Subspecialty training in Europe

Lanner, Maximilian; Nikolova, Tanja; Gutic, Bojana; Nikolova, Natasha; Pletnev, Andrei; Selcuk, Ilker; Vlachos, Dimitrios-Efthymios; Razumova, Zoia; Bizzarri, Nicolo; Theofanakis, Charlampos

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Subspecialty training in Europe: a report by the European Network of Young Gynaecological Oncologists

Maximilian Lanner,[1] Tanja Nikolova,[2] Bojana Gutic,[3] Natasha Nikolova,[4] Andrei Pletnev,[5] Ilker Selcuk,[6] Dimitrios-Efthymios Vlachos ,[7] Zoia Razumova,[8] Nicolò Bizzarri ,[9] Charlampos Theofanakis,[10] Piotr Lepka,[11] Ilker Kahramanoglu,[12] Sileny Han,[13] Sara Nasser,[14] Szabolcs Molnar,[15] Delphine Hudry,[16] Rosa Montero-Macías ,[17] Natascha de Lange,[18] Ronalds Macuks,[19] Mir Fuad Hasanov,[20] Ramina Karimbayli,[21] Irina Gagua,[22] Claudia Andrade,[23] Catarina Pardal,[24] Jelena Dotlic,[25] Rosa Maria Alvarez,[26] Martin Hruda,[27] Filip Fruhauf,[28] Linnea Ekdahl,[29] Sofie Leisby Antonsen,[30] Vladyslav Sukhin,[31] Ane Gerda Zahl Eriksson,[32] Elko Gliozheni,[33] Ratko Delic,[34] Alima Satanova,[35] Nina Kovacevic,[36] Liidia Gristsenko,[37] Suzanna Babloyan,[38] Kamil Zalewski,[39] Rasiah Bharathan[40]

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For numbered affiliations see end of article.

Correspondence to
Dr Maximilian Lanner, Department of Obstetrics and Gynaecology, Kardinal Schwarzenberg Klinikum, Schwarzach im Pongau, Austria; lanner_maximilian@hotmail.com

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HIGHLIGHTS

- A total of 82% of countries in Europe offer a national or ESGO (European Society of Gynaecological Oncology) recognized fellowship in gynaecological oncology.
- A total of 58% of countries offer a centralized model of cancer care, which in turn influences the training infrastructure.
- ENYGO (European Network of Young Gynaecological Oncologists) initiatives play an important part in training resources and experience of fellows.

ABSTRACT

Background ESGO (European Society of Gynaecological Oncology) and partners are continually improving the developmental opportunities for gynaecological oncology fellows. The objectives of this survey were to evaluate the progress in the infrastructure of the training systems in Europe over the past decade. We also evaluated training and assessment techniques, the perceived relevance of ENYGO (European Network of Young Gynaecological Oncologists) initiatives, and unmet needs of trainees.

Methodology National representatives of ENYGO from 39 countries were contacted with an electronic survey. A graduation in well/moderately/loosely-structured training systems was performed. Descriptive statistical analysis and frequency tables, as well as two-sided Fisher's exact test, were used.

Results National representatives from 33 countries answered our survey questionnaire, yielding a response rate of 85%. A national fellowship is offered in 22 countries (66.7%). A logbook to document progress during training is mandatory in 24 (72.7%) countries. A logbook of experience is only utilized in a minority of nations (18%) for assessment purposes. In 42.4% of countries, objective assessments are recognized. Trainees in most countries (22 (66.7%)) requested additional training in advanced laparoscopic surgery. 13 (39.4%) countries have a loosely-structured training system, 11 (33.3%) a moderately-structured training system, and 9 (27.3%) a well-structured training system.

Conclusion Since the last publication in 2011, ENYGO was able to implement new activities, workshops, and online education to support training of gynaecological oncology fellows, which were all rated by the respondents as highly useful. This survey also reveals the limitations in establishing more accredited centers, centralized cancer care, and the lack of laparoscopic training.

INTRODUCTION

The purpose and value of structured training is to instill the requisite knowledge, develop the skills, and guide behavioral development toward an independent practice. This becomes increasingly important in a subspecialized field such as gynaecological oncology if we are to deliver optimal care. Additionally, to reach a high standard of care, a specialist service should be delivered in a centralized model as it leads to better outcomes.[1–3] Nationally recognized subspecialty training in gynaecological oncology was conceived more than four decades ago.[4] USA, UK, and Australia were among the first nations to have established fellowships. Indeed, gynaecological oncology is recognized as a subspecialty by the European Union of Medical Specialists.

