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The Experience of Family Medicine Residents during the Early Phase of COVID-19 Pandemic in Tunisia

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ABSTRACT

The COVID-19 pandemic has overwhelmed healthcare systems particularly the training curriculum for post-graduate medical students. Our aim was to assess family medicine residents' perceived impact of the COVID-19 pandemic on training and medical education in Tunisia.

***Methods*: We conducted a cross-sectional survey among all Tunisian family medicine residents who were in training during the year 2020. Residents starting their first-year residency studies in 2021 were excluded. A structured questionnaire was created and shared via Google Forms. Residents' anonymity and consent were respected.**

***Results*: We included 107 residents (85% females). During the first semester of 2020, a significant reduction in workload was reported including working hours (58.9%), patient's flow (65.1%) and elective admission (83%). The workload tended to partially normalize during the second half of the year. The restriction of academic activities (staff, grand rounds, and congresses) was considered the major obstacle (73.8%) hindering residents' training. About 72% benefited from E-learning during the second period. By the end of 2020, 48.6% of participants reported being infected by the virus. The majority (97.2%) reported feeling anxious, irritable and/or depressed. The pandemic significantly decreased residents' satisfaction with their medical training (4.22±2.15 before the crisis versus 2.78±1.18 during COVID-19) (p<10-3).**

***Conclusion*: The COVID-19 pandemic had decreased residents' level of satisfaction with their training and had negatively affected their mental health. The key findings of the present research can be a starting point to provide high quality residency training and to avoid bypassing their weaknesses in the upcoming outbreaks.**

Keywords: COVID-19, pandemics, residency, family medicine, medical education, satisfaction, Tunisia.

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I. Introduction

The COVID-19 pandemic has overwhelmed healthcare systems around the world, particularly the training curriculum for postgraduate medical students.

Several studies have been carried out in many countries to identify the impact of these changes on their medical learning process [1]-[4]. However, how Tunisian family medicine residents perceived these changes has not yet been studied, to the best of our knowledge.

Therefore, we conducted the present study to assess residents' experience during COVID-19 pandemic and the perceived impact on their training and medical education.

II. Methods

A. Database and Study Population

It was a cross-sectional study conducted through a nationwide online survey distributed between 20th February and 10th April 2021.

All Tunisian family medicine residents, totaling 762 in 2020 according to the Tunisian Ministry of Health, were eligible to participate, regardless of their residency level, college of origin and training area.

Inspired by similar studies, a structured questionnaire was created and shared via Google Forms [5]. As a pretest phase, the questionnaire was reviewed by four senior doctors with experience in medical education. The final version included five sections aiming to collect demographic data, investigate organizational and working pattern changes, educational methods modification and assess residents' satisfaction with their training. After revision and approval of faculty of Monastir IRB, our survey was sent to email addresses, with two reminders after one week.

To extend our survey's reach, the link was shared and re-shared through MESSENGER as well as FACEBOOK pages connecting almost all the Tunisian family medicine residents.

B. Statistical Analysis

Data was analyzed using IBM SPSS software version 19 on Windows.

Baseline characteristics were expressed as mean with determination of extremes and interquartile range for quantitative variables and absolute or relative frequencies for qualitative variables.

For the analytical study, we used the following tests including t-test, chi-square test, two-tailed test, exact Fisher test, McNemar test and non-parametric tests.

Pearson correlation was utilized to evaluate the linear relationship between satisfaction before and during the COVID-19 pandemic.

III. Results

A. Demographic Data

The participation rate was 14.04%.out of 107 participants, 85% were females and the mean age was 28±1.8 years, Table I illustrates the general characteristic of the study population.

TABLE I: The Demographic Data of the Population

Variables	Findings	
Age (Years)	28.6±2.1 [25], [40]	
Gender (%)		
Female	85	
Male	15	
Faculty of origin (%)		
Faculty of medicine of Tunis	32	
Faculty of medicine of Sousse	9	
Faculty of medicine of Monastir	48	
Faculty of medicine of Sfax	11	
Seniority level (%)		
Second year	66	
Third year	34	
Training center (%)		
	January-June	July-December
University hospital	64.2	48
Regional hospital	16	16.3
Primary care center	19.8	35.7

B. Impact of the Pandemic on the Training

Participants reported a significant change in working pattern including a reduction in working hours (58.9%), a decrease in patients' flow (65.1%) and a reduction of elective activities (83%) during the first semester (Table II).

For the clinical setting, 58% of training areas were not arranged to receive COVID-19 infected patients. An alternate working pattern was adopted by more 68% of participants' teams during the first outbreak (Table III). With time, we noticed a significant increase in COVID-19 units as long as a normal working pattern. During the two periods, 85.5% of hospitals did not use telehealth technology.

By the end of 2020, 48.6% of participants reported being infected by the virus. The majority (97.2%) reported feeling anxious, irritable and/or depressed.

