

# Systematic review of oocyte donation: investigating attitudes, motivations and experiences

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**BACKGROUND:** The social and psychological factors determining intentions to donate gametes are important for clinics, policy-makers and recruitment campaigns. The aims of this systematic review were therefore to integrate the research findings regarding the psychosocial determinants of oocyte donation and extrapolate women's experiences of donation.

**METHODS:** A bibliographic search of English language publications of four computerized databases was undertaken with no time restriction set for publications.

**RESULTS:** A total of 64 studies met the inclusion criteria and were included in the review. The research syntheses revealed there were distinct differences between patient and non-patient (known, commercial, volunteer and potential) donors on demographic characteristics, motives for donation, and issues relating to disclosure and attitudes towards the resultant offspring. Further, studies have found that a significant proportion of oocyte donors and women from the general population were prepared to donate their oocytes as identifiable donors. Studies which have examined the experiences of donors report positive experiences of oocyte donation. However, a number of methodological limitations relating to the oocyte donation research literature have been identified in this systematic review.

**CONCLUSION:** Differences between donor groups on a range of factors highlight the need for tailored psychosocial evaluation and counselling. The review has demonstrated that it is not useful to generalize across donor groups on various factors relating to oocyte donation.

**Key words:** oocyte donation / gamete donation / infertility / artificial reproductive technologies / systematic review

## Introduction

Since the first successful use of donated oocytes in 1984 (Lutjen *et al.*, 1984), oocyte donation has become a common treatment option

(Pennings, 2007), resulting in good pregnancy rates and the birth of healthy babies. Demand for oocytes has been increasing across the globe, with more couples willing to use this as a means to overcome their infertility, although practices differ between countries. For

example, some Islamic countries do not permit any form of gamete donation (Inhorn, 2006), whereas, Denmark, China and Israel only permit excess oocytes that are retrieved from women undergoing IVF to be donated (Klein and Sauer, 2002). In America on the other hand, non-patient oocyte donors can be awarded monetary compensation (Patrick *et al.*, 2001; ASRM, 2007), whereas payment in the UK is illegal.

There are distinct groups of oocyte donors; 'patient donors' (women who enter an agreement with their infertility clinic to donate a proportion of their oocytes for the treatment of others in order to receive subsidized infertility treatment) and 'non-patient donors' which include different sub-types; volunteer donors (donation without financial reward), known donors (donation to known recipients), commercial donors (donation with monetary compensation) and potential donors (women who report an intention to donate their oocytes in the research literature). Although widely practiced, there is an acute shortage of oocyte donors in the UK and globally (HFEA, 1998; Murray and Golombok, 2000; Blyth and Frith, 2008). Pennings (2005) noted that changes in legislation regarding the abolishment of donor anonymity in many European countries are responsible for the decline in donor availability, however Blyth and Frith (2008) provided compelling evidence against that. Furthermore, Daniels (2007a, b) also asserted that the recruitment of identifiable gamete donors is very much possible. The aims of this systematic review were 2-fold. First, to integrate the findings regarding the psychological determinants and motivational patterns across oocyte donation type, and second, to draw a coherent picture of women's actual experiences of donation and attitudes towards potential donation.

## Methods

### Search strategy

A bibliographic search of English language publications in four computerized data bases (PubMed, Science Direct, Swetswise and PsycInfo) was undertaken, with no restriction set for time of publication, resulting in the exclusion of eight (potentially relevant) non-English publications. The keywords 'egg/oocyte donation', 'egg/oocyte donor(s)', 'attitudes' and 'psychological/psychosocial' were used in all possible combinations. The search was augmented with references cited in primary sources, in review papers and hand-searching specialist journals.

### Selection

Inclusion criteria: only English language peer-reviewed studies that have examined the demographic characteristics, attitudes, motives and experiences of oocyte donation for treatment (where relevant) of patients donors (oocyte sharers); non-patients (known, commercial and volunteer); potential patient donors from infertile populations; and potential non-patient donors from the general populations were eligible. 'Potential donors' refers to women from general or patient populations who have not donated their oocytes nor are they on the waiting list to donate, but whose attitudes and intentions to donate have been investigated. Studies with potential donors have been included because their data provided progressive information on the social and psychological processes which may influence the decision to donate, and combined with data from actual donors, provides a comprehensive account of the research literature and the attitudes and motivations for oocyte donation.

Exclusion criteria: studies that have focused on sperm donors, recipient couples, donor offspring, practitioners or researcher's attitudes

towards oocyte donation were not included because the focus of this review is on oocyte donors or potential oocyte donors. Articles on oocyte donation for research were excluded because of the small number of papers on this topic and papers on embryo donation were also excluded because there is compelling evidence that asserts there are distinct differences in peoples' perceptions of embryos and oocytes (e.g. Söderström-Anttila *et al.*, 2001; Kirkman, 2003; Roberts and Throsby, 2008).

### Study characteristics

All study methodologies and designs (e.g. quantitative, qualitative or case studies) and measurement outcomes were included. Study participants included actual oocyte donors (patient, known, commercial or volunteer oocyte donors) or potential donors.

### Screening and quality assessment

The first author (S.P.) independently screened titles, abstracts and full-text reports of all retrieved papers and this was cross-checked by the second author (O. van den A.). Any disagreements were resolved by discussion. The selection of studies was informed by the research question, inclusion/exclusion criteria and full consensus by both authors. Quality assessment on articles which met the inclusion criteria was based upon the protocol recommended by the Cochrane Database of Systematic Review. This was done by the first author and cross-checked by the second. However, the criteria were adjusted to fit the remit of this review:

- (i) Database: studies should be peer-reviewed in an English language journal with an abstract presented in an electronic database.
- (ii) Selection of participants: study participants should be clearly defined as patient, known, volunteer, commercial or potential donors.
- (iii) Outcome measures: the outcome measurements should be described, preferably including reliability and validity coefficient for quantitative studies and the research questions for qualitative studies.
- (iv) Study methodology: study methodology should be clearly described in sufficient detail which includes the recruitment of participants, sample size and description of participants, method and time of assessment and outcome measurements.

### Data abstraction

A standardized data extraction sheet was developed. Studies which met the eligibility and quality criteria were comprehensively examined and necessary information was extracted from each paper and tabulated by the first author (S.P.) and cross-checked by the second (O. van den A.). The extracted data from single studies included author's details, year of publication, study and participants' characteristics, sample size, assessment procedures, outcome measurements and summary of findings. Disagreements regarding extracted data were resolved by consensus.

### Search results

The titles of 8264 records were initially screened (dates of publication ranged from 1974 to 2009 for PubMed; 1961 to 2009 for Science Direct; 1996 to 2009 for Swetswise; and 1995 to 2009 for PsycInfo) and the majority of the records were medical/embryological papers or duplication of papers. Of these 8264 titles, the abstracts of 3348 records were reviewed and this led to the exclusion of any research articles that were not relevant (e.g. duplication in the searches, medical/embryological papers, papers focused on sperm donors or donor recipients/offspring or only fleetingly covered oocyte donation). Of the 3348 abstracts, full texts of 155 records were reviewed and 64 met the inclusion criteria and were included. Of the remaining 91 records which were rejected, 28 records were reviews, commentaries, opinions or letters

(publication dates ranged from 1995 to 2008), 61 records were not relevant (publication dates ranged from 1988 to 2008) (e.g. medical, sperm donors, donor recipients/offspring or practitioner/researcher focused articles) and two were rejected (publication dates ranged from 1991 to 2004) because they were deemed poor quality, as outlined in the quality assessment quality (i.e. unexplained inconsistency in recruitment and lack of scientific rigour, respectively). The screening process is summarized in the study flow chart (Fig. 1).

