

Socio-demographic and fertility-related characteristics and motivations of oocyte donors in eleven European countries

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STUDY QUESTION: Do the socio-demographic and fertility-related characteristics and motivations of oocyte donors differ in European countries?

SUMMARY ANSWER: The socio-demographic and fertility-related characteristics and motivations of oocyte donors differ considerably across countries.

WHAT IS KNOWN ALREADY: There have been no other international studies comparing the characteristics of oocyte donors. Regarding their motivations, most studies indicate mixed motives.

STUDY DESIGN, SIZE, DURATION: The proposed study was a transversal epidemiological study. Data were collected from 63 voluntarily participating assisted reproduction technology centres practising oocyte donation in 11 European countries (Belgium, Czech Republic, Finland, France, Greece, Poland, Portugal, Russia, Spain, UK and Ukraine). The survey was conducted between September 2011 and June 2012 and ran for 1–6 calendar months depending on the number of cycles of oocyte donation performed at the centre. The sample size was computed in order to allow an estimate of the percentage of a relatively rare characteristic (~2%) with a precision (95% confidence interval) of 1%. The calculation gave 1118 donors.

PARTICIPANTS/MATERIALS, SETTING, METHODS: In total, 1423 forms were obtained from oocyte donors. All consecutive donors in these centres filled out an anonymous questionnaire when they started their hormonal stimulation, asking for their socio-demographic and fertility-related characteristics, their motivations and compensation. Population characteristics were described and compared by country of donation. Motives for donation and mean amount of money were compared between countries and according to the donors characteristics.

MAIN RESULTS AND THE ROLE OF CHANCE: The socio-demographic and fertility-related characteristics and motivations of oocyte donors varied enormously across European countries. The number of received forms corresponded with a participation rate of 61.9% of the cycles performed by the participating centres. Mean age was 27.4 years. About 49% of donors were fully employed, 16% unemployed and 15% student. The motivation in the total group of donors was 47.8% pure altruism, 33.9% altruism and financial, 10.8% pure financial, 5.9% altruism and own treatment and finally 2% own treatment only. About 15% of the donors were egg sharers (patient donors), mainly from the UK and Poland. Women were donating for the first time in 55.4% of cases, for the second time in 20.3% and for the third time in 12.8%. The motivation to donate was significantly related to being of foreign origin ($P < 0.01$), age ($P < 0.001$), living in couple or not ($P < 0.01$), level of education ($P < 0.001$) and number of donations ($P < 0.001$). The amount of compensation differed considerably between centres and/or countries. The general donor profile in this study was a well-educated, 27-year-old woman living with her partner and child who mainly donated to help others.

LIMITATIONS, REASONS FOR CAUTION: The selection of clinics in some countries and the limited participation rate may have led to a bias in donor characteristics. A possible effect of social desirability in the answers by the donors should be taken into account.

WIDER IMPLICATIONS OF THE FINDINGS: The diversity of the donor population reflects the differences in European legislation (for example, on anonymity and payment) and economic circumstances. The differences in systems of reimbursement/payment demonstrate the need to have a thorough discussion on the specific meaning of these terms.

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Key words: altruism / compensation / oocyte donors / ethics / motivation

Introduction

Oocyte donation is on the rise in many countries all over the world. According to data collected for the European IVF Monitoring (EIM) programme, 11 475 oocyte donation cycles were performed in 2005, 12 685 in 2006, 15 731 in 2007, 13 609 in 2008 and 22 323 in 2009 (Nyboe Andersen *et al.*, 2009; de Mouzon *et al.*, 2010, 2012; Ferraretti *et al.*, 2012, 2013). There have been concerns about this procedure from the early start. Oocyte donation is still prohibited in a number of European member states such as Germany, Austria and Italy. The main concerns regard the safety of the donors, the exploitation of poor women and the commodification of the human body (Pfeffer, 2011; Danish Council of Ethics, 2013). The relatively high amounts of money paid to oocyte donors in the USA undoubtedly have contributed to these concerns. Add to that a number of clear violations of the rules of good clinical practice in some clinics, widely reported in the news media, and one has the perfect recipe for a heated debate. In 2005, for instance, serious shortcomings were demonstrated in Romanian clinics, where oocyte donors had not given informed consent, had received inadequate information regarding the possible health risks of the procedure and had not received follow-up care when complications resulted (Magureanu, 2005). Policy makers both at national and European level have taken a position. Questions were asked in the European Parliament regarding the safety of the procedure and about the risk of exploitation of women. A final point that pushed oocyte donation to the forefront is the international dimension of recruitment and the movements of candidate recipients across national borders. The search for donor oocytes is one of the main reasons for patients seeking cross-border reproductive care, either because the national legislation forbids the use of donor oocytes or because the waiting lists at home are too long (Shenfield *et al.*, 2010). Other elements of the procedure, such as anonymity/identifiability and payment/reimbursement, have also contributed to large differences across Europe.

The European Society for Human Reproduction and Embryology (ESHRE), as the main assisted reproduction technology (ART) professional society in Europe, has taken up these concerns. In 2011 a good practice guide for cross-border patients was published which covered partly the worries about oocyte donation (Shenfield *et al.*, 2011). Data collection is the first step towards an informed debate. Therefore, the ESHRE Task Force on Cross-Border Reproductive Care together with the EIM Consortium decided to perform an international study to collect empirical data in order to answer some of the main questions about oocyte donation. This information will be useful to all stakeholders, from patients to clinical teams to policy makers.

Objectives

The main objectives of the study were (i) to obtain reliable information on oocyte donors in Europe (their origin and residence, their characteristics

(social, demographic, reproductive history), their reasons for donating and the reimbursement they receive for the donation), (ii) to compare the differences in socio-demographic and fertility-related characteristics and motivations across countries and (iii) to find out which donor characteristics relate with the motivations.

Study characteristics

The proposed study is a transversal epidemiological study on donors recruited during a relatively short period of time in selected centres from European countries in which oocyte donation is performed, based on an anonymous questionnaire for donors.

Materials and Methods

The selection of the countries started by taking all European countries performing > 100 donation cycles per year, as reported or estimated in the EIM report 2010 (representing cycles performed in 2007). This resulted in a list with 13 countries: Belgium, Cyprus, Czech Republic, Finland, France, Greece, Poland, Portugal, Russia, Spain, Sweden, UK and Ukraine. The next step was to look for a coordinator who was willing to participate. This finally left us with 11 remaining countries, minus Cyprus and Sweden. In each country, the national coordinator (listed in the Acknowledgements) contacted the centres performing at least 50 cycles of oocyte donation per year. The centres that agreed to participate received the summarized protocol, the forms and instructions. They were asked to enrol all consecutive oocyte donors starting hormonal stimulation during a specific number of months. This included 'egg sharers', that is IVF or ICSI patients who share some of their oocytes with another woman. The donors were recruited during the stimulation cycle, according to the possibilities in the clinic. The period during which the centres enrolled donors depended on the number of cycles the centre performed per year; the lower the number of cycles, the longer the study period.

We designed two questionnaires. The donor's form consisted of a two-page questionnaire (see [Supplementary data](#)) containing the main socio-demographic characteristics (age, marital status, sexual orientation, education, reproductive history), the main reasons for donating (altruism, obtaining treatment, financial benefit), the information and counselling received and the expected compensation for the donation. The country coordinators also translated the instructions to participating collaborators and the questionnaires in all languages of the different countries. Whenever appropriate, patients could tick more than one answer. Almost all questions were closed questions.

