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ORIGINAL ARTICLE

When residents work less, they feel better: Lessons learned from an unprecedented context of lockdown



Lorsque les internes travaillent moins, ils se sentent mieux : leçons tirées d'un contexte de confinement sans précédent

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Summary

Introduction. — With the COVID-19 outbreak activities of urology departments have been limited to non-deferrable procedures impacting the daily program of residents in urology. We assessed the psychological impact of the lockdown on Belgian residents in urology and their resounding on the quality of the training.

Material and Methods. — A self-administered anonymous questionnaire assessing the risk of burnout in a pandemic situation and its impact on the quality of the training was e-mailed

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Assessment

to the members of the European Society of Residents in Urology of Belgium (ESRU-B). We used the Copenhagen Burnout Inventory score which assesses the different dimensions of burnout (personal (CBIP), professional (CBIPro), relational (CBIR)). Several questions evaluating impact on residents' health and apprehension of the future were included. The survey lasted for 5 days. Comparison of parameters before and during the coronavirus crisis was made using paired samples *t*-test or χ^2 test were.

Results. – Fifty percent (62/126) of the ESRU-B members replied to the questionnaire. If 93% of the responders reported a negative impact on the quality of their practical training (CI95 = [0.07–1.10]; $P=0.83$), 56% and 61.7% reported a positive impact of the crisis on their life and on their theoretical training respectively. Burnout risk scores were significantly reduced ($P < 0.001$) for each dimension 7.26 to 3.40 (CBIP), 9.02 to 4.35 (CBIPro) and 4.42 to 3.03 (CBIR) respectively.

Conclusion. – Despite a negative impact on the daily work quality, the decrease in activity induced by the lockdown did not have a negative psychological impact on Belgian residents in urology but stress the opportunity to review the current training system to be better balanced between practice and theoretical formation.

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MOTS CLÉS

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Évaluation

Résumé

Introduction. – Avec l'épidémie de COVID-19, les activités des services d'urologie se sont limitées à des procédures non différables, ayant un impact sur le programme quotidien des internes en urologie. Nous avons évalué l'impact psychologique du confinement sur les internes belges en urologie et son retentissement sur la qualité de la formation.

Matériel et méthodes. – Un questionnaire anonyme évaluant le risque d'épuisement professionnel en situation de pandémie et son impact sur la qualité de la formation a été envoyé par courrier électronique aux membres de la Société européenne des résidents en urologie de Belgique (ESRU-B). Nous avons utilisé le score *Copenhagen Burnout Inventory* qui évalue les différentes dimensions du burnout (personnel (CBIP), professionnel (CBIPro), relationnel (CBIR)). Plusieurs questions évaluant l'impact sur la santé des internes et leur appréhension de l'avenir ont été incluses. L'enquête a duré 5 jours. La comparaison des paramètres avant et pendant la crise du coronavirus a été effectuée à l'aide d'échantillons appariés test *t* ou test χ^2 .

Résultats. – Cinquante pour cent (62/126) des membres de l'ESRU-B ont répondu au questionnaire. Si 93 % des répondants ont signalé un impact négatif sur la qualité de leur formation pratique (IC 95 % = [0,07–1,10]; $p=0,83$), 56 % et 61,7 % ont rapporté un impact positif de la crise sur leur vie et sur leur formation. Les scores de risque de burnout ont été significativement réduits ($p < 0,001$) pour chaque dimension 7,26 à 3,40 (CBIP), 9,02 à 4,35 (CBIPro) et 4,42 à 3,03 (CBIR) respectivement.

Conclusion. – Malgré un retentissement négatif sur la qualité du travail au quotidien, la diminution d'activité induite par le confinement n'a pas eu d'impact psychologique négatif sur les internes belges en urologie. Cela souligne la possibilité de revoir le système de formation actuel pour tendre vers un meilleur équilibre entre la pratique et les enseignements théoriques.

Level of proof. – 3.

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Introduction

The COVID-19 outbreak quickly spread around the world forcing the Belgian healthcare system to change and adapt to these extraordinary conditions [1]. The urology departments activities were drastically reduced and limited only to non-deferrable procedures given the urgent need to re-allocated health care resources to treat COVID-19 patients [2–4]. The organogram was reorganized following a rigorous

flow-chart published by the Belgian Association of Urology (including Société Belge d'Urologie and Belgische Vereniging voor Urologie) from March 20, 2020 [5].

