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Original Article

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Obstetrics and Gynecology Residents Self-perceived Competency Regarding Female Pelvic Medicine and Surgery: An Internet-based Cross-sectional Survey

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Abstract

Background: The aim of our study was to assess factors associated with residents' perceived competency regarding female pelvic medicine and reconstruction surgery (FPMRS).

Methods: We conducted an Internet-based cross-sectional survey. Obstetrics and gynecology residents' self-perceived competence in clinical skills for management of pelvic floor disorders were questioned. Competency in different aspects was analyzed concerning the availability of fellowship-trained professor, rotation, and fellowship training program.

Results: 1168 residents of four levels of residency participated in this study. 760 (65.06 %) of residents were not trained by a fellowship-trained attendant. Of 409 (35.01%) responders who were trained by board-certified fellowship, 334 had FPMRS rotation in their residency program. Senior residents were significantly more confident than residents in the first and second years. 695 (59.50 %) of residents reported participating in the pelvic floor surgeries; however, only 15.3 % were served as primary surgeons. Where pelvic floor education had been provided by a fellowship-trained attendant, more perceived competency was evident in all fields of clinical skills except performance as primary surgeon and management of emergency cases. Among residents trained by board-certified FPMRS attendants, there were no significant differences regarding FPMRS rotation or fellowship training programs. 88.69 % of residents declared that a comprehensive course in the field of FPMRS is needed in the residency curriculum.

Conclusion: This study demonstrates that being trained by board-certified FPMRS attendants has significant effect on residents' self-perceived competency. Residency education was not compromised by fellowship training program.

Keywords: Cross-sectional studies, Female, Gynecology, Pelvic floor, Surgeons

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Introduction

Female Pelvic Medicine and Reconstructive Surgery (FPMRS) is a novel subspecialty of obstetrics and gynecology proposed for the first time in 1979 and award certification started in 2013 (1). The number of fellowship programs in this field is rapidly expanding (1,2). Considering this novelty, researchers have focused on the adequacy of female pelvic medicine education in current obstetrics and gynecology residency curriculum (3,4).

Residents' satisfaction level was higher when education was provided by board-certified FPMRS trainers (5). However, confidence in performing surgical procedures was not reasonable which validates further improvements in resident training (6,7). Additional parameters such as the complex pelvic anatomy, technological advancements, and restricted training hours in advanced gynecologic surgery in residency curriculum might also contribute to diminished confidence performing pelvic procedures (8,9). Pelvic organ disorders are common and have imperative effects on the healthcare system (2,10). Incorporating comprehensive education in this field would result in a reduced financial burden on health budgets more highlighted in developing countries with restricted income (6).

To our knowledge, the competency of female pelvic medicine training in current obstetrics and gynecology residency programs has not been analyzed in Iran. Although there might be variations in residency programs based on equipment and specific settings of each university, standard objectives for learning female pelvic medicine should be fulfilled. This diversity is likely due to the scant board-certified fellowship of female pelvic medicine, although the majority of the graduates are university professors. The aim of our study was to assess the factors associated with residents' perceived competency regarding female pelvic medicine.

Materials and Methods

We conducted an Internet-based cross-sectional survey from April 2020 to September 2020. An expert committee including contributors of obstetrics and gynecology residency programs was developed to ascertain the rationale and objectives of the study.

Study participants

All 27 universities providing obstetrics and gynecology residency programs in Iran were contributed to this study. Residents in all years of residency training were eligible to take part.

Tools and measurements

An introductory letter, followed by a request for informed consent and an online questionnaire was delivered to the residents by social media, through the delegates of each university. In order to access a higher response rate, the Iranian board of obstetrics and gynecology sent an invitation letter to all program directors of the residency programs in Iran.

