OCCASIONAL REPORT

A survey on gastroenterology training in Europe

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Background: Specialist training in gastroenterology and hepatology is not standardised in different European countries.
Aim: The aim of this survey was to assess the different teaching and socioeconomic aspects of training programmes in Europe.
Methods: Seventy questionnaires were distributed to last year trainees or newly graduated gastroenterologists. Forty two respondents (60%) from 34 major training centres in 10 different European countries replied.
Results: Overall, the data revealed major diversity for all aspects analysed, between and within the different European countries. Both the duration of training (range 4–10.4 years) and workload (range 48.5–89.2 hours per week) differed markedly between countries. The average number of endoscopic procedures (gastroscopies, range 300–2600; colonoscopies, range 73–550; endoscopic retrograde cholangiopancreatographies, range 1–385) differed also. One third of last year trainees reported that they felt uncertain in some endoscopic procedure. The European trainee was on call for 5–6 nights a month on average (range 1–8). Monthly wages differed considerably between countries, ranging from 767 to 2180 Euro.
Conclusion: We found major differences in the professional aspects and socioeconomic conditions of gastroenterologist/hepatologist training in 10 different European countries, probably leading to differences in quality of training. In several countries or centres the average number of procedures was below the threshold issued by the European Board of Gastroenterlogy or the American Gastroenterological Association. Issuing a European diploma for gastroenterology is a valuable effort towards meeting this problem. Further studies are needed to re-evaluate the training programmes in Europe and to define threshold numbers and technical end points for assessment of endoscopic skills.

In the face of increasing changes and challenges in the current health care environment, medical educators in both the USA and Europe have initiated major efforts to anticipate and modify the training needs of the gastroenterologist and hepatologist of the future.[1–4] One of the stated aims of the European Board of Gastroenterology (EBG), inaugurated at the first United European Digestive Disease Week in Athens in 1992, is to promote good practice in gastroenterology and hepatology in Europe and to harmonise the different methods of specialist training in different European countries.[1] Also, since 1994 the EBG has awarded a European Diploma of Gastroenterology to individual candidates who satisfy a set of criteria for training, including a minimum number of specific gastrointestinal procedures. From the point of view of the European trainee, these aims by the EBG, namely to guarantee quality of training and to harmonise specialist training, are laudable and to be commended. However, while information on current training patterns is not a prerequisite for defining appropriate training aims, such information could be both useful and interesting. We therefore designed a survey that aimed to assess the clinical and technical particulars and also the workload and socioeconomic aspects of the training of physicians specialising in gastroenterology/hepatology in 10 different European countries.

METHODS

The questionnaire

We designed a 60 point questionnaire with mostly definite and a few open ended questions. The questionnaire was divided into four sections. The first section addressed general issues such as age, sex, marital status, number of departmental beds, and number of staff members and gastroenterology/hepatology trainees at a particular training hospital. The second section dealt with training as such, and was divided into seven subsections concerning: work on the ward, work in the outpatient clinic, endoscopic training, technical training in other specialised procedures, administrative workload, research and teaching, and night shifts. The third section aimed at the social and financial aspects of training. The fourth and last section posed questions on both the outlook of the trainee towards future job prospects and the number of graduates per year in a particular training centre. The participants were asked to answer the questionnaire representatively for their situation in a particular training centre. The respondent was free to provide his name and/or the name of the training centre.

Distribution of the questionnaires and data collection

The questionnaire was distributed to a total of 70 last year trainees or to specialists that had just completed their training in gastroenterology/hepatology, working in 10 different European countries. Excluding Belgium, the questionnaire was mailed to 13 physicians in nine different European countries (Denmark (D)=1, UK (E)=2, France (F)=2, Germany (G)=2, Greece (GR)=1, Italy (I)=1, Netherlands (N)=1, Norway (NO)=1, Spain (S)=2) who were asked to distribute a copy to four other last year trainees working at different large training hospitals within their own country. In Belgium, four other colleagues working in four different university hospitals were contacted directly.

Abbreviations: EBG, European Board of Gastroenterlogy; B, Belgium; D, Denmark; E, UK; F, France; G, Germany; GR, Greece; I, Italy; N, Netherlands; NO, Norway; S, Spain; ERCP, endoscopic retrograde cholangiopancreatography; AGA, American Gastroenterological Association.

Table 1 Endoscopy training

Country	No of years/ct	No of gastroscopies	Therapeutic procedures (n (%))	No of colonoscopies	Therapeutic procedures (n (%))	No of ERCPs	Therapeutic procedures (n (%))
B	3 (2)/3	1600	96 (6%)	375	34 (9%)	55	12 (21%)
D	4/3	2600	260 (10%)	91	3 (3%)	49	22 (45%)
E	3/2	2557	368 (14%)	929	197 (21%)	385	183 (48%)
F	4/0	1020	102 (10%)	308	65 (21%)	1	0 (0%)
G	3/5	300	33 (11%)	82	16 (20%)	52	5 (10%)
I	4/0	355	11 (3%)	73	3 (4%)	5	0 (0%)
N	3/3	1100	193 (18%)	380	86 (23%)	280	154 (55%)
S	2/3	620	50 (8%)	218	15 (7%)	10	0 (0%)
NO	3/3	1300	195 (15%)	450	135 (30%)	120	24 (20%)
GR	4	1000	250 (25%)	550	55 (10%)	300	15 (5%)
Europe	—	1363	156 (11%)	348	61 (17%)	113	41 (36%)

No of years/ct, mean number of years of endoscopy training in a particular country/number of years of common trunk (ct) training.
No of gastroscopies, total number of gastroscopies performed by the trainee by the end of the training.
No of coloscopies, total number of colonoscopies performed by the trainee by the end of the training.
No of ERCPs, total number of endoscopic retrograde cholangiopancreatographies (ERCPs) performed by the trainee by the end of the training.
Therapeutic procedures, total number of procedures, mentioned in the respective left hand columns, that were therapeutic and percentage of total procedures that were therapeutic.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

In total, 42 respondents (60%) working in 34 different major training centres throughout Europe (B=5, D=5, E=8, F=5, G=5, GR=1, I=5, N=2, NO=1, S=5) returned the questionnaire. In each centre two gastroenterologists graduate per year on average.

Data analysis

Each returned questionnaire was labelled to indicate the country of origin and the training hospital (for example, D3 is a reply from the third training hospital in Denmark). Data are presented as raw data for each training hospital or as the average per country. Salaries in different currencies were converted to Euros. Due to the small number of respondents in the Netherlands, Norway, and Greece, these countries were not taken into account when the different countries were compared. However, their answers were used for calculating overall averages. The average of all 42 respondents is referred to as "Europe".

RESULTS

Age and years of training

Mean age of the last year trainee was 33 years (range 28–41); mean age per country ranged from 29 to 39 years. The official duration of common trunk training and speciality training, as issued by national governments, is displayed in table 1. In most countries the duration of common trunk training did not exceed the duration of speciality training, except in Germany (five and three years, respectively). In France and Italy, common trunk training is not compulsory. The mean number of years of training reported by the respondents was 6.4, with a large variation between different countries (range 4–10.4). In the UK and Denmark in particular, the duration of training reported by the respondents differed from the official length of training.

Table 2 Relation between number of beds (beds), number of trainees (ass), and number of staff members (staff)

	Mean ratio beds/staff	Mean ratio ass/staff	Mean ratio beds/ass	Mean No of staff members
B	6.67	0.62	10.77	6.2 (3–12)
D	2.64	0.25	11.27	9 (4–12)
E	4.18	0.60	6.95	11 (4–25)
F	10.70	1.37	13.60	7.2 (4–10)
G	11.31	1.55	11.37	3.8 (2–7)
I	1.96	0.42	5.15	13.2 (5–23)
N	3.18	0.34	12.00	9
S	3.15	0.68	5.33	15 (10–22)
NO	5	0.50	10.00	6
GR	3.00	1.20	2.50	5
Europe	5.18	0.75	8.89	9.3

B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

Relationship between number of beds, number of trainees, and number of staff members in the training hospitals

The average number of beds per staff member in a European training centre was 5.18 (range 1.96 in Italy to 11.31 in Germany) (table 2). The mean number of staff members in the gastroenterology/hepatology department in a European training centre was 9.3 (range 2–25) (table 2). In most European countries a trainee had one or two staff members at his disposal at one specific moment during his specialisation (mean ratio assistants/staff members=0.75, range 0.25–1.55). During his entire training, the candidate was tutored by a larger number of staff members as a result of a system of rotations.

Training on the ward and in the outpatient clinic

On average, a last year trainee in Europe was in charge of 14.7 (range 0–30) hospitalised patients per week and saw 21 patients per week in the outpatient clinic (range 0–40) (table 3). No data are available on the proportions of new patients or follow up patients.

On average, the European last year trainee spent 31.2 hours working on the ward and 9.8 hours examining patients in the outpatient clinic per week. Only in Germany was the trainee working either on the ward or in the outpatient clinic. In all other countries the trainee was employed on both the ward and outpatient clinic, and when he/she spent more hours on the ward, he/she spent less time in the outpatient clinic and vice versa.

