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### Original Citation

Blyth, Eric and Golding, Berenice (2008) Egg sharing: a practical and ethical option in IVF? *Expert Review of Obstetrics & Gynecology*, 3 (4). pp. 465-473. ISSN 17474108

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# Egg sharing: a practical and ethical option in IVF?

*Expert Rev. Obstet. Gynecol.* 3(4), 465–473 (2008)

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Egg sharing is a procedure in which a woman who is herself undergoing assisted-conception treatment receives subsidized treatment in exchange for sharing her eggs with another woman. It has become increasingly prevalent in the UK and is the major source of donor eggs in the UK; however, its practice is controversial. Available evidence concerning the outcomes of egg sharing is limited. To date, while this has failed to provide strong empirical support for concerns that have been raised regarding egg sharing, continuing significant gaps in information regarding clinical and psycho-social outcomes remain, which mean that an informed judgment on empirical grounds cannot yet be made. Ongoing key ethical controversies focus on the impact of egg sharing on the commodification of human gametes and whether women can genuinely consent to donating their eggs under an egg-sharing scheme.

**KEYWORDS:** commodification of gametes • decision making • donors • egg donation • egg sharing • informed consent

Technological developments in reproductive healthcare have increased the options available to people seeking to overcome fertility impairments – including treatments using gametes provided by a third party. In practice, although some jurisdictions prohibit donor remuneration, payment to ‘donors’ is common. Such payment necessarily confounds the accepted definition of ‘donor’. In accordance with common usage in the assisted reproductive technologies (ART) literature, we have employed the terms ‘donor’ and ‘donation’ in this paper, but the reader should be aware of this caveat. While insemination of donor sperm has been used as a medicalized procedure for well over a century [1], IVF using donor eggs is a much more recent phenomenon; the first birth from such a procedure was reported in Australia in 1984, using an egg provided by an IVF patient [2]. It is quite possible, although the authors do not provide details of the arrangements under which the donation took place, therefore, that the very first reported birth through egg donation was in fact the result of egg sharing. Use of donor eggs is clinically indicated for women seeking to conceive who have experienced primary or secondary ovarian failure, who have functioning ovaries but for whom standard ovarian stimulation drug regimes have failed or where there is a risk of transmitting a serious genetic disorder to a child [3].

Use of donor eggs has become especially prevalent in ART procedures for older women (i.e., women aged over 40 years), for two inter-related reasons; first, because of the significant decline in female fertility once women reach their mid-30s [4] and the more rapid decline after the age of 40 years [101], and second, because the likelihood of successful embryo implantation is related to the age of the woman providing the egg rather than to the age of the woman in whom the embryo is implanted [5]. US data show that while fewer than 3% of all women undergoing an ART procedure during 2005 used donor eggs, 22% of women aged 41–42 years, 55% of women aged over 42 years did so, while 90% of ART cycles undertaken by women aged over 47 years utilized donor eggs [5]. A total of 52.3% of all embryo transfers undertaken in 2005 in the USA using fresh donor eggs resulted in a live birth and 30.9% of transfers using frozen–thawed donor eggs resulted in a live birth. By comparison, 34.3% of transfers using fresh nondonor eggs and 28.0% of transfers using frozen–thawed nondonor eggs resulted in a live birth. These data illustrate the higher success rates of procedures using fresh contrasted with frozen–thawed embryos and of procedures using eggs provided by young and healthy donors.

European data for ART outcomes in 2003 from 28 countries show a similar trend [6]. While outcomes in the most ‘successful’ European

