

Brief Correspondence

Urology Residency Training at the Time of COVID-19 in Italy: 1 Year After the Beginning

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic has led to significant changes in urology practice and residency programs. One year ago, the first nationwide survey on this topic showed a dramatic impact of the acute phase of the pandemic on residents' training activities. Aiming to assess for the first time how the COVID-19 scenario reshaped the pattern of urology training over a whole pandemic year, a cross-sectional, 38-item, web-based survey was developed. Residents scored the percentage decrease of their involvement in various clinical and surgical activities during the period of March 2020–March 2021 (as compared with the pre-COVID period). Overall, 312/585 (53.3%) residents from 27 schools of urology were included. The proportions of those experiencing a significant decrease of training exposure were 13.6%, 28.8%, 26.7%, 46.9%, 37.6%, and 33.3% (as compared with 40.2%, 85.8%, 82.3%, 69.7%, 59.7%, and 50.2% in the previous survey) for on-call activities, outpatient visits, diagnostic procedures, endoscopic surgery, open surgery, and minimally invasive surgery, respectively. The most impactful reductions in training activities were reached by final-year residents. Our findings highlight that, even if less burdensome than expected, urology residency training (especially in endoscopic surgery) was highly affected throughout the whole past year. This critical gap of skills may jeopardize residents' training even beyond the COVID-19 pandemic.

Patient summary: In this study, we assessed whether the training activities of Italian urology residents were impacted negatively by a whole year of COVID-19 pandemic (March 2020–March 2021). We also compared our results with those reported in a previous survey evaluating how the coronavirus disease 2019 (COVID-19) pandemic changed the training pattern of urology residents during the peak of the outbreak in March 2020. We found a critical decrease in residents' activities (especially for those in their final years of residency and for surgical procedures) that, even if lower than expected, might negatively impact their education and training in the future.

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Globally, as of May 3, 2021, there have been >152 million confirmed cases of coronavirus disease 2019 (COVID-19), including >3 million deaths, as reported by the World

Health Organization (WHO; <https://covid19.who.int>). These features make COVID-19 one of the deadliest global pandemics in human history.

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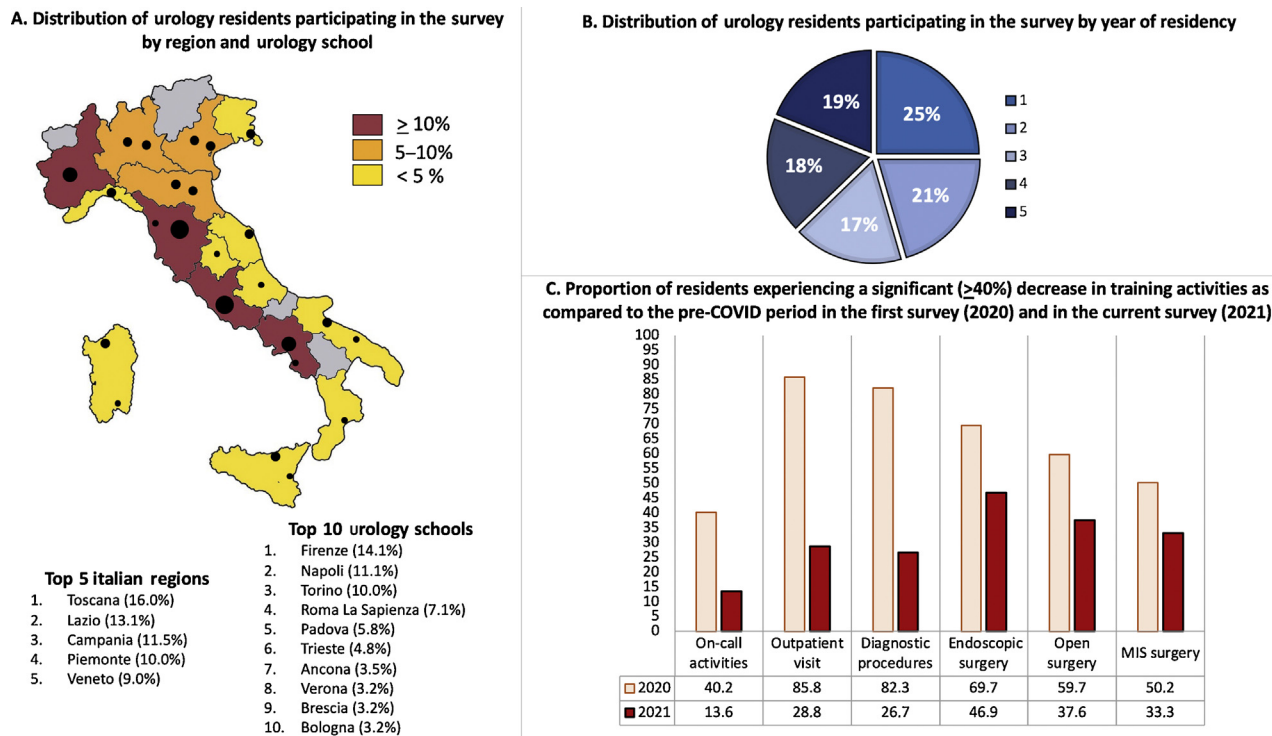


Fig. 1 – Graphical overview of the main survey results. (A) Distribution of urology residents participating in the survey by Italian region and urology school. The top five Italian regions and top ten urology residency schools are highlighted. (B) Distribution of urology residents participating in the survey by year of residency. (C) Proportion of urology residents experiencing a significant ($\geq 40\%$) decrease in their training activities (as compared with the pre-COVID period) in the current survey. COVID = coronavirus disease; MIS = minimally invasive surgery.

