



# Impact of COVID-19 on clinical practice, income, health and lifestyle behavior of Brazilian urologists

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## ABSTRACT

**Objectives:** To evaluate the impact of COVID-19 on clinical practice, income, health and lifestyle behavior of Brazilian urologists during the month of April 2020.

**Materials and Methods:** A 39-question, web-based survey was sent to all urologist members of the Brazilian Society of Urology. We assessed socio-demographic, professional, health and behavior parameters. The primary goal was to evaluate changes in urologists' clinical practice and income after two months of COVID-19. We also looked at geographical differences based on the incidence rates of COVID-19 in different states.

**Results:** Among 766 urologists who completed the survey, a reduction  $\geq 50\%$  of patient visits, elective and emergency surgeries was reported by 83.2%, 89.6% and 54.8%, respectively. An income reduction of  $\geq 50\%$  was reported by 54.3%. Measures to reduce costs were implemented by most. Video consultations were performed by 38.7%. Modifications in health and lifestyle included weight gain (32.9%), reduced physical activity (60.0%), increased alcoholic intake (39.9%) and reduced sexual activity (34.9%). Finally, 13.5% of Brazilian urologists were infected with SARS-CoV-2 and about one third required hospitalization. Urologists from the highest COVID-19 incidence states were at a higher risk to have a reduction of patient visits and non-essential surgeries (OR=2.95, 95% CI 1.86 – 4.75;  $p < 0.0001$ ) and of being infected with SARS-CoV-2 (OR=4.36 95%CI 1.74-10.54,  $p=0.012$ ).

**Conclusions:** COVID-19 produced massive disturbances in Brazilian urologists' practice, with major reductions in patient visits and surgical procedures. Distressing consequences were also observed on physicians' income, health and personal lives. These findings are probably applicable to other medical specialties.

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## INTRODUCTION

The COVID-19 pandemic has had broad consequences beyond the spread of the disease itself and efforts to restrain it. A major aspect of the pandemic is the fact that it caused the most extensive recession in history, with more than a third of the global population at the time being placed on lockdown (1, 2).

As we prepare this manuscript, Brazil's curve of new cases and deaths is probably at its peak (3). Social distancing has been introduced for more than two months and is plainly effective throughout the country, with no signs that it will be relaxed in the next weeks (2).

The pandemic has disrupted daily professional activities and personal life routine (4). For medical professionals, regular patient care was dramatically affected. The focus of medical care for both the public and private health systems shifted to the management of patients with COVID-19 and avoidance of any non-emergency treatments (5).

In urology, surgery is limited to emergencies (6-8). Elective surgeries have been suspended and even cancer cases have been postponed, with the hope that such delay will not have a negative impact on patient's outcome (9). Telemedicine has become an important tool, reducing the exposure of patients and clinicians, but only a small fragment of practitioners was prepared for this and most patients do not openly accept this new way modality of evaluation (10, 11). As a result, urologists and other surgical specialists have been experiencing a tremendous impact on their income, especially those whose earnings are driven mostly from their private practice (12). As other medical specialists and dentists, most costs with personnel and rent have been maintained in spite of their dramatically reduced income. Many are facing a financial crisis which is expected to worsen.

Apart from the economic and professional impacts, COVID-19 is attacking people's personal lives. The unprecedented restrictions to movement and the isolation of those under greater risk have created unthinkable situations and forced major changes in lifestyle (2). Big changes in everyday

routines due to the need to stay at home and the widespread closures of schools along with the financial hardships and fear of losing a loved one to the disease may raise the level of anxiety and tension in family relationships (13, 14).

The aim of this study is to perform a cross-sectional evaluation of the impact of COVID-19 on clinical practice, income, health and lifestyle behavior of Brazilian urologists.

## MATERIALS AND METHODS

This study was approved by the Research Ethics Committee of the University of Sao Paulo School of Medicine (project number CAPPESQ 13051/2020) and informed consent was obtained from all participants.

This study was conducted as an electronic survey sent through e-mail to all urologist members of the Brazilian Society of Urology, with no incentives for completion. The first e-mail inviting urologists to participate was sent on April/29/2020; two additional invitations were sent on May 04 and May 06, 2020. Data collection was closed on May 10, 2020. The data reported in this study refers to urologists' activities and impressions during the month of April/2020, when the whole country was living the second month of social distance officially recommended by state and federal sanitary authorities.

The invitation to participate was sent to 4200 eligible urologists. The invitation e-mail contained a link to a 39-question, web-based survey (Supplementary Questionnaire). Most questions were closed-ended, multiple choice. Some also allowed an open answer.

The survey included an assessment of socio-demographic, professional, health-related and behaviour parameters. The primary goal was to collect data on changes in urologist's clinical practice and income after 2 months of COVID-19. We also investigated changes in urological indications and planning for the near future regarding cost containment in professional and personal life. Urologists were asked to estimate the time beyond which delaying a surgery would be harmful to patients based on a priority tier classification va-

rying from 1 to 3 that was recommended by the European Association of Urology (EAU) (15).

We also investigated the impact of COVID-19 on health parameters and lifestyle behaviours.

Given the fact that Brazil is a country with continental dimensions and the incidence of COVID-19 varies markedly between different states, we investigated the impact of COVID-19 incidence on urologist's practice and income. Based on official data provided by the Brazilian Health Minister (3), we compared data from the 3 states with more participants in this survey that were among the lowest incidence rates states (Minas Gerais, Rio Grande do Sul and Santa Catarina) with the 3 states with more participants among the highest incidence states (São Paulo, Rio de Janeiro and Pernambuco).

## Statistical Methods

Data were initially elaborated using Survey Monkey® software online. Quantitative variables were expressed as medians and interquartile ranges, while qualitative variables were expressed as absolute values, percentages, or proportions. Categorical variables were compared using the Chi-squared or Fisher's exact test. Association were described as Odds Ratio with respective confidence intervals. All tests were 2-sided and a p value <0.05 was considered statistically significant. GraphPad Prism, version 8.0.4, San Diego-CA, USA, was used for data analysis.

