthermore, there is a dearth of studies on the significance of research courses and on the perceptions of faculty members of the importance of incorporating those research courses in the undergraduate pharmacy curricula. The College of Pharmacy (CPH) at Qatar University (QU) offers two undergraduate research in pharmacy courses (URPCs) in the third and fourth professional years in the undergraduate pharmacy program and this study examines the significance of those two courses.

Purpose: To examine the perceptions of faculty members at CPH-QU of the delivery, impact of the URPCs and to explore the facilitators and barriers to the delivery and impact of the URPCs, as well as to investigate opportunities to improve the courses.

Methods: A qualitative research was conducted utilizing a case study approach to enquiry. This involved conducting five virtual focus groups with all eligible CPH-QU faculty members, who have supervised students in research in one or two URPCs. A topic guide with open-ended questions was developed based on the theoretical domain framework (TDF), which contained questions about faculty members' past research experience, perceived professional role, beliefs about the significance of research, and actual and predicted outcomes. Verbatim transcription was performed, and the transcripts were thematically analyzed using the NVIVO® software.

Results: Five themes were generated, social/professional role and identity, beliefs about capabilities, interpersonal/ physical skills, beliefs about consequences/goals, and barriers and suggested improvements. Overall, faculty members were aware of their roles and confident in their capabilities. In terms of students, faculty members believe that students have sufficient theoretical research knowledge but needed more practical research skills. Also, several hurdles to URPCs were identified, such as limited resources, lack of faculty support, diminished student interest, limited timeframe, and the logistics associated with ethical approval process.

Conclusions: The results shed the light on the significance of incorporating URPCs into the undergraduate pharmacy curriculum at CPH–QU in terms of enhancing the academic and professional careers of both the students and the faculty members, and in terms of enhancing the evidence-based practice. However, several organizational factors shall be addressed to maximize the impact of these courses, such as enhancing the fund opportunities, improving the allocated timeframe, and facilitating the logistical processes.

Examining pharmacy alumni's perceptions of job satisfaction, achievements, and preparedness: A mixed-methods study

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Objectives: There is a scarcity of research that holistically explores pharmacy alumni's employment experience and their professional performance. Job satisfaction is linked to professionals' productivity and their educational preparedness. This study aimed to explore the professional experiences of the College of Pharmacy-Qatar University alumni.

Methods: A convergent mixed-methods design was utilized to examine the alumni's perceptions of job satisfaction, achievements in the workplace, and preparedness for practice through both quantitative and qualitative approaches. This study involved the administration of a pre-tested online questionnaire among all alumni (n=214) and the conduction of seven focus groups (FGs) of which the participants were selected from a heterogeneous purposive sample (n=87). Herzberg's motivation-hygiene theory was applied in both approaches.

Results: One hundred thirty-six alumni completed the questionnaire (response rate=63.6%), and 40 alumni attended the FGs. A good level of job satisfaction was demonstrated (median score=30 (IQR=12), [out of 48]). Sources of job satisfaction and dissatisfaction were recognition and limited opportunities for professional growth, respectively. Also, good satisfaction was revealed (median score=20 (IQR=21), [out of 56]) with the alumni's ability to attain several achievements (eg, developing pharmacy-related services), which allowed for career success. Moreover, fair agreement concerning the adequacy of the preparedness for practice was indicated (eg, being care providers) (mean=37 (SD=7.5), [out of 52]). However, certain aspects, such as the enhancement of non-clinical knowledge, warranted further improvement.
Conclusions: Overall, pharmacy alumni had positive perceptions of their professional experiences. However, alumni's excellence in different pharmacy career prospects needs to be supported throughout their learning experience.

Self-reflection and peer-assessments effect on pharmacy students' performance at simulated counselling sessions

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Background: Verbal communication is a vital skill for pharmacists and essential for improving patient care. The aim of this study was to explore students' perception of the impact of self-reflection and self- and peer-assessment on simulated patient counselling sessions.

Methods: Focus groups explored student perceptions of how this course and way of learning has impacted their performance at counselling patients. Data were analysed using iterative inductive thematic analysis procedures and mapped to the self-determination theory.

Results: Nine focus groups with 47 pharmacy students. We identified three main themes and ten associated subthemes. These were learning style (sub-themes gradual introduction to assessment, learning through self-reflection videos, authentic assessment, individual learning compared to group learning, and learning through observation of best practice), feedback (sub-themes inconsistent feedback, summative feedback, perception of self and relationship with peers informing peer assessment) and benefits in real life practice. These themes mapped well to self-determination theory and highlighted that additional focus may be required for benefits in real-life practice.

Discussion: Students' perceptions of self-reflection and self- and peer-assessment centred on learning style, feedback, and benefits in real-life practice. Additional focus on benefits of this unit of study in real-life practice and work integrated learning on placements may further strengthen the impact of these learning activities.

Development and evaluation of a educational module and workshop for pharmacists managing suicidal ideation

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Background: The COVID-19 pandemic has put the spotlight on mental health, specifically suicide trends. The World Health Organization has identified that the pandemic triggered a 25% increase in prevalence of anxiety and depression worldwide, further supporting the continued need for healthcare professionals to be prepared to respond.
The role of pharmacists in management of suicidal ideation has been identified in the literature; however, the focus is

primarily on community pharmacists or pharmacy students. In Canada, as pharmacist scope of practice continues to evolve, pharmacists have become key care providers in primary and acute care interprofessional teams. Pharmacists are now commonly in unique positions to assess patients, where suicidal thoughts or ideations may be expressed. Educational content has been developed worldwide to train pharmacists in suicide prevention, however it has been identified that practical experience is beneficial in improving comfort and efficacy in this area.

Purpose: To develop and evaluate an asynchronous educational module and follow-up, synchronous, case-based workshop for pharmacists on the management of suicidal ideation.

Method: In 2020 an environmental scan was performed, confirming the lack of training geared towards pharmacists outside of the community setting. Educational module content was created based on a literature review and expert consultations. A survey was developed to assess perceived efficacy of the educational module. In 2021, recruitment to pilot the module occurred through a national online pharmacist forum in Canada. Survey analysis informed the development of a synchronous workshop. In 2022 through to 2023, a 90-minute pilot educational workshop was designed, implemented and evaluated. Recruitment for this component occurred through the Northern Health Authority (British Columbia, Canada) Pharmacy Department email distribution list. Participants engaged in the previously developed asynchronous online education module prior to the workshop, a pre-workshop survey, the workshop itself, and finally completed a post-workshop survey. Evaluation of the pre-post surveys were done through descriptive statistics.

Results: Nine pharmacists from across Canada participated and provided feedback on the asynchronous pilot module in 2021. Evaluation of this content showed increased perceived confidence and efficacy in managing patients with suicidal ideation, as well as positive shifts in perceived attitudes in managing those with suicidal ideation. Qualitative feedback from this evaluation led to the development of the case-based, synchronous workshop where participants role-played scenarios using their knowledge to further develop comfort and skills in managing those with suicidal ideation. Workshops were delivered in February of 2023 to a further nine participants. Results of the "pre-post" survey on the workshop showed improvement in perceived efficacy and confidence in managing suicidal ideation. All participants agreed that the workshop was useful, delivered effectively, and that the overall experience was positive.

Conclusion: An asynchronous educational module for supporting pharmacists managing suicidal ideation was well received by pilot participants, and informed the development of a synchronous workshop for learners to practice new skills. The data collected through this research will be used to develop and deliver a full educational activity as continuing education for pharmacists and undergraduate pharmacy students.

A simulation activity exploring medication crushing technique and mass loss from crushed tablets among pharmacy students

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Posters Monday, September 25, 2023, 12:30 PM - 2:30 PM

Background: Dosage form modifications are common clinical practices to ease medication swallowing. These practices pose safety concerns including adverse events resulting from dose loss or cross-contamination.

Purpose: This study aims to evaluate crushing technique and lass loss from crushed tablets among pharmacy students, and to educate students about medication crushing techniques.

Methods: Sixty-seven pharmacy students participated in a simulated tablet crushing activity. To investigate cross-contamination, each student was instructed to first crush a green ibuprofen-containing tablet and then a white placebo tablet using various randomised crushing devices. Ibuprofen contamination was quantified using a validated ultraviolet-visible (UV) spectroscopic method. Mass losses were measured by comparing the weight difference of the whole green tablet and its crushed form.

Results: Results showed cross-contamination in almost all samples. This was evident as green tinged solutions and powders, which were observed by students and staff. This contamination was also confirmed by UV analysis. Approximately 62% (n=41/67) and 76% (n=51/67) of the samples did not fall within the acceptable mass loss range according to the British Pharmacopoeia and the US Pharmacopeia, respectively. Students also reported their observations, noting that solutions were "cross-contaminated" or had "green-colour".

Conclusion: This stimulation activity offers a new approach to educate students about safety concerns with dosage form modification. Students learned that cross-contamination is possible even with careful wiping of crushing devices. This hands-on demonstration is a powerful way to educate students about dosage form modification and mechanisms of crushing tablets used by clinicians.

Pharmacist professional identity: Delusions, realities and opportunities.

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Pharmacy education and practice across the world have evolved over the last several years. However, the disconnect between what is taught in the classroom and what is

happening in practice continued to widen. This has been a result of the imposter syndrome by graduates and practitioners, turf conflict with physicians, lack of purposeful advocacy, disjointed professional leadership, socio-political barriers, and legal and regulatory barriers. This has resulted in delusions by graduates about their role in the healthcare system and practice settings where pharmacists are not utilized to the potential of their training at a local, national a global level resulting in a pharmacists' professional identity that is in limbo. This session will provide insights on the above issues from the experience of pharmacy education and practice in Lebanon with the hope to start a wider discussion about a global pharmacists' professional identity.

Mental health matters: Rethinking pharmacy education in arabic-speaking countries

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Background: Mental disorders are a major cause of disease burden. People with mental disorders face substantial challenges in Arab countries. These include poor health outcomes due to increased risk of premature death from untreated physical illnesses and suicide, increased risk of conditions such as cardiovascular diseases and diabetes preventable psychotropic medication adverse effects and drug interactions, and under or late diagnoses. To address these challenges, there is a need to strengthen the provision of comprehensive, integrated mental health services through community pharmacies. Therefore, many schools are reforming their curricula to include a greater focus on patient care skills, experiential training, and competency-based assessments such as objective structured clinical examinations. Despite the promising changes in the pharmacy education landscape, there have been no studies on the preparation of pharmacists for the provision of mental health care.

Objective: To assess how entry-level pharmacy programs in Arab countries prepare graduates to provide mental health care, specifically examining the didactic curricula and experiential training in psychiatry in bachelor and PharmD programs.

Methods: A large-scale multi-country cross-sectional survey was conducted. An electronic survey was sent to all entry-level pharmacy programs in the 22 Arab countries, asking them to report on the 2021-2022 academic year. The survey assessed the teaching and learning (e.g., psychiatric diseases taught and extent of the coverage; contact hours dedicated to psychiatric therapeutics, pharmacology, and medicinal chemistry), experiential training in psychiatry and its challenges, and graduates' preparedness to provide mental health. A descriptive analysis of the data was undertaken,

and data were reported for bachelor and PharmD programs separately.

Results: Overall, 35 pharmacy programs completed the survey. All PharmD programs and 80% of bachelor programs covered psychiatric therapeutics, and most contact hours were dedicated to pharmacology, followed by psychiatric therapeutics and medicinal chemistry. Over half of the faculty considered depression and anxiety disorders covered sufficiently, and 56.2% of programs did not offer experiential training in psychiatry. Common challenges in psychiatry experiential training included a lack of sites and qualified preceptors. Overall, 26.4% of faculty positively rated graduates' preparedness to provide mental health care. Graduates who completed experiential training in psychiatry and PharmD graduates were rated higher.

Conclusion: Pharmaceutical education in Arab countries could be improved by enhancing the teaching and assessment of mental health topics and expanding psychiatry experiential training. Such changes would improve entry-level pharmacists' competencies in mental health care provision.

An evaluation of a novel e-learning platform to support pharmacists' professional development in Commonwealth countries

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Background: The Commonwealth Pharmacists Association (CPA) is a charity representing pharmacists across 56 Commonwealth (CW) countries, working to empower and develop the profession, through capacity building programmes and providing world class education and training for pharmacists across the globe. In December 2020, CPA launched a new continuing professional development (CPD) platform with the aim to improve pharmacy education. The digital platform offers easy, free 24/7 access to evidence-based content. To date, >9,200 pharmacists have enrolled on the platform, with access to 7 courses, equating to 112 hours of self-directed learning covering pharmacy practice topics such as antimicrobial stewardship, infectious diseases (tuberculosis, malaria) and non-communicable diseases (diabetic retinopathy).

Purpose: This study aimed to evaluate the CPD platform in relation to its accessibility and relevance to pharmacy practice to users in their respective countries.

Method: A quantitative approach was used for data collection. An online survey was developed using Google Forms and included multiple-choice questions to assess relevance to practice, and accessibility of the CPD platform; demographic information was also collected. The survey was emailed to all 9,297 pharmacists enrolled onto the platform

in January 2023, with a 3-week response timeline. Dashboard metrics (e.g., number of users, course uptake and completion rates) were also analysed. Data were analysed in Microsoft Excel™ using descriptive statistics. As a service evaluation, this study did not require ethical approval.

Results: A total of 570 pharmacists responded to the survey (6% response rate). 1) Demographics: The majority of respondents (99%) were currently practicing in CW countries, from a mix of 22 countries. The main sectors represented were community (51%) and hospital (34%) pharmacy; 61% of respondents had between 1 and 15 years of practice experience. 2) Content usefulness and relevance to practice: During 2022, a total of 1,401 courses were started, of which 915 were completed (65% completion rate); 90% of respondents agreed or strongly agreed that the topics on the CPD platform were relevant to practice; 86% of respondents agreed or strongly agreed that the platform had improved their knowledge of the topics covered; and 83% agreed or strongly agreed that the learning had enabled them to improve their practice. Suggestions for improvement of the platform included having more case-studies, interactive content, further opportunities for shared learning and to reflect on practice. 3) Accessibility: 60% of respondents found it easy or very easy to access the platform, as well as to navigate, select and run courses.

Conclusion: Pharmacy education and up-skilling practicing pharmacists is a key element to strengthen health systems. The CPA CPD platform is the first of its kind to successfully deliver self-directed learning content developed by pharmacists and tailored to meet the unique needs of pharmacists working in low resource settings across the world. Future work will include the expansion of the platform by adding new content to further support the development of clinical skills and pharmacy practice (e.g., procurement, substandard and falsified medicines, leadership, behaviour change). Opportunities for shared learning and the establishment of communities of practice will also be explored.

Evaluating the impact of the second cohort of the Chief Pharmaceutical Officer's Global Health (CPhOGH) fellowship programme

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Posters Monday, September 25, 2023, 12:30 PM - 2:30 PM

Background: The Chief Pharmaceutical Officer in the UK established a Chief Pharmaceutical Officer's Global Health (CPhOGH) Fellowship Programme which aims to support the professional development of UK pharmacists while working on projects within Commonwealth Partnerships for Antimicrobial Stewardship (CwPAMS) programme in 8 African Commonwealth (CW) countries. Pharmacist fellows have the opportunity to develop leadership and

management skills, and gain knowledge about global health principles for the improvement of antimicrobial stewardship (AMS) and infection prevention and control (IPC). In 2021-22, the second cohort of the CPhOGH fellowship programme provided the opportunity for 13 pharmacists to undertake collaborative projects with partners in Ghana, Malawi, Nigeria, Sierra Leone, Uganda, and Zambia.

Purpose: This study aimed to evaluate the impact of the second cohort of the CPhOGH fellowship programme, and its effectiveness in developing pharmacist fellows' leadership and management skills while working on AMS/IPC projects in 6 African CW countries.

Methods: A quantitative survey approach was used. Three questionnaires, containing both qualitative and quantitative questions, were developed using Survey Monkey and delivered between December 2021 and November 2022, and included: 1) a fellows pre- and post-fellowship self-assessment questionnaire (34-items); 2) a fellows leadership skills assessment (24-items) undertaken by their senior colleagues (supervisors); 3) a fellowship impact self-assessment (10-items). Data were anonymised and analysed using Microsoft Excel. As a service evaluation, ethical approval was not required.

Results: All participants reported that the COVID-19 pandemic created various challenges for the second cohort of CPhOGH fellows, including delays in funding, training, staffing, and turnout. However, fellows were able to adapt and achieve their objectives through remote and blended activities. A fellows' self-assessment showed that 64% had gained a better understanding of how to apply pharmacy skills in a global health context, including an understanding of international development, health partnerships and AMS principles in low and middle-income contexts; 55% also demonstrated enhanced leadership skills. Supervisors thought that 86% of the fellows were ready for a more senior role after completing the fellowship. All the fellows felt that their participation in the CPhOGH fellowship programme had been valuable as they had gained leadership skills and a greater understanding of global health, developed resilience and motivation for their current roles, and a better appreciation for problem-solving with limited resources. Supervisors identified compassionate leadership, innovation, communication skills, collaborative working and stakeholder engagement as some of the strengths displayed by the fellows; they also recommended the CPhOGH fellowship to other pharmacists in their department.

Conclusion: The CPhOGH fellowship programme is a successful initiative to improve fellow's knowledge and skills in global health and leadership, resulting in significant improvements in their abilities to work under pressure in resource limited settings. The success of the second cohort has led to plans for the initiation of a new Leadership Fellowship Programme aimed at empowering future African pharmacy leaders to tackle AMR and IPC in their respective countries.

The creation of a workshop framework for training of faculties of a Canadian undergraduate PharmD program within climate change and planetary health

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Background: The WHO has identified the climate crisis as being the most critical public health crisis of our team. Climate Change is having an enormous impact on health, including and not excluding the impact of heat on cardiovascular disease, the impact of heat and rainfall on infectious diseases, the impact of destroyed crops on health more generally, and the impact of natural disasters on healthcare infrastructure. In addition, the COP26 conference identified that the healthcare system has a large emissions burden associated to it with a large portion (up to a quarter) being attributed to medications. Finally, pharmaceutical pollution is also having a large impact on health, with the example of wasted antibiotics in the environment affecting antimicrobial stewardship. Current pharmacy curriculum does not address the climate crisis within adaptation and mitigation or pharmaceutical pollution. University student learning objectives are currently being identified by the Global Consortium of Climate Health Education however this is focused on university students and pharmacy staff also have a learning curve within this area.
Purpose: Create a training opportunity for Faculties in a Undergraduate PharmD program at the University of Ottawa in Canada on climate and planetary health specific areas within an academic setting.

Method: Developing, offering and evaluating a one day workshop - includes one hour of overview, two hours of group review specific to climate mitigation and pharmaceutical pollution, and two hours specific to adaptation. The University of Ottawa is implementing a new Undergraduate Doctorate of Pharmacy (PharmD) program starting with its first cohort in September 2023. The workshop would include problem based learning (PBL) which incorporates lenses of medicinal chemistry, pharmaceutics, pharmacology, pharmacy management and pharmacotherapy. Pre-post knowledge and comfort in articulating climate specific concerns from staff.

Results: (workshop planned for the summer of 2023, results will be out by the publication of this poster, expecting increase in comfort in considering planetary health within the pharmacy profession)

Conclusion: TBD as per the above

Development of a course leading to an award in basic regulatory sciences

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Posters Monday, September 25, 2023, 12:30 PM - 2:30 PM

Background: The Academy for Patient Centred Excellence and Innovation in Regulatory Sciences within the Malta Medicines Authority (MMA) is an academic platform accredited according to European quality assurance standards adopted by the Malta Further and Higher Education Authority (MFHEA). The Academy serves as a forum through which educational planning and academic development in relation to pharmaceutical regulatory sciences unfold. Feedback from stakeholders presented a need to develop an educational initiative intended to provide a strong and comprehensive foundation on basic aspects of pharmaceutical regulatory sciences, which is invaluable for individuals working or aspiring to work in this field.

Purpose: To develop a 25-hour EQF/MQF level 4 accredited course on the basic aspects of pharmaceutical regulatory sciences, targeted at individuals seeking to enhance their knowledgebase, skill set and competences in this dynamic sphere.

Method: A literature review was carried out to identify topics to be covered during the course. Learning objectives, outcomes, course duration and thematic experts to deliver the respective material were determined and validated by an expert panel consisting of pharmacists with academic and regulatory sciences background. Subsequently, topics and material to be covered were discussed with respective speakers during collaborative meetings.

Results: All members of the expert panel (N=4) agreed that the topics and experts identified met the needs of the course. Topics included were (i) Introduction to Regulation covering definition, role, challenges and interaction with regulators (ii) Regulation terminology covering pertinent terms and abbreviations (iii) Scope and history of medicinal product regulation: Avoiding risks covering why and how medicinal product regulations arose and key elements of risk (iv) Legal framework and obligations for medicinal products (v) Working in a pharmaceutical regulated environment including mention of diverse pharmaceutical regulated settings and how such settings contribute to the safety of medicines for the benefit of the patient (vi) Role and limitations of competent authorities: Collaborative Practice (vii) Essential Skills including accountability, communication, data protection and ethics (viii) Quality management including what it is and why it is important (ix) Sources of information, namely the package leaflet and labelling (x) Key principles of Good Manufacturing and Good Distribution Practice (xi) Fundamental concepts and activities relating to Pharmacovigilance (xii) Digitalisation including rationale, principles and different digital tools (xiii) Medical devices including CE mark and incident reports (xiv) Regulation as a

science (xv) Person-centred approach to regulation encompassing evolution of regulation from product to patient—centred (xvi) Complying with regulation, avoiding potential victims of the system (xvii) and innovation in regulation, describing how the approach towards regulation evolved from policing to compliance to adherence to concordance. A stakeholder panel discussion was included to allow for sharing of expertise. The course is intended to be delivered face to face over 3 days including assessments and interactive sessions.

