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**ORIGINAL ARTICLE****Retrospective Cohort Study**

- 26 Treatment patterns of primary care physicians *vs* specialists prior to subspecialty urogynaecology referral for women suffering from pelvic floor disorders  
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## Retrospective Cohort Study

**Treatment patterns of primary care physicians vs specialists prior to subspecialty urogynaecology referral for women suffering from pelvic floor disorders**

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**Author contributions:** Prentice A contributed to design of study, collecting data, creating the tables, and writing the manuscript; Bazzi AA contributed to calculating the statistics, creating the tables, writing the manuscript, submission and revisions; Aslam MF contributed to design of the study, data interpretation, writing the manuscript and revisions.

**Institutional review board**

**statement:** The St. John Hospital and Medical Center IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

**Informed consent statement:**

Patients were not required to give informed consent to the study because the analysis used anonymous data. Please refer to the IRB document which states informed consent and HIPPA waver documents were received.

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None.

**STROBE statement:** The guidelines of the STROBE Statement have been adopted.

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**Abstract****BACKGROUND**

There are approximately 25% of women in the United States suffering from pelvic floor disorders (PFDs) and this number is predicted to rise. The potential complications and increasing healthcare costs that exist with an operation indicate the importance of conservative treatment options prior to attempting surgery. Considering the prevalence of PFDs, it is important for primary care physician and specialists (obstetricians and gynecologists) to be familiar with the initial work-up and the available conservative treatment options prior to subspecialist (urogynecologist) referral.

**AIM**

To assess the types of treatments that specialists attempted prior to subspecialty referral and determine the differences in referral patterns.

**METHODS**

This is a retrospective cohort study of 234 patients from a community teaching hospital referred to a single female pelvic medicine and reconstructive surgery (FPMRS) provider for PFD. Specialist *vs* primary care provider (PCP) referrals were compared. Number, length and treatment types were studied using descriptive statistics.

**RESULTS**

There were 184 referrals (78.6%) by specialists and 50 (21.4%) by PCP. Treatment (with Kegel exercises, pessary placements, and anticholinergic medications) was attempted on 51% ( $n = 26$ ) of the PCP compared to 48% ( $n = 88$ ) of the specialist referrals prior to FPMRS referral ( $P = 0.6$ ). There was no significant difference in

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length of treatment prior to referral for PCPs *vs* specialists (14 mo *vs* 16 mo, respectively,  $P = 0.88$ ). However, there was a significant difference in the patient's average time with the condition prior to referral (35 mo *vs* 58 mo for PCP compared to specialist referrals) ( $P = 0.02$ ).

### CONCLUSION

One half of the patients referred to FPMRS clinic received treatment prior to referral. Thus, specialists and generalists can benefit from education regarding therapies for PFD before subspecialty referral.

**Key words:** Pelvic floor disorders; Referral patterns; Female pelvic medicine and reconstructive surgery; Primary care provider

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**Core tip:** The true value of this study highlights the finding that half of the patients sent for subspecialist (urogynecologic) evaluation did not receive any treatment from primary care physicians and specialists (obstetricians and gynecologists) prior to the referral. This suggests that there is a potential paucity of knowledge about non-invasive therapy options available for pelvic floor disorders. This leaves room for education about these disorders, whether during residency training or through certification examinations. This could result in decreased healthcare costs and morbidities associated with surgical procedures.

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## INTRODUCTION

One in four women in the United States suffer from at least one pelvic floor disorder (PFD), which includes fecal incontinence, urinary incontinence or pelvic organ prolapse<sup>[1]</sup>. These disorders are more prevalent with increasing age and obesity; thus, will likely become even more pronounced in the future<sup>[1]</sup>. Consequently, this results in an overall increase in healthcare expenditure and potential complications that exist with an operation; especially when the lifetime risk of pelvic surgery is estimated to be between 11%-19%<sup>[2]</sup>. In 2005-2006, after adjusting for deductibles and co-payments, the average annual cost of ambulatory physician services for PFDs in the United States was \$412 million and this number was expected to increase<sup>[3]</sup>. Factoring in expensive surgical procedures, this can be a huge burden on overall healthcare costs<sup>[4]</sup>. Surgical therapy, while normally minimally invasive for PFDs, is costly and has many possible side effects<sup>[1]</sup>. It is associated with increased healthcare costs, medical comorbidities, pain, and prolonged recovery time<sup>[5]</sup>. Therefore, conservative treatment options should be offered to a patient prior to attempting surgery.