## RESULTS

A total of 766 subjects completed the survey, representing 18.2% of the invited urologists. The mean time to complete the questionnaire was 12 minutes and 57 seconds. The skipping rate for each question ranged from 0% (Q1) to 38.6% (Q39). Most responses (83.4%) were filled during 4 of the 12 days that the survey was open.

The median age of the participants was 46.0 years [38-57]. Most were (90.8%), married (92.2%) and have children 80.4%. The state and geographic region distribution of the participants are shown in Table-1 as well as the actual distribution of Brazilian urologists throughout states and

geographic regions. The participation of urologists from the five different Brazilian geographic regions was proportional to the actual distribution of Brazilian urologists ( $p=0.881$ ).

The distribution of urologists according to the type of medical practice is depicted in Figure-1. The majority (61.2%) has most of their earnings coming from work in private practice, followed by employment in the public health system (14.6%) and employment in the private sector (14.1%). These numbers vary by region, with some states having a major preponderance of independent practice while others being dominated by the employed physician model.

The enormous impact of COVID-19 on urologist's clinical practice is shown in Table-2, with a major reduction in daily hours of work, patient visits, elective and emergency surgeries.

According to the surgical priority classification recommended by EAU, emergency surgeries were performed by 79.6% of the participants, priority 1 surgeries by 51.3%, priority 2 by 34.1% and priority 3 by 47.0%, in April, 2020. Non-essential procedures were performed by 31.3% of the participants during this period.

Urologist's estimates of time beyond which delaying surgeries may be harmful to patients are shown in Table-3. Most urologists considered that delaying surgeries classified as Priority 1 for more than 1 month might be harmful for the patient. Delays of up to two months for Priority 2 and up to 3 months for Priority 3 surgeries were considered acceptable by most urologists.

The impact of COVID-19 on urologist's income is shown in Figure-2. An income reduction of  $\geq 50\%$  was reported by 54.3% of the participants, including 23.8% who had a  $>75\%$  income reduction. Urologists in private practice had a higher chance of experiencing a  $>75\%$  income reduction in comparison with those working as employees in private or public sector (OR=3.69, 95% CI 2.09-6.35;  $p < 0.0001$ ).

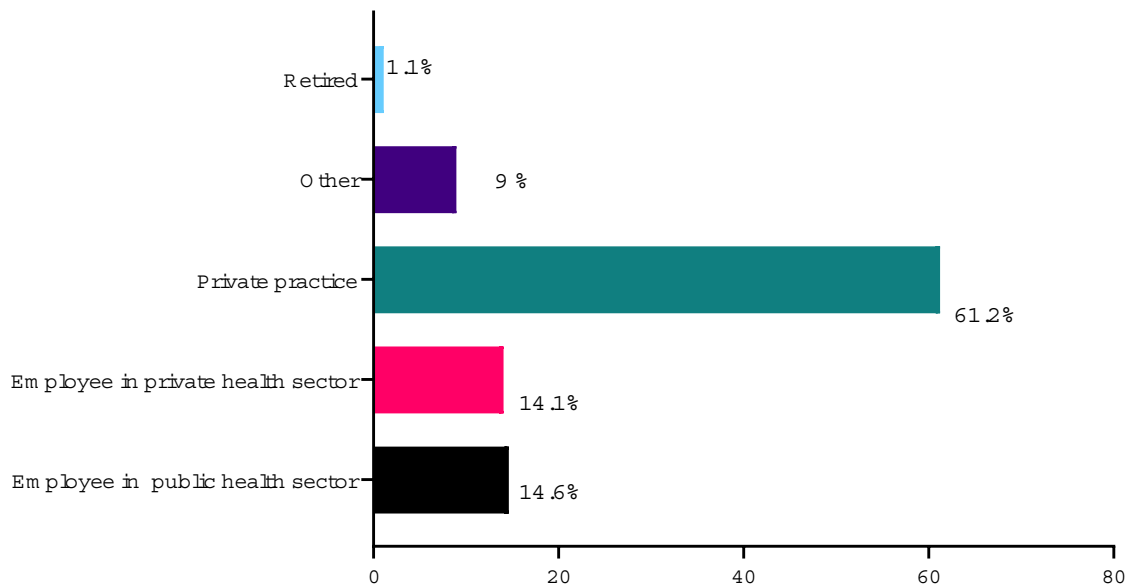
Since the start of the COVID-19 pandemic, 38.7% of the urologists reported performing video consultations. Patient's acceptance of video consultations was high as was physician's confidence regarding proper diagnosis and management

**Table 1 - Geographic regions in Brazil and state distribution of the 766 participants of the survey.**

Geographic region/State	N* (%)	Actual state distribution** (%)
<b>Southeast</b>	<b>361 (49.9)</b>	<b>55.5</b>
São Paulo	231 (31.9)	31.5
Minas Gerais	54 (7.5)	11.0
Rio de Janeiro	59 (8.2)	11.0
Espirito Santo	17 (2.3)	2.0
<b>South</b>	<b>141 (19.3)</b>	<b>15.4</b>
Paraná	32 (4.4)	5.6
Rio Grande do Sul	65 (8.9)	6.1
Santa Catarina	44 (6.0)	3.7
<b>Northeast</b>	<b>144 (19.8)</b>	<b>16.7</b>
Alagoas	10 (1.4)	0.6
Bahia	38 (5.2)	4.7
Ceará	18 (2.5)	2.9
Maranhão	8 (1.1)	1.2
Paraíba	6 (0.8)	1.1
Pernambuco	35 (4.8)	3.3
Piauí	11 (1.5)	0.9
Rio Grande do Norte	11 (1.5)	1.4
Sergipe	7 (1.0)	0.6
<b>Center-West</b>	<b>53 (7.3)</b>	<b>8.5</b>
Federal District	15 (2.0)	2.9
Goiás	24 (3.3)	3.2
Mato Grosso	7 (1.0)	1.1
Mato Grosso do Sul	7 (1.0)	1.3
<b>North</b>	<b>26 (3.7)</b>	<b>3.7</b>
Acre	0 (0.0)	0.1
Amapá	1 (0.2)	0.2
Amazonas	6 (0.8)	0.7
Para	15 (2.0)	1.4
Rondônia	1 (0.2)	0.6
Roraima	1 (0.2)	0.2
Tocantins	2 (0.3)	0.5

\* Urologists who participated in the survey;

\*\* Official state distribution of urologists who received invitation for the survey.

