



Implementation of Virtual Surgery Advance Pharmacy Practice experience APPE rotation: Creative solution to combat COVID-19 ramification on pharmacy education.

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Introduction and rational

In response to covid-19 global pandemic, many education sectors worldwide were forced to cancel or postpone classroom meetings. In the Kingdom of Saudi Arabia, many hospitals instructed the health profession's schools to restrict or prevent the presence of students and interns in training hospitals in an effort to limit the spread of the virus ⁽¹⁾. This has caused a major shift in medical education throughout the world ⁽²⁾. We designed this virtual surgery pharmacy practice rotation with the aim of providing pharmacy students with the key principles of providing pharmaceutical care for peri-operative patients. The aim of the study was to investigate students' satisfaction with the knowledge they received, and to evaluate outcomes.

Rotation Objectives

To familiarize pharmacy students with the key principles used in hospital to provide pharmaceutical care in peri-operative patients

Methods Rotation design

- The four week Surgery APPE rotation was designed by four clinical pharmacy faculties at a college of Pharmacy in Saudi Arabia and involved 12 pharmacy interns.
- All clinical faculties had experience in integrating simulation in pharmacy education and training.
- The virtual APPE was implemented using Microsoft Teams, where all pre-scheduled activities and meetings with students were performed remotely. The goals of this rotation are described in table 1.

Table 1: Goals of Virtual Surgery APPE rotation

1. Be familiar with the clinical pharmacist role in surgical unit.
1. Understand some surgical procedure, medication that used in this unit especially (antibiotic therapy, anticoagulation, and pain management).
1. Improve communication skills even in the presence of obstacles.

- This was achieved through integration of surgical themes and activities described in the ASHP guidelines on Surgery/ Perioperative Pharmaceutical services series (Table 2).

Rotation design (cont.)

- Virtual activities included Topic discussions, simulated patients case presentations, Journal clubs, drug information questions (table 3), and a longitudinal protocol development project of perioperative patients in collaboration with the university hospital.

Table 2: Rotation Major themes distribution of the 4 weeks of the rotation

Week 1	Surgical infection prophylaxis (SCIP)
	DVT prophylaxis
	Anticoagulant agent (pre, post)
Week 2	Sedation
	Anesthesia (General, Regional, Inhaled, Local)
	Neuromuscular blocking agents & reversal agents
Week 3	Post-operative pain management (Benzodiazepines, opioid agonists/antagonists & non-opioids)
	Post-operative nausea, vomiting and constipation
	Hematologic agent
Week 4	Peri-operative & post-operative hypertension

Table 3: Example of weekly work plan

	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	
Day 1	Orientation						
	T.D.	Surgical infection prophylaxis ppt			DVT prophylaxis ppt		
Day 2	C.P.	-	-	-	-	-	
	J.C.	-	-	-	-	-	
	A.	DI Question	DI Question	DI Question	DI Question	DI Question	DI Question
Day 3	T.D.	-	-	-	-	-	
	C.P.	DVT prophylaxis - case		Surgical infection prophylaxis - case (Intra-abdominal infection)		Surgical infection prophylaxis - case (antibiotic allergy)	
	J.C.	-	-	-	-	-	
	A.	-	-	-	-	-	
Day 4	T.D.	-	-	-	-	-	
	C.P.	-	-	-	-	-	
	J.C.	JC		JC		JC	
Day 5	A.	DI Question	DI Question	DI Question	DI Question	DI Question	
	T.D.	Anticoagulant agent (pre, post)					
	C.P.	Sepsis case		Neurological complication after surgery case		Burn case	
	J.C.	-	-	-	-	-	
Day 5	A.	DI Question	DI Question	DI Question	DI Question	DI Question	