## Results

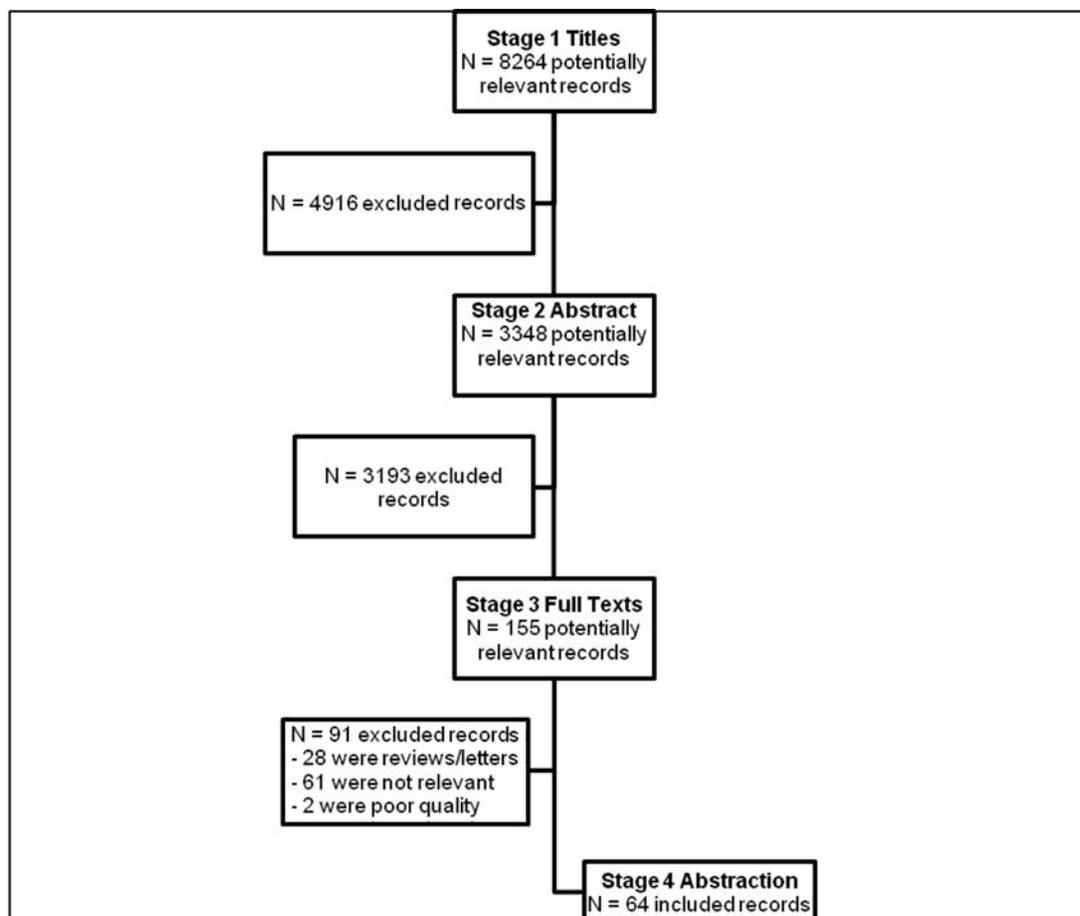
There was considerable variation in research question, methodology and study design, quality, sample and sample size and outcome measurement between the 64 studies. Despite this, it was possible to extrapolate central issues which emerged and these are discussed below. The results section consists of seven subsections. First, methodological aspects of the studies are reviewed. Second, the results of studies with patient donors are discussed, followed by sections with known donors, commercial donors and volunteer donors. The sixth section reports findings which are relevant for all actual donor groups and not covered in individual subsections to avoid repetition. Finally, data with potential donors are reviewed separately.

## Study characteristics

The study characteristics of the 64 included articles can be found in Tables I–IV. Tables I–III report the study characteristics of studies with patient, known, commercial and volunteer donors, whereas Table IV reports the study characteristics of potential donors. The tables are organized by donor type and includes key features on samples, methodologies and research questions, which provide important contextual information. Individual study results are not presented on the tables because they are discussed in detail in the result section. An overview of the methodological aspects of the studies included in the review will be discussed below and where relevant, distinctions between donor groups (patient, non-patient and potential donors) will be made.

### Country of origin

Oocyte donation practice varies across countries, and this will have an inevitable impact on the research output and create some divergence within the oocyte donation literature. Authors from 12 different countries have contributed to the psychological assessment of oocyte donation and with the exception of Turkey, all these countries permit oocyte donation. However, the majority of these studies were conducted either in the USA (22/64) or the UK (21/64), thus



**Figure 1** Flowchart depicting selection of articles for review.

resulting in an over-representation of white Western ideology and interpretation of what is a global phenomena [oocyte donation]. Moreover, a substantial percentage of the research output from the USA has involved commercial donors.

Additionally, the majority of the studies which have examined the psychological profile of oocyte donors have also stemmed from the USA and relate specifically to commercial donors using prospective and retrospective research design (e.g. Schover *et al.*, 1990; Lessor *et al.*, 1993; Klock *et al.*, 1999, 2003; Lindheim *et al.*, 2001) (see Table II) and little research has been carried out on the psychological profile of patient, volunteer, known and potential oocyte donors. There are legitimate constraints therefore to how much the data from the USA can be generalized to other populations, which needs to be taken into account when interpreting the data presented in this systematic review. Studies from the UK have included a more balanced representation of the different donor groups, although they tend to be largely retrospective.

### Research design

Studies on oocyte donation have used a combination of questionnaires or interview research designs; and as shown in Tables I–IV, some of the qualitative studies have not used a theoretical approach to analyse their data (e.g. Snowdon, 1994; Kalfoglou and Geller, 2000a, b; Blyth, 2004), and not all studies have distinguished between donor groups in data analyses (e.g. Sauer and Paulson, 1992; Ahuja *et al.*, 1997; Byrd *et al.*, 2002; Frith *et al.*, 2007). Furthermore, some of the sample sizes of the studies reviewed were relatively small. For example, Yee *et al.* (2007) reported a quantitative study on 13 known oocyte donors. As can be seen from Table IV, studies on general populations however reported more substantial participant numbers (e.g. Kailasam *et al.*, 2001; Skoog-Svanberg *et al.*, 2003a, b; Purewal and van den Akker, 2009).

The research literature also includes studies using psychological interviews and psychometric assessments to determine the suitability of candidates for oocyte donation (e.g. Schover *et al.* 1990, 1991, 1992; Bartlett, 1991; Klock *et al.*, 1999; Beatens *et al.*, 2000), or questionnaire designs to assess oocyte donor's attitudes and experiences of the donation procedure post-donation (e.g. Rosenberg and Epstein, 1995; Fielding *et al.*, 1998; Warren and Blood, 2003; Yee *et al.*, 2007; Kenney and McGowan, 2009). However, many of the studies have not used standardized or validated questionnaires or do not report reliability or validities (see tables for the identities of these specific studies). In addition, with the exception of some studies (e.g. Kirkland *et al.*, 1992; Skoog-Svanberg *et al.*, 2003a, b; Purewal and van den Akker, 2006, 2009; Isikoglu *et al.*, 2006), the outcome measurements used differ. Thus, some of the differences reported in the systematic review may be attributable to differences in the questions asked, however this will be discussed in more detail in the subsequent sections. Further, as can be seen from Tables I–III, follow-up studies with oocyte donors range from weeks (e.g. Klock *et al.*, 1998), months (e.g. Söderström-Anttila, 1995; Braverman and Corson, 2002; Klock *et al.*, 2003) to a few years after donation (e.g. Fielding *et al.*, 1998; Kalfoglou and Gittelsohn, 2000; Yee *et al.* 2007; Kenney and McGowan, 2009). Thus, the data presented in the review is an immediate or short-term reflection of the psychosocial factors associated with oocyte donation and no assertions can be

made about long-term consequences of donating oocytes. The following sections will present some of the findings from these studies.

### Patient donors

There were seven studies which examined patient donors and of these, three studies focused exclusively on patient donors and the remaining studies included samples of patient and volunteer donors (see Table I). As expected, studies have shown that the majority of patient donors were married (Power *et al.*, 1990; Ahuja *et al.*, 1997, 1998; Blyth, 2004) and a large proportion were nulliparous (Power *et al.*, 1990; Ahuja *et al.*, 1997). Oocyte donation through oocyte sharing agreements has been controversial in the UK (e.g. Hands off Our Ovaries campaign, HOOO, 2006). This is perhaps why all of the studies on patient donors have stemmed from the UK and as can be seen from Table I, an important theme within this literature has been whether donors donate for altruistic reasons or for self gain (e.g. access to fertility treatment).

### Motivation

Ahuja *et al.* (1997, 1998) reported that patient donors felt helping another childless couple was just as important as helping themselves through the oocyte sharing model, and altruism was not the prerogative of their small sample of volunteer donors; even though 95% of volunteer donors were motivated to help a childless couple too. However, Ahuja *et al.*'s (1997, 1998) apparently contradictory findings have been supported by other studies. For example, Blyth (2004) interviewed patient donors on their motivation for donating and found that altruism and self interest were the primary reasons for donation and the majority of patient donors believed oocyte sharing is a 'win win' situation for all parties. In addition, Power *et al.* (1990) compared 15 patient donors to 20 volunteer donors and found that 90% of donors from both groups reported altruistic motives for donating. However, Rapport (2003) interviewed 11 prospective patient donors and showed that women were in 'pursuit of motherhood' which motivated them to donate their oocytes and not altruism.

### Attitudes towards disclosure, donor offspring and recipients

Power *et al.*'s (1990) findings suggested that patient donors were more 'removed' from the oocyte donation process than volunteer donors. For example, they found that patient donors preferred not to know the pregnancy outcome of the donation, would not donate if recipients were informed of their identity, did not wish to meet the recipients and were less likely to donate to a known recipient compared with volunteer donors. However, Kirkland *et al.* (1992) found that patient and volunteer donors (they did not distinguish between donor groups in data analyses) reported significantly less objections towards meeting the donor offspring compared with recipients suggesting this could be a potential cause for conflict in the future with the removal of donor anonymity in the UK from 2005 (HFEA, 2004). Moreover, even before changes to UK legislation (Ahuja *et al.*, 1997; Blyth, 2004), most patient donors agreed that donor offspring should be informed of their origins.