Training aspects: endoscopy training

The total number of gastroscopies varied significantly between the different European countries (table 1). On average, a European trainee performed 1363 (range 20–4000) gastroscopies before graduating but a newly trained gastroenterologist in Italy, Spain, and Germany had clearly performed fewer gastroscopies. The average number of colonoscopies performed by a European trainee was 348 with considerable variations between countries (range 0–2500) (table 1). On average, a European trainee had performed 113 endoscopic

Table 3 Training on the ward and in the outpatient clinic

Country	No of patients/ ward/week	No of outpatients/week	No of hours on ward/week	No of hours in outpatients/week	% Sup ward	% Sup outpatient
B	12.6	27.6	30	16.4	17.8	37.5
D	18	23.4	15.2	16	30.2	6
E	20.7	28.1	26.9	7.6	16.8	15
F	18.2	8	39.8	3	30	14
G	15.5	42.5	45.5	28	11.3	14
I	4.2	16.6	31.2	6.6	37.2	46
N	7.5	20.5	5	5.5	43	20
S	14.2	9.2	41	3.4	17.2	17.5
NO	30	25	45	17	4	15
GR	5	25	40	10	63	100
Europe	14.7	21	31.2	9.8	27	21.3

No of patients/ward/week, number of patients on the ward the trainee was in charge of per week.
No of outpatients/week, number of outpatients seen per week.
No of hours on ward/week, number of hours spent on the ward per week.
No of hours in outpatients/week, number of hours spent in the outpatients clinic per week.
% Sup ward, percentage of supervised working hours on the ward.
% Sup outpatient, percentage of supervised patients in the outpatient clinic.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

retrograde cholangiopancreatographies (ERCPs) during endoscopy training but the screened centres in some countries did not provide training for this specialised procedure (range 0–1000) (table 1).

The number of therapeutic procedures was calculated using the total number of procedures and the estimated percentage of all endoscopic procedures that were therapeutic. On average, a European trainee performed 156 (11%) therapeutic gastroscopies, 61 (17 %) therapeutic colonoscopies, and 41 (36%) therapeutic ERCPs (table 1).

Training aspects: other specialised procedures

In this section of the questionnaire, we tried to assess the amount of training in other than the classical endoscopic procedures—that is, abdominal ultrasound, endoscopic ultrasound, radiology training, proctology, rectal manometry, oesophageal manometry, 24 hour pH metry, gastric and small intestinal manometry, interpretation of breath tests, interpretation of stool microscopy, and interpretation of biopsies. As several of these procedures were only applicable to a few training centres in a few countries, table 4 summarises only those specialised procedures that assistants regularly reported that they had received training. Training in stool sampling was only given on a regular basis in three training centres. Endoscopic ultrasound, gastric/small intestinal manometry, and rectal manometry were part of the basic training programme in, respectively, four, four, and seven of the 34 training centres.

Regular training in abdominal ultrasound was provided in only four countries, and the average number of abdominal ultrasound scans performed by the end of the training varied considerably between countries (table 4) and between training centres in one country (for example, Spain 10–300, France 50–1500). Training in interpretation of radiology documents was given in approximately 50% of the European training centres. Less than 50% of all trainees in the different European countries received training in proctology. One third of assistants were trained in oesophageal manometry and 40% in 24 hour pH metry (table 4). Regular training in interpreting breath tests and biopsies was provided in 20–60% of training centres in European countries.

Training aspects: supervision of the trainee

Staff members directly supervised 21.3% (range 0–100%) of patients seen in the outpatient setting. The European average of supervised hours on the ward was 27% (range 0–100%) (table 3). Both the wide variability of these European averages and the broad range of averages for each country does not permit a comparison between the different countries. The same applies to supervision at the beginning of endoscopy training (table 5). On average, a European trainee was directly supervised during endoscopic procedures for 12 months. The dissimilarity between the various European countries was remarkable: in Italy, the trainee was supervised for 27 months on average, which constitutes 75% of total endoscopy training. In contrast, in Denmark, this period was limited to one month

Table 4 Other specialised procedures included in the basic training programme

Country	%US	No of US	%Rad	%Proct	%OM	No of OM	%pHM	No of pHM	%Breath	%Biopsy
B	40	1750	40	40	20	50	40	35	20	20
D	0	—	60	20	20	25	20	200	40	60
E	0	—	75	12.5	37.5	92	50	99	25	50
F	80	452	60	20	20	150	20	60	0	20
G	100	370	100	40	60	73	60	63	0	20
I	80	2666	60	20	40	105	60	65	40	60
S	80	97	40	40	40	20	40	112	40	40

%US, percentage of assistants trained in abdominal ultrasound.
No of US, average number of abdominal ultrasounds.
%Rad, percentage of assistants receiving regular teaching in radiology.
%Proct, percentage of assistants receiving adequate training in proctology.
%OM, percentage of assistants trained in oesophageal manometry.
No of OM, average number of oesophageal manometries performed by the assistant.
%pHM, percentage of assistants trained in 24 hour pH metry.
No of pHM, average number of 24 hour pH metries performed by an assistant.
%Breath, percentage of assistants trained in interpretation of breath tests.
%Biopsy, percentage of assistants trained in interpretation of biopsy specimens.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; S, Spain.

Table 5 Direct supervision during endoscopy training

Country	Duration (months) of constant supervision at the start of endoscopy training	No of procedures (gastro/colo) under constant supervision at the start of endoscopy training	% of direct supervised procedures during the last year of training
B	2 (1–6)	40/118	30 (2–75)
D	1 (1–2)	27/9	8 (0–20)
E	6 (1–12)	79/79	16 (0–70)
F	8 (0–24)		20 (0–40)
G	9 (1–16)	44/30	35 (5–100)
I	27 (1–36)		85 (40–100)
S	3 (2–4)		59 (35–90)

Values are mean (range) or number.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; S, Spain.

or 2% of endoscopy training. The disparity within particular countries was also striking. For example, in France, five respondents mention periods of direct supervision ranging from 0 to 24 months. Twenty one respondents mentioned the number of procedures they had to perform before they were granted autonomy in conducting the endoscopies. On average, 58 gastroscopies (range 27–97) and 63 colonoscopies (range 9–118) were directly and constantly supervised at the start of endoscopy training in Europe.

To investigate the grade of independence of the trainee, we enquired about the percentage of procedures that were directly supervised during the last year of training. The European average was 35% (range 8–85) (table 5). Clearly, at the end of training there was still a significant difference in autonomously performed procedures between the different countries and between the different training centres in one country.

Teaching aspects: research and teaching

On average, a gastroenterology/hepatology trainee in Europe spent 7.5 hours per week on research (fig 1). In Belgium, five respondents from five different training centres reported no available time for research. The mean number of teaching rounds per week attended by a European trainee was three. The average numbers were comparable in most countries. The mean number of teaching rounds given by a trainee varied considerably (mean 8, range 3.4–20.3) (fig 2).

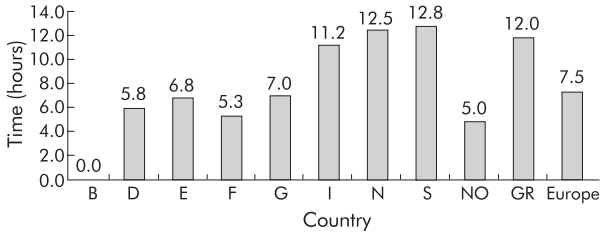

Figure 1 Average number of hours spent on research per week in the different European countries. B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

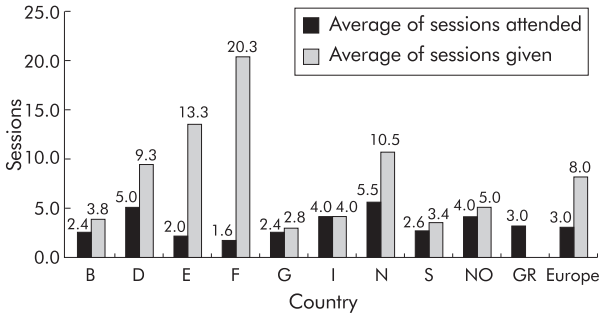

Figure 2 Average number of teaching rounds attended per week and given per year in the different European countries. B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

Teaching aspects: fields that were perceived to be undertrained

This part of the questionnaire, asking respondents in which field of gastroenterology/hepatology they subjectively felt undertrained, was answered by 34 of the 42 respondents (fig 3). Remarkably, one third of last year trainees feel undertrained in some diagnostic endoscopic procedure, including ERCP, colonoscopy, or a therapeutic procedure such as sclerotherapy. One quarter of graduates felt uncertain in the field of hepatology. Almost 10% judged their training in proctology as insufficient to achieve proficiency. Finally, in the field of specialised procedures, 16.7% felt undertrained in manometry and 19% in radiology, including abdominal ultrasound.