In addition, each clinic was asked to complete a short questionnaire, recording the total number of donations performed during the study and the arrangements regarding compensation. The survey was conducted between September 2011 and June 2012. The number of received forms corresponded with a participation rate of 61.9% of the cycles performed by the participating centres but it was not possible to know how many were not asked to participate or how many refused to participate.

The study was approved by the appropriate ethics committees, according to the rules of each collaborating country. Donor anonymity was guaranteed.

In order to analyse and compare the compensation given to donors in different countries, we used the notion of purchasing power parity (PPP). PPPs are the rates of currency conversion that equalize the purchasing power of different currencies by eliminating the differences in price levels between countries. The mean PPP of the European Union is 1.0. In their simplest form, PPPs are price relatives that show the ratio of the prices in national currencies of the same goods or service in different countries. This takes into account both the cost of a similar item in different countries, and the different earning powers in these countries (Taylor and Taylor, 2004).

Statistical aspects

Donor sample size

The sample size was computed for a descriptive study to allow to estimate a percentage of a relatively rare characteristic (~2%) with a precision (95% confidence interval) of 1%. The calculation gave 1118 donors. Such a number was also large enough to allow many comparisons with a power of 80% to be made.

Data were entered at BIG (Bioethics Institute Ghent) and ESHRE Central Office and analysed at INSERM (Institut National de la Santé et de la Recherche Médicale) with the SAS software system, version 9.1. (SAS Institute, Inc., Cary, NC, USA).

Statistical analysis

Standard descriptive statistics were performed on the population. The collected data were described with percentages or means associated with their SD.

Results were given for the whole set of patients and by country of treatment.

Donors' answers were also compared by country of treatment. Chi-square tests were used to compare the percentages of population characteristics across countries, and the percentages of motives according to the total population characteristics. Variance analysis was used to compare mean age across countries or mean amount of money across total population characteristics.

A *P*-value of ≤ 0.05 was considered statistically significant. In all the following sections, only significant differences were reported. Analyses were performed with the SAS software.

Results

Socio-demographic characteristics and fertility history

General description of the donor population

In total, 1423 forms were received from 63 clinics in 11 countries (Table 1). Spain provided by far the largest percentage of forms (31.6%), followed by the Czech Republic (12.2%) and Finland (close to 10%). The other countries contributed between 3 and 8%.

Residence of the donor

Throughout the report, the reference to donors of a certain country indicates donors who donated in that country. It gives no direct information on the country of residence or country of origin of the donor. In most countries, almost all donors also had their residence in the country. The only exception was Belgium where only 47 of the 65 donors lived in the country. The largest group of foreign donors in Belgium came from France (15/18) and they were donating to a family member or friend (12/15).

Country of origin of the donor

When the country of origin (i.e. country of birth) was considered, four countries had a considerable percentage of immigrant donors: Greece (57.9%), Belgium (31.3%), UK (15.7%) and Spain (14.1%). Belgium differed from the other countries in the fact that most donors born in another country did not reside in Belgium either. Greece had a mixture of donors from ex-Soviet Union member states (Georgia $n = 10$, Russia $n = 6$, Ukraine $n = 2$) and eastern European countries (Romania $n = 8$, Bulgaria $n = 5$, Poland $n = 4$). In all, two nationalities

Table 1 Distribution of forms per country for a study of the socio-demographic and fertility-related characteristics and motivations of oocyte donors in eleven European countries.

Country	Centres N	Forms N	Not resident in the country %	Not born in the country %	Living in couple ^a %	Age (years) M ± SD
Belgium	4	65	27.7	31.3	78.1	30.2 ± 3.9
Czech Republic	4	174	0.0	0.0	74.4	26.9 ± 4.2
Finland	10	141	1.4	3.6	58.9	28.4 ± 4.9
France	7	60	0.0	6.8	81.7	31.0 ± 4.5
Greece	5	76	1.3	57.9	49.3	27.9 ± 4.0
Poland	6	107	0.9	0.9	86.5	29.5 ± 3.6
Portugal	3	100	0.0	25.5	33.3	26.6 ± 4.3
Russia	2	49	0.0	0.0	68.7	27.1 ± 3.4
Spain	15	449	0.2	14.1	41.6	25.6 ± 3.9
UK	6	116	0.0	15.7	92.2	30.1 ± 3.8
Ukraine	1	86	0.0	0.0	77.9	26.6 ± 2.9
Total	63	1423	1.6	12.9	61.1	27.4 ± 4.0
<i>P</i>			< 0.001	<0.001	<0.001	<0.001

^aMarried or living together.

in terms of country of origin stood out: Brazil ($n = 21$) and Romania ($n = 24$). The donors born in Brazil were mostly found in Portugal while the Romanian women donated in Spain. In the total population, donors of 54 different countries of origin were present.

Mean age of the donor

The mean age of the donors ranged from 25.6 years in Spain to 31.0 years in France. The mean age overall was 27.4 (± 4 years) with a range from 18 to 40 years. There were 70 donors (4.9%) below the age of 21 years and 70 donors (4.9%) were 35 years or older. (Table I).

Civil status

Civil status differed greatly depending on the country. In general, 61.1% of donors were living in couple, either married or cohabiting. Both Portugal and Spain had >50% single women, followed by Finland and Greece around 30% (Table I). The highest percentages of divorced women came from Greece (17.1%) and Russia (16.3%).

Living circumstances

Of all donors, 19.3% were living with their parents. In three countries (Portugal, Spain and Ukraine), this percentage was higher than 30%.

Professional activity

The highest number of students was found in Spain (24.9%), Finland (22%) and the Czech Republic (15.3%) (Table II). The highest number of unemployed donors was found in Spain (23.8%), Ukraine (22.4%) and Greece (18.8%). Full employment was on average 48.7%. Full employment was the lowest in Spain (28%) and Greece (29%) and the highest in Belgium (75.4%), the UK (73.6%) and Poland (69.5%).

Educational level

One-third of all donors had a university degree and 40.5% had a secondary level education (Table II). The differences amongst countries were again considerable. More than half of the donors had a university

degree in Belgium, France, Poland and the Ukraine. The lowest percentage of university educated donors could be found in the Czech Republic with 4.7%. Regarding technical/professional education, Finland (43.6%) and Russia (45.8%) scored highest, followed by the Ukraine (32.6%) and then France, Greece, Poland and Spain (all slightly more than 20%).

Reproductive history

Of the donors, 52.3% had at least one child of their own (Table III). Among these, 28.7% had one child, 18.4% had two and 5.2% had three or more children. In Russia and the Ukraine almost all women had children. In France, >90% of donors had had a child. The lowest proportions were in Poland, Portugal, Spain and the UK with ~35%.

Among the donors, 15.7% had experienced at least one miscarriage. In total, 17.7% has had an elective abortion. The percentage of elective abortions increased with age until 25–29 years with 24.0% and then decreased, dropping to 11.6% after 35 years ($P < 0.01$). This evolution was the same in most countries apart from France and Greece where the highest percentage of abortions was observed among the youngest donors. The abortion rate was very high for all age categories in Russia (53.1%).

Altogether, about 11.6% of the donors had themselves suffered from infertility but Poland and the UK stood out with ~55%. Furthermore, 4.7% had achieved their own pregnancy through infertility treatment in general while this was 26.7% in the UK.