countries appear comparable with those of the USA, lower rates are reported for European countries overall, as there are considerable variations between countries. These differences may be attributable to a range of factors, including superior clinical skills and technological facilities, and transfer of a higher number of embryos per cycle. Higher US rates of success for procedures using donor eggs may also be affected by greater access to paid egg providers (this is prohibited in a number of European countries). Indeed, egg donation in the USA is a highly commercialized industry, utilizing eggs provided by young women charging variable fees dependent on their educational, ethnic, health and physical profile [7]. Allowance also needs to be made for the fact that the European data relate to procedures undertaken 2 years earlier than in the USA, and – assuming improvement in outcomes over time – that fewer differences might be apparent in a ‘like-for-like’ comparison. However, true intercountry comparison is compromised by the small number of procedures reported in some countries. A total of 37.9% of embryo transfers using donor eggs (outcomes for fresh and frozen–thawed donor eggs are not reported separately) resulted in a pregnancy, ranging from 14.3 (France) to 55.2% (Spain). An overall delivery rate for all countries included in the survey is not available due to incomplete data or an absence of pregnancy follow-up in some countries; however, available data show delivery rates ranging from 6.5 (Belgium) to 50.0% (Iceland and Ireland). Comparative data for transfers using fresh non-donor eggs show a mean clinical pregnancy rate per embryo transfer of 29.6%, ranging from 20.8 (Austria) to 44.4% (Iceland). Overall delivery rates per embryo transfer are also unavailable; however, data for individual countries range from 7.4 (Belgium) to 31.6% (Iceland). A total of 18.6% of embryo transfers using frozen nondonor eggs resulted in a pregnancy, with intercountry ranges of 0 (Lithuania, where only seven transfers were reported during 2003) to 33.0% (Greece). Delivery rates per transfer using frozen nondonor eggs ranged from 0 (Lithuania) to 23.5% (Iceland).

However, use of donor eggs in ART is not universally accepted. The most comprehensive international review to date, providing an overview of ART in 57 countries, reported that use of donor eggs is expressly prohibited in China, Croatia, Egypt, Germany, Italy, Japan, Morocco, Norway, the Philippines, Switzerland, Tunisia and Turkey, and donor eggs are not used in Austria, Jordan or Malaysia [8].

Where use of donor eggs is permitted, demand typically exceeds supply, irrespective of the conditions in which egg-donor procedures are undertaken. This disparity may be more acute where overt payment to donors is prohibited or where they may be required to disclose their identity to any offspring – although it is also possible that the latter factor might be balanced, at least in part, by a reduction in demand, since fewer potential recipients might wish to use eggs provided by an identifiable than an anonymous donor [9]. A variety of sources of donor eggs has been reported, which include the following:

- Women undergoing sterilization;
- Specifically recruited donors (who, depending on national requirements and/or practices may or may not receive financial remuneration; may or may not be already known to the recipient – especially as a friend or family member – and, depending on jurisdictional requirements, may or may not be required to agree that any offspring wishing to know their identity may be able to do so – or in the absence of mandated identity disclosure may be offered the option of agreeing to disclose their identity to any offspring);
- Women who are themselves undergoing fertility treatment (with similar arrangements to those outlined previously regarding disclosure of their identity to any offspring).

### Egg sharing

The latter form of egg donation is typically described as egg sharing and, in the UK, has specifically developed as a form of discounted IVF treatment, where the donor is able, by sharing her eggs with up to two recipients, to offset the costs of her own treatment, which is subsidized by the recipient(s) of her eggs. Egg sharing is also a term used when eggs provided by a single donor are shared between multiple recipients [6,10]. This variant of egg sharing is not discussed in this paper. Egg sharing should also be distinguished from ‘egg giving’, a procedure in which the donor undergoes a stimulation and retrieval cycle from which all available eggs are donated to one or more recipients, followed by a second, subsidized cycle in which the donor retains all available eggs for her own treatment. Compared with egg sharing, egg giving is claimed to offer improved chances of conceiving to both the egg provider and recipient and, in addition, increase the opportunities for the recipient of conceiving two or more children fully genetically related to each other. However, egg giving was prohibited by the UK’s regulatory body, the Human Fertilisation and Embryology Authority (HFEA) on the grounds that the egg ‘giver’ would be required to undergo two stimulation and retrieval cycles in order to obtain her own treatment, and would derive no benefit from the first cycle other than the right to have her own treatment cycle at reduced cost [11]. Currently, it is claimed that an egg-share donor would pay upwards of £600 towards the cost of a single IVF cycle, while the recipient would pay up to £6000 [102].

