



Clinical Research

The use of a novel smartphone app for monitoring male luts treatment during the COVID-19 outbreak

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To the Editor:

We are still experiencing the consequences from the global COVID-19 pandemic [1]. The public health emergency has resulted in a significant reallocation of health resources, with the consequent reorganization of all clinical activities in urological Departments all over the world [2].

Within the first weeks of the outbreak, Urological Departments progressively stopped the outpatient visits for benign diseases, limiting the access to the hospital exclusively for life-threatening conditions, emergency surgery, and oncological diseases [3]. Male LUTS due to Benign Prostatic Hyperplasia (BPH) were considered as a non-urgent deferrable condition; therefore, outpatient visits were postponed or canceled, even if the bothersome urinary symptoms had remarkable impact on quality of life and patient's capability to comply with the limitations imposed by the lockdown. As a result, this has led to the development of new strategies with telemedicine to appear as a pragmatic approach to screen clinically relevant cases and provide adequate treatment and follow-up [4].

An observational cohort multicenter study for treatment-naïve patients with LUTS due to BPH is currently ongoing in five urological centers across Europe [<https://clinicaltrials.gov/ct2/show/NCT03228485>]. This trial is based on the

use of MyBPHCare, an app for mobile phones created by Ydeal®. Aim of the present study was to assess the use of MyBPHCare App to manage males with LUTS under lockdown due to COVID-19 outbreak. For this reason, an extension of the inclusion criteria was approved by the institutional review board of a single center (Italy), to also enroll patients already on treatment for LUTS to deal with new follow-up needs in COVID-19 era.

Baseline patients' characteristics and their comorbidities are recorded in the App. Urinary symptoms, sexual function and quality of life are assessed by International Prostate Symptom Score, International Index of Erectile Function-15 and the Short Form (36) Health Survey questionnaires. Patients record their daily medication intake after a reminder generated by the App. Physicians can monitor patients' compliance to medication and contact them via the included MyBPHCare Messenger in case of low or inattentive compliance. Patients can also contact their physicians via Messenger. Information is directly stored in a data management system via an encrypted connection.

Under lockdown (March 2020-April 2020), 24 patients were enrolled in a single center. Results (Table 1) show that the enrolled patients were younger but with similar LUTS-related characteristics compared to real-life patients [5]. Compliance reached 95% within the first 45 days. Fourteen patients (58.3%) requested clarifications/info via Messenger. All patients were inquired after one month and expressed their satisfaction (no withdrawals).

The EAU Guidelines on Male LUTS recommend remote consultations for assessment and follow-up if capacity allows in the COVID-19 era. Symptom scores and bladder diaries can be (e)-mailed to patients [6]. However, there is a potential risk of inaccuracy and lack of relevant clinical information including the symptoms severity and the compliance to treatment that might occur during telephone consultation.

We observed a remarkable adherence to the study by patients while a significant number of patients contacted

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Table 1 Patient's characteristics and results from the use of MyBPHcare App under COVID-19, and from a series of real-life practice patients in Italy before COVID [4]. Figure on the top: MyBPHCare working concept – Hospital-Physician to House-patient communication through app.



	myBPHCare App under COVID-19	Real life practice in Italy ⁴
Number of patients	24	789
Median stay in the study (range) <i>days</i>	45 (35–50)	NA
Median Age (Interquartile range) <i>years</i>	60 (55–64)	64.0 (59–70)
N of patients with comorbidities (%)	10 (42.0)	520 (65.9)
Median PSA (range) <i>ng/ml</i>	2.2 (0.9–6.2)	79.1% < 4
Median flow rate (SD) <i>ml/s</i>	12.8 (8.5–17.0)	NA
Median PVR (range) <i>ml</i>	90.7 (0–300)	51.5
Median Prostate Volume (SD) <i>cc</i>	40 (22–47)	45
Median IPSS (range)	11 (7–15)	12
Median IIEF-15 (range)	42 (40–56)	NA
Median SF-36 (SD)		NA
<i>Physical Functioning</i>	93 (85–100)	
<i>Role-Physical</i>	100 (50–100)	
<i>Role-Emotional</i>	100 (67–100)	
<i>Vitality</i>	60 (55–75)	
<i>Mental Health</i>	64 (60–72)	
<i>Social Functioning</i>	65 (50–87)	
<i>Body Pain</i>	78 (45–100)	
<i>General Health</i>	65 (50–80)	
LUTS-specific therapy		NA
-Alpha-blockers	19	
-5-alpha-reductase inhibitors	2	
-Serenoa repens	4	
Compliance (% of daily taken medication)	95%	NA
Patients' withdrawals (%)	0 (0)	NA
N of communications via Messenger	14	NA

IIEF International Index of Erectile Function, *IPSS* International Prostate Symptom Score, *LUTS* Lower Urinary Tract Symptoms, *NA* not applicable, *PSA* Prostate-Specific Antigen, *PVR* Post Void Residual, *SD* Standard Deviation, *SF-36* Short Form (36) Health Survey.

physicians for clarifications and guidance. These findings indicate that patients become immediately familiar with the app and urologists can properly follow them, according to the novel EAU 2020 Guidelines. It also confirms the great potential of telemedicine, as long as supported by validated diagnostic and therapeutic instruments, maybe even beyond the COVID-19 outbreak.

This is the very first study regarding an App proposed in the urological field, to manage a benign disorder, during the COVID-19 outbreak. Advantages include the use of self-reported validated questionnaires, scheduled reminders for taking medication and the ability to contact physicians via Messenger. Furthermore, the App is free downloadable for participants and with encrypted personal data providing full protection of privacy.

Although the sample size is small, these preliminary data are reported to provide new evidence on the feasibility of the app use under a lockdown phase. A control group and a mid-term follow up are missing: both these limitations will be overcome in the next months, with the progressive reopening of the outpatient visit and the monitoring of follow up outcomes.

In conclusion, urologists should follow-up patients with urologic benign diseases, including those with LUTS due to BPH despite the outpatient clinics lockdown during a pandemic. The App presented in this study is a useful solution to avoid contagion for both patients and physicians. Further multicenter studies are in progress, to evaluate the acceptability and use of this App for men with LUTS due to BPH, outside a pandemic lockdown.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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