Sexual orientation

In total 88% of donors were heterosexual, 3.8% homosexual, 2.4% bisexual and 5.8% gave no answer to the question. There were again fairly large differences between the countries (Table III). The UK sample for instance contained 22.4% lesbian women while the Ukraine had none. In the Czech Republic >20% of the respondents refused to answer or gave no answer to this question.

Table II Oocyte donor characteristics across countries: professional activity and educational level.

	Professional activity			Educational level				
	Full-time %	Part-time %	Unemployed %	Student %	Primary %	Secondary %	Technical %	University %
Belgium	75.4	10.8	12.3	1.5	3.1	35.4	9.2	52.3
Czech Republic	56.7	12.0	16.0	15.3	11.0	80.2	4.1	4.7
Finland	62.4	13.5	2.1	22.0	5.0	15.7	43.6	35.7
France	61.7	28.3	10.0	0.0	1.7	13.3	23.3	61.7
Greece	29.0	47.8	18.8	4.4	11.8	39.5	22.4	26.3
Poland	69.5	15.2	10.5	4.8	4.7	19.6	20.6	55.1
Portugal	50.5	9.1	9.1	31.3	0.0	53.0	8.0	39.0
Russia	59.6	23.4	14.9	2.1	0.0	20.8	45.8	33.3
Spain	28.0	23.3	23.8	24.9	8.3	46.7	22.5	22.5
UK	73.6	16.0	8.5	1.9	0.9	40.0	11.3	47.8
Ukraine	42.3	31.8	22.4	3.5	0.0	16.3	32.6	51.2
All	48.7	20.2	15.7	15.4	5.7	40.5	21.1	32.7
P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table III Reproductive history and sexual orientation of oocyte donors.

	≥ 1 child %	Miscarriage %	Elective abortion %	Infertility %	Pregnancy after treatment %	Homosexual %	Bisexual %	Egg sharers %
Belgium	73.9	21.5	9.2	10.9	9.2	6.1	1.5	4.6
Czech Republic	67.1	6.9	13.8	3.0	0.6	0.0	1.8	0.6
Finland	53.2	16.3	14.9	6.8	0.0	1.4	8.6	1.4
France	96.6	23.3	18.3	8.3	10.0	3.3	0.0	1.7
Greece	52.6	7.9	9.2	18.7	10.5	0.0	0.0	19.7
Poland	35.5	16.8	4.7	54.7	12.2	2.0	0.0	65.4
Portugal	36.0	6.0	15.0	0.0	0.0	1.0	2.2	5.0
Russia	100	14.3	53.1	0.0	2.0	2.2	2.2	8.2
Spain	34.8	18.5	23.2	0.2	0.2	3.4	2.7	4.5
UK	37.9	31.0	11.2	54.9	26.7	22.8	1.8	78.4
Ukraine	98.8	5.8	23.3	0.0	0.0	0.0	1.2	11.6
All	52.3	15.7	17.7	11.6	4.7	3.8	2.4	20.3
P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001

Table IV Number of previous oocyte donation cycles, relationship with the recipient and the future child.

	Number of previous cycles					Relationship with the recipient				Anonymity towards child
	0 %	1 %	2 %	3 %	≥4 %	Friend %	Family %	Exchange %	Unknown %	%
Belgium	92.2	4.7	0.0	3.1	0.0	6.1	26.2	41.5	26.2	76.6
Czech Republic	30.9	30.9	9.7	13.3	15.2	0.0	0.6	2.4	97.0	95.8
Finland	50.0	27.9	10.7	6.4	5.0	2.8	5.0	5.0	87.2	5.0
France	91.7	6.7	0.0	1.6	0.0	11.7	8.3	56.7	23.3	93.0
Greece	64.9	20.3	12.2	1.3	1.3	0.0	0.0	0.0	100	100.0
Poland	82.7	10.6	6.7	0.0	0.0	7.7	7.7	0.0	84.6	100.0
Portugal	77.8	14.1	8.1	0.0	0.0	0.0	0.0	0.0	100	87.8
Russia	51.2	14.0	11.6	13.9	9.3	0.0	4.3	6.4	89.3	100.0
Spain	38.9	28.6	20.5	6.6	5.4	0.0	0.0	0.0	100	100.0
UK	82.6	7.8	6.1	0.9	2.6	4.4	4.4	4.4	86.9	15.6
Ukraine	40.0	3.7	25.0	13.8	17.5	0.0	2.3	3.5	94.2	95.3
All	55.4	20.3	12.8	5.9	5.6	2.0	3.3	5.9	88.8	79.0
P			<0.001					<0.001		<0.001

Egg sharing

There were 222 egg sharers (15.6% of the total) (sometimes also called patient donors) among the respondents. More than half of them (55.4%) either did not answer the question on reimbursement or said that they would not receive any refund. Most egg sharers came from Poland and the UK (31.5 and 41.0%, respectively). The proportion of egg sharers among the total number of oocyte donors in the UK was 78.4%, 65.4% in Poland, 19.7% in Greece and 11.6% in Ukraine (Table III). In the other countries, egg sharing did not represent > 10% of the cycles. It seems that egg sharing was an unequally distributed protocol; some clinics clearly specialized in this type of recruitment while others did not.

Number of donation cycles

Women were donating for the first time in 55.4% of cases, for the second time in 20.3%, for the third time in 12.8% and more often in 11.5% (Table IV). When we calculated the mean number of cycles by country, the Ukraine was leading with 1.85 cycles per donor, followed by the Czech Republic (1.75), Russia (1.30) and Spain (1.13). Countries with a high percentage of women who were donating for a second or higher number of times were the Czech Republic (69.1%), Spain (61.1%) and the Ukraine (60%). The percentage of first-time donors was very high in Belgium (92.2%), France (91.7%), Poland (82.7%) and the UK (82.6%). When one looked at donors with four or more previous

cycles, again the Czech Republic with 15.2% and the Ukraine with 17.5% scored significantly higher than the other countries ($P < 0.001$).

Relationship between donor and recipient

Among the total group of donors, 88.8% gave to an unknown woman (Table IV). In addition, 5.9% gave to an unknown woman in exchange for a friend or family member to receive oocytes. In Greece, Portugal and Spain, all donors gave to a person unknown to them. In the following countries ~90% of the donors donated to an unknown person: Czech Republic, Finland, Poland, Russia and Ukraine. A distinction has to be made between donating to a person (i.e. the recipient uses the oocytes of the donor for herself) and donating for a person (i.e. the recipient receives oocytes from someone else in exchange for the oocytes donated by the donor she brought with her). The latter system has also been called personalized anonymity or cross-donation (Raoul-Duval *et al.*, 1992). In Belgium (73.8%) and France (76.7%), the majority gave for and/or to a family member or friend. In Belgium, 32.3% gave to a family member or friend and 41.5% entered in a cross-donation for a family member or friend. Out of the 60 donors in France, 10 indicated that they donated to a friend or family member for their own use. Only 23% gave to an unknown recipient; the remaining donors entered into a cross-donation system.

Relationship between donor and donor offspring

In the total sample of donors, 79% will be anonymous for the child resulting from their donation. In the Czech Republic, France, Greece, Poland, Russia, Spain and Ukraine >90% of the donors will be anonymous to the child (Table IV). Although donors were only offered two options (anonymous or identifiable), there was a certain percentage of 'no answer'. In some of the countries above, a small percentage of the donors indicated identifiability: in the Czech Republic 4%, France 6.7%, Portugal 6% and the Ukraine 4.7%. In the other countries of the list above, there was no answer. In the UK (84%) and Finland (94%), the majority of the donors indicated identifiability to the donor offspring in the future. Belgium was the only country with a middle position with 21.5% identifiable and 76.6% anonymous donors. The connection with the legislation on donor anonymity will be discussed below.