As for medical education, residents were negatively affected by the suspension of some conventional methods of instruction particularly seminars (62.6%) and academic meetings (45.8%). However, among 71% who attended online courses, only 30% were satisfied.

TABLE II: Change in Working Pattern

	January-June 2020	July-December 2020	p-value
Working hours during the pandemic (%)			
No change	23.6	48.1	$<10^{-3}$
Decrease	58	19.8	
Increase	17.9	32.1	
Patients flow during the pandemic (%)			
No change	13.2	19.8	
Decrease	65.1	44.3	
Increase	9.4	24.5	$<10^{-3}$
Not concerned	12.3	11.4	
Elective activities during the pandemic (%)			
No change	11.3	30.2	
Decrease	83	54.7	$<10^{-3}$
Increase	5.7	15.1	
On-call duties (%)			
No change	65.7	69.5	
Decrease	14.3	3.8	$<10^{-3}$
Increase	20	26.7	

TABLE III: Change in Clinical Settings

	January-June 2020	July-December 2020	p-value
Residents training structures were sorted to receive COVID-19 patients (%)			
Yes	41.9	52.8	$<10^{-3}$
No	58.1	47.2	
Alternate work arrangement (%)			
Yes	68.6	25.5	$<10^{-3}$
No	31.4	74.5	
Use of telemedicine (%)			
Yes, due to the pandemic	9.3	15.2	
Yes, prior to the pandemic	1.9	1	
No	88.8	83.8	

C. Residents' Satisfaction

Resident satisfaction with their medical education was profoundly impacted by the COVID-19 pandemic ($p<10^{-3}$). The mean satisfaction score decreased significantly during 2020 (2.78±1.18 on the 10-point scale during the crisis versus 4.22±2.15 before the crisis). Self-reported satisfaction during the crisis was strongly correlated with satisfaction level before the pandemic (Fig. 1). Expect for being trained aboard, there was no correlation between satisfaction level and gender, age, seniority level or training center.

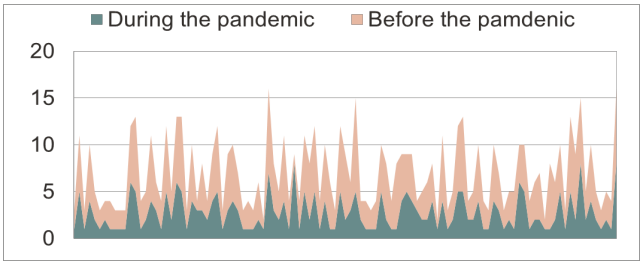

Fig. 1. Residents' satisfaction before and after COVID-19 pandemic.

IV. Conclusion

Findings of the present study suggest a significant change in clinical setting and pattern as long as medical education

leading to an important impact on residents' educational process. This perceived impact was reflected by the decrease in satisfaction level.

In fact these results are not surprising as the great majority of published papers in the same topic suggested similar findings [5], [6]. Canadian radiology residents, 87.4% reported a disruption in daytime schedules, 93% observed a decrease in the number of cases [7].

Worldwide, residency programs have been quick to migrate the didactic components of the training curriculum online [8]. This approach allowed residents to attend at more convenient times based on their schedules. However, a significant and inescapable disadvantage of shifting to online is the restriction of professional networking and opportunities for "in person" collaboration. In addition, the most obvious barrier to the implementation of e-learning is the restricted facilities' availability in the workplace [9].

The design of effective educational experiences requires an understanding of the factors most associated with trainee's satisfaction and the differences in learning needs of trainees by level of training. In spite of being a subject of controversy [5], [10], residents' satisfaction is mainly determined by the perceived quality of health care provided at the facility [11], resident- senior relationship [12], [13] and skills acquisition reflected by clinical independence [14]. The pandemic has caused a major reshuffle on all these levels although Tunisian residents were not really satisfied even before pandemic.

In this perspective, we suggest the following recommendations to improve post graduate training quality:

- Regular and continuous assessment of training gaps.
- Interventions to preserve adequate clinical training.
- Adopting the "Agile" principles in health care system.
- Diversifying pedagogical method (clinical reasoning-based learning, case-based learning, patient video cases, simulation …).
- Encourage hydride sessions, whenever it is safe, to get the benefit of both in-person and online methods.
- Ensure the general well-being of residents

V. Strengths and Limitations

To the best of our knowledge, the present study is the first to evaluate the impact of COVID-19 pandemic on Tunisian residents covering almost all dimensions of medical education in postgraduate medical studies.

However, a number of limitations should be noted. The low response rate made it prone to sampling bias. The timing of the survey distribution was late compared to the questioned period; resident's response might be biased by the upcoming viral outbreak.

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Conflict of Interest

Authors declare that they do not have any conflict of interest.

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