ESGO (European Society of Gynaecological Oncology) is an umbrella organization which brings together many nations with a diverse healthcare infrastructure. One of the core missions of ESGO and ENYGO (European Network of Young Gynaecological Oncologists) is aimed at facilitating the training and development of fellows across Europe. This is a critical task in ensuring that women with gynaecological cancer in Europe receive the optimal care. In order to attain and guarantee a minimum standard of practice across the continent, an ESGO curriculum was conceived for the first time in 2004. The need for

Table 1 A comparative summary of training methods

No.	Country	Official fellowship program		Duration of fellowship (y)		Chemotherapy administration		Job opportunities in gynaecological oncology		Private tertiary referral		National gynaecological oncology journal		Stratification of training program	
		2019	2010	2019	2010	2019	2010	2019	2010	2019	2010	2019	2010	2019	2010
1	Albania	Yes	No	–	–	Yes	No	Limited	Adequate	No	Few	Yes	No	LSTS	LSTS
2	Armenia	No	No	–	–	Yes	Yes	Limited	Adequate	Yes	Yes	No	No	MSTS	MSTS
3	Austria	No	No	–	–	Yes	Yes	Adequate	Adequate	No	Yes	No	No	MSTS	MSTS
4	Azerbaijan	Yes	–	–	–	No	–	Limited	–	No	–	No	–	LSTS	–
6	Belarus	Yes	No	2	–	Yes	Yes	Limited	Adequate	No	No	Yes	No	LSTS	LSTS
5	Belgium	Yes	Yes	5	5	Yes	Yes	Limited	Limited	No	Yes	No	No	WSTS	WSTS
7	Bulgaria	No	No	–	–	No	No	Adequate	Limited	No	No	No	No	LSTS	LSTS
8	Croatia	Yes	No	2	–	No	Yes	Adequate	Adequate	No	No	No	No	LSTS	LSTS
9	Cyprus	No	–	–	–	Yes	–	Adequate	–	No	–	No	–	LSTS	–
10	Czech Republic	Yes	Yes	2	2	Yes	Yes	Adequate	Adequate	Yes	Yes	Yes	Yes	WSTS	WSTS
11	Denmark	Yes	Yes	4	3	No	No	Adequate	Adequate	No	No	No	No	WSTS	WSTS
12	Estonia	No	No	–	–	No	Yes	Adequate	Adequate	No	No	No	No	LSTS	LSTS
13	France	No	No	–	2	No	No	Limited	Adequate	No	Yes	No	Yes	WSTS	WSTS
14	Georgia	Yes	Yes	5	4	Yes	Yes	Limited	Limited	Yes	No	Yes	Yes	MSTS	MSTS
15	Germany	Yes	Yes	3	3	Yes	Yes	Adequate	Adequate	Yes	Yes	No	No	WSTS	WSTS
16	Greece	Yes	Yes	2	3	No	No	Adequate	Limited	No	Yes	No	No	MSTS	MSTS
17	Hungary	Yes	No	3	–	Yes	No	Adequate	Adequate	No	Yes	Yes	Yes	LSTS	LSTS
18	Italy	No	No	3	–	No	Yes	Limited	Limited	No	Yes	No	No	MSTS	MSTS
19	Kazakhstan	No	No	–	–	Yes	Yes	Adequate	Limited	Yes	Yes	No	No	LSTS	LSTS
20	Latvia	Yes	Yes	2	2	No	No	Limited	Limited	No	No	No	No	LSTS	LSTS
22	North Macedonia	Yes	No	2	–	No	No	Limited	Limited	Yes	Yes	No	No	LSTS	LSTS
23	Norway	No	No	–	–	Yes	Yes	Adequate	Adequate	No	No	No	No	MSTS	MSTS
24	Poland	Yes	Yes	2	3	Yes	Yes	Adequate	Adequate	No	Yes	Yes	Yes	WSTS	WSTS
25	Portugal	Yes	Yes	5	3	No	Yes	Adequate	Adequate	Yes	Yes	No	No	MSTS	MSTS
26	Russia	No	No	3–4 months	2	Yes	Yes	Limited	Adequate	No	Yes	No	No	LSTS	LSTS
27	Serbia	Yes	Yes	1	1	No	Some	Limited	Limited	No	Yes	No	No	MSTS	MSTS
28	Slovenia	No	No	–	–	No	Yes	Limited	Limited	No	No	No	No	MSTS	LSTS
29	Spain	Yes	No	–	–	No	No	Limited	Adequate	Yes	Yes	Yes	No	MSTS	LSTS
30	Sweden	Yes	–	3	–	No	–	Adequate	–	No	–	No	–	WSTS	–
21	The Netherlands	Yes	Yes	2	2	No	No	Adequate	Adequate	No	No	Yes	No	WSTS	WSTS

Continued

harmonization across European training programs is recognized and much effort is focused on this matter.[5]

Our clinical practice changes rapidly as a result of better understanding of disease processes, developments in surgical techniques, systemic therapy, patient expectations, trainee expectations, and medico-legal conditions. Indeed, the service infrastructure, outcomes, and training systems are interconnected. Training program accreditation improves the training environment and trainees gain a greater level of competence.[6 7] Therefore, continued evaluation and improvement of the training and educational environment is a key aspect of outcomes improvement.