**Figure 1 - Distribution of urologists according to type of medical practice.**

using this consulting modality. A fee for service was charged in more than 50% of video consultations (Table-4).

Urologist's measures to reduce costs in professional practice and personal life since the start of COVID-19 are described in Table-5.

Table-6 compares the impact of COVID-19 on urologist's clinical practice from states with highest vs lowest COVID-19 incidence. Reduction of elective patient visits were more severely reduced in states with highest incidence of COVID-19. Almost 90% of the urologists from states with highest incidence of COVID-19 reported >50% reduction of elective patient visits vs. 70% of the participants from states with low incidence of COVID-19 (OR=2.95, 95% CI 1.86-4.75;  $p < 0.0001$ ). The impact on daily hours worked, emergency and elective essential surgeries (Priority 1 to 3 surgeries) was not significantly different based on the incidence of COVID-19. The chance of performing non-essential procedures was lower among urologists living in the highest incidence COVID-19 states (OR=0.52 95% CI 0.33-0.83,  $p=0.009$ ).

The impact on income was profound and similar between states with highest vs. lowest incidence of COVID-19. Among urologists living in highest incidence COVID-19 states, 23.6% reported an income reduction >75% as opposed to 21.5% in

those from lowest incidence states (OR=1.13, 95% CI 0.67-1.94;  $p=0.692$ ).

Asked about their physical health, 357 (68.0%), 140 (26.7%) and 28 (5.3%) considered themselves as very healthy, moderately healthy and not healthy, respectively. The median body mass index was 26.5Kg/cm<sup>2</sup> [24.4 - 28.7]. The impact of COVID-19 on urologist's weight, physical activities, alcohol consumption and sexual activity is shown in Table-7.

The activities that occupied most of the urologist's time out of working hours during the two first months of the COVID-19 pandemic were online social media, housekeeping, watching movies and TV shows and spending time with family (Table-8).

At the end of April, 2020, after two months of the pandemic in Brazil, 13.5% of Brazilian urologists have had COVID-19, including 5.2% with unequivocal laboratory confirmation and 8.2% with diagnosis based on clinical, radiological and epidemiological parameters. In most instances the clinical presentation was mild, but 34.8% of the affected urologists required hospitalization. Urologists living in the highest incidence COVID-19 states had much higher chance of having COVID-19 than those living in lowest incidence states (17.1% vs. 4.5%; OR=4.36 95%CI 1.74-10.54,  $p=0.012$ ).

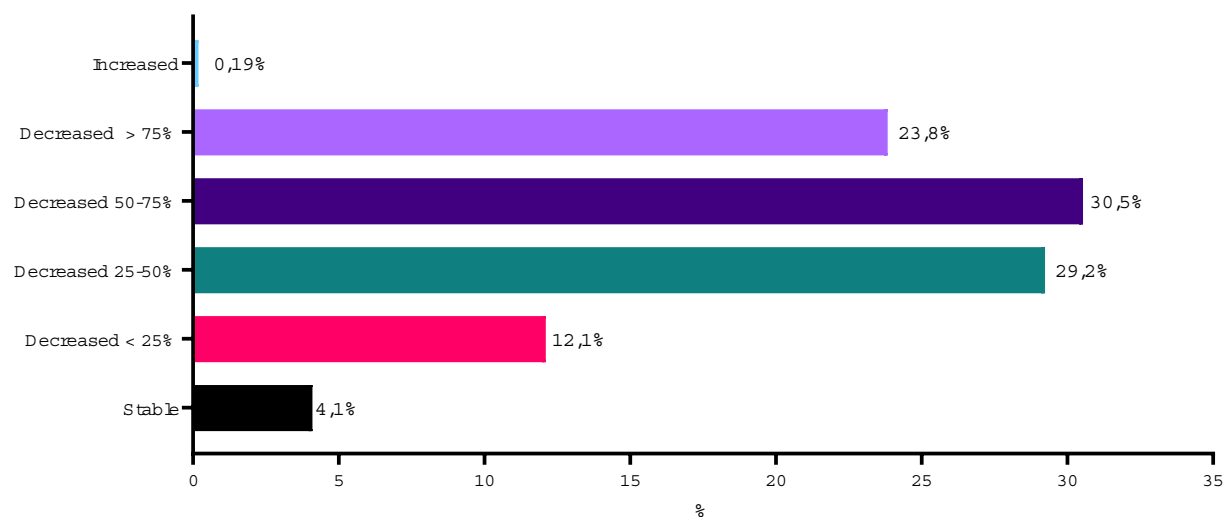
**Table 2 - Impact of COVID-19 on Brazilian urologist's clinical practice.**

Practice activity	N (%)
<b>Daily hours worked on weekdays</b>	
None	79 (10.9)
Up to 2 hours/day	140 (19.3)
Between 2-4 hours/day	217 (29.9)
Between 4-8 hours/day	225 (31.0)
>8 hours/day	64 (8.9)
<b>Elective patient visits</b>	
Remained stable	3 (0.4)
Decreased up to 25%	23 (3.2)
Decreased 25 to 50%	96 (13.2)
Decreased 50 to 75%	205 (28.3)
Decreased >75%	398 (54.9)
<b>Elective surgeries</b>	
Remained stable	5 (0.7)
Decreased up to 25%	14 (1.9)
Decreased 25 to 50%	50 (6.9)
Decreased 50 to 75%	98 (13.5)
Decreased >75%	551 (76.1)
Increased	1 (0.2)
<b>Emergency surgeries</b>	
Remained stable	116 (16.0)
Decreased up to 25%	91 (12.6)
Decreased 25 to 50%	108 (14.9)
Decreased 50 to 75%	141 (19.4)
Decreased >75%	256 (35.4)
Increased	7 (3.3)

