

Issue 12/2023

PRESCRIPTION

Latest news and updates from the Faculty of Pharmacy, UiTM



HARNESSING ARTIFICIAL INTELLIGENCE FOR SAFER MEDICATION PRACTICES

The Global Patient Safety Challenge: Medication Without Harm initiated by the World Health Organization, aims to reduce the level of severe, avoidable harm related to medications by 50% within a span of 5 years (1). Over the years, substantial progress has been made in improving medication safety, yet challenges persist (2). Majority of current patient safety approaches were developed prior to the healthcare digital revolution. Significant advances in healthcare practises can be achieved by adopting modern technological tools and digital advancements which hold the potential to substantially improve the prediction and prevention of patient safety risks.

Artificial Intelligence (AI) has rapidly transformed industries, notably in healthcare. AI implementation in the domain of medication safety is not, however, new. Using inputs from databases containing known effects, patient parameters, and drug information, a neural-network analysis with a high accuracy, was implemented in the early 1990s to forecast adverse effects of antidepressants (3). Recent years have witnessed AI, particularly machine learning, predominantly employed in patient safety and pharmacovigilance, notably in identifying adverse drug events and extracting insights from safety reports and clinical narratives (4).

IN THIS ISSUE

- HARNESSING ARTIFICIAL INTELLIGENCE FOR SAFER MEDICATION PRACTICES
- GREENRx INITIATIVE: EDUCATING ON RESPONSIBLE MEDICATION DISPOSAL
- UiTM HOSTS DELEGATION FROM NAMANGAN INSTITUTE OF ENGINEERING AND TECHNOLOGY, UZBEKISTAN IN EFFORTS TO STRENGTHEN GLOBAL TIES
- LEARNING THROUGH EXPERIENCE :HANDS-ON SOAP-MAKING SESSION AT MA'AHAD TAHFIZ ISMAIL PUNCAK ALAM (MTI) SCIENCE WEEK 2023
- CULTIVATING CONNECTIONS: A TRANSFORMATIVE JOURNEY IN INTERNATIONAL COMMUNITY SERVICE
- WORKSHOP ON INSIGHTS INTO SKIN PERMEATION
- ALUMNI SERIES: SERVICES PROVIDED BY COMMUNITY PHARMACISTS DURING COVID-19 PANDEMIC
- ACHIEVEMENT
- UPCOMING EVENT



The following examples highlight the application of AI in an effort to enhance medication safety:

1. Zitnik et al. (5) developed a prediction model capable of identifying the adverse effects of drug combinations by integrating molecular protein–protein and drug–target networks with side effect data at the population level, utilising neural network techniques. It was discovered to have an exceptionally high degree of precision when predicting polypharmacy side effects.

2. Pavani et al. (6) utilised an artificial neural network to construct a pharmacogenomic algorithm that predicted the safe and effective dose of warfarin with 92.5% accuracy by combining therapeutic warfarin dose, age, gender, body mass index, plasma vitamin K levels, thyroid status, and genetic variables with therapeutic warfarin dose. This application has decreased the incidence of international normalised ratio (INR) values that are outside the acceptable range by 49% and the time required to achieve the first therapeutic INR by 6.6-fold, with no adverse drug reactions.

3. In their study, Wang et al. (7) employed machine learning techniques to ascertain potential causal relationships in the US Food and Drug Administration Adverse Event Reporting System (FAERS) with regards to pharmacovigilance in two case studies: acute liver failure associated with analgesics and fatalities related to tramadol. The model successfully recalculated established risk factors associated with these adverse events and detected possible secondary risk factors that increase the susceptibility of individuals to liver failure.

4. Weissenbacher et al., (8) applied convolutional neural network to identify tweets discussing changes in medication treatment, particularly focusing on users' explanations for medication non-adherence. Another study utilised a natural language approach to extract information on medication intake and birth defects from Twitter and revealed that women reporting birth defects exhibited increased medication intake (9). These analyses enable the monitoring of vulnerable groups, such as pregnant women, who are often excluded from clinical trials, and where drug safety is not well-established. These studies underscore social media's potential in complementing current resources and enhancing medication safety monitoring.

AI holds promise in elevating medication safety, yet most efforts are led by computer science and AI experts, lacking adequate involvement from healthcare professionals, emphasising the need for increased collaboration in this domain (10). Despite the considerable potential of AI, hurdles remain. Inadequate understanding and proficiency in navigating complex AI systems and interpreting their outcomes might burden healthcare professionals and the healthcare system overall. Hence, integrating AI training into healthcare education becomes critical to empower professionals with essential knowledge for comprehending AI basics and extracting clinically valuable insights.