The COVID-19 pandemic not only affected COVID-19 patients but hit the entire healthcare system. As other medical staffs, urology residents were fully impacted by the crisis. The residents in urology had less opportunity to carry out clinical activities or to be tutored by their senior staff. The procedures most affected by these restrictions were

those in which the residents are most often on the front line and directly involved (benign pathology, lower urinary tract surgery, etc). Surgeries when performed, were carried out by experts' surgeons to reduce the operative time and risks of complications. To avoid gathering most multi-disciplinary consultations and lectures were cancelled and moved to videoconferences [6].

This crisis could also have a real impact on the mental health of global population as well as physicians [7]. Urologists in training are a known population at risk of burnout [8–10]. Long working hours constitute one of the most important sources of stress in the workplace and a dose-dependent relationship is known between the number of weekly working hours and burnout score [11].

The aim of this survey was to assess the quality of life impact of the lockdown on Belgian residents in urology and the impact on the quality of their training.

Material and methods

Database and study population

After 6 weeks since the national Belgian lockdown due to the COVID-19 outbreak, an online anonymous survey was designed and submitted to all 126 Belgian residents in urology excluding residents involved in their first year of general surgery program, members of the European Society of Residents in Urology of Belgium (ESRU-B). The survey sought to evaluate the practical, and theoretical impact of the COVID-19 crisis on the quality of the training as well as the psychological issues. The questionnaire was reachable online via Google Forms®. In Belgium, urology residency last 6 years with the 2 first years dedicated to general surgery.

To develop our questionnaire, we were inspired by the psychological known risk factors of COVID-19, the national guidelines, a validated questionnaire of burnout, and several questionnaires used in other countries [5].

Our 34-items questionnaire included demographic questions on: age, year of post-graduated training 2 to 6 (PGY2–6), university, place of residency (Table 1). In addition, the survey included the practical aspect of the daily work: number of days in the operating room and consultation, number of surgeries, satisfaction with surgical autonomy and supervision, type of surgery performed, compliance with national guidelines, type of training, the ability to get involved in scientific research or readings. Satisfaction was compared before and during the crisis.

Additional survey items were health aspect: respiratory history, smoking, symptoms, screening medical spacing for coronavirus infection and type of protection in the hospital environment.

To assess psychological impact of crisis, we used the validated Copenhagen Burnout Inventory (CBI), a questionnaire to complete on the psychological feelings before and during the crisis [7]. It assesses three dimensions of burnout through 19 questions: personal (CBIP), professional (CBIPro) and relationship (CBIR) exhaustion. The scores obtained allow an interpretation into three categories: no worry (CBIP/R 0–13, CBIPro 0–15) versus alertness (CBIP/R13–17, CBIPro 15–19) signifying worrying symptoms of exhaustion, versus alert (CBIP/R > 17, CBIPro > 19) meaning proven physical and

Table 1 Description of the population studied.

	Number of subjects (n/62)	Percentage (%)
Age		
25–27	15	24
28	9	14.5
29	16	26
30	12	19.5
31–35	10	16
Year of training		
2	15	24.2
3	15	24.2
4	16	25.8
5	5	8.1
6	6	17.7
Training center		
University center	34	54.8
Peripheral center	28	45.2
Training site		
Flemish region	14	22.6
Wallonia	22	35.4
Brussels capital region	26	42

psychological exhaustion. The higher the score the greater is the psychological impact. We compared the CBI residents' score before and during the crisis. We evaluated feeling of insecurity, stress from the risk of contaminating loved ones and the impact of the crisis on their private life.

The survey was conducted from April 29 to May 3, 2020.

The representatives of each Belgian University made a census of the number of residents confronted with the care of COVID-19 patients in order to compare the general proportion with that of the residents who completed the questionnaire. It was accomplished by individual calls or emails.