The questionnaire to evaluate the factors influencing residents' perceived competency was developed in three steps: First step was item generation through interviewing residents, contributors of residency programs, experts in medical education, and professors of female pelvic medicine and surgery; Second step was content validity testing by expert committee; Third step was a pilot study (sample of 20 residents) for testing construct validity and internal consistency reliability. The questionnaire contained basic demographic data, including university and year of residency. Questions were focused on female pelvic medicine education in the respondent's current training curricula. Participants were asked to declare whether they had fellowship-trained professors in their educational center. Residents were also asked whether they perceived to be competent in performing and interpreting history taking, physical examinations, and appropriate use of para-clinical assessment in the cases of pelvic floor dysfunction. Categorically, cases of pelvic organ prolapse, urinary incontinence, voiding dysfunction, defecation disorders, and also emergency cases including post-operative urinary retention and acute third and fourth-degree perineal lacerations were considered. Questions also mentioned clinical decision-making skills about selecting the best treatment methods including conservative management and surgical interventions. Residents were requested to report participation in pelvic floor surgeries and specify whether they had served as primary surgeon, first or second aid, or only observer. "Primary surgeon" was defined as performing greater than 75%

of the surgery independently. These questions were formatted as dichotomous, yes/no. Finally, residents were inquired about the adequacy of their current training program. Using a five-point Likert scale, residents were asked to rate their perceived need for a comprehensive course of female pelvic medicine education in their training curricula.

Statistical analysis

All analyses were carried out using the SPSS statistical package (*V*20.0). Descriptive statistics were first utilized to describe the demographic characteristics using mean and SD for continuous data; categorical data were described using frequencies, expressed as percentages. The results were analyzed for significance using the chi-square and Fisher exact test for categorical variables and the student *t-test* for continuous variables. All results P <0.05 were considered statistically significant.

Ethical considerations

The ethical principles of confidentiality were considered to keep secret all information related to the participants. This survey was approved by the research ethics board of the Iranian National Center for Strategic Research in Medical Education (study number: 983794)

Results

The invitation letter was delivered to 1320 current obstetrics and gynecology residents. 1168(88.48 %) residents from 27 universities of Iran responded. All obstetrics and gynecology residents in Iran are female. The participants comprised all levels of residency 203 (17.38%) first-year residents, 286 (24.48%) second year, 360 (30.82%) third year, and 319 (27.31%) fourth year.

760 (65.06%) of residents from 19 universities lacked a FPMRS fellowship-trained attendant in their educational center. Female pelvic medicine fellowship training program was available only in 2 centers including 42 (3.59 %) residents.

Of 409 (35.01%) responders trained by board-certified fellowship attendant, 334 had female pelvic medicine rotation in residency program. These residents mostly had (62%) this rotation in the fourth year of residency followed by the third-year (48. 86%). 29.34% of respondents reported rotating on the FPMRS service in multiple years during their residency. 24.86 and 4.57% of residents were exposed to female pelvic medicine for the first time in the second year and the first year of residency, respectively, and all had repeated rotations in the following years.

Data regarding the perceived competency in performing and interpreting clinical skills required for the management of pelvic floor disorders is summarized in table 1 for all levels of residency. Higher-level residents had significantly more identified themselves more skilled than residents in first and second years (p-value=0.0001).

695(59.50%) of residents reported that they had participated in pelvic floor surgeries and 54.93% were just observers. Only 15.3% of students were served as primary surgeons and 33.87% were first aid and 34 % second aid in pelvic floor procedures. The exposed procedures were mostly anterior and posterior repairs (96%), vaginal hysterectomy and culdoplasty (49 %), native tissue vaginal apical suspension (46%), abdominal apical repair (32%) and anti-incontinence surgery (27%). Laparoscopic reconstructive surgery, vaginal mesh procedures, or fistula repairs (overall 5 %) were the least exposed procedures.

Where pelvic floor education was provided by fellowship-trained professor more perceived competency was evident in all fields of clinical skills. However, we did not find this effect when performance as primary surgeon in pelvic surgeries was stated and also this effect was not apparent in emergency cases, managing post-operative urinary retention or acute third and fourth-degree perineal lacerations (Table 2). In additional, among residents trained by board-certified attendant there were no significant differences regarding dedicated FPMRS rotation or fellowship training program (p-value 0.162 and 0.081, respectively).

