



# The multidisciplinary approach to pelvic floor diseases: an Italian survey

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## ABSTRACT

**Objectives:** Pelvic floor disorders (PFD) consist in a series of anatomic-functional disfunctions involving different professional profiles and often requiring a multidisciplinary approach. The purpose of this survey is to identify how PFD are managed in Italian centers and what is the degree of integration between the various specialists involved.

**Materials and Methods:** This survey was a retrospective, observational, multicenter census, among all colorectal surgeons and proctologists affiliated with the Italian Society of Colorectal Surgery (SICCR) who were contacted by email and invited to answer to a 12-item questionnaire on a voluntary basis.

**Results:** Thirty-seven surgeons from all over Italy answered to the survey. Only 14 (37.8%) stated that a dedicated pelvic floor center consisting of urologist, gynecologist and colorectal surgeon/proctologist was available in their hospital. Eighteen surgeons declared the availability of a pelvic rehabilitation center and the most performed rehabilitation modalities are biofeedback (BF) + electrostimulation (ES) + physiokinesitherapy (PFK). In 22 (59.4%) centers the complex surgical procedures can be performed simultaneously by the various specialists of the team even if in half of these centers this occurs in a systematic manner and in dedicated operating sessions.

**Conclusion:** The multidisciplinary center of the pelvic floor represents the apex of a hierarchical organization for more complex cases in which the pelvic disease is thoroughly analyzed in a multidisciplinary way, with a full availability of diagnostic investigations and in which a series of standard and innovative treatments could be offered.

**Keywords:** Pelvic floor disease; multidisciplinary approach; multidisciplinary pelvic center; survey; SICCR

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## INTRODUCTION

Pelvic floor disorders (PFD) consist in a series of anatomic-functional pathologies that involve not only different medical figures such as urologists, gynecologists, proctologists, general surgeons, but also other professional profiles such as nurses, physiotherapists or obstetricians. More than in other specialties, for general surgeons, pelvic floor represents a sort of grey zone, in which a multidisciplinary approach could not be avoided. The figure of the colo-proctologist, especially in Italy, arises from an extension and a sub-specialization of general surgery and dedicated experts in this field are few. Although pelvic floor disorders, especially functional ones, have a multidisciplinary etiopathogenesis, in most Italian centers all functional disorders of the pelvic floor are treated by different specialists without coordination and cooperation between the various professional figures. The purpose of this survey is to identify how PFD are managed in Italian centers and what is the degree of integration between the various specialists involved.

## MATERIALS AND METHODS

The survey was a retrospective, observational, multicenter census, analyzing the presence and organization of Italian pelvic floor centers, the level of collaboration of the various specialists (general surgeon, gynecologist, and urologist), the presence of a dedicated rehabilitation center, the number and type of procedures that are carried out in multidisciplinary team. All colorectal surgeons and proctologists affiliated with the Italian Society of Colorectal Surgery (SICCR) were contacted by email and invited to answer to a 12-item questionnaire (Table 1) on a voluntary basis.

A reminder was e-mailed two, three, and four weeks after the initial mailing to non-responders. Because of the retrospective nature of the survey, and for the lack of use of patient data, approval by an ethics committee was not required.

Results of the survey were reported according to the Checklist for Reporting Results of Internet ESurveys (CHERRIES) guidelines.<sup>1</sup>

## RESULTS

Thirty-seven surgeons from all over Italy answered to the survey, most of these operating in northern Italy. Only 14/37 (37.8%) stated that, in their hospital, a dedicated pelvic floor center consisting of urologist, gynecologist and colorectal surgeon/proctologist is available. Only one center has been present with this modality of organization since before 2000 and four since before 2010 while most of the others were established from 2010 onwards (Figure 1).

