The educational and professional status of clinical embryology and clinical embryologists in Europe†

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Submitted on April 9, 2015; resubmitted on April 9, 2015; accepted on April 20, 2015

STUDY QUESTION: What is the recognition of clinical embryology and the current status of clinical embryologists in European countries, regarding educational levels, responsibilities and workload, and need for a formal education in assisted reproductive technology (ART)?

SUMMARY ANSWER: It is striking that the profession of clinical embryology, almost 40 years after the introduction of IVF, is still not officially recognized in most European countries.

WHAT IS KNOWN ALREADY: Reproductive medicine has developed into a sophisticated multidisciplinary medical branch since the birth of Louise Brown 37 years ago. The European Board & College of Obstetrics and Gynaecology (EBCOG) has recognized reproductive medicine as a subspeciality and has developed a subspeciality training for gynaecologists in collaboration with the European Society for Human Reproduction and Embryology (ESHRE). However, nothing similar exists for the field of clinical embryology or for clinical embryologists.

STUDY DESIGN, SIZE, DURATION: A questionnaire about the situation in clinical embryology in the period of 2012–2013 in the respective European country was sent to ESHRE National representatives (basic scientists only) in December 2013. At this time, 28 European countries had at least one basic scientist in the ESHRE Committee of National Representatives.

PARTICIPANTS/MATERIALS, SETTING, METHODS: The survey consisted of 46 numeric, dichotomous (yes/no) or descriptive questions. Answers were obtained from 27 out of 28 countries and the data were tabulated. Data about the numbers of ‘ESHRE Certified Embryologists’ were taken from the ESHRE Steering Committee for Embryologist Certification.

MAIN RESULTS AND THE ROLE OF CHANCE: In 2012, more than 7000 laboratory staff from 1349 IVF clinics in 27 European countries performed over 700 000 fresh and frozen ART cycles. Despite this, clinical embryology is only recognized as an official profession in 3 out of 27 national health systems. In most countries clinical embryologists need to be registered under another profession, and have limited possibilities for organized education in clinical embryology. Mostly they are trained for practical work by senior colleagues. ESHRE embryologist certification so far constitutes the only internationally recognized qualification; however this cannot be considered a subspecialization.

LIMITATIONS, REASONS FOR CAUTION: Data were obtained through different methods, by involving national embryologist societies and cycle registers, collecting information from centre to centre, and in some cases by individual assessment of the situation. For these reasons, the results should be interpreted with caution.

WIDER IMPLICATIONS OF THE FINDINGS: This paper presents the current status of clinical embryology and clinical embryologists in Europe and is an important step towards implementation of clinical embryology as an officially recognized profession.

STUDY FUNDING/COMPETING INTEREST(S): None.

TRIAL REGISTRATION NUMBER: No.

Key words: clinical embryologist / education / embryology laboratory / European Society of Human Reproduction and Embryology / embryologist certification

†ESHRE pages content is not externally peer reviewed. The manuscript has been approved by the Executive Committee of ESHRE.
Introduction

For several decades, laboratories for human IVF and clinical embryology have successfully asserted themselves in the field of medicine. It became clear from the beginning that the success of infertility treatments with assisted reproductive technology (ART) required more than just competent physicians and IVF laboratory equipment. The results of ART procedures are especially influenced by the laboratory staff’s skills to handle high-tech equipment and their accuracy, persistence and patience in performing micromanipulations on gametes and embryos. In addition, laboratory staff are expected to introduce new techniques into routine practice and improve existing operational procedures. Therefore, due to the rapid development of this field, laboratory staff need to be updated on the scientific literature and have the ability to interpret and critically assess reported data.

In most European countries, ART is regulated. The implementation of the European Union Tissue and Cells Directive (EU-TCDS) has led to further legislation regarding safety standards for human tissue and cells.