References:

1. World Health Organization (2017). WHO launches global effort to halve medication-related errors in 5 years. Available at: <https://www.who.int/news/item/29-03-2017-who-launches-global-effort-to-halve-medication-related-errors-in-5-years> (Accessed on 12 Dec 2023)
2. Classen, DC, Griffin, FA, Berwick, M (2017). Measuring patient safety in real time: an essential method for effectively improving the safety of care. *Ann. Intern. Med.* 167, 882–883.
3. Alvager T, Smith TJ, Vijai F. (1993). Neural-network applications for analysis of adverse drug reactions. *Biomed Instrum Technol.* Sep–Oct;27(5):408–11.
4. Salas M, Petracek J, Yalamanchili P, Aimer O, Kasthuril D, Dhingra S, Junaid T, Bostic T (2022). The Use of Artificial Intelligence in Pharmacovigilance: A Systematic Review of the Literature. *Pharmaceut Med.* Oct;36(5):295–306. doi: 10.1007/s40290-022-00441-z.
5. Marinka Zitnik, Monica Agrawal, Jure Leskovec, Modeling polypharmacy side effects with graph convolutional networks, *Bioinformatics*, Volume 34, Issue 13, July 2018, Pages i457–i466, <https://doi.org/10.1093/bioinformatics/bty294>
6. Pavani A, Naushad SM, Kumar RM, Srinath M, Malempati AR, Kutala VK. (2016). Artificial neural network-based pharmacogenomic algorithm for warfarin dose optimization. *Pharmacogenomics*; 17(2):121–31. doi: 10.2217/pgs.15.161.
7. Wang X, Xu X, Tong W, Roberts R, Liu Z. (2021). InferBERT: a transformer-based causal inference framework for enhancing pharmacovigilance. *Front Artif Intell*;4:659622. doi: 10.3389/frai.2021.659622
8. Weissenbacher, D, Ge, S, Klein, A, O'Connor, K, Gross, R, Hennessy, S, Gonzalez-Hernandez, G. (2021). Active neural networks to detect mentions of changes to medication treatment in social media. *Journal of the American Medical Informatics Association: JAMIA*, 28(12), 2551–2561. <https://doi.org/10.1093/jamia/ocab158>
9. Golder S, Chiuve S, Weissenbacher D, Klein A, O'Connor K, Bland M, Malin M, Bhattacharya M, Scarazzini LJ, Gonzalez-Hernandez G (2019). Pharmacoepidemiologic Evaluation of Birth Defects from Health-Related Postings in Social Media During Pregnancy. *Drug Saf.* Mar;42(3):389–400. doi: 10.1007/s40264-018-0731-6.
10. Aronson, JF. (2022). Artificial Intelligence in Pharmacovigilance: An Introduction to Terms, Concepts, Applications, and Limitations. *Drug Safety*;45:407–418. <https://doi.org/10.1007/s40264-022-01156-5>

ABOUT THE AUTHORS:

Dr. Mahmathi Karuppanan holds the position of Associate Professor at the Department of Clinical Pharmacy. Previously, she led as the head of the department and also served as the Coordinator for the Masters in Clinical Pharmacy program. She has presented and been invited as a speaker at many international and local conferences. She also has published in several indexed journal articles and has secured several research grants. Her research revolves around medication safety, pharmaceutical care, telepharmacy, medication review, community pharmacy services, and complementary and alternative medicine.

Questions

Let's dive deeper into the article and evaluate your comprehension. We have 5 questions for you [here](#).

GREENRx INITIATIVE: EDUCATING ON RESPONSIBLE MEDICATION DISPOSAL

The issue of environmental pollution, particularly water pollution due to the improper disposal of toxic substances like medications, has become a pressing concern requiring urgent attention. The GreenRx Initiative aims to address this issue at its core by raising awareness and educating the public. The overarching goal is to encourage responsible medication disposal practices, ultimately preventing environmental damage, especially water pollution resulting from the inappropriate disposal of chemical medications. This campaign will be implemented in collaboration with the District Health Office (PKD) of Kuala Selangor and will target the residents in the surrounding areas. The participants are not only from the general public but also include vulnerable groups such as people with visual impairments who often miss out on the benefits of such programs due to the unsuitability of campaign materials and modules.

To achieve the goal, the GreenRx Initiative will implement various strategic actions. One of our key strategies involves creating awareness about the importance of medication compliance and the quality use of medications to avoid excess and waste. This involves educating the community on adhering to prescribed medication regimens and ensuring the appropriate use of medications. Emphasis will be placed on avoiding unnecessary excess and minimizing waste. Another crucial strategy is to raise awareness about the environmental impact of medication disposal, particularly emphasizing the implications for water pollution. The initiative recognizes that improper disposal of medications can lead to the contamination of water sources, posing a direct threat to aquatic ecosystems and, consequently, human health.

Additionally, the initiative aims to encourage awareness and the adoption of safe and environmentally friendly practices for medication disposal. This involves educating the community about proper disposal methods that minimize harm to the environment. Initiatives such as organized medication take-back programs, the use of designated disposal boxes, and guidance on eco-friendly disposal techniques will be promoted.