**Table 1** Characteristics of studies with patient, known and volunteer oocyte donors

Authors, year of publication and country	Sample	Method and time of assessment (pre/post donation)	Research question(s)
<b>I.a. Patient donors</b>			
1. Ahuja <i>et al.</i> (1998)/UK	114 patient donors	<b>Questionnaires<sup>b</sup></b> <i>Post-donation (women had donated between 1993 and 1997)</i>	Investigate the motivation for oocyte sharing; attitudes towards donor off spring; and reflection on medical procedure
2. Blyth (2004)/UK	20 infertile women [and 18 husbands/partners] (22 were patient donors and 16 were enquirers)	<b>Interviews<sup>a</sup></b> <i>Post-donation/post-enquiry (time since donation or enquiry unknown)</i>	Explore the motivation for oocyte sharing; experiences of treatment; and attitudes towards various aspects of oocyte sharing
3. Rapport (2003)/UK	11 prospective patient donors	<b>Interviews</b> using van Manen's interpretative phenomenological analyses <i>Pre-donation</i>	Explore the beliefs, experiences and motivations for oocyte sharing
<b>I.b. Patient and volunteer/known donor</b>			
4. Ahuja <i>et al.</i> (1997)/UK	49 patient donors, 12 volunteer donors, 46 recipients patient and 110 women enquiring about oocyte donation	<b>Questionnaires<sup>b,c</sup></b> <i>Post-donation/Post-enquiry (time since donation or enquiry unknown)</i>	Investigate the source of awareness; motivation to participate; reactions to medical procedure; attitudes towards oocyte donation issues; and perceived consequences of oocyte donation
5. Frith <i>et al.</i> (2007)/UK	75 oocyte donors (12 were patient donors and remaining were volunteer and known donors) [43 sperm donors]	<b>Questionnaires<sup>b,c</sup></b> <i>Post-donation (time since donation unknown)</i>	Investigate attitudes towards the loss of donor anonymity
6. Kirkland <i>et al.</i> (1992)/UK	15 patient donors, 20 volunteer donors [50 recipients]	<b>Questionnaires<sup>b,c,d</sup></b> <i>Post-donation (women had donated between 1988 and 1989)</i>	Compare attitudes of donors and recipients on secrecy, anonymity, disclosure, contact between donor and donor off spring and financial payment
7. Power <i>et al.</i> (1990)/UK	15 patient donors and 20 volunteer donors	<b>Questionnaires<sup>b,d</sup></b> <i>Post-donation (time since donation unknown)</i>	Compare attitudes of patient and volunteer donors towards oocyte donation (including motivation); the recipients; donor off spring; recording of information; and experiences of medical treatment
<b>I.c. Known donors</b>			
8. Warren and Blood (2003)/Australia	29 known donors	<b>Questionnaires<sup>b</sup></b> <i>Post-donation (women had donated between 1997 and 2000)</i>	Investigate the characteristics and motivations of known donors
9. Beatens <i>et al.</i> (2000)/Belgium	144 known donors [144 recipients]	<b>Psychological interviews</b> <i>Pre-donation</i>	Investigate recipient's decision making process of selecting a known or anonymous donor and examine donor's motivation for donating
10. Khamsi <i>et al.</i> (1997)/Canada	10 known donors [10 recipients]	<b>Psychological interviews</b> <i>Pre-donation</i>	Investigate the motivations for known donation and attitudes relating to disclosure, anonymity and social support
11. Winter and Daniluk (2004)/Canada	3 known donors	<b>Interviews</b> using narrative analysis <i>Post-donation (donor offspring were aged between 2 and 3 years at time of interview)</i>	Explore the motivations, experiences of medical treatment, and post donation feelings
12. Yee <i>et al.</i> (2007)/Canada	13 known donors	<b>Questionnaires<sup>b</sup></b> <i>Post-donation (women had donated during 2000–2005)</i>	Investigate the motivation for known donation, and attitudes towards medical treatment, counselling, disclosure and implication on relationship with recipients
13. Raoul-Duval <i>et al.</i> (1992)/France	32 known-anonymous donors <sup>e</sup> [32 recipient couples]	<b>Psychological interviews</b> <i>Pre-donation and 3 years post donation</i>	Explore the psychological mechanism and consequences of known-anonymous donation scheme
14. Weil <i>et al.</i> (1994)/France	69 known donors and 41 known-anonymous donors <sup>e</sup> [and their 110 recipients]	<b>Psychological interviews</b> <i>Pre-donation</i>	Compare motivations and attitudes towards confidentiality between donors and recipients involved in known donation and known-anonymous donation

Continued

Table I Continued

Authors, year of publication and country	Sample	Method and time of assessment (pre/post donation)	Research question(s)
15. Bartlett (1991)/ USA	16 prospective known donors [14 recipient infertile women. Control group of 16 infertile women not needing exogenous gametes]	<b>Psychological interviews and assessments</b> (PSS & SCL-90) for oocyte donors & recipients and control group only completed PSS & SCL-90 <i>Pre-donation for oocyte donors &amp; recipients; N/A for control group</i>	Investigate the motivations and expectations of known donation and examine the psychosocial, psychosexual, fertility, and family history of known donors and recipients

Note: Table is organized first by donor type (1.a. = Patient donors; 1.b. = Patient and volunteer/known donors; 1.c. = known donors), then alphabetically on country of origin. SCL-90 = Hopkins Symptom Checklist-90; PSS = Perceived Stress Score PSS.

<sup>a</sup>Qualitative research methodology used without a theoretical approach.

<sup>b</sup>Use of unstandardized questionnaires or no reported information on measurement's validity and reliability.

<sup>c</sup>Data analyses did not distinguish between donor groups.

<sup>d</sup>Questionnaire modified/translated from existing questionnaire.

<sup>e</sup>Known-anonymous donors refers to recipients recruiting a known donor whose oocytes are distributed to another recipient couple, who in return provided the oocytes from their donor for the first couple.

### Attitudes towards importance of genetic ties

Ahuja *et al.* (1998) also reported that their sample of 114 patient donors did not perceive the oocytes that they donated as 'their child' and they distanced themselves from the oocytes and downplayed the importance of a genetic link with any potential donor offspring. In addition, like Ahuja *et al.* (1998), Rapport found that patient donors often downplayed the importance of a genetic tie; however, Rapport's analyses revealed that donors did this as a mechanism to cope with the oocyte donation process and their doubts about oocyte sharing.

### Known donors

As can be seen from Tables I–III, eight studies have included samples with known donors only, five have studied known donors with volunteers, and a further four have included samples of commercial donors. Raoul-Duval *et al.* (1992) and some of Weil *et al.*'s (1994) and Snowdon's (1994) samples have included known-anonymous donors, which refers to recipients recruiting a known donor whose oocytes are distributed to another recipient couple, who in return provided the oocytes from their donor for the first couple. Although known donor's oocytes go to a couple whom they do not know, they are classified as known donors because they have decided to donate for a couple known to them (which means they are not volunteer donors either). Studies have generally reported that known donors are usually married, parous and related to the recipient (e.g. sister) or close friends (Raoul-Duval *et al.*, 1992; Snowdon, 1994; Greenfeld *et al.*, 1995; Khamsi *et al.* 1997; Beatens *et al.*, 2000; Warren and Blood, 2003; Winter and Daniluk 2004; Yee *et al.*, 2007).

### Motivation

Unlike other donation types, there appears to be consensus within the known donation literature regarding the motivation for known oocyte donation. Studies with known donors have reported that the majority of known donors were motivated to donate because of their personal relationship with the recipients, particularly if they were related (Raoul-Duval *et al.*, 1992; Snowdon, 1994; Weil *et al.*, 1994; Greenfeld *et al.*, 1995; Khamsi *et al.*, 1997; Beatens *et al.*, 2000;

Kalfoglou and Gittelsohn, 2000; Warren and Blood, 2003; Winter and Daniluk, 2004; Yee *et al.*, 2007). Through psychological interviews, Raoul-Duval *et al.* (1992) found that all of their known-anonymous donors were donating their oocytes in an 'oocyte pool' in the hope that the recipient woman (often sisters or friends) 'could experience the supreme female accomplishment of motherhood' (pp. 52), suggesting the perceived importance of motherhood is an underlying factor too. Further, Warren and Blood (2003) found in their sample of 29 Australian known donors, that 65% of donors came from large families (three or more siblings) and nearly half of the sample indicated that their family experiences (such as love for sister and witnessing sister go through reproductive difficulties) had influenced their decision to donate.