**Table 3 - Urologist's estimates of time beyond which delaying surgeries would harm patients.**

Surgical priority tier*	N (%)
<b>Priority 1</b>	
Up to 1 month	407 (76.5)
Up to 2 months	93 (17.5)
Up to 3 months	29 (5.5)
Up to 6 months	3 (0.5%)
Up to 12 months	0 (0.0%)
<b>Priority 2</b>	
Up to 1 month	195 (36.7)
Up to 2 months	209 (39.2)
Up to 3 months	116 (21.8)
Up to 6 months	11 (2.1)
Up to 12 months	0 (0.0)
<b>Priority 3</b>	
Up to 1 month	116 (22.1)
Up to 2 months	139 (26.6)
Up to 3 months	187 (35.8)
Up to 6 months	78 (14.9)
Up to 12 months	3 (0.6)

\* = European Association of Urology surgical priority tier (15).

**Figure 2 - Impact of COVID-19 pandemic on urologist's income.**

**Table 4 - Patient acceptance, physician`s confidence and charging for video consultations during the COVID-19.**

Video consultations	N (%)
<b>When you proposed video consultations, what percentage of patients accepted?</b>	
>80% of the patients	87 (41.6)
between 50-80% of the patients	44 (21.1)
<50% of the patients	78 (37.3)
<b>How confident were you with the diagnosis and treatment of patients during video consultations?</b>	
Confident in >80% of consultations	103 (49.2)
Confident in 50 to 80% of consultations	62 (29.7)
Confident in <50% of consultations	44 (21.1)
<b>When you performed video consultations, how often you charged a fee?</b>	
>80% of consultations	103 (49.3)
50 to 80% of consultations	24 (11.5)
<50% of consultations	82 (39.3)

**Table 5 - Reduction of costs in professional practice and personal life since start of COVID-19.**

Measures to reduce costs	N (%)
<b>Professional practice</b>	
None	271 (51.6)
Fired one or more employee	102 (19.4)
Reduced investment in advertising/marketing	141 (26.9)
Returned rented office	12 (2.3)
Closed office	33 (6.3)
Other	57 (10.8)
<b>Personal life</b>	
None	158 (30.1)
Children`s education	43 (8.2)
Healthcare plan	14 (2.7)
Supermarket	181 (34.5)
Housekeeper	133 (25.3)
Phone, internet, TV	83 (15.8)
Other health professionals (psychotherapist, dentist)	115 (21.9)
Gym/personal trainer	237 (45.1)
Returned rented vacation home	6 (1.1)
Sold car, motorcycle, boat	10 (1.9)
Music, dance, theater or similar classes	121 (23.0)
Foreign language classes	48 (9.1)
Other	48 (9.1)



**Table 6 - Urology practice in states with highest vs lowest incidence of COVID-19.**

Urology practice parameters	Highest incidence states	Lowest incidence states	OR (95% CI)	p
<b>Daily hours worked</b>			<b>1.17 (0.80-1.71)</b>	<b>0.438</b>
Decreased <4 hours	61.0%	57.0%		
Decreased >4 hours	39.0%	43.0%		
<b>Elective patient visits</b>			<b>2.95 (1.86-4.75)</b>	<b>&lt;0.001</b>
Decreased <50%	12.4%	29.4%		
Decreased >50%	87.6%	70.6%		
<b>Emergency surgeries</b>			<b>0.98 (0.66-1.43)</b>	<b>&gt;0.999</b>
Decreased <50%	44.8%	44.4%		
Decreased >50%	55.2%	55.6%		
<b>Elective essential surgeries*</b>			<b>1.40 (0.76-2.57)</b>	<b>0.268</b>
Decreased <50%	9.1%	12.4%		
Decreased >50%	90.9%	87.6%		
<b>Non-essential surgeries**</b>			<b>0.52 (0.33-0.83)</b>	<b>0.009</b>
At least one surgery	24.5%	38.4%		
No surgeries	75.5%	61.6%		

\* Priority 1 to 3 surgeries;

\*\* Percentage of surgeons who performed at least one non-essential surgery.

**Table 7 - Changes in weight, physical activity, alcohol consumption and sexual activity during COVID-19.**

Health parameters during COVID-19	N (%)
<b>Weight</b>	
Slightly reduced (less than 3Kg)	80 (15.2)
Significantly reduced (more than 3Kg)	22 (4.2)
Stable	236 (44.9)
Slightly increased (less than 3Kg)	140 (26.6)
Significantly increased (more than 3Kg)	33 (6.3)
I don't know	14 (2.7)
<b>Physical activity</b>	
Reduced	315 (60.0)
Stable	124 (23.6)
Increased	86 (16.4)
<b>Alcoholic beverages intake*</b>	
Reduced	88 (21.6)
Stable	157 (38.5)
Increased	163 (39.9)
<b>Sexual activity</b>	
Reduced	164 (34.9)
Stable	243 (51.7)
Increased	63 (13.4)

\* Participants who reported not drinking alcoholic beverages were removed from calculations;

**Table 8 - Activities on non-working hours during COVID-19 pandemic.**

Activities	N (%)
Online social media	96 (20.4)
Housekeeping	79 (16.8)
Movies and TV shows	61 (13.1)
Spending time with family	52 (11.2)
Physical activity	39 (8.4)
Watching news on TV	32 (6.8)
Diverse internet browsing	31 (6.6)
Studying urology	30 (6.2)
Studying COVID-19	14 (2.9)
Religious/spiritual activities	13 (2.6)
Musical instruments	12 (2.5)
Reading books	12 (2.5)

## DISCUSSION

The coronavirus pandemic is a major challenge for healthcare systems worldwide and has impacted the habits, economic and health systems around the world. The routine of all urologic procedures has changed and, in Brazil, urology practice was drastically affected (16, 17). As we prepare this manuscript, in late May/2020, social distancing remains fully effective in most areas in Brazil, with no clear perspective about when it will be relaxed (2, 3).