In jurisdictions that permit egg donation but prohibit donor remuneration, egg sharing is also generally prohibited or not practiced – and may be practiced infrequently in jurisdictions where payment to gamete providers is permitted. Egg sharing has been reported in Australia [12], Belgium [13–15], Canada [16], Greece [12], Spain [12], the UK [12,17–26,103,104] and the USA [27–37], and was practiced in Italy until legislation passed in 2004 that prohibited all forms of donor and third-party-assisted-conception procedures [38–39]. It is the sole legally permissible form of egg donation in Denmark [3,105] and Israel [40].

According to anecdotal information, egg sharing is also available in other countries (e.g., India and Poland), thus its true prevalence globally remains uncertain.

In relation to the countries in which egg sharing has been documented, consideration of relevant ethical issues needs to take account of variant arrangements for funding ART services – and therefore, the extent to which access to treatment is dependent on an individual's ability to pay. Limited state funding of ART in the UK, for example, contrasted with generous public funding in Belgium, Denmark and Israel, means that the contexts in which egg sharing is practiced are quite different, even among this limited range of countries.

### Egg sharing in the UK

Assisted reproductive technologies services in the UK are funded variably by the NHS. Access to NHS-funded ART services is largely determined on the basis of residence, in effect resulting in a so-called 'postcode lottery'. Sharing their eggs might therefore be seen as being of potential interest to women who are unable to access NHS treatment at all, women who have used up their entitlement to NHS-funded treatment and women eligible for NHS-funded treatment who could have one or more egg-sharing cycles while on the waiting list for NHS treatment. Egg sharing in the UK was developed and promoted in the early 1990s by Ahuja and Simons with three specific objectives: as a means of addressing the supply–demand disparity, by accessing an additional source of donor eggs; to provide treatment opportunities for women who otherwise might be unable to afford treatment at all or who might have to delay treatment while saving up to pay for it; and to reduce reliance on – or avoid completely – the recruitment of nonpatient donors who would be exposed to the risks associated with ovarian stimulation and egg retrieval [17,18,20,25]. The first birth resulting from egg sharing in the UK was reported in 1992 [25]. Legally, egg sharing was made possible by the fact that 'payment in kind' to donors has never been prohibited in the UK, although when the HFEA began operations in 1991 it pegged overt donor remuneration for all gamete donors at £15. This was the average payment made to sperm donors by UK clinics at that time. Since egg donation was little practiced in the UK then, it did not impact formal decisions regarding donor remuneration.

During the 1990s, egg sharing was available at relatively few UK clinics [41] and, in 1998, survived an attempt by the HFEA to have it outlawed as part of a policy to completely terminate financial remuneration to gamete providers. The HFEA's decision to abandon these plans resulted from overwhelming opposition from clinics and insufficient support from a wider public consultation. However, in acknowledging egg sharing as a formally licensed procedure, the HFEA stated that "allowing egg-sharing to continue did not mean that the HFEA had given the practice its ethical approval" [106]. This seems strikingly bizarre, since it meant that the HFEA was countenancing the regulation of a procedure whose ethical credentials it doubted. Nevertheless,

as a consequence of what many clinics perceived as the HFEA's 'green light' for egg sharing, the number providing egg sharing grew after 1998 and by 2007 had risen to 47 – well over half of all licensed clinics [42]. By 2005, egg sharing was identified as the source of approximately two-thirds of all donor eggs [43] and it is estimated that at least 2000 children have been born to both egg-share donors and recipients [25].

In 2005, anticipating implementation of the EU *Tissue Directive*, limiting compensation to donors to "making good the expenses and inconveniences related to the donation" [44], the HFEA developed a framework for gamete donor remuneration ostensibly driven by a policy of 'cost neutrality' in which donors should neither profit nor be financially disadvantaged as a consequence of donating, which would not provide compensation for inconvenience. The opportunity provided by this review was taken by the HFEA to revisit egg sharing, which it has continued to sanction – justifying the element of subsidy as compensation for the element of the procedure in which the egg provider acts as a donor [11]. This is discussed in more detail later.