Socioeconomic aspects of training: workload, wages, night shifts, family status, and job prospects

On average, a European trainee in gastroenterology worked for 70 hours a week, which constituted 59 hours of hospital work (85%), including night shifts, and 11 hours of administrative work (15%), including dictating letters, writing up orders, documenting hospital stay, etc. (table 6). Distinct differences between the total workload in the different European countries were apparent, with a remarkably higher total workload in Belgium: 89.2 hours per week on average. A single Greek respondent reported 95 working hours per week. The administrative workload ranged from 5% to 23% of the time (table 6).

On average, the European trainee was on call for 5–6 nights a month, of which he had to spend 2–3 nights in the hospital and three nights at home (table 6). The ratio between inhouse and home on-calls varied between the different countries but

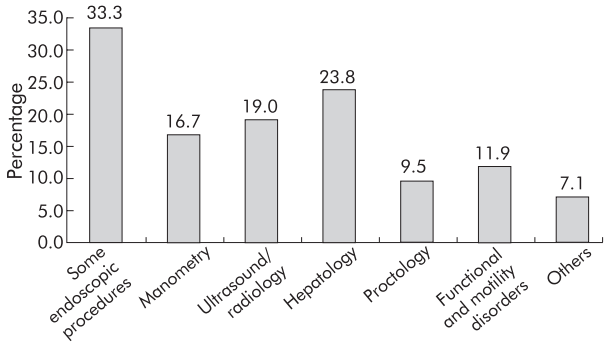

Figure 3 Fields in which last year trainees felt undertrained.

Table 6 Socioeconomic aspects of gastroenterology training in Europe: workload, wages, and family status

Country	Married (%)	No of children	No of hours in hospital (%)	No of hours in admin (%)	No of hours total	No of nights in	No of nights out	Salary (Euro)	Euro /hour
B	50	1	68.8 (77)	20.4 (23)	89.2	3.1	5.4	1437	4.03
D	100	2.4	45.0 (90)	5.0 (10)	50.0	0.0	5.8	2180	10.9
E	87.5	1.7	59.8 (90)	7.0 (10)	66.8	1.4	5.4	2113	7.91
F	100	1.3	65.6 (82)	14.5 (18)	79.1	4.4	0.0	1687	5.33
G	60	0	61.4 (79)	16.8 (21)	78.2	3.7	1.4	2130	6.81
I	60	0.2	39.3 (81)	9.3 (19)	48.5	1.4	0.0	838	4.32
N	100	—	60.0 (95)	3.0 (5)	63.0	0.0	6.3	1892	7.51
S	20	0	67.0 (86)	11.0 (14)	78.0	5.3	0.0	1043	3.34
NO		—	45.0 (91)	4.5 (9)	49.5	0.0	6.0	2234	11.28
GR		—	85 (89)	10 (11)	95	7.0	4.0	767	2.02
Europe	69		59.0 (85)	10.9 (15)	69.9	2.6	3.1	1669	5.97

Married, percentage of respondents that were married.
No of child, average number of children in the family.
No of hours in hospital (%), average number of working hours in the hospital per week, including night shifts, and percentage of total workload.
No of hours in admin (%), average number of administrative workload hours per week and percentage of total work load.
No of hours total, average number of hours of total workload per week.
No of nights in, average night shifts per month in hospital.
No of nights out, average number of home on-calls per month.
Salary Euro, average net salary per month in Euro.
Euro/hour, average net salary per working hour in Euro.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

the total number of night shifts was comparable for most countries.

The salary of a European last year gastroenterology trainee was an average of 1669 Euro per month, with striking differences between countries (range 767–2234 Euro). The ratio between the average salary and average total workload was rather low (on average 5.97 Euro per hour) and was most profitable in Denmark where the trainee earned 10.9 Euro per hour (table 6). Solid prospects for a job after the last year of training varied from one third of graduates in the UK to 100% for Denmark and the Netherlands.

DISCUSSION

To our knowledge, this is the first attempt at assessment of the technical and clinical particulars and socioeconomic conditions of trainees in gastroenterology/hepatology in different European countries. The answers provided by 42 trainees in 10 different countries, working in 34 major training centres, clearly showed that there are important differences in almost all aspects of training within and between countries.

The average number of gastroscopies and colonoscopies performed by a last year trainee at the end of endoscopy training varied markedly between the different countries. Following the efforts of the American Gastroenterological Association (AGA),[2 11] the EBG established primary goals for assessment of the technical skills of the applicant for the diploma in 1994, to promote good practice in gastroenterology.[1] The minimum number of gastroscopies necessary for achievement of the diploma was set at 300 diagnostic and 30 therapeutic procedures.[1] The threshold number for colonoscopies to qualify for the European diploma was 100 total colonoscopies and 50 therapeutic procedures, such as polypectomy and haemostatic techniques.[1] Competence in endoscopy implies the attainment of both the technical skills with the endoscope and the cognitive ability to evaluate the findings and to develop an effective treatment plan.[5 6] Assessment of this competence is not easy and although a minimal threshold of procedures is one way to meet this problem, this approach does not take into account the cognitive ability of the trainee. The AGA set the threshold number of procedures for endoscopic skills at 100 gastroscopies and 35, later 40, therapeutic procedures.[4 6] Only a few studies have attempted to provide an objective evaluation of the technical skills of young gastroenterology trainees according to the number of endoscopies they performed.[5 7 8] Cass and colleagues demonstrated a two phase learning curve in oesophagogastroduodenoscopy both for oesophageal intubation and for reaching the pylorus. The intubation rate reached 90% after 50 endoscopies but this rate dropped to 75% after approximately 100 procedures with the introduction of more complicated cases. Cass and colleagues concluded that more than 100 supervised procedures were necessary to achieve technical competence[9] and not just 100 procedures. Marshall evaluated the technical skills of colonoscopies by combining the achievement of a certain end point (reaching the caecum) with a time limit (30 minutes).[5] He concluded that the threshold of 100 colonoscopies, as proposed by the AGA and EBG, may be low as in his study the first year trainee had an overall success rate of 54% of cases in contrast with a second year assistant where this was 86%. The latter had performed 328 colonoscopies on average whereas the former had carried out 149 colonoscopies. Cass and colleagues[9] also found that over 100 colonoscopies were required before the trainee was able to reach the caecum in 90% of endoscopies. Church[10] found that the rate of reaching the caecum did not rise above 62% for procedures 76–100. The Conjoint Committee for Recognition of Training in Gastrointestinal Endoscopy of Australia emphasised both the achievement of a threshold (200 gastroscopies, 100 colonoscopies, and 200 ERCPs) and registration of the success rate in a log book.[12 13] We did not explicitly ask if trainees had to register the number of procedures and their success rate in a log book. Regarding supervision at the beginning of endoscopy training, the EBG does not provide specific guidelines or threshold numbers before autonomy in performing endoscopies can be granted: "The practical skills . . . should be acquired under appropriate supervision within the training period".[1] A similar reasoning is followed by the AGA: "When performing endoscopic procedures early in training, each trainee should be observed regularly by a supervisor. . . . Simpler procedures may require fewer observations, whereas those that are technically complex may require more".[4] Decisions on decreasing the level of direct supervision are left to the supervisor. In Australia, the supervisor has to declare that the trainee is competent, both in technical and cognitive skills, on completion of the training, before privileges are granted to perform endoscopic procedures independently.[12]

Considering these studies and guidelines, endoscopy training seemed to be inadequate in the centres we surveyed in at least four countries. As our survey demonstrated, supervision varied markedly between centres in different European countries and between different training centres in a single country. Subjectively, endoscopy training did not always seem to be

satisfactory as one third of trainees reported to be lacking in confidence for some endoscopic procedures.

The basic training programme also varied considerably between the different countries. Some procedures that were compulsory for the basic diploma of the EBG were not included in the programmes of some training centres, whereas some optional subjects seemed to be scheduled on a regular basis in other centres. Abdominal ultrasound, obligatory in the EBG curriculum, seemed to be a regular part of gastroenterology training only in France, Germany, Italy, and Spain, the latter not reaching the reference threshold of 300 ultrasounds.[1] Optional training in ERCP is a basic endoscopic procedure in most European countries except for France, Italy, and Spain. Although the technique is being taught, the EBG threshold of 150 ERCPs was reached only in the UK. The European average itself was only 113. As trainees remain 20% behind the ability of their supervisors after 100 ERCPs and therefore more than 100 ERCPs are needed to approach their skills,[14] ERCP training was inadequate throughout Europe during the basic gastroenterology training, except in the UK. Manometric investigations and pH metry were also optional subjects in the EBG curriculum. They were sporadically provided as a basic training technique in several training centres throughout Europe, especially in Germany. In contrast with ERCP training, oesophageal manometry and pH metry training were in line with the EBG reference standard of 50 procedures.

Both the AGA and EBG described the requirements of facilities and resources essential for accrediting a training centre, without giving definite specifications on numbers of beds, staff members, or patient turnover.[1 4 15] In Europe, a training centre can only be approved after a visit by two gastroenterologists appointed by the EBG. In practice, the make up of the training centres in the different European countries varied markedly. Whether the different structures in the training hospitals have any effect on the quality of training is hard to assess. Apparently, most trainees seemed to gather enough and comparable clinical experience both in the outpatient clinic and on the ward.