The GreenRx Initiative will conduct educational sessions at key locations, such as health clinics, supplemented by home visits to ensure the widespread dissemination of information about the importance of proper medication disposal. It will also leverage social media platforms like Facebook, Instagram, TikTok and X (formerly known as Twitter) to share information related to proper medication disposal. Engaging content in the form of images, infographics, and short videos will be created to convey easily understandable messages and tips. Furthermore, our initiative will implement medication disposal programs at health centers, pharmacies, and other public spaces. Special disposal boxes will be provided at strategic locations to facilitate proper medication disposal.

To measure the effectiveness of the campaign, various indicators such as participant involvement, increased community awareness, and the quantity of recycled medications, will be tracked. Surveys will be conducted to assess the knowledge, attitudes, and practices of the community before and after the GreenRx Initiative, providing valuable insights for future initiatives.

In conclusion, the "GreenRx Initiative: Educating on Responsible Medication Disposal" represents a dedicated effort to enhance awareness among the public and visually impaired individuals. Through a holistic approach involving educational materials, sessions, disposal programs, and collaboration, the initiative aims to instill safe and environmentally friendly medication disposal practices. This project is expected to commence in early 2024.



Mr. Muhammad 'Izzuddin Zamery
Faculty of Pharmacy, UiTM

WORKSHOP ON INSIGHTS INTO SKIN PERMEATION

The Department of Pharmaceutics, Faculty of Pharmacy, UiTM Puncak Alam Campus, recently hosted a transformative two-day workshop titled "Insights into Skin Permeation: From Theory to Practice." The workshop conducted on November 15th and 16th, 2023, was designed with the objective of bridging the gap between theoretical knowledge and practical application in delivering active compounds through the skin.



Led by experienced speakers from the Department of Pharmaceutics, namely Dr. Nor Khaizan Anuar and Dr. Nor Hayati Abu Samah, the workshop delivered an in-depth understanding of skin permeation, emphasizing the fundamental characteristics of the skin and the intricate routes through which compounds permeate. Participants explored both transdermal and topical approaches, gaining invaluable insights into the factors influencing compound penetration and absorption, thus offering a comprehensive understanding of the subject matter.

A notable feature of the workshop was the immersive hands-on experience of in-vitro drug and active compound permeation testing. This segment centered on the fundamental principles of drug permeation, membrane selection, technical intricacies, and calculations essential for determining the amount of drug or active compound that permeated. The workshop sought to equip participants with enhanced skills for assessing compound permeability and devising strategies to optimize skin penetration.



The event drew participants from diverse institutions, encouraging collaboration and the exchange of knowledge. The workshop's success is attributed not only to its informative sessions but also to its capacity to inspire participants to engage in further research and foster interdisciplinary collaborations.



In conclusion, the "Insights into Skin Permeation" workshop serves as a testament to UiTM's Faculty of Pharmacy's unwavering commitment to excellence in education and research. The faculty remains steadfast in its mission to provide innovative learning experiences, deepen participants' understanding of skin permeation, and contribute significantly to the ongoing advancement of drug delivery sciences.

Dr. Nor Khaizan Anuar, Dr. Gurmeet Kaur Surindar Singh
Faculty of Pharmacy, UiTM

UiTM HOSTS DELEGATION FROM NAMANGAN INSTITUTE OF ENGINEERING AND TECHNOLOGY, UZBEKISTAN IN EFFORTS TO STRENGTHEN GLOBAL TIES

On November 15th, 2023, the Faculty of Pharmacy UiTM graciously welcomed distinguished delegates from Namangan Institute of Engineering and Technology, Uzbekistan, to the UiTM Puncak Alam Campus. This visit represents a significant opportunity to bolster UiTM's global standing and performance. Professor Ergashev Oybek, Vice-Rector of Scientific Affairs and Innovations, led the Namagan Institute delegates along with four faculty members and seven students.

Dr. Maziana Mahmood and Mr. Alif Othman, the Coordinator and Executive Officer of the Industry, Community, and Alumni Network (ICAN), respectively, cordially welcomed them upon their arrival at the faculty from the Office of International Affairs (OIA) Shah Alam. The visit commenced with a 2-hour session focused on exploring prospective collaborative initiatives for 2024. These initiatives included the exchange of faculty staff and students as well as collaborative research initiatives potentially involving joint supervision of postgraduate research. Dr. Rozzana Mohd Said, the Coordinator of Exchange Students at the Office of International Affairs, together with the dean's deputies and the heads of departments, attended the meeting.

Subsequently, the delegates were given a tour of the laboratories and the animal facility at the Faculty of Pharmacy Puncak Alam, offering them a thorough insight into the faculty's resources. The delegates also toured the MAKERLAB, a facility dedicated to computer programming, 3D printing, drones, virtual reality, and internet of things (IoT) at the UiTM Alam library, Perpustakaan Tun Abdul Razak Puncak Alam, under the guidance of Dr. Siti Azma Jusoh. The immersive experience showcased UiTM's commitment to creating an inclusive educational setting and ignited inspiration for upcoming joint initiatives.