### Attitudes towards disclosure

There has been some research interest in known donor's attitudes towards disclosure because as they are known to the recipient family, they may have regular contact with the donor offspring. For example, Greenfeld *et al.* (1995) found that known donors were less likely to believe the child should be informed of their genetic origins compared with commercial donors. Khamsi *et al.* (1997) found 80% of donors in known donation would not disclose information to a child, which concurs with Weil *et al.*'s (1994) findings. Although Yee *et al.* (2007) found a shift in attitudes towards more willingness to disclose to the donor offspring (9 out of the 13 known donors planned to disclose), the majority of donors however recognized that disclosure decision-making was the parents decision. Further, there are some inconsistencies regarding the need for 'secrecy' within the family and this may be due to the small sample sizes of studies which have looked at this. For example, Khamsi *et al.* (1997) found that the majority of their donors and recipients (80%,  $n = 20$ ) had not informed their friends and family about the oocyte donation program and Fielding *et al.* (1998) also found that known donors ( $n = 7$ ) were less likely to tell other members of their family about their donation than volunteer donors ( $n = 32$ ). However, these results are not conclusive because Yee *et al.* (2007) and Weil *et al.* (1994) reported that the majority their sample of known donors had informed significant others.

**Table II** Characteristics of studies with known and commercial oocyte donors

Authors, year of publication and country	Sample	Method and time of assessment (pre/post donation)	Research question(s)
<b>2.a. Known and commercial donors</b>			
16. Greenfeld <i>et al.</i> (1995)/USA	26 prospective known donors and 49 prospective commercial oocyte donors	<b>Psychological interviews</b> <i>Pre-donation</i>	Compare known and commercial donors on psychosocial history, motivation for donation, and attitudes towards disclosure
17. Kalfoglou and Geller (2000a)/USA	11 known and 22 commercial oocyte donors and 6 prospective oocyte donors (donor type unknown)	<b>Interviews<sup>a</sup></b> <i>Pre-donation (for 6 women preparing to donate) and post-donation (for former donors, donated within 3 years at time of study)</i>	Explore oocyte donor's experiences and knowledge of oocyte donation and their attitudes towards the outcome of donation
18. Kalfoglou and Geller (2000b)/USA	11 known and 22 commercial oocyte donors and 6 prospective oocyte donors (donor type unknown)	<b>Interviews<sup>a</sup></b> <i>Pre-donation (for 6 women preparing to donate) and post-donation (for former donors, donated within 3 years at time of study)</i>	Explore the relationship oocyte donors have with lawyers, psychologists and health care providers
19. Kalfoglou and Gittelsohn (2000)/USA	11 known and 22 commercial oocyte donors and 6 prospective oocyte donors (donor type unknown)	<b>Interviews<sup>a</sup></b> <i>Pre-donation (for 6 women preparing to donate) and post-donation (for former donors, donated within 3 years at time of study)</i>	Explore the motivations for oocyte donation and attitudes towards the medical treatment, levels of involvement and financial compensation
20. Sauer and Paulson (1992)/USA	33 prospective known and 17 commercial oocyte donors	<b>Psychological interviews<sup>c</sup></b> <i>Pre-donation</i>	Investigate the demographic profile of oocyte donors and their medical treatment experiences
<b>2.b. Commercial donors</b>			
21. Almeling (2006)/USA	Staffs from 2 oocyte donation agencies and 1 sperm bank and clinic records of 549 commercial oocyte donors [and 44 commercial sperm donors]	<b>Clinic Records</b> on donors and <b>Interviews</b> with clinic staff <i>N/A</i>	Explore the rhetoric of altruism in oocyte and sperm banks and compare the recorded profiles of oocyte and sperm donors
22. Braverman and Corson (2002)/USA	235 commercial donors [80 surrogates]	<b>Questionnaires<sup>b</sup></b> <i>Post-donation (donated or surrogated within 14 months at time of study)</i>	Compare oocyte donors and surrogate mother's attitudes towards third party reproduction
23. Jordan <i>et al.</i> (2004)/USA	24 commercial donors	<b>Questionnaires<sup>b</sup></b> <i>Post-donation (mean 21 months after donation)</i>	Investigate oocyte donor's experiences and satisfaction with medical treatment
24. Kenney and McGowan (2009)/USA	80 Commercial donors	<b>Questionnaires<sup>b</sup></b> <i>Post-donation (2–15 years after donation)</i>	Investigate oocyte donor's motivations, expectations and experiences retrospectively
25. Klock <i>et al.</i> (1998)/USA	25 commercial donors	<b>Psychological interviews and assessments</b> (PAI, STAI; SE; Donor Ambivalence Scale <sup>d</sup> ; PRAIS; Donor Motivation <sup>b</sup> and Post Donation Satisfaction Questionnaire <sup>d</sup> ) <i>Pre and 2 week post-donation</i>	Investigate the psychological status and post-donation satisfaction and willingness to donate oocytes again
26. Klock <i>et al.</i> (1999)/USA	150 prospective commercial oocyte donors	<b>Psychological interviews and assessments</b> (MMPI) <i>Pre-donation</i>	Investigate the scores of prospective commercial on the MMPI in four donor outcome groups
27. Klock <i>et al.</i> (2003)/USA	52 commercial oocyte donors	<b>Questionnaires</b> (SE; BSI; Donor Ambivalence Scale <sup>d</sup> ; Donor Motivation <sup>b</sup> ; Satisfaction <sup>b</sup> ; Donation Procedure <sup>b</sup> and Disclosure <sup>b</sup> questionnaire) <i>Post-donation (women donated between 3 and 18 months at time of study)</i>	Investigate the psychological status of oocyte donors and compare the psychological status of first time versus repeat donors
28. Lessor <i>et al.</i> (1993)/USA	95 prospective commercial oocyte donors	<b>Psychological interviews and assessments</b> (MMPI) <i>Pre-donation</i>	Investigate the psychological status of prospective commercial donors

Continued

Table II Continued

Authors, year of publication and country	Sample	Method and time of assessment (pre/post donation)	Research question(s)
29. Lindheim <i>et al.</i> (2001)/USA	380 prospective commercial oocyte donors who received \$2500 for donation and 157 oocyte donors who received \$5000 for donation	<b>Psychological interviews and assessment</b> <i>Pre-donation</i>	Investigate the motivation for oocyte donation
30. Patrick <i>et al.</i> (2001)/USA	24 commercial oocyte donors	<b>Questionnaires<sup>b</sup></b> <i>Post-donation (women had donated between 1993 and 2000)</i>	Investigate motivation and attitudes towards oocyte donation and disclosure
31. Rosenberg and Epstein (1995)/USA	32 commercial oocyte donors	<b>Questionnaires<sup>b</sup></b> <i>Post-donation (women had donated between 1992 and 1994)</i>	Investigate attitudes, post donation experiences and satisfaction with oocyte donation
32. Schover <i>et al.</i> (1990)/USA	26 prospective commercial oocyte donors [43 matched-control participants]	<b>Psychological interviews and assessments</b> for prospective donors completed (CPI; MMPI; SCL-90) and control completed on reproductive traumas and family turmoil <sup>b</sup> questionnaire <i>Pre-donation for prospective oocyte donors; N/A for control</i>	Investigate the psychological status of prospective donors and compare to matched-control participants
33. Schover <i>et al.</i> (1991)/USA	45 prospective commercial oocyte donors	<b>Psychological interviews and assessments</b> for 45 prospective donors completed (SCL-90 & MMPI) and 23 actual donors completed follow-up questionnaire <sup>b</sup> <i>Pre and post-donation (women had donated between 6 and 12 months at time of study)</i>	Investigate the psychological status of prospective commercial donors and post donation satisfaction
34. Schover <i>et al.</i> (1992)/USA	45 prospective commercial oocyte donors [17 sperm donors]	<b>Psychological interviews and assessments</b> (MMPI) <i>Pre-donation</i>	Compare the psychological status and motivations of oocyte donors to sperm donors
35. Zweifel <i>et al.</i> (2006)/USA	32 commercial oocyte donors	<b>Psychological interviews</b> (research questions were asked during the initial and exit interviews) <i>Pre-donation and post donation (immediately afterwards)</i>	Investigate oocyte donors' attitudes towards oocyte and embryo disposition and change of attitudes over the course of the donation process

Note: Table is organized first by donor type (2.a = known and commercial donors; 2.b = commercial donors), then alphabetically on country of origin.

BSI = Brief Symptoms Inventory; CPI = California Personality Inventory; SCL-90 = Hopkins Symptom Checklist-90; MMPI = Minnesota Multiphasic Personality Inventory; PAI = Personality Assessment Inventory; PRAIS = Pennsylvania Reproductive Associates Infertility Scale; SE = Rosenberg Self-Esteem Scale; STAI = State-Trait Anxiety Inventory.

<sup>a</sup>Qualitative research methodology used without a theoretical approach.

<sup>b</sup>Use of unstandardized questionnaires or no reported information on measurement's validity and reliability.