Motives for donation

Donors could indicate more than one reason for donating and many of them did. For the analysis of the results, the choices made by the donors were grouped in five categories: pure altruism (helping infertile people, a family member or a friend or combinations thereof), altruism and financial (in combination), pure financial, altruism and obtaining own treatment (in combination), and pure own treatment. For the total group of donors, the following results were obtained: 47.8% pure altruism, 33.9% altruism and financial, 10.8% pure financial, 5.4% altruism and own treatment and finally 2% own treatment only (Table V). The trends in the distribution over the countries can be summarized as follows: high levels of pure altruism could be found in Belgium (86.2%), Finland (88.7%) and France (100%). High proportions of donors indicating a pure financial reason were present in Greece (39.5%), Russia (52.3%) and the Ukraine (28.3%). The motivation in the two countries with a high percentages of egg sharers (Poland and UK) were very different: 23.2% indicated altruism and own treatment and 3.2% pure own treatment in Poland while in the UK, this was, respectively, 47.3 and 20%.

Reimbursement

The data regarding reimbursement turned out to be highly complicated. Apparently the precise meaning or purpose of the amount that donors received was not always clearly indicated to them. It was finally decided to use the data by the donors only if the centre did not provide the relevant information in their centre questionnaire.

The situation in most countries differed considerably. A number of countries applied a consistent policy across all centres. In France, only reimbursement of proven expenses was provided. In Portugal the specific sum of 627€ was used. In the UK, a fixed amount of 870€ (750£) was given as a compensation per cycle of donation to cover any financial losses incurred in connection with the donation. In Spain, the fixed amount was generally 900€ (with some variability). In Finland, the amount was fixed at 250€; however a number of donors mentioned amounts of up to 600€. The Russian centres gave no information on compensation but the majority of the donors mentioned a sum of ~600€ (25.000 Roubles). The Ukraine gave a fixed amount between 400€ (4200 UAH) and 650€ (6800 UAH). Again, however, some donors mentioned amounts of up to 960€. The largest difference between centres was found in Belgium where one centre offered 500€ as a fixed amount while another offered 2000€.

We also looked at the purchasing power instead of the fixed amount because this recalculation allowed us to take into account the welfare level of the countries. The lowest PPP applied in Belgium (0.838) and the highest in Ukraine (4.388). This means that the amount the donors received should be multiplied by this rate in order to determine how much the money is really worth in their country.

Counselling

The overwhelming majority (~95%) of the donors declared having received counselling about the medical risks of the procedure. The only exception was Poland where only 78.6% answered this question positively (Table V). The results were considerably worse for psychological implication counselling. The answer was negative for 36.8% of the donors in Greece, 36.4% in Poland and 18.6% in Ukraine. Most donors (98.2%) also received counselling in their mother tongue.

Relationships between donor characteristics and motives for donation

There is a significant relationship between being born in another country and the motivation to donate ($P < 0.01$). Donors of foreign origin were less likely to be motivated by pure altruism than the donors of local origin (41.7 versus 49.5%) and they were more likely to be purely financially motivated (19.4 versus 9.1%) (Table VI).

There is also a significant relationship between the age of the donor and the motives to donate ($P < 0.001$). Among donors younger than 25 years, 45.7% indicated pure altruism compared with 78.6% of those above 35 years. Also 11.9% of those below 25 years were purely financially motivated compared with 1.4% of those older than 35 years. (Table VI).

There is a statistically significant relationship ($P < 0.001$) between professional activity and motives for donation. Of the persons working full time, 55% donated for purely altruistic reasons compared with 34.8% of the unemployed. Part-time working people and students were situated in between these, with 44%. Still only 10.8%, a relatively small proportion of donors in all groups donated for purely financial

Table V Motives for oocyte donation and counselling.

	Motives for donation					Counselling		
	Altruism %	Own treatment %	Financial %	Altruism + own treatment %	Altruism + financial %	Medical risks %	Psychological implications %	Information in mother tongue %
Belgium	86.2	0.0	1.5	0.0	12.3	90.6	95.3	95.4
Czech Republic	48.8	0.0	5.3	0.0	45.9	94.1	69.2	100
Finland	88.7	0.0	0.7	0.7	9.9	93.6	93.6	97.9
France	100	0.0	0.0	0.0	0.0	91.7	86.4	100
Greece	28.9	4.0	39.5	0.0	27.6	97.4	56.6	98.7
Poland	58.9	3.2	0.0	23.2	14.7	78.6	45.8	95.8
Portugal	76.3	0.0	4.1	0.0	19.6	98.9	95.8	98.9
Russia	18.2	0.0	52.3	0.0	29.5	100	88.4	100
Spain	30.4	0.0	19.1	0.0	56.5	96.2	92.2	99.3
UK	30.0	20.0	0.0	47.3	2.7	97.4	86.6	91.2
Ukraine	12.9	0.0	28.3	0.0	58.8	98.8	81.2	100
All	47.8	2.0	10.8	5.4	33.9	94.6	83.4	98.2
<i>P</i>				<0.001		<0.001	<0.001	<0.001

Table VI Factors related to the motives for oocyte donation in five classes.^a

	Foreign origin		Age (years)				In couple		Educational level			University %
	No %	Yes %	<25 %	25–29 %	30–34 %	≥35 %	Yes %	No %	Primary %	Secondary %	Technical %	
N	1159	175	387	520	403	70	837	536	76	560	293	449
Altruism	49.5	41.7	45.7	41.0	53.4	78.6	49.2	45.7	46.1	40.5	48.8	55.9
Own treatment	2.0	1.7	1.0	1.5	3.7	1.4	3.3	0.0	1.3	1.4	2.1	2.9
Financial	9.1	19.4	11.9	15.0	6.2	1.4	9.0	18.4	15.8	12.3	10.2	8.5
Altruism + own treatment	5.4	4.0	1.3	3.8	10.4	11.4	8.6	0.4	1.3	4.5	3.4	8.7
Altruism + financial	34.0	33.1	40.1	38.7	26.3	7.1	29.9	40.5	35.5	41.3	34.5	24.0
Total	100	100	100	100	100	100	100	100	100	100	100	100
P	<0.01		<0.001		<0.001		<0.01				<0.001	

^aExclusion of rare modalities: own treatment + financial compensation (n = 3, 0.2%), altruism + own treatment + financial compensation (n = 16, 1.1%), not specified (n = 20, 1.4%)

reasons (7.4% full time, 16.9% part time, 12.9% unemployed and 11.1% students).

The level of education had an impact on the motives to donate. The higher the level of education, the more altruistic the donor (P < 0.001) (Table VI).

The percentage of purely altruistically motivated donors was 54.3% for those who donate for the first time compared with 38.3% for donors donating three or more times. The 'pure financial' motive (9.3% for the first donation and 14.8% for third and higher) and especially the 'altruism and financial' motive (25.4 and 46.9%, respectively) increased with the number of donations. The relationship was statistically significant (P < 0.001). (Table VII).