ENYGO is an independent body within ESGO and represents the voice of trainees at the ESGO council. A survey of ENYGO representatives in 2011 described the status of training and identified opportunities for improvement.[5] Since the publication of that report and subsequent evaluations of unmet needs, there have been several initiatives to facilitate the implementation of structured training such as surgical skills workshops, webinar-based didactic teaching, and short fellowships.[8 9]

The Accreditation Council for Graduate Medical Education (ACGME) model encompasses six domains. These are practice-based learning and improvement, patient care and procedural skills, systems-based practice, medical knowledge, interpersonal and communication skills, and professionalism (https://www.acgme.org). This ACGME model of education is adopted in the latest revision of the ESGO gynaecological oncology curriculum. Therefore, a broader evaluation of trainee experience was required. The primary objective of this survey was to evaluate the progress in the infrastructure of the training systems in Europe over the past decade. The secondary objectives were to explore the use of training and assessment techniques, the perceived relevance of ESGO-ENYGO initiatives, and identify the unmet needs of trainees.

METHODS

ESGO attracts global membership, including from Asia and the Americas. For the purposes of this study, we consider 39 of the 44 official European nations; another five countries each have total populations of less than 80 000 and to our knowledge do not have subspecialty service in gynaecological oncology. A national representative from each nation is elected to ENYGO. At the time of the survey, ENYGO representatives had been appointed from 31 countries. Where a representative had not been appointed, ENYGO approached a trainee from that nation through personal networks. Representatives were contacted by email and were asked to complete a questionnaire (online supplemental appendix A). Two further email reminders were sent. Indeed, three outstanding questionnaires were completed at the biennial scientific meeting in Athens in 2019. According to NHS Health Research Authority our survey and the following publication does not need any ethical approval.

The survey was designed to harness information about national infrastructure, as well as opinions on aspects of training. The scope of this survey was broader than the previous one by ENYGO.[5] We obtained data on training and assessment techniques. In addition, this survey collated opinions about engagement and the importance of ENYGO initiatives among the representatives. Collectively these

Table 1 Continued

No.	Country	Official fellowship program		Duration of fellowship (y)		Chemotherapy administration	Job opportunities in gynaecological oncology	Private tertiary referral		National gynaecological oncology journal		Stratification of training program	
31	Turkey	Yes	Yes	3	3	Yes	Yes	Adequate	Adequate	Yes	Yes	Yes	MSTS	MSTS
32	UK	Yes	Yes	3	2–3	No	Yes	Adequate	Adequate	No	No	No	WSTS	WSTS
33	Ukraine	Yes	No	1	–	Yes	Yes	Limited	Adequate	No	Yes	No	LSTS	LSTS

LSTS, loosely-structured training system; MSTS, moderately-structured training system ; WSTS, well-structured training system; y, years.

survey findings will complement the evolving ESGO curriculum and the assessment techniques. This report allows comparison with our previous survey and this facilitates an evaluation of changes to gynaecological oncology training over the past decade in Europe.[5]

As previously defined, the countries are stratified into three categories that reflect the available training opportunities in gynaecological oncology.[5] In countries with a well-structured training system (WSTS), gynaecological oncology is an officially recognized subspecialty accorded by a statutory body. The fellowship is organized in a structured training program undertaken in accredited training centers. A logbook, as well as assessments and/or board exams, are included in the curriculum. The group of moderately-structured training systems (MSTS) includes countries without the official recognition of subspecialty and therefore lack a uniform national curriculum. But all have either ESGO accredited training centers or at least a locally organized training program and curriculum. Loosely-structured training systems (LSTS) do not have any standardized curricula or training centers/programs.

Descriptive statistical analysis and frequency tables as well as two-sided Fisher's exact test (with ϕ_c – Cramer's phi effect size) were used to supplement the qualitative data analysis. Data were analyzed by means of International Business Machines Corp (IBM) Statistical Package for the Social Sciences (SPSS) Statistics 25 and Microsoft Excel (MS Office 2016, Microsoft Corp, Redmond, WA).

RESULTS

Thirty-three national representatives answered our survey questionnaire, yielding a response rate of 85%. A detailed summary of the responses is presented in Tables 1 and 2.

The median duration of training in general obstetrics and gynaecology is 5 years (IQR 4–5 years). The UK has the longest training in general obstetrics and gynaecology, 7 years, and Russia has the shortest duration, 2 years. A logbook is part of the curriculum in general obstetrics and gynaecology in 28 (84.8%) countries.

Fellowship in Gynaecological Oncology

A national fellowship training in gynaecological oncology is offered in 22 countries (66.7%). The median fellowship duration is 2.5 years (IQR 2–3 years). Belgium, Georgia, and Portugal offer the longest fellowships (5 years). A logbook is part of the curriculum in 24 (72.7%) countries. In seven (29.2%) of these countries the logbook is competency based, in eight (33.3%) countries it is based on volume of procedures, and in seven (29.2%) both on competency and volume; two (8.3%) countries did not respond. Chemotherapy administration is part of fellowship training in 16 (48.5 %) countries. Table 3 summarizes the factors that are associated with the likelihood of gynaecological oncology fellowship existence in a country.

Research Experience During Fellowship

The fellowship includes a research degree (PhD) in two (6.1%) of countries, general research experience in 12 (36.4%), and 11 (33.3%) have no formal research component in the training program; eight (24.4%) countries did not provide an answer. The majority of the countries (24 (72.7%)) do not publish a national gynaecological oncology journal.