<sup>c</sup>Data analyses did not distinguish between donor groups.

<sup>d</sup>Questionnaire modified/translated from existing questionnaire.

### Attitudes towards donor offspring and recipients

Studies have found that most known donors questioned prefer minimal or no contact with the donor offspring (Weil *et al.*, 1994; Khamsi, *et al.*, 1997; Fielding *et al.*, 1998; Beatens *et al.*, 2000; Kirkman, 2003; Yee *et al.*, 2007). Yee *et al.* (2007) reported that many of their known donors would treat the donor child as any other child of their friends or family. Khamsi *et al.* (1997) explored contact with donor offspring and found that no known donor reported anticipating any possessive feelings or an urge to raise the donor child themselves. However, the known donors were interviewed with the recipient couple, which compromises the validity of their responses in the study. Further, the way the question is asked may account for some of the differences and contradictions. For example, Beatens *et al.* (2000) found a significant minority of known donors had ambivalent feelings towards the child. Specifically, donors felt a responsibility

towards the child and wished to be sure that the child would be well taken care of by the recipient parents.

Bartlett (1991) reported data on psychological interviews and assessments conducted with 16 known donors and 14 recipients before the donation. Results revealed that half of the donors (and the recipients) expected their relationship with the recipient to become closer after treatment. There is some evidence to suggest that the expectations of strengthening relationships between donors and recipients are realized. For example, a couple of studies with known donors post-donation have found that for some donors, there had been a deepening of relations or a 'positive change' in their relationship with the recipients (Winter and Daniluk 2004; Yee *et al.*, 2007), but a small minority had experienced some difficulties, particularly seeing the donor offspring (Yee *et al.*, 2007). Where the donation had not resulted in pregnancy, profound disappointment for the recipient had been felt by donors

**Table III** Characteristics of studies with known and volunteer oocyte donors

Authors, year of publication and country	Sample	Method and time of assessment (pre/post donation)	Research question(s)
<b>3.a. Known and volunteer donors</b>			
36. Kirkman (2003)/Australia	6 known and 6 volunteer donors [5 embryo donors and 21 recipients]	<b>Interviews</b> using narrative analysis <i>Post-donation (time since donation unknown)</i>	Explore the meaning of motherhood in the context of oocyte and embryo donation
37. Shaw (2007)/New Zealand	2 known and 12 volunteer donors. Of these, 4 (1 known donor and 3 volunteer donors) had gone on to become surrogate mothers	<b>Interviews</b> using narrative analysis <i>Post-donation (time since donation unknown)</i>	Explore the rhetoric of 'gift-exchange' in the context of oocyte donation and surrogacy
38. Byrd <i>et al.</i> (2002)/UK	14 known and 99 volunteer donors	<b>Questionnaires</b> <sup>b,c</sup> <i>Post-donation (time since donation unknown)</i>	Investigate the motivation and medical treatment experiences of oocyte donors
39. Fielding <i>et al.</i> (1998)/UK	7 known and 32 volunteer oocyte donors [34 sperm donors]	<b>Questionnaires</b> <sup>d</sup> <i>Post-donation (women had donated between 1992 and 1996)</i>	Investigate the attitudes and motivations of oocyte donors and compare them to sperm donors
40. Snowdon (1994)/UK	1 known-anonymous donor <sup>e</sup> , 3 volunteer donors [5 recipients; 2 gestational surrogates; 2 commissioning surrogate mothers]	<b>Interviews</b> <sup>a</sup> <i>Post-donation (time since donation unknown)</i>	Explore the meaning of motherhood in the context of oocyte donation and surrogacy
<b>3.b. Volunteer donors</b>			
41. Söderström-Anttila (1995)/Finland	27 volunteer donors	<b>Questionnaires</b> <sup>b</sup> <i>Post-donation (women had donated between 12 and 18 months at time of study)</i>	Investigate post donation experiences and attitudes towards oocyte donation
42. Craft <i>et al.</i> (2005)/UK	504 volunteer donors [and 363 recipients]	<b>Questionnaires</b> <sup>b</sup> <i>Post-donation (women had donated between 1986 and 2003)</i>	Investigate attitudes towards the loss of donor anonymity
43. Kan <i>et al.</i> (1998)/UK	145 volunteer oocyte donors and 356 non-donors (enquired but did not donate)	<b>Questionnaires</b> <sup>b</sup> <i>Post-donation (women had donated during 1988–1995)/post-enquiry (women had enquired during 1994–1995)</i>	Investigate and compare the demographic characteristics and reasons for donating oocytes and not donating

Note: Table is organized first by donor type (3.a. = known and volunteer donor; 3.b. = volunteer donors), then alphabetically on country of origin.

<sup>a</sup>Qualitative research methodology used without a theoretical approach.

<sup>b</sup>Use of unstandardized questionnaires or no reported information on measurement's validity and reliability.

<sup>c</sup>Data analyses did not distinguish between donor groups.

<sup>d</sup>Questionnaire modified/translated from existing questionnaire.

<sup>e</sup>Known-anonymous donors refers to recipients recruiting a known donor whose oocytes are distributed to another recipient couple, who in return provided the oocytes from their donor for the first couple.

(Fielding *et al.*, 1998; Kalfoglou and Geller, 2000a; Winter and Daniluk 2004; Yee *et al.*, 2007).

## Commercial donors

As can be seen from Table II, there were 14 reports which focused entirely on commercial donors and a further five reports consisted of samples of commercial and known donors. All of the studies with commercial donors have come from the USA. Some of the studies with commercial donors have reported that the majority of donors were single and nulliparous (Schover *et al.*, 1990; Rosenberg and Epstein, 1995; Klock *et al.*, 1999, 2003; Lindheim *et al.*, 2001; Patrick *et al.*, 2001; Jordan *et al.*, 2004).

### Motivation

The motives of commercial donors appear to be mixed because although many commercial donors have reported altruistic motives behind their donation (Schover *et al.*, 1990, 1991; Klock *et al.*, 1998, 2003; Almeling, 2006), financial gain has also been noted

(Sauer and Paulson, 1992; Greenfeld *et al.*, 1995; Kalfoglou and Gittelsohn, 2000; Patrick *et al.*, 2001). These inconsistencies in studies could be explained by the fact that some of the data are from psychological assessment of prospective donors (e.g. Schover *et al.*, 1990, 1991; Sauer and Paulson, 1992; Greenfeld *et al.*, 1995) limiting reliability of the results, because donors are more likely in assessment circumstances to report altruistic motives than financial ones. Lindheim *et al.* (2001) found that financial motivation was greater for prospective commercial donors receiving \$5000 dollars compared with donors receiving \$2500 and Kenney and McGowan (2009) found students (at the time of donation) were more likely to be financially motivated than non-students. Moreover, Patrick *et al.* (2001) found that the majority of commercial donors believed financial compensation was necessary to compensate for the hardship they endured and most donors would not donate if payment was not provided. Further, Klock *et al.* (2003) found that repeat donors were more likely to rate financial compensation as positive aspects of donation, although the opposite was found by Kenney and McGowan (2009).