Dr. Norkasih Ibrahim, Dr. Gurmeet Kaur Surindar Singh
Faculty of Pharmacy, UiTM

LEARNING THROUGH EXPERIENCE :HANDS-ON SOAP-MAKING SESSION AT MA'AHAD TAHFIZ ISMAIL PUNCAK ALAM (MTI) SCIENCE WEEK 2023



Experiential learning manifested through hands-on experiments and problem-solving activities, plays a pivotal role in elevating cognitive engagement and facilitating the transfer of theoretical knowledge into practical application. In the spirit of fostering a love for science and hands-on learning, the Faculty of Pharmacy Universiti Teknologi MARA (UiTM) has been invited to Maahad Tahfiz Ismail (MTI) Puncak Alam in conjunction with the school's Science Week Programme held on the 30th of November 2023. The programme was officiated by MTI Deputy Principal of Academic, Associate Professor Dr Zaini Affandi, and attended by school top management; Deputy Principal of Hafazan, Syeikh Abdul Rahman Mohamed Amin Abdel Salam, director of the programme; Mdm. Khadijah Abdul Hamid, teachers, all students (Form 1 to Form 5) and delegates from Department of Pharmaceutics, Faculty of Pharmacy UiTM led by Mdm. Nor Zaleha Ishak; director of Soap-making Committee at Faculty of Pharmacy. This programme aimed to instil scientific knowledge and foster interest in science-related subjects as well as create a platform for interactive learning.

The programme then proceeded with an introductory lecture by Dr Khuriah Abdul Hamid on the saponification process, which helped students gained a deeper understanding of the science behind soap-making and its relevance to their science subject. There were 64 students involved in the practical session consisting of Form 3 to Form 5 students. Following the engaging lecture, students were grouped into three categories, each participating in activities designed to enhance their overall learning experience. In a unique and immersive approach, each group rotated through all three activities throughout the event.

The first activity involved the Rubik's Cube challenge, testing the students' prowess in problem-solving. This activity contributes significantly to enhancing educational value in visual-spatial intelligence which aids in the development of strategic thinking, memory retention, and logistical skills, fostering heightened concentration and persistent problem-solving abilities across all age groups. The second activity was conducted by Mr. Ahmad Assakir bin Ahmad Shukri who engaged the students in a Jeopardy group quiz that covers general knowledge, science, and English.

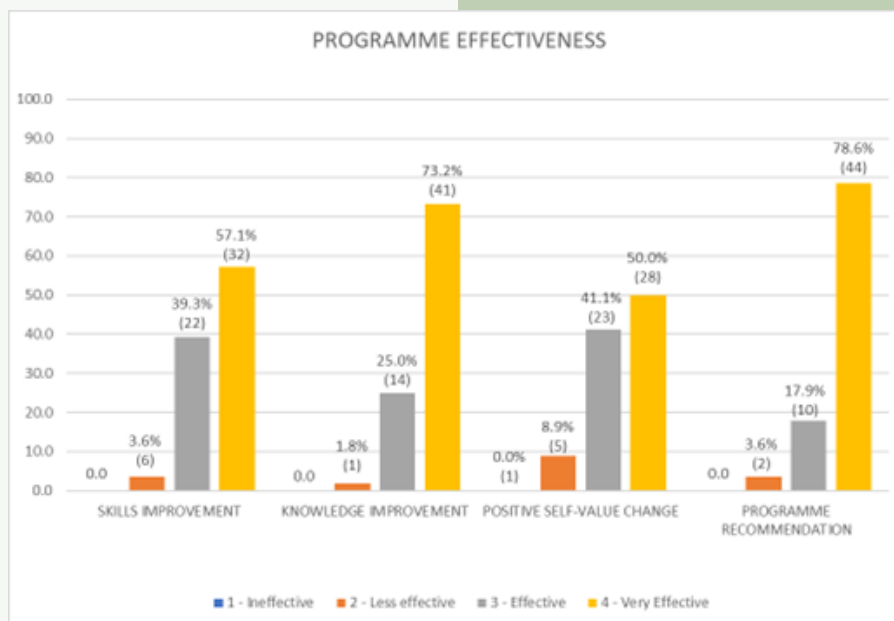
The purpose of the activity is not only to assess knowledge but also to infuse an element of fun into the learning process. The third activity was the highlight of the event, which was the hands-on soap-making practical session. It applied theoretical knowledge to real-world applications, which strengthened the students' understanding of the subject matter. The students experienced experimental skills such as using analytical balance to weigh the soap base, heating and stirring to homogenize the mixture of ingredients, adding the choice of colouring agent and fragrance to the soap mixture, and finally pouring the soap mixture into the soap mould. Then the students were taught to check the pH of the soap by using pH strip to ensure it is within the acceptable limit for skin use. All activities were skilfully managed by the members of the Department of Pharmaceutics, Faculty of Pharmacy UiTM, spearheaded by the programme director; Mdm. Nor Zaleha Ishak.

Overall, the programme was executed smoothly and achieved its objectives successfully, as evidenced by the positive feedback from the students. This initiative not only contributed to the academic development of the students but also sparked a passion for science that will undoubtedly continue to grow.

Furthermore, the programme helped bridge the gap between classroom learning and real-life applications, thereby enhancing the students' overall learning experience.