In spite of these developments, some areas of reproductive medicine have no mandatory organized education. The European Board & College of Obstetrics and Gynaecology (EBCOG) has recognized reproductive medicine as a subspecialty and, in collaboration with the European Society for Human Reproduction and Embryology (ESHRE), developed a subspecialty practice for gynaecologists (http://www.eshre.eu/Accreditation-and-Certification/Centre-accreditation-of-subspecialist-training/Introduction.aspx; 17 May 2015, date last accessed). Regarding work in a human IVF laboratory, the practical training needed is frequently described in ART textbooks (Keck et al., 2005; Elder and Dale, 2010; McCulloh, 2012; Mortimer and Mortimer, 2015), and its value, included in the ESHRE Mission and Vision, is also recognized by international scientific societies such as Alpha (Alpha Scientists in Reproductive Medicine, 2015) and the American Society for Reproductive Medicine (Practice Committee of the American Society for Reproductive Medicine, Practice Committee of the Society for Assisted Reproductive Technology, and Practice Committee of the Society of Reproductive Biology and Technology, 2014). Nevertheless, clinical embryologists continue to face difficulty in the development of a formalized training and recognized professional expertise. It is amazing that for such a strictly regulated and monitored field, the formal education of ART laboratory staff remains unresolved in a majority of European countries.

In the paper ‘Revised guidelines for good laboratory practice in IVF laboratories’ (Magli et al., 2008), ESHRE proposed a two-level embryologist certification programme to become the European qualification standard for staff working in IVF laboratories. The ESHRE certification programme was introduced in 2008, with the first exams for Clinical Embryologist and Senior Embryologists taking place in 2009. Enrolment criteria for the Clinical Embryologist exam include a BSc degree in Natural Sciences with at least 3 years’ hands-on experience, whilst enrolment criteria for the Senior Embryologist exam include an officially recognized academic MSc or PhD degree in Natural Sciences with at least 6 years’ hands-on experience. However, this is a self-training programme and involves no formal training or competence assessment for the practical work.

The aim of the present survey was to gather information from European countries about the current educational level of laboratory staff, the requirements for managing or working in an IVF laboratory, the requirements for formal education, and the involvement of embryologists in professional bodies. An additional aim was to understand the recognition of the ESHRE Certificate for Clinical and Senior Embryologists in the different countries. The study was organized and conducted by the Embryologist Certification Committee together with the ESHRE Special Interest Group for Embryology (SIG Embryology) by means of a detailed questionnaire, which was sent out to 28 European country representatives.

Materials and Methods

Data collection

The questionnaire was prepared using SurveyMonkey® free online software (SurveyMonkey, Inc., USA) and sent to all basic scientists of the ESHRE Committee of National Representatives (CNR), which comprises leading embryologists in different European countries. European countries not having a scientist representative in the CNR were excluded from the survey.

Most of the 46 questions were close-ended (yes/no, numeric or multiple choice questions), but in some cases also open-ended questions (descriptive) were included. The number of certified embryologists by country was obtained from the ESHRE register of ESHRE-certified embryologists.

We collected data from 2011 and 2012 for the number of treatment cycles and from 2013 for other information. Where necessary, CNRs forwarded the questionnaire directly to official coordinators of national embryologist societies in order to obtain the requested information.

Participation and reporting methods

Answers were obtained from 27 out of 28 countries. Data were collected by different methods (Table I). Sixteen of the 27 representatives provided the exact number of all performed ART cycles in their countries. For number of staff, exact numbers were provided by seven countries, the rest were estimations made by the reporting persons (Supplementary Table SI).

Results

Number of cycles and IVF clinics

Table II shows the numbers of cycles and staff of the IVF centres per country. In 2012/2013 there were 1349 IVF centres in the 27 analysed countries, ranging from 214 centres (Spain) to 3 centres (Slovenia). The majority (70%) of the IVF centres were private. In total, 46.7% of the clinics were ISO-certified, and in seven countries all IVF centres had achieved ISO certification.

In 2012, a total of 540 647 fresh IVF/ICSI cycles and 159 380 frozen embryo replacement (FER) cycles were performed, which was an increase from 2011 of IVF/ICSI cycles by 2%, and of FER cycles by 3.6%. PGD or preimplantation genetic screening (PGS) was performed in 23 out of 27 countries. The proportion of cycles including PGD/PGS was around 2%, with 235 clinics (17%) engaged in this activity.