Considering the prevalence of these disorders and, it is important that physicians are familiar with the initial work-up, and the available treatment options. To accomplish this, it is important to understand the types of treatment, if any, that patients receive prior to subspecialty referral. This assessment starts with the primary care providers (PCPs) and specialists. According to a previous study, PCP are familiar with overactive bladder and urinary incontinence, but less familiar with pelvic organ prolapse<sup>[6]</sup>. Obstetricians and gynaecologists see PFDs with higher frequency and may be more familiar with the treatments available for those disorders<sup>[7]</sup>. This allows them to partake in earlier interventions and this can have clinical and economic implications.

Female pelvic medicine and reconstructive surgery (FPMRS) providers specialize in PFDs, often offering additional care, which includes non-invasive treatment options and surgical interventions<sup>[4]</sup>. These non-invasive treatment modalities include dietary intervention, pelvic floor physical therapy, and medications; all which could be attempted at the primary care level<sup>[8]</sup>. This would allow for earlier intervention and

more efficient use of medical resources. A recent 2014 study found that using pelvic floor muscle training for urinary incontinence should be a recommended first line intervention<sup>[9]</sup>. With the appropriate training and minimal resources, PCPs and OBGYNs can counsel patients on this treatment to allow for earlier treatment and intervention. The purpose of this study was to assess which treatments were attempted by specialists and primary care physicians, and to determine if there was a significant difference in the treatments attempted prior to referral to a urogynecologist.

## MATERIALS AND METHODS

This is a retrospective cohort study whose primary goal was to determine the types of treatments for PFDs, if any, that PCPs and OB/GYN physicians attempted prior to FPMRS referral. The secondary aim was to determine if there was a difference in referral patterns between providers. The participants were recruited from a community teaching hospital in Detroit between August 1, 2015 and August 31, 2017. The patient cases were identified by use of electronic medical record. All protected health information was de-identified. Only patients who were evaluated by the single FPMRS provider during the study period were included. The research protocol was approved by the relevant Institutional Review Board.

A total of 234 participants were included in the assessment. The inclusion criteria included female patients between the ages of 18-95 years referred to a single provider subspecialty FPMRS clinic for PFDs. These PFDs included urge, stress incontinence, and fecal incontinence as well as pelvic pain and pelvic organ prolapse during the study period. Patients under 18 and over 95 years of age were excluded. Certain patient information was abstracted, including demographics, specialty of the referring physician, type of PFD, and treatments utilized. Finally, patients that were referred to the urogynecology clinic by various specialists were compared to those referred by their primary care physicians.

### Statistical analysis

Statistical analysis was performed using SPSS version 25 (manufacturer: IBM, location: Armonk, New York). A *P*-value of 0.05 or less was considered to indicate statistical significance. Descriptive statistics were generated to characterize the study population. This included the mean, standard of deviation, median and range. The number, length and types of treatments were compared. A univariate analysis was performed using Student's *t*-test to show differences between groups on continuous variables<sup>[10]</sup>. Categorical variables were described as frequency distributions. Chi-square was used to indicate associations between categorical variables. Fisher's exact test was used when assumptions for Chi-square distribution were violated.

## RESULTS

The study included 234 referrals to the single FPMRS provider clinic from August 2015 through August 2017. Our population was predominately white (60.1%) compared to 35.3% African American, 1.3% Native American, 0.8% Asian, and 0.4% Hawaiian/Pacific Islander. Patient demographics are shown in [Table 1](#).

We also looked at the referral pattern between PCPs and specialists by individual PFD category. Most patients were referred for multiple coincident disorders, with a total number of 474 disorders (234 patients referred, but many for multiple disorders). Overall, stress incontinence was the leading medical issue that was referred to the FPMRS specialty clinic. One hundred forty-three (30.2%) of the referrals were at least partially for stress incontinence. One hundred twenty-seven (26.8%) of referrals had urge incontinence as one of the reasons for referral. Forty-two (8.8%) of patients were referred for fecal incontinence, 22 (4.6%) for pelvic pain, and 140 (29.5%) were referred for pelvic organ prolapse. Referral patterns of PCPs *vs* specialists based on PFD is portrayed in [Table 2](#).