**Table IV** Characteristics of studies with potential donors

Authors, year of publication and country	Sample	Method	Research question(s)
<b>4.a. Potential patient and potential non-patient donors</b>			
44. Urdapilleta <i>et al.</i> (2001)/Argentina	55 infertile patients on waiting list for oocyte donation; 35 infertile patients who can use their own oocytes; and 67 fertile participants	<b>Questionnaires<sup>b</sup></b>	Investigate fertile and infertile population attitudes towards oocyte donation
45. Bharadwaj (2003)/India	43 infertile patients and clinicians ( <i>n</i> for each group unknown)	<b>Interviews<sup>a</sup></b>	Explore the experiences of infertility treatment for Indian infertile populations
46. Westlander <i>et al.</i> (1998)/Sweden	50 IVF patients; 62 investigating infertility problem; 50 attending maternity unit after delivery; 50 attending family clinic for therapeutic abortion; and 44 Turner Syndrome	<b>Questionnaires<sup>b</sup></b>	Investigate fertile and infertile population attitudes towards oocyte donation
47. Baykal <i>et al.</i> (2008)/Turkey	368 infertile women	<b>Questionnaires<sup>b</sup></b>	Investigate infertile population attitudes towards gamete donation and surrogacy
48. Baluch <i>et al.</i> (1994)/UK & Iran	25 infertile British women and 50 fertile British women; 50 infertile Iranian women and 50 fertile women	<b>Questionnaires<sup>b</sup></b>	Investigate fertile and infertile Iranian and British attitudes towards oocyte donation
49. Bolton <i>et al.</i> (1991)/UK	53 Infertile patients receiving oocyte donation; 134 infertile patients receiving donor insemination; 168 potential patient donors; and 44 general population control group (190 men and 290 women were in the sample however the gender ratio in each group is unknown)	<b>Questionnaires</b>	Investigate differences in fertile and infertile population attitudes towards oocyte donation
50. Kazem <i>et al.</i> (1995)/UK	Females (97 fertile; 113 infertile; 20 recipient mothers; and 28 oocyte donors <sup>e</sup> ) [Males (25 fertile; 75 infertile; 17 recipient)]	<b>Questionnaires<sup>b</sup></b> <i>Unknown for oocyte donors and N/A for fertile and infertile participants</i>	Investigate differences in fertile and infertile, men and women's attitudes towards oocyte donation
51. Lyall <i>et al.</i> (1995)/UK	870 women attending a family planning centre, 160 women attending an abortion clinic and 180 women attending a fertility clinic	<b>Questionnaires<sup>b</sup></b>	Investigate infertile and fertile population attitudes towards donated ovarian tissue from donors, cadavers and fetuses
52. Oskarsson <i>et al.</i> (1991)/UK	222 infertile couples	<b>Questionnaires<sup>b</sup></b>	Investigate infertile population's attitudes towards oocyte donation
<b>4.b. Potential non-patient donors</b>			
53. Chliaoutakis (2002)/Greece	180 males and 185 females from general population	<b>Structured interviews<sup>b,c</sup></b>	Investigate population attitudes and intentions towards oocyte donation and surrogacy
54. Chliaoutakis <i>et al.</i> (2002)/Greece	185 females [180 males] from general population	<b>Structured interviews<sup>b,c</sup></b>	Investigate population attitudes and intentions towards oocyte donation and surrogacy
55. Khalili <i>et al.</i> (2006)/Iran	100 Christians (49% female) and 100 Muslims (94% female)	<b>Questionnaires<sup>b</sup></b>	Investigate ethnic differences in attitudes towards oocyte donation
56. Skoog-Svanberg <i>et al.</i> (2003a)/Sweden	724 women from the general population	<b>Questionnaires</b>	Investigate factors influencing the willingness to donate oocytes
57. Skoog-Svanberg <i>et al.</i> (2003b)/Sweden	729 women [556 men] from general population	<b>Questionnaires</b>	Investigate population attitudes towards oocyte donation
58. Isikoglu <i>et al.</i> (2006)/Turkey	232 females [168 males] from general population	<b>Questionnaires<sup>d</sup></b>	Investigate population attitudes towards oocyte donation
59. Brett <i>et al.</i> (2008)/UK	143 females from general population	<b>Questionnaires<sup>b</sup></b>	Investigate the impact of removal of donor anonymity on willingness to donate
60. Culley <i>et al.</i> (2007)/UK	67 women [10 men] from British South Asian background	<b>Focus Groups</b> using thematic analysis	Explore the meaning of infertility for British South Asians
61. Kailasam <i>et al.</i> (2001)/UK	428 women [and men] from the general population	<b>Questionnaires<sup>b</sup></b>	Investigate population attitudes towards gamete donation
62. Purewal and van den Akker (2006)/UK	101 women from general population	<b>Questionnaires<sup>d</sup></b>	Investigate ethnic differences in the importance of altruism and willingness to donate

Continued

**Table IV** *Continued*

Authors, year of publication and country	Sample	Method	Research question(s)
63. Purewal and van den Akker (2009)/UK	349 women from the general population	Questionnaires <sup>d</sup>	Investigate population attitudes towards oocyte donation and examine the link between oocyte donation intentions and reasons for parenthood
64. Lessor <i>et al.</i> (1990)/USA	501 women [and men] from the general population	Structured interviews <sup>b,c</sup>	Investigate population attitudes towards oocyte donation between sisters

Note: Table is organized first by donor type (4.a. = Potential patient donors; 4.b. = potential non-patient donors), then alphabetically on country of origin.

<sup>a</sup>Qualitative research methodology used without a theoretical approach.

<sup>b</sup>Use of unstandardized questionnaires or no reported information on measurement's validity and reliability.

<sup>c</sup>Responses from structured interviews were converted into quantitative data.

<sup>d</sup>Questionnaire modified/translated from existing questionnaire.

<sup>e</sup>The oocyte donor group in Kazem *et al.*'s (1995) study was unknown, so their data was not included in the tables with actual donors.

However, donors who reported altruistic motives are more likely to report post-donation satisfaction (Klock *et al.*, 1998; Kenney and McGowan, 2009). Some unusual and self gratifying reasons for donating oocytes among commercial donors have also been reported, such as the confirmation of their fertility (Jordan *et al.*, 2004) and to pass on their genes (Kalfoglou and Gittelsohn, 2000). Researchers have noted commercial (and known) donors were motivated to make up for a loss, such as a past abortion or rape (Schover *et al.*, 1990, 1991, 1992; Klock *et al.*, 1998, 1999; Kalfoglou and Gittelsohn, 2000; Jordan *et al.*, 2004).

#### Psychological profile

Schover *et al.* (1990, 1991, 1992) used the Minnesota Multiphasic Inventory (MMPI) and reported a disturbing picture of prospective commercial donors. They found that just over half of their sample reported mild depressive episodes or anxiety symptoms and two women had a major psychiatric disorder. Other studies have reported contradictory reports, for example, Greenfeld *et al.* (1995), Klock *et al.* (1998, 1999, 2003) and Lessor *et al.* (1993) evaluated commercial (some were prospective) donors and found no significant psychopathology and scores on psychological measures such as the MMPI were within normal ranges. However, Lessor *et al.* (1993) and Klock *et al.* (1999) reported that prospective commercial donors often demonstrated non-traditional sex role beliefs and behaviours. It is important to note however that the American Society for Reproductive Medicine (ASRM, 2004a, b) have set guidelines on the psychological assessment of oocyte donors and women who demonstrate psychological risk would not normally be considered as candidates. So, although prospective donors might demonstrate some psychopathology (e.g. Schover *et al.*, 1990, 1991, 1992), accepted donors reported in the research literature generally do not (e.g. Klock *et al.*, 1998, 2003). For example, Klock *et al.* (1999) reported that from a total of 150 commercial applicants, 32 (21%) were rejected because of psychological concerns such as depression and obsessive-compulsive disorder and a similar percentage were also rejected by Lessor *et al.* (1993).

Moreover, data reported from studies on the psychological interviews of oocyte donors must be interpreted with some caution. As

mentioned previously, a problem with these clinical studies are that they report psychological interviews and assessments as part of the oocyte donation eligibility process, and it is possible that women may be 'impression managing'. To some extent these fears have been realized in the data. For example, Schover *et al.* (1990), Lessor *et al.* (1993), Klock *et al.* (1999) reported elevated K scores on the MMPI (version I and 2), which represented an attempt to minimize anxiety and present themselves favourably. Further, Kalfoglou and Geller (2000b) in an in-depth interview study noted that commercial donors concealed certain information from the mental health practitioner conducting the psychological interviews because they understood they could be excluded from the donation procedure with their personal details.

#### Attitudes towards donor offspring and recipients

There is evidence which indicates that most commercial donors would want information on the outcome of the pregnancy (Klock *et al.*, 1998; Kalfoglou and Gittelsohn, 2000; Kalfoglou and Geller, 2000a; Patrick *et al.*, 2001; Klock *et al.*, 2003; Jordan *et al.*, 2004). Further, Kalfoglou and Geller (2000a), Patrick *et al.* (2001), Braverman and Corson (2002) and Klock *et al.* (2003) all reported a significant proportion of donors would not object to contact with the donor offspring once they are of age. However, Kalfoglou and Geller (2000a) conducted in-depth interviews with donors (the majority were commercial donors) and found that most donors were given little or no information about the recipients. Some donors reported that additional information might make donation more complicated and felt characteristics such as age, race or religion of the recipient couple were not important to them. Most participants were reassured knowing that the couple desperately wanted to have a child. However, Jordan *et al.* (2004) did find that a significant minority (37.5%) of commercial donors were concerned about the parenting style of recipients. Zweifel *et al.* (2006) found that donor's attitudes towards certain recipients (e.g. to women of advanced age or those using sperm from a deceased husband) changed from pre-donation to post-donation and reflected a greater reservation towards willingness to donate oocytes to them. Moreover, it was interesting to note that Kenney and McGowan (2009) found that 31% ( $n=80$ ) of donors

reported they were aware that they may experience a sense of loss and emotional attachment towards the oocytes/off-spring at the time of donation, unfortunately Kenney and McGowan did not collect data on whether these feelings were realized after donation.

## Volunteer donation

Although, only three investigations have focused on volunteer donors exclusively, four studies have included samples of volunteer and patient donors, and five studies have combined samples of volunteer and known donors (see Tables I and III). The demographic profile of volunteer donors in the research literature suggests that most volunteer donors were married and parous (Power *et al.*, 1990; Söderström-Anttila, 1995; Fielding *et al.*, 1998; Kan *et al.*, 1998; Byrd *et al.*, 2002).