Advanced Minimal Access Surgery

Trainees in most countries (22 (66.7%)) requested additional training in advanced laparoscopic surgery. Respondents from nine countries (27.3%) find their training as adequate, and two (6.1%) countries did not answer. In 20 (60.6%) countries there are cancer centers that perform robot-assisted surgeries. Training in robot-assisted surgery is not a mandatory component in any of the countries.

Assessment Methods

In 42.4% of countries, objective assessments are recognized. A logbook of experience is only utilized in a minority of nations (18%) for assessment purposes. Laparoscopic skill assessment in a laboratory setting only takes place in three countries (9%). Non-technical skill (24%) and knowledge assessments (45%) are conducted in some countries. Formal mentorship is offered in 48% of countries. The results are summarized in Table 4.

Stratification of Training Systems

Thirteen (39.4%) countries have an LSTS: Albania, Azerbaijan, Belarus, Bulgaria, Croatia, Cyprus, Estonia, Hungary, Kazakhstan, Latvia, North Macedonia, Russia and Ukraine. Eleven (33.3%) countries have an MSTS: Armenia, Austria, Georgia, Greece, Italy, Norway, Portugal, Serbia, Slovenia, Spain and Turkey. Nine (27.3%) countries have a WSTS: Belgium, Czech Republic, Denmark, France, Germany, Poland, Sweden, the Netherlands and UK.

ENYGO Initiatives

The final part of the questionnaire surveyed the respondents about the opportunities within the ENYGO network. ENYGO initiatives have been well received with median ratings ranging from 9 to 10 (on a scale of 1 to 10, where 10 indicates most useful for training).

DISCUSSION

Since the last publication regarding the status of gynaecological oncology fellowships in Europe in 2011, ENYGO has been able to implement new activities, workshops, and online education to support training of gynaecological oncology fellows.[5] Although the need for a curriculum is recognized as an important quality marker in other specialties such as general surgery and emergency medicine, the establishment of a common curriculum in all these specialties has been challenging.[10 11] The lack of standardized assessment tools, the high competitiveness, and costs of training were identified as barriers to a harmonized curriculum-based training.[10 11] A subtle but important factor is also the work–life balance preferences of Generation Y, which is likely to impact training.[12]

ENYGO, under the guidance of the ESGO council, has the potential to innovate solutions in conjunction with national or regional bodies. In our survey, 14 countries mentioned the lack of centralization and the lack of national recognition of gynaecological oncology as a subspecialty as the greatest barriers to developing adequate fellowship training. Countries where gynaecological oncology is an official subspecialty do offer fellowship programs significantly more often. ESGO has initiated a forum for the leaders of the national gynaecological cancer societies across Europe, in an effort to improve cooperation within European nations. This forum has a pivotal role in accelerating the national recognition of gynaecological oncology

Table 2 Summary of training support

	Country	How would you describe the cancer care in your country?	Do you have a national gyn-onc society/ faculty/ college in your country?	Are there special centers for training in your country?	Is there a curriculum?	Do you have a logbook of training?	If so, are the procedures competency based, numbers based or both?	If your country has a gyn-onc training program, is there a defined fellowship selection process for trainees?	Do you have to attend mandatory courses during fellowship?	Is laparoscopic surgery (eg, hysterectomy) a mandatory part of fellowship?	Do you think laparoscopic surgery training for fellows is adequate or would you require more?	Are there any cancer centers performing robot-assisted surgery in your country?
		2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019
1	Albania	Decentralized	No	Yes	Yes	No	Numbers	No	Yes	No	More training	Yes
2	Armenia	Decentralized	No	Yes	No	No	–	n/a	Yes	Yes	More training	Yes
3	Austria	Centralized	Yes	Yes	Yes	Yes	Both	Yes	Yes	Yes	More training	No
4	Azerbaijan	Centralized	No	Yes	No	No	Competency	No	Not sure	Yes	More training	No
5	Belarus	Centralized	No	Yes	Yes	Yes	Competency	Yes	Yes	No	More training	No
6	Belgium	Decentralized	Yes	Yes	No	Yes	Numbers	No	No	Yes	Adequate	Yes
7	Bulgaria	Decentralized	Yes	Not sure	No	No	–	n/a	–	n/a	–	Yes
8	Croatia	Centralized	Yes	Yes	Yes	Yes	Both	n/a	Not sure	Yes	Adequate	Yes
9	Cyprus	Both	Yes	No	Yes	Yes	Both	No	No	Yes	More training	No
10	Czech Rep.	Centralized	Yes	Yes	Yes	Yes	Both	No	Yes	Yes	More training	Yes
11	Denmark	Centralized	Yes	Yes	Yes	Yes	Both	No	No	n/a	More training	Yes
12	Estonia	Centralized	No	Yes	No	No	–	n/a	–	Yes	More training	No
13	France	Centralized	Yes	Yes	No	No	Competency	No	Yes	Yes	More training	Yes
14	Georgia	Decentralized	Yes	No	Yes	No	–	Yes	No	No	More training	Yes
15	Germany	Decentralized	Yes	Yes	Yes	Yes	Numbers	No	No	Yes	Adequate	Yes
16	Greece	Centralized	Yes	Yes	No	No	–	n/a	–	n/a	More training	Yes
17	Hungary	Decentralized	Yes	Yes	Yes	Yes	Numbers	n/a	No	No	Adequate	No
18	Italy	Decentralized	Yes	Yes	Yes	Yes	Numbers	Yes	No	Yes	More training	Yes
19	Kazakhstan	Centralized	Yes	Yes	No	No	–	No	No	Yes	Adequate	Yes
20	Latvia	Centralized	Yes	Yes	Yes	Yes	Competency	No	No	No	More training	No
21	North Macedonia	Centralized	Yes	No	Yes	No	Competency	No	No	n/a	More training	Yes
22	Norway	Centralized	Yes	Yes	Yes	Yes	–	n/a	No	No	Adequate	Yes
23	Poland	Centralized	Yes	Yes	Yes	Yes	Numbers	Yes	Yes	No	More training	No
24	Portugal	Decentralized	Yes	Yes	Yes	No	–	No	No	No	More training	Yes
25	Russia	Decentralized	No	Yes	No	No	Numbers	No	No	n/a	Adequate	Yes
26	Serbia	Decentralized	Yes	No	No	No	Numbers	No	No	No	More training	No