We separated the donors according to their motivation and then combined this with the amount they indicated as compensation. This amount was then recalculated with the PPP for the country in which they donated. Donors who said to be purely financially motivated received a mean fix sum of 867€ (purchasing power 1357€), those motivated by a mixture of altruistic and financial motives 912€ (purchasing power 1188€) and the purely altruistic donors 706€ (purchasing power 821€). This relation is statistically significant (P < 0.001). (Table VII).

About 40% of the egg sharers participated in this procedure for purely altruistic reasons. About one in three had mixed (altruism plus own treatment) motives. Only 11.6% indicated that they shared their oocytes exclusively to be able to have their own treatment.

Centre data and donor profile

In order to understand the distribution of characteristics among the different countries, it is necessary to understand the legal situation in the countries. This information is provided in [Supplementary data](#).

Belgium

Donors' minimum age was mostly 18 years but one centre used 21 years. The maximum age was 34 years and 37 years. One centre demanded that the donor should already be a mother while none asked for marriage or co-habitation. Some centres gave a fixed amount plus proven expenses while others only gave a fixed amount. This amount ranged from 500 to 2000€. In return for egg sharing, some centres offered nothing while others provided a full free IVF cycle.

Donor profile: a cohabiting or married mother of ~30 years, highly educated with a full-time job and altruistically motivated. She donated for the first time and mostly to and/or for family and friends.

Czech Republic

Minimum age was 18, 19 or 20 years and maximum age was 33, 34 or 35 years. Neither motherhood nor marriage or co-habitation was required. All centres only compensated for proven expenses. As a consequence, most donors did not answer the question about compensation but those who did mentioned an amount of 560€ (15.000CZK). Nothing was offered for egg sharing.

Donor profile: a young mother with secondary education who donated several times to an unknown recipient.

Finland

The minimum age ranged from 20 (most clinics) to 23 or 24 years while the maximum age was between 35 and 38 years. No clinic requested the donor to be a mother, married or cohabiting before donation. Other

Table VII Motives for oocyte donation (%) in relation with number of previous cycles and the fixed amount expected by patients, in Euros and in PPP (purchasing power parity) euros.

	Number of previous donations					Euros	PPP
	0	1	2	3	≥4	M ± SD N	M ± SD N
	%	%	%	%	%		
Altruism	54.3	43.3	36.2	38.3	47.4	706 ± 380	821 ± 542
Own treatment	3.1	1.1	1.1	0.0	0.0	—	—
Financial	9.3	8.7	16.1	14.8	7.9	867 ± 253	1357 ± 706
Altruism + own treatment	7.8	2.9	3.5	0.0	2.6	564 ± 342	621 ± 348
Altruism + financial	25.4	44.0	43.1	46.9	42.1	912 ± 305	1188 ± 594
Total	100 (740)	100 (275)	100 (174)	100 (81)	100 (76)	820 ± 330	1065 ± 593
P			<0.001			<0.001	<0.001

criteria included (listed so not necessarily applicable in all centres): psychologically, physically and genetically healthy (no genetic diseases). All clinics reimbursed proven expenses and added a fixed amount of 250€.

Donor profile: a highly educated woman who donated to an unknown recipient for purely altruistic reasons.

France

Minimum age is 18 years and maximum age 37 or 38 years. Motherhood is always requested but marriage or co-habitation was not. Only proven expenses were reimbursed. Nothing was offered in return for egg sharing.

Donor profile: a cohabiting or married woman with child, older than 30 years and highly educated. She donated for purely altruistic reasons.

Greece

Minimum age ranged from 20 to 25 years and maximum age from 30 to 37 years. Only one centre required the donor to be a mother. Marriage or co-habitation was not a condition. Additional medical/health criteria were imposed. One clinic indicated that it only reimbursed proven expenses, one gave a fixed amount of 1400€ and two others gave a fixed amount (between 900 and 1000€) plus proven expenses. No compensation was offered for egg sharing.

Donor profile: an average aged woman (27 years) who in many cases was of foreign origin and was unlikely to work full time. She was single or divorced and likely to be (purely) financially motivated.

Poland

Minimum age ranged from 18 to 23 years and maximum age from 34 to 35 years. Only one centre required that the donor be a mother prior to donation. Two centres required that the donor be married or co-habiting. Additional criteria were a normal karyotype, no genetic disorders and BMI within the normal range. Two out of six centres only reimbursed proven expenses while others gave a fixed amount ranging from 935 to 1400€ (4000–6000PLN). Regarding egg sharing, five out of six centres funded a partial cycle in return.

Donor profile: a slightly above average age woman (29.5 years) who was likely to share her oocytes, was highly educated without children and cohabiting or married.

Portugal

Minimum age was 18 years, maximum age 35 years. Motherhood and marriage or co-habitation were not required but other conditions applied: the donor could not be an adopted child herself, no tattoos or piercings in the last year, normal BMI, height < 185 cm, no strongly pronounced physical traits. All centres gave a fixed amount ranging from 625 to 650€. No refund was given for egg sharing.

Donor profile: a young woman who is single or divorced and has no child. She is highly educated and donates to an unknown recipient for purely altruistic reasons.

Russia

Minimum age was 20 years, maximum age 34 or 35 years. Both centres required the donor to be already a mother and married or co-habiting. They gave a fixed amount plus expenses but did not mention the fixed amount. One centre gave a full IVF cycle in return for egg sharing.

Donor profile: younger than average woman with child who had an elective abortion and was highly educated. She donated in several cycles and was likely to be purely financially motivated.

Spain

Minimum age was mostly 18 years with two centres using 20 years. Maximum age ranged from 30 to 35 years. The Spanish centres either gave a fixed amount only or a fixed amount plus expenses. The fixed amount ranged from 700 to 1300€ (PPP 727–1350). Nothing was offered in return for egg sharing.

Donor profile: young woman who is unlikely to work full time, single or divorced and without child, donates more than once. She donated for a combination of altruistic and financial reasons.

Ukraine

The number of centres participating is unknown as the questionnaires were brought in as one package. As a consequence, it was impossible to know whether there was variation in the rules applied by the centres. On the basis of the differences in answers from the donors, we concluded that several centres have participated. On the basis of the data we received, both motherhood and marriage or co-habitation were requested. Additional criteria included normal anti-Müllerian hormone (AMH) and normal karyotype. The centres gave a fixed

amount of 400–640€ (4200 or 6800 UAH) (PPP 1754–2807). In return for egg sharing, a partial IVF cycle was offered.

Donor profile: young, highly educated mother who donated in several cycles for a combination of altruistic and financial reasons.

UK

Minimum age used by the centres ranged from 18 to 25 years. Maximum age was 35 years. Neither motherhood nor marriage or co-habitation was requested. Additional conditions included BMI >21 kg/m², no family history of hereditary diseases, non-smokers, good AMH and FSH. Five out of six centres indicated that they only paid proven expenses but at the same time some indicated that they also provided a fixed amount of 750£ (870€). Regarding egg sharing, all possibilities were applied: some offered a full cycle, some a partial cycle and some nothing at all.

Donor profile: a woman of 30 years of age who was highly educated and was most likely sharing her oocytes.