It is important to note that the numerical data reported may deviate from that published by the ESHRE IVF Monitoring Consortium, since the latter obtained data from national registers only, while in this study many CNR representatives, especially those from countries with incomplete or no registers, collected data by contacting their colleagues in all IVF laboratories.
In 2012/2013, there were approximately 7056 laboratory workers in IVF laboratories (Table II). The questionnaire asked about the proportion of laboratory technicians versus embryologists in each country. The answers show clear differences in the interpretation of these two titles between European countries. For example, the term ‘laboratory technician’ covers laboratory staff without a university education in some countries, whilst in others this term covers staff with BSc degree in laboratory or biomedical science. When defining the profession of ‘Clinical Embryologist’ even more variation in the education level existed between, and also within, analysed countries.

Supplementary Table SI shows the educational structure of personnel working in IVF laboratories for each country according to their geographical position in Europe (Northern, Western, Southern and Eastern European countries). It was apparent that in the Northern and Western European countries, the prevalent profile of IVF laboratory staff was that of a laboratory technician without a BSc and technologist/medical scientist with a BSc, or there was a combination of equally represented profiles of laboratory technician and embryologist with MSc or PhD from biological or natural sciences.

The situation was quite different in Southern and Eastern Europe, where scientists (mainly biologists) with a BSc and/or MSc were prevalent in IVF laboratories, whereas laboratory technicians without BSc and technologists with a BSc were rarely represented or even non-existent.

Amongst educational profiles of employees in IVF laboratories, physicians were rare. In 44.4% (12/27) of the analysed countries, physicians did not work in IVF laboratories at all. The exception was France where they were the majority.

ESHRE certification scheme
In 2013, 972 (13.8%) of the IVF laboratory staff had obtained the ESHRE Certificate, with 381 (39.2%) having the Clinical Embryologist Certificate.

### Table I Data collection methods for a survey of educational and professional status of clinical embryology and clinical embryologists in Europe.

<table>
<thead>
<tr>
<th>Number of cycles obtained through:</th>
<th>Other data from questionnaire obtained through:</th>
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<td>National registers covering a majority of cycles</td>
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<th>Finland</th>
<th>France</th>
<th>Hungary</th>
<th>Ireland</th>
<th>Italy</th>
<th>Norway</th>
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<th>Switzerland</th>
<th>The Netherlands</th>
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</tbody>
</table>

- **Human resources**

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**ESHRE certification scheme**

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### Table II  Demographic data about IVF centres (from 2012/2013) and number of IVF/ICSI cycles (from 2011 and 2012) by country.

<table>
<thead>
<tr>
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*PGD, preimplantation genetic diagnosis; PGS, preimplantation genetic screening; FER, frozen embryo replacement; NR, not reported.

*Data for number of cycles in 2012 are not available yet and thus the numbers from 2011 were taken for further calculation.

m = 116
and 591 (60.8%) having the Senior Embryologist Certificate. Interest in the possibility to obtain the ESHRE Certificate seemed to vary between countries (Supplementary Table SI).

**IVF laboratory management**

The educational levels of IVF laboratory heads and directors are presented in Supplementary Table SII. For 78% (21/27) of countries, IVF laboratories mainly operated under the authority of MSc or PhD degree scientists/biologists, without any formal specialization in ART. In France, Romania, Russia and Poland, managers of IVF laboratories were predominantly physicians.

Supplementary Table SIII shows which individual countries had laws, policies or guidelines for professionals, defining the requirements (education, work experience, special skills) for heads or directors of IVF laboratories. In 41% (11/27) of the countries, there was at least some form of official document that attempted to define the requirements for managing an IVF laboratory, whilst in the remaining countries no such document was reported to be present.

