

Social egg freezing (oocyte banking for anticipated gamete exhaustion). Ethical, practical and social problems.

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INTRODUCTION AND OWNER'S MANUAL:

This text has two objectives: 1 / to draw attention to an important issue in women's health; and 2 / to help train health professionals by providing evidence-based information about and criteria for what is called "social egg freezing." Those who have only a personal interest in the topic can skip the references and read only the text. However, we recommend that professionals read both the full text and the references. These will together present arguments for and against the practice, thereby allowing individuals to reach their own informed personal views of social egg freezing.

To understand the diversity among feminists with regard to egg freezing, Leasly Tarasoff's and Marcia Inhorn's positions listed among the first three links of for and against arguments are specifically recommended.

Although our ultimate goal is not to engage in a moral debate, we do want to ensure that the discussion is not reduced to simple instrumental answers to only two questions: "Can we do it technically?" and "Does it meet our purposes?" We believe in the importance of ethical reflection about human dignity, obstetric violence¹ and long-term impact on women, their offspring and society when social egg freezing is considered. And so we want to add a third question: "What are the consequences?", in order to promote a necessary encounter between science, technology, ethics and the humanities.

Clinical scenario²: Mary and Diana are neighbours and friends who were in school together from kindergarten to college. They both studied journalism and then obtained master's degrees in international cooperation. Mary has been working in the press section of the World Health Organization (WHO). Diana has worked with her husband, Jesus, a Paediatrician, in international cooperation "in the field". They and their four children went to Haiti after the 2010 earthquake and

¹ We consider this case to be one of medical obstetric violence if the woman is not given sufficient and complete information. That is, her human rights would be injured and gender violence in relation to pregnancy (from conception to lactation) would occur.

² Fiction, not based on a true story.

are still living there. Mary has just arrived in Haiti with a group from WHO seeking to assess the long term impact of the international help provided to the Island country.

After dinner one evening, while Jesus was putting the children to bed and cleaning up the kitchen, Diana asked Mary: "So, don't you think about motherhood?" Mary responded, "Actually, not yet. I am already 40, but at 35 I froze some eggs, and I don't yet know what I want to do about them. I've had all kinds of sexual and romantic relationships over the years; you cannot imagine the possible options! But I haven't found anyone with whom to have a family. And then there's work. I want my career to advance beyond where I am now, and this is a most cruel and competitive world."

Diana looked tenderly at her friend and said: "Can you imagine if, when we talked about having children at the beginning of our flirting with the guys, someone had told us about this process, this freezing of our eggs?"

QUESTION: Does the freezing of ovarian tissue or of eggs for "social" reasons, primarily to postpone pregnancy, raise problems?

ANSWER: Yes, it raises serious ethical, practical and social problems.

COMMENT:

Introduction³

The ovaries contain just under one million eggs at birth. These comprise the complete resources for a woman over her lifetime. Over the years, eggs die and lose their vitality and power; many of them suffer atresia⁴. By the time of puberty, there are, on average, only half a million eggs remaining in the ovaries. These mature monthly in groups of 20-30, although only one egg is usually expelled per menstrual period into the fallopian tube where it can be fertilized by a sperm^{5, 6}.

Fetal chromosomal anomalies increase in frequency as the age of the pregnant woman increases. For example, the chance of a woman giving birth to a child with Down syndrome is about 1 per 1,555 when she is 18 years old. This rises to 1 in 250 at 35, to 1 in 250 when she is 35, to 1 in 30

³ This "case" is part of a book in preparation on "medical fury against women" and some footnotes refer to other "cases" that will be part of it.

⁴ To learn more, 26 question: What are the advantages of identifying fetal chromosomal abnormalities in pregnancy?

⁵ To learn more, 45 question: In Spain, does preventing cervical cancer through screening or early detection make sense?

⁶ To learn more, 27 question : Analysis of fetal DNA obtained from pregnant women: can this provide useful results?

when she is 45, and 1 in 10 at age 48.

Aging also affects women's overall fertility, with this declining over time as a reflection of biological processes as well as of exposures to environmental conditions such as industrial and food contaminants. Fertility is highest for women around the age of 20 years: at this time, among healthy, fertile women who seek a pregnancy, about 86 of 100 having unprotected sexual intercourse will become pregnant. This rate drops to about 5 per 100 among women aged 45 years, and finally becomes almost zero with the arrival of menopause and the accompanying cessation of ovulation even if menstrual periods persist for some months.

Men are able to produce sperm continuously in their testes throughout their lives, and if they are healthy, they may remain fertile until death. However, the vitality and potency of sperm do diminish over time, and their chances of having a child with some genetic disorder increases.

Biological fertility “expectations” of women

In the early twentieth century, life expectancy for men and for women was 40 years. As a result, "biological fertility expectations" were similar for both sexes. Today, life expectancy is over 80 years for the majority populations in most “developed” countries (i.e, in North America, Western Europe, the UK, Australia), which means that men who retain their fertility through their lifespan have a greater “biological fertility expectation” than women.