Discussion

The participation differed between countries. In the Czech Republic, all centres performing oocyte donation participated. In others countries, only a small portion of the IVF centres provided data. Still, the number of centres does not necessarily indicate the coverage within a country since not all IVF centres offer oocyte donation. A view on the reliability can be better obtained by comparing the numbers with the EIM data. The countries of the participating centres produced 94.9% of the estimated number of donors aspiration reported by EIM in 2009. Among those countries, the number of forms received for the study represents 9.9% of the aspirations for oocyte donation in 2009, ranging from 2.4% in Russia to 75.2% in Greece with 7.2% Spain, 7.8% Belgium, 8.3% UK, 9.4% France, 9.7% Czech Republic, 17.3% Ukraine, 36.9% Finland, 39.4% Portugal, 43.7% Poland. This indicates a relatively good participation in most countries.

Relationship between donor and recipient

Although ‘anonymity’ usually refers to the relationship between donor and offspring, the term can also be used for the relationship between donor and recipient. Frequently, the terms ‘known’ and ‘unknown’ are used to refer to the relationship between donor and recipient at the moment of the donation. Some countries have regulation or legislation on this point, others have not. Poland, for instance, has no regulation on this point. It is up to the centres to decide. The overwhelming majority of their donations was anonymous but donations within the family and donations to known donors were performed in Poland (Kurzawa, personal communication). The percentages for France were remarkable on this point because anonymity is legally imposed and donors are not allowed to donate to a specific person.

For Belgium, there is no conflict between the results and the legislation. Although the Belgian law imposes anonymity, it allows known donation if both donor and recipient agree. From two studies on oocyte donors in Belgium, we know that ~15% of oocyte donors are unknown to the recipient couples or women (Baetens *et al.*, 2000; Laruelle *et al.*, 2011). This broadly corresponds with the data from our study in which 26% reported to donate to an unknown person.

Relationship between donor and donor offspring

There is an obvious link between the results in this section and the legislation in the country. Both the UK and Finland adopted a law that obliges donors to be identifiable. It is therefore remarkable that in these countries a small percentage of donors still indicated that they will be anonymous. In the case of the UK, this amounted to 15.5%. There are several possible explanations. One explanation would be that counselling did not make this point clear to the donors. Another explanation would be that they misunderstood the question and interpreted it as their current position vis-à-vis the child. The wording of the question makes this interpretation difficult (‘For the future child you will be anonymous or identifiable?’ and ‘Identifiable means that your name may be released to the child at a later age’) but it cannot be excluded. The reverse could also be found in countries with legally imposed anonymity such as France and the Czech Republic. In France, for instance, 6.7% answered ‘identifiable’ while this was not allowed according to the law. In the Czech Republic, this was 4%. A possible explanation is that some centres did not follow the law strictly and allowed sisters or good friends to donate directly to each other.

Furthermore, there is no evident relationship between known/unknown donors and anonymity/identifiability for the offspring. A known donor (a donor whose identity is known to the recipient at the moment of donation) is not necessarily known or identifiable to the offspring. The two Belgian studies (Baetens *et al.*, 2000; Laruelle *et al.*, 2011) showed that recipients who used a known donor frequently decided neither to inform the child about the donor conception nor about the identity of the donor.

Age of the donor

Many countries have a minimum age of 18 years for oocyte donation (age of majority). Besides the basic legal reasons, this age limit is also based on the wish to include only women with sufficient psychological maturity. The upper age limit is based on two considerations: women over 35 years have a lower response to the hormonal stimulation (fewer oocytes are collected) and a higher aneuploidy rate. Therefore, most centres have a 35-year age limit. However, this is not necessarily a legal rule and centres may accept exceptions. In Belgium, for instance, women older than 35 years are accepted when they donate to a specific recipient who has been counselled about the implications of the donor’s age. Also in the UK, the age limits may be interpreted flexibly in cases of direct donation. Other countries may accept older donors because there is great scarcity and thus no alternative. The majority of the donors over 35 years could be found in Belgium and France.

Residence of the donor

Only in Belgium a considerable minority of donors was not living in the country. This was also corroborated by the national data collected by BELRAP (College of Physicians for Assisted Reproduction Therapy, 2011, 2012). In a report of the High Health Council, the data showed that in 2008, 64.4% of the oocyte donors resided in Belgium, 27.7% in another European country and 7.4% were unknown. It is unclear whether the donors from outside Europe were included in the category ‘unknown’. When the residence of the donor oocyte recipient was considered, the data indicated that 50.5% of the recipients had residence in Belgium, 42.4% in Europe and 5.8% unknown (High Health Council,

2010). The present study confirmed that most non-residents (17/18) donated to foreign recipients. This was a typical case of cross-border reproductive care performed for reasons of law evasion (Pennings et al., 2009). There are many reasons why people prefer to donate to a specific other person (genetic link, familiarity with and trust in the recipient, etc.). People who attribute great importance to these aspects are willing to travel in order to obtain these aspects.

Country of origin of the donor

Women who immigrate into a country are frequently situated in the lower social classes. As such, the financial compensation may be especially attractive to them. In total, 13% of the women were not born in the country in which they donated. Immigration streams are, however, difficult to present. UK for instance is a popular destination for many people. Countries such as Greece that border poor countries will obviously also attract many immigrants. It is impossible to say on the basis of our data whether the number of donors coming from other countries was disproportionate in comparison to the total presence of immigrants in the countries.

Number of donations

There is an ongoing debate about the possible negative effects of the stimulation and oocyte retrieval on women. No evidence of harmful effects has been provided. Most countries do not have a direct limit on the number of times a donor can donate. Only Portugal has specific rules: a donor cannot donate more than three times and the donations must be >6 months apart. However, there is often indirect regulation of the number of stimulation cycles through the maximum number of donor offspring or the number of families that can receive a donor's gametes. In Belgium, this is fixed at 6 women; in Greece, 10 children but excluding siblings of already existing children; in Finland, a maximum of 5 families; and 10 families in the UK. No regulation exists in Poland, Russia and Ukraine on this point.

Without evidence of harmful effects, the question is why there seems to exist a negative attitude about multiple donations. The assumption seems to be that poor women are lured into this trap or may see this as their only way to make money. However, although we found a relationship between multiple donations and financial compensation, many studies found that most donors (including altruistically motivated donors) would donate again (Purewal and van den Akker, 2009). In the right setting, the psychological benefits outweigh the physical burden. In general, in our study only 11% of all donors donated three times or more.

Educational level

The educational level is difficult to interpret because of the category of 'technical/professional'; depending on the country, this is a low-level education (slightly below secondary education) or a high education (slightly lower than university degree). Our data however seem to indicate that this category is situated in between secondary education and university. More than half of the donors had a higher than secondary level of education. The only exception here was the Czech Republic with only 9% above secondary level.

Many people are convinced that the proportion of students may be explained by the compensation. However, the high proportion of students in countries like Portugal and Finland cannot be explained by the

compensation (of 625€ and 250€, respectively). Other factors, such as recruitment strategies, may have a larger impact.

Reproductive history

A little more than half of the donors had proven their fertility. This selection criterion increases the chance of having a suitable donor. The rule of proven fertility may also be defended on the basis of improved informed consent: women who already have a child understand better than non-mothers what it means to help others to have a child and to have a genetically related child that will be raised by another person. To a certain extent, motherhood will correlate with age of the donor and civil status. However, in some countries, motherhood is imposed by law. In France, for instance, the law restricted oocyte donation to women who have reproduced. A recent law has changed this and allows non-mothers to donate (France, 2011). Donors will also have the opportunity to freeze five oocytes for themselves for future use if they want. Ukrainian and Russian centres also demanded that donors are mothers.