In this study we have shown several and striking changes affecting Brazilian urologists during the first two months of COVID-19 pandemic. Urologists have had a major reduction of patient visits, elective and emergency surgeries. Non-essential surgeries have been performed by a minority of Brazilian urologists since the outbreak of COVID-19. Most have experienced a tremendous cutback in their income, especially those in private practice, prompting measures to reduce costs in professional practice and personal life. Along with such major professional changes, significant modifications in health and lifestyle have also been observed, including weight gain, reduced physical activity, increased alcoholic beverages intake and reduced sexual activity. Finally, 13.5% of participant urologists were infected with SARS-CoV-2

and about one third of them required hospitalization. As we prepare this manuscript, COVID-19 had taken the lives of 4 Brazilian urologists, to whom we dedicate this study.

A total of 4.200 urologists received a link to the interview and 766 (18.2%) participated. The distribution of respondents was in accordance with the actual distribution of urologists throughout the different states and geographical areas of the country, confirming a well-balanced and representative participant distribution. The skipping rate for each question was satisfactory, ranging from 0% to 38.6% and the mean time to completion was almost 13 minutes. Because we gave no incentives to participants and we used a long questionnaire (39 questions), we consider our participation rate of 18.2% as very good, and in line with recent online surveys evaluating practice patterns by healthcare providers in which participation rates varied from 2% to 25% (18-22).

The outbreak of COVID-19 has drastically changed how outpatient care is delivered in health care practice. To decrease the risk of contamination for patients and health care workers, providers are deferring elective and preventive visits as well as non-emergency surgeries. For their part, patients are also avoiding them to prevent unnecessary exposure. Also influencing these behaviors are the authorities' recommendations to restrict tra-

vel and nonessential services. Many national health authorities are recommending cancellation of scheduled elective surgeries and office visits (15, 23, 24). The objectives are to increase the availability of inpatient and intensive care unit's beds, to permit internal redeployment of medical staff and nurses, and to avoid overwhelming the health care system. Some reports have pointed that the number of visits to ambulatory care practices declined by nearly 60 percent in the pandemic (5).

Our results are in accordance with this context, showing a profound impact on Brazilian urologist's clinical practice, with a drastic reduction of the number of patient visits and all types of surgical cases. A reduction  $\geq 50\%$  of elective surgeries was reported by 80% of the participants. Interestingly, a decline in emergency surgeries was also reported in large scale. Only 16% reported that emergency surgeries remained stable while more than 50% revealed a  $\geq 50\%$  decrease of these procedures. Consequently, a tremendous reduction of hours worked per day was observed, with 30.2% of the urologists working less than 2 hours per day and only 8.9% working more than 8 hours per day during the month of April, 2020.

Since Brazil is a country with continental dimensions and the incidence of COVID-19 varies markedly between different states, we investigated the impact of COVID-19 incidence by comparing data from 3 states among those with the lowest incidence rates with 3 states among the highest incidence states (2, 3). We found that urologists from the highest COVID-19 incidence states were at a higher risk to have a major reduction of patient visits and elective surgeries. The most likely explanation for this is the earlier and more vigorous implementation of social distancing measures, with reduced mobility. A greater fear of contamination in these areas may possibly make urologists and patients more inclined to postpone elective consultations and surgeries.

The effect of the observed changes in urology practice on income was also of enormous proportions, with more than 95% of the urologists reporting a significant reduction in their earnings, including 54.3% with a decline of  $\geq 50\%$  during this period. Urologists in private practice (61.2%

of the participants) were more profoundly affected and had a 3.7 times higher chance of experimenting a  $>75\%$  income reduction in comparison with those working as employees in the private or public sector. Such major reduction in practice and income has been reported in other countries and with other medical specialties (5, 12, 25-29). Consistent with the observed income cutback, a great proportion of Brazilian urologists have already implemented cost containment measures in their professional and personal lives.

Because of the pandemic, remote care through telemedicine has been recently regulated and temporarily authorized by the Brazilian Ministry of Health (30). Before COVID-19, telemedicine was not practiced by the vast majority of Brazilian physicians and was restricted to specific projects. The fact that almost 40% of Brazilian urologists have had experience with video consultations in such short period is remarkable. Another significant finding was that urologists were reimbursed in most video consultations. We did not evaluate how this was done and how much was charged. We also did not evaluate differences in how telemedicine has been used in the private and public health systems. Because telemedicine has only recently been introduced in Brazil, billing regulations are not well established yet.

Our study also showed that most physicians were confident with their diagnosis and treatment upon the use of video consultations and most patients seem to accept it and be content with it. Indeed, studies have shown high levels of effectiveness and patient satisfaction with tele-interventions in many clinical scenarios (31, 32). Telemedicine limitations, however, must be discussed constantly with the medical and lay population. We believe that tele-screening, test reviews and follow-up evaluations that do not require physical examination are the ideal situations for this type of care, especially when the patient is in the high-risk group and must be socially isolated (33).

During the pandemic, the general recommendation is to reschedule surgical procedures that can be postponed without harm to the patient, reducing the risks of contamination for the patient and the surgical team. It is not well defined whi-

ch operations can be postponed and for how long. Different guidelines and recommendations have been published in order to help practitioners and authorities in prioritizing essential surgeries (15, 17). These recommendations, however, are mostly not evidence-informed, but based on expert opinion. Most urologists in Brazil did not perform any non-essential surgeries during April/2020. Still, most performed emergency cases, as recommended by the guidelines. In addition, it was interesting to observe urologist's estimates of time beyond which delaying surgeries would harm patients, which seem to be in fair agreement with the expert recommendations (34).