Continued

Table 2 Continued

	Country	How would you describe the cancer care in your country?	Do you have a national gyn-onc society/ faculty/ college in your country?	Are there special centers for training in your country?	Is there a curriculum?	Do you have a logbook of training?	If so, are the procedures competency based, numbers based or both?	If your country has a gyn-onc training program, is there a defined fellowship selection process for trainees?	Do you have to attend mandatory courses during fellowship?	Is laparoscopic surgery (eg, hysterectomy) a mandatory part of fellowship?	Do you think laparoscopic surgery training for fellows is adequate or would you require more?	Are there any cancer centers performing robot-assisted surgery in your country?
27	Slovenia	Centralized	No	Yes	No	No	–	n/a	–	n/a	More training	Yes
28	Spain	Decentralized	Yes	Yes	No	No	–	No	Not sure	n/a	Adequate	No
29	Sweden	Centralized	Yes	Yes	Yes	Yes	Both	Yes	No	No	–	Yes
30	The Netherlands	Centralized	Yes	Yes	No	Yes	Competency	No	Yes	Yes	Adequate	Yes
31	Turkey	Decentralized	Yes	Yes	Yes	Yes	Both	Yes	No	n/a	More training	No
32	UK	Centralized	Yes	Yes	Yes	Yes	Competency	Yes	Yes	Yes	More training	No
33	Ukraine	Centralized	Yes	Yes	Yes	Yes	–	Yes	Not sure	No	More training	No

gyn-onc, gynaecological-oncology; n/a, not available.

as a subspecialty in all European nations. The significant variation in general obstetrics and gynaecology residency may be an additional factor limiting the harmonization of gynaecological oncology fellowships. Because graduates from these programs will have a variable skill set and knowledge base, navigating fellows through a standardized fellowship will be challenging. A total of 82% of countries in our survey offer either a national or ESGO recognized gynaecological oncology fellowship. Such fellowships are significantly less likely to be offered in countries with shorter compared with countries with longer obstetrics and gynaecology training. (Table 3).

The assessment of learned skills is an important pedagogical principle. The value of assessment strategies is not optimally appreciated in surgical education.[13] At present a notable number of countries utilize an objective assessment tool for technical skills. Objective assessment of surgical skills is expected to be part of the new ESGO curriculum and supervisors will need to become familiar with this strategy. In only 9% of countries, laparoscopic skills are assessed in the laboratory setting. This chimes with the demand from trainees for a greater level of training in laparoscopic surgery both in our survey and in an earlier study.[8] It is encouraging to note that in 25% of countries, a form of non-technical skills assessment is conducted. The authors believe that this will require further evaluation to optimize and propagate. At present 39% of countries conduct an examination at the end of the fellowship. With the recent introduction of a theoretical exam by ESGO, and the requirement for successful completion of this exam for the award of an ESGO fellowship, we are a step closer to standardizing training in Europe. In only 48% of countries, a formal mentorship program is offered. The need for mentorship during fellowship has been voiced by our cohort of participants. This aspect is also expected to be a feature of the new ESGO curriculum. With a shift in the ESGO curriculum, adoption of communication platforms such as the webinars, and a growing educational resource such as laparoscopic courses, we anticipate a paradigm shift in training and assessment over the next decade.