Conclusion: The course is tailormade to bring together individuals with an interest in regulatory sciences and experts in the field, for assimilation of essential principles and competences, which support the provision of pharmaceutical processes and services of excellence.

Implementation of a workshop on the dimensions of cannabis for medicinal and research purposes

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Posters Monday, September 25, 2023, 12:30 PM - 2:30 PM

Background: The discovery of the endocannabinoid system and the main components in cannabis steered research interest to expand the scientific knowledgebase on potential therapeutic and adverse effects of cannabis. Following legislative and policy amendments locally, in Europe, and across the globe, various strains of cannabis are being used to manage a range of conditions.

Purpose: The objective was to develop an educational workshop on the dimensions of cannabis for medicinal and research purposes for interdisciplinary exchange of expertise and real-world evidence on the current landscape of medicinal cannabis.

Method: In September 2022, the Academy for Patient Centred Excellence and Innovation in Regulatory Sciences, under the auspices of the Malta Medicines Authority, organised an interactive workshop on the dimensions of cannabis for medicinal and research purposes. The workshop was led by interprofessional specialists, including experts from the Universities of Aberdeen in Scotland and Tor Vergata in Rome. The six-hour programme consisted of a series of presentations, interactive discussions and a networking session. The workshop was evaluated through a participant feedback form.

Results: The one-hundred and fifty-one (151) national and international participants from the public and private health sectors, who participated actively in the workshop included representatives of pharmaceutical companies, regulatory affairs professionals, physicians, pharmacists, pharmaceutical technologists, nurses, occupational therapists, medical and pharmacy students and academics. Topics encompassed the prescribing framework, regulatory

considerations, analysis, pharmacological properties, and therapeutic uses. Controversies as well as pertinent research in the field were also addressed. The academic activity was awarded two Continuing Professional Development points by the Malta College of Family Doctors. Feedback obtained through the participant feedback form demonstrated that 92% of respondents agreed or strongly agreed that the content was presented in an organised, understandable and effective manner. Ninety-seven percent (97%) of the participants stated that their knowledge regarding the subject matter was enhanced. Respondents unanimously declared that they would consider attending a similar initiative in the future and that they would recommend such an educational initiative to fellow colleagues. Suggestions to incorporate good manufacturing practice related topics as applicable to medicinal cannabis, including stability and expectations of inspectors, if the workshop is repeated, were also put forward.

Conclusion: The workshop provided a window into the complex landscape of medicinal cannabis. It served as a key platform for the sharing of information and ideas amongst stakeholders and presented an opportunity for the Malta Medicines Authority to strengthen international relationships and foster collaborative impetus for long-lasting research consortia, knowledge propagation, pharmaceutical innovation and healthcare sustainability. This educational initiative is an example of how pharmacists could lead an interdisciplinary activity for the benefit of all stakeholders.

Development and implementation of an annual competency-based assessment for a doctor of pharmacy program

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Posters Monday, September 25, 2023, 12:30 PM - 2:30 PM

Background: Per ACPE accreditation standards, academic programs need to evaluate the progress of their students throughout the curriculum by means other than course grades. While a national examination might be available, it may not synchronize with the semesters and years in which a school teaches that content. Additionally, "content" may not be the desired framework for the program measurement. More programs are applying aspects of competency-based education to either provide a different lens for outcome measurement or provide flexibility in students' progression rate. This presentation will explain the steps taken by a professional degree program to develop an internal examination to test students' competency in each didactic professional year.

Method: The faculty and administration decided that an internal program-level examination would be beneficial to measure student competence across the new curriculum,

and it would be given after each didactic year of the program. The Assessment Committee wrote a proposal that included the test length (time, count, questions per minute), scoring (weighting, distribution, scaling, and rating), and a draft competency blueprint. This was approved by the faculty. A subsequent document specified the ways in which exam validity and reliability were to be measured. To prepare for the blueprint-built comprehensive exam, electronic exams given during the didactic courses were associated with the program competencies using electronic category "tagging".

The comprehensive exam, which focused only on competencies intended for the first year of the program, was held at the beginning of the second year of the program. In addition to the need to avoid interference with spring final exams, the objective of administering it in August was to encourage students to review material over the summer. When academic programs do not intentionally connect one year's learning to the next, students will intentionally or unintentionally forget information they deem as unessential.

Results: The master blueprint includes four domains and 15 competencies. Only 10 of the competencies were included on the blueprint for the first-year exam. Results for the overall exam were reported in two ways: % correct, which was categorized as Poor, Fair, Good, and Strong; and Level 1, Level 2, Level 3, and Level 4 scaled scores, similar to the model now used by this profession's national licensure exam vendor. A report per student and for the cohort was also generated which showed performance on each competency. Data will be used for student advising and Curriculum Committee course reviews.

Conclusions: Because the program's assessment faculty understood both the scrutiny and ramifications of a comprehensive exam, careful attention was given to each step of the process. Background research included comparisons to other profession's standardized exams (e.g., questions per minute) and designation of appropriate validity and reliability statistics. Faculty involvement and approval was also key to its success.
Learning outcomes: 1) Develop a basic framework for a comprehensive examination; 2) Recognize how to use online testing software to assist in question bank development; and 3) Designate reliability and validity studies that will be conducted before and after the examination.

Curriculum planning & assessment for long-term retention of pharmacy knowledge & skills

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Posters Monday, September 25, 2023, 12:30 PM - 2:30 PM

Background:
One of the many challenges to busy higher education degree programs is the need for students to learn and retain content instead of memorizing and forgetting it. This presentation will delineate steps taken by a U.S. school of pharmacy to build a Doctor of Pharmacy curriculum that reinforces knowledge and skills and assesses that information at specified times throughout the program.

Methods: During the development of the "Practice and Team Ready Curriculum", faculty noted the need for reinforcing topics throughout the program. It had previously been observed that many students would learn content for one course, semester, or academic year, but not retain it for future courses. This, in turn, affected their outcome on comprehensive standardized assessments.
To tackle this challenge, faculty built it two weeks (two one-week events) in each semester of the revised four-year program. These weeks, considered part of the semester laboratory course, would be dedicated to integrating the content that was taught throughout the semester. Cases would cross courses and reinforce what was being learned in the classroom by presenting additional or new applications of the content.
Likewise, a series of assessments were proposed to be dispersed throughout the program. These assessments would be based on competencies designated for each professional year and emphasized in the courses taught to that cohort. Each assessment would focus on a specific professional year but also have a percentage of comprehensive questions from prior professional years. This was to, once again, to encourage students to study for long-term retention, with the reminder that – they WILL see this information again!

Conclusions: More than two years of the new program have now been completed, along with two of the comprehensive milestone examinations. Changes have been made along the way, and lessons learned will be presented. Faculty involvement and approval has been key to its success, and data has been instrumental in finding needs and strengths at both the student and program level.
Learning outcomes: Identify curricular opportunities for reinforcement of knowledge and skills and determine the need for and viability of comprehensive testing in a cohort-based professional degree program.

Hands on practice improves confidence and communication during cardiac arrest scenarios

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Posters Monday, September 25, 2023, 12:30 PM - 2:30 PM

Background: Principles of treating cardiac arrest are taught in the Doctor of Pharmacy curriculum to third-year pharmacy students. In addition to traditional lecture, a mannequin and a crash cart are brought into the classroom to expose students to real-world pieces of equipment used in resuscitation efforts. After content was delivered, the president of the local chapter of the pharmacy academic honor society (Rho Chi) requested a separate simulation

experience for up to 12 pharmacy students to learn more and practice their skills related to cardiac arrest.

Purpose: The purpose of this project was to characterize the changes in perceptions and confidence for 3rd year pharmacy students after a 3.5-hour voluntary cardiac arrest simulation event.

Methods: A standard electronic survey is used for all simulation events at our institution. After the initial survey was delivered by e-mail, participants were sent two e-mail reminders and given about two weeks to complete the survey. The instrument contains 12 questions which ask students about their perceived confidence on six domains (ability to assess patients; communicating with the healthcare team; carrying out needed skills; implementing patient safety measures; providing safe patient care; trust that simulation was a safe place to learn) before and after a simulation experience. Each confidence question is rated on a 4-point Likert scale (not confident at all, little confidence, somewhat confident, and very confident). For analysis, ratings of somewhat confident were combined with very confident (assured confidence). The survey was anonymous and voluntary.

Results: Twelve students participated in the simulation event; however, six participants completed the survey (50% response rate). Confidence improved with all six domains after the simulation. Data for assured confidence (somewhat confident + very confident) are listed below for the 6 pairs of confidence questions before and after the simulation, respectively. Ability to assess patients 67% (n=4) versus 100% (n=6); Communicating with the healthcare team 67% (n=4) versus 100% (n=6); Carrying out needed skills for the scenario 33% (n=2) versus 100% (n=6); Implementing patient safety measures 67% (n=4) versus 100% (n=6); Providing safe patient care in practice 67% (n=4) versus 100% (n=6); Trust simulation as a safe place to learn 67% (n=4) versus 100% (n=6).

Conclusion: Despite already learning content and seeing demonstrations in a large classroom environment, participants in this cardiac arrest simulation event increased their confidence in all domains assessed on a standard simulation survey. Despite the small sample size, this investigation demonstrated a consistent improvement in confidence, a direct reflection of practice during the simulation experience. This highlights the importance of hands-on learning, especially with potentially highly stressful clinical scenarios such as cardiac arrest.

Integrating social determinants of health (SDOH) curriculum into experiential education in pharmacy to promote health equity

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Social Determinant of Health (SDOH) impact every patient. Preparing learners to address SDOH is imperative since they impact every element of a patient's physical and mental health. Integrating SDOH into pharmacy education will help prepare learners to be socially aware when making medication recommendations and optimizing their patients' health. This curriculum and evaluation plan is designed to teach student pharmacists SDOH and how to integrate SDOH into patient care to promote health equity.

The World Health Organization (WHO) and Healthy People 2030 are frameworks for why the SDOH curriculum will achieve the desired results. WHO published a conceptual framework for action on the social determinants of health, which outlines how the SDOH impact health and wellness on a global scale. This framework links the SDOH directly to health equity. Through educating health profession students on the SDOH, the gap in health equity may be narrowed and ensure every human has access to health care that will promote their well-being. Also, Healthy People 2030 provides a framework for the elements of SDOH in the United States of America (USA). As defined by Healthy People 2030, the SDOH are "are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks." SDOH include: "economic stability, education access and quality, healthcare access and quality, neighborhood and built environment, and social and community context." SDOH play a large role in people's health and contribute to health disparities. By incorporating the SDOH into health care providers education, we can prepare them to meet the social and medical needs of patients.

Desired competencies for the SDOH curriculum in experiential education include the following:
• Demonstrates awareness of the importance of SDOH in health care and health equity.
• Evaluates patients for SDOH during each patient encounter.
• Incorporates the SDOH into each patient's plan of care.

Learning objectives:
o Through the successful completion of this curriculum, learners will be able to formulate patient-centered care plans that meet the social and medical needs of patients while promoting health equity in their practice.
o Through the successful completion of this curriculum, learners will be able to implement patient care plans incorporating both evidence based medicine and the social determinants of health (SDOH)
o Through the successful completion of this curriculum, learners will be able to recognize elements of the Social Determinants of Health (SDOH) and how they impact health equity.
o Through the successful completion of this curriculum, learners will be able to define the Social Determinants of Health (SDOH) and health equity and discuss their reactions to these definitions in the context of modern society.

Critical evaluation question:
o How well do learners formulate patient-centered care plans that meet the social and medical needs of patients

while promoting health equity in their practice after completing this curriculum? How do these patient care plans impact the health of the community?
Blueprint of SDOH Curriculum Assessments by Experiential Education Courses

Investigation of pharmacy students' reflections on a TED talk about difficult conversations

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Posters Tuesday, September 26, 2023, 12:30 PM - 2:30 PM

Background: Healthcare communication is complex and often requires empathy and active listening to be effective, particularly with difficult conversations. A previous paper summarized using a Technology, Entertainment, and Design (TED) Talk video with reflective prompts when teaching this content to nursing students. It is not known if pharmacy students would have similar themes emerge in their responses to question prompts after watching the same video.

Purpose: Characterize student reflections based on two question prompts after watching a TED Talk on difficult conversations presented by a nurse.

Methods: A TED talk entitled On Being Present, Not Perfect was shown to pharmacy students as part of a required in-class activity at a single school of pharmacy in the United States. The video conveys effective healthcare communication from the perspective of a nurse and uses personal examples and storytelling in the 20-minute clip. After the video, two question prompts were used: 1) What was the most meaningful part of the video? and 2) What resonates with you personally and professionally? Responses to the prompts for students who agreed to participate in the study were compiled into a single anonymous file. The length of each response was not limited so there could be one or more paragraphs of content leading to multiple potential themes for a single response. This document was then independently coded by two investigators into three themes modeled after the nursing study: communication as a foundational competency, importance of empathy, and professional role development. Areas of disagreement were resolved by consensus. Although individual student responses could be mapped to more than one theme, no single statement was mapped to more than one theme. To ensure consistency, each statement or sentence was color-coded based on the themes.

Results: There were 52 pharmacy students who agreed to participate in the study; 36 were second-year and 16 were third-year students. For the most meaningful part of the video, there were 39 responses (75%) in the theme of empathy, 34 responses (65%) in the theme of communication, and 21 responses (40%) in the theme of role development. For the question related to personal and professional resonance, there were 45 responses (87%) in the theme of empathy, 34 responses (65%) in the theme of

role development, and 27 responses (52%) in the theme of communication. Some responses included multiple themes.

Conclusion: Use of On Being Present, Not Perfect to teach pharmacy students about effective healthcare communication in difficult situations produced high rates of responses in the predefined domains of communication, empathy, and role development through the lens of a student pharmacist. This supports the idea that the issues presented in the video permeate beyond nursing and include other healthcare professionals such as pharmacists. Pharmacy students were able to reflect on the importance of empathy, communication skills, and how these inform professional development as a pharmacist. Narrative student responses suggest the video made an impact on their learning which supports this type of strategy for teaching communication in the pharmacy curricula.

Combatting opioid addiction in families through interprofessional education and awareness

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Posters Tuesday, September 26, 2023, 12:30 PM - 2:30 PM

Background: The United States' drug-related overdose and deaths continues to worsen during the pandemic. There have been increases in drug overdose mortality as high as 27% compared to the year prior as a result of COVID-19. The economic instability, social isolation, increased mental stress, and limited access to addiction support were contributing factors that led to a rise of opioid-related deaths. Healthcare professionals are a powerful influencer for patients with opioid addiction to accept treatment. Reducing stigma through cross-sector training and dissemination of prevention interventions is needed to break down the "siloing" of services for children and families affected by opioids. This project describes a program developed to cross-train an interprofessional workforce to increase awareness resources needed to positively affect the lives of young children and families dealing with opioid abuse.

Methods: A program focusing on opioid addiction and its impact on families with children was led by psychiatrists, rehabilitation counselors, social workers, pharmacists, and community health workers. The program was directed to health professional students including pharmacy, physical therapy, nursing, rehabilitation counseling, and medicine. The 3-hr program focused on recognizing addiction symptoms, treatment of intoxication and withdrawal, understanding the impact of addiction on families, attachment and relationship-based approaches to working with families, and appropriate referral services for those with substance abuse. Surveys were collected post-program to evaluate student's knowledge and perceptions with the training using descriptive statistics.

Results: Eighty-nine students participated from pharmacy (53.9%), physical therapy (25.8%), nursing (7.4%),

rehabilitation (6.7%), and medicine (3.4%). The majority were females (71.9%) and African-American (48.3%). After the program, 79 students (88.7%) reported confidence in their ability to support families impacted by the opioid crisis. Approximately 73 students (82.0%) were more knowledgeable about evidence-based therapies and 75 (84.3%) students were more familiar with family-focused interventions. Seventy-two students (80.1%) were more confident to refer families to the appropriate substance abuse services, and the majority (84.3%) believed that interprofessional practice is improved by educating healthcare professionals together. Overall, 78 (87.6%) of participants reported their satisfaction with the training, and 86 students (96.6%) believed that they can easily communicate with other healthcare professionals about important issues. Seventy-five students (84.3%) believed that interprofessional practice is improved by enabling healthcare professionals to be educated together.

Conclusion: This program allowed healthcare professional students to learn evidence-based treatments for children impacted by families with opioid addiction in an interprofessional setting, allowing them exposure to real-world situations and interact with other disciplines.

Assessing teamwork skill aptitudes of international students: Insights from a baseline teamwork assessment tool

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Background: Effective teamwork skills are essential for success in the modern workplace, but students face various cognitive, motivational, and emotional obstacles in undergraduate team projects. International students in Australia encounter unique challenges in developing teamwork skills, including adjusting to new academic expectations, cultural differences, communication norms, and language barriers. Monash University's Faculty of Pharmacy and Pharmaceutical Sciences developed a Baseline Teamwork Assessment Tool to provide students with tangible evidence of their teamwork attributes and facilitate the development of teamwork skills over time. The tool consists of 3 parts - Part 1 measures growth mindset using Carl Dweck's implicit theory scales, Part 2 uses free-text responses to a case study to explore teamwork challenges, while Part 3 assesses Ideal Team Players based on Lencioni's model of Humble, Hungry and Smart (Lencioni, 2016).

Purpose: The aim of this study was to use the Baseline Teamwork Assessment Tool to evaluate the teamwork skill aptitudes of first-year international students who were studying Pharmaceutical Science offshore in 2021.

Method: The survey-based tool was administered to 42 first year international students studying Pharmaceutical Science 2021 offshore at the start of their academic year. Descriptive statistics were used to analyse the Likert scale responses in Part 1 and Part 3 of the tool. Additionally, students' free-text responses to a 3-part teamwork scenario in Part 2, were analysed using thematic analysis.

Results: Student responses from Part 1 of the tool revealed that 48% of the students demonstrated a growth mindset when first entering a tertiary environment. Furthermore, only 50% of students believed that people can change and grow over time. Student responses to the case study in Part 2 demonstrated competency in interpersonal skills, commitment to team success, and managing team composition. However, there were few references to themes of encouragement, problem solving, and closed communication, highlighting areas where students may require support for their development in these areas. The ideal team player assessment in Part 3 revealed that 67% of international students identified that improvement was needed in the 'Humble' attribute while 62% identified the need for improvement in the 'Smart' attribute and 57% acknowledged the need for improvement in the 'Hungry' attribute. These results suggest targeted interventions are needed to improve teamwork skills, particularly in terms of emotional intelligence, interpersonal awareness and motivation.

Conclusion: This study demonstrates the importance of evaluating and supporting the development of teamwork skills among international students in tertiary education. The Baseline Teamwork Assessment Tool provides a useful framework for identifying areas of strength and weakness in teamwork aptitudes, and can inform the development of targeted interventions to improve these skills. These findings have important implications for educators and institutions seeking to prepare students for success in the 21st century workplace, where effective teamwork skills are essential.

Adherence experts' perspectives and experiences of educating healthcare professionals on medication adherence: A preliminary synthesis

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Background: Medication non-adherence is a global health problem affecting patients with various backgrounds and medical conditions. Training healthcare professionals (HCPs) to address the range of factors required to improve patient non-adherence requires an evidence-based approach.

Purpose: We aimed to explore the perspectives and experiences of adherence experts in educating HCPs on medication adherence to inform educators in composing content and designing the delivery of medication adherence training for HCPs, particularly pharmacists.

Methods: Semi-structured interviews were conducted online, face-to-face and by phone. Interviews were recorded and transcribed. Upon reading transcripts multiple times, the first author developed the preliminary themes and subthemes using inductive thematic synthesis and discussed them among authors.

Results: From May 2022 to March 2023, we interviewed 15 international adherence experts with different professional backgrounds including nurses, pharmacists, psychologists, physicians, sociologists, and pharmaco-epidemiologists. We developed five themes with subsequent subthemes.
- Enhancing awareness among healthcare professionals (recognising the magnitude of the problem, regularly addressing adherence in a holistic consultation, clarifying, and strengthening interdisciplinary roles)
- Seeing life through the patient's lens (aligning with patient values and beliefs, delineating between intentional and unintentional behaviours, being vigilant of changing circumstances)
- Communicating to build empathy and rapport (becoming a trustworthy source of information, asking non-judgmental but factual questions, listening attentively)
- Having a structured approach to address individual patient behaviours (using tools to guide adherence consultation, theoretical frameworks to categorise and understand non-adherence, setting goals using motivational interviewing)
- Delivering enriching and targeted training (clinically relevant learning, extending existing skillsets, promoting behaviour change, skills, and confidence over time)

Conclusion: Adherence experts expressed the need for enhancing awareness among HCPs about the magnitude of the problem. They indicated that adherence assessment is not a priority in routine consultations due to competing priorities, short consultation times, or unclear roles and responsibilities. Furthermore, experts stated that patients may not reflect on how they take their medications due to the fear of being judged. Hence, HCPs must communicate with patients in a non-judgemental way and show genuine interest in their health through careful listening, acknowledging their problems as well as understanding their perspectives. Experts suggested that HCPs could utilise a theoretical framework to help categorise and understand non-adherence and use motivational interviewing techniques when setting goals. Adherence experts recommended delivering the training through multiple educational formats designed to be engaging and clinically relevant. Additionally, they emphasised the importance of providing continuous training to promote behaviour change and build skills and confidence over time. The findings highlight the need to increase awareness among HCPs and support them with time-efficient strategies to capture non-adherence in daily practice. Furthermore, the results guide

educators in composing training content and suggest training delivery methods.