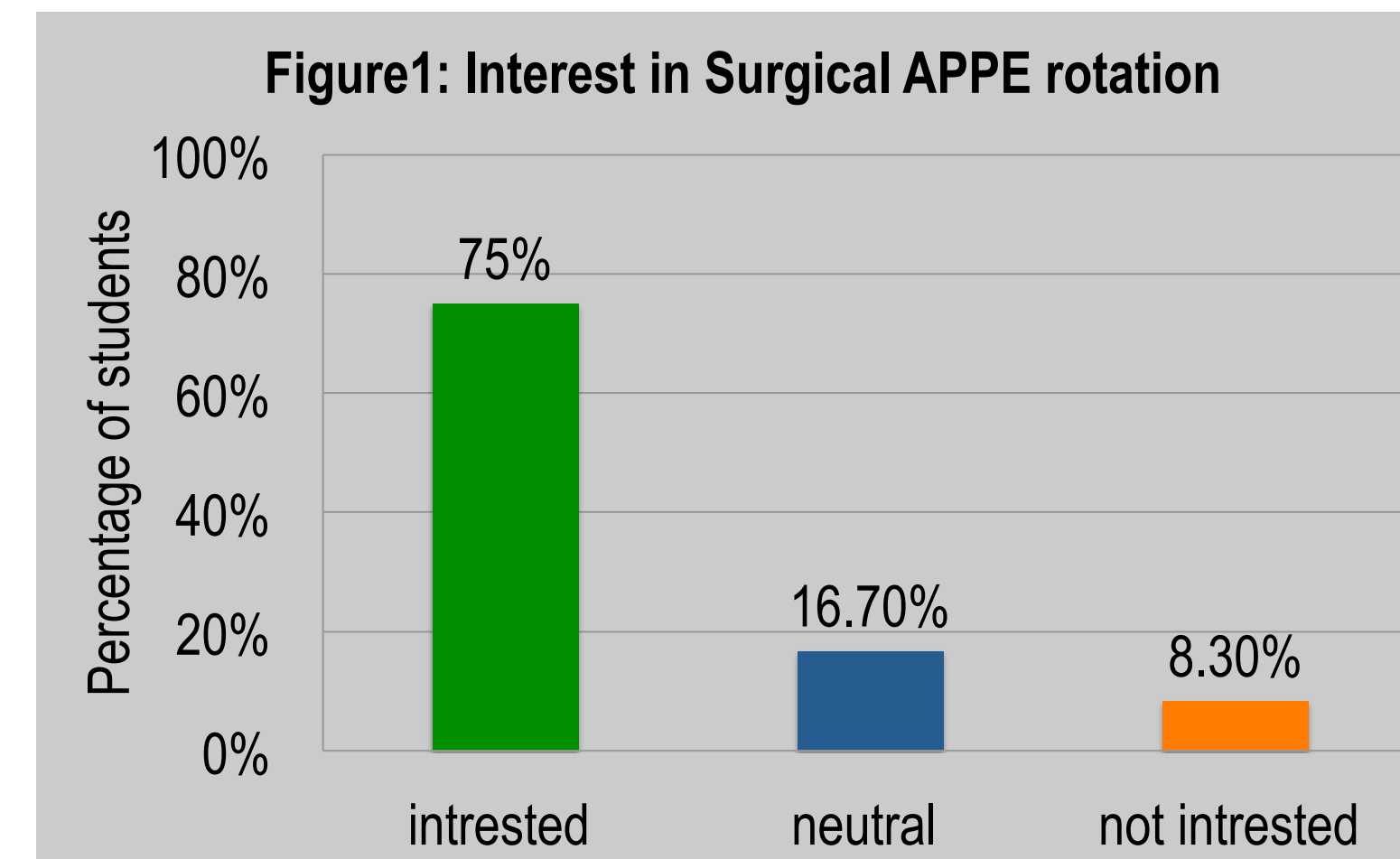
T.D: Topic discussion, C.P: Case presentation, J.C: Journal Club, A.: Assignment

Evaluation and assessment

- This virtual APPE rotation was assessed from multiple angles, including technical issues faced by students, interest in the rotation, the likelihood of accepting a surgical pharmacy job, the amount of activity, perceived benefit, and average hours spent weekly.

Rotation evaluation and assessment

Interest in Surgical APPE rotation:



Technical issues:

- All students had a personal laptop and access to the Internet at home, which provided technical accessibility to utilize Microsoft teams functions and perform their rotations duties.
- During the first week of the rotation, 25% of students felt that the technical issues they faced affected their overall learning experience, this has decreased over the course of the rotation to 8.3% during the last week.