Unsurprisingly, the outbreak has led to significant changes in urology practice and residents' training patterns [1–5], raising critical concerns on how to resiliently address the challenges of urology education at the time of COVID-19 and beyond [6].

The first nationwide survey published in literature revealed a dramatic short-term impact of the acute phase of the pandemic on Italian residents' training activities [4], a finding that has also been confirmed later in other countries [5,7].

To provide a contemporary detailed overview on this topic, herein we assessed how the COVID-19 scenario has reshaped the pattern of urology training over a whole pandemic year.

A cross-sectional, 38-item, web-based survey was developed using Google Forms according to the Checklist for Reporting Results of Internet E-Surveys (CHERRIES; Supplementary material) [8].

The survey was sent to all Italian residents via e-mail on March 27, 2021, exactly 1 yr after our previous survey, specifically focused on the impact of the first peak of the COVID-19 pandemic on urology training [4] and remained open for 7 d.

For the purpose of this study, residents were asked to score the percentage decrease of their involvement in on-call, outpatient, diagnostic (prostatic biopsy, cystoscopy, etc.), and endoscopic/open/minimally invasive surgical activities during the period of March 2020–March 2021 (COVID-19 pandemic) as compared with the pre-COVID period, considering reductions of $\geq 40\%$ as significant.

Then, we compared the results of the current survey with those of our previous analysis [4] to explore whether the degree of reduction in each training activity, as assessed during the peak of the pandemic, was confirmed along the whole year. For the latter analyses, we excluded trainees in their 1st year of residency, as they did not experience a prepandemic working condition. Lastly, participants were asked to indicate the number of hours per day available for educational purposes as well as their exposure and potential interest in *smart learning* programs [9,10].

Overall, 312/585 (53.3%) residents from 27 schools of urology were included in the analysis (Fig. 1A and 1B). The characteristics of the participants are reported in Supplementary Table 1. There was no evidence of a late responder bias. No differences were found among responders of different years regarding gender, region, and center of training (data not shown).

The histograms in Figure 1C show the percentage decrease of II–V-year urology residents' involvement in each training activity throughout the whole year as compared with the 1st month of the COVID-19 pandemic (March 2020). Overall, the proportions of residents experiencing a significant decrease of training exposure were 13.6%, 28.8%, 26.7%, 46.9%, 37.6%, and 33.3% in the current survey (as compared with 40.2%, 85.8%, 82.3%, 69.7%, 59.7%, and 50.2% in the previous one) for on-call activities, outpatient visits, diagnostic procedures, endoscopic surgery, open surgery, and minimally invasive surgery, respectively. These findings outline a considerable

Table 1 – Proportion of Urology residents experiencing a significant ($\geq 40\%$) decrease in their training activities (as compared with the pre-COVID period) in the current survey and in our previous survey

Proportion of residents experiencing a $\geq 40\%$ decrease in each activity, n (%)		Overall	Year of residency				p value
			2	3	4	5	
On-call activity	March 2020 (previous survey)	105 (40.2)	30 (39.5)	33 (42.3)	23 (40.4)	19 (38.0)	0.1
	March 2020–March 2021 (current survey)	29 (13.6)	4 (6.8)	6 (11.5)	7 (14.3)	12 (22.6)	0.9
Outpatient visits	March 2020 (previous survey)	224 (85.8)	67 (88.2)	66 (84.6)	48 (84.2)	43 (86.0)	0.9
	March 2020–March 2021 (current survey)	64 (28.8)	14 (23.7)	10 (19.6)	18 (32.7)	22 (38.6)	0.1
Diagnostic procedures	March 2020 (previous survey)	215 (82.4)	63 (82.9)	59 (75.6)	47 (82.5)	46 (92.0)	0.1
	March 2020–March 2021 (current survey)	60 (26.7)	12 (19.7)	9 (16.7)	16 (29.1)	23 (41.8)	0.012
Endoscopic surgery	March 2020 (previous survey)	182 (69.7)	48 (63.2)	55 (70.5)	38 (66.7)	41 (82.0)	0.1
	March 2020–March 2021 (current survey)	98 (46.9)	17 (37.0)	21 (42.0)	28 (50.0)	32 (56.1)	0.2
Major open surgery	March 2020 (previous survey)	156 (59.8)	44 (57.9)	45 (57.7)	31 (54.4)	36 (72.0)	0.2
	March 2020–March 2021 (current survey)	79 (37.6)	17 (34.0)	19 (37.3)	19 (35.2)	24 (43.6)	0.7
Minimally invasive surgery	March 2020 (previous survey)	131 (50.2)	34 (44.7)	34 (43.6)	30 (52.6)	33 (66.0)	0.06
	March 2020–March 2021 (current survey)	61 (33.3)	8 (24.2)	15 (30.6)	16 (32.0)	22 (43.1)	0.3