Changes in life expectancy are generally attributed to socio-economic developments, improvements in water supply and treatment, advances in education, redistribution of wealth, better food, and so on. Also important has been the establishment of a public national system of universal health coverage in many countries, as well as certain scientific and medical technologies, such as vaccines, antibiotics, anaesthesia, aseptic surgical supplies, medical appliances, other medications, etc.

These socio-economic changes have facilitated the incorporation of women into paid employment and have been accompanied by large reductions in the numbers of children a woman has: a high birth rate is no longer needed to compensate for high infant-juvenile mortality rates. Furthermore, access to the pill and other contraceptive methods have separated sexual activity from reproduction. A patriarchal society does not take the needs of women into consideration. Hence, it remains difficult for women to accomplish what they want in their personal and professional lives at home and at paid work. Similar societal restraints also remove women's freedom to choose whether and when to start a family and to determine how many children they might have: neither their training

nor their working lives are such as to accommodate the ability of those who want offspring to become mothers. So, while men can easily reach 50 years without any fertility problems or need to adjust their work and home lives, 50 is the absolute limit of fertility for women (and only possibly surmountable with "heroic" measures).

You can freeze eggs, but not lives

Pressures during their years of studying and working, among other things, have been delaying the age of women's first pregnancies and decreasing family size. Currently in western countries, only the rich can afford to have many children while they are still young; only the rich can become grandparents while also relatively young.

Birth control measures such as the pill give women an opportunity to reflect on the value to them of having children. If a woman chooses motherhood, birth control lets her delay her childbearing from youth to maturity. But this comes with at least two specific costs: 1) major complications for herself during pregnancy, childbirth and the postpartum period; and 2 / higher risks of fertility problems due to the loss of integrity and vitality of her eggs over the years.

Voluntary temporary infertility through the use of birth control measures has, therefore, a high biological cost, especially for women over 30 years of age. This has led some to ask: Why don't we extract eggs or ovarian tissue from women who are still young and then freeze and store them until they are needed at a later age?⁷

At first glance, this may seem to be a kind of preventive measure,⁸ one that could achieve "better health of the embryo", that "buys time" and allows "breathing", since freezing offers a de facto stopping of the clock. Regression and atresia of eggs are avoided, since frozen eggs remain as they were when initially removed many years earlier. Unfortunately, however, only the eggs or ovarian tissue fragments remain the same: real time passes for the woman herself, her own body ages, so that if she becomes pregnant at a much later time, more complications are expected in pregnancy, childbirth and the postpartum period.

Nothing is ever as simple as it is presented

⁷ In this text "donations" of eggs are not considered, this is a separate and a very important issue, especially since the economic crisis has caused an increase in their occurrence because of the compensation offered (around one thousand euros). In Spain., regulation and control of these processes are rare and there is intense commercial activity with hundreds of thousands of frozen embryos and eggs implanted in both Spanish women and foreigners. (Some of these phenomena are considered to be "health tourism", or, more accurately, "cross border reproductive care").

⁸ In some ways, egg and ovarian tissue freezing may be seen as similar to autologous blood transfusion in which blood is extracted from a healthy, often young, individual and stored for possible use if during some future surgical intervention there is a need for transfusion.

Obtaining eggs for freezing is an aggressive process. Ovulation must be forced through the use of various hormones and drugs, and then there must be surgical access to the ovary to extract the eggs. The younger the woman is when the eggs are obtained, the more power and vitality they will have. Thus, it is advised that extraction and freezing occur before the age of 35 years (with doing it before 30, if possible, even better). Keeping the eggs frozen for years has financial costs, and then if a woman subsequently decides to use them, this will involve in vitro fertilization and the implantation of an embryo if one is created, with the latter also involving aggressive treatments.

In vitro fertilization (IVF) is not always achieved, and success rates are about 40% for women under 35 years, and 15% in those who are 40⁹. If more eggs have been extracted and frozen than are used to attempt a pregnancy, a woman must then decide what to do with the “extras”: donate them for fertilization and use by another woman, offer them for research, or eliminate them.

Needless to say, the whole process has become a business, and a lucrative one, since the financial costs are high.

But money is not the only cost. And the costs are not only for the women who give birth. If the woman who becomes pregnant through the use of the technologies available is, for example 50 years old when a baby is born, she may soon be entering retirement with its accompanying decline in her income as well as having an increased chance of death of the mother and/or her partner. In these situations, and especially if the child has not yet reached full independence, the offspring may be the one who pays a price.

With regard to the physical health of children born from previously frozen eggs, the data appear mostly reassuring. There seem to be no major differences between these babies and those born without the use of reproductive technologies albeit not all studies agree and some suggest more problems among the former. In addition, some studies have associated the use of fertilization processes with the later development of some cancers in children (e.g., leukaemia and neuroblastoma).

In the case of the use of ovary fragments that have been frozen either to be re-implanted or used in IVF after menopause, there are insufficient data to determine what, if any, the effects on a child's health are.