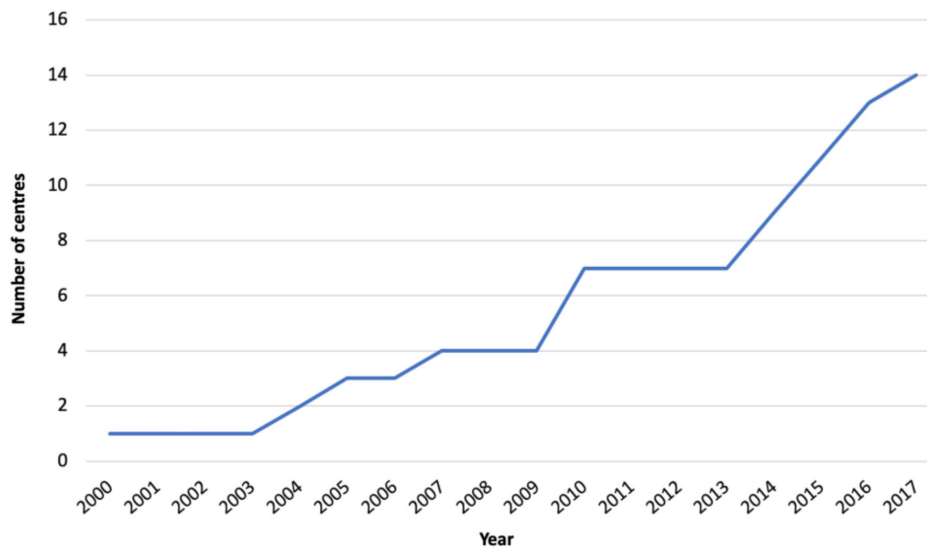
**Clinical evaluation:** All centers provide access through an initial coloproctological or urogynecological/urological evaluation. Only five Italian regions recognize a dedicated code that refers to the pelvic specialist visit (different from that of the normal surgical, uro-gynecological, urological or colo-proctological visit). A simultaneous multidisciplinary evaluation is available in 20/37 (54%) centers.

**Diagnostic tools:** Anorectal manometry and/or urodynamic studies are available in 67% of cases, while radiological studies (defecography, magnetic resonance, pelvic floor ultrasound, etc.) are available in 87% of centers. In 10/37 (27%) pelvic floor centers there is a neurologist or neurophysiopathologist for neurophysiologic studies.

**Rehabilitative programs:** In the survey 48.6% (18/37) of surgeons declared the availability of a pelvic rehabilitation program in their center, in 5/32 cases the rehabilitation center was defined with limited availability and in 7/32 of the cases the surgeon or the structure entrusted to a rehabilitation center external to the structure. In the 30 rehabilitation centers reported and evaluated, the most performed rehabilitation modalities are biofeedback (BF) + electrostimulation (ES) + physiokinesitherapy (PFK) (17/37), BF + ES (9/37), and PFK only (4/37). In only 12/37 (32.4%) the multidisciplinary team gives indications on the type of rehabilitation treatment. Out of 37 surgeons interviewed, 5 (13.5%) always use rehabilitation programs, 14/37 (37.8%) use rehabilitation programs in 20%–60% of patients and 15/37 (40.5%) use rehabilitation in less than 20% of cases. In 9/37 (24.3%) centers, posterior tibial nerve stimulation is regularly performed.

**Surgery:** In 11/37 (29.7%) centers, colorectal surgeons/proctologists perform regularly sacral neuromodulation. In the case of diseases that require a multidisciplinary surgical approach, in 22/37 (59.4%) centers the surgical procedure can be performed simultaneously by the various specialists of the team even if only in half of these centers this occurs in a systematic manner and in dedicated operating sessions while in the other half of this collaboration occurs only if planned. The most frequently performed combined procedures are summarized in Table 2. The most reported combined procedure is a laparoscopic approach (2 or 3 compartments) with or without perineal surgical time, followed by a combined middle and posterior compartments treatment. Anterior/posterior compartments combined surgery is less frequently reported.

In 4/37 (10.8%) centers a multidisciplinary pelvic-integrated care pathways are available. Finally, the surgeons were interviewed on the average annual number of pathology-related procedures performed in their own center to extrapolate an overall number of the most frequently performed. Regarding anal fistulas, seton



**Figure 1.** The number of centers dedicated to pelvic floor disorders over the years.

positioning and subsequent fistulotomy are the most performed procedures (47%) followed by flap (17%), ligation intersphincteric fistula tract (LIFT) (7%), video assisted anal fistula treatment (VAAFT) (6%), plug placement (5%) and fistula laser closure (FiLac) (4%). The Milligan–Morgan procedure is the most widely used for haemorrhoidal disease (60%), followed by stapler haemorrhoidopexy (21%), transanal hemorrhoidal dearterialization (THD) (9%) or other hemorrhoidopexy techniques (8%). The most performed procedures for internal rectal prolapse/obstructed defecation syndrome are stapled transanal rectal resection (STARR) (60%), Delorme procedure (18%) and ventral rectopexy (17%). For external rectal prolapse Altemeir procedure (44%) and ventral rectopexy (38%) are the most commonly performed.

