

## Covid 19 pandemic and general surgery residency: impact and perspectives

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### Abstract

The COVID 19 pandemic constitutes a major challenge for various states of the world, whether in terms of health or economics. To deal with it, health authorities will have a lot of difficulties to balance between responding to COVID 19, maintaining essential health services and of course preparing the post COVID period including resident training.

This study aims to assess the impact of this pandemic on the surgery residents training and to propose solutions to deal with it.

**Keywords:** Covid 19, pandemic, surgery resident, medical education.

### Materials & Methods

To assess the effects of this world critical situation on surgical residency training, a survey was sent by email to all general surgical residents in the military hospital of RABAT. After analyzing the demographic data (age, gender, family status, residency year), we tried to assess the impact on the residents' hospital activity, their self-learning as well as their social life. Finally, some solutions were proposed to bridge this

educational gap while respecting the safety measures adopted by the government.

### Results

Participants were 15 residents. They ranged in age from 27 to 38, with a mean age of 31.2. The majority of them were male (73.33%) while 30% were female. Single residents represent (53.33%) whereas 46.67 % were married. They are distributed as follows: 33.33% are in the first year of residency, 6.67% in the second year, 40% in the third and 20% in their last year of training. The preliminary analysis does not show any significant association between the demographic variables. (Table 1)

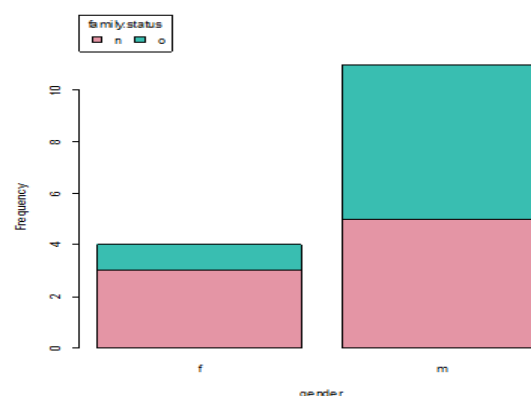


Figure1: Demographic data (n: single, O: married, f: female, M: male)

The analysis of hospital activity before and during this pandemic revealed a significant decrease in the number of bedside visits/ week (3 vs 1.5), didactic visits/week (1.5 vs 0) and patients seen in consultation/day (10.67 vs 0.6).

The operating volume of our residents has also declined due to a decrease in the operating days (3.73 vs 1.53 day/week) and a reduction of patients operated in a day (2.6 vs 1.06).

Despite the fact that emergency activity was not too affected (1.2 guard/week vs 0.86), the number of patients operated in a shift has clearly decreased (2.6 vs 0.62).

Except for acute and oncological surgery, a significant decrease was noted in the number of mini-invasive surgery essentially for benign conditions (5.133 surgery/week vs 0.2 during the SARS cov2 pandemy). Data analysis shows also that residents in their last year of training are the most affected due to a reduction of their operating volume. (Table 2)

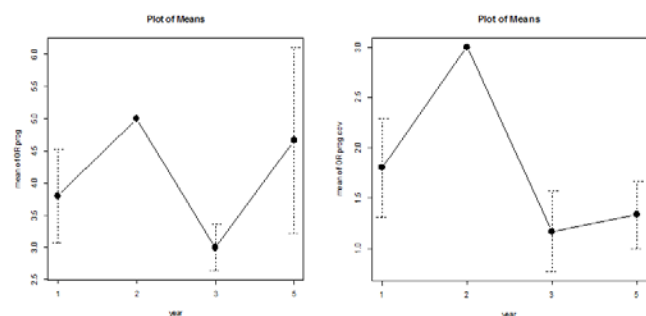


Figure 2: OR program by residency year before and during covid-19

The time spent by each resident in self-study (article reading, viewing surgery video, simulator training...) before and during this pandemic was evaluated and no significant differences were noted, even for those on call in services dedicated to the care of covid -19

patients. However, we realize that female residents are more affected with a significant decrease in their learning time.