Currently only a third of the countries have a research component in gynaecological oncology training. The new ESGO curriculum is expected to place a greater emphasis on this component. The details of this will be published in the near future. At present in 27% of countries in this survey a national gynaecological oncology journal is published. There has been a medical writing workshops among the most popular initiatives by ENYGO, which is designed to develop some of the key elementary skills of research. There will be an online version conducted via webinars in 2021. In addition, there are specific sessions during the ESGO congress which are designed to encourage fellows: the young investigator oral presentations, excellence in research, and clinical trial design. Indeed, the development of fellows' research skills could be enhanced through a collaboration of the various organs of ESGO such as ENGOT (European Network for Gynaecological Oncological Trial groups), ENGAGe (European Network of Gynaecological Cancer Advocacy Groups), and ENYGO. Workshops and placements will mutually benefit all stakeholders including the patients. Beside the already existing *International Journal of Gynecological Cancer* editorial fellowship, the short traveling fellowships sponsored by ESGO could not only be a vehicle for surgical skills development but also for research skills. In a recent study comparing research output between North American and European universities, absolute output appears to

Table 3 Factors associated with gyn-onc fellowships

Characteristics	Cohorts with access to ESGO or national gyn-onc fellowships	Cohort without access to 'organized' fellowship	P value
Length of obs&gyn training			
≥4 years	20	1	0.02
<4 years	7	5	j_c=0.46 Medium effect size
National obs&gyn curriculum			
Yes	18	9	
No	5	1	0.64
Logbook in obs&gyn training			
Yes	17	8	
No	6	2	1
Board certification exam in obs&gyn			
Yes	21	8	
No	2	2	0.57
National income status			
LIC+MIC	8	4	
HIC	15	6	1
National recognition of gyn-onc as a subspecialty			
Yes	20	0	<0.001
No	3	10	j_c=0.82 Large effect size
National gyn-onc journal publication			
Yes	6	2	
No	17	8	1
Training program category			
MSTS/LSTS	14	10	0.03
WSTS	9	0	j_c=0.40 Medium effect size
Adequacy of laparoscopic training			
Yes	6	3	
No	17	7	1
Cancer care model			
Centralized	14	5	
Decentralized	9	5	0.71
National gyn-onc organization			
Yes	18	7	
No	5	3	0.67
Adequacy of gyn-onc training			
Yes	8	3	
No	15	7	1

ESGO, European Society of Gynaecological Oncology; gyn-onc, gynaecological-oncology; HIC, high-income countries (ranking by the World Bank Group in 2019); LIC, low-income countries (ranking by the World Bank Group in 2019); LSTS, loosely-structured training system; MIC, middle-income countries (ranking by the World Bank Group in 2019); MSTS, moderately-structured training system; obs&gyn, obstetrics and gynaecology; WSTS, well-structured training system.

Table 4 Assessment methods during fellowship

In the clinical setting, are technical surgical skills assessed during the training in gyn-onc?	(a) Objective procedure-based assessment (eg, OSATS, GOALS, etc) Yes – 42%[14] (b) Logbook assessment of experience Yes – 18%[6] (c) Report by your supervisor Yes – 30%[10] (d) Other methods Scoring by the sup – 3%[1]
In the laboratory setting, are technical surgical skills assessed during the training in gyn-onc?	(a) Laparoscopic skill assessment using synthetic simulator (eg, plastic props) Yes – 9%[3] (b) Laparoscopic skill assessment using animal tissues (eg, porcine bowel anastomosis) Yes – 0% (c) Other methods Yes – 3% (19)
Are *non-technical* skills assessed during the training in gyn-onc?	Yes – 24%[8] structured team feedback – 18%[6] 360 feedback – 6%[2] other – 6%[2]
Is there a theoretical knowledge exam at the end of training in gyn-onc?	Yes – 45%[15]
If yes, please write what methods are used	(a) CPD/CME on a regular basis – 3%[1] 1. Oral exams – 39%[13] 2. Written exam – 9%[3] (d) Other - viva exam by a panel 3%[1]
Do you have a training program director/supervisor to mentor you?	Yes – 48%[16]

CME, continuing medical education; CPD, continuing professional development; GOALS, global operative assessment of laparoscopic skills; gyn-onc, gynaecological-oncology; OSATS, objective structured assessment of technical skills.

be linked to resources.[14] Similar findings were echoed by a study of productivity in gynaecological oncology.[15] When adjusted for resource availability, productivity indices demonstrate an inverse shift. Even though these findings have policy implications, attention must be directed toward developing the knowledge and skill base for raising research awareness among those from low and middle resource nations.

Traveling fellowships were one of the most popular activities of ENYGO. Since 2012, 86 fellows from 35 countries visited 28 centers in 12 countries. The benefits could be amplified, when these visits target specific needs of the fellow, whether surgical or research skills development. The well-established mentorship in traveling fellowships is a good model. This model can be adopted in enhancing the value of ENYGO initiatives such as the Short Clinical Visit program and the upcoming laparoscopic skills certification program. A recent study of fellows revealed the need for wider adoption of virtual communications platforms.[9] The webinar series launched in 2018 is one such example. This was rated high (median 9.5) in our study. The attendee figures for live webinars grew from 20 in the beginning to 80 in 2020 and over 300 clicks for single webinar records in the eAcademy. This successful platform has enabled support to be provided to ESGO members during the COVID-19 pandemic. The first of the 'Meet the surgeon' webinars launched in May 2020 attracted over 300 attendees. In this new webinar series, well-known and experienced surgeons demonstrate techniques as well as discuss tips and tricks by showing a video presentation. The discussions are facilitated by a panel of expert surgeons to help contextualize and moderate the learning experience. This telemedicine strategy will be an important tool in democratizing access to knowledge, skill development, and nurturing the holistic development of fellows.