### Concerns regarding egg sharing

Criticisms of egg sharing may be distinguished as either empirical or ethical concerns. With regards to empirical concerns, a recipient may compromise her own chances of successful treatment by using eggs provided by a woman who, herself, has fertility difficulties [23,45]. A donor may compromise her chances of successful treatment by not retaining all her available eggs (if necessary and/or possible, cryopreserving some eggs for use in a future cycle) and may expose herself to increased risk if she has to undergo additional stimulation, egg retrieval and transfer cycles [23,45,46]. She may also be subjected to stronger ovarian stimulation (and consequent risk of ovarian hyperstimulation) in order to maximize the number of available eggs and ensure a sufficient number of eggs to share with at least one recipient [11]. The distribution of available eggs may favor the interests of the (paying) recipient at the expense of those of the donor [23]. In addition to physical risks associated with the procedure, a donor whose own treatment is eventually unsuccessful may experience emotional difficulties if she knows or believes that the recipient of her egg(s) may have succeeded in having a child [45,46,103]. The 2005 legislative change in the UK requiring all gamete providers to agree to the disclosure of their identity to any offspring reaching the age of 18, has been cited as potentially aggravating this problem: "... you could potentially have a woman who is infertile who is unsuccessful but who donates eggs to someone who is successful and a child then potentially might want to visit that 'poor infertile woman' some 20 years down the track" [107] – our emphasis. Templeton [102] and Winston [108] make a similar point.

One self-evident shortcoming of empirical concerns relates to the lack of evidence to support (or indeed to confound) them. There are few clinical studies of egg sharing and only a small number of these have compared outcome data for donors with a matched group of women undergoing regular IVF cycles or

outcome data for egg-share recipients with a matched group of women undergoing treatment with eggs from nonpatient donors. Several reports provide no information regarding outcomes for donors at all [29,32–34,37]. Others, while providing outcome data for both donors and recipients, are restricted to pregnancy – or to pregnancy and implantation outcomes only – and provide no information regarding live births [19,28,30,31,35,36,38]. Only five studies provide data regarding live-birth outcomes for donors [14,17,25,26,34]. A single published paper has compared pregnancy and live-birth rates for donors, egg-share recipients and women undergoing nonegg-sharing standard IVF cycles [26]. Some provisional findings may be discerned from these studies.

Recipients using eggs provided by an egg-share donor are not exposed to reduced pregnancy or implantation rates [26,32,33,37]. Compared with similar aged women using their own eggs, older women using eggs provided by a third party achieve higher pregnancy and implantation rates [13,47]. This is probably the result of using eggs provided by younger women. Pregnancy and implantation rates are similar for donors and for women using their own gametes in standard IVF [26,31]. Donors do not appear to be exposed to a higher potential risk of ovarian hyperstimulation syndrome [26]; nor does the allocation of available eggs discriminate against donors [21,26]. Current regulations in the UK are designed to ensure an equal distribution of available eggs (subject to a minimum number of eggs being available in any one cycle) between the donor and a single recipient, although eggs may be shared with a maximum of two recipients in any single cycle [48]. Although studies have shown higher pregnancy and live-birth rates for recipients than for donors, the reported results do not always achieve statistical significance [17,26–28,30,31,34,36,38,49]; however, the evidence is contradictory. Research conducted by Kolibianakis *et al.* found no significant difference in delivery rates between donors and recipients [14], while Thum *et al.* found that both pregnancy and live-birth rates were similar for donors, egg-share recipients and women using their own gametes undergoing standard IVF [26]. Flamigni *et al.* reported a slightly lower pregnancy rate for recipients than donors [38]; however, when donors and patients were matched for age, the donors had slightly reduced pregnancy and implantation rates. In a UK newspaper article focusing on the potential problems of the egg-share donor who remains childless, Templeton reported selected HFEA data for egg-share cycles undertaken between 1999 and 2005, noting that 770 of 4140 cycles resulted in the delivery of a baby to recipients only [102]. However, the same HFEA data indicate that, based on ‘matched’ cycles (i.e., where eggs from a donor cycle can be tracked through to a recipient cycle), 1141 of 4140 donor cycles during this period resulted in a live birth (27.56%) and 1093 of 4526 recipient cycles resulted in a live birth (24.15%) [BLYTH, PERS. COMM.]. More recipient cycles than donor cycles are reported because eggs may be donated to up to two recipients.