Participants' feedback on the programme's impact (Figure 1) exhibits a highly positive outcome across various dimensions. A significant majority of participants acknowledged substantial benefits, with over half and nearly all of them expressing that the programme was effective (Effective - Very Effective) in improving their skills (95.4%), knowledge (98.2%), and positive change in self-value (91.1%), reflecting the programme's impact on personal development. Most compellingly, a vast majority of participants (78.6%) highly recommended the programme, highlighting its effectiveness and positive influence. This collective response underscores the program's success in delivering meaningful outcomes, resonating positively with participants in terms of skills improvement, knowledge enrichment, and personal value development.

We extend our gratitude to Ma'ahad Tahfiz Ismail Puncak Alam for inviting us to be part of this educational journey and to committee members of the Soap-making practical from Faculty of Pharmacy UiTM; Mdm. Nor Zaleha Ishak (director), Mdm. Nor Hidayah Mohamed Mobin (secretary), Mdm. Siti Hanim Mohd Noor (treasurer), Mr. Muhammad 'Izzuddin Zamery, Mr. Ahmad Assakir bin Ahmad Shukri, Mr. Muhammad Aliff Shahkirin Hamdan, Mr. Norzaharin Mohd Nor, Mr. Mohamad Fikrey Bin Ramli and Dr Khuriah Abdul Hamid for making the event a success.



Mr. Muhammad 'Izzuddin Zamery, Dr Khuriah Abdul Hamid, Mdm. Nor Zaleha Ishak, Mdm. Nor Hidayah Mohamed Mobin, Mdm. Siti Hanim Mohd Noor, Mr. Ahmad Assakir bin Ahmad Shukri, Mr. Muhammad Aliff Shahkirin Hamdan, Mr. Norzaharin Mohd Nor, Mr. Mohamad Fikrey Bin Ramli
Faculty of Pharmacy, UiTM

CULTIVATING CONNECTIONS: A TRANSFORMATIVE JOURNEY IN INTERNATIONAL COMMUNITY SERVICE

The expedition from the Faculty of Pharmacy from UiTM to Universitas Pakuan, Bogor, Indonesia demonstrated the effectiveness of international exchange and community engagement. This expedition was not just a mere visit but a transformative experience, forging connections and fostering a deeper understanding of the world around us.

September 8: Exploring the Heart of Indonesia

Our adventure commenced with the warm embrace of Indonesia's rich culture as we touched down at Bandung Terminal 2 CGK. Pak Usep, our gracious host, extended his hearty welcome and led us on a journey to Bogor. Along the way, we were treated to a captivating sight of Indonesia's government buildings.

To savour the true essence of Indonesian cuisine, we dined at "Little Minang Jakarta." The feast included a mouth-watering array of dishes such as ikan kakap, teh talua, sop durian, daging rendang, and Gulai daun singkong. The flavours danced on our palates, leaving an indelible mark.

We had the privilege to visit Fakultas Matematika dan Ilmu Pengetahuan Alam (FMIPA) where we met the Dean, Pak Asep. His words resonated with warmth and importance, setting the tone for our visit. We explored the faculty, laboratories, pharmacognosy cabinets, lecture halls, and the serene Graha Pakuan Siliwangi, a building that houses various facilities for students and staff at the university.

An evening of cultural exchange transpired over dinner with FMIPA lecturers and students at Shabu Hachi, fostering knowledge-sharing and camaraderie.



September 9: Empowering Communities and Herbal Wisdom

Our second day was dedicated to experiencing the heart-warming efforts of rural communities. In the village of Pagelaran, Bogor, we witnessed the empowerment of Tani moms in managing small gardens filled with herbal plants. They guided us through the art of making herbal drinks and products, ranging from ginger drinks to ginger pudding, sharing centuries-old wisdom.

A culinary adventure led us to Bakso Rusuk Joss to explore the world of Bakso, an Indonesian meatball, and sempelak, a savory and spicy traditional Indonesian cracker tantalizing our taste buds.

The day concluded with an artistic and musical delight as we visited Lawang Suryakencana, a cozy hipster cafe. Local buskers set the mood as we painted and savoured coffee, experiencing the pulse of Bogor's creative culture.



September 10: Nature's Treasures and Botanical Wonder

An enchanting day awaited us as we explored the Istana Presiden Bogor and Bogor Botanical Gardens. A brisk walk amidst lush greenery turned into a picnic, where we indulged in local snacks called "cemilan," including kuih ape, kuih cubit, tahu walik, martabak cheese, telur gulung, and kuih ranggin. These local flavors told stories of tradition and innovation.

We also had the privilege of visiting a herbarium, home to numerous plant species, including beautiful orchids. The day culminated in the Festival Literasi Digital, where local singer Feby Putri left us mesmerized with her captivating performance, igniting our spirits.



September 10: Nature's Treasures and Botanical Wonder

The final day brought together reflections and discussions on potential collaborations, ranging from student activities to academic research and development for post-graduates. Our hearts were full, and our minds brimming with possibilities as we prepared to take our flight back to Malaysia.