Finally, among 1168 obstetrics and gynecology residents, 88.69% strongly ascertained that a comprehensive course in the field of female pelvic medicine is needed in their educational curriculum.

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Table 1. Perceived competence in performing and interpreting clinical skills required for the management of cases of pelvic floor dysfunction regarding levels of residency

		1st year (203)	2ed year (286)	3rd year (360)	4th year (319)	Total (1168)	P value
Residents who claimed that they had the skill of history taking	in patients with pelvic organ prolapse	125 (61.3 %)	191 (66.8%)	295 (81.9%)	268 (84%)	879 (75.3%)	0.000
	in patients with urinary incontinence, voiding dysfunction, defecation disorders	110 (53.9%)	166 (58%)	268 (74.4%)	247 (77.7%)	791 (67.7%)	0.000
Residents who claimed that they had the skill of physical examination	in patients with pelvic organ prolapse	59 (28.9%)	94 (32.9%)	191 (53.1%)	206 (64.8%)	550 (47.1%)	0.01
	in patients with urinary incontinence, voiding dysfunction, defecation disorders	79 (38.7%)	138 (48.3%)	256 (71.1%)	225 (70.8%)	698 (59.8%)	0.01
Para clinical assessment	Residents who claimed that they had the clinical judgment to use appropriate Para clinical assessment	53 (26%)	95 (33.2%)	181 (50.3%)	191 (60.1%)	520 (44.6%)	0.02
Treatment	Residents who claimed that they had the clinical judgment to choose appropriate treatment method	28 (13.7%)	47 (16.4%)	110 (30.6%)	142 (44.7%)	327 (28 %)	0.000
	Residents who claimed that they knew the different types of pessary and how to fit a pessary	29 (14.2%)	39 (13.6%)	105 (29.2%)	158 (49.7%)	331 (28.3 %)	0.000
	Residents who perceive to be competent to do the different surgical techniques	25 (12.3%)	86 (30.1%)	161 (44.7%)	206 (64.8%)	487 (40.9 %)	0.01

Cont Table 1

	Residents who claimed that they had participated in pelvic surgery	22(10.8%)	134(46.9%)	261(72.5%)	277(86.1%)	694(59.4%)	0.03
	Residents who identified themselves as primary surgeon in pelvic surgery	0(0%)	0(0%)	17(4.7%)	101(31.8%)	118(10.1%)	0.04
Residents who claimed that they knew how to deal with emergency cases	a case of post-operation urinary retention	56 (27.5%)	111 (38.8%)	193 (53.6%)	226 (71.1%)	586 (50.2%)	0.01
	cases of acute third and fourth degree perineal lacerations	111 (54.4%)	205 (71.7%)	299 (83.1%)	266 (83.6%)	881 (75.4 %)	0.01

Table 2: Perceived competence in performing and interpreting clinical skills required for the management of cases of pelvic floor dysfunction and receiving education by board-certified fellowship attendant

		Board-certified fellowship attendant		
		No 760	Yes 408	p value
Residents who claimed that they had the skill of history taking	in patients with pelvic organ prolapse	529(69.6%)	350(85.8%)	0.01
	in patients with urinary incontinence, voiding dysfunction, defecation disorders	455(59.9%)	336(82.4%)	0.000
Residents who claimed that they had the skill of physical examination	in patients with pelvic organ prolapse	297(39.1%)	253(62%)	0.005
	in patients with urinary incontinence, voiding dysfunction, defecation disorders	390(51.3%)	308(75.5%)	0.02
Para clinical assessment	Residents who claimed that they had the clinical judgment to use appropriate Para clinical assessment	245(32.2%)	275(67.4%)	0.005
Treatment	Residents who claimed that they had the clinical judgment to choose appropriate treatment method	145(19.1%)	182(44.6%)	< 0.02