## DISCUSSION

PFD consist of a spectrum of symptoms that includes urinary incontinence, sexual disorders, pelvic organ prolapse (POP) and gastrointestinal disorders. Increased weight, menopause, previous hysterectomies, vaginal deliveries, smoking, and alterations of connective tissue represent the main risk factors for the development of PFDs. PFDs are very common, and it is estimated that at least 25% of women experience at least one symptom during their lifetime. Incidence increases also with age and more than 40% of women after 40 years may present with urinary incontinence.<sup>2,3</sup> POP, described as a descent of the anterior or posterior vaginal wall, or descent of the uterus (or the vaginal vault after hysterectomy),<sup>4</sup> is seen in up to 30%–76% of women presenting for routine gynecologic care<sup>5</sup> with 3%–6% of those with descent beyond the vaginal opening.<sup>6</sup> During their lifetime 12%–19% of women will develop POP and more

than 300,000 surgeries are performed for this disorder every year in the United States (US) alone.<sup>7,8</sup> The complete rectal prolapse, characterized by the circumferential, full-thickness intussusception of the rectal wall which protrudes outside the anal canal, along with the incomplete one, that is a telescoping of the rectum on itself without expression through the anal verge, are part of the disorders resulting from pelvic floor weakness and often occurs in conjunction with one or more of the other disorders in the spectrum. Rectal prolapse has an incidence of 2.5 cases per 100,000 people,<sup>9</sup> it can also arise in pediatric age,<sup>10</sup> but in adults it generally occurs in the fifth decade and in 80%–90% of cases in women.<sup>11,12</sup> Pelvic floor disorders are an extremely age-related disease but despite the average age increase of the population, it is estimated that in the next 30 years, the growth in demand for services for the treatment of female pelvic floor disorders will increase twice as much at the rate of growth of the same population.<sup>13</sup> A recent study by Kirby et al.<sup>14</sup> predicted that in the US between 2010 and 2030 the demand for treatment of PFDs will increase by 35%. Pelvic floor weakness, which is one of the main etiopathogenetic causes of pelvic floor disorders, implies that these disorders are rarely isolated but often associated with each other and could require a surgical solution which involves the experience and skill of different pelvic floor clinicians. Symptoms of obstructed defecation (OD) and abnormalities of the posterior compartment such as rectal prolapse, rectocele and enterocele are, in fact, highly prevalent also in uro-gynecological patients;<sup>15</sup> according to Li et al.<sup>16</sup> 50% of patients with stress urinary incontinence and 80% of patients with uterovaginal prolapse also experienced symptoms of OD. As early as 1994 Virtanen et al.<sup>17</sup> showed that

**Table 1. Questionnaire for the 37 surgeons who took part in the survey**

Is there a multidisciplinary pelvic surgical clinic (consisting of urologist, gynecologist and general surgeon/proctologist) in the hospital where you work?	<b>No</b>		<b>Yes</b>	
	23		14	
If yes, from what year?	<b>Before 2010</b>		<b>In/After 2010</b>	
	4		10	
Does your hospital have a dedicated performance code for pelvic multidisciplinary examination?	<b>No</b>		<b>Yes</b>	
	32		5	
Does your work environment have a rehabilitation center?	<b>No</b>	<b>Partially</b>	<b>External</b>	<b>Yes</b>
	7	5	7	18
If so, what kind of rehabilitation does it perform?	<b>PFK</b>	<b>BF + ES</b>	<b>PKT + BF + ES</b>	
	4	9	17	
Are reservations and the type of rehabilitation treatment set by the multidisciplinary team?	<b>No</b>		<b>Yes</b>	
	25		12	
In what percentage do you use rehabilitation?	<b>&lt;20%</b>		<b>20%–60%</b>	
	15		14	
			<b>Always</b>	
			5	
Is posterior tibial nerve stimulation performed in your hospital?	<b>No</b>		<b>Yes</b>	
	28		9	
Do the patients who undergo rehabilitation repeat the follow-up visit again with the multidisciplinary team after treatment?	<b>No</b>		<b>Yes</b>	
	17		20	
Does your center make use of the collaboration of an osteopath?	<b>No</b>		<b>Yes</b>	
	33		4	
Does your facility provide a pelvic neurofunctional study with a dedicated neurologist?	<b>No</b>		<b>Yes</b>	
	27		10	
Is sacral neuromodulation performed in your hospital?	<b>No</b>		<b>Yes</b>	
	11		26	
In pathologies that require a multidisciplinary surgical approach, is any surgical procedure performed simultaneously by the specialists who make up the team?	<b>No</b>		<b>Yes</b>	
	15		22	
If yes, how often?	<b>Sporadically</b>		<b>Sistematically</b>	
	11		11	
Does your facility use a pelvic-integrated care pathways filed in medical direction?	<b>No</b>		<b>Yes</b>	
	33		4	

