



Effectiveness of telehealth physical therapy for patients with pelvic floor disorders in a community hospital setting

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Abstract

Purpose To examine whether there are differences in meeting treatment goals between pelvic floor physical therapy (PFPT) patients who participated in a majority of telehealth visits versus those who participated in mostly traditional office visits at a community hospital.

Methods Retrospective chart review was performed among patients who received PFPT from April 2019 to February 2021. Cohorts were defined as “Mostly Office Visits” (> 50% office visits) and “Mostly Telehealth” (> / = 50% telehealth visits). Primary outcome measures included demographic data, number/type of visit for each patient, number of no-show/cancellation appointments, and number of patients discharged meeting PFPT goals. Statistical significance was defined as $p < 0.05$.

Results 234 subjects met criteria for the “Mostly Office Visit” cohort and 48 subjects met criteria for the “Mostly Telehealth” cohort. There were no significant differences observed in age ($p = 0.919$), BMI ($p = 0.817$), race/ethnicity ($p = 0.170$) or insurance type ($p = 0.426$) between cohorts. There was no significant difference in meeting PFPT goals between the “Mostly Office Visit” cohort (24.4%) and the “Mostly Telehealth” cohort (35.4%) ($p = 0.113$). There was no difference in the number of canceled visits per patient (mean cancellations “Office visit” 1.98; “Telehealth” 1.63; $p = 0.246$) and the number of no-show visits per patient (mean no-show’s “Office visit” 0.23; “Telehealth” 0.31; $p = 0.297$) between cohorts.

Conclusion There was no difference in meeting discharge goals regardless of whether a patient participated in mostly telehealth visits versus mostly traditional office visits. Therefore, we can conclude that participating in mostly provider-led telehealth visits can be equally efficacious at providing competent PFPT care.

Keywords Goals · Pelvic floor · Physical therapy · Telehealth · Telemedicine

What does this study add to the clinical work

Our retrospective cohort study found that participation in mostly telehealth visits can be an efficacious alternative to in-person visits at providing competent pelvic floor physical therapy care. Given that telehealth care may be more convenient and accessible for many patients, these results are meaningful because they demonstrate that patients may pursue remote pelvic floor physical therapy without significantly compromising their care, adding to existing literature by specifically examining physician-led virtual consult as the vehicle through which physical therapy is performed.

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Introduction

Physical therapy—the treatment of disease, injury, or deformity by methods such as massage, heat treatment, and exercise rather than medications or surgery—is well-known to provide vital support and treatment for a wide range of various ailments [1]. Among these are pelvic floor disorders such as incontinence, prolapse, dyspareunia, and chronic pelvic pain; all conditions which are burdensome and disproportionately affect women [2]. The advent of pelvic floor physical therapy (PFPT) has provided another avenue through which providers may address these conditions, seeing success over recent years in improving bothersome symptoms without medication or surgery [1]. Physical therapists may use a wide range of modalities within the context of PFPT, including external and internal tissue mobilization and myofascial release, manipulative therapies to mobilize visceral, urogenital, and joint structures, electrical stimulation, active pelvic floor retraining, biofeedback, bladder and bowel retraining, and pelvic floor muscle stretching [1].

When faced with the SARS-CoV-2 coronavirus disease (COVID-19) global pandemic, rapid and drastic changes in healthcare were required to protect patients from exposure, including those who may be undergoing treatment for pelvic floor dysfunction. On March 20, 2020, Governor Lamont issued “Stay Safe, Stay Home” executive order No. 7H in the state of Connecticut, new legislation mirroring the United States’ (U.S.) response to the pandemic and the growing need for social distancing [3]. Our 305-bed community-based teaching hospital is a Level 2 trauma center located close to New York City, and saw a rapid surge of critically ill patients in our community. Healthcare delivery for nearly all patients after the issued Stay-At-Home executive order was augmented by adopting telehealth technology, defined as any health-related service that utilizes technology to deliver health care [4]. This includes the use of virtual visit, remote patient monitoring, and mobile health care [5].

Multiple studies have been published examining the efficacy of mobile applications in treating pelvic floor disorders since the onset of the pandemic [2, 6–8]. The vast majority of these analyses identified telehealth as various forms of telecommunication, such as through digital applications, YouTube videos, and online programs. Telehealth treatment efficacy was defined as improvement in symptoms, or through patient reported satisfaction scores [2, 6–8]. In addition, research has demonstrated comparable outcomes between telehealth and traditional visits without compromising the physician–patient relationship [2]. Few studies, however, have examined remote physician-provided care, particularly within the context of adherence rates or rates of patients who successfully completed PFPT and ultimately met discharge goals.