In the field of research the EBG requires at least two publications in recognised journals and two oral presentations.[1] The AGA emphasises that "a major contributor . . . is active participation in one or more research projects, ideally followed by presentation . . . at a national meeting and publication of a paper . . .".[4] We did not specifically enquire about the number of presentations or publications but we found that in most European countries trainees were able to spend 7.5 hours a week on research activities. In the Italian and Spanish centres, this was extended to more than 11 hours per week. In contrast, in Belgium, the gastroenterology trainee was not allowed any extra time for research purposes.

Regarding socioeconomic aspects, the data obtained reflected the disposition of our society towards the making of a specialist: on average, a 70 hour week with an hourly salary that is generally paid to employees of lower expertise and responsibility.

In conclusion, gastroenterology training differed markedly in European training centres. Although the EBG does "not seek complete uniformity of training",[1] the current dissimilarities between the 34 training centres in 10 different countries in this survey can hardly be regarded as demonstration of harmonised European training. Even though this survey was not all encompassing due to a limited sample size and the fact that it was organised by only one training centre, it reflects the training of several specialists in gastroenterology/hepatology working in Europe. Therefore, it would be useful to re-evaluate our findings in a larger multicentre study, ideally coordinated by the EBG. This survey could then be combined with further studies to define threshold numbers and technical end points to assess competence in endoscopic procedures and cognitive skills.

The disparity in the training of young gastroenterologists results in differences in quality between graduates which may hamper clinical competence of certain specialists at the beginning of their career. In this respect issuing a European diploma for gastroenterology is a valuable effort towards promoting good practice in European gastroenterology but without any enforcement or greater public awareness its chance of influencing structural changes in individual countries may be slim.

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OCCASIONAL REPORT

A survey on gastroenterology training in Europe

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Background: Specialist training in gastroenterology and hepatology is not standardised in different European countries.
Aim: The aim of this survey was to assess the different teaching and socioeconomic aspects of training programmes in Europe.
Methods: Seventy questionnaires were distributed to last year trainees or newly graduated gastroenterologists. Forty two respondents (60%) from 34 major training centres in 10 different European countries replied.
Results: Overall, the data revealed major diversity for all aspects analysed between and within the different European countries. Both the duration of training (range 4–10.4 years) and the workload (range 48.5–89.2 hours per week) differed markedly between countries. The average number of endoscopic procedures (gastroscopies, range 300–2600; colonoscopies, range 73–550; endoscopic retrograde cholangiopancreatographies, range 1–385) differed also. One third of last year trainees reported feeling uncertain in some endoscopic procedure. The European trainee was on call for 5–6 nights a month, on average (range 1–8). Monthly wages differed considerably between countries, ranging from 767 to 2180 Euro.
Conclusion: We found major differences in the professional aspects and socioeconomic conditions of gastroenterologist/hepatologist training in 10 different European countries, probably leading to differences in quality of training. In several countries or centres, the average number of procedures was below the threshold issued by the European Board of Gastroenterology or the American Gastroenterological Association. Issuing a European diploma for gastroenterology is a valuable effort towards meeting this problem. Further studies are needed to re-evaluate the training programmes in Europe and to define threshold numbers and technical end points for assessment of endoscopic skills.

In the face of increasing changes and challenges in the current health care environment, medical educators in both the USA and Europe have initiated major efforts to anticipate and modify the training needs of the gastroenterologist and hepatologist of the future.[1–4] In 1992 the European Board of Gastroenterology (EBG) held its inaugural meeting at the first United European Digestive Disease Week in Athens. One of its stated aims is to promote good practice in gastroenterology and hepatology in Europe and to harmonise the different methods of specialist training in different European countries.[1] Also, since 1994 the EBG has awarded a European Diploma of Gastroenterology to individual candidates who have satisfied a set of criteria for training, including a minimum number of specific gastrointestinal procedures. From the point of view of the European trainee, these aims by the EBG, namely to guarantee quality of training and to harmonise specialist training, are laudable and to be commended. However, while information on current training patterns is not a prerequisite for defining appropriate training aims, such information could be both useful and interesting. We therefore designed a survey that aimed to assess the clinical and technical particulars and also the workload and socioeconomic aspects of the training of physicians specialising in gastroenterology/hepatology in 10 different European countries.

METHODS

The questionnaire

We designed a 60 point questionnaire with mostly definite and a few open ended questions (see appendix). The questionnaire was divided into four sections. The first section addressed general issues such as age, sex, marital status, number of departmental beds, and number of staff members and gastroenterology or hepatology trainees at a particular training hospital. The second section dealt with the training as such, and was divided into seven subsections concerning: work on the ward, work in the outpatient clinic, endoscopic training, technical training in other specialised procedures, administrative workload, research and teaching, and night shifts. The third section aimed at the social and financial aspects of training. The fourth and last section posed questions on both the outlook of the trainee towards future job prospects and the number of graduates per year in a particular training centre. The participants were asked to answer the questionnaire representatively for their situation in a particular training centre and were encouraged to give honest answers. The respondent was free to provide his name and/or the name of the training centre.

Distribution of the questionnaires and data collection

The questionnaire was distributed to a total of 70 last year trainees or to specialists that had just completed their training in gastroenterology/hepatology, working in 10 different European countries. Excluding Belgium, the questionnaire was mailed to 13 physicians in nine different European countries, who were asked to distribute a copy to four other last year trainees working at different large training hospitals within their own country. In Belgium, four other colleagues working in four different university hospitals were contacted directly. Thus the following number of questionnaires were mailed to

Abbreviations: EBG, European Board of Gastroenterology; B, Belgium; D, Denmark; E, UK; F, France; G, Germany; GR, Greece; I, Italy; N, Netherlands; NO, Norway; S, Spain; ERCP, endoscopic retrograde cholangiopancreatography; AGA, American Gastroenterological Association.

Table 1 Endoscopy training

Country	No of years/ct	No of gastroscopies	Therapeutic procedures (n (%))	No of colonoscopies	Therapeutic procedures (n (%))	No of ERCPs	Therapeutic procedures (n (%))
B	3 (2)/3	1600	96 (6%)	375	34 (9%)	55	12 (21%)
D	4/3	2600	260 (10%)	91	3 (3%)	49	22 (45%)
E	3/2	2557	368 (14%)	929	197 (21%)	385	183 (48%)
F	4/0	1020	102 (10%)	308	65 (21%)	1	0 (0%)
G	3/5	300	33 (11%)	82	16 (20%)	52	5 (10%)
I	4/0	355	11 (3%)	73	3 (4%)	5	0 (0%)
N	3/3	1100	193 (18%)	380	86 (23%)	280	154 (55%)
S	2/3	620	50 (8%)	218	15 (7%)	10	0 (0%)
NO	3/3	1300	195 (15%)	450	135 (30%)	120	24 (20%)
GR	4	1000	250 (25%)	550	55 (10%)	300	15 (5%)
Europe	—	1363	156 (11%)	348	61 (17%)	113	41 (36%)

No of years/ct, mean number of years of endoscopy training in a particular country/number of years of common trunk (ct) training.
No of gastroscopies, total number of gastroscopies performed by the trainee by the end of the training.
No of coloscopies, total number of colonoscopies performed by the trainee by the end of the training.
No of ERCPs, total number of endoscopic retrograde cholangiopancreatographies (ERCPs) performed by the trainee by the end of the training.
Therapeutic procedures, total number of procedures, mentioned in the respective left hand columns, that were therapeutic and percentage of total procedures that were therapeutic.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

the different countries: Belgium (B)=5, Denmark (D)=1, UK (E)=2, France (F)=2, Germany (G)=2, Greece (GR)=1, Italy (I)=1, Netherlands (N)=1, Norway (NO)=1, and Spain (S)=2.

In total, 42 respondents (60%) returned a copy of the questionnaire, giving the following distribution between the different countries: B=5, D=5, E=8, F=5, G=5, GR=1, I=5, N=2, NO=1, and S=5. The 42 respondents worked in 34 different major training centres throughout Europe. In each centre two gastroenterologists graduate per year on average.

Data analysis

Each returned questionnaire was labelled with a letter for the country of origin and a number describing the training hospital (for example, D3 indicates a reply from the third training hospital in Denmark). Data are presented as raw data for each training hospital or as an average of the data in one country. For some questions, such as monthly salaries, the answers were pooled for respondents from the same country. Salaries in different currencies were converted to Euros to facilitate comparisons between countries.

Because of the small number of respondents in the Netherlands, Norway, and Greece, these countries were not taken into account when different countries were compared. However, their answers were used for calculating overall averages. The average of all 42 respondents is referred to as "Europe".