**Workload**

In Table II, it can be seen that 700,027 fresh and frozen ART cycles were performed by 7056 laboratory workers. Thus, on average, one IVF laboratory staff person performed 116 cycles per year, ranging from 31 to 344. In countries for which the exact number of performed cycles was obtained, the average number of fresh and frozen cycles per member of IVF laboratory staff was 131, ranging from 72 to 344.

**Clinical embryologists in national health systems**

Clinical embryologist was an officially recognized occupation in national health systems in only 3 out of 27 countries, namely in Slovenia, the Netherlands and the UK (Table III). In all other countries, IVF laboratory staff had to be registered under another officially recognized occupation/wage system in healthcare to achieve the same status as their colleagues managing other medical laboratories. The UK had the most accurately defined system of requirements for accessing the title of ‘Clinical Embryologist’, where the term ‘Clinical Scientist’ is a protected title via the UK’s Health and Care Professions Council. Interestingly, in countries where there is no official recognition for the occupation of an embryologist, attainment of the ESHRE Certificate is often used to claim the title ‘Clinical Embryologist’.

**Organized education**

Supplementary Table SIV shows educational possibilities for IVF laboratory staff in different European countries. Only four countries reported having mandatory organized post-graduate education or training for independent work in IVF laboratories. In Turkey, it was mandatory for embryologists to spend a work rotation in an IVF laboratory in one of the academic health institutions. Mandatory practical training in laboratory ART techniques by officially designated state-certified instructors was reported only from the UK. In 23 of the 27 countries, personnel were trained to work in IVF laboratories without having to pass officially recognized educational programmes.

**Recognition of ESHRE certification**

Supplementary Table SV contains data about the meaning of ESHRE Certificate for Clinical or Senior Embryologists on national levels. The ESHRE Certificate was not mandatory for employment in an IVF laboratory in any of the European countries.

**Involvement of embryologists in professional bodies and inspection groups**

Supplementary Table SVI provides information about the participation of embryologists in national professional bodies related with IVF laboratory work. In 17 countries, embryologists participated in preparation of national guidelines or licensing of IVF laboratories, while in 6 countries embryologists were part of general external inspection groups for IVF laboratories. In others, this function belonged to pharmacologists or physicians. A total of 22 of the analysed countries had implemented the EUTCDs. However, EUTCD inspectors were never embryologists, except in the UK, and in general they had not undergone any training in ART procedures (Supplementary Table SVII). In some countries the inspectors may be accompanied by an ART expert, although this field in most countries was controlled by physicians and pharmacologists and occasionally by biologists (but not embryologists).

**Embryologists’ societies**

Embryologists in 17 of the analysed countries promoted their professional interests in their respective countries within national or regional societies of embryologists. In some countries laboratory staff were organized into an embryologic section as part of a wider association together with other infertility specialists, while embryologists in Hungary and Russia did not have a professional association (Supplementary Table SVIII).

**Organization of sperm analyses**

Supplementary Table SIX depicts where diagnostic semen analyses were performed. The majority of the countries reported that semen analyses were mostly carried out in specialized andrology laboratories and/or in IVF laboratories, which of course increased the workload of the laboratory.