To date, empirical studies of views and experiences of participants in egg-sharing programs are confined to surveys undertaken by a single London clinic [17,18] and two small-scale

exploratory studies reporting on in-depth interviews with donors [22,24], the latter including the donor’s partner. These have investigated donors’ motivations and decision-making processes, their perceptions of egg sharing, how they would anticipate dealing with eventual treatment failure and how information regarding egg sharing may be managed within their families. These studies have not produced any evidence that donors or recipients in general experience any particular emotional or psychological difficulties or that donors who remain childless either experience such difficulties or regret their decision; however, the limitations of these studies need to be acknowledged. They are based on relatively small numbers of respondents or participants and are likely to under-represent those with negative views and experiences of egg sharing. They have sought participants’ views at a single moment in time, which may change in the future. Therefore, it may well be the case that donors such as the woman cited by Blyth [22]: “I would do it again even though my own treatment failed. I would still do it again. I would still like to think that I was giving somebody else a chance” may have quite different feelings and views if the ‘possibility’ of treatment failure becomes a ‘certainty’. The limited scope of these studies also means that there is no empirical evidence concerning the longer term psycho-social outcomes for either donors or recipients and other members of their families, including any children conceived as a result of egg sharing. The three principal ethical arguments raised against egg sharing relate to:

- Donors subsequently regretting their decision;
- The risk of invalidated consent;
- The commodification of reproductive tissue.

### The donor who subsequently regrets her decision

This argument is frequently set alongside a scenario in which the donor’s own treatment is unsuccessful, while the recipient(s) of her egg(s) is/are successful in conceiving a child and is compounded by the hypothetical instance of the ‘childless’ donor being contacted some 18 or so years later by an adult offspring [9,107,108]. Judged purely in terms of a donor’s potential or actual regret or change of mind, we would argue that this does not provide a sufficient reason to invalidate the original decision. On a daily basis we are all faced with having to make decisions. Not only will we be very fortunate indeed if we never come to regret a past decision, but a regretted decision does not provide a legitimate basis for not making the decision in the first place, nor for denying an individual the opportunity to make it. Clearly, there are issues related to service providers making all relevant information available to the individual (which is required by the HFEA in its *Code of Practice* and where, in our view, it would be unethical to withhold relevant information, including information regarding the very tangible limits to current knowledge concerning the clinical and psycho-social outcomes of egg sharing).

As we have indicated, our views take account only of the perspective of the donor and, as we have noted previously, we know nothing regarding the perspectives and experiences of individuals who have been conceived as a result of egg sharing. This omission must be urgently addressed and, if it becomes apparent that those conceived as a result of egg sharing articulate concerns regarding the practice, this would provide sufficient grounds for a systematic review of its appropriateness – taking into account the views of all interested parties.

### Compromised consent

The possibility that egg sharing may represent the only alternative to having no treatment is subject to widely divergent views. On the one hand, it is lauded as extending women's options [17,18]; on the other, it is portrayed as no real choice at all, where a woman's desire to have a child may result in her being manipulated into endorsing any procedure that may hold out the possibility of assisting her to do so [50]. Faced with an option such as egg sharing, a woman may be encouraged to disregard the risks because of the potential prize of a much-wanted baby and may therefore not actually provide valid consent [50,103]: "For those who desperately want children but cannot afford to pay for treatment, egg sharing represents their only option. Where there is such a large inducement to donate eggs, questions must be raised about the validity of the consent and whether it meets the requirement that, in order to be valid, consent must be given voluntarily and free from pressure" [103].

Similar criticisms have been made by Lieberman [104] and Johnson [23]. The principle of informed consent is set out in Article 1 of the Nuremberg Code: "The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent; should be situated as to be able to exercise free power of choice, without the intervention of any element of force ... or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision ..." [51].

Our analysis accepts first that the monetary value of the subsidized treatment cycle is indubitably an inducement to a potential egg sharer, as indeed, is any 'feel-good' factor that may derive from ostensibly altruistic donation. There is a general acceptance, even where the principle of material reward to gamete donors is conceded, that "Both monetary compensation and [egg] sharing create the possibility of undue inducement and exploitation in the [egg] donation process" [46]. Recognizing such risks, the Ethics Committee of the American Society for Reproductive Medicine has put a price on exploitation, asserting that "Total payments to [egg] donors in excess of US\$5000 require justification and sums above US\$10,000 are not appropriate" [46]. The key ethical question is whether it is an excessive inducement to the

extent that the donor's consent is invalidated. Second, that decisions we all make are necessarily circumscribed to some extent [52]. Here, the Nuremberg Code's qualification that any form of constraint or coercion must not be 'ulterior', perhaps provides a basis for Lockwood's ostensibly pragmatic description of egg sharing as "... a form of coercion; it is just 'a more acceptable form of coercion' than the usual ones" (our emphasis) [109].