RESULTS

Age and years of training

Mean age of the last year trainee was 33 years (range 28–41) for all responders in all 10 countries. Mean age per country ranged from 29 to 39 years. The mean number of years of training reported by the respondents was 6.4 years (range 4–10.4). The official duration of common trunk training and speciality training, as issued by national governments, is displayed in table 1. In most countries the duration of common trunk training did not exceed the duration of speciality training, except in Germany (five and three years, respectively). In France and Italy common trunk training is not compulsory. A large variation in duration of training was found between the different European countries. In the UK and Denmark in particular, duration of training reported by respondents differed from the official length of training. The reported number of years varied respectively from 8 to 11 (mean 10) and from 6 to 14 years (mean 10.4).

Relationship between number of beds, number of trainees, and number of staff members in the training hospitals (table 2)

The average number of beds per staff member in a European training centre was 5.18. In Italy this value was far less (1.96) whereas in Germany and France the ratio was two times higher than in most European countries (11.31 and 10.70, respectively). In most European countries a trainee had one or two staff members at his disposal at one specific moment during his specialisation (mean ratio assistants/staff members=0.75). This was the case for Belgium, the UK, Italy, and Spain. In Denmark, four staff members accompanied one trainee. In Germany and France, the number of assistants was higher than the number of staff members (1.55 and 1.37), indicating that some staff members were responsible for one or two last year trainees. During his entire training, the candidate was tutored by a larger number of staff members due to a system of rotations. The mean number of staff members in the gastroenterology/hepatology department is indicated in table 2. On average, a gastroenterology/hepatology department in a European training centre employed 9.3 staff members (range 2–25). The number of beds per assistant was, on average, higher than the number of beds per staff member.

Training on the ward and in the outpatient clinic (table 3)

On average, the mean number of patients a last year trainee was in charge of in Europe was 14.7 (range 0–30) per week.

Table 2 Relation between number of beds (beds), number of trainees (ass), and number of staff members (staff)

	Mean ratio beds/staff	Mean ratio ass/staff	Mean ratio beds/ass	Mean No of staff members
B	6.67	0.62	10.77	6.2 (3–12)
D	2.64	0.25	11.27	9 (4–12)
E	4.18	0.60	6.95	11 (4–25)
F	10.70	1.37	13.60	7.2 (4–10)
G	11.31	1.55	11.37	3.8 (2–7)
I	1.96	0.42	5.15	13.2 (5–23)
N	3.18	0.34	12.00	9
S	3.15	0.68	5.33	15 (10–22)
NO	5	0.50	10.00	6
GR	3.00	1.20	2.50	5
Europe	5.18	0.75	8.89	9.3

B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

Table 3 Training on the ward and in the outpatient clinic

Country	No of patients/ ward/week	No of outpatients/week	No of hours on ward/week	No of hours in outpatients/week	% Sup ward	% Sup outpatient
B	12.6	27.6	30	16.4	17.8	37.5
D	18	23.4	15.2	16	30.2	6
E	20.7	28.1	26.9	7.6	16.8	15
F	18.2	8	39.8	3	30	14
G	15.5	42.5	45.5	28	11.3	14
I	4.2	16.6	31.2	6.6	37.2	46
N	7.5	20.5	5	5.5	43	20
S	14.2	9.2	41	3.4	17.2	17.5
NO	30	25	45	17	4	15
GR	5	25	40	10	63	100
Europe	14.7	21	31.2	9.8	27	21.3

No of patients/ward/week, number of patients on the ward the trainee was in charge of per week.
No of outpatients/week, number of outpatients seen per week.
No of hours on ward/week, number of hours spent on the ward per week.
No of hours in outpatients/week, number of hours spent in the outpatients clinic per week.
% Sup ward, percentage of supervised working hours on the ward.
% Sup outpatient, percentage of supervised patients in the outpatient clinic.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

Twenty one patients per week were seen in the outpatient clinic (range 0–40). These values varied significantly between the different countries. In England, France, and Denmark an assistant followed more patients on the ward—that is, 20.7 (range 15–30), 18.2 (range 8–26), and 18 (range 16–20). In Italy, on average, a trainee was in charge of only 4.2 patients (range 3–6). The number of patients seen in the outpatient clinic was higher in Belgium (27.6; range 6–75), the UK (28.1; range 15–35), and Germany (42; range 30–55). Less patients were seen in France (8, range 0–15) and Italy (16.6, range 8–30).

We have no data on how many of the subjects in the outpatient clinics were new or follow up patients.

On average, the European last year trainee spent 31.2 hours working on the ward and 9.8 hours examining patients in the outpatient clinic per week. The workload on the ward was highest in Germany: 45.5 hours (range 40–50). In Germany, hours spent in the outpatient clinic could not be taken into account for calculation of the total workload (outpatients+ward) as the trainee was working either on the ward or in the outpatient clinic. In other countries the assistant was employed in both settings. Hence the time spent in the outpatient clinic was higher in Belgium (16.4; range 4–45 hours) and Denmark (16; range 5–32 hours). However, in the latter this was compensated for by less hours on the ward (15.2, range 6–20). In fact, when a trainee spent more hours on the ward, he spent less time in the outpatient clinic and vice versa, except for Belgium. In France and Spain the trainee spent most of his time on the ward (39.8 hours, range 9–60; 41 hours, range 25–60, respectively) and only a little time in the outpatient clinic (three hours per week, range 0–5; 3.4 hours, range 0–7, respectively).

Training aspects: endoscopy training (table 1)

The total number of gastroscopies varied significantly between the different European countries. On average, a European trainee performed 1363 (range 20–4000) gastroscopies before graduating. The average number of gastroscopies in any one country were comparable. The mean number of gastroscopies in each country are shown in table 1. A newly trained gastroenterologist in Italy, Spain, and Germany had performed fewer gastroscopies than the average—that is, 355, 620, and 300, respectively. Mean numbers were higher in Denmark and the UK (2600 and 2557, respectively).

The average number of colonoscopies performed by a European trainee was 348 (range 0–2500). The average number of colonoscopies by the end of training in each country are shown in table 1. There was a tendency for less colonoscopy training in Denmark (91 colonoscopies), Germany (82 colonoscopies), Italy (73 colonoscopies), and Spain (218 colonoscopies). Again, in the UK more colonoscopies were performed during training: 929 on average.

On average, a European trainee performed 113 endoscopic retrograde cholangiopancreatographies (ERCPs) during his endoscopy training (range 0–1000) (see table 1). Remarkably, there was hardly any training provided for this specialised procedure in the screened centres in France, Italy, and Spain. The average number was highest in the UK: 385 ERCPs.

The mean number of therapeutic procedures was calculated using the mean total number of procedures and the mean estimated percentage of all endoscopic procedures that were therapeutic. On average, a European trainee performed 156 (11%) therapeutic gastroscopies, 61 (17%) therapeutic colonoscopies, and 41 (36%) therapeutic ERCPs.

The percentage of all three therapeutic procedures conducted by trainees was lower in Belgium, Italy, and Spain compared with other countries. In Belgium, 6% of gastroscopies, 9% of colonoscopies, and 21% of ERCPs were therapeutic. For Italy and Spain, these percentages were 3%, 4%, and 0%, and 8%, 7%, and 0%, respectively. In the UK, these percentages were higher for all three procedures (14%, 21%, and 48%, respectively). In Denmark, the percentage of therapeutic colonoscopies was less than the average (3%) but was higher for therapeutic ERCPs (45%).

Training aspects: other specialised procedures

In this section of the questionnaire we tried to assess the amount of training in other than the classical endoscopic procedures—that is, abdominal ultrasound, echoendoscopy, radiology training, proctology, rectal manometry, oesophageal manometry, 24 hour pH metry, gastric and small intestinal manometry, interpretation of breathing tests, interpretation of stool microscopy, and interpretation of biopsies. Because some procedures were only applicable to a few training centres in a few countries, table 4 summarises only those specialised procedures that assistants regularly reported that they had received training. Training in stool sampling was given on a regular basis in only three training centres (two in Denmark and one in France). Echoendoscopy and gastric/small intestine manometry was part of the basic training programme in only four of the 34 training centres. Finally, training in rectal manometry was provided in seven centres in seven different countries.

Training in abdominal ultrasound was a regular basic procedure in the training of young gastroenterologists in Germany, Italy, France, and Spain. However, the average number

Table 4 Other specialised procedures included in the basic training programme

Country	%US	No of US	%Rad	%Proct	%OM	No of OM	%pHM	No of pHM	%Breath	%Biopsy
B	40	1750	40	40	20	50	40	35	20	20
D	0	—	60	20	20	25	20	200	40	60
E	0	—	75	12.5	37.5	92	50	99	25	50
F	80	452	60	20	20	150	20	60	0	20
G	100	370	100	40	60	73	60	63	0	20
I	80	2666	60	20	40	105	60	65	40	60
S	80	97	40	40	40	20	40	112	40	40

%US, percentage of assistants trained in abdominal ultrasound.
No of US, average number of abdominal ultrasounds.
%Rad, percentage of assistants receiving regular teaching in radiology.
%Proct, percentage of assistants receiving adequate training in proctology.
%OM, percentage of assistant trained in oesophageal manometry.
No of OM, average number of oesophageal manometries performed by the assistant.
%pHM, percentage of assistants trained in 24 hour pH metry.
No of pHM, average number of 24 hour pH metries performed by an assistant.
%Breath, percentage of assistants trained in interpretation of breath tests.
%Biopsy, percentage of assistants trained in interpretation of biopsy specimens.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; S, Spain.

