

The impact of COVID-19 on pharmacy education in Saudi Arabia

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Abstract: In late 2019, the first COVID-19 case was announced. Subsequently, numerous other instances were found all around the world. On March 2, 2020, the first case was reported in Saudi Arabia. The Saudi government has taken several precautions to stop the spread of this pandemic sickness. Closing public and private schools and universities and moving educational activity to online platforms were two of these approaches. Whether they are the 21 public pharmacy schools in Saudi Arabia or the. These abrupt transitions had an impact on 8 people, and depending on their level of preparedness, they responded differently. Here, we discuss the elements of the pharmacy school curriculum, including classroom instruction, laboratory work, and experiential learning, based on our experience at King Saud University.

Keywords: Pharmacy education COVID-19 Assessment Lesson learned.

1. INTRODUCTION

On December 31, 2019, episodes of pneumonia with an unknown aetiology were reported in the city of Wuhan.

Later, one of these cases was identified as one of the first COVID-19 cases. (WHO, 2020a). The Saudi Ministry of Health (MOH) reported the initial COVID-19 case on March 2, 2020. (MOH, 2020a). On March 11, 2020, the WHO subsequently declared the COVID-19 outbreak to be a pandemic (WHO, 2020b). A total of out of 291,468 confirmed cases of COVID-19 have been reported in Saudi Arabia as of August 11, 2020. (MOH, 2020b). To stop the spread of COVID-19, the Saudi government has implemented a number of precautionary and preventative steps, including temporarily suspending universities and other institutions of higher learning and transferring all educational activities to virtual platforms (Alshammari et al., 2020).

The COVID-19 crisis may have a more negative effect on pharmacy education than initially thought. In recent years, the pharmacy profession has received very little attention, which is regrettably a regular occurrence in various regions of the world (Stone, J. 2020). The COVID-19 pandemic has in fact highlighted the crucial tasks that pharmacists, who are among the most accessible healthcare professionals, must play. Further clarification is needed regarding the lessons discovered as a result of the modifications made to the Moroccan educational system. As had never been seen before, pharmacy students at higher academic levels helped out the younger ones by sharing their prior notes on the same courses, giving them a copy

of past tests to practise on, and giving general guidance on the modules for each year.

The Ministry of Education (MOE) convened an online brainstorming meeting with all deans of public and private health faculties in Saudi Arabia and compiled all the recommendations. As a result, the MOE published a guide for university-level examination and assessment. during the temporary closure of COVID-19 (MOE, 2020a). All pharmacy schools in Saudi Arabia, be it the 21 public ones or the eight private ones, were affected by these sudden changes and their reactions varied according to their level of preparation. Pharmaceutical education in Saudi Arabia has undergone several evolutionary stages since 1959. Prior to 2002, King Saud University (KSU) was the only university in the Kingdom offering a degree in Pharmacy. In 1959, a four-year Bachelor of Pharmaceutical Sciences degree was started, which grew into a five-year degree program in 1979 with the introduction of the discipline of clinical pharmacy into the curriculum. For 2010, the five-year program was renamed Bachelor of Pharmacy (BPharm) and a six-year Doctor of Pharmacy (PharmD) was introduced (KSU, 2020). Both curricula include classroom work, laboratory and tutorial sessions, and experiential training, and both qualify graduates to become practicing pharmacists.

Problematic situations frequently inspire fresh, original approaches (Brazeau, 2020). The KSA and other countries' pharmacy professors took advantage of this historic moment to expand their professional chances. To best match the learning objectives and the interests of the students, a number of pharmacy courses and teaching and evaluation techniques were altered. In several courses, alternate assessments took the place of final exams. Programs for online video conferencing and learning management systems (LMS) have never been investigated or used to this degree before. Fortunately, the obstacles were overcome by utilising the technology's wide availability. In the context of online education, the epidemic has undoubtedly ushered us into a new era of "out-of-the-box thinking and creative problem-solving" (Romanelli et al., 2020).

2. ONSITE TUTORIALS DEVELOPMENTS

The switch from traditional face-to-face classes to virtual ones has to happen right away when the closure was announced. In order to guarantee the delivery of consistent materials and assessments, the university implemented a number of actions. First, the Blackboard academic learning system was incorporated into all sections of the same undergraduate course. The University's Department of Information Technology (IT) has also produced a number of films to assist instructors in using Blackboard for academic tasks like recording lectures, creating tests, and submitting other materials. Alternative software solutions were explored in the videos as well as how to record lectures using Microsoft PowerPoint and then convert those files into a Blackboard-friendly format. The Vice Dean for Studies and Teaching reviewed all videos, the Dean gave his or her approval, and immediately published in the university journal. Website, YouTube channel and Twitter account (YouTube, 2020a). Finally, the university deployed an on-call technical support team to help professors with Blackboard. teachers and students who are familiar with or have been trained to use Blackboard.