Average hours spent weekly:

- mean =28.6 hrs/week, median= 30 hrs/week. (Excluding the time spent on Microsoft-teams with the preceptor)

Rotation evaluation and assessment

Student prospective compared to other onsite rotations:

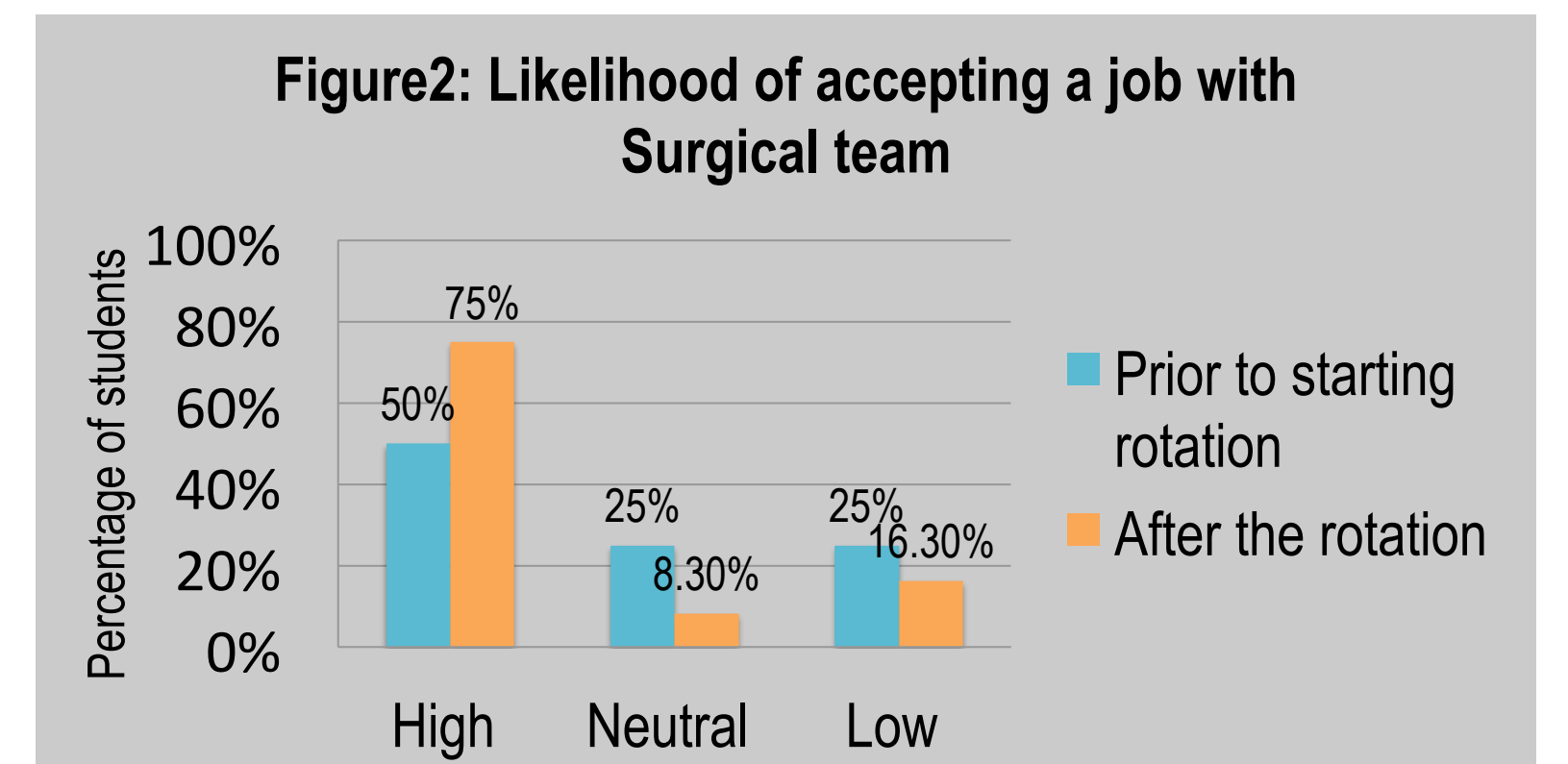
1.Amount of activity done every week:

- With the exception of last week of the rotation (0%), about 2-3 students (16.6-25%) thought it was more than other rotations, while others thought it was comparable.

2. Benefit:

- Overall (91.6%) of students though it was comparable to other onsite rotations, while (8.3%) thought that real life patients and onsite rotations would give them more benefit.

Likelihood of accepting a job with surgical team:



Conclusion

In the presence of a secure, personalized, and professional virtual platform, a distant surgical APPE rotation can be easily adapted by pharmacy schools, preferably with an experience in scenario creation and simulation education. This creates an opportunity for pharmacy students to enhance pharmacotherapeutic management skills of peri-operative patients and supplement their clinical communication skills, especially in areas where surgical pharmacy practice is not well established.

References

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2. Murdock, H. M., Penner, J. C., Le, S., & Nematollahi, S. (2020). Virtual Morning Report during COVID-19: A novel model for case-based teaching conferences. *Medical education*.