Our journey to Universitas Pakuan, Bogor, was not just a visit; it was an impactful exploration of culture, community, and collaboration. It revealed the potential of international partnerships in creating a more interconnected world. We returned home with enriched hearts and a deepened commitment to global engagement.

As we reflect on our time in Bogor, we are reminded that in the tapestry of life, every thread of connection counts. This experience has served as a beacon for the Faculty of Pharmacy UiTM, motivating us to persist in our efforts to foster friendship, establish connections, and contribute to a more interconnected and empathetic global community.

Mr. Hafizy Akmal Hamzah
Final Year Student
Faculty of Pharmacy, UiTM

ALUMNI SERIES

SERVICES PROVIDED BY COMMUNITY PHARMACISTS DURING COVID-19 PANDEMIC

Patients faced interruptions in seeking healthcare during the outbreak of coronavirus disease due to fear of infection, difficulty reaching physicians or healthcare facilities, and medicine supply interruptions. Despite adhering to some rules and restrictions throughout the pandemic, community pharmacies have remained accessible to the public and have worked on the front lines, providing essential services with the aim of ensuring the continuity of healthcare in the community. COVID-19 has led to a paradigm shift in community pharmacists' roles from dispensing medications to providing patient-centered care [1].

During the pandemic, over-the-counter (OTC) drugs like paracetamol and ibuprofen, herbal remedies, and supplements, such as vitamins C and D, were highly sought after as preventive measures against COVID-19. The increased consumption of these medications has resulted in irrational use, incorrect dosages, and misconceptions about their effectiveness in treating COVID-19 [2]. This underscores the vital role of community pharmacists in preventing the inappropriate use of vitamins and OTC products [2].

There was also a surge in demand for medicine supplies, which led to a medication shortage and an insufficient supply of medicines. Hence, community pharmacists were rapidly adapting their front-line services to meet unprecedented demand by balancing the supply and demand of medications to ensure an uninterrupted drug supply chain to the community. As the role of community pharmacists is significantly trusted by patients to maintain the continuity of medicine supply, they have collaborated with physicians in providing therapeutic substitutions that are available in the market [3].

Community pharmacists have also contributed significantly to maintaining continuity of care for individuals with chronic diseases during the COVID-19 pandemic. Many patients experienced reduced adherence during this time due to difficulties accessing healthcare facilities and obtaining medications [4]. Over 50% of the vulnerable population with chronic diseases relied on community pharmacists for their care, including medication management, as they were highly accessible during the outbreak [5]. Community pharmacists provided telemedicine consultations via telephone and electronic channels, improving patient adherence to chronic therapies, especially for those who do not need to visit a clinic or required prescription renewals [4]. Additionally, they offered medication home delivery services to high-risk populations, such as the elderly, individuals with AIDS, asthma, tuberculosis, diabetes, hypertension, and COPD, limiting the need for these populations to visit the pharmacy [6, 7].

COVID-19 has underscored the crucial involvement of community pharmacists in vaccination programs. They not only serve as vaccination sites but also monitor adverse effects and outcomes through ambulatory and tele-pharmacy services [1]. Even before the pandemic, community pharmacists successfully administered a variety of vaccines, including seasonal, pandemic influenza, travel, and hepatitis B vaccines [8]. During the H1N1 pandemic, their active involvement significantly increased vaccine uptake to 80% of the population [9]. The active engagement of community pharmacists in vaccination is expected to continue beyond the COVID-19 era.

References:

1. Pantasri, T. (2022). Expanded roles of community pharmacists in COVID-19: A scoping literature review. In *Journal of the American Pharmacists Association* (Vol. 62, Issue 3, pp. 649–657). Elsevier B.V. <https://doi.org/10.1016/j.japh.2021.12.013>
2. Mohamed Ibrahim, O., Ibrahim, R. M., Ibrahim, Y. A., Madawi, E. A., & Al Deri, M. Y. (2022). Shedding the light on Pharmacists' roles during COVID-19 global pandemic. In *Saudi Pharmaceutical Journal* (Vol. 30, Issue 1, pp. 14–27). Elsevier B.V. <https://doi.org/10.1016/j.jsps.2021.12.003>
3. Tan, S.-L., Zhang, B.-K., & Xu, P. (2020). Chinese pharmacists' rapid response to the COVID-19 outbreak. *American Journal of Health-System Pharmacy*, 77(14), 1096–1097.
4. Olmastroni, E., Galimberti, F., Tragni, E., Catapano, A. L., & Casula, M. (2023). Impact of COVID-19 Pandemic on Adherence to Chronic Therapies: A Systematic Review. In *International Journal of Environmental Research and Public Health* (Vol. 20, Issue 5). MDPI. <https://doi.org/10.3390/ijerph20053825>
5. Akour, A., Elayeh, E., Tubeileh, R., Hammad, A., Ya'Acoub, R., & Al-Tammemi, A. B. (2021). Role of community pharmacists in medication management during COVID-19 lockdown. *Pathogens and Global Health*, 115(3), 168–177. <https://doi.org/10.1080/20477724.2021.1884806>
6. Brey, Z., Mash, R., Goliath, C., & Roman, D. (2020). Home delivery of medication during coronavirus disease 2019, Cape Town, South Africa. *African Journal of Primary Health Care and Family Medicine*, 12(1), 1–4.
7. Ph, A. M. A. R. (2021). SARS-CoV-2 outbreak: how can pharmacists help? *Research in Social and Administrative Pharmacy*, 17(2), 480–482.
8. Maidment, I., Young, E., MacPhee, M., Booth, A., Zaman, H., Breen, J., Hilton, A., Kelly, T., & Wong, G. (2021). Rapid realist review of the role of community pharmacy in the public health response to COVID-19. In *BMJ Open* (Vol. 11, Issue 6). BMJ Publishing Group. <https://doi.org/10.1136/bmjopen-2021-05004>
9. Cadogan, C. A., & Hughes, C. M. (2021). On the frontline against COVID-19: Community pharmacists' contribution during a public health crisis. *Research in Social and Administrative Pharmacy*, 17(1), 2032–2035.