Sustainability of the impact of a novel antimicrobial stewardship intervention implemented by a physician-pharmacist team in general practice in Australia: A pilot follow-up study

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Background: Primary care accounts approximately 80% of antimicrobial prescriptions and 30-50% prescriptions are inappropriate either in choice, dose or duration. Inappropriate and excessive antimicrobial prescribing leads to growing antimicrobial resistance and patient harms. Despite this, antimicrobial stewardship programs are not well established in general practice. In 2018, a novel educational intervention implemented by a physician-pharmacist multidisciplinary team resulted significant improvements in appropriate prescribing and guideline compliance of antimicrobial prescriptions by general practitioners (GPs) in Australia. To date, evidence of sustainability of educational intervention involving pharmacist in general practice remains limited.

Purpose: This follow-up study examined the sustainability of the impact of a novel GP educational intervention on the appropriateness and guideline compliance of antimicrobial prescriptions.

Methods: This was a retrospective observational study. We collected practice-based data on all oral antimicrobial prescriptions issued by the general practice where intervention was rolled out in 2018. Post-intervention data (2018) were compared with 2019 data to measure sustainability. Data was analysed using a two-sample test of proportions. The primary outcome measures were the compliance of antimicrobial prescription with Australian Therapeutic Guidelines ('Antibiotic') and appropriateness of antimicrobial choice and duration.

Results: Overall, there was a significant decline in guideline compliance, from 58.5 to 36.5% (risk ratio (RR) (95% CI): 0.62 (0.52–0.74)), in the appropriateness of antimicrobial choice, from 92.8 to 72.8% (0.78 (0.73, 0.84)), and in the prescribed duration, from 87.7 to 53.3% (0.61 (0.54, 0.68)) in the intervention follow-up period. In respiratory infections and ear, nose, and throat infections, the rates of guideline compliance and appropriate choice and duration of antimicrobial prescription decreased significantly at $p < 0.001$. Appropriateness in the duration of antimicrobial therapy also significantly decreased for most antimicrobials.

Conclusions: The positive effect of the educational intervention on improving guideline compliance and appropriateness of antimicrobial prescription by GPs declines over time and does not sustainable in the longer term. The evidence suggests that a simple and single-occasion antimicrobial stewardship education programme is probably not enough to sustain improvements in the optimal use of antimicrobials by GPs. Regular practice-based antimicrobial audits and feedback programs including updates on antibiotic prescribing guidelines may sustain the benefits of the educational intervention in improving guideline compliance and appropriateness of antimicrobial use in general practice. Future research is needed to validate the results in multiple GP clinics and to examine the effect of sustained education programmes involving infection-specific and antimicrobial-targeted audits and feedback.

The sharpest tool in the shed? Critical thinking in pharmacy students

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Critical thinking is a core component required to generate arguments, evaluate data and ultimately solve patient-care problems. There is also a growing interest in measuring and understanding critical thinking levels in pharmacy students.

Students from each year of a 4 year Bachelor of Pharmacy (Hons) completed a survey assessing their preconceived critical thinking ability. Students from different year levels were also asked to solve a logic problem and provide their feedback on the process. In follow-up focus groups, students discussed critical thinking in the pharmacy curriculum.

Students preconceived views on their critical thinking ability were compared between cohorts. Ability to solve the logic problem and the processes used were compared from each year's cohort. Students self-perceived critical thinking ability did not always align with the ability to solve problems. Finally, students shared their view of critical thinking in the pharmacy curriculum context.

Using logic problems may be a simple way to measure students critical thinking and problem-solving process. This can then be used to inform teaching practices across the pharmacy curriculum. Teaching students' problem solving strategies and processes early in the pharmacy curriculum will benefit students in the long-term.

Thematic analysis of student pharmacist's perceptions of deprescribing education and assessment in the pharmacy curricula

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Background: Deprescribing may be defined as the process of reducing or discontinuing medications where risk outweighs benefit. Deprescribing in pharmacy curriculum varies; however, student pharmacists are often unfamiliar with deprescribing and report being unprepared to implement or recommend deprescribing in practice.

Purpose: The purpose of this study was to explore perceptions of deprescribing among student pharmacists from three schools of pharmacy.

Method: Student pharmacists from three United States schools of pharmacy (Universities of Arizona, New England, and Tennessee) were identified via email to voluntarily participate in Focus Groups in Fall 2021. An experienced qualitative researcher led each focus group using a semi-structured guide developed using the Theory of Planned Behavior. Focus groups were audio recorded, professionally transcribed, and thematically analyzed using the Braun and Clarke framework. Two researchers independently coded the data using Dedoose® software and then met to discuss codes and themes with the research team until saturation of data was reached. Representative quotations that richly describe students' perceptions were reported.

Results: Twenty-six student pharmacists participated in one of four focus groups. Students described how they typically received very little education on deprescribing: "In a whole semester of courses, it was one part of one lecture, so not very robust", and that it was not a priority: "Just a little bit here and there… when we write our assessments for our patient care class, deprescribing usually is at the end of our priority list." Students mentioned that their education and assessment came later in the curriculum: "I've never really had any sort of examination over deprescribing, but then again, I'm early in the pharmacy curriculum… it could come later". Students highlighted that their assessment of deprescribing was also often limited, and typically occurred through exams or Objective Structured Clinical Exams (OSCEs): "As far as deprescribing itself, we did have a few exam questions on one of our last exams on just how to go about it in general". Another quotation was: "We've just been assessed maybe in an OSCE, maybe, but I'm really not for sure, OSCEs for counseling or med recs or something like that, but we usually are just assessed on exams." Finally, one student provided an example of how they identified an opportunity for deprescribing an over-the-counter medication during an OSCE: "The patient was on like simvastatin and a bunch of other over-the-counter medications. One that I remember was like red yeast rice, so

that was an example of them having us practice deprescribing the OTC med."

Conclusion: These findings offer opportunities to improve deprescribing education and assessment in pharmacy curricula that may prepare the next generation of pharmacists to participate in deprescribing activities. Future research on deprescribing educational initiatives should evaluate impact amongst a broader sample of student pharmacists. Further research is needed to evaluate the impact of improved deprescribing education on patient health outcomes.

Leveraging stakeholder engagement to future proof Australian pharmacy graduates

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Background: Internationally, pharmacy programs have undertaken an educational shift to meet emerging educational needs as pharmacist roles evolve with changing societal needs. Multiple countries have transitioned from a four-year Bachelor of Pharmacy followed by a one-year internship then pharmacist registration, to a longer, more clinically focused Doctor of Pharmacy with registration on graduation. Examples include Canada and the United States of America where pharmacist can do more and have higher wages. The idea of an Australian Doctor of Pharmacy is gaining momentum with changes in the professional landscape, including moves towards expanded scope of practice. Stakeholder engagement is integral to ensuring new programs are current and future proofed to meet the changing needs of the profession.

Purpose: This study aimed to engage stakeholders throughout curriculum design via an expert working group, exploratory interviews, and consensus methods to identify and confirm priorities for curriculum and work integrated learning (WIL) for an Australian Doctor of Pharmacy program.

Method: Exploratory semi-structured interviews were conducted via MS Teams with pharmacy students, interns, pharmacists, and other pharmacy stakeholders across diverse practice settings to explore views on program content, structure, and WIL. Four group sessions were then held in-person or online via MS Teams using the nominal group technique (NGT) to identify and rank stakeholder priorities, for curriculum and WIL. Interviews and focus groups were recorded, transcribed, and thematically analysed in NVivo® using a general inductive approach. An expert working group of leaders across the sector provided oversight throughout.

Results: Forty interviews and four groups were conducted, two focused on curricula and two on WIL. Forty participants

were interviewed (34 pharmacists, six pharmacy students) reporting on average 19 years in practice (range:1.5 - 46). Expanded scope was identified as important for graduates particularly prescribing and administering medicines, screening/diagnosing, and specialised services. Prescribing was described as team-based, in specialty areas and/or restricted to certain conditions. Twenty-one participants proposed 153 ideas via the NGT, consolidated these into 10 to 11 over-arching statements per group and then ranked them via individual voting. Key topics both discussed in interviews and ranked highly included core competencies, specialisation, complex communication, or management skills, prescribing, emerging technology and innovative approaches to WIL. Examples include core curricula to develop key skills, such as communication and critical thinking, extended therapeutics topics and emerging technologies. Specialisation was widely discussed and proposed as streams or elective courses within programs, e.g., research. Effective WIL was considered integral to program and graduate success, and recommendations included earlier initiation, increased duration, introducing remuneration opportunities, initial rotation across core practice settings followed by increasingly complex WIL experiences, and absorption of the intern year throughout.

Conclusion: Insights from international programs and sustained stakeholder engagement has highlighted specific knowledge, skills, and WIL to integrate into Australian Doctor of Pharmacy curricula and strategies for innovation. The value of sustained stakeholder engagement is development of relevant curricula and WIL opportunities that will graduate competitive, work ready pharmacists. Future directions include extending stakeholder engagement to include evaluation of new programs and the engagement experience.

How to indigenise a pharmacy curriculum: An Australian example

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Background: Aboriginal and Torres Strait Islander Australians are one of the oldest continuing cultures on earth that have thrived for Millenia on the Australian continent with hundreds of individual nations and languages. However, as with most native cultures the impacts of colonialism have been devastating. Life expectancy of First Nations peoples is approximately 10 years less than non-indigenous Australians, and the risk of developing chronic diseases is increased. To help close this gap, the government has implemented several policies, including frameworks to help create curricula for health professionals. These frameworks aim to facilitate the teaching of cultural safety, a mandatory accreditation requirement for pharmacy.

Purpose: The 4 phases of research explore: 1. What pharmacy schools are teaching about cultural safety, 2. A

case study looking specifically at all units of study in one pharmacy school; 3. A needs-based analysis with First Nations people about what they would like to see taught in pharmacy curricula; 4. co-design of case studies to teach students in classrooms.

Method: Phase 1 and 2 involved qualitative interviews with university-based stakeholders, mapping quotes to the government curriculum framework. Phase 3, currently underway, also involves qualitative interviews with First Nations' participants where data will be coded into themes and stories used to guide the co-design of cases in Phase 4.

Results: Phase 1 of the research revealed that pharmacy schools have struggled to employ Aboriginal staff members and large variations in how cultural safety content has been delivered were uncovered. For example, there was no consensus on whether placements within Aboriginal communities should be compulsory, with one participant stating this could be seen as "cultural tourism", whereas others believed rural placements should be mandatory. Phase 2 reviewed a school curriculum in depth and found that in individual units of study, ideas from staff members did not always align with accreditation guidelines – e.g. "I find it content irrelevant", and there were several key improvements that could be implemented. Phase 3 in underway, where First Nations people can assist in informing how and what they believe can be taught in pharmacy schools.

Conclusion: This research has uncovered gaps in current Australian pharmacy curricula with respect to cultural safety teaching, and current work aims to hear from consumers to inform improvements in Indigenising a pharmacy curriculum.

Exploring the student perspective on how skill-based Learning can be optimised

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The focus of this project is on fostering employability skills and professional development for student pharmacists. We explored the student perspective on how skill-based learning can be optimised. The Centre for Postgraduate Pharmacy Education worked with The University of Nottingham to deliver Community Pharmacist Consultation Service training.

Underpinning addition of this training has been prompted by changes to the initial education and training of pharmacists to provide newly qualified pharmacists with necessary consultation skills and confidence to provide clinical services expected by patients and the NHS, enabling pharmacists to be independent prescribers at point of registration

This study analysed the confidence and competence of students before and after the training. Before the training students completed a self-assessment of their confidence

and competence via an online questionnaire. Students repeated the self-assessment immediately after the workshop and in the final week of a 6-month placement to investigate retention of knowledge and skills. Students participated in semi-structured interviews to explore their perspectives of the training, areas of improvement, factors that contributed to the development of their confidence and competence, and how they could have been further developed.

Results: Results highlighted student competence and confidence was increased through practice opportunities involving peer-learning and complex simulated scenarios. Students appreciated demonstrations, being observed by an expert, and receiving immediate feedback. Students placed importance on timing of the workshop, number of students in the session and receiving guidance from an expert. For improvement and better understanding, there should be reflection-promoting discussions on rationale. This sequence of training also resulted in learning in wider contexts and general employability skills such as time-management.

The application of Kirkpatrick's evaluation model in the assessment of interprofessional simulation activities involving pharmacy students: A systematic review

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Background: In January 2021, the U.K General Pharmaceutical Council released new Standards for the education and training of pharmacists including a prescribing qualification and weighted importance on interprofessional collaboration. Similarly, the American College of Clinical Pharmacy's Strategic Plan for 2020 released similar objectives of increasing representation in interprofessional panel group. 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 for IPE and interprofessional socialization as a core component of the pre-registration educational activities. The extant literature lacks to provide insight to pharmacy educators of the needed integration of IPE activities into their curricula. This SR aims to address this knowledge gap as well as provide evaluative outcomes from existing evidence and thus, a blueprint for successful future IPE implementation.

Purpose: This SR aimed to use KEM to assess to what extent are current IPE simulation activities in pharmacy education effective when applied to the available literature.

Method: This systematic review, (PROSPERO CRD42021244892), of the peer reviewed articles published after September 2015 was carried out to evaluate the, interprofessional education simulation learning outcomes in University. Studies that did not evaluate IPE learning activity were excluded. Two reviewers (DEN and KA) searched

MEDLINE, CINAHL, PsycINFO and Web of Science in March 2021, screened titles and abstracts, and full text.

The data was extracted, methodological quality of the studies was critically appraised separately by two reviewers (DEN and LN). A narrative synthesis was conducted to include textual descriptions and tabulation of data. KEM was then applied to the data in the primary studies with the learning outcomes being assigned a corresponding Level ranging from 1-4.

Results: Total of 14 studies met eligibility criteria. One study illustrated a longitudinal approach where data collection was timestamped at pre-intervention, post-intervention, and then again eight-to-ten months later. Thus, it was the only study that achieved Level 3. The remaining studies achieved Levels 1 and 2 as they measured the effect of IPE on students' reactions, attitudes, and skills. One study achieved Level 1 only as only reaction results were collected.

Conclusion: This systematic review highlights the importance of using theoretical frameworks to design and deliver IPE activities and to mobilize stakeholders between the university and workplace. There is a need for future research to focus on designing longitudinal studies where data collection can take place after exposure to several time-stamped IPE simulation activities, alongside experience within a multidisciplinary work setting. This way, the extent of impact IPE activities has had on learners can be ascertained, as well as whether it was transferred to the workplace, and whether it had an impact on organizational and/or patient outcomes can be assessed.

Using the theoretical domains framework to study the potential of pharmacy students and recent graduates to practice safely

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Background: Canadian Patient safety institute developed 6 core domains that facilitate the integration of patient safety in health professional education. Patient safety education was associated with positive outcomes in terms of knowledge and skills. However, healthcare students including pharmacy students had variable levels of patient safety competencies, which indicates that not all educational interventions were equally effective. To develop successful strategies and effective curricula, identifying the influencing elements on students' potential to practice safely is necessary.

Purpose: to investigate future pharmacists' behavioral determinants regarding their potential to practice safely and to suggest potential solutions for implementing behavioral change to enhancing the likelihood for practicing safely.

Methods: A qualitative study was conducted to explore facilitators and barriers of practicing safely in pharmacy students in Qatar using the Theoretical Domains Framework

(TDF). Data from focus groups was analyzed using deductive Thematic analysis (TA).

Results: Total 6 focus groups were conducted with 27 participants. Among the 20 identified themes, "Knowledge in clinical aspects related to patient safety" and "Contributing to the overall patient safety culture", solely emerged highly as facilitators whereas other themes, "Skills to translate knowledge to practice", "Availability of patient safety resources and workflow depending on the setting", "Behavior and attitude of teams", "Institutional policies regarding pharmacist contributions to patient safety" acted as a facilitator or a barrier. Potential solutions suggested more clinical training, specific courses on patient safety and providing training sessions on the local error reporting systems.

Conclusion: The study elicited a wide range of behavioral determinants regarding practicing safely. Designing patient safety educational programs that revolve around the behavior change techniques proposed in this study is warranted. Future studies should test the effectiveness of interventions designed based on this study.

Evolving training to meet the needs of practitioners

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The Ghana College of Pharmacists trains pharmacists and related professionals in various areas of specialisation. The primary means by which these specialisation training programmes have been conducted is by residency training. This usually requires the pharmacist to take a two-to-three-year study leave to go into residence in a teaching or other tertiary hospital. For pharmacists in some facilities, this is a luxury they cannot afford as they may be one of only two pharmacists in the facility, and in some instances, the only pharmacist. This is the case in both public and private institutions. There are also pharmacists who may not be interested in undertaking the specialisation training but, are interested in acquiring new skills and sharpening their professional skills to enhance their practice. To respond to the needs of these pharmacists, the College is designing and implementing short courses to provide the relevant skills at the same level of rigour required, but in specific identified areas.

In designing the short courses, a number of issues are considered: the duration of the course, the skills that need to be acquired, the availability of facilitators to impart the skills within the set time, the interest of pharmacists in undertaking the planned short courses.

The courses that have been designed and implemented range in duration from two to six months. They all include a conceptual training conducted by didactic lectures and a hands-on training led and supervised by preceptors and assessed using logbooks or other forms of reporting. The

courses that have been designed and implemented so far provided skills for practice from industrial pharmacy practice through clinical and community practice to public health services and reporting. Since introducing these short courses in 2021 over 1500 pharmacists have been trained in different areas of expertise. In, some instances, support will be obtained to roll out the programme at no cost or at a subsidised fee to the practitioner. New short course programmes are constantly being conceptualised and designed to meet the training needs of practising pharmacists. Lessons learned are incorporated into new courses to ensure constant improvement. This concept is adaptable in building the capacity of practising members of the pharmaceutical workforce to provide top notch professional services.

Developing a resilience curriculum for undergraduate pharmacy education

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Background: Pharmacy students and early career pharmacists face numerous challenges that can significantly impact their mental and emotional well-being. Such challenges may include high workload, time pressure, and ethical dilemmas. Therefore, there is a need to equip pharmacy students with the necessary resilience skills to manage these challenges effectively. Despite the growing recognition of resilience as a critical skill, few studies have explored how to effectively incorporate resilience into pharmacy education.

Purpose: The Faculty of Pharmacy and Pharmaceutical Sciences (FPPS), Monash University Australia (MUA) and Malaysia (MUM), identified the need to introduce the topic of resilience to undergraduate students enrolled in the Bachelor of Pharmacy (Hons) / Masters of Pharmacy degree. The aim of this study was to design, develop and implement a resilience curriculum across a 4-year pharmacy degree to give the students multiple scaffolded opportunities to broaden their understanding of resilience and develop strategies to strengthen their resilience such that they are equipped with the necessary skills when facing challenging situations as students, and as health care professionals.

Method: An expert working group was established comprising of 4 academics where 2 members of the team belonged to the global group of resilience experts (GRiT) and 2 members were practising pharmacists. All members taught into the Pharmacy curriculum where 3 members were based at MUA and 1 expert at MUM. Faculty education grant funding was utilised to onboard a practitioner educator (hospital pharmacist) to support the design and development of the curriculum. A layered and sequential approach was used to develop a resilience curriculum where the foundational concepts of resilience are introduced in the

early years and subsequently scaffolded to address specific challenges or contexts, such as how resilience can be challenged in the workplace.

Results: The developed curriculum consisted of 4, hour long, workshops, each embedded into the Pharmacy curriculum across years 1-4. Each workshop featured topics and activities geared at defining, exploring and developing strategies to build resilience. The activities were founded on principles that help individuals learn skills such as self-awareness, self-regulation, positive thinking, and problem-solving, which are essential components of resilience. For example, 'What is resilience?' (Year 1), 'Self-talk' (Year 2), 'What is flexible Thinking?' (Year 3). Activities in later years were founded on principles from health psychology, that focus on the relationship between work and health. For example, 'Community pharmacy dispensing error case study' (Year 4). The resilience curriculum was piloted for the first time in 2022. Pharmacy students across both MUA and MUM were receptive to exploring resilience training further and felt that it is a useful skill that will aid them in becoming well-rounded health professionals when they enter the pharmacy workforce.

Conclusion: A resilience curriculum was designed, developed and embedded into the FPPS Pharmacy degree, aligned with the International Pharmaceutical Federation's vision for lifelong learning. This will help future pharmacists identify their learning needs through self-assessment, recognize limitations, and act on them as part of personal and professional competencies. Feedback from staff and students will further improve the curriculum moving forward.

Using an intention/reflection (I/R) practice to stimulate student engagement

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Posters Tuesday, September 26, 2023, 12:30 PM - 2:30 PM

Background: Educators don't always need to make massive changes in their courses or curricula to engage students. Often, simply creating space for students to consider their own personal learning outcomes can provide the framework that encourages engagement, motivation, and persistence, which positively affects metacognition and self-awareness. When applied to students in educational settings, a simple "Intention/Reflection" (I/R) activity helps students connect course content with their own unique personal or professional goals and interests. The I/R practice is no-cost, no-tech, and takes only a few minutes.

Purpose: The purpose of this session is to help the audience develop pedagogical knowledge and practical teaching skills to provide better outcomes for pharmacy students across the globe. This includes sharing the research findings from multiple studies in diverse educational settings – including clinical, basic science, experiential, and co-curricular – effectively utilizing the Intention/Reflection practice. Also

included are foundational pedagogical theories behind its development.

Method: I/R has been used in various settings as a low-resource, high-impact student experience. Before and after an educational activity, students use a series of questions to contextualize their personal experiences, expectations and goals regarding their education and future pharmacy practice. Faculty use touchpoints to provide students an opportunity to assess and discuss the progress of the goals that were set at the beginning, their educational success and their relationship to the pharmacy profession. I/R is used in various courses across the curriculum (didactic, experiential, co-curriculum) and is embedded in all 4 years of the professional program.