Thus, the current study examined the differences in meeting treatment goals among patients who participated in a majority of provider-led telehealth PFPT visits versus those who participated in a majority traditional office visits at Stamford Hospital. We hypothesize that discharge rates of patients meeting goals will be similar between groups. Secondary objectives include assessing differences in baseline demographics between those utilizing telehealth services versus traditional office visits, as well as factors associated with likelihood of utilizing telehealth services and meeting discharge goals to identify if there are patient populations for which telehealth services may be more successful or more effective.

Methods

This retrospective cohort study includes women 18 years or older who received PFPT care at a 305-bed community-based teaching hospital from April 2019 to February 2021. Participants were identified through electronic medical records (Meditech and E-Clinical Works, as both systems were utilized between 2019 and 2021) using ICD-10 codes within the desired time frame. Patients who were scheduled for PFPT visits but ultimately did not attend were excluded, as were any patients under 18 years old.

Patients were then divided into two cohorts. The “Mostly Telehealth” group included patients for whom at least 50% of attended PFPT visits were via telehealth. Patients that attended greater than 50% in-person office visits were categorized into the “Mostly Office Visit” group. If a patient attended an equal number of telehealth and office visits, they were included in the “Mostly Telehealth” cohort. Outcome measures included demographic data (age, body mass index (BMI), race/ethnicity, insurance type), number of scheduled and attended telehealth and office visits, number of no-show and cancellations, and whether the patient met their discharge goals as determined by a licensed pelvic floor physical therapist. If any patients were lost to follow-up, they were determined to have been discharged without meeting goals. In addition, some patients were officially discharged, but it was documented that they had not met their initial goals and were going to continue certain treatment regimens on their own. Thus, these patients were also deemed “discharged not meeting goals”. Those with missing data for either demographics or outcome variables were excluded from the analysis.

Statistical analysis for this research was performed using SPSS version 28. The distribution of all variables of interest was compared between those categorized into the “Mostly Telehealth” cohort and “Mostly Office Visit” cohort. Categorical datapoints were analyzed via chi-square tests of association and reported as counts and percents.

Continuous variables were analyzed using analysis of variance (ANOVA), reporting respective means and standard deviations for both groups. As this is an exploratory analysis, corrections for multiple comparisons and missing value imputation were not conducted for this research. A p -value of 0.05 ($p < 0.05$) denoted statistical significance for each analysis.

Ethics approval

Prior to study initiation, the Stamford Health’s Institutional Review Board of Record, WCG Institutional Review Board, reviewed the study protocol and was determined as exempt from continuing review.

Results

There were 234 patients who were identified as meeting inclusion criteria in the “Mostly Office Visits” cohort, and 48 patients who were identified as meeting inclusion criteria in the “Mostly Telehealth” cohort. The five most common reasons for seeking out PFPT were pelvic floor weakness, muscle spasm, pelvic floor dysfunction, incontinence and diastasis of the rectus abdominus. Overall, significant differences were not observed in the demographic values of the

two cohorts (Table 1 and Table 2). The average age for the “Mostly Telehealth” cohort was 43.9 and for the “Mostly Office Visit” cohort was 44.2 ($p = 0.919$). The average BMI for patients upon whom height and weight were collected within the “Mostly Telehealth” cohort was 24.2 kg/m² and for the “Mostly Office Visit” cohort was 24.4 kg/m² ($p = 0.817$). Both cohorts were predominantly composed of patients whose self-identified race/ethnicity was “White” (92.1% of the “Mostly Telehealth” cohort and 74.9% of the “Mostly Office Visit cohort, $p = 0.17$). The majority of patients in both cohorts had private insurance (79.2% of the “Mostly Telehealth” cohort and 75.6% of the “Mostly Office Visit” cohort) with similar distributions of patients with public insurance and those who did not have insurance (“Self-Pay”) ($p = 0.426$).