Mr. Mohd Shah Rezan bin Hamzah, RPh 11171
Graduate of Master in Pharmacy Practice (2022/2023 Intake)
Faculty of Pharmacy, UiTM

Congratulations



iidex2023 **Fakulti Farmasi**

CONGRATULATIONS

Faculty of Pharmacy Contingent

GOLD

- IWEED ENHANCING ACTIVE INGREDIENT EFFICACY: EMULGEL FOR OPTIMAL SKIN WELLNESS**
- WASTE2LIGHT @ KELAPABLAZE**
- BREWBIOTIC (BB) COFFEE CUBES: ELEVATE YOUR TASTE, EMPOWER YOUR GUT!**
- ONY-CURE: HERBAL NAIL FUNGUS TREATMENT KIT**
- PLECOPAWS: WHISKER-LICKING GOODNESS - FROM MENACE TO MARVEL**

SILVER

- PURECLAY TAHARAH SOAP**
- EMAS4FP: PANDUAN PENGGUNAAN UBAT DAN PENCEGAHAN JATUH UNTUK WARGA EMAS**
- CRUDEND AN AQUALIPID DERMEASE SOLUTIONS**
- AERO-S: HERBAL BIOPOLYMER SCAFFOLDS WOUND PATCH**
- PLECOCOLLAGEN UNVEILING NATURE'S TREASURE: SUCKERMOUTH CATFISH COLLAGEN-FROM MENACE TO MARVEL**

BRONZE

- HAIL-P: THE HERBAL X-INFLAMMATORY LYOPHILIZED POWDER**
- STEMULUS: THE BANANA STEM-BASED FACIAL CARE KIT**
- DECIPHERING ANDROGRAPHOLIDE DERIVATIVES IN METASTATIC BREAST CANCER WITH MDA-MB-231 XENOGRAFTS**
- HEPASILENCE CRISPR KIT: CYP450 SILENCING KIT FOR DRUG METABOLISM STUDY**
- REVOLUTIONIZING PHARMACY EDUCATION: UNLEASHING THE POTENTIAL OF OSPA APPROACH OVER TRADITIONAL LABS**
- EZ-EVE (CELEBRATING FEMINISM)**
- MYRMECARE PAIN AWAY**
- BEACKEA BLISS; PLANT-BASED WOUND SPRAY**
- PROPOHEAL: WOUND CARE KIT**

— **From The Dean and The Faculty Fraternity** —

<https://pharmacy.uitm.edu.my/> @pharmacyuitm @pharmacy_uitm Faculty of Pharmacy UTM

Congratulations to the winners of IIDEX 2023 for their outstanding inventions, innovations, and designs! May their achievements serve as an inspiration to others.

Congratulations



 UNIVERSITI
TEKNOLOGI
MARA | Fakulti
Farmasi

Congratulations

IJPNaCS International Journal of
Pharmaceuticals,
Nutraceuticals and
Cosmetic Science



**International Journal of
Pharmaceuticals, Nutraceuticals
and Cosmetic Science**
(e-ISSN 2682-8146)
Faculty of Pharmacy, UiTM

is now indexed in

 **Malaysia
Citation
Centre**
Pusat Sitasi Malaysia

 <https://pharmacy.uitm.edu.my/>  @pharmacyuitm  @pharmacy_uitm  Faculty of Pharmacy UiTM

We are pleased to announce that the International Journal of Pharmaceuticals, Nutraceuticals, and Cosmetic Science (e-ISSN 2682-8146) managed by the Faculty of Pharmacy UiTM has been successfully indexed in the Malaysia Citation Centre (MCC)! This significant accomplishment reflects the unwavering dedication of the faculty towards promoting research excellence. We extend our sincerest congratulations to everyone who contributed to this achievement.