### Motivation

Studies with volunteer donors have found that donors often report general altruistic motives for donating (Fielding *et al.*, 1998; Power *et al.*, 1990; Söderström-Anttila, 1995; Byrd *et al.*, 2002). However, other reasons have been noted such as experiences of infertility, either personally or through witnessing family or friends (e.g. Fielding *et al.*, 1998; Byrd *et al.*, 2002). Most volunteer donors were against payment for oocyte donors (Power *et al.*, 1990; Kirkland *et al.*, 1992; Fielding *et al.*, 1998) and Shaw (2007) found some of the oocyte donors she interviewed believed any financial compensation would cheapen their 'gift' to other women. However, Byrd *et al.* (2002) reported donors considered payment to be acceptable to cover expenses but not for financial gain.

### Attitudes towards disclosure, donor offspring and recipients

Fielding *et al.* (1998) adapted an existing questionnaire that had been used with sperm donors and surveyed 32 volunteer and seven known donors a few years after they had donated, and reported a number of inconsistencies within oocyte donors. For example, although volunteer donors reported they do not want any contact with recipients or any involvement with donor offspring upbringing, they were also very curious about the recipients, wished to know the outcome of the donation and cared about the recipient's treatment, believed they would not be able to forget about their donation and also reported that donor offspring should be informed of their genetic origins. Similarly, Söderström-Anttila (1995) reported that although 41% of volunteer donors ( $n = 27$ ) preferred not to have any information about the donor offspring or recipient couple, 48% would be willing to take care of the donor child if both parents died. Further, a large percentage (59%) of donors thought the donor offspring should be told of their genetic origins, however only 33% believed the donor offspring has the right to obtain identifying information about the donor. However, there has been no recent work with volunteer donors to ascertain their attitudes towards disclosure (although attitudes towards anonymity has been examined), despite changes to legislation in a number of European countries.

### Donor anonymity

Craft *et al.* (2005) surveyed 504 former volunteer donors in the UK about the current change in UK legislation using a short questionnaire consisting of three items and yes/no/unsure category responses. They found that 69% of their sample of volunteer donors said they would

donate again, even after the removal of anonymity, however 36% would not donate at all if anonymity were to be waived. Although, the measurement was crude, Craft *et al.* suggested this drop would have a significant impact on the current shortage of oocyte supply. Frith *et al.* (2007) however used a detailed questionnaire with former UK donors (mostly volunteers) on their concerns regarding the removal of anonymity and 32% of the issues raised concerned consequences of a donor offspring making contact after 18 years. Included in these concerns were issues relating to emotional liability; personal security; impact on family members (particularly spouse); and psychological effects on both donor and child. Unfortunately, Frith *et al.* (2007) did not distinguish between volunteer, patient and known donors in their data analyses, so there is no information on between-group differences. It is important however to note that even during a political and social climate which considered anonymous donation as the only 'correct' form of donation in the UK (Warnock Report, 1984), Power *et al.* (1990) found that 87% of volunteer donors would still consider donating as identifiable donors.

## All donor groups

Oocyte donor's experiences of the donation procedure have been recorded for all donor groups and there was a high degree of consensus in the research findings. So, to avoid repetition within the review, this section is devoted to presenting a summary of these findings.

### Oocyte donation experience

On the whole, there is consistent evidence demonstrating that the oocyte donation procedure is well tolerated and most donors of all donation types report high levels of satisfaction with the quality of medical care (Power *et al.*, 1990; Schover *et al.*, 1991; Kirkland *et al.*, 1992; Rosenberg and Epstein, 1995; Söderström-Anttila, 1995; Ahuja *et al.*, 1998; Klock *et al.*, 1998, 2003; Kalfoglou and Gittelsohn, 2000; Braverman and Corson, 2002; Jordan *et al.*, 2004; Yee *et al.*, 2007; Kenney and McGowan, 2009). Although 43% of known and volunteer donors in Byrd *et al.*'s (2002) study found the process painful, stressful or both, most donors concluded that the procedure had been manageable. Kenney and McGowan (2009) found that the majority of commercial donors (63%) reported a 'perfect' match between their expectations of donating oocytes and their actual experiences, which suggest clinicians have been reasonably successfully in preparing donors for the medical procedure. Despite this, only a minority were aware that 'pain' and 'bloating' were common side effects, which were experienced by 45 and 31% of the sample, respectively. An important feature in a donor's experiences of donation was meetings with mental health practitioners (counsellors, psychologists and psychiatrists). Studies have found that the majority of donors of all donor groups questioned found counselling invaluable (Schover *et al.*, 1991; Ahuja *et al.*, 1997, 1998; Patrick *et al.*, 2001; Jordan *et al.*, 2004) and helpful in making disclosure decisions in known donation (Winter and Daniluk, 2004; Yee *et al.*, 2007). However, some complaints have been noted (e.g. Jordan *et al.*, 2004) and some commercial donors reported medical staff were cold and impersonal and they were made to feel like a commodity (Kalfoglou and Gittelsohn, 2000). However, the most notable complaint was more practical and relating to time inconvenience, and to

the geographical distance that donors (known, commercial and volunteer) had to travel (Sauer and Paulson, 1992; Patrick *et al.*, 2001; Byrd *et al.*, 2002; Yee *et al.*, 2007) but not to the medical or physical aspects of donation (e.g. hormonal injections, retrieval, side effects). Indeed, Kan *et al.* (1998) reported that 'distance involved' (40% of  $n = 280$ ) was the main reason why women (in volunteer donation) dropped out of the oocyte donation process and concerns over the drug regime came second (31.8%).

Studies have found that when questioned, most donors from all donor groups reported they would donate again (Power *et al.*, 1990; Schover *et al.*, 1991; Ahuja *et al.*, 1997; Fielding *et al.*, 1998; Klock *et al.*, 1998; Byrd *et al.*, 2002), and Söderström-Anttila (1995) surveyed 27 volunteer donors and none of them regretted donating their oocytes. Rosenberg and Epstein (1995) found that 90% of their sample of 32 commercial donors claimed that donation changed their life in a positive way, suggesting the psychological benefits outweigh the physical costs of the oocyte donation process.

The studies reviewed so far have focused on actual oocyte donors. However, as there is an acute shortage of oocyte donors, it is important to investigate what women from the general and patient populations (potential donors) think about oocyte donation. These findings help to form the context to which patient and non-patient donate their oocytes and works as a 'foil' for the research literature with actual donors.

## Potential donors

There were 21 studies which examined general and patient population attitudes towards oocyte donation (see Table IV). As can be seen from the research question(s) segment of Table IV, most of these studies have reported general attitudes towards oocyte donation and intentions to donate, and the findings from these studies are reviewed below.

### *Attitudes towards oocyte donation*

Overall, studies that have assessed women and men from the general population's attitudes towards oocyte donation have largely observed positive attitudes towards oocyte donation, irrespective of the date the studies were carried out (Lessor *et al.*, 1990; Bolton *et al.*, 1991; Kazem *et al.*, 1995; Lyall *et al.*, 1995; Westlander *et al.*, 1998; Kailasam *et al.*, 2001; Urdapilleta *et al.*, 2001; Chliaoutakis, 2002; Skoog-Svanberg *et al.*, 2003a, b; Isikoglu *et al.*, 2006; Khalili *et al.*, 2006; Purewal and van den Akker, 2006, 2009; Brett *et al.*, 2008). However, knowledge of oocyte donation was often low (Chliaoutakis *et al.*, 2002; Isikoglu *et al.*, 2006; Khalili *et al.*, 2006; Baykal *et al.*, 2008), particularly among the fertile populations (Kazem *et al.*, 1995).

### *Demographic differences in attitudes*

There appear to be some gender, fertility status and ethnic differences between participants in their attitudes towards oocyte donation. For example, studies have found men are more positive and accepting of oocyte donation than women (Lessor *et al.*, 1990; Chliaoutakis, 2002; Isikoglu *et al.*, 2006). Infertile populations find oocyte donation more acceptable than fertile participants (Bolton *et al.*, 1991; Kazem *et al.*, 1995) and Kazem *et al.* (1995) noted that support for oocyte donation was greater if the individuals were aware that their infertility could only be treated with donated gametes. However, Baluch *et al.* (1994) found the opposite and fertile British and Iranian women

were significantly more positive towards oocyte donation than infertile women. Baluch *et al.* recruited their fertile group from a university population (mean age 21) and their results suggest that younger women may have more simplistic attitudes towards oocyte donation than women who are older or infertile (e.g. Kazem *et al.*, 1995).