Statistical analysis

Statistical analyses were performed using SPSS software version 25 (SPSS Corp., Somers, New York). All tests were 2-sided and P -value < 0.05 was considered statistically significant. Continuous variables were expressed as mean \pm 1 standard deviation (SD) and binary variables as count and proportion. Comparison of parameters before and during the COVID-19 crisis was made using paired samples t -test. Comparisons of sub-groups within the population were carried out by independent sample t -tests or Chi² tests when appropriate.

Results

Description of our population

A total of 62 PGY2–6 (49.2%) respondents from all 7 Belgian Universities completed the survey. The median age was 29 years old [25–35].

Table 2 Comparison between practical training before and during COVID-19 pandemic.

	Mean BC	Mean DC	Standard deviation	P-value
Number of Surgeries/week*	3.73 ± 2.58	1.15 ± 2.58	1.52	< 0.001
Satisfaction of autonomy in practice	7.06 ± 0.52	6.55 ± 0.52	2.3	0.83
Number of Consultations/week*	5.11 ± 3.47	1.65 ± 3.47	2.56	< 0.001
Supervision satisfaction	8.03 ± 0.84	7.19 ± 0.84	1.81	0.001

BC: before crisis; DC: during crisis.

*0=0–5; 1=6–10; 2=11–15; 3=16–20; 4=21–25; 5=26–30; 6=31–35; 7=36–40; 8=41–45.

Among them, 22.5% ($n=14$) had to manage COVID-19 patients (8% ($n=5$) in a COVID-19 units and 14.5% ($n=9$) in emergency rooms), 21% ($n=13$) had to come every day at the hospital and the rest came part time (Table 1).

Among the general population of Belgian resident in urology, 21% ($n=26$) had to manage COVID-19 patients.

Practical activity

Before the COVID-19 pandemic, the average number of days spent in the operating room (OR) per week was 3 (± 1 day) with an average of 16–20 weekly procedures. During the crisis a drastic decrease was reported with 1 day (± 1 day) for surgery per week and an average of 0–5 weekly surgeries ($P<0.001$). Seventy-one % ($n=44$) of residents were satisfied with their autonomy in the OR before crisis with a rate of 7 out of 10 on a linear scale but only 61.3% ($n=38$) during the crisis (mean difference in content score 0.516; CI95[0.7–1.10]; $P=0.083$) (Table 2).

Regarding residual surgical activity, 92% ($n=57$) residents reported that their center followed the national recommendations and 84% ($n=52$) had read them. The most frequent surgical procedures were mainly those at high-risk of oncological features, acute lithiasis crisis and emergencies.

Before the COVID-19 epidemic, the average number of days spent in out-patients consultation was 2 (± 1) with an average of 21–25 weekly consultations. During the crisis, only 1 day (± 1) per week was dedicated to out-patients clinic with an average of 5–10 consultations ($P<0.001$).

The vast majority of residents (93.4%; $n=58$) reported that the crisis had a negative impact on their practical training and a quarter thought that an extension of training would be of interest if the crisis extended beyond 6 months.

Theoretical training

Sixty-four percent ($n=40$) were satisfied with supervision and teaching before crisis at a rate of 7 out of 10 on a linear scale but only 54.8% ($n=34$) during the crisis (mean difference in content score 0.84; CI95[0.38–1.3]; $P=0.001$) (Table 2).

Before the epidemic, 59% ($n=37$) of residents were satisfied with the theoretical training provided by their university and training centers, decreasing to 36.1% ($n=22$) during the crisis. Seventy-three percent ($n=45$) reported a diminution of this training but 25.8% ($n=16$) reported no modification. Residents reporting no modification in theoretical training were mostly juniors, in the 2nd and 3rd years of residency (69% ($n=43$) juniors vs 31% ($n=19$).

seniors respectively, $P=0.058$) and already reported a lower frequency of theoretical activities before the crisis (< 1 x/month vs average = 1 x/months, $P=0.004$). However, there was no significant trend depending on their university ($P=0.69$). Surprisingly, 61.3% ($n=38$) of residents took advantage of this period of decrease in clinical activity to carry out scientific work and 54.8% ($n=34$) to deepen their theoretical knowledge. We note that 61.3% ($n=38$) found that the crisis had a positive impact on their theoretical formation without significant difference according to their training year ($P=0.13$) or university ($P=0.54$).