A clinical infection by the SARS-CoV-2 was reported by 13.5% of participants, including 5.2% with unequivocal laboratory confirmation. These numbers must be evaluated cautiously since they were self-reported. They seem to be much higher than expected, especially considering that the majority of the individuals did not participate in the COVID-19 front-line. A recent study showed that 5% of the population of the six more affected districts of the city of Sao Paulo had serological evidence of coronavirus infection (35). Urologists are certainly more exposed than the general population since they visit hospitals and clinics where the risk of infection with COVID-19 is increased. What seems to be very worrisome is the high rates of COVID-9 requiring hospitalization, which was necessary for approximately 34% of the infected participants. Sadly, as we write this manuscript, we are aware of 4 urologists who passed away due to coronavirus infections. They all lived in states among those with the highest infection rates.

Since the start of Covid-19 a significant impact was observed in a number of health indicators of Brazilian urologists. Almost one third of the participants (32%) in our study reported being moderately healthy or not healthy. We believe that the mental afflictions resulting from the COVID pandemic may have an important role in this self-reported perception of general well-being although other factors such as changes in diet and physical activities may also play a role in this scenario (36). The economic recession already in display represents an additional burden on mental health (37).

Although most reported their weight remained stable, 32.9% of the participants had some weight gain while 19.4% noticed weight loss. Physical activity was reduced for most urologists, while a small group reported an increase in physical activity. An increase in alcohol use was almost twice more common than the opposite, during the first two months of COVID-19 in Brazil. Finally, sexual activity was reported as stable by half of the participants but more than one third reported reduced sexual activity and only 13% reported an increase. Similar changes affecting the general population have been predicted by experts since the outbreak of the pandemic (38-42). So far, however, few studies have been published evaluating such important issues. When it comes to physicians, we were not able to find any study reporting on the impact of COVID-19 in such parameters. A number of factors may be contributing to the reported changes in health parameters, including the stress associated with social distancing, fear of contamination and reduction of income. All may have a powerful effect on appetite and alcohol misuse and inhibit sexual activity (39, 41, 42). Home confinement is also an obvious factor that might influence alcohol misuse, physical and sexual activity (38, 40, 41, 43, 44) Our findings reinforce the need to implement interventions to promote health and wellbeing during the COVID-19 pandemic among health care workers. They should also include positive sexual health messages to help mitigate the detrimental effects of the pandemic.

We found it important to evaluate how Brazilian urologists are coping and occupying their free time during COVID-19, especially considering the exceedingly long free time that most are having due to the drastic reduction of professional activities and the need to be confined at their homes. We found that the top activities occupying urologist's time are use of social media (Facebook, Instagram, Tweeter), watching movies and TV shows, spending time with their families and physical activities. Other activities such as watch the news, study urology or COVID-19, play musical instruments, spirituality and the reading of non-medical books were also reported.

## CONCLUSIONS

COVID-19 has introduced massive disturbances in the professional and personal lives of Brazilian urologists. The effects of the major cut-down in patient care, including patient visits and all kind of surgical procedures are still unknown, but will certainly be worsened with the prolongation of the pandemic. Also preoccupying are the distressing consequences of the pandemic on physician's health and personal lives. The uncertainties regarding the duration of the pandemic make this moment even more stressful for urologists and physicians alike, aggravating the perceptions of the occasion. Although this study only included urologists, the findings are probably applicable to most surgical and many clinical specialties that are not directly involved in caring for patients with COVID-19.

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## DEDICATORY

As we prepared this manuscript, we were aware of 4 urologists who died due to coronavirus infection: Aluizio Gonçalves da Fonseca; Fernando Jordão de Souza; Osmar Seabra; Pasquale Francisco Giglio. This work is dedicated to their memory and to all the health care workers who lost their lives to COVID-19.

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## APPENDIX - SUPPLEMENTARY MATERIALS

### Supplementary material 1 - Web-based survey with 39 questions, translated to English.

#### 1. Impact on urological medical practice

##### \* 1. Free and informed consent form

You are being invited to voluntarily participate in a research developed by Brazilian Society of Urology (BSU). After reading this Consent Form, if you agree to participate, click ACCEPT at the end of this document. In case you decide not to participate, click DO NOT ACCEPT.

This is a study to understand in which way COVID-19 has been affected Brazilian urologists. The filling of this question form takes about 10 minutes.

This research will help understand the professional impact of COVID 10 on Brazilian urologists and will help BSU to develop actions to reestablish and refresh urological practice after the end of the COVID-19 pandemic.

Your participation is voluntary and secrecy if guaranteed, it is not necessary to identify yourself. Gathered data will be used in future book, paper or digital communication. The research will not harm you in any way or will generate any financial return. If you have any doubt, please contact the authors by the email: [sbuonline@sbunet.org.br](mailto:sbuonline@sbunet.org.br).

##### CONSENT FORM TO PARTICIPATE

I was correctly informed and enlightened by the authors about the research, involved proceedings as well as the possible risks and benefits of my participation.

- I ACCEPT to participate
- I DO NOT ACCEPT to participate





## 2. Knowing the Urologist

\* 2. What is your age?

20 50 100

\* 3. In which Brazilian state do you currently work?

\* 4. Please, inform which alternative better describes your marital/familial status:

- I am married (or have a steady partner) and I have kid (s)
- I am married (or have a steady partner) and don't have kids
- I am single (or divorced/separated/widow) without a steady partner and I have kid(s)
- I am single (or divorced/separated/widow) without a steady partner and I don't have kid(s)
- Another (specify):

\* 5. I am

- Male
- Female
- Another (specify)

\* 6. Which of the following categories better describes your current work and income in medicine?

- Most of my income as a doctor comes from a public job as urologist
- Most of my income as a doctor comes from a private or no-profit organization job as urologist
- Most of my income as a doctor comes from my private office as urologist
- Most of my income comes from other medical activities than urology (clinical or general practice, etc)
- Most of my income comes from activities other than medicine
- Retired



\* 7. In the last 4 weeks (COVID-19 epidemics) how many daily hours (of working days) have you been involved in medical practice activities (medical consultations, surgeries, telemedicine, medical reports, on call activities, bureaucratic office work)?