Results: Outcomes have shown the Intention/Reflection practice is effective in courses across the curriculum, advanced pharmacy practice experiences, international exchange programs, co-curricular, and interprofessional escape rooms. Students self-identify, discuss and internalize their own personal educational and professional pharmacy values, beliefs and goals via survey and classroom discussion. Faculty use the cognitive disequilibrium inherent in the professional pharmacy program to facilitate student reflection and adaptation. This I/R practice impacts all students throughout the professional program. Outcome data of multiple scholarly activities will be shared.

Conclusion: Intention/Reflection (I/R) is a low-time, low-tech, straightforward practice to encourage learner engagement by identifying and infusing students' personal interests and motivations into the expected learning outcomes of the course, alongside instructor-identified educational objectives. I/R helps keep faculty and students connected as learning environments become increasingly dynamic, and provides academicians insight in order to advance the understanding of learners.

Training students to be controlled substances diversion detectives

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Posters Tuesday, September 26, 2023, 12:30 PM - 2:30 PM

Background: "Pharmaceutical Diversion" is when a controlled substance is removed from the closed system of distribution. One of the methods of diversion is illegal dispensing of prescriptions. Pharmacists play an integral role in combating the opioid crisis through fulfilling their corresponding responsibility when evaluating and dispensing prescription drug orders. Pharmacists work collaboratively with the Drug Enforcement Administration (DEA) and Department of Justice (DOJ) to evaluate alleged violations of federal and state-controlled substances acts, analysis of data and evidence during investigations, and during enforcement through expert opinion and testimony.

Purpose: To assess student understanding and analysis of drug diversion through participation in an elective course on controlled substances.

Method: First through third year doctor of pharmacy students were enrolled in an elective course in evaluating violations, participating in investigations and enforcement efforts regarding controlled substances diversion. Student knowledge was evaluated at the beginning and end of the course. Course performance was based on student analysis of data and evidence, providing an expert opinion based on the analysis, and testimony in a simulated hearing. Student perspective regarding drug diversion, opioid and substance use disorders was evaluated using a semi-structured interview and participation in a pre- and post-course survey.

Results: Student knowledge regarding drug diversion was limited prior to taking the course. Student understanding of drug diversion was through information they read or saw in the media.
At the end of the course, students were able to identify types of violations of federal and state-controlled substances laws and rules, identification of "red flags" and the pharmacist's responsibility, methods and analysis of drug diversion cases, and the pharmacist's role in enforcement. As expected, students' rated their knowledge of drug diversion as low prior to the course and higher at the end. Student opinion regarding opioid (OUD) and substance use disorders (SUD) was perceived as judgmental prior to the course and empathetic at the conclusion. Students remarked understanding how and why individuals develop OUD and SUD was biased prior to evaluating diversion data as a pharmacist.

Conclusion: Student understanding of the controlled substances laws and rules is necessary for licensure and practice. Participation in the drug diversion elective course increased student knowledge on the use of controlled substances, analysis of data, and utilization of their expertise to assist with diversion prevention. In addition, dispelling myths associated with OUD and SUD enhanced student understanding regarding these disorders and will be instrumental in their provision of patient care.

Sport pharmacy education: Australia's two stage approach for educating current practicing pharmacists

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Posters Tuesday, September 26, 2023, 12:30 PM - 2:30 PM

The World Antidoping Agency (WADA) prohibited list places strict limitations on which medicines (and substances) an athlete may consume in and out of competition. To support patients who are athletes, the International Pharmaceutical Federation (FIP) in 2014 (1) declared that pharmacists have an important role in assisting and supporting athletes in the fight against doping in sport and avoiding inadvertent doping.

In 2022, the FIP published a global review into sport pharmacy practice and education (2). Despite this work, both the FIP review and published literature (3) suggested varying levels of knowledge about sport pharmacy. Similarly, recognition of roles and responsibilities of pharmacists in advising athletes regarding medications, supplements and anti-doping education appeared vastly variable. Of particular note this literature highlighted a significant gap in antidoping and prohibited substance knowledge in currently registered pharmacists.

Sport Integrity Australia (SIA) in conjunction with the Pharmacy Society of Australia (PSA) have developed a unique three stage program to educate and upskill registered pharmacists across Australia. Stage one involves a webinar which will introduce pharmacists to the field of sport pharmacy and highlight their role (and responsibilities) as athlete support personnel. It will also cover all regulations within the World Anti-Doping Code, WADA Prohibited List and relevant information from the International Standard for Therapeutic Use Exemptions while meeting the regulations of the International Standard for Education. Stage two will be a short online module to consolidate the information outlined in the webinar and provide information regarding annual updates to pharmacists. A literature article evaluating the sport pharmacy program, highlighting key education areas and reflecting on future development for sport pharmacy in Australia will serve as a final stage in this awareness campaign.

This presentation outlines the program process and evaluation following 360 review of the pilot program. The presentation will also cover recent studies of the knowledge of practicing pharmacists and current international sport pharmacy education programs that have served as evidence base for the content of this sport pharmacy program.

Pharmacy student perceptions and knowledge of online pharmacy use

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Objective: Currently, there is no set of accreditation standards for integrating the dangers of illegal online pharmacies into Doctor of Pharmacy (PharmD) curricula. Likewise, pharmacy training programs worldwide also have limited content on e-commerce as a method to obtain prescription medicines. As a result, many pharmacists are unable to recognize the differences between a legal and illegal online pharmacy or educate patients on the dangers of online pharmacies. The objectives of this study were to assess gaps in student pharmacists' knowledge and to assess the impact of adding education regarding online pharmacies into PharmD programs.

Methods: A pre- and post survey design was developed. Data were collected through an electronic questionnaire distributed to second-year pharmacy (P2) students to evaluate student knowledge gaps at baseline and after education on illegal online pharmacies.

Results: A total of 102 students responded to the presurvey, with 93 (91%) consenting to participate. Out of 100 respondents to the post survey, 84 (84%) students consented. Approximately 87% (81/93) of respondents indicated some awareness of prescription medications being purchased online. Most students (89%, 77/86) stated that they do not believe the university has provided adequate curriculum on illegal online pharmacies and counterfeit medications. After receiving education on the relevant topics, 64%(55/85) stated they now felt their education was adequate.

Conclusion: Although pharmacy students were aware of the existence of illegal online pharmacies, they were not aware of the significance of this patient safety issue or how to accurately identify suspicious websites. It is imperative that PharmD programs incorporate formal education on the risks that illegal online pharmacies pose to patient and medication safety.

A longitudinal curriculum to develop empathy in doctor of pharmacy students

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Objective: Empathy is an essential skill when pharmacists are interacting with patients. Little has been published regarding the sustainability of empathic skills following curricular interventions. This study investigates a longitudinal curricular model for developing empathy in a Doctor of Pharmacy curriculum to determine if empathetic skills are sustained over a 3-year time period.

Methods: Students from the 2022 cohort of a 3-year Pharm.D. program participated in a longitudinal curricular intervention to develop empathic skills. Only results from students providing consent were evaluated. Team-based learning, role-play and objective structured clinical exams focusing on empathy skills were utilized over the 2-year instructional period. Empathy was assessed at baseline, annually and after Year-3. Students self-assessed using the Jefferson Scale of Empathy-Health Professional Student (JSE-HPS). Standardized patients(SP) also assessed students using the Jefferson Scale of Patient Perceptions of Physician Empathy (JSPPPE). Results from the JSE-HPS and JSPPPE were compared annually.

Results: A total of 59 PharmD students from the 2022 cohort provided consent. Self-assessed empathy using the JSE-HPS did not significantly change over the three-year period (baseline average score of 110.61, final average score 108.94; p = 0.9045). The SP rated empathy using the JSPPPE significantly increased from an average score of

21.02 at baseline to 27.51 (p = 0.0001322) at study completion which may suggest that participants learned to display empathic behaviors despite maintaining a similar degree of self-assessed empathy from baseline.

Conclusion: The use of a longitudinal curriculum to develop empathy skills in PharmD students may improve learners ability to demonstrate empathy to patients despite a lack in self-assessed empathy.

Experience in interdisciplinary lectures on global public health topics in a pandemic & beyond

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Background: The outbreak of the Covid-pandemic provoked to enrich the interdisciplinary curricula of Innovation in Biopharmaceutical Industry, Biopharmaceutical Economics and Innovation in the Biopharmaceutical Business with planetary and global public health topics. The shift from a shareholder economy to a stakeholder economy, disruptive innovation and societal transformation offer to lecture along United Nations- and FIP Development Goals. Furthermore, there is the need to discuss sustainability, equity and access linked to each stakeholder's responsibility within healthcare and healthcare systems.

Purpose: This investigation aims to demonstrate which elements of explorative learning support sustainability in lecturing and learning. Furthermore, we investigated whether a personality test for students combined with a future skills roadmap insures to focus on student's own (research) interests, on their future development, and to deepen the understanding on health as a global public and common good.

Methods: Appropriate elements for teaching interdisciplinarily and exploratively are chosen. The implementation of those elements is linked to the type of university and the economic models applied in the lectures. Portfolio assessments were applied. The personality test and the skills roadmap were performed during the course. A reflection paper structured in 3 chapters was requested and evaluated at the end of the course.

Results: By applying the explorative learning approach students learned to develop their own approaches and research interests in global health topics. The FIT principles of Remo Largo, adapted by Ehlers were offered to students the first time successfully and were assessed of high value. The future skills roadmap supported to focus on sustainable teaching and learning experience and gave first hints for continous professional development. Journaling techniques helped to intensify the formative and self-determined learning process within the field of biopharmaceuticals and global health topics.

Conclusion: Explorative learning seems appropriate to lecture on planetary and global public health topics in interdisciplinary lectures. It insures sustainable lecturing and learning. Further experience in offering standalone moduls on student's personality and future skill sets are recommended. A further spread of interdisciplinary curricula in this field looks like a human capital investment that could strengthen the workforce in healthcare systems.

The psychological impact of COVID-19 on the mental health of staff and students in the faculties of pharmacy and education in two universities in Nigeria

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Background: The outbreak of COVID-19 pandemic globally has had and continues to have disruptive effects on the way people live, work, play and study1,2. This disruption has resulted in various levels of mental health issues for both staff and students of educational institutions occasioned by the uncertainties associated with the disease. Literature documents that mental wellbeing of students is an escalating public health issue with studies showing a high rate of anxiety and depression. In addition, the mental health of university staff is often neglected and might have been exacerbated during the pandemic3-5.

Purpose: The main goal of the study was to document causes and perceptions about mental health and well-being of students and staff (teaching and non-teaching) of the faculties of pharmacy and education in the University of Lagos (representing Southern Nigeria) and the University of Jos (representing Northern Nigeria).

Method: Ethical approval was obtained from the Human Research and Ethics Committees of the Lagos University Teaching Hospital (LUTH) and Jos University Teaching Hospital (JUTH) before commencement of the study. Mixed methods were employed. For the first part, a descriptive, cross-sectional study utilizing a structured questionnaire, prepared with Google Form®, and consisting of standardized tools used in the measurement of mental health was deployed in the four faculties. Pilot study was undertaken in Obafemi Awolowo University, Ile-Ife with tool modified accordingly. The survey was administered electronically via WhatsApp and/or email with reminders till the close of

questionnaire administration (approximately 8 weeks). The second part consisted of in-depth interviews (IDI) with some of the respondents to further explore issues highlighted in the survey. The data obtained was analyzed using descriptive and inferential statistics, as appropriate.

Results: Of the 1079 respondents that accessed the form in the four faculties, 10 (0.9%) chose not to participate. The result breakdown shows that most of the respondents are single (73%), female (57%) and practice Christianity (84%). The differences were not significant at $p < .05$.. Over 80% of the respondents believe that the main causes of mental health issues currently being faced are Unemployment/Underemployment, Economic factors, Insecurity and Stress.Only 59% of the respondents blame COVD-19. A third of the respondents experienced feeling of giving up during or since the COVID-19 pandemic though only about 11% and 4% actually considered hurting or killing themselves respectively. About 27% and 26% of the respondents did not indicate presence of depression or anxiety using the depression and anxiety scales respectively. The results were significant at $p < .05$. Varying levels of insomnia, burnout and fulfilment were determined. Over 64% of the respondents believe that the negative impact of COVID-19 on mental health can be reduced by people seeking medical care from a psychologist, proper counselling, getting vaccinated or when a cure is available for COVID-19.

Conclusion: The result shows that varying levels of mental health and wellbeing was exhibited by the respondents. The study recommends that the National Universities Commission (NUC) should institute appropriate policies to manage mental health in institutions of higher learning.

Survey to determine the changes in global health activity in US schools of pharmacy pre and post COVID-19 pandemic travel restrictions

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Background: Prior to COVID-19, papers were published describing global health activities at schools of pharmacy within in the United States. However, there are limited data illustrating how the pandemic changed student activities after travel restrictions lifted. Of specific interest is how student global health opportunities changed post-COVID-19 travel restrictions.

Purpose: The objectives of the survey were to 1) determine student activities prior to the pandemic; 2) determine global health activities during the pandemic; 3) capture if the pandemic created new student global health opportunities; 4) illustrate changes in student experiences post pandemic.

Method: A survey was developed using Qualtrics survey analytics by UW-Madison School of Pharmacy Office of

Global Health. A total of 15 questions were categorized into four categories: 1) student global health activities pre-pandemic 2) changes in global health student activities during COVID; 3) new opportunities created during the pandemic; 4) student global health activities post-pandemic. Questions were tested on a cohort of ten universities to ensure clarity of the question and clarity of the designated responses. Open ended responses were also included to further describe changes that may have occurred within their schools of pharmacy. Finalized questions were sent to 158 schools of pharmacy that had global health offerings prior to the pandemic. Data was managed by Qualtrics data analytics.

Results: Eight universities have returned the survey providing preliminary survey results. Of the eight respondents, five were offering some form of global health activity for students prior to the pandemic. Two schools expanded classroom and local experiential rotations during the pandemic; no schools were sending students internationally. Post pandemic, two schools resumed sending students.

Conclusion: These preliminary findings show that more than half of the schools of pharmacy have lost their global experiences due to the pandemic and have not brought them back to pre-pandemic levels. This survey did not ask why the changes in global health administration have changed, but may suggest lack of funding, lack of interest or changes in staffing at the schools. Future studies may focus on expanding the body of knowledge around why these changes have occurred.

Linking theory to practice: Design, development and implementation of a pharmacist preceptor training program in a regional Australian university

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Background: Preceptors play a key role in linking theory to practice for pharmacy students during their experiential placements, and training is essential to optimise the student placement experience and produce high quality graduates. While the need for training is clear, there is currently limited guidance on the ideal structure and content of preceptor training programs.

Purpose: The aim of this research was to design, develop and implement a pharmacist preceptor training program for James Cook University in Australia.

Methods: Informed by a scoping review, a participatory approach was taken in the design of this training program, which included a comprehensive mixed stakeholder training needs analysis to identify preceptor roles, ideal skills and attributes and training and support needs. An expert advisory group provided oversight to program development.

Reference to the relevant Pharmaceutical Society of Australia's National Competency Standards Framework for Pharmacists was also observed and consideration given to a range of pedagogical approaches, when designing program content. Program evaluation was conducted using pre and post training surveys and post-training preceptor interviews.

Results: A flexible preceptor training program was designed which consisted of four online modules, based on four key roles of the preceptor: role model, educator, mentor, and assessor. Each modules included didactic information about the preceptor role, preceptor activities, video clips, additional reading materials and a multiple-choice quiz to assess and reinforce knowledge. Orientation to precepting and an overview of the university curriculum was also included. To complete the program, preceptors attended a small-group online interactive networking session, with a certificate being provided following program completion. Launched in 2022, the program was completed by 28 preceptors.

Conclusion: Preliminary feedback on the program was very positive, particularly for the interactive networking session. The benefits of a participatory approach to training design included a tailoring of the program to this university, allowing preceptors to optimise their learning and facilitate high quality student placement experiences.

Comparative study on the pharmacist licensure examination based on the roles and competencies of pharmacists

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Background: In recent years, the healthcare model in Korea has shifted to a patient-centered approach, resulting in changes to the roles and competencies of pharmacists due to the influence of advanced technologies such as artificial intelligence (AI), the Internet of Things (IoT), and big data. Since 2020, the pharmacist preliminary examination and a six-year pharmacy program have been launched, and with the legalization of the Board of Pharmaceutical Specialties (BPS) certification in 2023, some expected changes in the examination or education in the future.

Purpose: This study aims to compare and analyze the roles and competencies of entry-level pharmacists, taking into consideration the evaluation standards and content of the pharmacist licensure examination. It aims to provide evidence and strategies for the developing the Korean pharmacist licensure examination.

Method: A comparative analysis was conducted, focusing on countries such as Japan, the United States, Canada, the United Kingdom, Germany, and France. The roles of pharmacists were classified based on their areas of activity and whether the pharmacist licensure is mandatory. Furthermore, differences were identified by comparing the

evaluation goals, subject areas, and criteria of the examinations.

Results: The roles of pharmacists are commonly categorized into community pharmacies, hospitals, the pharmaceutical industry, and academia. In Korea, comprehensive pharmaceutical-related competencies are required regardless of pharmacist licensure, while other countries tend to focus on competencies required in fields that necessitate pharmacist licensure, especially in clinical practice, pharmacy management, and manufacturing/quality control. It was found that the subjects emphasized in the United States, Canada, and the United Kingdom are related to clinical knowledge or skills, whereas Korea, Japan, and Germany include not only clinical fields, but also pharmaceutical sciences and industrial pharmacy in their licensing examinations. In particular, Japan places strong emphasis on the significance of pharmaceutical sciences and industrial pharmacy in relation to clinical practice. On the other hand, in Germany, these subjects are assessed in lower grades and the focus gradually shifts to clinical aspects as students progress to higher grades.

Conclusion: As pharmacists are licensed healthcare professionals, it is necessary for Korean pharmacist licensure examination to focus more on the field of clinical practice. In other words, it is necessary to consider various factors comprehensively, such as the employment status of pharmacists after graduation, the frequency or difficulty of their tasks, and their future value.

Improving rural health: The development of a rural health certificate in pharmacy curriculum

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Background: The Rural Health Certificate Program is a new certificate offered by University of Tennessee Health Science Center College of Pharmacy. This certificate allows student pharmacists to gain practice knowledge and diverse experiences in rural pharmacy settings. The program consists of three didactic courses, beginning the fall semester of the second professional year (P2) and two pharmacy practice experiences. The first course in the series focuses on examining rural environments, rural health disparities, and their impact on population health. The second course delves deeper into rural health disparities and their impact on population health, as well as healthcare communication strategies and considerations for rural communities. The final course serves as a training for students to design and implement health interventions in rural pharmacies.

Purpose: This study aimed to explore student pharmacist perspectives, experiences, and satisfaction with rural health

certificate curriculum offered within a college of pharmacy in the USA.

Methods: The first cohort of this program, consisting of eight students, completed a seven-question survey consisting of Likert-scale and open-ended questions sent out by the program director at the conclusion of each course. Each survey was comprised of a series of 5-point Likert scales addressing workload and satisfaction and included open-ended questions where the student pharmacist could elaborate on successes of the course and areas of opportunity for future improvement. Responses to open-ended questions were analyzed using thematic analysis to establish themes concerning topics from each course perceived as most beneficial to student learning. Three common themes emerged, including: Rural Health Disparities, Communication Practices, and Behavioral Health Theories.

Results: The surveys revealed a high level of satisfaction among students in the certificate (n=8; 100% = very satisfied). Students had the opportunity to offer recommendations at the conclusion of each course. Provided feedback included aspects such as introducing topics via brief overviews in advance so students could get a glimpse of what lies ahead in the program. Furthermore, students encouraged the course director to blend the teaching of theoretical concepts with interactive learning activities to enhance the learning experience. Similarly, students encouraged the inclusion of more group projects and activities to foster the sharing of ideas throughout the course. Lastly, participants expressed their desire to learn more about the communication techniques utilized by actively practicing rural pharmacists to bridge between theory and real-world application.

Conclusion: The materials, projects and activities within the program provide a solid foundation for student pharmacists to become successful pharmacists within rural healthcare settings. These findings can be applied to other certificate programs and curriculum tracks in pharmacy education. Specifically, active and team-based learning assignments were the best received learning activities. Additionally, the survey results provided insights for future iterations of the rural health curriculum, including the incorporation of additional active learning assignments and the opportunity for peer feedback and peer learning. These improvements will be implemented for future cohorts with the goal of strengthening the program and to better equip future pharmacists to practice in rural pharmacy settings.

Perceptions of pharmacists of the impact of OSCE on personal and professional development in practice: A cross-sectional study

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Posters Tuesday, September 26, 2023, 12:30 PM - 2:30 PM

Background: The Objective Structured Clinical Examination (OSCE) is a widely used form of learning-based assessment in healthcare education and practice. It is considered popular for assessing and evaluating clinical competencies and skills within a standardized or simulated setting, using real case scenarios.

Purpose: This study aimed to explore the perceptions of Qatar University (QU) College of Pharmacy alumni regarding the impact of OSCE on their personal and professional development in practice.

Method: A cross-sectional survey was conducted, and data was collected using an online questionnaire distributed to QU pharmacy graduates who had undertaken the OSCE and have at least a year of practice experience via a Survey Monkey link sent to their emails. The survey instrument consisted of 10 items consisting of a 4-point Likert scale, in addition to demographic information. Open-ended questions related to the impact of OSCE on personal and professional development followed some of the questions. Quantitative data was analyzed statistically using SPSS. A total of 75 pharmacists met the inclusion criteria after being identified from the QU alumni database and were invited to participate. 46 participants completed the survey, yielding a response rate of 61.3%. The majority of participants perceived OSCE to have a positive impact on their personal and professional development. Specifically, more than 85% of the participants reported that OSCE helped them improve their communication skills and interprofessional collaboration skills ($p < 0.05$), while 80% reported that OSCE helped in the application of skills and abilities required of pharmacists to provide professional services ($p < 0.05$). However, mixed perceptions were shared about having the OSCE as an integral component of licensure/re-licensure requirements for pharmacists in Qatar ($p = 0.471$). Regarding feedback on the OSCE process, most of the participants (90%) reported that the OSCE is a beneficial high-stakes examination, 70% thought that the OSCE simulates real case scenarios they encounter in practice where they had the opportunity to apply their knowledge and skills, while around 70% agreed that the OSCE helped them to identify some of their strengths and weaknesses in practice.