Psychological impact

Analysis of the CBI score before crisis (BC) described that among residents 8% ($n=5$) had a CBIP exhaustion burnout score with vigilance worrying symptoms or with proven physical and psychological exhaustion. The vigilance or alert burnout score relating to CBIPro and CBIR exhaustion concerned 11% ($n=7$) and 1.6% ($n=1$) residents respectively. During crisis, only 1 resident presented worrying symptoms of burnout (vigilance) on a personal, professional or relationship point of view.

The analyses of scores obtained demonstrate a significant diminution of the CBIP (mean difference 3.86; CI95[2.61–5.09]; $P<0.001$), CBIPro (mean difference 4.66; CI95[3.26–6.06]; $P<0.001$) and CBIR (mean difference 1.38; CI95[0.49–2.29]; $P=0.003$) respectively during the crisis (Table 3).

Independent sample *t*-test to compare scores between junior and senior during and after crisis showed no significant difference between these two subgroups (Table 4).

Among responders, 56.6% ($n=35$) finds that the COVID-crisis has a positive impact on their private life.

With a focus on the 23% ($n=14$) of residents involved in the management of COVID patients in a COVID unit or emergency room, we also observed a significant decrease in the two classes of CBI score: CBIP (mean difference 2.86; CI95[0.37–5.35]; $P=0.028$), CBIPro (mean difference 4.93; CI95[2.51–7.35]; $P=0.01$) before and during the crisis (Table 2).

Health DC

Most residents (90.2%; $n=56$) had access to surgical masks and 42.6% ($n=26$) to FFP2-masks, blouse or visor. Among them 3.2% ($n=2$) were worried about their medical pulmonary history or smoking status (1.6%; $n=1$) and 9.7% ($n=6$) felt insecure at the hospital. We observed 61.3% ($n=38$)

Table 3 Paired samples tests of total population (*n* 62) and assistants taking care of COVID patients (*n* 14) CBI score BC and DC.

	Mean BC	Mean DC	Mean difference	<i>P</i> -value
CBIP (<i>n</i> 62)	7.26 ± 3.89	3.40 ± 3.38	3.86	< 0.001
CBIP (<i>n</i> 14)	7.57 ± 2.56	4.71 ± 3.77	2.86	0.028
CBIPro (<i>n</i> 62)	9.02 ± 4.57	4.35 ± 4.56	4.66	< 0.001
CBIPro (<i>n</i> 14)	9.00 ± 3.41	1.07 ± 3.5	4.93	0.001
CBIR (<i>n</i> 62)	4.42 ± 3.55	3.03 ± 3.89	1.38	0.003
CBIR (<i>n</i> 14)	4.29 ± 3.43	4.07 ± 3.5	0.21	0.777

CBIP: Personal Copenhagen Burnout Inventory; CBIPro: Profesional Copenhagen Burnout Inventory; CBIR: Relational Copenhagen Burnout Inventory; BC: before crisis; DC: during crisis.

Table 4 Burnout score comparison between junior and senior during and after crisis.

	Mean BC Junior (PGY 2–3)	Mean DC Junior (PGY 2–3)	Mean BC Senior (PGY 4–6)	Mean DC Senior (PGY 4–6)	<i>P</i> -value BC	<i>P</i> -value DC
CBIP	7.07 ± 3.85	3.40 ± 3.75	7.44 ± 3.98	3.41 ± 3.06	0.71	0.99
CBIPro	8.83 ± 4.40	5.20 ± 5.10	9.19 ± 4.78	3.56 ± 3.90	0.76	0.16
CBIR	4.63 ± 3.53	3.70 ± 4.50	4.22 ± 3.61	2.41 ± 3.16	0.65	0.20

CBIP: Personal Copenhagen Burnout Inventory; CBIPro: Profesional Copenhagen Burnout Inventory; CBIR: Relational Copenhagen Burnout Inventory; BC: before crisis; DC: during crisis; PGY: Post-Graduated year.

feared infecting loved ones. There is 58% (*n* = 36) of our population describes a positive impact of the pandemic on their privacy.