### *Ethnic differences in attitudes*

There also appear to be ethnic differences in attitudes towards oocyte donation; however, the data is complex and contradictory. For example, Purewal and van den Akker (2006) found British South Asian women were significantly less likely to agree to donate their oocytes than Caucasian British women. Culley *et al.* (2007) found that British South Asians considered oocyte donation to be socially unacceptable, however using donated oocytes was still considered to be more acceptable than using donated sperm, a preference also observed in Caucasian participants (Kazem *et al.*, 1995; Kailasam *et al.*, 2001). Similar findings were echoed in Bharadwaj's exploration of attitudes towards gamete donation among Indian infertile populations. Chliaoutakis *et al.* (2002) reported a significant link between religiosity and reluctance to donate among Greek populations. However, Bharadwaj (2003) found that attitudes towards oocyte donation were complex. For example, although infertile participants reported objections to oocyte donation (mainly on religious grounds), they still considered it to be acceptable, as long as it was kept secret. Studies from some Islamic countries have also found that men and women share positive attitudes towards oocyte donation (e.g. Isikoglu *et al.*, 2006; Baykal *et al.*, 2008), despite the fact that some Muslims believe third party conception is forbidden by Islamic law (Inhorn, 2006). It is possible that the pursuit of parent/motherhood through any means available (e.g. donated gametes) overrides any religious or societal objections. For example, Lyall *et al.*'s (1995) (with a majority Caucasian sample) found that the high levels of public support for oocyte donation observed in their study stemmed partly from the fact that oocyte donation allowed women to experience motherhood. Purewal and van den Akker (2009) found that women reporting a willingness to donate (36% of  $n = 349$  in a majority Caucasian sample) were more likely to endorse non-conventional perceptions of parenthood, which coincided with their positive beliefs about the importance of parenthood. Yet, Khalili *et al.* (2006) found that Christian Iranians were more supportive of oocyte donation than Muslim Iranians. However, 51% of the Christian sample and only 6% of the Muslim sample were males and as other studies have found males are more supporting of oocyte donation than females (e.g. Lessor *et al.*, 1990; Chliaoutakis, 2002; Isikoglu *et al.*, 2006), it is possible that this may also explain in part some of these observed differences.

### *Attitudes towards disclosure*

In 1991, only 36% of  $n = 222$  UK infertile patients thought the donor offspring should receive non-identifying information (Oskarsson *et al.*, 1991). Whereas in 2006, nearly half of Purewal's and van den Akker's non-patient sample held positive attitudes towards identifiable donation and supported the oocyte donor having a relationship with the donor offspring's family. Urdapilleta *et al.* (2001) too found that over half of their sample of fertile and infertile Argentinean participants believed that parents should inform the donor offspring of their genetic origins and these findings concur with Skoog-Svanberg

et al.'s (2003b) more recent results in Sweden. However, Turkish (Isikoglu et al., 2006) and Iranian (Khalili et al., 2006) populations were more likely to believe donor offspring should 'never' be informed of their genetic origins.

#### Removal of donor anonymity

Studies that have measured women's intentions to potentially donate before the removal of donor anonymity (Oskarsson et al., 1991 in the UK; Westlander et al., 1998 in Sweden) and during or after (Brett et al., 2008; Purewal and van den Akker, 2009 in the UK; Skoog-Svanberg et al., 2003a in Sweden) have reported that a significant minority of fertile and infertile populations continue to report willingness to donate as identifiable donors. However, these data might be misleading or unduly encouraging because these studies have all reported intentions and not actual behaviour.

## Discussion

### Summary of research synthesis

The aims of this systematic review were to integrate the findings regarding the psychological determinants of oocyte donation and to explore women's experiences of donation. We conclude that general attitudes towards oocyte donation are positive. There were intrinsic differences between the donor groups on demographic characteristics, motivation for oocyte donation and attitudes towards disclosure of genetic origins to child. Recognition of these differences may have implications for future recruitment. Studies have also revealed that a significant proportion of patient donors, non-patient donors and women from the general population were willing to donate their oocytes as identifiable donors. The oocyte donation procedure is well tolerated and most donors of all donor type report high levels of satisfaction with the experience.

### Motivation

Motivation for oocyte donation has been a key feature in the oocyte donation literature and the results suggest that donor's motives differ depending on their donation 'type'. For example, there appears to be some ambiguity relating to patient donor's motives for donating. Whereas, research indicates that known donors were motivated by their personal relationship with the recipient couple; volunteer donors reported they were motivated by general altruistic motives; and commercial donors have reported altruistic and financial motives for donation. However, the use of psychological interviews and assessments in oocyte donation motives is problematic and raises serious concerns on the validity of reported motivations of oocyte donors. Further, it is likely that financial motivation stems from the availability of financial gain and is not necessarily an impetus to donate, since it never features in research studies of countries where no financial gain is possible (e.g. Power et al., 1990; Kirkland et al., 1992; Kazem et al., 1995; Ahuja et al., 1998; Fielding et al., 1998; Shaw, 2007).

### Attitudes towards disclosure and the removal of donor anonymity

On the whole, there appears to be a cultural shift towards more favourable attitudes towards disclosure. However, this is more evident in studies with general population samples (e.g. Oskarsson et al., 1991; Purewal and van den Akker, 2006) than actual donors, but this is probably because attitudes towards disclosure has not been consistently examined (i.e. before changes to legislation and after in countries where this applies) within the same donor group. In addition, the literature also suggests that a proportion of commercial, volunteer, patient donors and potential donors would donate as identifiable donors. Although reassuring, there still remains a sizeable minority of donors who will not donate as a consequence of recent legislation removing donor anonymity, and because of the shortage of oocyte donors across Europe and the UK, this will undoubtedly cause concerns for recruiting clinics.

### Current state of research and future direction

There were a number of methodological limitations identified in this systematic review relating to the research literature as a whole. Specifically, many studies have reported small numbers, even in quantitative studies. There were only a limited number of studies with patient donors, which is surprising as they make a considerable proportion of the oocyte donor population in the UK (HFEA, 2007). Furthermore, oocyte donors are rarely compared with any appropriate control groups. A number of studies have reported data used to screen donors, which can be problematic. There is also a lack of intervention work or application of theory in oocyte donation research, as pointed out previously (e.g. Fielding et al., 1998; Applegarth and Kingberg, 1999; van den Akker, 2006) and there is no evidence of longitudinal work with oocyte donors that has assessed the long-term consequences of donation. Follow-up studies with oocyte donors ranged from weeks, months or just a few years after donation. Thus, there is no understanding of how the oocyte donors feel about donating oocytes and the donor offspring in the future. This is of particular concern in countries where donor offspring can seek contact with donors after 18 years. Without longitudinal follow-up research, it is impossible to prepare oocyte donors about the long-term implications of donating oocytes.

In addition, it is possible there is a certain degree of 'sampling bias' within the oocyte donation literature. For example, many studies have found that donors find counselling helpful (e.g. Schover et al., 1991; Ahuja et al., 1997, 1998; Patrick et al., 2001; Jordan et al., 2004). However, anecdotal accounts from clinics indicate that many oocyte donors do not actually take-up counselling which is offered. It is possible therefore that the 'type' of donor who participates in research, may be the 'type' of donor who would find the counselling experience useful, and they may not be representative of the oocyte donor population. Furthermore, it may be that only participants with positive attitudes, motivations and experiences have participated in the studies; resulting in the high consensus of favourable attitudes, motives, experiences and possibly leading to publication bias (Thornton and Lee, 2000).

There has been no psychological profiling of volunteer or patient donors, but a great deal has been done on commercial donors and

some with known donors. Generally, research has found that commercial and known donors do not display any serious psychopathology. These results are to be expected because women who display psychopathology would not be accepted as commercial donors (ASRM, 2004a, b) and family members and couples are unlikely to recruit women who display any visible signs of psychopathology for known donation. It is important therefore to establish the psychological profile of other donor groups, particularly women who voluntarily donate their oocytes without a personal request or prompt and in essence recruit themselves.

The methodological limitations identified and the synthesis of the research findings apply only to English-language publications and no generalization can be made about non-English studies. This is undoubtedly a limitation of this systematic review (for example see Moher *et al.*, 1998). However, additional research using titles and [when available] abstracts from non-English articles (in the same databases) revealed that only a handful of non-English articles (5 French; 2 German; and 1 Dutch) may have been relevant to the aims of this systematic review. Thus, the exclusion of non-English papers should not compromise the accuracy of this review. However, most of the published papers have stemmed from the USA and UK and lack of non-English publication does results in a lack of global understanding of oocyte donation. Similarly, there is little in the research evidence that also reflects the rise in cross border reproductive care (Heng, 2006; ESHRE, Task Force on Ethics and Law, 2008) and attitudes towards the use of donated oocytes from other countries, and this is another serious limitation.

## Conclusion

The aims of this systematic review were to review the research evidence on the psychosocial determinants of oocyte donation and to explore oocyte donor's experiences of donation. A number of key issues emerged from the research syntheses including a number of distinct differences between patient, non-patient and potential donors on various factors relating to oocyte donation. Despite the hazards and discomfort of the oocyte donation procedure, the majority of donors have reported positive experiences of oocyte donation.

## Author's Role

Both listed authors (S.P. and Professor van den A.) have contributed significantly to all stages in the preparation of this systematic review.

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