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Original article

Italian survey on the residents' surgical level in gynecology and obstetrics. Italians do it better?

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Abstract: *Purpose:* The present study aims to investigate the number of surgical procedures performed by Italian residents and their confidence to carry out different surgeries in obstetrics and gynecology. *Methods:* The present study is a national survey including all Italian gynecology and obstetrics senior residents. A questionnaire including 25 questions was provided. The free Google Forms site was used to create the survey. The study was conducted from April to October 2019. The survey started from the University Hospital of Parma, a tertiary hospital, and was sent to all the Italian post-graduation medical school in gynecology and obstetrics. An e-mail was sent to all representative residents in gynecology and obstetrics in Italy, then forwarded to all the senior residents. *Results:* Of the 555 residents enrolled, 100 joined the survey (18.2%). The analysis of the different procedures performed by residents has shown that 53%, 57%, and 77% of the residents had never performed a laparotomic, laparoscopic, and vaginal hysterectomy, respectively. The analysis of cesarean section skills has shown that 1% of residents had never performed any simple cesarean section, and 6% of residents had never performed any complex cesarean section. Fifty-two doctors in training had never performed an operative vaginal delivery. Seventy-three and ninety-three residents performed more than thirty uterine curettages and sutures of 1st or 2nd degree tears, respectively. *Conclusions:* In Italy, senior residents are generally confident with the low-complexity procedures and also with complex cesarean sections. The number of Italian residents confident to perform a hysterectomy is poor. (www.actabiomedica.it)

Keywords: Survey; Resident; Gynecology; Obstetrics.

Introduction

Recently, there is an increasing interest in simulation and training in obstetrics and gynecology. This is mostly due to the availability of simulators, mannequins, and pelvic trainers and to their integration in residents' training programs in order to achieve adequate surgical skills(1, 2) Worldwide, specific skills have been established for each doctor in training(3, 4). In Italy, similarly to other countries, a training log-book has been established. Each resident must report in his own log-book all surgical procedures performed during the training program (Legislative Decree n. 368 of August 17, 1999). The residents' skills vary enormously according to personal inclination and facilities offered by the training center. Furthermore, there is no external accreditation system of the surgical level reached by the trainees. In addition, the residents' skills acquisition and the surgical level reached in different procedures, could greatly depend on personal preferences(5).

Although many studies settled in different European countries have been already published, to our best knowledge a survey has never been made for Italian residents in gynecology and obstetrics(6–8).

The aim of the present study is to investigate the number of surgical procedures performed by Italian residents and their confidence to carry out different surgeries in obstetrics and gynecology.

Methods

An e-mail was sent to all representative residents in gynecology and obstetrics in Italy, then forwarded to all the senior residents of the last two years of specialty training. A questionnaire including 25 questions was provided. The questions aimed to explore residents' skills to perform all the main gynecological and obstetric procedures (Table 1). Each resident had to specify how many procedures were performed during the training. At the end of each question, the resident had also to specify if he/she felt confident to perform that particular surgical procedure. A cut-off of 30 procedures and 20 procedures was chosen for cesarean sections and hysterectomies based on learning curves for these procedures, respectively(9, 10). The question-

Table 1. Questionnaire.

Small surgery	1- Office diagnostic and operative hysteroscopy; 2- Marsupialization or removal of Bartolini's cysts; 3- Dilatation and curettage; 4- Diagnostic Laparoscopy; 5- Episiotomy, episiorraphy, laceration suture I-II degree; 6- Amniocentesis, chorionic villus sampling.
Medium surgery	1- Operative laparoscopy for benign adnexal pathology (ovarian cyst removal, salpingo- oophorectomy); 2- Laparotomic myomectomy; 3- Middle urethral Sling, tension-free vaginal tape, Transobturator Tape, mini-sling; 4- Resectoscopic surgery; 5- Laparoscopy / Laparotomy for extra-uterine pregnancy; 6- Simple cesarean section; 7- Operative vaginal delivery; 8- Suture of perineal tears III-IV degree; 9- Manual placental removal;
High surgery	1- Laparotomic hysterectomy for benign pathology; 2- Laparoscopic myomectomy; 3- Laparoscopic deep endometriosis eradication; 4- Laparoscopic hysterectomy; 5- Laparoscopic lymphadenectomy; 6- Laparotomic hysterectomy for malignant pathology; 7- laparotomic lymphadenectomy; 8- Vulvectomy; 9- Vaginal hysterectomy; 10- Complex cesarean sections (previous Caesarean section, breech presentation, twin pregnancy, full dilatation, placenta accreta).