Among residents, 14.5% (*n* = 9) received screening while 27.4% (*n* = 17) had symptoms. As consequences, 4.8% (*n* = 3) were diagnosed COVID-positive.

No resident was taking an anti-psychotic drug before crisis and this did not change during the crisis.

Discussion

We present the results of 62 residents in urology responders to an online survey to assess the resounding on practice and the psychological impact of the COVID-19 pandemic.

This study demonstrates that the vast majority of the responders had a low commitment in COVID-19 unit. This is not in phase with other data coming from Italy or France wherein residents were much more frequently confronted with COVID-19 patients in first line with the feeling of inability to provide well adapted medical care for a new disease or to not be enough protected in their institutions [9,12,13]. The Belgian residents taking care of COVID-19 patients have no deterioration in their burnout score. Safety working environment is a corner stone of well-being and decrease the risk of contamination of medical staff. This requires a good information on the COVID-19 [14] and the feeling of security within the hospital described in our population. Our responders had the possibility of accessing the necessary protective equipment when necessary: FFP2 masks, visors, blouses or gloves [12]. They were able to carry out a screening given that Belgium is in the European "top 3" for the number

of performed screening tests [15]. We therefore observed a limited number of residents infected or showing typical symptoms of coronavirus infection (4.8%), comparable to the general Belgian population (4.3%) [16].

Despite residents in urology are considered at increased risk of burnout [17], we observed that our responders rarely had worrying burnout scores before the crisis and that these results even improved during the COVID-19 crisis. This observation concerns both junior (2nd and 3rd year of residency) and senior residents (4th, 5th and 6th years). The experience of professional pressure therefore seems to be homogeneous in our population. This is reflected among other things by the total absence of anti-psychotic drugs intake. A high number of working hours is a predictor of burn-out [17]. The lockdown offered a new and unprecedented perspective of analysis of the working time reduction. Nearly 80% of our target population have reduced their working hours. That is huge and never seen in the medical world. The comparison of burnout scores before and during crisis therefore suggests that a reduction in working time has a beneficial effect on the burnout score, on private life and so on general quality of life. This data must be tempered as they were obtained during the pandemic period and because we got less response from the PGY5.

During the COVID-19 epidemic, cancellation of routine care visits and surgery has dramatically reduced overall clinical volume and consequently the learning opportunities for trainees. This disruption of usual training affords some educational value. Currently, residents in urology must fulfill more scientific (publications, thesis based on studies) and theoretical (national exams) criteria to be graduated. However, no specific time slot is allocated to better prepare for

these objectives as most of the training is based on the practical acts. Our study reports a positive impact for residents on their ability to carry out scientific work or even deepen their theoretical knowledge on their own, so the coronavirus crisis demonstrated that the time allocated is reinvested wisely and that residents found satisfaction in the diversification of activities. A questioning is necessary about the place given to practical training in relation to theoretical knowledge and the schedules of residents. This is important during times of crises when traditional time- and volume-based educational standards may be challenged. This period could be an opportunity to reconsider the structure of urology training for the near future taking into account new modalities to provide knowledge that is both practical and theoretical [18].

Residents were not satisfied with the training received during the crisis without any difference between university membership or level of education. It corresponds with the decrease in courses given during this period.

The impact of such a pandemic is undoubtedly deleterious for surgical training as observed in other European countries [14,19] and alternatives should be more developed such as e-learning and webinar [20–22]. There is a crucial role to play for the national resident's association to conduct such program together with universities and the support of national scientific society.

Limitations

This survey data has inherent limitations and need careful interpretation. All of the results were obtained during the crisis and we therefore called on the responders' memory for their pre-crisis feelings. We cannot exclude a selection bias due to the sample size and the residents who did not respond to the questionnaire were perhaps more overworked as more involved in first line against the COVID-19.

Conclusion

This survey showed that despite a decrease in surgical training, residents made use of the time allocated to deepen their theoretical knowledge and carry out scientific work. An opportunity to review the current training system, to be better balanced between practice and theory. This crisis highlighted the room to develop new modalities of training and residents' association should be involved in such reflection. The results of our study also suggest that a decrease in activity can have a favorable effect on the risk of burnout and on quality of life in general.

Disclosure of interest

The authors declare that they have no competing interest.

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