COVID = coronavirus disease.
For this analysis, trainees in their 1st year of residency were excluded as they did not experience a prepandemic working condition. Descriptive statistics were reported as frequencies and proportions. Potential differences across residency years regarding the proportion of residents experiencing a significant reduction of their training activity were evaluated using the Kruskal-Wallis test.

impairment of residents' daily urology practice and of their routine exposure to both clinical and surgical training activities, even if less burdensome than the peak of the pandemic [4]. Notably, however, the proportion of residents experiencing a significant reduction in their training surgical activities was relevant, involving almost one out of two residents for endoscopic surgery (46.9%) and at least one out of three residents for open and minimally invasive surgery (37.6% and 33.3%, respectively).

Table 1 shows the same analysis stratified by year of residency (excluding residents in their 1st year of training). Of note, the most impactful reductions in training activities were reached by final-year residents: 56.1%, 43.6%, and 43.1% of them had significant decrease in their endoscopic, open, and minimally invasive surgical exposure, respectively. This is important, as these are the residents who are about to take up employment shortly and therefore need to gain independence in these procedures soon.

Lastly, Supplementary Figure 1 shows how residents took advantage of several smart learning modalities and contents during the whole pandemic year. As compared with our previous survey [9], a lower proportion of residents in the current study reported to have at least 2 h/d for smart learning activities (31.1% vs 85.2%), probably in light of their regained involvement in on-call, outpatient, and diagnostic training activities. Notably, only 38.8% of residents reported to have taken advantage of webinars as a tool for smart learning during this year, with even lesser proportions using podcasts (8.3%) and social media (11.9%) for such educational purposes.

Moreover, when asked about the "utility" of the above-mentioned modalities, only 47.1% and 49.7% of residents considered prerecorded videos and webinars, respectively, as highly useful for educational purposes (as compared with 77.8% and 69.8%, respectively, recorded in our previous survey), with fewer than one out of four residents giving value to podcasts (23.1% vs 65.8% in the previous survey) and social media (17.6% vs 34.2% in the previous survey). These

findings appear to reduce the potential value of such smart learning modalities in urology residents' education as compared with what was expected at the beginning of the pandemic [9,10]. This concept stresses the need to refine the role and methods of virtual urology education as well as of educational meetings in the future [11]. In this regard, the educational gap of knowledge experienced by urology residents over a whole pandemic year should encourage shared collaborative initiatives involving all Italian urology residency schools to reshape a common framework toward updated training strategies (ie, modular simulation, hands-on training programs, webinar courses, etc.). Of note, a recent study found that urology residents may find webinar activities a better tool for social networking and personal pleasure, while face-to-face meetings may be more useful for educational purposes, suggesting that integrated "hybrid" meetings might be the most effective strategy for educational purposes [12]. In fact, the so-called "phygital" dimension (in which some participants attend a meeting in person, while others are online) might have distinct advantages for residents, such as the opportunity to benefit at the same time from both "on-demand" and "downloadable" learning tools [13].

Our study is not devoid of limitations. First, the risk of recall bias cannot be ruled out entirely. Second, the cutoff of 40% used to define the percentage decrease of residents' involvement in different training activities (compared with the pre-COVID period) as *significant* was ultimately based on the design of our previous survey [4]. While it might have introduced a detection bias, this choice was made to offer readers the opportunity to compare the results of the two surveys. Third, we could not evaluate how potential differences in urology programs across Italian residency schools influence the residents' perception of their training activities. Moreover, the response rate recorded for the current survey (53.3%) was lower than expected [4], probably reflecting a decreasing interest in online educational activities by urology residents over the pandemic year, potentially limiting the generalizability of our findings.

Acknowledging these limitations, to the best of our knowledge, this is the first nationwide survey providing insights on the variation in urology residency training throughout a whole year of COVID-19 pandemic. Taken together, our findings highlight that, even if the exposure of urology residents to “clinical” and “diagnostic” activities was preserved more than expected, this was not the case for their involvement in surgical practice, which was highly affected, especially for endoscopic procedures. This represents a critical gap of skills that may jeopardize residents’ training even beyond the COVID-19 pandemic.

Author contributions: Riccardo Campi had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Campi, Amparore.

Acquisition of data: Campi, Amparore, Checcucci.

Analysis and interpretation of data: Campi, Amparore.

Drafting of the manuscript: Campi, Amparore.

Critical revision of the manuscript for important intellectual content: Serni, Gacci, Esperto, Minervini, Fiori, Porpiglia.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.euros.2021.07.002>.

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