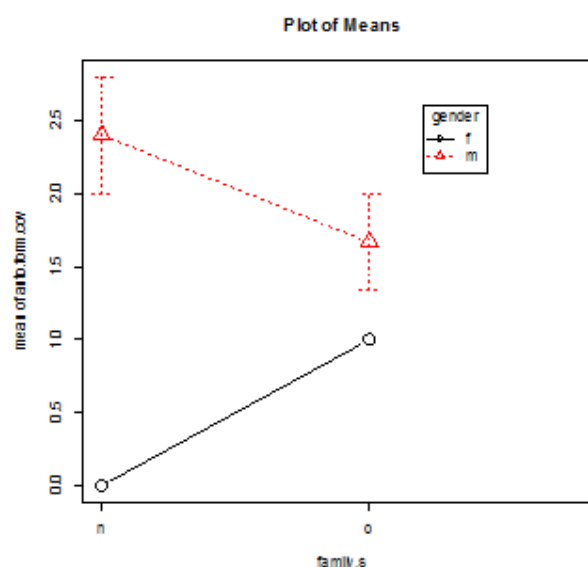


Figure 3: self study time (hour/day) during covid-19 pandemy in terms of family status and gender.

Our survey also shows that 93.33% of residents believe that this pandemic will impact their training, and in 66.67% of cases their social life will be also concerned. In order to assess the burnout degree among residents, we used the modified version of Maslach Burnout Inventory for Medical Personnel. (1) Results show that for 26.6% of residents, the scales of Emotional Exhaustion and Personal Accomplishment are located in the red zone which describes their difficulty to manage this stressful event.

Table 1 demographic DATA

Residents n(15)	1 <sup>st</sup> year n(5)	33.33%
	2 <sup>nd</sup> n (1)	6.67%
	3 <sup>rd</sup> n(6)	40%
	4 <sup>th</sup> n()	
	5 <sup>th</sup> n(3)	20%
gender	Male n (11)	73.33%
	Female n (4)	26.67%

age	Median 30,5 years M 32 F 29	
Family status	Single n(8) Married n(7)	53.33% 46.67%

Table 2: Resident activities before and during the covid-19 pandemic

activities	Normal (mean)	During covid pandemic (mean)	p-value (t-test)
Self-study	1.625 (hour/day)	2 Male 120 min Female 30 min	0.549 (0.008366)
Visit			
Didactic	1.5 (visit / week)	0	0.0404
Bedside visit	3	1.5	0.0008054
consultation	10.67 (patient / day)	0.6	0.0000962
Emergency guard	1.2(day/week)	0.8667	0.01919
Operated patient/ day	2.6	1.067	0.0000327
OR program			
day/week	3.733	1.53333	0.0000095
laparoscopic	5.133	3	31
cancer	2.667	0.2	0.0000337
(patient/ week)		1.4	0.001828

## Discussion

Since the onset of the covid-19 pandemic, residents all over the world live in a state of uncertainty and doubt dealing with this uncontrollable situation. Measures adopted by governments, in order to limit the exposure of hospitals' staff, constitute an obstacle for maintaining normal resident training program essentially for surgical specialties.

Our study has demonstrated a clear decrease of resident surgical activities. This can be explained by differing non urgent procedures, a reduction of daily surgical activity, a limited number of consultant and by recommendations advising to limit surgery acts to experienced surgeons.(2) Similar results have been reported in other surgical specialties. (3)

Residents' academic activities were also compromised due to a reduction of daily visits and staff. However, we find that this pandemic has provided our residents an opportunity to update their knowledge as demonstrated in the increase of self-study time of each resident.

Another face of SARS-COV-2 pandemic, which deserves to sound the alarms bells, is the social and psychological effects. We found that 26% of residents suffer from burn out.

So, what are the solutions in order to maintain a high quality of surgical education while ensuring the safety of learners and educators?

## Perspectives

Certainly, no solution can replace learning in the operating room and in the patient bed for surgical residents. However, this critical world situation was also the occasion to change educational methods in surgical residency. New alternatives were adopted like pre-recorded videos commented by an expert surgeon, virtual class and staff in webinar format, academics

conferences via teleconference and critical article reading sessions. (4, 5)

### **Conclusion**

The covid-19 pandemic has severely impacted the learning and lives of general surgery residents. Therefore, social support and use of smart learning methods are required to pass this unprecedented scenario.

### **Authors' contributions:**

MB was the principal investigator; AE, LM, AB, and BA collected and analysed data; MB, BS, and HK wrote the report and all authors approved the report.

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