UPCOMING EVENT

PRP Bootcamp: Career Pathway for Provisionally Registered Pharmacists



PRP Bootcamp
Career Pathway
for Provisionally Registered Pharmacists

HOSPITAL PHARMACY
COMMUNITY PHARMACY
PHARMACEUTICAL INDUSTRY
RESEARCH & ACADEMIA

SAVE THE DATE
13th - 14th January 2024
8:00 am - 5:30 pm
Faculty of Pharmacy,
UiTM Puncak Alam Campus

WHO SHOULD JOIN ?

- PHARMACY STUDENTS
- PHARMACY GRADUATES
- PROVISIONALLY REGISTERED PHARMACISTS (PRP)



SPEAKERS

- Mindfulness and Emotional Regulation During the Essential Phase of Career**
Cik Amirah Zulaikha Zafrul Azlan, Clinical Psychologist, UiTM
- Research and Academia - Navigating the Future Healthcare Landscape Through Pharmaceutical Sciences**
Prof. Dr. Wong Tin Wui, Senior Lecturer, UiTM
- Hospital Pharmacy - Acquired Skills and Practice**
Pn. Nur Dalila Mohd Ali, Pharmacist, Hospital Sg. Buloh
- Charting your future: Financial Planning**
Pn. Azlinda Makhatar, Public Mutual Berhad
- Community Pharmacy - Career Pathway: PRPship to Ownership**
Pn. En Ni Lim, Pharmacist, Alpro Pharmacy
- Pharmaceutical Industry- Igniting Excellence in Industrial Pharmacy**
En. Mohd Fairuz Khan, Duopharma Biotech Berhad
- Code of Ethics for Pharmacists**
Pn. Nor Aqilah Hassim, Bahagian Lembaga Farmasi, Program Perkhidmatan Farmasi

REGISTER NOW

PRICE **RM135**

CONTACT US
prpbootcamp2023@gmail.com

<https://forms.gle/cZkAXpsejFErFMTY6>

Are you ready to elevate your career and confidently navigate the PRP's path to success? Or are you in a dilemma in choosing which career pathway suits you better?

We are excited to extend an invitation to you for our exclusive Provisionally Registered Pharmacist: Career Navigation Bootcamp, a 2-day's program designed to equip you with the skills, insights, and connections needed to thrive in your PRP-ship journey.

Secure your spot today and take the first step towards unlocking your full potential as a provisionally registered pharmacist. Don't miss this opportunity to invest in your career. The details are as follow:



13th- 14th January 2023



Faculty of Pharmacy, UiTM Puncak Alam Campus

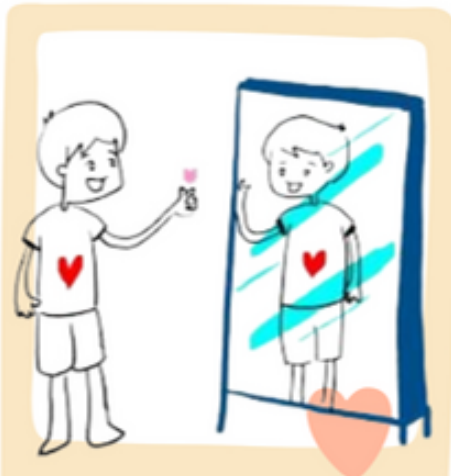


Investment in Your Future: RM 135

Welcome 2024

NEW YEAR NEW ME

This coming year, I'm going to



love myself more



be healthier



**be kinder to
all kind**



**commit for
personal growth**

Mdm. Nur Sabiha Md. Hussin
Faculty of Pharmacy, UiTM

Issue 12/2023

PRESCRIPTION

Latest news and updates from the Faculty of Pharmacy, UiTM



NEWSLETTER EDITORIAL TEAM

Editorial Advisor:

Prof. Dato' Dr. Abu Bakar Abdul Majeed

Authors:

Assoc. Professor Dr. Mahmathi Karuppanan, Dr. Nor Khaizan Anuar, Dr. Gurmeet Kaur Surindar Singh, Mr. Muhammad 'Izzuddin Zamery, Dr. Norkasihah Ibrahim, Dr. Khuriah Abdul Hamid, Mdm. Nor Zaleha Ishak, Mdm. Nor Hidayah Mohamed Mobin, Mdm. Siti Hanim Mohd Noor, Mr. Ahmad Assakir bin Ahmad Shukri, Mr. Muhammad Aliff Shahkirin Hamdan, Mr. Norzaharin Mohd Nor and Mr. Mohamad Fikrey Bin Ramli, Mr. Hafizy Akmal Hamzah, Mr. Mohd Shah Rezan bin Hamzah, Mdm. Nur Sabiha Md. Hussin

Illustrator:

Mdm. Nurul Izzati Ismail

PRESCRIPTION

Faculty of Pharmacy,
Universiti Teknologi MARA,
Kampus Puncak Alam,
42300 Bandar Puncak Alam, Selangor.

 @pharmacyuitm



 @pharmacy_uitm




 Faculty of Pharmacy UiTM



 <https://pharmacy.uitm.edu.my/>



 +603-3258 4645

 korporatff@uitm.edu.my