Conclusion: This study provided evidence that OSCE has a positive impact on the personal and professional development of pharmacists in practice. Therefore, it is recommended that OSCE be incorporated into the training and assessment of pharmacists in Qatar and other countries to enhance their clinical competencies and improve the quality of patient care.

An active learning and assessment framework to support competency-based education

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Posters Wednesday, September 27, 2023, 12:30 PM - 2:30 PM

Background: With the expanded scope of pharmacy practice, pharmacy schools are expected to develop the necessary competencies for students throughout their curriculum. Thus, reorientation of pharmacy education, through the implementation of active learning strategies, has become necessary. Many accreditation bodies have highlighted the need for pharmacy faculty members and preceptors to incorporate different active-learning strategies to improve the critical-thinking and problem-solving skills of students.

Purpose: The College of Pharmacy at Kuwait University started the implementation of a competency-based PharmD curriculum in 2020. To support the development of competencies throughout the curriculum, a novel framework, including both active learning and assessment strategies, was developed.

Methods: Educational guiding principles, based on a needs assessment, were established before starting the curriculum reform. Then, a thorough literature review was conducted on the literature that is available on different active learning strategies and frameworks. Our framework came from the intersection of our curriculum guiding principles and the literature review.

Results: This framework is composed of 4 stages (on campus) plus the experiential learning happening in practice sites. The first 2 stages are aimed at knowledge acquisition, while the last 2 stages focus on knowledge application for competence development. Stage 1 focus on student preparation before in-class learning activities, while stage 2 represents in class active learning modalities to consolidate knowledge acquisition and correct misconceptions. Stage 3 include preparation activities before students get into laboratory sessions performed in stage 4. These last 2 stages are aimed at performing pharmaceutical science laboratories and entrustable professional activities (practice laboratories). Each course of the curriculum is expected to have students going through the four stages, and the assessment plan ensures that the students' work is rewarded throughout the stages (assessment for learning). As students progress within the course, deeper learning is expected and assessed accordingly (according to Bloom's taxonomy). To support the implementation of the framework, guiding documents and workshops were offered on the framework and on different learning and assessment modalities that can be used in the different stages of the framework.

Conclusion: The authors developed an active learning and assessment framework that is balancing structure and flexibility. Indeed, instructors are free to use the methods that they prefer within the framework, as long as they promote student engagement. The framework was critical to translate our vision into reality by juxtaposing theoretical and practical learning in each course, and by facilitating an important shift from passive to active learning in a structured way.

Perception of patients in a university-based drug information service on medication safety

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Background: The COVID-19 pandemic has prompted healthcare professionals to deliver healthcare services on alternative platforms. Globally, various institutions are implementing telehealth services to ensure continuity of care among patients. In the Philippines, many teleconsultation platforms have been piloted to increase access to care for patients with limited mobility due to physical distancing measures implemented by the government.

Objectives: To assess clients' perception regarding a university-based drug information service (DIS) in improving their knowledge and decision-making and their contribution to medication safety.

Method: The study employed a cross-sectional design which utilized a questionnaire administered through voice-call interviews using an online survey questionnaire as data collection instrument. The inclusion criteria of the study are as follows: (1) must be at least 18 years old, (2) with no cognitive impairment, (3) must have sent a medication-related query in the UPCP Telepharmacy Service during the selected duration of the study, and (4) must be contacted through voice call platforms.

Results: Knowledge and decision-making have no significant relationship with the clients' sociodemographic characteristics assessed in the study. Overall client satisfaction towards the DIS was observed to be high (4.625 ± 0.0471). It was found that the drug information advice does not have a significant effect on the client's knowledge (p = 0.054) but is significantly related to the client's decision-making behavior towards the use of their medication (p = 0.054). Furthermore, the client's decision-making after receiving a drug information advice through the DIS positively affected medication safety (p = 0.004).

Conclusion: A drug information service is a helpful pharmacist-intervention to provide medication information to patients who need them. The study provides evidence that the decision-making of clients who received drug information advice is directed towards medication safety which has positively impacted patients in the appropriate use of medicines, providing information on drug interactions

and adverse drug reactions, and allowing clients to understand when they need to consult to healthcare providers.

Study on the attitudes of pharmacy students and professors at a Russian university towards academic fraud and their opinions on effective measures to combat it

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Background: Academic fraud (AF) is a serious issue among students in higher education institutions, and it has attracted the attention of researchers worldwide due to its potential negative effects on the quality of higher education. In particular, academic fraud among medical and pharmaceutical students is a matter of concern as these students will be responsible for people's health and well-being in the future.

Objectives: The aim of this study was to investigate the attitudes of students and professors from the Faculty of Pharmacy at RUDN University towards AF and identify effective measures to combat this phenomenon. The study surveyed 589 students and 10 teachers from the Faculty of Pharmacy from December 2021 to January 2023. Female students made up 72.5% of the sample, while female professors represented 90% of the total number of respondents. More than half of the students from the sample had good academic performance and did not work during their studies. 40% of professors had more than 25 years of work experience.

Results: The study found that 54% of pharmaceutical students believed that AF did not pose a threat to their educational process, while 60% of professors considered violations of academic integrity to be unacceptable. It is noteworthy that all professors who allowed the use of academic fraud methods in some cases had a PhD degree, while those with a Doctor's degree rejected the possibility of such behavior.

More than half of the students considered professors' competence and their ability to engage students in their subjects to be the most effective measures to prevent the spread of academic fraud (55%). Meanwhile, 61.5% of professors would lower grades in case they noticed an act of academic fraud, and only 15% of professors would be lenient towards students in such a situation. Strict discipline and the usage of special programs to control students were reported by students as the least significant ways to reduce the level of AF acts (11% and 7%, respectively).

On the contrary, according to professors' opinions, the most effective measures to reduce the likelihood of academic

fraud cases among students were lowering grades and tightening control (both 27%). Only one professor reported that the Honor Code could be useful for enhancing academic integrity at the university, although the effectiveness of this approach is widely debated abroad.

Students suggested that the most effective measures to combat academic fraud in higher education institutions were democratic ones, such as open-book exams when teachers do not mind using self-made cheat sheets (35%) and the change of point-rating system towards higher assessment of students' work in the semester (32%). At the same time professors believe that regular renew of assignments base and tightening of sanctions for using AF methods are the most efficacious ways to prevent students from dishonest behavior (27% and 23% respectively).

Conclusion: the results of the study reveal a conflict between students' and professors' opinions towards ways of preventing the wide use of AF among pharmaceutical students. The data can be effective for improving academic integrity in medical universities.

Creating our own spaces–An autoethnographic case study of an indigenous pharmacist researcher network

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Background: Māori, the Indigenous peoples of Aotearoa New Zealand (NZ) comprise 17% of the total population yet less than 2% of the country's registered pharmacist population are Māori. The number of pharmacists involved in education or research in NZ is also low by international standards and in 2017, there was only one Māori pharmacist who had graduated with a PhD. There are no formal pathways to support Māori pharmacist research capacity and capability development. Consequently, we, a trio of Māori pharmacists formed an informal network to provide holistic and culturally safe support for our respective research aspirations and assist in times of hardship.

Purpose: To describe the functions of our informal research network established between three Māori pharmacist doctoral candidates. To identify potential areas of focus in the development of future Indigenous pharmacist research networks.

Method: This autoethnographic case study focussed on our experiences as three Māori pharmacists who had a formal connection as members of Ngā Kaitiaki o Te Puna Rongoā o Aotearoa - The Māori Pharmacists' Association. We each had a different field of expertise (preterm infant health, older persons health and health policy). Data was collected from

our formal meeting notes, emails and private social media communications. General inductive analysis was used to identify key themes of discussion over a six year period from 2017-2022.

Results: Six broad themes were identified from review of our discussions: Relationships and allies, career opportunities, personal and family lives, navigating the formal research pathway, triumphs and successes, ongoing personal and professional development. Over time our discussions moved from those focused on understanding research methods and processes to thinking more about transformative potential and research impact.

Conclusion: An informal research network was critical to supporting our formal research training as Māori pharmacist doctoral candidates and as future researchers. The themes highlighted through reflection on our journey together have allowed us to identify areas of importance and potential focus for the development of both informal and formal research support networks for Indigenous, and other, pharmacists in the future.

Student and preceptor perceptions of advanced pharmacy practice experience (APPE) readiness from incorporation of electronic health record (EHR) within the clinical capstone course

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Background: As of 2020, 99% of US hospitals had implemented an EHR and 96% of hospitals are using computerized order entry for medications. Pharmacists need knowledge and experience with EHRs to provide efficient and effective care to their patients. Significant variability exists in how colleges of pharmacy utilize EHR. A 2017 study demonstrated only 63% of schools were using an EHR in their curriculum.

Purpose: The authors aimed to provide students with opportunities to learn the EPIC® EHR during a clinical capstone course to determine if they were better prepared to perform on APPE rotations that utilize EHRs for patient care.

Methods: All students enrolled in the third year Clinical Capstone course received 6 hours of EPIC® training paired with 3 course activities and assessments. This included training with faculty and preceptors from the University of Colorado Hospital (UCH) on EPIC® navigation, and live, remote patient case work-up to identify pharmacotherapy interventions simulating inpatient clinical pharmacy. An EPIC® scavenger hunt quiz and quiz of the patient case work-ups were utilized in addition to graded verbal case presentations.

A cohort of students at UCH were administered a survey at the end of their 6 week APPE. Outcomes measured included student perceptions of APPE readiness and UCH preceptor perceptions of APPE student performance.

Results: Forty-nine students completed an APPE rotation at UCH and responded to the survey. Seventy percent of students completed an inpatient rotation and 30% completed an ambulatory care APPE. Major areas included: 29% ICU, 14% internal medicine, 8% infectious diseases, and 29% other specialties. Student EPIC® experience prior to the clinical capstone course was as follows: 9.6% never used; 28.8% used at work; 61.7% used on an IPPE experience. Fifty-five percent agreed or strongly agreed that EPIC training within the capstone course increased their proficiency with the EHR. Sixty-one percent of students thought the clinical capstone training adequately prepared them for their APPE EHR (25% were neutral); 67% of students 'Somewhat or strongly agreed' the EPIC experiences in the capstone course improved their ability to perform on their APPE rotation at UCH. Students desired more practice and opportunities to gain proficiency in "real world" experiences prior to APPE's. Thirty UCH preceptors completed the survey: 30% ambulatory care, 17% internal medicine; 33% ICU, and 20% other specialties. Seventy-three percent of preceptors 'somewhat or strongly agreed' that compared to previous students, their student was more familiar with EPIC functionality. Eighty percent agreed they spent less time teaching the student how to use the EHR compared to previous years and 56% agreed their student's performance on the rotation was improved based upon their EPIC proficiency/experience prior to starting the APPE. Preceptors felt training specific to their rotation (note writing, handoff, intervention documentation, etc.) would further increase student performance if incorporated prior to APPE rotations.

Conclusions: Successful incorporation of a real world EHR into a controlled classroom environment prior to clinical rotations resulted in improved APPE readiness and student performance as perceived both students and preceptors.

Implementation of instant response system in the design and practice of nursing pharmacology courses

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Traditional one-way lectures are no longer sufficient to meet the learning needs of the Internet native generation (also known as Generation Z), whose attention span is only eight seconds on average. Many educators are already using the Classroom Response System (CRS) to flip creative teaching and learning to get positive feedback from students and effectively increase motivation. The purpose of this study is to investigate the effectiveness of using the real-time

feedback system ZUVIO in pharmacology classrooms. The experimental subjects were 325 third-year nursing students in a private nursing college in southern Taiwan. The results showed that 1) there was a significant difference between the pre-test and post-test scores of the experimental group in terms of pharmacology learning outcomes, i.e., the integration of ZUVIO into the teaching was beneficial to students' learning of pharmacology; 2) students generally had positive views on the integration of ZUVIO into the teaching, as ZUVIO made the teaching activities of the course more active and varied, increased the interaction between teachers and students in the classroom, and students enjoyed the class more; and 3) Through the development and innovation of teaching methods, we help teachers and students grow together.

A multi-year comparative analysis of leadership assessments for PharmD students

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Background: Leadership assessments are critical tools for identifying strengths, weaknesses, and areas for growth in leaders. Leaders can use the results of the assessments to set meaningful goals, communicate more effectively, and build stronger relationships. They can also use the assessments to identify areas for growth and development and seek out opportunities to develop new skills and knowledge. Popular assessments include 5 Voices which focuses on communication style, StandOut which focuses on strengths, and CliftonStrengths which focuses on overall strengths.

o StrengthsFinder identifies an individual's top strengths out of 34 possible themes. By focusing on strengths rather than weaknesses, individuals can develop a greater sense of self-awareness and confidence in their leadership abilities. By leveraging their strengths, leaders can achieve greater results, build stronger relationships, and contribute more meaningfully to their organizations.

o StandOut identifies an individual's strengths and provides insights into how to use those strengths to achieve greater success. The assessment categorizes individuals into nine different strength roles. By understanding one's own strengths and how to use them in a leadership context, leaders can build more effective teams and achieve greater results.

o Five Voices identifies an individual's communication style and the impact it has on others. The assessment categorizes individuals into five different voices: Pioneer, Connector, Creative, Guardian, and Nurturer. Each voice represents a different communication style, and by understanding one's own voice and the voices of others, leaders can build stronger relationships and communicate more effectively.

Each assessment has its unique features and strengths, and leaders can benefit from using multiple assessments to gain a more comprehensive understanding of their leadership style and abilities.

Purpose: The purpose of this multi-year, comparative analysis of three leadership assessments (5 Voices, StandOut, and StrengthsFinder) is to identify themes within each of the assessments among pharmacy students.

Method: PharmD students from a PharmD program in the United States have completed three leadership assessments over the past 7 years. An analysis of the results was completed following each administration, and an overall summary of all results over time was compiled.

Results: The top StrengthsFinder theme results have included Achiever, Learner, Responsibility, Consistency, Discipline, and Harmony. The top StandOut roles identified were Teacher, Creator, and Connector. The top 5 Voices were Nurturer and Guardian.

Conclusion: Leadership assessments are tools for understanding and developing effective leadership and can be used by pharmacy schools to assist students in understanding and developing their own leadership style. By providing insights into communication style, and strengths, assessments such as 5 Voices, StandOut, and StrengthsFinder can help students identify areas for growth and development. Students can use the results of these assessments to develop practical strategies for achieving goals and building more effective teams. Faculty and schools of pharmacy can use these results to assist students in identifying strategies for academic and professional success. Future analysis is recommended to compare PharmD student leadership assessment results with other professions and explore changes in leadership assessments over time.

Future proofing the pharmacy workforce: Introducing workplace-based assessment for Australian pharmacy interns

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Background: In Australia, the Pharmacy Board of Australia (PharmBA) requires completion of a period of supervised practice (internship) for pharmacist registration. Pharmacy interns work under the guidance of a preceptor responsible for making judgements about intern readiness to practice based on observation and assessment of performance in the workplace.

Purpose: There is no nationally consistent approach for gathering information about pharmacy intern performance in the workplace. The International Pharmaceutical Federation (FIP) calls for development of a competent pharmacy workforce by ensuring initial pharmacist training is fit for purpose (FIP DG 1). The Australian Pharmacy Council

and the PharmBA have been working together to introduce workplace-based assessment (WBA) and training for pharmacy interns.

Method: WBA tools were developed through a consultative process overseen by a technical working group comprising education experts and a project governance group. Three consultative forums and a pilot study informed the final tools. Educational resources to support uptake in pharmacy workplaces were developed. A nation-wide evaluation of the implementation of the tools is being undertaken.

Results: Six WBA tools including entrustable professional activities, case-based discussion and in training assessment activities are now in the first year of implementation. Preliminary feedback from the pilot demonstrated that the tools were feasible, acceptable, and useful with all Interns and pharmacists.

Conclusion: The WBA tools are providing a nationally consistent approach for pharmacy intern training. Findings from the evaluation will inform future improvement and expansion of WBA.

The creation and implementation of a "Global North-South" clinical pharmacy practice, education, research collaboration in Sri Lanka: Towards sustainable pharmacy education, practice and research: CASPPER a case study in Sri Lanka

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Undergraduate pharmacy commenced in Sri Lanka in 2007 by 2011 six universities were delivering courses. Prior to these courses pharmacists' primary focus was dispensing. The major early barriers were a shortage of academic staff experienced in teaching and a health system unfamiliar with clinical pharmacy.

In 2009 Australian clinical pharmacists were invited to deliver clinical lectures to a new course in the University of Peradeniya over an 8 week, replacing local clinical pharmacologists assisting pharmaceutical science-based academics.

Following that initial visit, it was proposed to develop a collaborative pharmacy teaching and research group. The Collaboration of Australians and Sri Lankans for Pharmacy Practice, Education and Research (CASPPER) is an international partnership of pharmacy and medical clinicians, educators and researchers from Australia and UK who work with colleagues in Sri Lanka. CASPPER's aim is to develop clinical pharmacy services through education and research, in order to enhance health outcomes in Sri Lanka. This was modeled on the South Asian Clinical Toxicology Research Collaboration (SACTRC) an international collaboration based in the University of Peradeniya. SACTRC was able to fund and facilitate post-graduate pharmacy researchers.

CASPPER is a not for profit company with limited funding and has successfully made significant contributions to undergraduate teaching and postgraduate research. CASPPER has provided 10 in country teaching programs. During COVID teaching continued virtually. The teaching program consisted of problem-based learning including simulations using mock wards and formative Objective Structured Clinical Examinations. CASPPER also collaborated with and provided clinical education to the pharmacy department University of Sri Jayawardenapura, who in 2010 with CASPPER hosted World Health Organisation funded train the clinical pharmacy educator program.

CASPPER formed partnerships with senior local clinicians who championed and facilitated the introduction of clinical pharmacists to their hospitals. Once access was gained , clinical ward-based teaching become a core component of the in-country education program. To support sustainability teaching staff accompany CASPPER staff and students to hospitals undertaking a train the trainer model. Students discuss cases, deliver case presentations and receive formative feedback.

CASSPER supports local research by supervising local researchers. The explicit aim was to generate a local evidence base for the impact of clinical pharmacists to patient outcomes. Face to face and virtual mentoring and supervision of these early career researchers has utilized a combination of local and international collaborators. In addition CASPPER has facilitated international postgraduate training in Australia and UK. To date CASPPER and SACTRC has successfully supported 13 local post-graduate students.

Initial research identified opportunities to optimize medicines. A subsequent controlled study, demonstrated pharmacists significantly improved the resolution of medicine related problems and reduced hospital re-admissions. This methodology has now been extrapolated and replicated by other students to show clinical benefits in patients with chronic kidney disease, diabetes and acute coronary syndrome. Further studies are underway in patients with mental health and cancer disorders.

The CASPPER model is a sustained model of developed (North) countries supporting the growth of local pharmacy education and demonstrating impact through practice based research in (South) countries.

Effectiveness of utilizing analogies in video projects to enhance pharmacy students' learning of kidney physiology

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Background: Kidney physiology is one of the most difficult topics covered in health professions education (Anacleto et al., 2020). In fact, difficulties in understanding complex kidney physiology are significant enough to contribute to some medical students' reluctance to pursue further training in nephrology (Leehey and Daugirdas, 2016). Active learning methods can improve understanding of kidney physiology and overcome this barrier to nephrology education. Video production, in which students create videos to demonstrate their understanding and learning of concepts, is an active learning technique (Singh et al., 2009). However, the impact of video production on promoting student learning within health professions education remains unclear (Liu et al., 2022). Analogy-making has long been shown to facilitate knowledge construction (Pena et al., 2010). Nevertheless, the impact of an analogy-containing student-generated video project to enhance conceptual learning in health professions education is not well understood.

Purpose: This study aimed to assess the effectiveness of utilizing analogies in a video project to enhance pharmacy students' understanding of kidney physiology.
Method: Students were assigned to groups and tasked with creating a video that used analogies to explain kidney physiology processes. Survey responses, a rubric, and an objective test were used to evaluate the project's effectiveness. Pearson's correlation was used to determine association between number of roles or time spent on the project and perceived effectiveness. Mann-Whitney tests were used to compare students' average percent scores on physiology (covered by the project) vs. non-physiology quiz items (data extracted from Examsoft item analysis).

Results: Students generated various analogies, such as making tea or coffee, cars and roads and college application process, to explain kidney physiology. Most of the submitted videos (12/14) successfully met all criteria in the rubric (accuracy of information, use of relevant analogy, creative presentation). All students (n=71) believed that the project was effective, to varying degrees, in reinforcing their knowledge. Time spent on the project positively correlated ($r = 0.25$; $p < 0.05$) with perceived effectiveness of use of analogy, and achievement of most of the learning objectives investigated. Students reported that the project engaged both lower- and higher-order cognitive skills. Quiz scores analysis showed higher average scores of students on physiology-related questions compared to non-physiology items. Notably, this improvement was most marked for bottom-performing students. About 60% of students recommended the use of videos as a class assignment, but only 50% believed that they should be used as an alternative to quizzes. Students suggested specific guidance from instructors, and changes to group collaboration to improve implementation of video projects.