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Cont Table 2

	Residents who claimed that they knew the different types of pessary and how to fit a pessary	163(21.4%)	168(41.2%)	0.000
	Residents who perceive to be competent to do the different surgical techniques	235(30.9%)	243(59.6%)	0.000
	Residents who claimed that they had participated in pelvic surgery	398(52.4%)	296(72.5%)	0.000
	Residents who identified themselves as primary surgeon in pelvic surgery	76(10%)	42(10.3%)	0.874
Residents who claimed that they knew how to deal with emergency cases	a case of post-operation urinary retention	356(46.8%)	230(56.4%)	0.067
	cases of acute third and fourth degree perineal lacerations	579(76.2%)	302(75.4%)	0.473

Discussion

Pelvic organ disorders are common, particularly as the female population ages. Due to advancing the age of the population, the number of women requiring pelvic procedures will increase (10).

Various options for the management of pelvic organ disorders are available both in number and complexity (10). Several factors such as the complex pelvic anatomy, technological advancements, and restricted training hours in advanced gynecologic surgery would contribute to the diminished surgical versatility and poor confidence performing pelvic procedures (8,9). In this study, we considered competency-based self-assessment of pelvic floor disorders management including history taking, physical examinations and appropriate use of para-clinical resources, clinical decision-making skills about choosing the best treatment methods. Our results showed 879(75.3%) of residents claimed that they had the competency of history taking but when physical examination and appropriate usage of para-clinical resources were questioned, the perceived competency decreased, 550(47.1%) and 520(44.6%), respectively. Results were similar for urinary incontinence, voiding dysfunction, and defecation disorders. The perceived competency was even more diminished when clinical decision-making skills and choosing the best treatment methods were addressed [327(28%)] considering both conservative management and surgical interventions. Lack of evidence of clinical reasoning training in residency curricula results in cognitive biases in problem solving that might cause bias, prejudice, and incorrect diagnosis (11).

Similar to the findings of Kandadai P *et al* (12), we observed low level of confidence regarding proper pessary administration. This can be because of the low frequency of recommendation for pessary due to its high price in our country and not being supported by health insurance.

In a study conducted by Curran D *et al*, respondents mostly reported feeling well prepared to manage obstetrics and gynecology disorders, but respondents' preparedness to pelvic procedures including anterior and posterior colporrhaphy and vaginal hysterectomy was less than 50% (13). We similarly found 40.9% perceived confidence performing pelvic surgeries. Klebanoff JS *et al* demonstrated that by increasing the complexity of surgical procedures, residents' self-perceived preparedness would decrease. Their study showed that nearly 70% of senior residents were

confident in performing simple vaginal hysterectomies but they were less confident in procedures requiring vaginal morcellation for tissue extraction (14).

Residents felt more satisfied with the training, when they were educated by a board-certified FPMRS surgeon (5). Our findings confirmed this fact and it was observed that where pelvic floor education had been provided by the fellowship-trained professors, more perceived confidence was evident in all clinical skills. However, this effect was not apparent considering emergency cases, managing post-operative urinary retention or acute third and fourth-degree perineal lacerations. Totally 75.45% of residents in our study claimed that they knew how to deal with acute third and fourth-degree perineal lacerations comparable to nearly 60% of participants in Curran D *et al* study (13).

Confidence performing FPMRS procedures seems to be various based on the frequency of exposure during residency. Literature has revealed that performing a standardized preoperative evaluation and offering pessary was more likely when surgeons performed more than 50 prolapse procedures over 4 years compared with lower volume (15). In addition, a resident's interests in performing these procedures or pursuing fellowship training in future practice are factors that might have an influence on surgical skill achievement (4). Our residents were mostly exposed to anterior and posterior repairs (96%), vaginal hysterectomy and culdoplasty (49%), native tissue vaginal apical suspension (46%), abdominal vaginal apical repair (32%) and anti-incontinence surgery (27%). Contrariwise, laparoscopic reconstructive surgery, vaginal mesh procedures or fistula repairs (overall 5 %) were the least exposed procedures. Based on evidence anterior and posterior repairs, McCall's culdoplasty and cystourethroscopy were performed more confidently, conversely needle suspensions, fistula repairs, or laparoscopic reconstructive surgery was rarely performed either during residency or after graduation (4).