**Discussion**

A profession can be defined as an exclusive occupational group applying abstract knowledge to particular cases (Abbot, 1988). This paper presents the current status of clinical embryology and clinical embryologists in Europe and is an important step towards implementation of clinical embryology as an officially recognized profession. ESHRE has always valued scientific knowledge highly and it is important to realize that this is also part of the definition of a profession such as clinical embryology. A true profession also has the ability to expand its cognitive domain and annex new areas to define them as its own proper work (Abbot, 1988). However, despite the successful work performed by clinical embryologists and their responsibility, it is a startling fact that in a majority of European countries embryologists are not required to have any formalized theoretical or practical education in reproductive biology. This is quite unusual when comparing to other fields of laboratory medicine.
<table>
<thead>
<tr>
<th>Country</th>
<th>Embryologists officially recognized</th>
<th>Registered under another profession</th>
<th>An embryologist is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>No</td>
<td>Yes</td>
<td>Everyone in the laboratory calls himself ‘clinical embryologists’. According to the Embryological Forum Austria only those are called ‘clinical embryologists’ who completed MSc course of clinical Embryology in Graz or passed the ESHRE exam.</td>
</tr>
<tr>
<td>Belgium</td>
<td>No</td>
<td>Yes</td>
<td>Not recognized profession, title does not exist officially but is used only for personnel with MSc or PhD, not for technicians with BSc degree.</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>No*</td>
<td>Yes</td>
<td>Every biologist who has more than 2 years experience in the field of Embryology and has this position in the hospital structure.</td>
</tr>
<tr>
<td>Croatia</td>
<td>No*</td>
<td>Yes</td>
<td>Biologist working in IVF laboratories after 2 years of experience.</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>No*</td>
<td>Yes</td>
<td>To use the title Clinical embryologist one must have—professional qualification to work in health care individually without supervision—specialized qualification as a laboratory worker (embryology is not specified). The clinical embryology specialization will be defined in the new law which is in progress.</td>
</tr>
<tr>
<td>Denmark</td>
<td>No</td>
<td>Yes</td>
<td>Not protected.</td>
</tr>
<tr>
<td>Finland</td>
<td>No</td>
<td>Yes</td>
<td>In general biologists, and biologists who have got the Certificate by ESHRE.</td>
</tr>
<tr>
<td>France</td>
<td>No</td>
<td>Yes</td>
<td>Nobody.</td>
</tr>
<tr>
<td>Germany</td>
<td>No</td>
<td>Yes</td>
<td>No official title in Germany, but the AGRBM (German society of reproductive biologists) has established an own title, namely the ‘Reproduktionsbiologe/AGRBM’, which is awarded after a minimum of 2 years of practical and theoretical education. The aim is to establish this title as an official national requirement for the heads of IVF laboratories.</td>
</tr>
<tr>
<td>Greece</td>
<td>No</td>
<td>Yes</td>
<td>Officially no one.</td>
</tr>
<tr>
<td>Hungary</td>
<td>No*</td>
<td>Yes</td>
<td>Only who has ESHRE Clinical Embryologist Certification.</td>
</tr>
<tr>
<td>Ireland</td>
<td>No</td>
<td>Yes</td>
<td>Everyone.</td>
</tr>
<tr>
<td>Italy</td>
<td>No</td>
<td>Yes</td>
<td>The title is not codified. It is adopted by biologists working in IVF laboratories.</td>
</tr>
<tr>
<td>Macedonia</td>
<td>No</td>
<td>Yes</td>
<td>There is no this kind of title or organization in Macedonia.</td>
</tr>
<tr>
<td>Norway</td>
<td>No</td>
<td>Yes</td>
<td>Those who passed exam from ESHRE, senior clinical embryologist are those with a MSc degree in addition to passed exam.</td>
</tr>
<tr>
<td>Poland</td>
<td>No</td>
<td>Yes</td>
<td>People with specialization in the field of clinical embryology certified by ESHRE or PTMR (Polish Society of Reproductive Medicine).</td>
</tr>
<tr>
<td>Portugal</td>
<td>No*</td>
<td>Yes</td>
<td>Staff working in IVF laboratories with certification of ESHRE.</td>
</tr>
<tr>
<td>Romania</td>
<td>No</td>
<td>Yes</td>
<td>At least MSc degree in biology, biochemistry, or specialist MD, with additional training in assisted reproductive technology</td>
</tr>
<tr>
<td>Russia</td>
<td>No</td>
<td>Yes</td>
<td>Nobody.</td>
</tr>
<tr>
<td>Serbia</td>
<td>No</td>
<td>Yes</td>
<td>None. Embryologists do try to improve their position and they call themselves ‘clinical embryologists’.</td>
</tr>
<tr>
<td>Slovenia</td>
<td>Yes</td>
<td>Yes</td>
<td>Not specified. Usually those who work with human embryos in IVF laboratories. However, the heads of IVF laboratories are registered under another profession, because Clinical embryologists are classified very low in the salary class system. There is no officially recognized qualification of clinical embryologist. There is a qualification from the scientific society of ASEBIR (Asociación para el Estudio de la Biología de la Reproducción) and of course the ESHRE qualification.</td>
</tr>
<tr>
<td>Spain</td>
<td>No</td>
<td>Yes</td>
<td>No official title, but some IVF laboratory staff call themselves embryologists.</td>
</tr>
<tr>
<td>Sweden</td>
<td>No</td>
<td>Yes</td>
<td>Not defined.</td>
</tr>
<tr>
<td>Switzerland</td>
<td>No</td>
<td>Yes</td>
<td>The title clinical embryologist is not protected.</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>Yes</td>
<td>No</td>
<td>Only those that are registered by the Health and Care Professions Council. Those not registered are titled trainee embryologists, or pre-registrant embryologists.</td>
</tr>
<tr>
<td>Turkey</td>
<td>No</td>
<td>Yes</td>
<td>Who are certified by the health ministry.</td>
</tr>
<tr>
<td>UK</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