Table 5 Direct supervision during endoscopy training

Country	Duration (months) of constant supervision at the start of endoscopy training	No of procedures (gastro/colo) under constant supervision at the start of endoscopy training	% of direct supervised procedures during the last year of training
B	2 (1–6)	40/118	30 (2–75)
D	1 (1–2)	27/9	8 (0–20)
E	6 (1–12)	79/79	16 (0–70)
F	8 (0–24)		20 (0–40)
G	9 (1–16)	44/30	35 (5–100)
I	27 (1–36)		85 (40–100)
S	3 (2–4)		59 (35–90)

Values are mean (range) or number.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; S, Spain.

of abdominal ultrasound scans performed by the end of the training varied greatly between the different countries (2666 in Italy *v* 97 in Spain) and between the different training centres in one country (Spain 10–300; France 50–1500).

Training in interpretation of radiology documents was given in approximately 50% of European training centres. Only in Germany did it appear to be a regular part of the training programme in all training centres. If a teaching round with a radiologist was provided, it was generally on a weekly or biweekly basis. With regard to training in proctology, less than 50% of all trainees in the different European countries felt sufficiently confident in this particular area, including sclerotherapy, banding techniques, rectal manometry, and biofeedback.

In general, during training, interpretation and performance of oesophageal manometry received less attention than 24 hour pH metry. One third of assistants were trained in the former and 40% in the latter. When this specialised procedure was provided, the average number of procedures differed considerably for the countries in question: 20–150 manometries and 35–200 pH metries. Regular training in interpretation of breath tests and biopsy samples was provided in 20–60% of the training centres in European countries. In Germany and France, interpretation of breath tests was not systematically included in the training programme.

Training aspects: supervision of the trainee (tables 3, 5).

Staff members directly supervised 21.3% (range 0–100%) of patients seen in the outpatient setting. The European average of supervised hours on the ward was 27% (range 0–100%). Both the wide range for these European averages and the broad range of the average for each country did not permit a

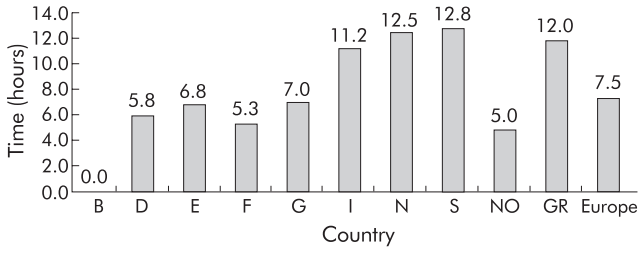

Figure 1 Average number of hours spent on research per week in the different European countries. B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

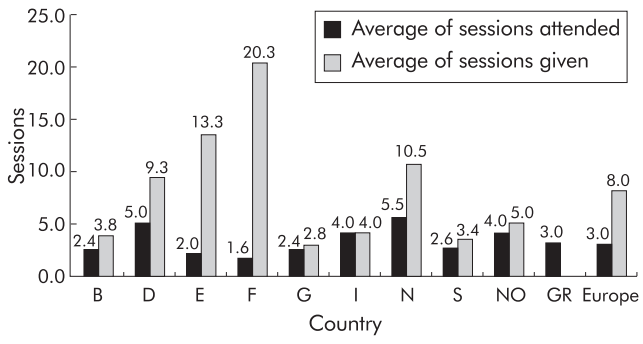

Figure 2 Average number of teaching rounds attended per week and given per year in the different European countries. B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

Table 6 Socioeconomic aspects of gastroenterology training in Europe: workload, wages, and family status

Country	Married (%)	No of children	No of hours in hospital (%)	No of hours in admin (%)	No of hours total	No of nights in	No of nights out	Salary (Euro)	Euro /hour
B	50	1	68.8 (77)	20.4 (23)	89.2	3.1	5.4	1437	4.03
D	100	2.4	45.0 (90)	5.0 (10)	50.0	0.0	5.8	2180	10.9
E	87.5	1.7	59.8 (90)	7.0 (10)	66.8	1.4	5.4	2113	7.91
F	100	1.3	65.6 (82)	14.5 (18)	79.1	4.4	0.0	1687	5.33
G	60	0	61.4 (79)	16.8 (21)	78.2	3.7	1.4	2130	6.81
I	60	0.2	39.3 (81)	9.3 (19)	48.5	1.4	0.0	838	4.32
N	100	—	60.0 (95)	3.0 (5)	63.0	0.0	6.3	1892	7.51
S	20	0	67.0 (86)	11.0 (14)	78.0	5.3	0.0	1043	3.34
NO		—	45.0 (91)	4.5 (9)	49.5	0.0	6.0	2234	11.28
GR		—	85 (89)	10 (11)	95	7.0	4.0	767	2.02
Europe	69		59.0 (85)	10.9 (15)	69.9	2.6	3.1	1669	5.97

Married, percentage of respondents that were married.
No of child, average number of children in the family.
No of hours in hospital (%), average number of working hours in the hospital per week, including night shifts, and percentage of total workload.
No of hours in admin (%), average number of administrative workload hours per week and percentage of total work load.
No of hours total, average number of hours of total workload per week.
No of nights in, average night shifts per month in hospital.
No of nights out, average number of home on-calls per month.
Salary Euro, average net salary per month in Euro.
Euro/hour, average net salary per working hour in Euro.
B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain; NO, Norway; GR, Greece.

comparison between the different countries. In some centres all outpatients were supervised whereas in others no supervision was provided. The same applied to the percentage of supervised hours on the ward.

The same reasoning applied to supervision at the beginning of endoscopy training. On average, a European trainee was directly supervised during endoscopic procedures for 12 months. The dissimilarity between the various European countries was remarkable: in Italy the trainee was supervised for 27 months on average which constituted 75% of the total endoscopy training (table 5). For three Italian assistants all endoscopic procedures were supervised. In contrast, in Denmark, this period was limited to one month or 1% of endoscopy training. The disparity within particular countries was also striking. For example, in France, five respondents mentioned five different periods of direct supervision ranging from 0 to 24 months.

Twenty one respondents mentioned the number of procedures they had to perform before they were granted autonomy in conducting endoscopies. On average, 58 gastroscopies and 63 colonoscopies were directly and constantly supervised at the start of endoscopy training in Europe. The dissimilarities between the different countries were again striking. In Denmark for instance, these numbers were 27 gastroscopies and nine colonoscopies. In the UK however 79 gastroscopies and 79 colonoscopies were needed before trainees could perform independently. In Belgium, the number of colonoscopies was 118.

Finally, to investigate the grade of independence of the trainee, we enquired about the percentage of procedures that were directly supervised during the last year of training. The European average was 35%, ranging from 8% in Denmark to 85% in Italy. Obviously, at the end of training there was still a significant difference in autonomously performed procedures between the different countries and between different training centres in one country.

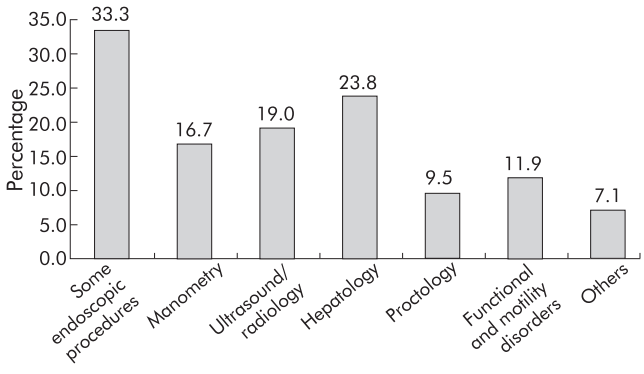

Figure 3 Fields in which last year trainees felt undertrained.

Teaching aspects: research and teaching (figs 1, 2)

On average, a trainee in gastroenterology in Europe spent 7.5 hours per week on research. In Italy and Spain the average number of hours was higher, 11.2 and 12.8, respectively. In Belgium, five respondents of five different training centres reported no available time for research.

The mean number of teaching rounds per week attended by a European trainee was three. The average numbers were comparable in most countries. In France in particular, the number of teaching rounds given by a trainee was considerably higher than in the rest of Europe: 20.3 sessions per year. The mean number in Europe was eight. In Belgium (3.8), Germany (2.8), Italy (4), and Spain (3.4), gastroenterology trainees gave less teaching rounds per year than in other European countries.

Teaching aspects: fields that were perceived to be undertrained

In this part of the questionnaire respondents were asked in which field of gastroenterology and/or hepatology they subjectively felt undertrained. Thirty four of 42 respondents answered this question. These results are shown in fig 3.

Remarkably, one third of last year trainees reported that they felt uncertain in some endoscopic procedure, including ERCP, colonoscopy, or therapeutic procedures such as sclerotherapy.