Furthermore, there might be discordances between the experts' viewpoint regarding expectations for the independent performance of urogynecologic procedures during residency. Some educational policymakers hardly expected the independent performance of these procedures during residency or believed that only is the understanding of these techniques without procedural mastery required (3). Fourth-year residents felt comfortable performing specific surgical procedures independently after graduation in 23.6% to 98.8% of cases (5). In our survey, 487 (40.9 %) of residents perceived to be competent to employ different surgical techniques and the rate was higher among fourth-year residents 206(64.8%). However, only 118(10.1%) residents identified themselves as primary surgeons in pelvic surgery during residency. This rate is in contrast with 30% of residency program directors expecting the independent performance of FPMRS procedures, including laparoscopic sacrocolpopexy, all apical suspensions, mesh excisions and cystotomy repairs by residents. They also expect that procedural mastery should be mostly achieved by the third year of residency (3).

Our trainees (62%) had mostly been rotated on the FPMRS service in the fourth year of residency followed by the third year (48.86%). It is proposed that being exposed in the first and second year of residency to FPMRS and also lengthening the exposure time would be advantageous. (4,16). Earlier and longer rotations and having been rotated in multiple years would rise the time they are focused on learning. In this study, no significant differences regarding rotation were found.

It is evident that residency timetables are adjusted to fulfill the more primary care, obstetrics, and office-based gynecology, thus limited work-hour is dedicated to education in advanced gynecologic surgery (17,18). Furthermore, higher surgical volumes would reduce surgical complications and improve surgical outcomes (19,20). In regard to education in FPMRS based on Propst, K *et al* report, 73.3% of residents were satisfied, 23.3% perceived to be too little, and 3.5% abundant (5). Satisfaction was higher in the presence of FPMRS rotations provided by a fellowship-trained attendant (4). Schimpf *et al* reported that 46% of residents were not satisfied with urogynecology education (4). 88.69 % of the respondents strongly ascertained that a comprehensive course in the field of female pelvic medicine is essential in their educational curriculum. This demonstrates that the current amount of residency training in FPMRS is inadequate and still needs to be

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enhanced.

Based on board certification of the subspecialty of FPMRS, the number of fellowship programs is growing and the impact of this on residency education is concerned (21,22). Potential effects of fellowship training on residency education have both positive and negative components. The quality of the education could be improved; however, the number of surgical procedures performed by residents would be compromised due to the priority of fellows over residents, especially in the novel technology and non-routine circumstances (6,7). According to our study, the fellowship training has not compromised residents' surgical performance. Our findings are consistent with other studies in regard to the fact that residents' education was not changed with fellowship introduction (6,16). The rationale for this finding in our study could be that both of fellowship training centers in Iran are referral for pelvic floor disorders and the policy has been to involve fellows as an additional instructor in residency education.

As a limitation of our study, it was an assay from residents' viewpoint. A survey of residency program directors and also program assessment is recommended. As an additional limitation, we assessed residents' competency regarding female pelvic surgical procedures in general. We recommend the assessment of each procedure in detail. The strength of this study is that it is a national comprehensive study of a large number of residents with high response rate (88.48%). Our survey provides valuable feedback for ongoing decision making regarding educational policies and curricular improvements. The imperative effect of fellowship-trained attendants should be considered as essential upcoming directions for residency programs.

Conclusion

This study shows that board-certified attendants have been significantly influential on residency FPMRS training. However, this effect was not marked when serving as primary surgeon or management of emergency cases were considered. Additionally, residency education was not compromised by the fellowship training program. Additionally, survey of residency program directors and program assessment is suggested.

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ETHICS COMMITTEE APPROVAL: The local ethics committee of Iranian national center for strategic research in medical education (study number:983794)

Conflict of Interest

None declared.

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