*In progress.
Our data show that in the year 2012, in the analysed countries, more than 7000 laboratory specialists in 1349 IVF laboratories carried out over 700,000 fresh and thawing ART cycles, and that this number increased yearly (from 2011 to 2012 by 2.4% for fresh cycles and by 3.6% for thawing cycles). PGD/PGS procedures were routinely carried out in 17% of the clinics in 23 out of 27 countries, whereas in the past this was linked only to a few clinics specializing in genetics. This indicates that the fields of reproductive medicine and clinical embryology are steadily interconnecting with genetics.

The main aim of this survey was to establish a basis of knowledge of the educational structure of IVF laboratory staff and their recognition at national levels. The major finding was the fact that ‘Clinical Embryologist’ was an officially recognized occupation in healthcare systems in only three European countries. In all the other countries, IVF laboratory staff had to be registered under another occupation. The occupation ‘Clinical Embryologist’ therefore functioned more as an alias for personnel in IVF laboratories working with embryos. In some countries this title was being adopted by IVF laboratory staff with a MSc or PhD degree, whilst others used the title ‘Clinical Embryologist’ for holders of the ESHRE Certificate. However, to have a formal training in ART was non-mandatory, and difficult, in almost all countries.

The educational structure of personnel in IVF laboratories ranged from profiles of laboratory technicians without a university education to PhD scientists and physicians. Our analysis showed that two educational models were prevalent.

The first model, characteristic of IVF laboratories in Northern and Western Europe, was a combination of laboratory technicians with short study programmes (2–3 years) and basic scientists, mostly biologists with a longer university education (3 + 2 years). The prevalent personnel in this system were technicians, who were mainly focused on the routine part of laboratory procedures. In contrast, biologists were most often laboratory managers or heads of development divisions for laboratory practice.

In the second model, characteristic of IVF centres in Southern and Eastern Europe, biologists or other basic scientists with 4–5 years (pre-Bologna university programme) or 5 years (3 + 2 Bologna programme) of university education prevailed and technicians (3 years study or less) were a minority.

Thus, IVF laboratories were mostly managed by highly educated personnel with MSc or PhD degrees in natural science. In rare instances, this function was carried out by physicians. The situation was the same in both the public and private sectors. Furthermore, there was no internationally accepted practical training, to cover laboratory techniques and skills with an established minimum number of processes which would be considered as a prerequisite to acquiring a licence for performing clinical embryology. For the majority, training continues as it was when IVF began in the late 1970s, by learning laboratory techniques and acquiring knowledge from more experienced colleagues. This is of further concern given that the majority of European countries have passed regulations implementing the EUTCDs, where strict national legislations and rigorous inspections highlight the specific nature of this work and the responsibility that IVF laboratory staff carry during the processes of ‘donation, procurement and testing, processing, preservation, storage and distribution’ of cells and tissues.