naire was anonymous. The name and the University of the residents were blinded. The free Google Forms site was used to create the survey(11).

Cesarean sections requiring higher surgical experience were defined as 'complex' for analysis purposes (e.g. history of previous cesarean section, breech presentation, twin pregnancy, full dilatation, or morbidly adherent placenta).

Informed consent was required and obtained by each participant. The study was conducted from April to October 2019.

Results

Of the 555 residents enrolled, 100 joined the survey (18.2%). In particular, 59 and 41 residents were attending the fourth and fifth year of their specialty training, respectively.

The analysis of the different procedures performed by residents has shown that 53%, 57%, and 77% of the residents had never performed a laparotomic, laparoscopic, and vaginal hysterectomy, respectively. When considering the surgical level reached by residents, only 2 of them managed to perform more than 30 laparotomic hysterectomies. The same number of laparoscopic hysterectomies was performed by only 2 other residents, and only 1 reached a similar number of vaginal hysterectomies. Moreover, 19%, 57%, and 7% of residents felt confident to perform laparotomic, laparoscopic, and vaginal hysterectomies, respectively.

The analysis about cesarean section skills has shown that 1% of residents had never performed any simple cesarean section, and 84% of them performed more than 20 procedures during the training. When moving to the complex type of the procedure, 6% of residents had never performed any complex cesarean section, whereas 68% of them performed more than 20 procedures.

However, 80% and 47% of residents feel confident to perform simple and complex cesarean sections, respectively.

Fifty-two doctors in training had never performed an operative vaginal delivery, whereas only one performed more than 30 procedures. Moreover, 86% of them do not feel confident to perform an operative vaginal delivery.

Seventy-three and ninety-three residents performed more than thirty uterine curettages and sutures of 1st or 2nd degree tears, respectively. Furthermore, 99% of the resident feel confident to perform these procedures.

Table 2. Main results.

Total 100 residents	**Never performed (number)**	**More than 30 procedures (number)**	**Confidence to perform (number)**
Laparotomic Hysterectomy	53	2	19
Laparoscopic Hysterectomy	57	2	57
Vaginal Hysterectomy	77	1	7
Operative vaginal delivery	52	1	34
1st or 2nd degree tears	1	93	99
Uterine curettage	1	73	99
	Never performed (number)	**More than 20 procedures (number)**	**Confidence to perform (number)**
Simplex Cesarean section	1	84	80
Complex Cesarean section	6	68	47

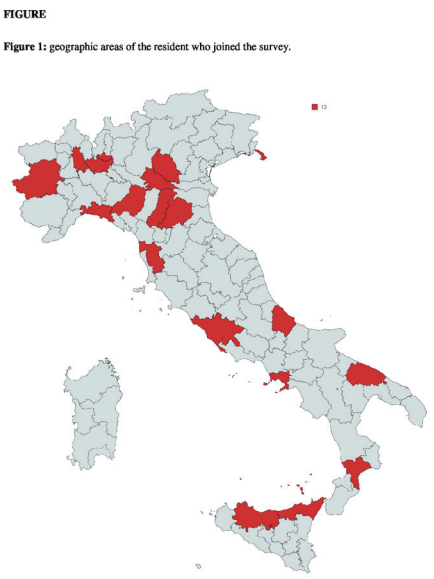

Figure 1. Geographic areas of the resident who joined the survey.

Among the participants in the study, 43% of them had a training period in an institution different than their university.