PFK: physiokinesitherapy; BF: biofeedback; ES: electric stimulation

**Table 2. Combined multidisciplinary procedures in the various centers per year**

Combined multidisciplinary procedures	Number of centers carrying out the procedure (%)	Total number of procedures in all the centers per year
Anterior compartment + posterior compartment	11/37 (29.7%)	79
Middle compartment + posterior compartment	13/37 (35.1%)	108
Laparoscopic assistance to perineal surgery of at least 2 of the 3 pelvic compartments	11/37 (29.7%)	104
Urethral hypermobility + posterior compartment	9/37 (24.3%)	53
Pelvic reconstruction combined with using mesh	9/37 (24.3%)	65
Laparoscopic surgery of at least 2 of the 3 pelvic compartments without perineal approach	12/37 (32.4%)	127

a unicompartiment approach could worsen, or even provoke, symptoms in the untreated compartments and subsequently, a long-term analysis highlighted how the efficacy of 10-year STARR for ODS is lower than in the short term, probably due to multicompartimental prolapses if not adequately diagnosed and treated.<sup>18</sup> The simultaneous or sequential evaluation by a urologist, gynecologist and colorectal surgeon is often mandatory and it may facilitate the stepwise approach and allows the patient to feel more confident about the standard of care. Despite this, this type of integration is rarely applied.<sup>19</sup> This survey shows that systematic cooperation between the various professional figures is actually present in only five of the 37 centers interviewed. From this it follows that in 40.5% of the centers interviewed (15/37), even in the case of pathology that would require a contemporary multidisciplinary approach, the treatment takes place in a deferred and sequential manner. Moreover, a simultaneous multidisciplinary evaluation is available in 20/37 (54%) centers. This point is essential, since the possibility of interaction and cooperation between the professionals involved in the pathway is essential to ensure optimal management of complex pelvic floor problems, as well as representing the most essential significance of the pelvic floor center itself. In fact, the relevancy of the interaction among different team specialists, as a central index of the existing cooperation, by means of a routinary decision making debate to be implemented before any treatment choice, is the key to ensuring optimal service for patients.

The coordination between the various specialists, in addition to raising the level of quality of care, could allow to carry out combined procedures with enormous benefit for the patient. A recent 10-year retrospective cohort of study proved that combined rectal and urogynecological surgery is well tolerated, associated with low morbidity, and more effectively treats a distressing and debilitating condition vs separate surgery for rectal and pelvic organ prolapse.<sup>20</sup> A fundamental point of strength of a multidisciplinary center of the pelvic floor is also the possibility to perform an adequate rehabilitation therapy. It is now well established that the rehabilitation of the pelvic floor plays a crucial role in the dysfunctions of this district as it prevents, assists, or integrates surgical therapy. The literature is now uniform on the usefulness of pelvic floor muscle rehabilitation (PFMR), BF and ES in dealing with numerous dysfunctions such as stress urinary incontinence,<sup>21</sup> hyperactive bladder,<sup>21,22</sup> pelvic organ prolapse,<sup>23,24</sup> dyspareunia and vaginismus,<sup>25-27</sup> chronic pelvic pain,<sup>28,29</sup> vulvodinia,<sup>30,31</sup> levator ani syndrome,<sup>32,33</sup> anal incontinence,<sup>34-36</sup> low anterior resection syndrome<sup>37-40</sup> and dyssynergic defecation.<sup>34,41-43</sup> Another advanced rehabilitation technique, in most advanced centers, is represented by tibial

nerve stimulation (TNS). TNS is a non-invasive nerve stimulation technique that is widely used in the context of urge urinary incontinence and overactive bladder, but which has also proved effective in anorectal disorders such as constipation due to slow transit, fecal incontinence, and enhanced postoperative recovery after colorectal surgery.<sup>44-49</sup>

PFMR, BF, ES, TNS and SNM, as well as the presence of an integrated activity between doctor, nurse, midwife and physiotherapist, are the basic services that a pelvic floor center, in which urological, gynecological and proctological dysfunctions converge, should offer. This makes the problem of the Italian centers even more evident as just over half of the centers interviewed (18/37) have a pelvic floor rehabilitation center available, seven centers use reference structures outside and five centers declared to have a rehabilitation center that is available only for some kind of treatments. This could raise from the fact that some realities performed a rehabilitation exclusively dedicated to pre- and post-partum training (middle compartment), but which does not treat disorders of the anterior and posterior compartment. A direct consequence of this situation is that in only five centers the rehabilitation programs are used consistently and systematically.