Conclusion: Incorporating analogies in a video project is an effective way to reinforce pharmacy students' understanding of kidney physiology. The findings suggest that this approach can engage students in higher-order cognitive skills, promote creative expression, and foster deeper learning. However, further research is needed to compare this technique's effectiveness to other teaching and learning methods. The findings also highlight the importance of providing adequate guidance to students and effective group collaboration in video projects to enhance implementation.

Development and implementation of a health system pharmacy administration and leadership rotation for fourth year student pharmacists

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Background: There continues to be concern about a leadership void in health system pharmacy. Historically, the curriculum in most colleges and schools of pharmacy has not devoted significant class time to health system pharmacy administration and leadership (HSPAL). As such, student pharmacists have had minimal exposure to this career path. To address this unmet need, concentrations in administration and leadership are being implemented in colleges and schools of pharmacy. Additionally, rotations in health system pharmacy administration and leadership are now being offered. The goal of both of these is to increase student pharmacists' interest in pursuing a career in pharmacy administration and leadership.

Purpose: To describe the development of a fourth-year student pharmacist rotation in health system pharmacy administration and leadership that introduces student pharmacists to the roles and responsibilities of the pharmacy leadership team.

Methods: The executive director of pharmacy services serves as preceptor for the rotation. Eleven overarching objectives for the rotation were developed. Rotation requirements were also developed and include presentation of an administration topic at the executive director's monthly meeting with the PGY1 residents, completion of a major project with submission of a final report, completion of the ASHP Student Leadership Development Program, participation in topic discussions (seventeen), and attendance/participation in a variety of leadership and management meetings (up to twenty depending on time of rotation). When appropriate, the student pharmacist and PGY1 resident doing their administration rotation participated in the topic discussions together.

Results: A HSPAL rotation was successfully developed and implemented for fourth year student pharmacists. The presentations by the student pharmacists have been well received by the PGY1 residents. Further, their major projects have benefited the department and allowed them to get experience working with various members of the leadership team. The student pharmacists felt that the information and exercises contained in the seven modules of the ASHP Student Leadership Development Program complimented the in-house topic discussions. In addition, they liked attending topic discussions with the PGY1 residents as they enjoyed hearing the residents' perspectives. They also felt that the many meetings they attended helped provide a perspective on the magnitude and diversity of the roles and responsibilities of the pharmacy leadership team. Overall, the student pharmacists reported having a thorough understanding of HSPAL at the end of their rotations. Feedback from the student pharmacists included a request for additional smaller projects to complete in addition to the major one and moving the rotation earlier in their fourth year to allow completion of the rotation prior to the ASHP Midyear.

Conclusion: A health system pharmacy administration and leadership rotation was successfully developed and implemented for fourth year student pharmacists. This rotation has been highly ranked with all rotation slots continuously filled since its inception.

Prescribing confidence and perceived competence of non-medical healthcare professionals in Queensland, Australia: A pre-program evaluation in a safe prescribing and quality use of medicines program.

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Background: Queensland University of Technology (QUT) as a tertiary education provider was engaged by Queensland Government to deliver a prescribing competency program for non-medical healthcare professionals. The learning outcomes (LOs) of the QUT Safe Prescribing and Quality Use of Medicines (QUM) Program included to:

1. Establish therapeutic partnerships with patients, to identify health issues and collaboratively implement a strategy for treatment, monitoring and review, underpinned by a person- cantered prescribing process;
2. Apply up to date clinical therapeutics and QUM knowledge to identify appropriate options for treatment, monitoring and review, within scope of practice;
3. Prescribe safely, effectively, appropriately, judiciously and professionally according to national standards, ensuring patient safety and legal requirements are met;

4. Prescribe within a collaborative healthcare environment; and
5. Prescribe according to the NPS Prescribing Competencies Framework (2021)

Program topics included: 1) clinical governance; 2) professional, legal and ethical prescribing; 3) information gathering; 4) medication histories; 5) adherence, 6) clinical reasoning and decision making; 7) collaboration, 8) communicating the decision to prescribe; 9) monitor and review; and 10) adverse drug reactions.

Purpose: To explore non-medical health professionals' prescribing confidence and perceived competence aligned with LOs and program topics prior to commencing the Program.

Method: Prior to Program commencement an electronic survey was distributed to learners using Qualtrics. Participants were asked to indicate their level of prescribing confidence and perceived competence using a 7-point Likert-like scale from 1, no confidence/not yet competent to 7, complete confidence/expert, respectively.

Results: There were 184 learners enrolled, 175 pharmacists and nine physiotherapists. 117 completed questions (63.6%) relating to confidence and perceived competence for the Program LOs and topics. This included 109 pharmacists (93.2%) and eight physiotherapists (6.8%). Participant experience as a health professional ranged from <1 year to >40 years (Median: 11-20 years). All respondents practiced in Queensland with one also working in New South Wales. With regards to prescribing confidence, respondents scored a median of 5 for LO1, LO2, LO3 and LO4, and a median of 4 for LO5. With regards to perceived competence respondents scored a median of 4 for seven of the ten Program topics. Perceived competence in three topics: information gathering, medication histories and adherence, all attained a higher median score of 5. Physiotherapists reported lower scores compared with pharmacists for all LOs and Program topics.

Conclusion: Prior to Program commencement, participants showed a relatively high confidence across LOs suggesting a familiarity with concepts, and a lower perceived competence in Program topics. Postgraduate learning in topics which some healthcare professionals are already familiar presents a challenge to education providers to deliver engaging learning material to develop safe prescribers. A post-program evaluation will also be conducted to evaluate any variation but more importantly to identify increased comprehension of key learning in the context of prescribing. This is critical for unleashing the potential of health professionals to learn and practice to full scope and to grow the non-medical prescribing workforce.

Undergraduate and graduate entry final year pharmacy students' work-readiness

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Background: Work-readiness is a set of competencies and attributes possessed by a prospective employee that are favourable to an employer. Four factors that are important determinants of work-readiness of an individual: personal characteristics, organisational acumen, work competence, and social intelligence (Caballero et al, 2011). The Australian Pharmacy Council's accreditation standards define "fitness-to-practise" and describe readiness-to-practise "from a competency perspective (including knowledge, skills, behaviours and attitudes), and the capacity to undertake professional practice safely from the perspective of wellbeing and impairment."

Purpose: The aim of this study was to compare indicators of entry-level pharmacist work-readiness between final year students enrolled in 4-year undergraduate B.Pharm and 2-year accelerated graduate-entry M.Pharm programs between 2018-2020.

Methods: This study undertook a mixed methods approach. Quantitative analysis of performance on similar competency-based assessments in the "Professional Practice" unit of study was carried out, comparing 452 B.Pharm and 143 M.Pharm students between 2018-2020. Comparisons included individual tutorial simulated case marks, overall tutorial performance, medication review assessment marks, and final unit of study marks. Triangulation of data collected vis focus groups were analysed using inductive content analysis and mapped to the self-determination theory to explore student perceptions of their own work-readiness.

Results: No significant differences in performance criteria between B.Pharm and M.Pharm. The focus groups showed that students in both programs had elevated levels of confidence and self-perceived competence, exhibiting no major differences in the emerging four themes of Learning on clinical placements, Importance of work experience, Increased simulation-based learning and assessment, Focus on community pharmacy. The main factors affecting these perceptions were clinical placements, simulation-based learning and assessment, work-experience, and focus on community pharmacy.

Conclusion: The results of this study suggest that both the undergraduate and graduate-entry programs equally prepare students for entry-level pharmacist work-readiness. Future work will compare stakeholder indicators of entry-level pharmacist work-readiness between the undergraduate and graduate-entry programs.

Humanising pharmacy curriculum through purpose-driven learning: A pilot project at senior care home

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Purpose-driven learning is an education philosophy that focuses on unlocking each learner's unique inner strengths. This approach moves away from theory-based education to real-world practice. While educators recognize the value of this approach, many are uncertain on how to implement it within the constraints of a conventional education framework. In this paper, we describe our experience in introducing a purpose-driven project as a learning activity for our Year 4 Pharmacy students.

In Malaysia, most senior care homes are manned with personnel with little knowledge about medications. This leads to a high prevalence of polypharmacy, medication errors and adverse drug events. Elderly is more vulnerable to harms from adverse drug events due to age-related pharmacokinetic and pharmacodynamic changes. For this reason, we saw senior care homes as a suitable avenue for purpose-driven learning, as pharmacy students would be able to address the unique medication-related needs of elderly and learn to work with other professionals in a real-world setting while simultaneously making a significant contribution to society and witnessing the potential positive effects their practice can have on the lives of others.

This pilot project was initiated with a visit to a senior care center by six academic staff together with the center manager, nurses and attending physician. We then briefed the Year 4 students on our needs assessment findings, project plan and invited volunteers to be involved in the project. Twelve out of 44 students volunteered to participate in the project. We brought the volunteers to the center for them to experience first-hand the complexity of medication use in elderly. Following this, the students were tasked to design new medication reconciliation form, medication list and medication administration chart to be used for the project. The students grouped themselves into pairs and each pair was responsible for up to three residents. Weekly, the pairs took turns to visit the center accompanied by an academic staff to review the residents' medications and prepare an updated medication list. Any discrepancies were highlighted to the nurse and documented for the attention of the attending physician. In the subsequent visits, the students organised the residents' medication stock including checking for expired and discontinued medications as well as provided medication counselling to the residents. The students also assisted in the proper disposal of expired and discontinued medications.

This project was carried out for a period of 14 weeks and medication reconciliation and review was completed for 17 residents. The main issues identified were duplicate and contaminated medications due to improper storage, inaccurate medication strength and improper medication administration time. Moving forward, we plan to integrate this project as part of a module requirement tied to learning outcome and assessment. We see this project and senior care homes as a relevant practice site for pharmacy students in addition to their hospital clerkship and community pharmacy placement. We believe the purpose-driven project would create awareness and inspire the students on the impact that they can create in the community by applying their pharmacy knowledge and skills.

Training of pharmacy assistants in Papua New Guinea (PNG) through the certificate in basic pharmacy management (CBPM) program at the university of Papua New Guinea

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The Discipline of Pharmacy in the School of Medicine and Health Sciences , University of Papua New Guinea, has rolled out Certificate in Basic Pharmacy Management for the second cohort (CBPM-2) in August 2022. This is a continuation of the existing CBPM program in Papua New Guinea (PNG), which had in the past produced 56 pharmacy assistants as the first cohort of graduates. Upon completion of the course the Pharmacy Assistants shall join the health workforce category for levels 1-2 in the community health posts, providing pharmaceutical services, [1]. In some cases, they may fill positions in health centers and district hospitals [2]. The pioneer pharmacy assistants were trained in 5 pilot

Provinces with Provincial Health Authorities (PHAs) then; Milne Bay, West Sepik, Western Highlands, Eastern Highlands and Western provinces from 2016 - 2018 [2]. Preliminary assessments of services in the above health facilities by pioneer graduates in the workplace indicates improved procurement supply and quality storage of medicines and medical supplies. This time, CBPM-2 has managed to include training to additional PHAs including New Ireland, West New Britain, Southern Highlands and Manus provinces with funding support from the United Nations Population Fund (UNFPA) and from some PHAs. The major challenge however, is that; although the National Department of Health (NDoH) would like the CBPM program to be extended to the entire 22 provinces of the country [3], [4], [5] lack of funding continues to be a limitation. The authors will discuss the objectives of the program, achievements, challenges and recommendations for way forward.

Sustainability in pharmacy education

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Background: Sustainability is one of the cornerstones of the University of Helsinki strategy. In Faculty of Pharmacy, the Generation Green task force begun working on incorporating sustainable development principles and environmental aspects into education as a part of the 2015 curriculum reform. Currently, the faculty is establishing the world's first professorship in sustainable pharmacy.

Purpose: The authors need to ensure that our graduates possess key sustainability competences as they begin their careers, such as benign-by-design drug development, green chemistry principles, rational pharmacotherapy, and mitigating the environmental impact of pharmaceuticals. The study, built on Generation Green's research-based curriculum work on integrating sustainability content throughout the degree, describes different approaches to implement sustainability perspectives in pharmacy education through case examples.

Method: Three cases demonstrate the implementation of sustainability perspectives in pharmacy education at different levels, from course level (Sustainable Health) to degree level (MPHARM), as well as in teaching methods.

Results: Case: Sustainable Health
A new course was created to enhance sustainability content in the curriculum and help students develop a holistic understanding of sustainability. The course applies the United Nations' 17 Sustainable Development Goals as the basis for assignments on human, animal, and environmental

health, which the students compile into an e-portfolio. The course is being piloted in 2023, with plans to offer it as an open online course afterward. Completed portfolios from the first run demonstrated students' strong motivation to learn about sustainability in their field and highlighted the need for a dedicated course on the topic.

Case: MPHARM
Master's Programme in Pharmaceutical Research, Development and Safety (MPHARM) is an international programme offered at the Faculty of Pharmacy since 2022. As a newcomer in the faculty's education portfolio, MPHARM has explicitly taken sustainability as one of its key themes. Among the learning outcomes, the students are expected to acquire understanding on the sustainability aspects of pharmaceuticals and an ability to use this knowledge in the future profession. Based on student admission interviews and surveys on the first enrolled students, bringing up the sustainability themes has been highly valued and considered as a key motivating factor for interest towards the program. In spring 2023, MPHARM attracted 257 applications, and 38 new students were accepted into the programme.

Case: Sustainability in pharmacy teaching
Laboratory skills are important for pharmacists. They require hands-on training, but practical courses require resources and generate waste in the form of disposables and chemicals. While any considerable reduction in training is unviable, there is room for refinement. A promising approach piloted in the faculty uses virtual and augmented reality tools for guiding laboratory work. Practising in virtual environment reduces stress and improves orientation by allowing dry runs, resulting in fewer errors and more effective hands-on training.

Conclusion: Sustainability can be exhaustively integrated into education programmes, at all levels from courses to entire study programmes. We promote environmental responsibility and sustainability in both the content and methods of our teaching, and our experiences can offer valuable insights on integrating sustainability principles into pharmacy education.

The role of undergraduate education in developing a commitment to lifelong learning and continuing professional development

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Background: Being a 'Lifelong learner' is an essential quality for graduates. Despite this, many graduates leave university without the ability to learn effectively and there are still educational gaps in what constitutes lifelong learning and how it can be taught. If pharmacy programs are to encourage lifelong learning it is essential that guidance for curriculum is established to support these outcomes.

Objective: 1. Define lifelong learning in the context of the pharmacy profession; 2) Establish how Australian pharmacists engage in CPD learning; 3) Teach CPD skills to pharmacy undergraduates and evaluate their engagement and learning

Method: Three studies were carried out to explore the aims. The research was mixed methods, guided by Biggs constructive alignment theory and used a parallel convergent research design.

Results: Discussion with national and international pharmacy stakeholders identified a list of lifelong learning outcomes, with motivation for learning ranked as the most important outcome. A national survey of Australian pharmacists demonstrated they were motivated to learn but their perceived value and use of the framework were barriers to CPD engagement. Students found relevance and value in being taught CPD skills, but assessment results demonstrated the skills were hard to learn

Discussion: Combining the studies identified that motivation for learning and knowing how to learn were the pre-requisites for learning. This research has provided evidence that teaching CPD skills in the undergraduate program is valuable but also highlighted the importance of providing ongoing support for CPD post-registration.

Advancing leadership competencies through problem based learning–An experimental approach for clinical pharmacy students

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Posters Wednesday, September 27, 2023, 12:30 PM - 2:30 PM

Background: Leadership is an essential skill for pharmacy students to become competent healthcare professionals who can collaborate with diverse teams and provide quality patient care. This study aims to investigate the effectiveness of problem-based learning (PBL) in improving leadership competencies among pharmacy students and to validate a rubric to assess these competencies.

Method: The study used a quasi-experimental design with two groups: a traditional didactic lecture group and a PBL group. The participants were third-year pharmacy students from a bachelor of pharmacy program assigned to the two groups, with 50 students in each group. The course module on Leadership in Clinical Pharmacy was delivered over a 10-week period, with the traditional lecture group receiving didactic lectures, while the PBL group received problem-based learning sessions on leadership competencies. Both groups completed a validated rubric assessing leadership competencies after the course module. The rubric scores compared using independent t-tests.

Results: The findings suggest that there were no significant differences in the baseline leadership questionnaire scores between the control and experimental groups, indicating that both groups were similar in terms of their initial leadership abilities. The results suggest that the experimental group had higher mean scores than the control group in all criteria. The largest difference between the groups was observed in the Collaboration criterion, with the experimental group scoring 0.90 points higher on average than the control group. The smallest difference was observed in the Initiative criterion, with the experimental group scoring 0.34 points higher on average than the control group.

Conclusion: The study findings provide insights into whether PBL can be an effective teaching method to improve leadership skills and meet the NBA (National Board of Accreditation) accreditation standards. The development and validation of a rubric to assess leadership competencies will contribute to the assessment of pharmacy students' leadership skills, providing valuable insights for future pharmacy education programs.

Building the next generation of pharmacy leaders

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Background: Much has been said about healthcare leadership and the critical role that leaders in pharmacy play in advancing our profession. Teaching leadership concepts alongside opportunities to practice leadership skills and receive feedback can greatly enhance the development of future leaders.

Purpose: The purpose of this project is to: 1) review the current landscape of leadership development for one college of pharmacy; 2) identify gaps and needs in leadership development for student pharmacists; 3) create sustainable leadership development opportunities to meet the students' needs.

Methods: The current status of leadership topics in the curriculum was reviewed via our curricular map. Then, stakeholder meetings were conducted to review needs for leadership development. A vision of leadership development for students was created and implemented.

Results: The curricular map showed some leadership development through required coursework for all students through curricular and co-curricular experiences via didactic and experiential learning. Furthermore, some students participated in elective offerings in leadership development. Stakeholder meetings with students and executive leadership board identified gaps in student leadership development despite the current coverage in the curriculum. College faculty worked collaboratively with campus partners make available additional leadership

elective courses and a collaborative leadership certificate to improve our students' leadership development. The entire leadership program will be presented with descriptive statistics.

Conclusions: Leadership development continues to be a priority for many schools and colleges of pharmacy. This program created more opportunities for students to develop their leadership knowledge and skills with experts in the fields.

The importance of undergraduate skill development for success in honours research: A student perspective

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Background: There is a growing interest in skills development for graduates across all academic disciplines to enhance job readiness and employability. However, there is limited knowledge on the preparedness of students who pursue research pathways after completing their undergraduate education. In this study, we focus on the skill development of undergraduate students pursuing a Bachelor of Pharmaceutical Science, from their perspective, in terms of their preparedness for their first year of research training. In Australia, an Honours degree is a specialised fourth year of undergraduate study. The Honours Program at the Faculty of Pharmacy and Pharmaceutical Sciences (FPPS), Monash University, offers 4 distinct 'themes' - Drug Discovery Biology; Drug Delivery Disposition and Dynamics; Medicinal Chemistry; and Pharmacy and Pharmaceutical Education.

Purpose: This study aims to determine student perceptions on their level of proficiency in a variety of discipline-specific and generic skills that they have acquired throughout their three-year undergraduate program as they commence their Honours Program at FPPS.

Methods: In 2023, a total of 51 students were enrolled into the FPPS Honours Program at Monash University. Upon commencement of the program, all 51 students were surveyed to determine their perspectives on the level of proficiency they had attained in various discipline-specific and generic skills in their undergraduate studies. Additionally, the students were asked to rate the perceived importance of these same skills for their Honours year.

Results: Survey results were collected from 76% of enrolled students, with representation from all 4 themes. All respondents were enrolled full-time and 90% had completed their 3-year undergraduate degree within FPPS. Students reflected on their level of discipline-specific and generic skill proficiency attained during their undergraduate degree as well as the skills they perceived to be important for successful completion of the Honours program. Of the 11

discipline-specific skills, students perceived their manipulative laboratory skills, pharmacology terminology and fundamental pharmacology principles to be the most well-developed. The students considered analytical skills, fundamental pharmacology principles and manipulative laboratory skills to be the most important skills for successful engagement with the Honours Program. Of the 12 generic skills, the students perceived their independent learning abilities, teamwork, and professional and ethical behaviour skills were the most well-developed through their 3-year undergraduate degrees. The students anticipated report writing, time management and independent learning ability to be the most important generic skills for the Honours Program.

Conclusion: This study provides insight to the perceptions of students embarking on an Honours Program in terms of discipline-specific and generic skills they consider crucial for successfully completing the program. This study also explores student perceptions about their proficiency in these skills after finishing their three-year undergraduate studies. Further insights will be elucidated from gaining the perspectives of the research project supervisors and whether the students' perceptions alter at the completion of the program.

What and how do residents learn in a pharmacy foundation residency program?–A synthesis of literature, resident experiences and theory

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Background: The Australian Pharmacy Foundation Residency Program prepares new-to-hospital and early-career pharmacists for extended roles and advanced pharmacy practice. While certain outcomes from residency programs have been described internationally, knowledge of what residents perceive they achieve through the completion of a residency and what supports them is limited in the Australian setting.

Purpose: To review literature reporting outcomes achieved through residency training internationally, integrate review findings with pharmacists' experiences and achievements during their residency and workplace learning theories to ascertain what leads to desired residency outcomes for pharmacy residents and their workplaces, and when and how these are achieved.

Method: A scoping review of peer-reviewed and grey literature reporting outcomes from residency programs was conducted, with a focus on contexts in which these were achieved and which mechanisms facilitated outcomes in specific contexts. Focus groups and interviews with twelve early-career or new-to-hospital pharmacists who recently completed a residency program in an Australian hospital thematically explored and analysed their achievements and

experiences and what they perceived as enablers and barriers to achievements. Learning theories provided theoretical frameworks to synthesise review and interview findings to establish the influences which favour positive outcomes of the pharmacy residency programs.