In our survey, 15% of respondents reported the existence of a national fellows' networks. ENYGO is well placed to facilitate the formation of national networks through their expertise on logistics and communications. This will help to strengthen the sense of community at both the national and European level. It is conceivable that such well rooted infrastructure will catalyze developments in clinical care, training, and research. UK and the Netherlands are two nations where an active national fellows' community has been important in driving training initiatives. Indeed in 2018 the UK fellows formed the Audit and Research in Gynaecological Oncology Collaborative. This has created opportunities for both junior residents and more experienced trainees to develop research skills with a number of ongoing projects.

In our survey, 66.7% of respondents reported inadequate laparoscopic training. This is echoed by a recent national study of fellows.[16] ENYGO is developing a joint laparoscopic step by step workshop program and certificate with ESGE (European Society for Gynaecological Endoscopy) to meet the needs of the fellows. The first of these workshops are scheduled in 2021. Indeed, the webinar platform and social media channels of ENYGO/ESGO can also facilitate ongoing tele-mentoring.[9] A total of 45.5% of countries reported a lack of adequate job opportunities. This appears to be associated with a decentralized model of cancer care, though it does not approach statistical significance. A Cochrane review identified that centralization can improve the quality of care in gynaecological cancer patients.[2] A total of 39.4% of countries in this survey still have not adopted a centralized cancer care model. Two thirds of those countries are in Eastern Europe and the remainder are in the more affluent parts of Europe.

This survey reveals the limited improvements in establishing more accredited centers in different countries, evident in the fact that only two countries have shifted from LSTS to MSTS in the past decade. However, the overall number of ESGO accredited training centers increased from 61 in 2011 to 103 in 2020 (ESGO office communication). The limitations of this survey are the fact the responses are from individual representatives of nations. Therefore, subjective responses may not be entirely representative of their entire country. Although our response rate was 85%, it is important to note that absentees are from low- and middle-income countries. Future granular studies ought to focus on low- and middle-income countries to help minimize disparity and

Table 5 Achievements 2011–2020 and suggested further steps

	Suggested steps 2011		Achievements 2020 + *suggested steps*
□	Recognition of gynaecological oncology as a separate subspecialty by statutory bodies in all countries.	□	Still just 20 out of 33 countries (61%) recognize it as a ***subspecialty***. So further work is needed here.
□	Establishment of national training programs and accreditation in countries that lack this.	□	Eight more countries developed **training programs** compared with 2011.
□	Standardization and harmonization of training programs in gynaecological oncology in Europe. The ESGO curriculum should be adopted and incorporated into national training programs.	□	The ***curriculum*** has been revised twice during this time and has been integrated in most of the training programs, but still needs further ***improvements***.
□	Establishment of more ESGO-accredited training centers across Europe, particularly in LSTS countries.	□	Number of ESGO accredited centers was raised during this period and two countries moved up from LSTS to MSTS. 15 countries have ESGO accredited training centers now.
□	Development of exchange programs between different national and international institutions to increase training opportunities and experience of fellows.	□	Traveling fellowship and short clinical visits were implemented.
□	Financial support in the form of additional scholarships particularly for colleagues from economically weaker countries.	□	Payments for traveling fellowship as well as **adapted congress/workshop fees for lower-income countries** were developed. With the implementation of a webinar program it also helped to keep educational costs low.
□	Further developing ENYGO as the official Europe-wide network among fellows to represent interests of fellows and facilitate collaborative work, sharing of experiences, and dissemination of information.	□	ENYGO is the leading network in gyn-onc fellows and was able to raise the number of its members and events.
□	Centralization of training in a few accredited centers in different countries with adequate caseload to improve training of fellows.	□	***Centralization*** still needs further improvement all across the ESGO area, but with the rise in accredited centers over the last 10 years a movement in the right direction has already been started.
□	Building research time into training programs for trainees.	□	Research will be integrated in the newly revised ESGO curriculum.
□	ESGO should pay attention to re-accreditation. Feedback from trainees/ENYGO representatives should be included in the process of re-accreditation of ESGO-accredited centers.	□	Feedback of the fellows has been included in all accreditation visits.

ENYGO, European Network of Young Gynaecological Oncologists; ESGO, European Society of Gynaecological Oncology; gyn-onc, gynaecology-oncology; LSTS, loosely-structured training system; MSTS, moderately-structured training system.

expedite harmonization of training. A summary of achievements from the last decade and further suggested steps is included in Table 5.