Of the 37 surgeons interviewed, only 30% perform sacral neuromodulation (SNM) in their center. SNM is a low-invasive surgical procedure and represents an effective treatment of several urinary and pelvic floor disorders including overactive bladder, urgency urinary incontinence, urinary retention, fecal incontinence, pelvic chronic pain and irritable bowel syndrome.<sup>50-53</sup>

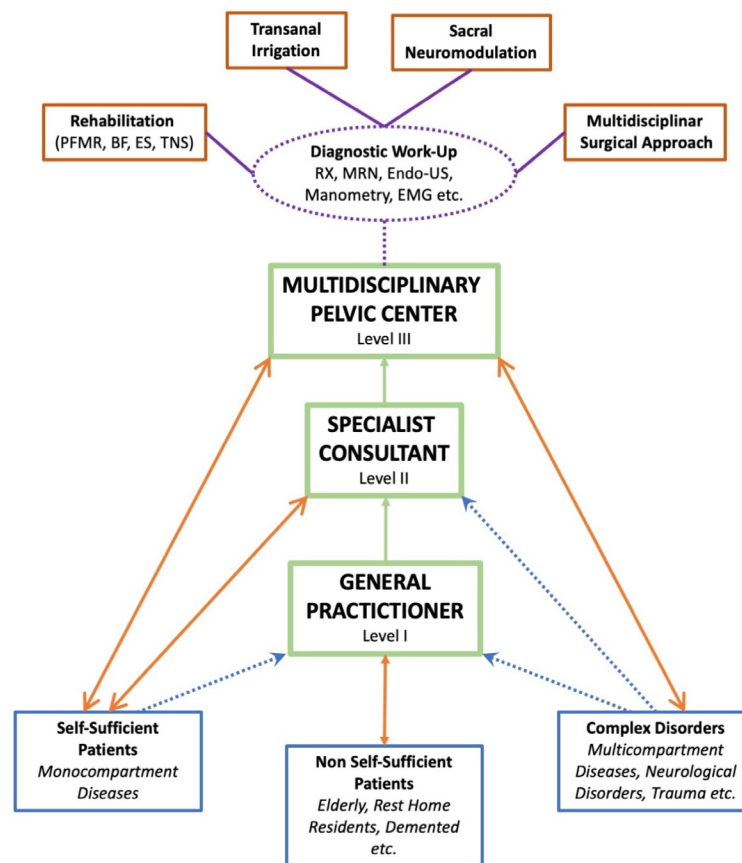
## CONCLUSION

The multidisciplinary center of the pelvic floor could be conceived as the apex of a hierarchical organization for more complex cases in which the problem is thoroughly analyzed in a multidisciplinary way, with a full availability of diagnostic investigations and in which a series of standard and innovative treatments could be offered (Figure 2). However, multidisciplinary collaboration, as well as diagnostic technologies, rehabilitation programs, or the possibility of combined surgery are not always available in all pelvic floor centers in Italy.

More precise criteria should be identified for the definition and recognition of a pelvic floor center, as well as the creation of a territorial network, based on the interaction of structures with a diversified level of assistance.

Pelvic floor diseases are extremely rooted in the population and are often typical of the elderly, often hospitalized or non-self-sufficient, in whom intensive and multidisciplinary treatment would not help in most cases. This type of patient should be





**Figure 2.** Hierarchical organization of pelvic floor disorders' management.

The blue dashed one-way arrows indicate the practitioner or center that patients are going to. The continuous orange bi-directional arrows also indicate the possible management of the disorder.

PFMR: pelvic floor muscle rehabilitation; BF: biofeedback; ES: electrical stimulation; TNS: tibial nerve stimulation

managed by the general practitioner (Level I) who, if necessary, could refer to the specialist (Level II) for more complex cases. Isolated pathologies of the pelvic floor (monocompartment disorders) could be managed by the specialist who in case of complex dysfunctions could refer to a referral pelvic center (Level III).

## ETHICS

**Ethics Committee Approval:** Because of the retrospective nature of the survey, and for the lack of use of patient data, approval by an ethics committee was not required.

**Informed Consent:** Retrospective study.

**Peer-review:** Both internally and externally peer-reviewed.

## Contributions

Concept: L.L., A.A., N.N., F.G., R.D., C.M., J.M.; Design: L.L.; Data Collection and/or Processing: A.A.; Revision: M.J.; Writing: L.L., A.A., N.N., F.G., R.D., C.M., J.M.

## DISCLOSURES

**Conflict of Interest:** No conflict of interest was declared by the authors.

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