International Urogynecology Journal (2023) 34:1487–1493
https://doi.org/10.1007/s00192-022-05392-2

ORIGINAL ARTICLE

Implementing telemedicine in urogynecology: A feasibility study

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Received: 21 June 2022 / Accepted: 29 September 2022 / Published online: 4 November 2022

Abstract

Introduction and hypothesis Telemedicine has been recommended for the management of urogynecological conditions during the coronavirus (COVID 19) pandemic. This study aimed to evaluate the feasibility of telemedicine for urogynecology at a Brazilian public hospital.

Methods A descriptive observational study was performed at a urogynecology outpatient clinic. The primary outcome was the desire to continue with telemedicine. Secondary outcomes were appointment resolvability, technical aspects of the appointment, and patient satisfaction. The participants had in-person appointments that were canceled because of the COVID-19 pandemic. We collected data on sociodemographic characteristics and clinical and technical aspects of the appointments. The participants responded to satisfaction questionnaires 7–15 days post-procedure. The categorical variables were evaluated based on absolute and relative frequency. The continuous variables were described as the mean and standard deviation. A chi-square test was performed to determine the association between variables.

Results In total, 225 patients had appointments canceled due to the COVID-19 pandemic, of which 171 were eligible for the study. Telemedicine appointments were agreed upon by 48% of the participants and 85.5% responded to the satisfaction survey. We found that 57.7% of the participants desired to continue with telemedicine. The appointment resolvability rate was 76.1%, 63.4% of the appointments met the technical criteria, and the satisfaction rate was 93%. The only variable associated with the desire to continue telemedicine was overall patient satisfaction (p=0.02).

Conclusions Telemedicine in urogynecology is feasible and can be implemented in the studied population. However, actions are essential to adequately support patient preference and improve the acceptance of telemedicine.

Keywords Feasibility study · Patient satisfaction · Pelvic floor disorders · Telemedicine

Introduction

Telemedicine is defined as effective patient–clinician interaction, despite being separated by distance, using information and communication technologies [1]. It can potentially improve access to healthcare services and is associated with reduced hospitalization rates for chronic diseases and improvements in quality of life [2, 3]. In Brazil, the use of telemedicine was authorized only in March 2020 through an emergency regulation in effect during the coronavirus disease 2019 (COVID-19) pandemic [4]. Owing to the broad territory, difficult-to-access locations, and unequal distribution of medical resources, Brazil presents unique opportunities for the development and application of telemedicine [5].

The COVID-19 pandemic is expected to have negative impacts on patients' quality of life, leading to increased surgery waiting times and shortages in the necessary resources for pelvic floor dysfunction [6]. Telemedicine, which provides an opportunity to minimize exposure to COVID-19 without delaying conservative treatment, is recommended by international societies and organizations for the management of non-urgent conditions during this period [7]. However, most of the

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published guidelines for remote care are based on specialist opinions, since limited literature exists on the subject [8].

The benefits of telemedicine use for treating highly prevalent urogynecological conditions have been reported. For example, telemedicine was associated with decreased severity of symptoms and improved quality of life in the conservative treatment of stress urinary incontinence [9, 10]. For overactive bladder syndrome, the addition of telemedicine to usual care was demonstrated as non-inferior in patients who underwent behavioral training, and also improved patient adherence to the prescribed treatment and utilization of third-line therapies [11, 12]. In the postoperative follow-up, telemedicine was equivalent to in-person visits with respect to clinical outcomes and was associated with reduced common patient complaints [13–16]. Preoperative counseling improved staff satisfaction and patient preparedness for procedures [17, 18]. Therefore, telemedicine can be appropriate for urogynecological care, but more studies are required [19].

Low- and middle-income countries can benefit significantly from remote access to healthcare services, but applications specific to urogynecology patients have mainly been studied among educated women living in economically developed countries [20]. Therefore, this study aimed to evaluate the feasibility of implementing telemedicine in the urogynecological setting of a public hospital in Brazil.

Methods and materials

This observational descriptive study was conducted between November 2020 and March 2021. It was approved by the institutional review board (CAAE 41733021.7.00005149), and informed consent was obtained from all participants. The primary outcome was patient desire to continue with telemedicine. Secondary outcomes included appointment resolvability, technical aspects of the telemedicine appointment, and patient satisfaction.