In regard to the primary objective, there were no significant differences found in the number of patients who were discharged from PFPT meeting discharge goals between the two cohorts (Table 3). In the “Mostly Telehealth” cohort, 35.4% of patients were discharged meeting discharge goals, and in the “Mostly Office Visits” cohort, 24.4% of patients were discharged meeting discharge goals ($p = 0.113$). Secondary analysis was performed to assess whether significant differences were observed in the number of canceled or no-show visits between cohorts, and this was also not significant ($p = 0.246$, $p = 0.297$ respectively) (Table 4). The mean number of canceled visits per patient was 1.63 for the

Table 1 Demographics: continuous variables

Variable	Mostly telehealth ($n = 48$)			Mostly office visit ($n = 234$)			p -value
	n	Mean	SD	n	Mean	SD	
Age (years)	48	43.94	13.59	234	44.18	15.60	0.919
BMI (kg/m ²)	34	24.21	4.93	145	24.43	5.24	0.817

14 patients from the “Mostly Telehealth” cohort (29.2%) and 89 patients from the “Mostly Office Visit” cohort (38.0%) were excluded from analysis within the “BMI” variable, as this information was not documented in the patient’s chart

Table 2 Demographics: discrete variables

Variable	Category	Mostly telehealth ($n = 48$)		Mostly office visit ($n = 234$)		p -value
		Count	%	Count	%	
Race	Asian	1	2.6	9	5.0	0.170
	Black	1	2.6	10	5.6	
	Hispanic	0	0.0	20	11.2	
	White	35	92.1	134	74.9	
	Other	1	2.6	6	3.4	
Insurance	Private	38	79.2	177	75.6	0.426
	Public	10	20.8	49	20.9	
	Self-pay	0	0.0	8	3.4	

10 patients from the “Mostly Telehealth” cohort (20.8%) and 55 patients from the “Mostly Office Visit” cohort (23.5%) were excluded from analysis within the “Race” variable, as this information was not documented in the patient’s chart

Table 3 Patients Meeting PFPT Goals

Variable	Category	Mostly telehealth (<i>n</i> =48)		Mostly office visit (<i>n</i> =234)		<i>p</i> -value
		Count	%	Count	%	
Goals	No/FR	31	64.6	177	75.6	0.113
	Yes	17	35.4	57	24.4	

“Yes”=Discharged with documented success at meeting pre-determined PFPT goals. “No/FR”=Patient was either lost to follow-up or was discharged with documentation that the patient had not met goals

Table 4 Mean canceled and no-show encounters for the “Mostly Telehealth” and “Mostly Office Visit” cohorts

Variable	Mostly telehealth (<i>n</i> =48)		Mostly office visit (<i>n</i> =234)		<i>p</i> -value
	Mean	SD	Mean	SD	
Number of Canceled visits	1.63	1.61	1.98	1.94	0.246
Number of No-show visits	0.31	0.55	0.23	0.49	0.297

“Mostly Telehealth” cohort and 1.98 for the “Mostly Office Visit” cohort, and the mean number of no-show visits per patient was 0.31 for the “Mostly Telehealth” cohort and 0.23 for the “Mostly Office Visit” cohort.

Discussion

The analysis performed for this retrospective study did not find significant differences in completion of PFPT and meeting discharge goals between those patients who participated in majority telehealth-provided care versus majority office care, supporting the authors’ initial hypothesis. This suggests that incorporating provider-led telehealth visits for some or all physical therapy care is acceptable and non-inferior to in-person visits at achieving goals established at the initial PFPT consultation.

These findings corroborate the data that has emerged in the last two years as a result of the COVID-19 pandemic, when non-emergent care, such as PFPT, were forced to adapt to social distancing for public safety. Some of these specialty care services were previously thought to not be conducive to remote care. However, a meta-analysis published in 2021, found that telehealth interventions have benefits over traditional models such as improved compliance to treatment regimens, improved access to subspecialty physical therapy care, and convenience [7]. Two systematic reviews, Novara et al. (2020) and Ueda da Mata et al. (2020) found that telehealth can be utilized to successfully treat urologic disorders, improve urinary symptoms, and enhance overall quality of life [9, 10]. Other studies have looked at whether technologies such as guided mobile applications and YouTube programs improved outcomes and found them to either

improve outcomes or to be non-inferior [2, 6]; this implies that a variety of modalities can achieve improvement in pelvic floor dysfunction, other than traditional office visits. Our findings add to existing literature on PFPT by demonstrating that PFPT can be provided through a physician-led virtual consult as a substitute for in-person treatment without compromising successful discharge rates.