- I have not practiced medicine in the past weeks
- Up to 2 hours per day
- From 2 to 4 hours per day
- From 4 to 8 hours per day
- More than 8 hours per day

\* 8. In relation to the last 3 months (mean) before COVID-19 epidemics, how many scheduled medical urological consultations have you attended in the last 4 weeks (since the beginning of the epidemics):

- Remained stable
- Reduced up to 25%
- Reduced 25-50%
- Reduced 50-75%
- Reduced more than 75%
- Increased more than 10%
- Other (specify)

\* 9. In relation to the number of elective urologic surgeries (mean) before COVID-19 pandemic, what have you observed in relation to the number of them in the last 4 weeks (since the beginning of the COVID 19 pandemic):

- Remained stable
- Reduced up to 25%
- Reduced 25-50%
- Reduced 50-75%
- Reduced more than 75%
- Increased more than 10%
- Other (specify)



\* 10. In relation to the mean number of urgent urologic surgeries in the past 3 months, what have you observed in relation to them in the past 4 weeks since the beginning of the pandemic:

- Remained stable Reduced
- up to 25%
- Reduced 25-50%
- Reduced 50-75%
- Reduced more than 75%
- Increased more than 10%
- Other (specify)



### 3. Professional History

\* 11. In the last 4 weeks, how many surgeries have you performed in each of the following priority classification categories:

**Emergency:** ureteral lithiasis with refractory pain or alteration of renal function or infection or single kidney; ureteral obstruction in pregnant woman; urological abscess; torsion; clot retention; urological bleeding; cadaver donor transplantation; penile fracture; prosthesis infection; urological trauma

**Priority 1:** radical cystectomy; nephrectomy (with thrombus); vesical tumor resection; second time neuromodulator; orchiectomy (tumor); nephroureterectomy; penile cancer; cancer adrenalectomy; urethral stenosis and impending retention.

**Priority 2:** retroperitoneal lymph node dissection; radical nephrectomy of T3-4 tumors; adrenalectomy (functioning tumor); urinary fistula; asymptomatic ureteral calculus after failed conservative treatment; prostate biopsy in suspected patient with symptoms of advanced disease.

Priority 3: prostatectomy in high risk cancer; partial nephrectomy in tumors T1b-2; replacement of double J stent; sling incision; mesh removal; urinary lithiasis in patient with double J stent; retention due to BPH.

Non-essentials: prostatectomy due to low or medium risk tumors; partial nephrectomy in T1a tumors; postectomy; scrotal surgeries; BPH or urethral stenosis without retention; slings prolapse; injection of botulinic toxin; penile prosthesis; Peyronie's disease; live donor transplantation; pediatric genital surgeries; adrenalectomy (no cancer and not functioning); renal lithiasis (**if there were no surgeries in each of the previous categories please mark 0**).

Emergency	<input type="text"/>
Priority 1	<input type="text"/>
Priority 2	<input type="text"/>
Priority 3	<input type="text"/>
Non-essentials	<input type="text"/>

\* 12. Taking into account the previous classification of surgical priorities (previous question), how long do you think it is safe to postpone **Priority 1** surgeries without causing harm to patient (make a general estimate of surgeries of this class of priority)

- Up to 1 month
- Up to 2 months
- Up to 3 months
- Up to 6 months
- Up to 1 year
- Other (specify)



\* 13. Taking into account the previous classification of surgical priorities (previous question), how long do you think it is safe to postpone **Priority 2** surgeries without causing harm to patient (make a general estimate of surgeries of this class of priority)

- Up to 1 month
- Up to 2 months
- Up to 3 months
- Up to 6 months
- Up to 1 year
- Other (specify)

\* 14. Taking into account the previous classification of surgical priorities (previous question), how long do you think it is safe to postpone **Priority 3** surgeries without causing harm to patient (make a general estimate of surgeries of this class of priority)

- Up to 1 month
- Up to 2 months
- Up to 3 months
- Up to 6 months
- Up to 1 year
- Other (specify)

\* 15. In relation to your income (compared to the previous 3 months before COVID-19 epidemics), in the last 4 weeks (since the beginning of the pandemic):

- Remained stable
- Reduced up to 25%
- Reduced 25-50%
- Reduced 50-75%
- Reduced more than 75%
- Increased more than 10%
- Other (specify)



\* 16. In the past 4 weeks, which percentage (%) of UROLOGIC consultations have you performed in each of the following modalities? (the total must be 100%):

Medical face-to-face consultation (in clinics or ambulatories)

Video-consultation (computer or cell phone camera)

Voice consultation, by phone or internet

\* 17. In the last 4 weeks, if you have performed video-consultations, how frequently did you charge medical bills?

- I charged medical bills (private or medical company) in more than 80% of video-consultations
- I charged medical bills (private or medical company) in 50%-80% of video-consultations
- I charged medical bills (private or medical company) in less than 50% of video-consultations
- I did not perform video-consultations

\* 18. In the past 4 weeks, after proposing video-consultations, how was the reaction/acceptance of patients:

- More than 80% agreed with video-consultation
- 50-80% of patients agreed with video-consultation
- Less than 50% of patients agreed with video-consultation
- I did not propose video-consultations

\* 19. In the past 4 weeks, when you performed video-consultations, how did you feel in relation to missing some relevant diagnosis or treating correctly the patient due to the limitations of this kind of consultation?