The following link shows all the results and details of the present survey: https://docs.google.com/forms/d/1VlnuMz2Mx3FXyxHC60-mvJ_D9f9Cuc-0iBwLudEhywu0/edit#responses.

The main results are shown in Table 2.

Figure 1 shows the geographic areas of the resident who joined the survey.

Discussion

Our survey shows that 53%, 57%, and 77% of the residents in gynecology and obstetrics in Italy had never performed a laparotomic, laparoscopic, and vaginal hysterectomy, respectively. Almost all residents feel confident in performing surgeries of low complexity, such as uterine curettage or low-degree perineal tears.

Several articles in the literature analyze residents' expertise in different sub-specialties(12–14). In addition to a natural trend to perform more gynecologic minimally invasive procedures than the classic laparotomy or vaginal surgery, nowadays the residents report a corresponding lower confidence to perform such procedures(6, 15–17).

In our survey, only 23% of the residents had performed a vaginal hysterectomy only one time, consistently with the general reduction of vaginal procedures observed in the last decade worldwide(18). In recent years, the minimally invasive approach has been preferred for an increasing number of procedures, leading to a greater number of laparoscopic surgeries rather than vaginal, performed by residents(19).

Only a small minority of residents (< 2%) performed more than 30 hysterectomies, regardless of the surgical approach. Several studies have shown a learning curve necessary for these kinds of procedures that exceed 20-30 cases(9, 20, 21). It seems consequently reasonable the lack of confidence shown by the vast majority resident in performing hysterectomies. However, it must be considered that part of the participant in the survey could show less interest in gynecological surgery according to their sub-specialty training.

Cesarean section is the most performed surgical procedure in the world considering its impact on fetal outcome in case of distress(22). Soergel et al. reported a learning curve for cesarean section of 10-15 cases(10). Our survey has shown that the majority of the Italian residents performed more than 20 cesarean sections, both simple (84%) or complex (68%). Therefore, we can conclude that the majority of residents achieved satisfactory surgical skills to confidently perform these procedures.

About half (52%) of the participants of the study had never performed any operative vaginal deliveries. Recently, a prospective cross-sectional study has shown that in case of operative vaginal delivery the neonatal and maternal outcomes do not significantly change if the operator is a resident rather than the attending obstetrician(23). Despite this, our data are consistent with what was reported by Bofill et al. in 1992, showing that only 15% of the residents had performed at least one operative vaginal delivery(24).

However, these figures are partially due to the infrequent occurrence of operative delivery and also to the possible medico-legal consequences related to that(25, 26). As a consequence, these procedures result in more difficulty to teach.

On the other hand, almost all (99%) the participants are confident to perform uterine curettage and low-degree tears sutures. This is likely related to the high occurrence and of these procedures.

We know that many factors impact on the training process and on the achievement of surgical confidence. In particular, the number of previously observed or assisted procedures, the predisposition to the gynecological surgery, and the supervisor predisposition to teach are important factors related to adequate training.

Despite all these limitations, the pelvic trainer exercise and simulations have been proven to be of paramount importance(27–29).

Another interesting aspect is the number of training hours. In an article by Wanzel et al., the complication rate decreased significantly after 10,000 hours of cardiac surgery among cardiac surgeons(30). Similarly, in the field of obstetrics and gynecology, the availability of the pelvic trainer during the residency could have an impact on the quality of the training(31). The longer is the time spent on the simulator, the greater are the surgical abilities achieved by the resident. Consistently with this view, Rogers et al. proposed an extension of the years of residency, like the European model(32). Furthermore, cadaver courses would increase both anatomical knowledge and resident operative confidency(33).

Conclusions

Resident training is a slow and complex process. In Italy, senior residents are generally confident with the low-complexity procedures and also with complex cesarean sections. The number of Italian residents confident to perform a hysterectomy is poor. Further studies are needed to define strategies to implement the residents' surgical training and improve their surgical skills.

Ethical approval: No approval from the ethics committee of the University of Parma needed for survey-type studies.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

Informed Consent: All participants provided their informed consent to participate in the study and to publish the results.

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