In the literature, it has been noted that some donors were motivated to make up for a loss such as a past abortion (Klock et al., 2003). German et al. (2001) found differences between a low compensation group (2500\$) and a high compensation group (5000\$) in that the latter group had higher numbers of previous pregnancies and a significantly higher number of previous abortions. We could not corroborate nor falsify these findings in our study.

Reimbursement/compensation and motives for donation

The amount of compensation is a highly contentious issue in the discussion on the practice of oocyte donation since it is linked with the question of exploitation of women and commodification of the human body. The data we collected are, however, difficult to interpret. First, even when there is a fixed amount of compensation, there may be a huge variation in amounts given within the country. Second, it is not always clear whether the amount covers only reimbursement of expenses or whether it also serves to compensate for discomfort, loss of time, etc. Third, when a fixed amount is paid, it is not always clear which elements it is supposed to cover. Finally, the same amount of money may have a completely different effect on women in one country compared with the next. To cover these differences, we applied the PPP exchange rates. If one fears that the amount that is offered would constitute a form of pressure or coercion on women, it is likely that this will have an effect mainly on poorer women.

Given the controversial status of oocyte donation, there is a risk that higher standards are introduced than for other types of donation of body material. Some people argue that this heightened standard is justified by the fact that there are certain (be it small) risks involved for the physical and psychological well-being of the donor. However, we will not enter that debate here. We would like to focus on another aspect of the heightened standard, namely the purity of motives (Pennings, 2005). Most people have more than one reason for most of their actions. There is no reason to assume that this would be different for oocyte donation. In fact, in many studies 'commercial' donors have also reported altruistic motives (Purewal and van den Akker, 2009). The problem is that the label 'commercial' may refer to two different meanings: (i) donors who receive payment for their donation and (ii) donors who are motivated by money. Theoretically, there does not have to be a relationship between receiving

money or compensation and the motives of people. The fact that a person receives compensation or money does not mean that she is merely motivated by that money. People find it very difficult to suppress the conclusion that if a financial benefit or self-interest is present, that is the only motive that counts. However, this rule is applied very selectively. Most people do not conclude from the fact that a doctor is being paid for his/her services that he/she is not motivated by the desire to help the patient. Likewise, the fact that an oocyte donor is compensated for her efforts does not mean that she is not motivated by the wish to help the infertile. The presence of a *quid pro quo* does not exclude an altruistic motive (Pennings, 2005). If people are motivated by a desire to help others, they may be easier to persuade to actually help when they also stand to benefit from it or when they have the perception that they are at least not losing anything. Our data on the combination of motives to donate, and especially the high number of donors who indicate both altruism and financial gain, seem to corroborate this conclusion.

Still, we wanted to find out whether the amount that is offered as payment or compensation correlates with motives for donation. Are countries that offer the highest amount of money (in PPP terms) also the countries with the highest percentage of purely financially motivated donors? This was difficult to measure given the variation between centres within one country and between countries. Still, our study confirms the finding from Lindheim *et al.* (2001) that financial motivation was greater for donors who received a higher sum. In Belgium, for instance, some clinics gave a fixed sum of 500€ while another gave 2000€. Among those donors who answered the question, 94.1% were purely altruistically motivated in the 500€ group compared with 52.9% on the 2000€ group. A similar trend was noticeable in Greece. However, the latter finding could not be confirmed for other countries because the differences in amount of compensation between the centres were insufficient. Nevertheless, these relationships may also remind us of a possible effect of social desirability in the answers by the donors. This study demonstrated that motivation varied with the amount of money paid to the donor. Those indicating a financial motivation were expecting a significantly higher amount of money (mean \pm SD: 867€ \pm 253) than those with both a financial and altruistic motive (912€ \pm 305) and those with purely altruistic motivation (706€ \pm 380); recalculated in purchasing power, the amount was, respectively, 1357€ \pm 706; 1188€ \pm 594; and 821€ \pm 542.

Egg sharing

Since the start, there has been a discussion on the acceptability of egg sharing. Two ethical issues remain: first, whether reimbursement of a cycle can/should be considered as indirect payment and second, whether the offer of a free or partially free cycle would jeopardize the voluntariness of the donation. In this study, we have treated 'own treatment' as a separate motive from the financial motive because we believe that these are different motives. Nevertheless, both financially motivated and treatment motivated donors enjoy a personal benefit compared with purely altruistically motivated donors. In most studies on the motivation of egg sharers, it was found that the willingness to help another couple was also present in the majority of these donors. Most egg sharers seemed to have mixed motives (Purewal and van den Akker, 2009; Gürtin *et al.*, 2012).

It would be logical that egg sharing would be especially popular in countries with bad reimbursement systems. Regulations governing

publicly financed IVF coverage were again highly variable between countries (Berg Brigham *et al.*, 2013). This makes it very difficult to find trends in utilization and effects on donor numbers. Nevertheless, the two countries with many egg sharers confirm the suggestion to a certain extent: Poland does not reimburse IVF and the National Health System in the UK most of the time only reimburses one cycle with wide inter-regional variations. Still, while low reimbursement may promote egg sharing, more factors are needed to explain this practice since many other countries do not provide public funding for ART either and still no egg sharing occurs. Belgium has had a very generous reimbursement system since 2007, with six stimulation cycles fully reimbursed. Pennings and Devroey (2006) have demonstrated that the introduction of this system has led to a decrease in egg sharers, at \sim 70%. The latest BELRAP report, however, showed an increased egg sharing activity. A possible explanation is that the current egg sharers are foreign patients who are not eligible for funding by the Belgian social security. This was confirmed in the latest BELRAP report for 2009 and 2010 (College of Physicians for Assisted Reproduction Therapy, 2011, 2012). In 2009, 65 of 67 fresh sharing cycles were performed by patients without social security. In 2010, it was 82 out of 85. It can be expected that the majority of these patients were of foreign origin.

Conclusion

This was the first report of oocyte donor characteristics in several European countries resulting from an international empirical study. The study documented a considerable variation of donor characteristics and motivations between European countries.

Oocyte donation raises many broad social, ethical and political problems which require a coordinated effort from various stakeholders, such as patients organizations, professional societies and policy makers, both at the national and European level. The safety aspect and the condition of altruism are covered by the European Commission Tissues and Cells directive. Nevertheless, it is obvious from our study that the notion of proportional and fair compensation of oocytes donors has a very wide margin of appreciation within the countries of the European Union, where some donors received what might be construed as a disproportionate amount of compensation when translated into PPP.

A quite striking finding of this study was that, in countries without legislation, there was as much variation between centres within the countries as between countries. Every element that was not strictly determined by law is prone to variations. For instance, the minimal age was 18 years according to most laws but some centres imposed a higher minimum age on a voluntary basis. The same variation applied to maximum age and conditions such as motherhood, etc. Although such variation is frequently frowned upon, there seems to be no good reason why such variations should be avoided or would be harmful.

It is very difficult to determine on the basis of the present data why some countries, such as Spain and the Czech Republic, have more donors than others. Most likely, the explanation will differ from country to country. The type of donor that is attracted will depend on the rules of the donation practice, i.e. whether anonymity is guaranteed, whether reimbursement/payment is provided, etc. However, one factor cannot explain the situation across all countries.