In addition to routine laboratory ART procedures, most embryologists fulfill other roles, including overall management, research, quality assurance, patient documentation, preparing reports on the numbers and success rates of ART procedures, maintaining cryobanks, validating equipment, ordering consumables/media/equipment, training of embryologists and other staff. With this in mind, Alpha recently prepared guidelines for a better organizational structure of IVF laboratories and the optimal workload was also discussed (Alpha Scientists in Reproductive Medicine, 2015).

At present there is no agreement upon uniform European specialization of clinical embryology. Thus, individual countries regulate this field on their own, with some attempting to organize certifications or a kind of specialization at national level, whilst others show little sign of activity. The only internationally standardized educational system in clinical embryology is the ESHRE organized self-teaching programme, where participants have to process materials from a prescribed literature list and become acquainted—in theory, not in practice—with various expert disciplines. However, the ESHRE Certificate for Clinical Embryologists cannot be seen as a specialization and is not officially recognized in any of the European countries. In addition, despite an increasing interest to register for the exam, less than 15% of all IVF laboratory employees (technicians and embryologists) are so far ESHRE-certified. Despite lack of official recognition, the ESHRE Certificate is considered a valued document among embryologists and employers in the majority of European countries. As embryologists look for employment in other European countries, the ESHRE Certificate provides a kind of ‘passport’ role that the embryologist uses to apply for work in any European IVF laboratory.

In 2012, the European Federation for Specialists Clinical Chemistry and Laboratory Medicine published the 4th version of the EC4 European Syllabus for Post-Graduate Training in Clinical Chemistry and Laboratory Medicine (Wieringa et al., 2012), in which IVF has now been included. This syllabus comprises a common basic part and separate specialist parts for the different disciplines. Clearly, improvements in these issues are welcome, although ESHRE and other relevant professional bodies must be involved as active participants in any future decisions at the European level.

In conclusion, although embryologists, utilizing advanced technology, directly participate in the creation of human embryos and substantially affect the success of treatment, they have no recognized healthcare worker status in the vast majority of European countries. The protection of patient rights may also be at stake because of this lack of specialization requirements for IVF laboratory staff. The undetermined status of embryologists in comparison with other healthcare profiles not only brings about difficulties in recognition, but also excludes embryologists from numerous professional bodies preparing professional guidelines or legislation concerning the laboratory part of ART. This is especially true for those reviewing the implementation of the EUTCDs, where this task is mostly covered by specialists with no specific training in ART. In order to ensure the further professionalization of clinical embryology and clinical embryologists in all European countries, an adequate formal specialization needs to be established, followed by a uniform teaching curriculum. Furthermore, it is paramount that embryologists are also actively involved in the evaluation process. ESHRE, as one of the leading international societies for human reproduction and embryology, must emphasize its role in supporting the educational and professional status of both clinical embryology and clinical embryologists.

Supplementary data

Supplementary data are available at http://humrep.oxfordjournals.org/.

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Note added in proof

Since completion of this paper, another country, Portugal, officially recognized the Clinical Embryologist title, bringing now to 4 (out of 27) the number of countries where Clinical Embryologists are officially recognized. Significantly in this case, the ESHRE Clinical Embryology examination was specifically incorporated in the national assessment system. We acknowledge the Portuguese recognition and use of ESHRE Clinical Embryologist Certification, and hope this trend may be followed by many countries in the future.

Acknowledgements

The authors wish to thank G. Cottichio, S. J. Apter and S. Debrock, the members of Special interest group Embryology for their contribution in preparation of the questionnaire. Elected representatives from individual countries at ESHRE CNR should be credited for answering the questionnaire. They consulted national professional societies and national IVF registers for data where such societies and registers exist.

Authors’ roles

B.K. made a draft of the questionnaire, participated in collecting and organization of the data and wrote the paper; C.P. participated in preparing online version of the questionnaire and collected data. C.E.P. was coordinating the survey. All authors carefully reviewed the manuscript, suggested changes before the questionnaire was released and made corrections where needed. They all agreed with their ordering in authorship.

Funding

The authors participated in the survey on voluntary basis.

Conflict of interest

None declared.

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References


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