- I felt secure in more than 80% of consultations
- I felt secure in 50-80% of consultations
- I felt secure in less than 50% of consultations
- I did not perform video-consultations



#### 4. Professional History - Continuation

\* 20. In the past 4 weeks, the perspective of income reduction in the next months made you reduce which of the following expenses in your professional practice? (more than one answer is allowed)

- None, for now
- I dismissed one or more employees
- I reduced investment in marketing/divulagation (social media, website, Google, other) Devolvi
- I returned my rented office
- I closed my office
- Other (specify)

\* 21. In the past 4 weeks, the perspective of income reduction in the next months made you reduce which of the following expenses in your PERSONAL LIFE? (including wife and kids expenses) (more than one answer is allowed)

- None, for now
- I reduced schooling expenses (I moved my son to a cheaper school, I suspended private lessons/preparatory courses)
- I reduced my medical health plan (changed to a cheaper one or completely suspended)
- I reduced supermarket expenses
- I dismissed maid and/or cleaner
- I reduced costs with telephone/cell phones, internet, cable TV
- I reduced expenses with health professionals (therapist, dentist, etc)
- I reduced expenses with gym and/or personal trainer
- I suspended the rent of vacation home (beach, field)
- I sold car, motorcycle, boat or other not needed (that had costs)
- I suspended music, dance, theater or other classes
- I suspended foreign language courses
- Other (specify)



\* 22. If your income reduction due to COVID-19 continues at least until SEPTEMBER, which of the following expenses do you think will have to reduce in your professional practice (more than one answer is allowed):

- None
- Dismiss one or more employees
- Reduce investment in divulgation/marketing (social media, website, Google, etc)
- I will give up attending a scheduled Medical congress
- I will suspend (rental) my office
- I will close my office
- Other (specify)

\* 23. If your income reduction due to COVID-19 continues at least until SEPTEMBER, which of the following expenses do you think will have to reduce in your personal life (including partner and kids (more than one answer is allowed):

- None
- I will reduce health care plan cost (change to a cheaper one or suspend)
- I will reduce supermarket expenses
- I will dismiss maid/cleaner
- I will reduce costs of telephone/cell phone, internet, cable TV
- Reduce spending on healthcare professionals (therapy, dentist, etc.)
- I will suspend leisure trip in the second semester or summer vacation
- I will reduce gym/personal trainer expenses
- I will cancel lease of summer house (beach, field)
- I will sell car, motorcycle, boat or other unnecessary assets with costs
- I will suspend music, dance, theater or similar classes
- I will suspend foreign language classes
- Other (specify)

\* 24. How physically healthy are you at present?

- Very healthy
- Moderately healthy
- Poorly healthy





\* 25. Which is your current weight (kilograms)?

50 100 150+

\* 26. Which is your height (centimeters)?

160 cm 190+ cm

\* 27. In the past 4 weeks (since intensification of COVID 19 epidemics), YOUR WEIGHT:

:

- Slightly reduced (loss of 2 to 3 kilograms) Significantly
- reduced (loss of more than 3 kilograms)
- Remained stable
- Other (specify)
- Slightly increased (gain of 2-3 kilograms)
- Significantly increased (gain of more than 3 kilograms)
- I do not know

\* 28. In relation to PHYSICAL ACTIVITY frequency in the past 4 weeks (since intensification of COVID-19 pandemic):

- Physical activity less frequent
- Same frequency of physical activity
- More frequent physical activity
- Other (specify)



\* 29. Which physical activity have you been more frequently practiced in the past 4 weeks of confinement due to COVID-19?

- Walking
- Running
- Exercises (abdominal, push ups and squats and others)
- Weight training
- Tennis
- Yoga
- Swimming
- Pilates
- Other (specify)



## 5. Personal History

\* 30. In relation to ALCOHOL BEVERAGE CONSUMPTION in the last 4 weeks (since intensification of COVID-19) you:

- Reduced consumption
- Consumption remained stable
- Increased consumption
- I don't drink alcoholic beverages

\* 31. In relation to SEXUAL ACTIVITY (sexual relations) in the past 4 weeks (since intensification of COVID 19) you have had:

- More frequent sexual relations
- Same frequency of sexual relations
- Less frequent sexual relations
- I am sexually inactive for months/years

\* 32. In relation to masturbation in the past 4 weeks (since intensification of COVID-19) you:

- Masturbate more frequently
- Same frequent masturbation
- Less frequent masturbation
- I do not masturbate for months/years

\* 33. Please number the activities that you have been attended off duty in order of frequency (1 HIGHER FREQUENCY and 13 LOWER FREQUENCY)



Social media (Facebook, Instagram, whatsapp groups)



Household chores (kitchen, cleaning, gardening)



Physical activities



SOCIEDADE BRASILEIRA DE UROLOGIA



TV or internet films, series, or other entertainment programs



TV news



Internet searches (news, shops, sports, culture)



Urology studies (revisions, new articles, books, academic papers)



Study of medical aspects of coronavirus



Non-medical books



Spiritual/religion activities



Expending time with Family (play, games, film sessions)



Play a musical instrument



Others



\* 34. How worried are you with the possibility to work at the front line to consult contaminated COVID 19 patients?

- Very worried
- Moderately worried
- Little worried
- Not worried at all

\* 35. Which would be your reaction if your employer (public or private) decide to allocate you to consult patients contaminated by COVID-19?

- I do not have an employer so I am not at risk
- I work at an Emergency Room and I am already consulting patients with coronavirus infection
- I am voluntarily working with contaminated patients with COVID 19
- I would accept, even if the protection conditions were not ideal
- I would accept only if protection conditions were ideal
- I would not accept even with correct protection
- Other (specify)

\* 36. Have you had symptomatic infection by coronavirus?

- Yes, with unequivocal confirmation (laboratory, tomography, other)
- Probably yes (clinical and epidemiologic suspected symptoms, but without confirmation)
- Very unlikely (clinical and epidemiologic symptoms less suspected)
- No

\* 37. In case of confirmed symptomatic infection by coronavirus, which was the severity of the disease:

- I did not have
- Mild presentation
- Mild symptoms, without shortness of breath, without hospitalization
- Other (specify)
- Severe symptoms, with shortness of breath, need of hospitalization, but no intubation
- Severe symptoms, with shortness of breath, need of hospitalization and intubation