We included participants who were already being followed by or referred to the urogynecology outpatient clinic of the Hospital das Clínicas of the Federal University of Minas Gerais (UFMG), who presented with a medical diagnosis of a condition that was possible to treat using telemedicine according to the Grimes et al. guide [21], who could be contacted by telephone, and who signed the consent form to participate in the study. No sample size calculation was performed, and recruitment was based on the period wherein elective appointments were suspended. The conditions included were stress urinary incontinence, overactive bladder, mixed urinary incontinence, pelvic organ prolapse, and recurrent urinary tract infections. Patients with urogynecology conditions not possible to follow by telemedicine, who were unable to be contacted by telephone, or who did not agree to telemedicine appointments were excluded from the study. The excluded pathologies were urinary retention, interstitial cystitis, neurogenic bladder, and vesicovaginal fistula. We included the first and follow-up appointments. The participants had in-person visits canceled because of the hospital's strategic plan in response to the COVID-19 pandemic. Urgent appointments during this period were referred to as "emergency settings." The patients consented electronically or by telephone, and copies of the consent form were sent by text message or email.

Telemedicine appointments were carried out by the coordinators of the urogynecology outpatient clinics as part of the telemedicine program implemented by the Hospital's Telehealth Center. Patient records were maintained electronically on the platform developed for the program. If patients stated that they had the resources to perform a video call, which included Internet access and a device with a camera and microphone, and agreed to a video appointment, an attempt was made using the same platform. Access to the video call was provided through a link sent via text message. If the patient did not agree to a video call, did not have the resources, had difficulties in accessing the link sent, or had connection issues, the appointment was made by telephone call. These appointments consisted of recording anamnesis for urogynecology symptoms, previous treatments, presence of comorbidities, and medication use. If necessary, medication prescriptions, exam requirements, written orientation, or reference reports to other clinics were sent via text messages or emails. If the physician was unable to make clinical decisions on the case, the patient was referred for an in-person visit. We collected data on clinical and sociodemographic characteristics, appointment length, and technical aspects, and after the procedure, the physician registered their subjective impression regarding the audio, video, and connection quality.

Between 7 and 15 days after the appointment, a telephone call was made by a researcher who was not involved in the remote appointment to check whether the patient could access the documents sent and perform the satisfaction questionnaire. A previously used questionnaire, the Telemedicine Satisfaction and Usefulness Questionnaire, was adapted and translated into Portuguese to evaluate responses to the following statements: "I can hear my healthcare provider clearly," "My healthcare provider is able to understand my healthcare condition," "I do not need assistance while using the system," "I feel comfortable communicating with my healthcare provider," "I receive adequate attention from my healthcare provider," "I will use telemedicine services again," and "Overall, I am satisfied with the quality of service being provided via telemedicine" [22]. The possible answers to the question were "yes," "no," and "I do not know."

The criteria for evaluating the feasibility of telemedicine were developed by the research team and were based on similar studies [23, 24]. The primary outcome was the desire to continue with telemedicine. It was evaluated by responses

to the questionnaire statement: "I will use telemedicine services again." The participants who answered "yes" were considered as desiring telemedicine and those who answered "no" were considered as not desiring telemedicine in the future. The appointment resolvability was evaluated by the need for an in-person visit after the appointment. We considered that the patient did not require an in-person visit if the data obtained from the remote appointment were sufficient for the physician to make clinical decisions and if efficient communication was established between the patient and provider. The situation was considered resolvable if an in-person visit was not required, and unresolvable if there was a need for a subsequent in-person visit. The technical aspects of the appointment were evaluated based on the quality of the audio or video and the ability to access the documents sent when applicable. The appointments were considered technically feasible when the participants answered that they were able to hear and see the physician adequately and that they were able to access documents sent by the clinicians. If the patient answered "no" to one or both questions, the appointment was considered technically unfeasible. The participant was considered satisfied if she answered "yes" to the question: "Overall, I am satisfied with the quality of service being provided via telemedicine." The participant was considered unsatisfied if the answer was "no."

Statistical analysis was performed using R software (R Core Team, 2020. Foundation for Statistical Computing, Vienna, Austria). All categorical variables were evaluated based on absolute and relative frequencies. Continuous variables were described as means and standard deviations. A chi-square test was performed to determine the association between the analyzed criteria. The significance level adopted was 0.05 (5%).