There was no difference in the number of patients for whom treatment was attempted in either group prior to the referral. PCPs attempted treatment on 26 (51%) patients prior to urogynecology referral, compared to 88 (48%) of the patients that were referred by the specialists (*P* = 0.6).

There was also no significant difference in length of treatment prior to referral with a mean of 14 mo for primary care and 16 mo for specialist (*P* = 0.88). There was, however, a significant difference in the patient's average time with condition prior to referral. Average time with index condition was 35 mo for primary care referrals

**Table 1 Patient race/ethnic background**

Race	Frequency (n)	Percent	Valid (%)	Cumulative (%)
African American	84	35.3	35.9	35.9
American Indian/Alaskan Native	4	1.7	1.7	37.6
Asian	2	0.8	0.9	38.5
Hawaiian/Pacific Islander	1	0.4	0.4	38.9
White	143	60.1	61.1	100
Total	234	98.3	100	

compared to 58 mo for specialist referrals ( $P = 0.02$ ).

The most common treatments attempted prior to FPMRS referral were Kegel exercises, pessary placement, and anticholinergic medications. Kegels were attempted by 27 (15.7%) of the patients referred by obstetricians, and in 6 (12%) of the patients referred by primary care doctors. Pessaries were attempted in 27 (15.7%) of the obstetric referrals as well, and 2 (4%) of the primary care referrals. Anticholinergics were attempted by 23 (13.4%) of the patients referred by obstetricians and 4 (8%) of the primary care referrals. Across the board, a similar number of women with different PFDs had treatments attempted at all prior to the referral. This includes 72 out of 143 (50.3%) women with stress incontinence, 68 out of 127 (53.5%) with urge incontinence, 65 out of 140 (46.4%) with pelvic organ prolapse and 15 out of 22 (68.2%) with pelvic pain. Overall, this shows that approximately half of the patients with each form of PFD received treatment prior to referral.

## DISCUSSION

The results of this cohort study show that there was no significant difference in the number of treatments attempted by PCPs versus specialists. We theorized that obstetricians would be more familiar and better prepared to treat PFDs given their background with gynaecologic problems. For this small subset of providers in our study, this was not the case. However, it should be noted that 121 more patients were sent by obstetricians than primary care physicians, which may indicate that they are more comfortable and familiar with the role of urogynecologists.

Even though stress incontinence was the most often referred PFD, comprising 30.2% of the referrals, it was not the most often condition treated. By percentage treated, pelvic pain received treatment most often prior to referral (68.2%) versus stress incontinence which only received treatment 50.2% of the time. Stress urinary incontinence is estimated to affect between 4% and 35% of adult women<sup>[9,11]</sup>. Generally speaking, urinary incontinence is a very common problem affecting women, with more than half of the population over 20 years of age affected<sup>[11,12]</sup>. The prevalence of incontinence in females suggests it is a disorder that should be taken seriously, and the various treatment modalities should be better understood.

Our study showed no significant difference in the length of treatment prior to referral, but it did show a difference in the time with the condition prior to referral. Often the referred patients were impacted by the disorder for at least 1 year prior to referral. With only half of the patients receiving any documented treatment for their condition, this implies that many of the referred patients received no intervention for at least a year. This can be important for its implications, which includes healthcare costs, patient satisfaction, surgical complications, length of time prior to treatment. Our assessment included a limited time span of new patients referred to the clinic. Furthermore, we only studied patients referred to a single FPMRS specialist. A larger multicenter study with multi-providers may be useful to fully explore the treatments attempted prior to referral by multiple FPMRS specialists<sup>[13]</sup>. This study can serve as a branching point for further studies that can further explore this avenue. Furthermore, this study can be used to encourage further utilization of non-invasive therapies for PFDs by primary care and OB/GYN physicians. Another limitation is the retrospective nature of this study<sup>[14]</sup>. Future studies can be designed to follow the referral patterns over a longer period of time.

The true value of this study highlights the finding that half of the patients sent for urogynecologic evaluation did not receive any treatment prior to the referral. This suggests that there is a potential paucity of knowledge about non-invasive therapy options available for PFDs. This leaves room for education about these disorders, whether during residency training or through certification examinations. There is a

**Table 2 Referral patterns categorized by pelvic floor disorder**

	Primary care provider (n)	Specialist (n)	Total (n)
Stress Inc	32	111	143
Urge Inc	28	99	127
Fecal Inc	10	32	42
Pelvic pain	6	16	22
Prolapse	29	111	140

Inc: Incontinence.

plethora of reasons as to why physicians may not attempt treatments prior to referral. This could be due to lack of confidence with recommending and overseeing these treatments, lack of resources/time, or simply that they would prefer the disorder be managed by a specialist in PFDs given the possibility for surgical intervention. Future studies can be aimed at understanding this question by surveying a large pool of physicians amongst various fields of medicine.