One of the most contentious issues, i.e. compensation or payment, proved to be highly complicated. A strict prohibition on any kind of

compensation above the level of proven expenses clearly had the desired effect of abolishing financial motives. France demonstrated this beyond doubt. However, France is also one of the countries with a low number of oocyte donations. A system like Finland, where one added 250€ on top of proven expenses, still maintained a high degree of altruistically motivated donors. Again, it seems perfectly defensible that every country should be able to decide for itself which system should apply on its territory. Still, a country that wants to hold on to free and voluntary donations should look carefully at the results of this study. The percentage of purely financially motivated donors shows that some countries may have reason to re-assess their system. The information on the motivation of donors in different countries may also be very useful for recipients who are concerned about this specific aspect.

On the basis of the current study, there is little reason to start an international oocyte donor registry. The number of donors with residence outside the country where they donate is very small (1.6%). The presence of a small but not insignificant percentage of donors with a different country of origin does raise some concerns because one may assume that this is proportionally an underprivileged and vulnerable group of women. Monitoring the oocyte donation activity at the national level is strongly recommended because new developments, such as the establishment of oocyte banks, may drastically alter the practice in a short time period.

Supplementary data

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

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Authors' roles

G.P., J.d.M. and F.S. wrote the main part of the paper. Statistical analysis was done by J.d.M. All other authors participated in the design of the study, the analysis of the data and critical reading of the entire document. All authors approved the final version for publication.

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Conflict of interest

None declared.

References

- Baetens P, Devroey P, Camus M, Van Steirteghem A, Ponjaert-Kristoffersen I. Counselling couples and donors for oocyte donation: the decision to use either known or anonymous oocytes. *Hum Reprod* 2000; **15**:476–484.
- Berg Brigham K, Cadier B, Chevreul K. The diversity of regulation and public financing of IVF in Europe and its impact on utilization. *Hum Reprod* 2013; **28**:666–675.
- College of Physicians for Assisted Reproduction Therapy. BELRAP Report Belgium 2009, 2011. www.belrap.be.
- College of Physicians for Assisted Reproduction Therapy. BELRAP Report Belgium 2010, 2012. www.belrap.be.
- Danish Council of Ethics. *International Trade in Human Eggs, Surrogacy and Organs*. Copenhagen: Danish Council of Ethics, 2013.
- de Mouzon J, Goossens V, Bhattacharya S, Castilla JA, Ferraretti AP, Korsak V, Kupka M, Nygren KG, Nyboe Andersen A and The European IVF-monitoring (EIM) Consortium, for the European Society for Human Reproduction and Embryology (ESHRE). Assisted reproductive technology in Europe, 2006: results generated from European registers by ESHRE. *Hum Reprod* 2010; **25**:1851–1862.
- de Mouzon J, Goossens V, Bhattacharya S, Castilla JA, Ferraretti AP, Korsak V, Kupka M, Nygren KG, Nyboe Andersen A. Assisted reproductive technology in Europe, 2007: results generated from European registers by ESHRE. *Hum Reprod* 2012; **27**:954–966.
- Ferraretti AP, Goossens V, de Mouzon J, Bhattacharya S, Castilla JA, Korsak V, Kupka M, Nygren KG, Nyboe Andersen A. The European IVF-monitoring (EIM) and Consortium for The European Society of Human Reproduction and Embryology (ESHRE) Assisted reproductive technology in Europe, 2008: results generated from European registers by ESHRE. *Hum Reprod* 2012; **27**:2571–2584.
- Ferraretti AP, Goossens V, Kupka M, Bhattacharya S, de Mouzon J, Castilla JA, Erb K, Korsak V, Nyboe Andersen A. The European IVF-monitoring (EIM) and Consortium for The European Society of Human Reproduction and Embryology (ESHRE) Assisted reproductive technology in Europe, 2009: results generated from European registers by ESHRE. *Hum Reprod* 2013; **28**:2318–2331.
- France. Loi no 2011-814 du 7 juillet 2011 relative à la bioéthique. www.legifrance.gouv.fr.
- German EK, Mukherjee T, Osborne D, Copperman AB. Does increasing ovum donor compensation lead to differences in donor characteristics?. *Fertil Steril* 2001; **76**:75–79.
- Gürtin ZB, Ahuja KK, Golombok S. Egg-share donors' and recipients' knowledge, motivations and concerns: clinical and policy implications. *Clin Ethics* 2012; **7**:183–192.
- High Health Council. Demography and epidemiology of fertility in Belgium and the need for medically assisted reproduction. Publication nr. 8632. 2010. http://www.health.belgium.be/internet2Prd/groups/public/@public/@shc/documents/ie2divers/19065508_nl.pdf.
- Klock SC, Stout JE, Davidson M. Psychological characteristics and factors related to willingness to donate again among anonymous oocyte donors. *Fertil Steril* 2003; **79**:1312–1316.
- Laruelle C, Place I, Demeestere I, Englert Y, Delbaere A. Anonymity and secrecy options of recipient couples and donors, and ethnic origin influence in three types of oocyte donation. *Hum Reprod* 2011; **26**:382–390.
- Lindheim SR, Chase J, Sauer MV. Assessing the influence of payment on motivations of women participating as oocyte donors. *Gynecol Obstet Invest* 2001; **52**:89–92.
- Magureau G. Egg donation and conflict within the Romanian legal framework. Paper presented at the CORE European seminar: Human egg trading and the exploitation of women. Brussels: European Parliament, 30 June 2005. <http://www.handsoffourovaries.com/pdfs/appendixg.pdf>.

- Nyboe Andersen A, Goossens V, Bhattacharya S, Ferraretti AP, Kupka MS, de Mouzon J, Nygren KG, The European IVF-monitoring (EIM) Consortium. Assisted reproductive technology and intrauterine inseminations in Europe, 2005: results generated from European registers by ESHRE. *Hum Reprod* 2009;**24**:1267–1287.
- Pennings G. Demanding pure motives for donation: the moral acceptability of blood donations by haemochromatosis patients. *J Med Ethics* 2005; **31**:69–72.
- Pennings G, Devroey P. Subsidized in-vitro fertilization treatment and the effect on the number of egg sharers. *Reprod Biomed Online* 2006; **13**:8–10.
- Pennings G, Autin C, Decler W, Delbaere A, Delbeke L, Delvigne A, De Neubourg D, Devroey P, Dhont M, D'Hooghe T et al. Cross-border reproductive care in Belgium. *Hum Reprod* 2009;**24**:3108–3118.
- Pfeffer N. Eggs-ploiting women: a critical feminist analysis of the different principles in transplant and fertility tourism. *Reprod Biomed Online* 2011; **23**:634–641.
- Purewal S, van den Akker O. Systematic review of oocyte donation: investigating attitudes, motivations and experiences. *Hum Reprod Update* 2009; **15**:499–515.
- Raoul-Duval A, Letur-Konirsch H, Frydman R. Anonymous oocyte donation: a psychological study of recipients, donors and children. *Hum Reprod* 1992; **7**:51–54.
- Shenfield F, de Mouzon J, Pennings G, Ferraretti AP, Nyboe Andersen A, de Wert G, Goossens V; Eshre Taskforce on Cross Border Reproductive Care. Cross border reproductive care in six European countries. *Hum Reprod* 2010;**25**:1361–1368.
- Shenfield F, Pennings G, de Mouzon J, Ferraretti A-P, Goossens V, on behalf of the ESHRE Taskforce 'Cross Border Reproductive Care'. ESHRE's good practice guide for cross-border reproductive care for centers and practitioners. *Hum Reprod* 2011;**26**:1625–1627.
- Taylor AM, Taylor MP. The Purchasing Power Parity debate. *J Econ Perspect* 2004;**18**:135–158.