Results

In total, 225 participants had their appointments canceled because of the COVID-19 pandemic, and 203 of these patients were eligible for remote appointments based on their urogynecological conditions. We were able to contact 171 participants, of whom 83 (48%) agreed to participate and subsequently had remote appointments. Seventy-one (85.5%) responded to the survey (Fig. 1).

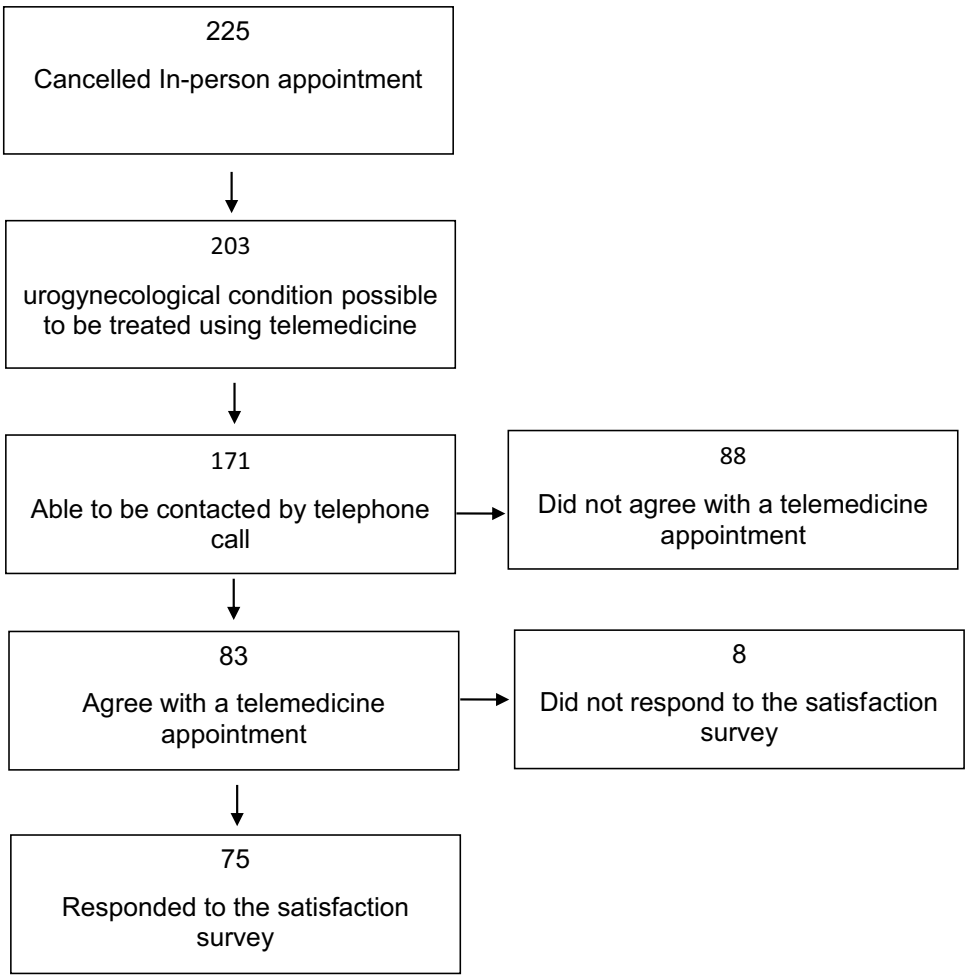

Fig. 1 Study steps flowchart

Table 1 Clinical and sociodemographic characteristics

Characteristics	*N*	%
Age (mean)	56.9 ± 12.4	
Menopausal status		
Postmenopausal	26	68.7
Premenopausal	57	31.3
Comorbidities		
Yes	69	83.1
Chronic hypertension	40	
Diabetes mellitus	21	
Neurological disease	13	
No	14	16.9
Previous urogynecology surgery		
Yes	31	37.4
No	52	62.6
Place of residence		
Same city	54	65.1
Metropolitan area	23	27.7
Distant city	6	7.2
Schooling Level		
No schooling	29	34.9
Middle school	24	28.9
High school	27	32.5
College degree	3	3.7
Internet access		
Yes	70	84.3
No	13	15.7
Type of appointment		
First visit	27	32.5
Follow-up	56	67.5

The mean age of the participants was 56.9 ± 12.4 years; the mean parity was 3.26 ± 2.20. The clinical and socioeconomic characteristics are presented in Table 1. Twenty-seven of the telemedicine appointments were first appointments and 56 were follow-ups. In-person visits were needed after 25 (30.1%) telemedicine appointments.