Johnson, a noted critic of egg sharing, also concedes that the complete absence of constraint on decision making may be unrealistic when he states that "[Effective consent] should be informed and given 'as free as possible' from pressure or coercion" (our emphasis) [23]. A Belgian study noted that the number of women agreeing to share their eggs dropped by approximately 70% following the decision by the Belgian government to provide free IVF from 1 July 2003, illustrating the impact of financial considerations on egg-share donors' motivation and what the authors concluded to be "A degree of coercion" [15]. Although they did not consider the impact of access to expeditious treatment as a motivating factor for erstwhile donors, the authors nevertheless acknowledged the multidimensional nature of motivation and the potential contribution of altruism in egg sharing. Data from the study indicated that financial factors provided a significant motivation for many donors, but did not identify those who might be willing to assist other women in a similar position, so long as the arrangement provided some return for themselves. Thus, self-help and a desire to help others may coexist – the offer of free treatment being 'the extra push that makes them donate.'

In general, the ability to give consent is complex; it has also been mooted that "The complexity of informed consent hangs on the fact that it can go wrong either in the informing or in the consenting" [53]. The HFEA, despite its reservations regarding the ethics of egg sharing to which we have earlier referred, requires consent to be obtained before any licensed procedure, including egg sharing, can be undertaken [54], so it clearly does not consider obtaining consent from an egg-share donor to be unachievable. What has clearly been absent from this debate so far has been the views of egg-share donors themselves and whether, at the time of undergoing the procedure and on subsequent reflection, they consider that their consent was properly obtained. The current limited evidence from empirical studies that have asked participants in egg-sharing programs indicates that donors themselves feel equipped to make valid choices regarding participating in egg sharing [17–19,24] – and some women who contemplated egg sharing decide not to proceed after they have had the opportunity to consider its implications for them [22]. Consequently, egg sharing is not simply perceived as an offer that is 'too good' for potential donors to refuse. However, ascertaining views regarding informed consent was not a primary objective of any of these studies, thus adequate analysis of egg-share donors' views and experiences of informed consent remains to be undertaken.

### Egg sharing & egg trading

Where donor remuneration is formally sanctioned, as in the USA, official rhetoric emphasizes that donor compensation should reflect the “Time, inconvenience, and discomfort associated with screening, ovarian stimulation, [and egg] retrieval” [46]. Similarly, the International Federation of Fertility Societies proscribes payment for providing the eggs, but “This does not exclude reimbursement for expenses, time and risk which are associated with the donation” [55].

In striving to maintain its position of permitting egg sharing within the overall policy of nonremunerated gamete donation (which does not permit compensation for time, inconvenience, discomfort or risk), the HFEA has tried a different tack, by contrasting the provision of donor-assisted conception services (i.e., largely commercial services) with other forms of medical treatment using donated tissue (provided largely within the NHS): “Thus a reduction in the charges made to an egg provider need not be seen as a payment for her eggs but a recognition that a part of her treatment involves an egg donation and, as such, should not be chargeable to her” [11].

Given that the commercial value of a discounted IVF treatment cycle in egg sharing runs to several thousand pounds [102,110] and is considerably in excess of the current limits imposed on donor remuneration by the HFEA, critics have complained that egg sharing is merely an attempt to bypass prohibitions on donor payment [23,104]; Lieberman in particular asserting that: “The eggs are not being donated; they are being traded for treatment” [104]. Johnson has identified further problems arising from what he sees as the commodification of gamete procurement through egg sharing: undermining not only the integrity of the child conceived through egg sharing both as (s)he and others perceive him/her, but also the rights of all of us “not to be regarded as commodities or be instrumentalized” [23].