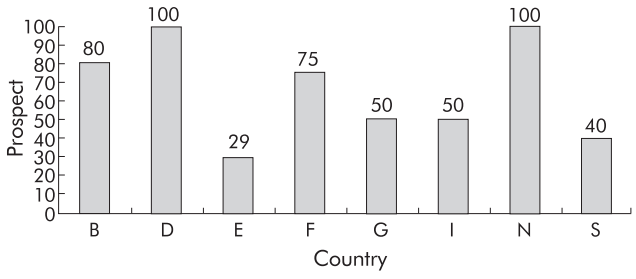

Figure 4 Future job prospects for last year trainees in gastroenterology. B, Belgium; D, Denmark; E, UK; F, France; G, Germany; I, Italy; N, Netherlands; S, Spain.

One quarter of graduates felt uncertain in the field of hepatology. Almost 10% thought that their training in proctology was insufficient to achieve proficiency. Finally, in the field of specialised procedures, 16.7% felt undertrained in manometry and 19% in radiology, including abdominal ultrasound.

Socioeconomic aspects of training: workload, wages, night shifts, family status, and job prospects (table 6, fig 4)

Distinct differences between the total workload in the different European countries were apparent. On average, a European trainee in gastroenterology worked for 70 hours a week which constituted 59 hours of hospital work (85%), including night shifts, and 11 hours of administrative work (15%), including dictating letters, writing up orders, documenting hospital stay, etc. The total workload was markedly higher in Belgium: 89.2 hours per week on average. A single Greek respondent reported 95 working hours per week.

In contrast, the five respondents in Denmark averaged a weekly workload of only 50 hours. The Italian trainees and the single respondent from Norway also reported less than 50 working hours a week. The administrative workload amounted to 21% and 23% of the total workload in Germany and Belgium. It was limited to 10% in Denmark and the UK.

On average, the European trainee was on call for 5–6 nights a month, of which he had to spend 2–3 nights in the hospital and three nights at home. In France, respondents were exclusively on duty in the hospital for 4–5 nights a month. In Denmark and the Netherlands, trainees only performed on-calls from home for five or six nights a month. Taking this into account the ratio between inhouse and home on-calls varied between the different countries but the total number of night shifts was comparable. In Italy this total number was remarkably less (1.4). In Belgium, inhouse on-calls were comparable with the European average but the additional home on-calls caused the total number to rise to 8.5 night shifts per month.

The European salary of a last year trainee in gastroenterology was 1669 Euro per month. Differences between countries were striking. In Denmark, the UK, and Germany, the assistant earned more than 2000 Euro per month whereas in Spain, Italy, and Greece the wages were 1000 Euro or less. The ratio between the average salary and average total workload was most profitable in Denmark where the trainee earned 10.9 Euro per hour. The European average was rather low (5.97 Euro per hour) but was even lower in Italy, Belgium, and Spain where wages were 4.32, 4.03, and 3.34 Euro per hour. The single Greek respondent earned 2.02 Euro per hour.

Finally, the future job prospects are given in figure 4. In Belgium, Denmark, and France, the prospects for employment were bright with 75–100% guarantee of a job after the last year of training. In Germany, Italy, and Spain only half of the last year trainees were sure of next year's place of employment whereas in the UK this was the case for only one third of graduates.

DISCUSSION

To our knowledge, this was the first attempt in assessing the technical and clinical particulars and socioeconomic conditions of trainees in gastroenterology/hepatology in different European countries. The answers provided by 42 trainees in 10 different countries, working in 34 major training centres, clearly showed that there were important differences in almost all aspects of training within and between countries.

The average number of gastroscopies and colonoscopies performed by a last year trainee at the end of endoscopy training varied markedly between the different countries. To promote good practice in gastroenterology in Europe, the EBG issued the European diploma of Gastroenterology[1] in 1994. Following the efforts of the American Gastroenterological Association (AGA),[2] this board established primary goals for assessment of the technical skills of the applicant for the diploma. The minimum number of gastroscopies necessary for achievement of the diploma was set at 300 diagnostic and 30 therapeutic procedures.[1] If we consider these numbers as a reference standard, two European countries in our survey did not meet these standards: Germany, where the average number of gastroscopies was 300 (of which 33 were therapeutic), and Italy with a mean of 355 gastroscopies but only 11 therapeutic procedures on average. In fact, one Italian respondent reported having performed only 20 gastroscopies by the end of training.

The threshold number of colonoscopies to qualify for the European diploma is 100 total colonoscopies and 50 therapeutic procedures, such as polypectomy and haemostatic techniques.[1] Again, considering these numbers as a reference standard, even more countries did not reach this standard: Italy (73 colonoscopies), Germany (82 colonoscopies), and Denmark (91 colonoscopies). One Danish respondent had performed only seven colonoscopies before graduating and one German trainee even reported to have not performed a single colonoscopy. In Spain, the average number of total colonoscopies was sufficient (218) but the proportion of therapeutic interventions was small (15). Training in colonoscopy was satisfactory in the other European training centres surveyed. In England, the trainee conducted, on average, threefold the European mean number of colonoscopies and even ninefold the threshold for the European diploma.

Competence in endoscopy implies the attainment of both technical skills with the endoscope and cognitive ability to evaluate the findings and to develop an effective treatment plan.[5 6] Assessment of this competence is not easy and although a minimal threshold of procedures is one way to meet this problem, this approach does not take into account the cognitive ability of the trainee. The AGA set the threshold numbers for endoscopic skills at 100 gastroscopies and 35, later 40, therapeutic procedures.[4 6] Only a few studies have attempted to provide an objective evaluation of the technical skills of young gastroenterology trainees according to the number of endoscopies they performed.[5 7 8] Cass and colleagues demonstrated a two phase learning curve in oesophagogastroduodenoscopy both for oesophageal intubation and for reaching the pylorus. The intubation rate reached 90% after 50 endoscopies but this rate dropped to 75% after approximately 100 procedures with the introduction of more complicated cases. They concluded that more than 100 supervised procedures were necessary to achieve technical competence[9] and not just 100 procedures. Considering this latter study, we found that the European average of supervised gastroscopies (58) at the beginning of training was far below the threshold proposed by Cass and colleagues. Only 24% of respondents who reported the number of supervised procedures, performed 100 or more gastroscopies under direct supervision when they started training.

Marshall evaluated the technical skills of colonoscopies by combining the achievement of a certain end point (reaching the caecum) with a time limit (30 minutes).[5] He concluded that the threshold of 100 colonoscopies, as proposed by the AGA and EBG, may be low as in his study the first year trainee had an overall success rate in 54% of cases in contrast with a second year assistant where this was 86%. The latter had performed 328 colonoscopies on average, whereas the former had carried out 149 colonoscopies. Cass and colleagues[9] also found that over 100 colonoscopies were required before the trainee was able to reach the caecum in 90% of endoscopies. Church[10] found that the rate of reaching the caecum did not rise above 62% for procedures 76–100. Following these studies, the American Society for Gastrointestinal Endoscopy defined not only a threshold number of ERCPs but also defined competence as the ability to cannulate the duct in at least 80% of cases.[11] The Conjoint Committee for Recognition of Training in Gastrointestinal Endoscopy of Australia emphasised both

the achievement of a threshold (200 gastroscopies, 100 colonoscopies, and 200 ERCPs) and registration of the success rate in a log book.[12 13]

Taking these studies and our own data into account, on average, endoscopy training seemed to be inadequate in the German, Italian, Danish, and Spanish centres surveyed. Subjectively, endoscopy training did not always seem to be satisfactory as one third of trainees reported that they were lacking in confidence for some endoscopic procedures. We did not explicitly ask if trainees had to register the number of procedures and their success rate in a log book.

Regarding supervision at the beginning of endoscopy training, the EBG does not provide specific guidelines or threshold numbers before autonomy in performing endoscopies can be granted: "The practical skills . . . should be acquired under appropriate supervision within the training period".[1] A similar reasoning is followed by the AGA: "When performing endoscopic procedures early in training, each trainee should be observed regularly by a supervisor. . . . Simpler procedures may require fewer observations, whereas those that are technically complex may require more".[4] Decisions on decreasing the level of direct supervisions are left to the supervisor's responsibility. The supervisor, as a direct observer, is the ideal person to evaluate the trainee's competence, both technical and cognitive, and to compare it with other or former assistants. In Australia, the supervisor has to declare that the trainee is competent, both in technical and cognitive skills, on completion of training, before privileges are granted to perform endoscopic procedures independently.[12] As our survey demonstrated, supervision varied markedly between centres in different European countries and between the different training centres in a single country. On the one hand the period of supervision was rather brief, leaving the trainee to his own devices and possibly exposing the patient to an unnecessary danger due to technical inexperience. On the other hand, in other centres, the trainee was directly supervised during all procedures for the total duration of the training, which may be detrimental for the development of self confidence and independence.