Results: The literature review showed that residency training supports the development of non-clinical skills such as research, teaching and leadership, while reporting on clinical skill development was scarce. Contexts which provided structured experiential learning opportunities and mentorship contributed to learning in the workplace and positive outcomes, for example, research project completion and publication rates.
Findings from the literature were reflected in five main themes generated through thematic analysis of how pharmacists discussed their experiences and achievements throughout their residency. Pharmacists described outcomes and achievements as gaining confidence to take on new and challenging roles, advancing their career and developing a deeper understanding of their role and potential in the healthcare system. Skill development was accelerated by the structure and assessment requirements of the residency program and support by mentors, which changed their attitude towards feedback and competency assessments. The findings align with workplace learning theories, in that training opportunities and activities of experiential curricula, peer and mentor interactions, but also learner engagement and motivation are essential bases for effective workplace learning.

Conclusion: The Australian Pharmacy Foundation Residency Program, like similar residencies, accelerates pharmacists' skill development, particularly in non-clinical areas and facilitates a deeper understanding of their role. Dedicated and qualified mentorship and authentic learning opportunities enhance motivation, experiences and outcomes for residents and workplaces.

Teaching associates' perspectives of online teaching and learning in a pharmaceutical science degree

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Background: COVID-19 restrictions have forced instructors to quickly adapt to the online environment by familiarising themselves with various strategies for teaching online. One of the online teaching strategies employed at Monash University in the Pharmaceutical Science course was the combination of breakout rooms in synchronous ZoomTM meetings with Google DocsTM, which replaced face-to-face workshops.

Purpose: This project aims to identify approaches used by teaching associates (TAs) to facilitate small-class

synchronous workshop-style online classrooms and to analyse their perspectives of online teaching and learning.

Method. Seven TAs teaching into the Bachelor of Pharmaceutical Science degree were observed in their online classrooms and interviewed in semi-structured manner. The observation data was analysed using a frequency analysis approach where the number of times a particular facilitation strategy that is known to be effective was used by TAs was counted and the interview data was analysed qualitatively using the reflexive thematic analysis approach.

Results: The analysis of the interviews showed that setting expectations and having a structured workshop with judicious group formation and instructor-prepared Google DocsTM were considered effective strategies for facilitating small synchronous online classrooms. However, non-compulsory classes that were not assessed and student-prepared Google DocsTM were perceived as less effective. Identified areas for improvement included promoting camera use during class, holding TA briefing sessions prior to workshops earlier to allow more preparation time, and expanding training for online facilitators. Barriers to improvement were also revealed, such as students' unfamiliarity with their peers and a delay in the availability of facilitator notes provided to TAs by academics. The former discouraged students from using cameras during class while the latter led to the TAs feeling under-prepared for the workshops which they were facilitating. Analysis of the classroom observation data revealed that the TAs used wide range of facilitation strategies that are known to be effective, with the most frequently used facilitation approaches including lecturing, questioning, listening, and providing feedback. TAs also employed various Zoom features where the most commonly used feature was moving between breakout rooms followed by sharing screen.

Conclusion: By keeping the identified successful teaching approaches while implementing strategies to address both the not-so-effective approaches and barriers to improvement, instructors would be able to create more effective and meaningful online learning experiences for students.

A pilot program for student training in a PIPE-based curriculum at Tianjin University

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Posters Wednesday, September 27, 2023, 12:30 PM - 2:30 PM

Background: Tianjin University (Peiyang University), established in 1895, is the oldest university for modern higher education in China. The School of Pharmaceutical Science and Technology (SPST) is a PRC-National International Demonstration School, aiming to develop an international research and education environment within current Chinese education system.

Purpose: To implement key curriculum reforms (PIPE) that provide an international platform for training students majoring in Pharmaceutical Science, to give them top quality research experiences, and to motivate them toward activities that can contribute more to medically relevant services globally.

Methods: A wide investigation of international peer institutions, led us to formulate a new international curriculum of pharmaceutical science in English. More than 60 compulsory and selective courses were opened, and lectured by both international and domestic professors. Our PIPE-based Curriculum embodies four principles: P (Professionalism), I (Internationalization), P (Practice), and E (Environment). It has been established and applied since 2015.

For P (Professionalism), The program prepares students as Pharmaceutical Science professionals. The teaching is broad and focused on creative innovation, critical analysis, and ethical practice. Our students are not only masters of technique but innovators asking important questions and developing ethical solutions to many of contemporary issues in health science.

For I (Internationalization), a mixed faculty team of international and domestic faculty members has been established. The target proportion of international faculty members is 1/3 to 1/2, with pre-Covid numbers reaching 46%. Hundreds of international students coming from more than 20 countries joined this program as well. These international students study and do research together with domestic students sharing experiences and developing broader perspectives.

For P (Practice), a special Practice training system has been applied, with 55% of class hours in the whole curriculum devoted to practical work. Students obtain basic practical training in the first 5 semesters, and then enter research groups in the 6th semester to pursue their research thesis as prospective master students.

For E (Environment), SPST provides a widely supportive environment for the PIPE program, including English-based official language, a strong international faculty team, international teaching modes, a series of student exchange programs, and a global culture atmosphere. To these programmatic elements we add state-of-the-art facilities also for the undergraduate curriculum.

Results: Students enjoyed this program and established effective study habits. Nearly 75% students have experience in international exchanges or participation in international affairs. The rate of further degree study is more than 65%, and the rest of 35% students enter drug administrations, companies, industries, etc. Feedback from the questionnaire shows that employers give high praises in all aspects and specially recognize the quality of critical thinking and internationalization training.

Conclusions: Results showed that this program can provide students with effective training on solid basic science, professional practice and international communication, so that students have the capabilities needed for future study and career. This program has made a valuable contribution

to health science education in China. We believe it could be a significant reference for student training, especially in non-English speaking countries wishing to have greater international character.

Pharmacy students' perspectives on online and on-campus learning and assessment in interdisciplinary subjects and skills

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RFMO-01 - Rapid Fire Session Monday, M1-M2, September 25, 2023, 11:00 AM - 12:30 PM

Background: A blended instructional model comprising of online learning and in-person classes was implemented at the Monash Pharmacy during the COVID 19 pandemic. Online learning activities consisted of self-directed learning modules with readings, short video clips and self-test quizzes and live-stream active learning webinars. In-person learning component included small group collaborative learning workshops facilitated by topic lead academics and teaching associates on campus.

Purpose: The purpose of the study was to examine the learning experiences and perspectives of pharmacy students in on-campus and online teaching and assessment activities in various pharmacy disciplinary areas (science, practice and clinical pharmacy knowledge and skills) with an aim to optimise instructional design and delivery approaches for better learning, engagement and outcomes.

Method: A retrospective, observational, cross-sectional survey was designed and implemented in the form of a 5-point Likert scale. The survey questionnaire was distributed electronically to undergraduate pharmacy students. The study examined students' perceptions, satisfaction and engagement in online vs. face to face classes and assessments in various pharmacy disciplinary areas including enabling sciences (physiology, pharmacology), technical sciences (formulation and drug delivery, pharmacokinetics), pharmacy practice, and clinical pharmacy. An open-ended question was used to gather qualitative students' feedback and suggestions.

Results: Over 60% of participants preferred the live-stream active learning lectures for pharmacy practice and clinical pharmacy topics compared with <50% for enabling and technical sciences. Comprehensive care (Clinical Pharmacy) topics were found to be effective and engaging when delivered as live stream active learning lectures than physiology and pharmacology topics which worked well as moderated online workshops. 70% did not perceive that online workshops enabled them to effectively participate and contribute to class activities involving problem solving, critical thinking and oral communication (verbal and non-verbal) tasks. 60% of students believed that online exams was easier than on-campus in-person exams. 75% felt less anxious to take an online assessment compared with face to face assessments. 40% perceived assessments involving

pharmacy professional skills (e.g. history taking, patient counselling) would be harder to perform online than face to face in person. Qualitative comments indicated flexibility as the key benefit whereas connecting with peers and instructors as a major limitation for learning online.

Conclusions: This study showed pharmacy students preferred a blended instructional model consisting of self-directed online modules for preparatory and interactive learning, livestream lectures for content clarification, feedback and in-depth learning, and on-campus face to face workshops for application of knowledge and practising skills. There was a trend for differences in students' satisfaction of online learning in different disciplinary topics where clinical and therapeutic topics were thought to be more engaging than enabling and technical sciences. Online learning was popular for its flexibility, autonomy and anonymity whereas in-person face to face classes promoted human interactions and authentic connection and development of professional skills including verbal and non-verbal communication and teamwork.

Pharmacy students' perception of a serious game prototype for teaching and learning of clinical reasoning in symptom assessment and triage

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RFMO-01 - Rapid Fire Session Monday, M1-M2, September 25, 2023, 11:00 AM - 12:30 PM

Background: Clinical Reasoning (CR) in assessment and triage of patients' symptoms is an essential cognitive skill for pharmacists. Sound CR underpins the comprehensive yet efficient information gathering and processing required for accurate identification of the clinical problem and triage decisions for effective and safe care of the patient.
Although CR is introduced to pharmacy students during pre-clinical years, patient encounters and practices are limited by timetable and resource constraints. Hence, students struggle to apply CR during objective standardised clinical exams under time pressure or when facing real patients. While CR could be honed through experiential learning during clinical years, the pressure and stress associated with high-stake real-world clinical environments may pose a steep learning curve and hinder learning. A serious game (SG) was thus designed to enhance the teaching and learning of CR for pharmacy undergraduate students.

Purpose: This mixed-method study aimed to evaluate students' perception of an SG prototype comprising of three interactive game scenarios of increasing difficulty level, on assessment and triage of "chest pain" in a community pharmacy setting.

Methods: Nine Bachelor of Pharmacy (Year 2) students at the National University of Singapore volunteered for a one-hour gameplay session in February 2023, where they followed a CR framework (embedded within the game

scenarios) to select relevant questions for history-taking and identify the likely differential and triage decision for the "patient" avatar. Faculty-led debrief was provided at the end of the session to clarify learning points relating to the clinical cases.

Quantitative responses pertaining to the Game Evaluation Questionnaire (GEQ) and confidence in CR were captured via a set of pre-and-post self-administered hardcopy survey. Qualitative feedback was captured via individual semi-structured qualitative zoom follow-up interviews.

Results: The participants were mostly male (n=6), studied 5-6 hours per day (n=5), had additional clinical attachment/exposure besides the usual in-course experiential learning (n=5), and played computer/mobile games (n=7).

Higher confidence levels in aspects of "Ruling In", "Ruling Out", and "Planning the Next Course of Action" within the CR framework were reported after the gameplay (p<0.05). Of the 11 GEQ domains assessed, participants were "Extremely Satisfied" with the prototype's learning effectiveness and utility, and "Somewhat Satisfied" on domains of enjoyment, visual adequacy, relevance, clarity of goals and feedback.

During the follow-up interviews (n=3), participants emphasised the SG's value in guiding students through triage decision-making process, with suggestions for more prompts and explanations on the selection of questions for history-taking. While physical formative individual role-play assessments would not be replaceable (as human interactions cannot be fully simulated), learning through gameplay was deemed more enjoyable and less stressful. Furthermore, the summary notes within each game scenario were self-sufficient for learning, without the need for faculty-led debrief. Hence, with more scenarios related to the curriculum, the SG can serve as a supplementary e-learning resource for more practices on CR in students' own time.

Conclusion: Overall, the SG prototype was favourably perceived by students for enhancing CR training. Further evaluation of the fully developed SG involving longer gameplay exposure is warranted to determine its benefits and limitations.

Impact of mentorship programs on pharmacy undergraduates' and new pharmacists' professional development in Singapore

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RFMO-01 - Rapid Fire Session Monday, M1-M2, September 25, 2023, 11:00 AM - 12:30 PM

Background: Mentoring has been found to be associated with positive personal and professional outcomes. Mentorship programs differ depending on the needs and goals of individuals at different stages of their career development. Different models such as one-on-one or group approach have also been utilized. Since 2021, a nine-month long mentorship program (INSPIRxE) for pharmacy and pharmaceutical science undergraduates in the National University of Singapore was launched where pharmacy alumni mentored students in a group mentoring approach. In parallel, a one-year mentorship program for new pharmacists was implemented in Alexandra Hospital (AH) where a one-on-one model was adopted.

Purpose: To measure the impact of the INSPIRxE and AH mentorship programs on mentee's professional development in terms of knowledge, skills and attitude. The sub-aim is to compare the preference for the mentoring approach.

Methods: Thirty-eight mentees were mentored by 22 alumni mentors in 11 small groups in the INSPIRxE program. Six mentees were mentored by one mentor each, and four mentees were mentored by two mentors in a small group in the AH program. Mentors and mentees of both programs were invited to participate in a survey. Group semi-structured interviews (SSI) was conducted for mentors and mentees of the AH program.

Results: The response rate was 89% (INSPIRxE mentees), 64% (INSPIRxE mentors), 75% (AH mentees) and 83.3% (AH mentors). More than 70% of INSPIRxE mentors and mentees agreed that mentees gained knowledge on different career pathways, enhanced their personal skills and gained insight about their interests and passion. Similarly, AH mentors and mentees felt that mentees gained clinical skills and furthered their career development. 80% of mentors and 83.3% of mentees agreed that the clinical discussions helped enhance mentees' confidence and skill sets to manage pharmacy work and challenges. 66.7% and 80% of mentees and mentors at least agreed that the AH mentorship program helped mentees navigate career development and self-care. Participants of both programs felt their effort and time spent were worthwhile.

If given a choice, 52.6% of INSPIRxE mentees would prefer the group mentoring approach as opposed to 23.7% who would prefer a one-on-one model. 60% and 40% of the AH mentees expressed preference for the group mentoring and one-on-one approach, respectively. The opportunity to hear different opinions were among the reasons for those who preferred the group approach. For the AH program, sharing of the pre-session preparation favoured the group mentorship model. Predisposition towards one-on-one model was due to more efficient scheduling and more individualised approach.

Conclusion: Undergraduate students and new pharmacists gained different sets of knowledge and skills relevant to their needs through the two mentorship programs. The group mentoring approach appeared to be favoured as it offered diverse views and peer support. Future programs could start with a group approach and offer one-on-one sessions for those who require individualized advice.

Adaptation of health literacy in clinical pharmacy curriculum–An outcome based education analysis

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RFMO-01 - Rapid Fire Session Monday, M1-M2, September 25, 2023, 11:00 AM - 12:30 PM

Background: Quality patient care depends heavily on health literacy, which is now widely acknowledged as a crucial ability for all healthcare workers, including pharmacists. The objective of this research was to assess how well a health literacy course affected pharmacy students' understanding of, attitudes towards, and actions for enhancing health literacy.

Methods: Using 60 Pharm.D Students in their IV and V years, the study was carried out utilizing a pre-post design. The health literacy course was taken by thirty students, but not by the other thirty. The Brief Assessment Questionnaire developed by the Agency for Healthcare Research and Quality was used to evaluate health literacy. During the Objective Structured Clinical Examination (OSCE), a rubric created specifically for the purpose was used to evaluate the students. In order to comprehend the students' Knowledge, Attitude, and Practices towards enhancing health literacy, a KAP survey questionnaire was also used.

Results: The students who had taken the course had significantly higher mean scores for the OSCE session ($p < .0001$), knowledge ($p = 0.0072$), attitude ($p < 0.0001$) and practices ($p < 0.0001$) domains compared to those who did not take the course. Improving the health literacy abilities of pharmacy students and, eventually, patient outcomes, requires integrating health literacy instruction into pharmacy curricula and evaluating the results of such courses.

Conclusion: The findings of this study support the necessity of incorporating health literacy instruction into pharmacy curricula and demonstrate the value of such programmes in enhancing students' understanding of and behavior towards enhancing health literacy.

Exploring educators' perspectives on the use of computer-based simulation in pharmacy practice education

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RFMO-01 - Rapid Fire Session Monday, M1-M2, September 25, 2023, 11:00 AM - 12:30 PM

Background: Computer-based simulation (CBS) is a valuable training tool for healthcare students, yet its uptake in pharmacy schools remains low. To address this gap, a global survey study was conducted to explore pharmacy educators' views on CBS implementation in pharmacy curricula.
Purpose: To understand why uptake of CBS remains low in pharmacy practice teaching, and form hypotheses about how uptake might be improved.

Method: A 15-minute online survey was built using Lime Survey, consisting of 16 close-ended 6-point Likert scale questions, and 6 open-ended questions. The questions were developed to explore various potential barriers to the uptake of CBS, which had been identified in advance from the existing literature. Respondents were asked about their teaching experience, knowledge of CBS, awareness of available simulators, usage of CBS in teaching, barriers and facilitators to using CBS, and stakeholder willingness to support CBS adoption. The survey was opened in February 2023, and will be closed in September 2023.

Results: (preliminary findings) To date, 75 participants from 23 countries have completed the survey. The majority of respondents were aware of CBS availability (86.1%), and some had experience using CBS (66.7%). The most reported usage occurred between 2021-2022 (51.8%), with 20% of educators using more than one simulator, and 44.6% encouraging their students to use CBS for independent study. In total, 69.6% of respondents agreed that CBS should be used more often. Many educators believed that their students would support CBS implementation (82.0%), as did the educators themselves (81.9%). The perceived willingness of leaders and accreditation bodies to support CBS implementation was similar, with 70.8% and 73.6%, respectively. Emerging themes from open-ended questions included the need for more pre-built case scenarios, paying attention to cultural and regional needs, and products being unsuitable for advanced training. Further in-depth analysis of the data collected in the research project is currently underway.

Conclusion: Preliminary findings suggest the reported uptake, awareness, and enthusiasm for the technology was higher than anticipated, although there is still room for greater awareness. Those developing CBS for pharmacy practice may wish to focus on increasing the number of cases available, better supporting regional variations in practice, and improving support for advanced training.

International doctor of pharmacy (ITPD) program: Creating opportunities for mid-career pharmacists worldwide

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RFMO-01 - Rapid Fire Session Monday, M1-M2, September 25, 2023, 11:00 AM - 12:30 PM

Background: The University of Colorado's ACPE-accredited, advanced standing, hybrid-delivery international Trained PharmD (ITPD) program was created in 2014 for mid-career pharmacists worldwide to advance patient-centered pharmacy care (PCPC) in their home countries. A longitudinal portfolio is required of all ITPD students to self-assess and reflect on their learning needs and achievements, including on their growth and development toward goals of advancing PCPC. Ongoing program evaluation informs optimization of the curriculum and achievement of programmatic goals.

Purpose: To identify impactful courses and how students are using them to advance PCPC.

Methods:
- As part of their portfolio, students submit nine 0.5-1 page written reflections, identifying impactful courses, along with why they are impactful, and how they will use the courses to advance PCPC in their home countries.
- A qualitative analysis of each reflection, with reviewer cross-check, was performed, identifying courses noted, stated plans or goals, practice settings of goals, and challenges toward goal achievement.
- NVivo™ (2023, Version 14, Release 1.7.1), a qualitative analysis platform, was used for tracking and basic quantitative analysis of findings.
- Basic results were then analyzed by curricular domains [PCPC, including pharmacotherapy series and patient-centered care courses; Drug Info (DI)/ Evidence-based Medicine (EBM) series; Interprofessional and ethical practice (IPE); pharmacy practice and healthcare policy; experiential/clinical rotations].
- The frequency of noted courses (or domains) relative to total course credit hours (frequency noted/credit hours) was calculated.
- Plans, settings and challenges were analyzed directly, and grouped by similarity when appropriate.

Results: Seventy-two reflections from 8 of 16 graduates (2017-2021) have been analyzed by 2 reviewers (n=16 reflections were cross-reviewed). Students represent 7 countries, 3 continents [Asia (n=3), Africa (n=3) and N. America (n=1)].
Curricular domains and frequency noted were: PCPC=32, Experiential=23, DI/EBM=22, Practice & policy=21, IPE=10, Informatics (an individual course)=5.

Frequency relative to credit hours: IPE=10, Informatics=5, DI/EBM=3.38, Practice & Policy=2.63, PCPC=1.14, Experiential=0.55
Plans/goals include:
- 42 plans/goals were assessed as being aspirational and 15 as implemented or communicated to leadership.
- Application of DI/EBM=33; Practice PCPC=32, with 14 being patient communication; education of others=29, with 20 being peer education; Interprofessional or ethical practice / patient advocacy=22; improving practice & policy=21; advocacy for advancement of pharmacists' roles=15; public health promotion=9.
Settings of goals include: Community/ambulatory care=11, hospital=7, healthcare system=2, telehealth=2, advocacy setting (government, professional organization)=1.
Challenges to plan/goal achievement: practice norms=15, limited resources=9, policy infrastructure=7, technology limitations=5.
Limitations include subjectivity, further cross-review needed. Complete analysis of all graduates in this timeframe is pending.

Conclusion: This interim results align with competencies identified in FIP's Global Competency Framework Version 2. They bring to light the importance of not only clinical knowledge and skills advancement, but also accompanying practices and skills, such as patient communication, use of evidence-based medicine, education of others, and interprofessional and ethical practice.
These results may inform priorities for pharmacy education workforce development, particularly for mid-career practitioners. The importance of advocacy in advancing our profession is noted by our students. Together, these insights may create opportunities for pharmacist practitioners worldwide.

Levels of resilience and empathy: A three-year study of pharmacy interns

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RFMO-01 - Rapid Fire Session Monday, M1-M2, September 25, 2023, 11:00 AM - 12:30 PM

Background: Resilience and empathy are essential attributes for healthcare professionals. While resilience assists them in negotiating challenging and unpredictable work environments, empathy enables healthcare professionals to provide patient-centred care, and both contribute to long-term success in their profession. However, little research has focused on the levels of resilience and empathy of pharmacists, particularly during the early stages of their professional careers as pharmacy interns.