3. LABORATORY TEACHING APPROVALS

Students in health-related areas, like as Pharm-D, experienced severe impacts from the pandemic, including the loss of clinical rotations, laboratory demonstrations, and industry clerkships, including internships. In light of this, it was crucial to offer an appropriate replacement and address these practical needs of a professional degree, such as pharmacists' responsibilities in any healthcare setting, both in the community and in hospitals, systems. In 2019, the National Center of Academic Accreditation and Evaluation published national PharmD program learning outcomes (PLOs). Henceforth, all national PharmD curricula are expected to aim for those PLOs. Nine of the 18 learning outcomes fall within the domains of skills and practise. This demonstrates the usefulness of laboratory instruction for comprehending the material being taught, enhancing teamwork abilities, and developing analytical and critical thinking skills. The abrupt switch to virtual instruction meant that pupils inexorably missed the chance to fully master laboratory skills. Laboratory sessions were replaced with shared videos of experimental work with students in order to lessen the influence of that. Although this method assisted pupils in developing a conceptual knowledge, they still lack practical abilities. The abilities that were missing will be addressed in other pertinent courses to make up for this shortcoming. In addition, the college forwarded a suggestion to the vice president for academic and educational affairs to be considered as part of KSU reopening plan where a student section is divided into two subgroups, and each subgroup will attend a two-period laboratory session every other week. This arrangement aligns with pre-cautionary measures, including social distancing and compensates for the intermittent scheduling. Besides, video demonstrations will be sent to students prior to their attendance to the hand-on session to minimize their presence time in the lab.

4. EXPERIENTIAL TRAINING MODIFICATIONS

Both Introductory Pharmacy Practice Experience (IPPE) and Advanced Pharmacy Practice Experience (APPE) are required in PharmD programs. Two days before the WHO announced that the COVID-19 outbreak was considered a pandemic, the Experiential Training Unit (ETU) suspended training for a week and worked on a response plan. Regarding the IPPE, the college transferred the training to a virtual dispensing platform that was supervised and monitored by preceptors. IPPE interns were assessed according to ETU's IPPE Handbook. On the other hand, APPE was more difficult to manage since it is an internship year where the cycles in the hospital are the majority. During Training: Suspension week, all inmates were asked to take the WHO infection control course entitled "Emerging Respiratory Viruses, including COVID-19: Methods for Detection, Prevention, Response and Control" (WHO, 2020c). All APPE preceptors have also been contacted to discuss possible scenarios and methods for optimal training. At the end of this week, all internship schedules were updated to include the services of King Saud University Medical City (KSUMC). Eight weeks visited each city or country that has reported COVID-19 cases or developed symptoms suspected to be COVID-19 and have been asked to report the ETU or self-report. Eventually, some cycles were moved to virtual platforms or performed remotely. Interns were kept up to date through regular meetings, clinical cases were discussed and presented via virtual platforms. As a result, training hours were not significantly impacted, especially since the KSUPharmD curriculum internship exceeds accreditation requirements.

5. NEW METHODS FOR ASSESSMENT

Beside teaching and training, assessment carried a great deal of challenge after the sudden switch from traditional to virtual education. Based on the aforementioned MOE guidance, many methods of assessment were adopted and suggested, such as open book exam, portfolio, online multiple-choice questions, assignment, online presentation, mini-projects, and discussion board (MOE, 2020b). Our college also applied more interactive methods of assessments, including reflections to specified classes where each student gave feedback on what he or she had learned, liked, disliked, and how to apply what was learned in practice. This method is expected to encourage students as well as faculty members to engage in the class in order to improve teaching and learning quality.

The College Council approved solely taking final exams online through Blackboard. Even though they had two hours to complete a one-hour exam, they nevertheless had to adhere to the university's rule that they could not log in to the exam after 30 minutes. The university also switched from the old grading system to a pass-or-fail one. Additionally, the College Council changed all tests such that they are not cumulative and that the material covered represents only 20% of the subject taught because to the potential emotional stress that students may experience during the pandemic. The various assessment techniques previously described were used to evaluate the remaining 80%.

6. EXTRACURRICULAR ACTIVITIES AND STUDENT MENTAL HEALTH

Although student groups have successfully held online activities and events, the epidemic has forced the Faculty of Pharmacy to postpone its annual Research Day. Since 2011, undergraduate and graduate students have the opportunity to present their research projects at this event, which is typically held in April. The Research Committee still required students to submit their abstracts for examination of their studies, and those who passed must be invited to present their work the following year.