Although 84.3% of the participants reported having access to the Internet at the time of their appointments and 75.9% reported having the resources to participate in video calls, only six appointments used this resource. The main reasons reported were connection issues (40.4%), including difficulties experienced by both participants and physicians, participant unwillingness to participate in video call appointments (29.8%), or difficulties accessing the link (28.9%). The mean length of the video or telephone calls was 12 ± 5.48 minutes. The average time spent on writing medical records and sending the documents was approximately 20 minutes. The appointment audio quality was considered adequate by 97.6% of physicians and 91.5% of participants. Appointment documents (prescription, exam request, reference reports, or written orientation) were sent to a total of 47 participants, of whom 43 responded to the survey and 60.5% reported being able to access them. The answers to the questionnaire are reported in Table 2.

Regarding the feasibility criteria, 57.7% of the participants reported that they would use telemedicine services again. A total of 76.1% of the appointments were resolvable, 63.4% met the technical criteria, and 93% of the participants were satisfied with telemedicine (Table 3).

No statistically significant differences were observed between the resolvability criteria, overall patient satisfaction, and the desire to continue with telemedicine among different diagnoses (Table 4). When comparing socioeconomic characteristics, type of appointment, form of contact and resolvability, technical criteria, and patient satisfaction, only patient satisfaction was associated with the desire to continue with telemedicine (p=0.02) (Table 5).

Discussion

The present study found a rate of desire to continue with telemedicine of only 57.7%, in spite of the high rates of resolvability and overall participant satisfaction. Additionally, more than half of the telemedicine appointments met the technical aspects criterion. We also found that, even in a pandemic setting, less than half of the eligible participants agreed to telemedicine appointments.

Table 2 Telemedicine satisfaction questionnaire (n=71)

Question	Yes	No	Did not answer
I can hear my healthcare provider clearly	65 (91.5%)	6 (8.5%)	-
My healthcare provider is able to understand my healthcare condition	64 (90.1%)	4 (5.7%)	3 (4.2%)
I feel comfortable communicating with my healthcare provider	66 (93%)	3 (4.2%)	2 (2.8%)
I do receive adequate attention	68 (95.8%)	2 (2.8%)	1 (1.4%)
I needed assistance while using the system	8 (11.3%)	62 (87.3%)	1 (1.4%)
Overall, I am satisfied with the quality of service being provided via telemedicine	66 (93%)	5 (7%)	-
I will use telemedicine services again	41 (57.7%)	30 (42.3%)	-

Table 3 Telemedicine feasibility criteria

	N	%
Desire to continue with telemedicine		
Yes	41	57.7
No	30	42.3
Appointment resolvability		
Resolvable	54	76.1
Unresolvable	17	23.9
Technical aspects		
Feasible	45	63.4
Unfeasible	26	36.7
Patient satisfaction		
Satisfied	66	93
Unsatisfied	5	7

Telemedicine has been studied in the context of the COVID-19 pandemic for other specialties to evaluate its feasibility and patient satisfaction. Chesnel et al. [23] evaluated telephone consultations in neuro-urology and found high efficacy and satisfaction rates for both physicians and patients, but 52.4% of the patients reported a preference for physical consultations. Muños-Duyos et al. [24] evaluated the efficacy of telemedicine in coloproctology and found a 61% resolvability rate, with no differences between different diagnostic categories . Similarly, we found a high resolvability rate in our population, and no difference among the diagnoses. Patel and Douglas-Moore [25] reported telemedicine applications in a urology setting and were able to make clinical decisions in 82% of the consultations, with a 93% satisfaction rate, and 83% of the patients stated that they would opt for telephone consultations in the future. We also found a high satisfaction rate, but a lower desire to continue with telemedicine. Barba et al. [26] evaluated telemedicine in the postoperative follow-ups of pelvic organ prolapse and anti-incontinence surgeries and reported that all patients showed high satisfaction with telephone interviews.

Our data show high rates of appointment resolvability and overall patient satisfaction, comparable to previous studies.