Cohorts were defined as “Mostly Telehealth” and “Mostly Office Visit”, meaning either greater than or less than 50% telehealth visits, to produce two defined cohorts and generate meaningful results. Almost all patients participated in some combination of office and telehealth visits. Given that our primary objective was to assess whether telehealth could be successfully incorporated into PFPT without compromising efficacy, the most logical way to differentiate between cohorts was based on which type of visit was the majority for each patient. It would be interesting to investigate whether there is a certain number of office or telehealth visits required to obtain significantly different results, however, our subject pool did not lend to this kind of analysis.

We acknowledge our primary outcome measure, namely whether patients met discharge goals as determined by a licensed physical therapist, comes with a degree of subjectivity that was difficult to control for. This was selected as the primary outcome measure because patient goals were significantly varied, and often specifically tailored to each individual patient. Common goals included targeted reduction in pain scores, decreased frequency of incontinence episodes, and self-determined “overall percent improvement”. An attempt was made to compare these specific objective measures of improvement between patients, however, inconsistencies in documentation of objective data in the clinical notes limited data extraction and made these comparisons irrelevant. To present results in a meaningful way, the decision to discontinue PFPT based on successful progress at or beyond pre-determined individual patient goals was compared between cohorts. The number of physical therapists involved in evaluating patients included in this study was limited to two individuals, which helps to minimize provider differences.

Areas for future research include investigating characteristics of patients more likely to use remote physical therapy services, whether there are certain pelvic floor disorders that are more likely to benefit from telemedicine,

and cost-effectiveness of remote visits. As previously discussed, the current study aimed to collect data on objective measured values of pelvic floor pain scores, incontinence episodes, and measures specific to various pelvic floor disorders, however, these data were inconsistently documented by physical therapists and thus unable to be analyzed reliably. This could potentially be addressed in a prospective study in the future, in which there would be the opportunity to standardize PFPT documentation of objective data for our study cohort. Future research could also be conducted across multiple institutions with varying demographics to obtain a larger sample size and affirm the generalizability of our findings.

We do acknowledge that our study contains limitations. Although baseline demographics were not significantly different, a limitation of our study is the smaller sample size for the mostly telehealth group (234 mostly office, 48 mostly telehealth). This was unavoidable as a notably smaller proportion of patients utilized a majority of telehealth PFPT services after it was introduced during the pandemic at our hospital. Additionally, demographic data including BMI and race/ethnicity were inconsistently documented. As a result, analysis regarding differences in demographics may not represent our cohorts in its entirety. Our study was conducted at a single-site institution that is a community-based teaching hospital and therefore the generalizability of our findings is indeterminate.

In conclusion, pelvic floor disorders remain complex and require multimodal patient-centered approaches for successful treatment. PFPT is an effective way for patients to achieve improvement in their symptoms [1]. The incorporation of telehealth physical therapy within PFPT yields equally efficacious results as in-person visits, particularly when it comes to achieving goals of treatment and overall improvement in patient symptomatology. Additionally, PFPT conducted through majority telehealth visits was found to be non-inferior to PFPT conducted through majority office visits. Our study demonstrates that patients can obtain PFPT using a telehealth platform without compromising health outcomes.

Author contributions BC: project development, data collection/analysis, manuscript writing. SR: data collection/analysis, manuscript writing. LM: project development. AP: project development. JM: project development. JH: project development, data analysis, manuscript writing. SC: project development. VA: data analysis, manuscript editing. Study conception and design was performed by BC, LM, and SC with the assistance of licensed pelvic floor physical therapists AP and JM. This was overseen by JH as Academic Research Program Manager at Stamford Hospital. At the time of IRB approval, a new academic year had begun, thus SR and VA were added to assist with carrying out the project, as other authors had moved on to other institutions. Data collection, data analysis, and manuscript writing were performed by BC and SR, with the assistance of JH and VA. All authors read and approved of the final manuscript.

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Data availability All data collected for this retrospective cohort analysis was uploaded to an electronic spreadsheet. A sequentially numbered list was created with a corresponding number assigned to each record thus de-identifying the data so that confidentiality of the subject records was maintained. The entirety of the data collected is stored on a password-protected Stamford Hospital computer in encrypted files accessible by the Principal Investigator, Sub-Investigators, Stamford Hospital's authorized Office of Research personnel, and Stamford Hospital's statistician consultant. This data is available upon request.

Declarations

Conflict of interest The authors completed the ICMJE Form for Disclosure of Potential Conflicts of Interest and reported no conflicts of interest.

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