Purpose: This study explored levels of resilience and empathy of pharmacy interns using the Connor-Davidson-Resilience-Scale-25 (CD-RISC-25) and the Kiersma-Chen-Empathy Scale (KCES), examining any associations with

demographic characteristics. Adopting questions from a 2020 American well-being survey, it qualitatively explored interns' experiences affecting resilience and empathy during an accredited internship training program (ITP) at an Australian university during the COVID-19 pandemic.

Method: Following ethical approval, paper-based surveys were distributed to pharmacy interns during a face-to-face workshop every September from 2020 to 2022. GraphPad Prism version 9® was used to analyse the data using descriptive and inferential statistics. Open-ended questions were analysed using qualitative and quantitative content analysis to determine the frequency of themes established by the original survey and any additional themes.

Results: From 2020 to 2022, 134 completed surveys were included in the analysis. Response rates were 70% in 2020, 29.3% in 2021, and 88.4% in 2022. The majority of respondents were female (73.9%), worked in a hospital (68.8%), were 18-22 years old (47%), and held a bachelor's degree (94.8%). Resilience and empathy scores did not significantly differ between cohorts. The mean resilience score was 66.6 ± 11.7, and the mean empathy score was 84.3 ± 9.23. No significant difference between demographic characteristics in relation to CD-RISC-25 scores was found. Age ($p=0.019$) and pre-intern employment history ($p= 0.007$) showed a statistically significant effect on empathy scores. Younger age groups scored higher in empathy levels than the older age group, and those working part-time during undergraduate studies had higher empathy scores than full-time employees. Resilience and empathy scores were not consistently correlated, with 10% scoring in the lowest quartiles for both and 8.9% in the highest quartile for both. Pharmacy interns had lower mean CD-RISC-25 scores compared to studies of pharmacists, pharmacy and nursing students internationally and an Australian community cohort. However, when compared to other studies using KCES, pharmacy interns demonstrated relatively high levels of empathy. Their mean empathy score was higher than that of pharmacy and other healthcare students in the USA. High workload related to the COVID-19 pandemic and ITP requirements, and feelings of inadequacy and inexperience among pharmacy interns added to challenges in their work lives. Pharmacy interns mentioning 'helping patients' most frequently as giving them fulfilment seems congruent with their relatively high empathy levels.

Conclusion: Pharmacy interns in this study scored lower levels of resilience but higher levels of empathy than comparable groups. Targeted interventions during their undergraduate studies or internship training may enhance their resilience. Additionally, continuing professional development and providing organisational support management may assist their long-term role satisfaction and well-being.

Exploring elements of success in international collaboration

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RFTU-01 - Rapid Fire Session Tuesday, M4, September 26, 2023, 11:00 AM - 12:30 PM

Background: International collaboration has been seen as an indicator of high-quality research which allows for opportunities and experiences for individuals to share multidisciplinary resources, skills, information, and sustainable solutions. As evidenced by the COVID-19 pandemic, international collaboration has been increasingly important within pharmacy and pharmaceutical sciences. Previous literature has begun exploration in international research collaboration; however, robust research is lacking in the field of academic pharmacy. Additionally, little is known about metrics of individual or team-based success or promoters of success. Given the benefits, challenges, and growth of international collaboration in pharmacy, it is important to understand which factors increase the likelihood of success in international partnerships and how that success is measured.

Purpose: To identify motivations, individual and team-based metrics of success, as well as contributors and limiters to success for international collaborations in academic pharmacy.

Methods: An online survey including closed- and open-ended questions was sent to students, faculty, and staff from schools of pharmacy who have engaged in international collaboration. Snowball sampling was utilized to recruit participants. Quantitative data was analyzed using descriptive statistics. Qualitative data was analyzed using thematic analysis with a combination of inductive and deductive coding.

Results: A total of 54 survey responses were included for analysis. More than 50% of respondents identified the following motivations for participation in international collaborations: "gain new perspectives and new opportunities globally," "desire to work with, or maintain/build a relationship with researchers globally," "improve research quality," "continue current global relationship," and "access expertise." A total of 27 themes were identified from qualitative data using a combination of inductive and deductive coding. Themes were organized into team- and individual metrics of success, contributors to success, and limiters to success in the final codebook. Metrics of success most commonly included publications, scientific presentations, and grants or other sources of revenue. Participants most often identified team dynamics (e.g., shared goals and values, adaptability, and friendship/positive interactions) and individual characteristics (e.g., commitment, open-mindedness, and perseverance) as contributors to success. Finally, when asked about limiters to success in international collaborations, participants discussed different time zones, lack of funding, and lack of commitment most often.

Conclusion: Motivations for international collaboration vary and can be used by institutions to attract globally-minded faculty, staff, and students. Metrics of success in international collaboration should be acknowledged by institutional leadership and can either be tangible or intangible. Organizations and institutions should support carefully designed teams financially along with other resources. The findings can help individuals, teams, and institutions optimize and support international collaborations. Additionally, this study can inform higher education researchers, academics, and leadership beyond pharmacy. Future research should seek to understand differences in motivations and success factors among different populations in academia.

Evaluating pharmacists' perceptions and knowledge of transgender and gender-diverse healthcare

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RFTU-01 - Rapid Fire Session Tuesday, M4, September 26, 2023, 11:00 AM - 12:30 PM

Background: Many transgender and gender-diverse (TGD) individuals may seek gender-affirming hormone therapy (GAHT) to achieve physical changes congruent with their gender identity and minimize gender dysphoria. In addition, GAHT has been shown to mitigate depression, anxiety, and suicidality, all of which are disproportionately higher in TGD individuals than in cisgender individuals. Pharmacists have a role in optimizing these medically-necessary and lifesaving treatments' safety and efficacy. However, several studies demonstrate that pharmacists are poorly prepared to provide pharmaceutical care for TGD patients despite understanding that their role in TGD healthcare is important. It is unknown whether this lack of perceived preparedness has improved alongside the increasing social acceptability of TGD identities.

Purpose: To evaluate pharmacists' perceptions and knowledge of transgender and gender-diverse healthcare in Central Texas.

Methods: Pharmacists were recruited to complete a de-identified survey assessing perceptions and knowledge of TGD healthcare. The survey was disseminated at a local professional meeting for pharmacists in Central Texas and during a didactic course for pharmacy residents in residency programs affiliated with the University of Texas at Austin College of Pharmacy. The demographic data collected included professional titles and prior education in TGD healthcare. The survey included 18 items related to perceptions and knowledge of TGD healthcare. Six multiple-choice items were regarding TGD healthcare knowledge with themes in health outcomes, GAHT, and preventative health screenings. Each knowledge question was assigned a value

of "1" if answered correctly, and a composite score was calculated for each participant (score range = 0-6). The answers to Likert scale responses (1=strongly disagree to 5=strongly agree) and multiple-choice items were analyzed with descriptive statistics.

Results: A total of 17 respondents completed the survey and were included in the final analyses. Twelve respondents (71%) were female. Seven respondents (41%) reported they were practicing pharmacists, while the others reported they were faculty, preceptors, pharmacy residents, or graduate students. Only six respondents (35%) reported that they received education regarding TGD healthcare during pharmacy school. Approximately 82% of respondents either agreed or strongly agreed regarding the importance of understanding the healthcare needs of TGD patients. All respondents strongly agreed or agreed that TGD patients deserved the same level of care as cisgender patients. Only one respondent strongly agreed that they were prepared to counsel patients or provide recommendations regarding GAHT. The median composite score for TGD healthcare knowledge questions was 4 (IQR, 3.5-4). About 47% of respondents answered questions regarding feminizing hormone therapy or masculinizing hormone therapy correctly.

Conclusion: Although most pharmacists acknowledged the importance of understanding the healthcare needs of TGD patients, only a small number felt prepared to provide necessary services such as counseling and GAHT recommendations. These outcomes suggest that pharmacists have not made substantial improvements in bridging knowledge gaps, specifically concerning GAHT. It is essential to take measures that address these gaps which may be achieved through increased coverage of TGD healthcare in pharmacy curricula and post-graduate learning opportunities.

Examining the Status of Quality Assurance of Pharmacy Education Using the FIP Self-Assessment Tool

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RFTU-01 - Rapid Fire Session Tuesday, M4, September 26, 2023, 11:00 AM - 12:30 PM

Background: The FIP, the WHO, and the UNESCO jointly recognize the need to build capacity and expertise in quality assurance (QA). Whether nationally or regionally, QA systems must ensure that educational programs are supported by a research-active environment, are competency-based, and reflect a modern vision for pharmacy practice. In 2020, FIP launched the 21 FIP Development Goals (FIP DGs), which bring workforce, practice, and science together into one pharmacy

transformative framework in alignment with wider global imperatives, such as United Nations Sustainable Development Goals and WHO Global Strategy on Human Resources for Health Workforce 2030. The "workforce" element of FIP DG 3: quality assurance, targets the global availability of transparent, contemporary, and innovative processes for the QA of needs-based education and training systems. To that end, the global leads of the FIP DG3 developed a self-assessment tool of QA of pharmacy and pharmaceutical sciences education.

Purpose: The aim of this study was to examine the status of QA of pharmacy and pharmaceutical sciences education globally and to identify areas of improvement and offer recommendations to continuously improve the QA of pharmacy and pharmaceutical sciences education.

Methods: The self-assessment tool of QA of pharmacy and pharmaceutical sciences education was developed utilizing the FIP pharmacy education in sub-Saharan Africa report, which investigated the QA and accreditation systems across seven sub-Saharan African countries. The tool was validated using content and face validity measures and then was administered among the FIP Academic Institution Members (AIM) using an email link to SurveyMonkey⍰. Descriptive and inferential data analysis was conducted using IBM Statistical Package for Social Sciences, SPSS⍰.

Results: The findings suggested that most academic programs undergo periodic accreditation by an external accreditation body (94.44%). The academic pharmacy programs were shown to be accredited equally by private/non-governmental accrediting bodies, or regional/national professional organizations. However, the most frequently reported accreditation activity was the accreditation site visit by a team from the external body (96.55%). Most participants reported having accreditation standards available for pharmacy programs specific to their country (83.33%), where a national accrediting organization or the regulator being the authorities who set these standards (64.00%) and (60.00%), respectively. The most frequently reported standards used for quality assurance of pharmacy education were the FIP global framework (66.67%), followed by the WHO standards (33.33%). The requirements of these accreditation standards included indicative curriculum (86.21%), prescribed hours of study (75.86%), prescribed numbers and levels of academic staff (75.86%) and the availability of clear learning outcomes (75.86%). Overall, participants agreed that the accreditation systems for pharmacy education in their country are relevant, add value, and assist in advancing the standards of pharmacy practice (average agreement >3.7/5).

Conclusions: Implementing quality assurance measures in pharmacy education is essential for assessing and enhancing the quality of pharmacy education and training. This will ultimately result in graduating a competent pharmaceutical workforce, which is vital for improving the quality of health services. The results and recommendations of this study will help the pharmacy academic programs to develop transparent, contemporary, and needs-based processes for QA.

Strengthening institutional and workforce capacity to tackle antimicrobial resistance through the commonwealth partnerships for antimicrobial stewardship programme

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Background: The Commonwealth Partnerships for Antimicrobial Stewardship (CwPAMS) is a health partnership programme funded by the UK Department for Health and Social Care's Fleming Fund and managed by the Commonwealth Pharmacists Association (CPA) and the Tropical Health & Education Trust (THET). CwPAMS aims to leverage the expertise of UK health institutions and technical experts to strengthen the capacity of health institutions and workforce across the Commonwealth (CW), in particular low- and middle-income countries (LMICs), by creating bidirectional learning opportunities to address antimicrobial resistance challenges. Since its launch in 2019, the programme has supported the implementation of 26 antimicrobial stewardship (AMS) and infection prevention and control (IPC) projects across eight countries. The first phase of the programme (CwPAMS 1), implemented in 2019/2021, delivered 12 projects across Ghana, Tanzania, Uganda, and Zambia. An extension of the programme (CwPAMS 1.5), in 2021/2022, provided opportunities for further work and expansion to Kenya, Malawi, Nigeria and Sierra Leone.

Purpose: To evaluate the effectiveness of the CwPAMS programme in building AMS/IPC capacity and capability in health institutions and workforce in CwPAMS countries.

Method: A total of 20 AMS/IPC monitoring and evaluation indicators were developed and established to assess success and impact of each partnership. 'Before and after' indicators were measured, where possible, and compared to further understand change and impact. Indicators included, for example, the number of LMIC healthcare staff trained in AMS/IPC and demonstrating improved knowledge after training compared to before; demographic information was also collected. All data were collected and analysed in Microsoft Excel. As a service evaluation, this study did not require ethical approval.

Results: Since its inception, CwPAMS has facilitated the training of over 6,500 LMIC healthcare staff across the 8 CwPAMS countries. A total of 19 UK-LMIC partnerships have been established to deliver 26 projects. CwPAMS-1 enabled the training of 3,324 LMIC healthcare staff, 407 of which were pharmacists. The extension of the programme, CwPAMS-1.5, enabled the training of further 3,432 LMIC healthcare staff, 342 of which were pharmacists. In both

phases of the programme, the majority of LMIC healthcare staff increased their knowledge and awareness of AMS, prescribing, and consumption surveillance (96% and 91% of LMIC healthcare staff, respectively). In CwPAMS-1.5, 76% also increased their knowledge and awareness of IPC principles (not measured in CwPAMS-1). In addition to the programme's impact on LMICs, CwPAMS also created capacity-building opportunities for 370 UK volunteers, the majority of which (87%) indicated that their NHS institution had benefited through their participation in CwPAMS; of these, 72% also stated having increased capacity for AMS activities in their team.

Conclusion: The CwPAMS programme contributed to health system strengthening across the CW, in particular LMICs. By improving AMS/IPC knowledge and practice, health institutions and the workforce, including pharmacists, were central in the implementation and success of the programme. The next phase of the CwPAMS programme was rolled out in March 2023, establishing 24 partnerships across the eight CwPAMS countries, and will continue being monitored and evaluated.

Advancing a patient-centered care curriculum for pharmacy students: Innovation with universities in developing countries

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RFTU-01 - Rapid Fire Session Tuesday, M4, September 26, 2023, 11:00 AM - 12:30 PM

Background: Vennue™ is a US nonprofit organization offering innovative pharmacy workforce education programs to improve patient care and health outcomes in developing countries.
Building on five years of successful program results with hospitals and community pharmacies in Southeast Asia, in 2021 Vennue introduced its workforce training model to universities in Bangladesh and Cambodia -- to help pharmacy schools prepare students to become effective providers of Patient-Centered Care.
Vennue partnered with the University of Puthisastra in Cambodia and the University of Science and Technology Chittagong in Bangladesh to provide pharmacy departments with opportunities to access Vennue's proprietary curriculum in Patient-Centered Care.

Objective: This new program explored the impact of on-campus, joint initiatives to enhance pharmacy students' academic experience and practical skills. The program gave pharmacy students and faculty cost-free, open access to Vennue's educational materials as they progressed through university requirements, while providing a unique forum to collaboratively learn, exchange ideas and network. It aimed

to foster new enthusiasm for the Patient-Centered Care model and a collective commitment to lifelong learning to support their professional careers and responsibilities.

Methods: From September 2021 to April 2023, pharmacy students at each university were enrolled in a series of on-campus training programs, led by Vennue's in-country Program Managers through a blended learning model – giving learners access to both traditional classroom instruction and online resources through the Vennue Digital Hub (hub.vennue.org):
a) Custom-Designed Training Program: Collaborated with university faculty to design a curriculum appropriate for local pharmacy practice.
b) Bilingual Instruction: Led on-campus, interactive seminars to introduce the Patient-Centered Care model, including case studies, dynamic role-play activities, and standard operating procedures. Number of sessions ranged from 10 to 30, depending on academic needs and preferences
c) Access to Information: Provided access to credible medical and pharmaceutical information. All faculty and students utilize the Vennue Digital Hub to access continuing education opportunities and benefit from ongoing professional support.
d) Key Performance Indicators: Measured progress toward program objectives by administering surveys, collecting and analyzing data on the knowledge and practice of pharmacy care, and interviewing students and faculty.

Results: In total, 375 pharmacy students completed the courses to earn Certifications in Patient-Centered Care. The program enabled university students to achieve gains in knowledge as measured by pre/post-tests for each training session (Cambodia: 20.22%, Bangladesh: 27.26%) and to increase cumulative Knowledge, Attitude, and Practice from baseline to end-line: (Cambodia: 7.76%, Bangladesh: 23.86%). It also advanced collaboration and confidence, as reported in surveys and interviews.

Conclusion: The program advanced pharmacy students' readiness to deliver high-quality Patient-Centered Care, and their capacity to improve community health outcomes in Cambodia and Bangladesh.
This initiative helps illuminate the role of innovative academic partnerships to help transform patient care. It demonstrates how a collaborative, cost-effective program that can be offered on campus to enrich the university experience -- to prepare the next generation of pharmacists to provide the best care possible to every patient.
Vennue's pharmacy education model is built for scale -- not only in Southeast Asia but throughout the developing world.

Designing the future of student success using artificial intelligence

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RFTU-01 - Rapid Fire Session Tuesday, M4, September 26, 2023, 11:00 AM - 12:30 PM

Background: Artificial intelligence (AI) is rapidly transforming the world enabling us to rethink how information is integrated and analyzed, and how resulting insights can be used to improve overall decision making. AI is currently being used to detect diseases faster, help provide personalized treatment plans for patients, and automate certain processes such as drug discovery. However, few studies have been done on how AI can be used to provide personalized educational plans for students to improve overall success outcomes upon graduation.

Purpose: This study objectives are to: 1) collect and curate curricular and co-curricular data related to student outcomes at multiple stages of pharmacy school, and 2) build a multi-step AI model called AI-SiPS: Artificial Intelligence - Success in Pharmacy School to identify variables that can be used to predict student success upon graduation.

Method: The current AI-SiPS model is based on data from a Doctor of Pharmacy program in the United States using the classes of 2019 to 2022. Data includes course grades (n=745 students), a third-year 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 students took after graduation (also n=564). Student success outcomes are divided into broad categories of "Residency", "Industry", "Community/Hospital" (RICH).
Data is being analyzed using Konstanz Information Miner (KNIME ver. 4.5.1). Using this platform, we have examined 1) relationships of APPE rotation order with residency matching, 2) performance in didactic courses with subsequent pre-APPE confidence, and 3) pre-APPE confidence with RICH outcomes. Decision tree analysis was used to find data breakpoints in each relationship.
Analysis has indicated that: 1) an early Acute Care APPE leads to a higher residency match rate than a late Acute Care APPE (70.2% vs. 58.0%), 2) students who perform well in certain therapeutic didactic courses, such as cardiology, have a higher chance of matching for residency than those who do not perform well (77.8% vs. 51.7%), and 3) students who feel confident about starting their APPEs have a higher chance of matching for residency than those who report not feeling confident (77.1% vs. 66.7%). Earlier didactic courses focused on practical application of knowledge also show impact on self-perceived confidence.

Results: These results have been used to implement changes in processes, including earlier identification of students with a desire to pursue residency. This information has permitted appropriate reorganization of students' APPE rotation order, which is predicted to lead to higher residency match rates.

Similar changes may be possible to support other career goals.

Conclusions: This AI-SiPS model represents a conceptual approach to using AI to support student success and desired post-graduation outcomes. Results from our research may allow for educators to advise students on specific actions that need to be taken in order to maximize their chances of success based on individual career aspirations. Future plans include adding admissions, co-curricular, and mentorship data to the AI-SiPS model and providing AI workflows to other educational institutions interested in using AI to support student success.

A qualitative study about the delivery of substance use disorder education in didactic health profession curricula in the United States of America

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Background: Substance use and misuse continue to be major public health issues around the globe, and the associated stigma creates barriers in accessing evidence-based care. Students in health professions struggle to recognize and treat patients with substance use disorders (SUD), and limited qualitative data exists characterizing healthcare students' collective perspectives about patients with SUDs.

Purpose: To characterize the healthcare professional student perspectives about the stigma associated with SUD and how to address it in their respective curricula.

Methods: Healthcare professional students enrolled in a health science center in the mid-South of the United States of America (USA) were identified via email to voluntarily participate in virtual Focus Groups in the Spring 2021. Two qualitative researchers led each focus group using a semi-structured guide developed using the Conceptualizing Stigma" theory by Link and Phelan (2006). All the focus groups were audio recorded, professionally transcribed, and thematically analyzed. Two researchers independently coded inductively the corpus of data using Dedoose®, a qualitative software. The researchers met to discuss the inductive codes and the emergent themes with the research team until saturation of data was reached.
Results: Five virtual focus groups were conducted, and a total of 31subjects attended. The average age was 27 years of age. Most subjects were White (n=19) and female (n=21). Most of the subjects were from the College of Medicine (n=17), while the rest of the subjects represented the College of Pharmacy (n=14).

Thematic Analysis revealed a theme: Students recommended to enhance their didactic courses providing SUD education

In this theme, healthcare professional students present the current challenges regarding the SUD from a didactic perspective. In addition, they recommended various avenues beneficial for implementation in the pedagogical courses promoting SUD awareness, counseling techniques, patient interactions, and empathy.

"*…I haven't had the substance use disorder course yet, this is just my experience in [another course]… at least like I haven't gotten a ton of experience talking about patients who like haven't overdosed but are potentially at risk. We haven't talked about that as much. So, I'd like to see a little bit more of that.*"

"*So I feel like the only thing you could really do is add something, another session, into [course name]…maybe something along the lines of psychological communication skills…there's a psychological basis to talking to these patients that probably not a lot of people understand.*"

"*…it would be great to have as a rotational option in the P3 and P4 years, or at least, at minimum, emphasis of substance use disorders within rotations.*"

Conclusion: The findings highlight the need to improve our didactic courses and emphasize interprofessional activities across professions. In addition, this study's results call for further research on healthcare professional students perspectives on improving their pedagogical courses to better prepare them for patient care.