## ARTICLE HIGHLIGHTS

### Research background

Approximately one half of the patients referred to a Female Pelvic Medicine and Reconstructive Surgeon for pelvic floor disorders (PFDs) did not receive any non-surgical treatment prior to referral. Rather than being managed conservatively, patients end up undergoing surgical procedures, which are associated with their own risks. Through education about these disorders, whether during residency training or through certification examinations, this may result in decreased healthcare costs and morbidities associated with surgical procedures.

### Research motivation

The main topic of these articles revolves around female PFDs and conservative management prior to subspecialist referral. The key problem to be solved is determining the extent to which treatments are attempted prior to subspecialist referral and if education about PFDs would be beneficial. This could reduce the total number of surgical procedures performed, which would decrease the medical comorbidities associated with surgery. Furthermore, this would result in fewer healthcare costs associated with subspecialty referral and surgical procedures.

### Research objectives

The objective of this study was to assess the types of treatments that primary care physicians and obstetricians and gynecologists (specialists) attempted prior to subspecialty female pelvic medicine and reconstructive surgery (subspecialists) referral. The secondary goal assessed the differences in referral patterns. Future studies can be aimed at understanding this question by surveying a large pool of physicians amongst various fields of medicine.

### Research methods

A retrospective cohort study of 234 patients was included in the assessment after the inclusion and exclusion criteria were met. The PFDs included urge, stress incontinence, and fecal incontinence as well as pelvic pain and pelvic organ prolapse during the study period. Certain patient information was abstracted, including demographics, specialty of the referring physician, type of PFD, and treatments utilized. Finally, patients that were referred to the urogynecology clinic by various specialists were compared to those referred by their primary care physicians. Descriptive statistics were generated to characterize the study population. This included the mean, standard of deviation, median and range. The number, length and types of treatments were compared.

### Research results

There were 78.6% of referral by specialists and 21.4% by primary care provider (PCP). Treatment (with Kegel exercises, pessary placements, and anticholinergic medications) was attempted on 51% ( $n = 26$ ) of the PCP compared to 48% of the OB/GYN referrals prior to FPMRS referral ( $P = 0.6$ ). There was no significant difference in length of treatment prior to referral for PCPs *vs* specialists (14 mo *vs* 16 mo, respectively,  $P = 0.88$ ). However, there was a significant difference in the patient's average time with the condition prior to referral (35 mo *vs* 58 mo for PCP compared to specialist referrals) ( $P = 0.02$ ).

### Research conclusions

Our results showed that there was no significant difference in the number of treatments attempted by PCPs versus specialists. We theorized that obstetricians would be more familiar and better prepared to treat PFDs given their background with gynaecologic problems. For this small subset of providers in our study, this was not the case. However, it should be noted that 121 more patients were sent by obstetricians than primary care physicians, which may indicate

that they are more comfortable and familiar with the role of urogynecologists. Even though stress incontinence was the most often referred PFD, comprising 30.2% of the referrals, it was not the most often condition treated. By percentage treated, pelvic pain received treatment most often prior to referral (68.2%) versus stress incontinence which only received treatment 50.2% of the time. Our study showed no significant difference in the length of treatment prior to referral, but it did show a difference in the time with the condition prior to referral. Often the referred patients were impacted by the disorder for at least 1 year prior to referral. The true value of this study highlights the finding that half of the patients sent for urogynecologic evaluation did not receive any treatment prior to the referral. There is a plethora of reasons as to why physicians may not attempt treatments prior to referral. This could be due to lack of confidence with recommending and overseeing these treatments, lack of resources/time, or simply that they would prefer the disorder be managed by a specialist in PFDs given the possibility for surgical intervention.

### Research perspectives

Our study suggests that there is a potential paucity of knowledge about non-invasive therapy options available for PFDs. Future studies can be aimed at understanding this question by surveying a large pool of physicians amongst various fields of medicine. This study could be done retrospectively or prospectively.

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