Table 5 Association between the desire to continue with telemedicine (yes/no) and sociodemographic characteristics and the feasibility criteria (*N*=71)

	Yes	No	*p*-value*
Age (years)			0.30
< 60	28	16	
≥ 60	13	14	
Place of residence			0.84
Same city/metropolitan region	38	29	
Distant city	3	1	
Schooling level			0.18
Low (no schooling/middle school)	24	23	
High (nigh school/college degree)	17	7	
Internet access			0.06
Yes	38	22	
No	3	8	
Type of appointment			0.06
First visit	15	6	
Follow-up	46	4	
Form of contact			0.40
Video call	1	3	
Telephone call	40	27	
Resolvability			0.13
Resolvable	28	26	
Unresolvable	13	4	
Technical feasibility			0.45
Feasible	28	17	
Unfeasible	13	13	
Patient satisfaction			0.02
Satisfied	41	25	
Unsatisfied	0	5	

*Two-sided chi-square test

These criteria are considered key indicators of health service outcomes and reimbursement criteria for hospitals [27]. In telemedicine, patient satisfaction was evaluated in a systematic review in which it was associated with improved outcomes, improved communication with providers, ease of use, and cost savings [28].

Table 4 Association between the different diagnoses and resolvability criterion, patient satisfaction, and desire to continue with telemedicine (*N*=71)

Urogynecological condition	Resolvability criteria		*p*-value*	Patient satisfaction		*p*-value*	Desire to continue with telemedicine		*p*-value*
	Yes	No	0.08	Yes	No	0.91	Yes	No	0.81
Mixed urinary incontinence	16	10		24	2		13	13	
Overactive bladder syndrome	18	3		19	2		12	9	
Stress urinary incontinence	12	2		13	1		9	5	
Recurrent urinary infection	6	0		6	0		4	2	
Pelvic organ prolapse	2	2		4	0		3	1	

*Two-sided chi-square test

On the other hand, we found low patient desire to continue with telemedicine. We expected that sociodemographic variables would be associated with this criterion due to evidence of its relevance for consideration in telemedicine acceptance. A systematic review by Kruise et al. [29] identified age, educational level, and computer literacy as barriers to telemedicine adoption. A recent survey of the United States population evaluating the intention to use telemedicine after the pandemic showed that even though most participants were willing to use telemedicine in the future, low-income, low-education, and rural area populations were less likely to accept this form of care [30]. This difference may be attributed to the small sample size, which reduces the statistical power to demonstrate a difference. Additionally, a high proportion of eligible patients (52%) did not agree to having a telemedicine appointment and participating in the study. This high rate of refusal may indicate that sociodemographic characteristics play a role in telemedicine acceptance in this population. We observed a statistically significant association between the desire to continue with telemedicine and overall patient satisfaction.

The strengths of this study include the evaluation of several aspects of telemedicine feasibility, thus being able to demonstrate that it can be used, despite the identified limitations. Other strengths were the high rate of appointment resolvability and the fact that we studied telemedicine in a population of a developing country, a different profile from previous studies in urogynecology. The limitations include its descriptive design without a comparison group, lack of sample size calculation, and lack of data evaluation for patients who did not respond or refused telemedicine as well as their reasons for refusal. We also acknowledge the potential recall bias, since the survey took place 7–15 days after the appointment, and the response rate of participants was only 85%.

Despite the potential benefits of improving access to healthcare in urogynecology, including reduced waiting time, travel time, and cost, and the evidence of non-inferiority for some urogynecological conditions, telemedicine still faces barriers to implementation in the studied population. The main challenges include technological resources and patient acceptance of this form of care.

In conclusion, telemedicine in urogynecology is feasible and can be implemented in our studied population. However, actions are essential to adequately support patient preferences and improve acceptance of telemedicine. The findings of this study motivate us to continue telemedicine appointments in urogynecology, and we hope it encourages other services attending to similar populations.

Author contributions This study was presented at the Joint Scientific Meeting of the American Urogynecological Society and International Urogynecological Association, Austin, Texas, USA, June 14–18, 2022.

DVDL Macharet: Project development, data collection, data analysis, manuscript writing.

LN Mendes: Project development, data collection, manuscript editing.

GMV Pereira: Data analysis, manuscript editing.

MVC Monteiro: Project development, data collection, data analysis, manuscript editing.

Funding The co-author GMVP received Scholarship Grant 2019/26723-5, São Paulo Research Foundation (FAPESP).

Declarations

Conflicts of interest None.

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