The Ethics Committee of American Society for Reproductive Medicine proposes what it considers a more upfront approach to the perceived contradictions of egg sharing, eschewing any pretence that subsidized IVF cycles represent legitimate compensation for donation only [46]. It advocates acknowledging overtly the commercial nature of egg sharing and the need to focus debate on whether resultant ethical concerns are outweighed by the benefits of increased access to ART services.

There is clearly a wide spectrum of views regarding the analogy between egg sharing and overt commercialization of gamete procurement. Participants in egg sharing arrangements themselves have distinguished between egg sharing and the sale of gametes, emphasizing the importance of a desire to help others in a similar position as well as themselves [15,17,18,22,24,56].

### Expert commentary

In the UK, egg sharing has provided a significant source of donor eggs. It has resulted in the birth of more than 2000 children and has therefore enabled many women, who may not

otherwise have done so, to fulfill their quest to conceive a child. The current, limited research evidence regarding clinical outcomes has not provided any significant indication that the practice carries with it particular risks for either donors or recipients. We recognize that lack of evidence of risk is not the same as evidence of lack of risk, and outcomes of the procedure for both donors and recipients should continue to be monitored and reported. Clinical researchers should facilitate methodologies and approaches that allow for more effective interstudy comparisons than has been achieved in the past, in particular, providing comparative pregnancy and live-birth data for both donors and recipients.

As we have indicated, significant aspects of the egg-sharing process and experience remain totally unexplored by researchers. Much more needs to be known regarding the longer term experiences of donors and recipients, their children and other family members – and the experiences of donors and recipients who ultimately remain childless – if the implications of egg sharing are to be fully understood. The views and experiences of those most personally affected by egg sharing remain silent voices in current debates. This omission should not be perpetuated.

### Five-year view

At present, information regarding the clinical and psycho-social outcomes of egg sharing is extremely limited. We have identified the key gaps in respect of clinical outcomes for both donors and recipients and the absence of long-term evidence concerning the experiences of women who have chosen to become egg-share donors and of members of families that have been built using egg sharing and, in particular, children who have been conceived as a result of egg sharing. While we may expect to see some similarities between the experiences of individuals personally involved in egg sharing and those involved in other forms of gamete donation, the particular characteristics of egg sharing suggest that these experiences will not necessarily be equivalent or comparable. For example, egg-share donors are clearly not in the same position as egg donors who are not simultaneously ART patients and (if critics of egg sharing are correct) children conceived to recipients may have feelings regarding being ‘traded’ in exchange for their genetic mother’s treatment in addition to feelings regarding being separated deliberately from half siblings who are likely to be of a similar age. We would both hope and expect that, during the next 5 years, further clinical and psycho-social research will be undertaken to ensure that continuing debates regarding egg sharing are less dependent on speculation and better informed by evidence.

### Conclusion

While egg sharing globally appears to play a marginal role in the maintenance of egg donation services and is not practiced at all in many countries, it occupies a more prominent position in others. In the UK, egg sharing has emerged as the principal source

of donor eggs, yet remains subject to critical debate both in terms of clinical and psycho-social outcomes and the extent to which it accords with accepted ethical principles. To date, the ethical debate has been confined to protagonists representing exclusively professional interests; this needs to be extended to ensure the active engagement of individuals who are most closely involved in, and affected by, egg sharing at a personal level – donors, recipients, their partners and their children. Only then can we ensure that both debate and policy decisions are based on the best quality and most relevant evidence that can be obtained.

### Financial & competing interests disclosure

*The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.*

*No writing assistance was utilized in the production of this manuscript.*

### Key issues

- Egg sharing is practiced in a small number of countries globally.
- Egg sharing has become increasingly prevalent in the UK, where it is the major source of donor eggs.
- Advocates of egg sharing argue that it is a 'win-win' option, offering erstwhile unavailable services to both donors and recipients.
- The monetary value of a discounted treatment cycle in egg sharing is considerably higher than the upper limit of expenses payable to other gamete donors, leading to concerns that it represents the commodification of gamete procurement and may encourage a potential donor to disregard the risks of participation.
- More research is required to ensure that debates regarding egg sharing are better informed by knowledge of clinical and psycho-social outcomes.

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