Author affiliations
[1]Department of Obstetrics and Gynaecology, Kardinal Schwarzenberg Klinikum, Schwarzach im Pongau, Austria
[2]Klinikum Mittelbaden, Academic Teaching Hospital of Heidelberg University, Baden-Baden, Germany
[3]Gynaecology Department, Vojvodina Institute of Oncology, Sremska Kamenica, Serbia
[4]Department of Obstetrics and Gynaecology and Centre for Perinatal and Reproductive Medicine, University of Perugia, Perugia, Italy
[5]Department of Gynaecological Oncology, N.N. Alexandrov National Cancer Centre of Belarus, Minsk, Belarus
[6]Gynaecological Oncology, Maternity Hospital, Ankara City Hospital, Ankara, Turkey
[7]First Department of Obstetrics and Gynaecology, National and Kapodistrian University of Athens, Athens, Greece
[8]Department of Women's and Children's Health, Division of Neonatology, Obstetrics and Gynaecology, Karolinska Institute, Stockholm, Sweden
[9]UOC Ginecologia Oncologica, Dipartimento per la salute della Donna e del Bambino e della Salute Pubblica, Fondazione Policlinico Universitario A Gemelli, IRCCS, Rome, Italy
[10]Department of Gynaecological Oncology, General Hospital of Athens Alexandra, Athens, Attica, Greece
[11]Department of Oncology, Gynaecological Oncology Clinic, Wroclaw Medical University and 2nd Lower Silesian Oncology Centre, Wroclaw, Poland
[12]Department of Obstetrics and Gynaecology, Division of Gynaecological Oncology, Istanbul University Cerrrahpasa Medical Faculty, Istanbul, Turkey
[13]Gynaecological Oncology, KU Leuven University Hospitals Leuven, Leuven, Belgium
[14]Department of Gynaecological Oncology, Gynaecology Clinic with Oncologic Surgery Centre, Charité Comprehensive Cancer Centre, Campus Virchow Klinikum, Berlin, Germany
[15]Department of Obstetrics and Gynaecology, University of Debrecen Faculty of Medicine, Debrecen, Hungary
[16]Department of Gynaecological Oncology, Centre Oscar Lambret, Lille, France
[17]Gynaecologic and Breast Oncologic Surgery Department, European Hospital Group Georges-Pompidou, Paris, France

[18]Department of Gynaecological Oncology, Universitair Medisch Centrum Groningen, Groningen, Netherlands
[19]Department of Obstetrics and Gynaecology, Riga Stradins University, Riga, Latvia
[20]Department of Obstetrics and Gynaecology, Medical Center-University of Freiburg, Freiburg, Baden-Württemberg, Germany
[21]Department of Oncogynaecology, The National Centre of Oncology, Baku, Azerbaijan
[22]Department of Gynaecology, Research Institute of Clinical Medicine, Todua Clinic, Tbilisi, Georgia
[23]Department of Gynaecology, Centro Hospitalar e Universitário de Coimbra EPE, Coimbra, Portugal
[24]Department of Obstetrics and Gynaecology, Hospital de Braga, Braga, Portugal
[25]Clinic of Obstetrics and Gynaecology, Clinical Centre of Serbia, University of Belgrade, Beograd, Serbia
[26]Department of Gynaecological Oncology and Breast Cancer, Santa Cristina University Hospital, Madrid, Spain
[27]Department of Obstetrics and Gynaecology, 3rd Medical Faculty, Charles University and Faculty Hospital Kralovske Vinohrady, Prague, Czech Republic
[28]Department of Obstetrics and Gynaecology, General University Hospital, Charles University, Prague, Czech Republic
[29]Department of Obstetrics and Gynaecology, Division of Gynaecologic Oncology, Skåne University Hospital Lund, Lund, Sweden
[30]Gynaecological Department, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark
[31]Department for Gynaecological Oncology, Grigoriev Institute for medical Radiology and Oncology NAMS, Kharkov, Ukraine
[32]Department of Gynaecological Oncology, Division of Cancer Medicine, Norwegian Radium Hospital, Oslo University Hospital, Oslo, Norway
[33]Department of Obstetrics and Gynaecology, Maternity Koco Gliozheni Hospital, Tirana, Albania
[34]Department of Obstetrics and Gynaecology, General Hospital Celje, Celje, Slovenia
[35]Department of Gynaecological Oncology, Kazakh Institute of Oncology and Radiology, Almaty, Kazakhstan
[36]Department of Gynaecological Oncology, Institute of Oncology Ljubljana, Ljubljana, Slovenia
[37]Department of Obstetrics and Gynaecology, The North Estonian Medical Centre, Tallinn, Estonia
[38]Department of Obstetrics and Gynaecology, Yerevan State Medical University, Yerevan, Armenia
[39]Gynaecological Oncology, Świętokrzyskie Cancer Centre, Kielce, Poland
[40]Department of Gynaecological Oncology, Maidstone Hospital, Maidstone, UK

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Twitter Ilker Selcuk @ilkerselcukmd, Ane Gerda Zahl Eriksson @agz_eriksson and Rasiah Bharathan @RasiahBharathan

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ORCID iDs
Dimitrios-Efthymios Vlachos http://orcid.org/0000-0003-3740-2575
Nicolò Bizzarri http://orcid.org/0000-0002-1727-904X
Rosa Montero-Macías http://orcid.org/0000-0002-8159-2903

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