The basic training programme varied considerably between the different countries. Some procedures that were compulsory for the basic diploma of the EBG were not included in the programmes of some training centres whereas some optional subjects seemed to be scheduled on a regular basis in other centres. Abdominal ultrasound, obligatory in the EBG curriculum, seemed to be a regular part of gastroenterology training only in France, Germany, Italy, and Spain, the latter not reaching the reference threshold of 300 ultrasounds.[1] Optional training in ERCPs is a basic endoscopic procedure in most European countries except for France, Italy, and Spain. Although the technique is being taught, the EBG threshold of 150 ERCPs was reached only in the UK. The European average itself was only 113. As trainees remain 20% behind the ability of supervisors after 100 ERCPs and therefore more than 100 ERCPs are needed to approach their skills,[14] ERCP training was inadequate throughout Europe during the basic gastroenterology training, except in the UK. Manometric investigations and pH metry were also optional subjects in the EBG curriculum. They were sporadically provided as a basic training technique in several training centres throughout Europe, especially in Germany. In contrast with ERCP training, oesophageal manometry and pH metry training were in line with the EBG reference standard of 50 procedures.

Both the AGA and EBG describe the requirements of facilities and resources essential for accrediting a training centre, without giving definite specifications on numbers of beds, staff members, or patient turnover.[1 4 15] In Europe a training centre can only be approved after a visit by two gastroenterologists appointed by the EBG. In practice, the make up of the training centres in the different European countries varied markedly. Whether the different structures in the training hospitals have any effect on the quality of training is hard to assess. Apparently, except for Italy, most trainees seemed to gather enough and comparable clinical experience both in the outpatient clinic and on the ward.

In the field of research the EBG requires at least two publications in recognised journals and two oral presentations.[1] The AGA emphasises that "a major contributor . . . is active participation in one or more research projects, ideally followed by presentation . . . at a national meeting and publication of a paper . . .".[4] We did not specifically enquire about the number of presentations or publications but we found that in most European countries trainees were able to spend 7.5 hours a week on research activities. In the Italian and Spanish centres, this time was extended to more than 11 hours per week. In contrast, in Belgium the gastroenterology trainee was not allowed any extra time for research purposes in five different training centres.

Regarding socioeconomic aspects, the data obtained reflect the disposition of our society towards the making of a specialist: on average a 70 hour week with an hourly salary that is generally paid to employees of lower expertise and responsibility.

In conclusion, gastroenterology training differed remarkably in European training centres. Although the EBG does "not seek complete uniformity of training",[1] the current dissimilarities between the 34 training centres in 10 different countries in this survey can hardly be regarded as demonstration of harmonised European training. Even though this survey is not all encompassing because of the limited sample size and the fact that it was organised by one training centre only, it reflects the training of several specialists in gastroenterology/hepatology now working in Europe. Therefore, it would be useful to re-evaluate our findings in a larger multicentre study, ideally coordinated by the EBG. This survey could then be combined with further studies to define threshold numbers and technical end points to assess competence in endoscopic procedures and cognitive skills.

The disparity in the training of young gastroenterologists results in differences in quality between graduates, which may hamper the clinical competence of certain specialists at the beginning of their career. In this respect issuing a European diploma for gastroenterology is a valuable effort towards promoting good practice in European gastroenterology but without any enforcement or greater public awareness its chance of influencing structural changes in individual countries may be slim.

ACKNOWLEDGEMENT

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APPENDIX

Guidelines for completing the questionnaire

Please fill in the questions as sincerely and accurately as you can—this is not a competition!

Where applicable, the questions refer to your last two years of training before becoming licensed in gastroenterology/hepatology (for example, if in a particular country it takes six years to be fully licensed you should use the fifth and sixths year to answer the relevant questions). Therefore, you should average the pertinent answers for the last two years. If you are in doubt because you are in a peculiar situation, contact your peers to get an answer that is most representative for the typical specialist in training for gastroenterology/hepatology in your department.

If you are not sure of an answer, do not hesitate to consult statistics of your department or colleagues that have just finished to obtain the most accurate information. Where applicable use averages. You can write notes on an extra sheet if you feel that you have to explain an answer more extensively.

General information

Name (optional):
Hospital/University where you are working (optional):
How many beds does your department have? If at your hospital gastroenterology/hepatology is not strictly separated from general internal medicine, please specify: internal medicine beds? gastroenterology/hepatology beds (use averages if there are no fixed numbers available)?
How many staff members (only those doing gastroenterology/hepatology) including the head of department do you have?
How many clinical assistants (only doctors training to be specialists in gastroenterology/hepatology) work at your hospital?
In your country, how many years of training after medical school does it take before you are a licensed gastroenterologist/hepatologist?
Age:
Sex:
Marital status:
Children (if yes, how many):

Training

(1) Work on the ward

How many patients are you personally in charge of per week?
Of those patients, how many are strictly gastroenterology/hepatology and how many are other disciplines of internal medicine (in %)?
How many hours per week do you spend on the ward?
How many hours of supervision by a staff member do you get per week?

(2) Work in the outpatient clinic

How many patients do you see per week?
How many hours per week do you do in the outpatient clinic?
How many of these patients are gastroenterology/hepatology, how many belong to other subdisciplines (in %)?
How many of these patients receive supervision by staff member?
How many of these patients receive direct supervision by a staff member?

(3) Endoscopic training

At what year of your training do you start endoscopic procedures?
How many gastroscopies had you done by the end of your training?
Of those, how many were diagnostic, how many were therapeutic (in %)?
How many colonoscopies had you done by the end of your training?
Of those, how many were diagnostic, how many were therapeutic (in %)?
How many ERCPs had you done by the end of your training?
Of those, how many were diagnostic, how many were therapeutic (in %)?
On average, how many endoscopic procedures per month did you do in your last two years of training?
Of these, how many did you do under direct supervision from a staff member (in %)?
When you started, did you have continuous supervision by an experienced staff member? If yes, for how long or for how many procedures?

(4) Other specialised procedures:

Have you been trained in abdominal ultrasound?
If so, how many abdominal ultrasounds had you done by the end of your training?
Of these, how many did you do under direct supervision from a staff member before you did them and documented your findings on your own?
When you started, did you feel you got adequate teaching by experienced staff members?
Have you been trained in echoendosonography?
If so, how many echoendosonographies had you done by the end of your training?
During your training, did you have regular teaching rounds with the radiologists to log at *x* rays of transit studies, CAT scans, etc.?
If yes, how frequent were these? Daily? Weekly? Monthly?
Do you feel you received adequate training in proctology, including sclerotherapy, banding techniques, rectal manometry and biofeedback?
How many rectal manometries have you performed yourself?
How many have you evaluated and interpreted yourself?
How many oesophageal manometries have you performed yourself?
How many have you evaluated and interpreted yourself?
How many 24 hour pH metries have you evaluated and interpreted yourself?
How many stomach/small intestinal manometries have you performed yourself?
How many have you evaluated and interpreted yourself?
Did you receive planned, regular training in the methodology and interpretation of stool microscopy?
Did you receive planned, regular training in the methodology and interpretation of biopsy specimens? Breath tests?

(5) Administrative work

How many letters per week do you dictate, including ward patients and outpatients?
How many hours per week do you spend doing administrative work (including dictating letters)?
How much of your average day is involved with administrative work (this includes dictating letters, writing up orders, documenting hospital stay, etc.), in %?

(6) Research and teaching

How many hours per week does the average colleague in your department dedicate to research?
How many teaching rounds per week do you attend (excluding radiology)?
How many teaching rounds do you give per year (not just simply presentation of a difficult case)?
Do you get extra time off for visiting congresses or specific courses?
Do you get financial support by your employer (that is, the hospital administration or your head of department out of funds directly allocated for this purpose by the institution) for these activities?
Which field of gastroenterology/hepatology do you feel undertrained in?

(7) Night shifts (or inhouse on-calls)?

How many inhospital night shifts per month do you do?
How many home on-calls per month do you do (that is, you can sleep at home, but you can be called to the hospital)?
For how many hospitalised patients are you responsible for during the night shift?
Are you responsible for other subdisciplines besides gastroenterology or hepatology?
On average how many hours of sleep do you get per night?
Do you have to work a full day after the night shifts?

Social and financial aspects

On average, and including night shifts, how many hours per week do you work in your hospital?
Do you work regularly on Saturdays and Sundays?
If so, how many hours per month?
What is your salary per months? Before taxes? After taxes?
What is the net salary of a nurse on your ward who has worked for six years?
What is the net salary of the cleaning lady or man on your ward?
What is the official salary (as given by the hospital administration) of the head of your department (answer optional)?
If you see private patients of your superiors on a regular basis either on the ward or in the outpatient clinic do you get a participation or bonus from the staff member or head of department in question?
For how much time does your contract extend? 6 months? 1 or 2 or 3 or 4 or 5 or 6 years? More than 6 years?
Does your contract cover health insurance?
Does your contract cover unemployment insurance?
Does your contract cover pension contribution?
How many weeks official vacation time do you get per year?
Do you get vacation money or a 13th salary every year?

Outlook

In the last five years, how many gastroenterologists/hepatologists did your hospital graduate?
How many of those stayed working in a university hospital (in %)?
How many went into a city or peripheral hospital (in %)?
How many opened a private practice (in %)?
How are your current job prospects for a position you would like? Several offers? Only one? None?