Additional information: Our university offers continuing student counselling. The Associate Dean of Academic and Educational Affairs has designated staff to speak with students and address any problems they may be having during the lockdown. Additionally, the university has created a WhatsApp account where you may send messages at anytime, and any issues will be resolved within 24 hours, to create a direct line of communication with the students. Direct phone calls and emails to the dean and vice-deans were always appreciated. - graduation ceremony not part of the university's yearly statement. Both activities were postponed because of the closure, as expected. The institution made the decision to honor our graduates in a special way as a result.

First, the graduates and the dean recorded the pharmacy faculty graduation oath from home and put the video online (Youtube, 2020b). Second, the faculty surprised all the graduates by sending each of them a congratulatory graduation cake. Card from the Dean This small gesture was well received by the graduates and their families.

7. LESSONS LEARNED

Additionally, more clarity needs to be brought to the lessons discovered as a result of the modifications made to the Saudi educational system. As had never been seen before, pharmacy students at higher academic levels helped out the younger ones by sharing their prior notes on the same courses, giving them a copy of past tests to practise on, and giving general guidance on the modules for each year. This local collaborative strategy has been successful because it strengthened bonds, created a sense of community, and encouraged peer learning. Support while maintaining social isolationist practises. In a broader sense, the collaboration of pharmacists from the American Association of Colleges of Pharmacy (AACCP) to develop four specific policy recommendations resulted in a significant accomplishment because they were picked up on by numerous reliable organisations, including the Centers for Disease Control and Prevention (CDC) (MaineL.L.2020).

For example, all registered students, whether used by an instructor or not, were automatically synced to Blackboard and their recordings were accessible to the instructor. In addition, KSU subscribes to many software and platforms that offer alternative or supplemental virtual teaching and meeting options. Like MS Teams and Zoom. In addition, the Dean of Electronic Transactions and Communications has increased its technical support capabilities to accommodate the sudden massive demand from e-learning users.

At the university level, the cooperation between the professors was phenomenal. Once the College Council introduced Blackboard for teaching and assessment, colleges have complied with this sudden change. In addition, many faculty have volunteered to join the university's technical support team to help their peers. Educators used Blackboard to grade and share material with students before the pandemic. This enabled a quick exchange of knowledge among colleagues.

As an aside, the management system imposed by the academic accreditations played an indirect role in facilitating such a rapid educational transition. In addition to ISO 9001 certification, KSU School of Pharmacy has received accreditation and certification for the undergraduate program from the Canadian Council - Council for Accreditation of Pharmacy Programs (CCAPP), Accreditation Council for Pharmacy Education (ACPE), National Center for Academic Accreditation and Evaluation (NCAAA) and American Society of Health System Pharmacists (ASHP) for the residency program. The positive effects of complying with accreditations enabled harmonized and almost uniform teaching, training, and assessment with high quality.

Apparently, despite the above prerequisites and strengths, there are still challenges. Although we carefully planned and implemented our actions, we encountered unforeseen obstacles. Blackboard downtime was longer than expected, especially during peak times of synchronized instruction. Therefore, the College Council instructed all departments to collect recorded lectures and share them with students via One Drive-based links, as KSU has already provided each faculty member with terabytes of storage.

Furthermore, the Dean received weekly follow-up reports from the Vice Dean for Academic and Educational Affairs. In situations when the new assessment techniques were being used, this approach sped up the resolution of disputes or misunderstandings. It was also an opportunity to evaluate and revise our policies and practises for instruction and evaluation. Due to our university's affiliation with King Saud University Medical City (KSUMC), the quality of our APPE education has been effectively protected.

This partnership is an important strength that not all national pharmacy schools have been able to enjoy. Time to mentor or train interns. And to add insult to injury, some inmates were pressured by family not to come to the hospital. As we believed Pharmacy interns are part of the healthcare team and to ensure all interns are providing healthcare services with full safety precautions during this outbreak, we are asking all instructors at KSUMC to offer as much online clinical training and case briefings as possible to cover everyone Learning Outcomes. We believe that COVID-19 has impacted pharmaceutical education around the world. Many pharmacy schools can relate to the challenges we face and talk about the opportunities we open up. We anticipate a paradigm shift in pharmaceutical education, where global critical transitions, such as social distancing. With unprecedented reliance on online services, simulation has never been closer to the real world and pharmaceutical curricula must meet the expectations of the new standard.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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