It is important to distinguish the ethical, practical and social problems associated with egg freezing and ovarian fragments used for non-medical (“social”) reasons from concerns when the eggs or ovarian fragments from fertile women are frozen to protect them from likely destruction during

⁹ Regarding egg “donation” for in vitro fertilization, better success has been demonstrated with fresh eggs (obtained at the time) than with frozen eggs. <http://jama.jamanetwork.com/article.aspx?articleid=2425734&resultClick=3>

necessary treatments that destroy the ovaries (e.g., chemo and radiation therapy for some cancers or other health problems). In the first case, the women are healthy; in the second, they are sick.

Conclusions

If egg freezing in healthy women becomes popular, it will represent a triumph of the male model and may lead to a reduction in pressures for societal changes that would support childbearing at younger ages. If increasing youth leads to its becoming "normal" and banal, and if companies (such as Facebook and Apple)¹⁰ promote it, it could be that women who reject this approach will be criticized (or worse) for "not sacrificing yourself for the job" and find themselves less able to choose the kinds of lives they want for themselves if not with fewer options for self-determination.

There are growing indications that "social egg freezing" is gaining acceptance as a new "normal": already (in 2014) 9% of Swedish university students considered it to be a future option.

"Social egg freezing" turns a social problem into one an individual must solve, and requires that a woman's body go through aggressive techniques to meet a gender-biased male model of reproduction. Women who are not given complete, valid, and independent information about the techniques experience a form of medical obstetric violence¹¹.

We need much better understandings of egg and ovarian tissue freezing if we are to keep these already commercialized approaches from being imposed on women and decreasing their reproductive autonomy. We also need to understand better how the use of egg and ovarian tissue freezing in the private sector by only those with financial resources to cover the costs, or who are heterosexual, will further widen class and social inequities.

Synthesis

In summary, freezing eggs and ovarian tissue fragments for use in reproduction for social causes raises serious ethical, practical and social issues that require reflection to prevent "normalization" and trivialization and to ensure there is no medical violence against women.

WHAT TO DO?

Work to create legislation and to re-fashion society and the world of work and study so that

¹⁰ It has also become a precious gift from grandparents to granddaughter, immersed in their studies and work that stop them from saving and thinking about having children, even more with the usual difficulties to find a mate and start a family.

¹¹ To learn more, 36 question: Obstetric violence, does it include professionals and lay people (when they act as paraprofessionals)?

motherhood is a right for every woman who wants children, and so she can have the number she wants at the age she wants without fearing personal or professional losses of any kind. **Reject** the easy solutions and weigh the ethical, practical and social problems of offers of egg and ovarian tissue fragment freezing. **Join** feminist groups and take part in discussions of these issues. **Discuss** the advantages and disadvantages of these technologies to you as a couple with any permanent partner you have. **Disseminate** knowledge about these technologies in order to enlarge analyses of them beyond instrumental levels.

TO END:

Gösta Espring Anderson is Danish, sociologist and economist. He was born in 1947. He currently works at the University Pompeu Fabra, Barcelona (Spain). His basic studies were at the University of Copenhagen (Denmark). His PhD in Wisconsin-Madison (USA). He taught at Harvard University (USA) and in Trieste (Italy).

Gösta Espring Anderson has always worked on the welfare state in the capitalist world. His first book had global impact, *The Three Worlds of Welfare Capitalism*. In his opinion, the future of the European social model faces three challenges, three black holes: 1 / the growing inability of females to exercise the right to start a family, 2 / increasing inequality of educational opportunities for young people and 3 / increasing social disability to ensure a decent old age.

The welfare state is structured around an obsolete model: a family with only one income from the man who works from a young age and retires shortly before he dies.

Currently we start working later and retire long before dying.

In addition, women have enormous difficulties if they want both to work and have a family.

Therefore, Gösta Espring Anderson proposes as a first step to improve the situation a universal free childcare system to help women who work. Secondly, he proposes that those from higher social classes and who have more education, income and life expectancy, retire later (this is also defended by Guillén López Casanovas, also from Pompeu Fabra). And third, he proposes that pensions be created from both individual contributions and general taxation.

Gösta Espring Anderson may be wrong but his approaches are definitely worth considering.

English version: Raquel Gómez Bravo and Martin Sattler (Luxemburg). Edited by Abby Lippman (Canada).

Links to the basic literature against eggs and ovarian fragments freezing, and about damages:

<http://blog.utpjournals.com/2014/10/16/exciting-and-terrifying-a-young-feminist-scholar-reflects-on-social-egg-freezing-as-a-solution-for-having-it-all/>
http://www.researchgate.net/publication/272818819_Breaking_the_ice_Young_feminist_scholars_of_reproductive_politics_reflect_on_egg_freezing
<http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=12012028942&UserID=0>
http://file.scirp.org/Html/3-1590383_51974.htm
<http://www.ncbi.nlm.nih.gov/pubmed/26139157>
http://mys.matriz.net/mys-09/dossier/doss_09_01.html
<http://www.sciencedirect.com/science/article/pii/S0015028214025205>
[http://www.science20.com/news_articles/social_freezing_the_ethical_and_medical_issues_of_egg_cryopreservation-152947 ...](http://www.science20.com/news_articles/social_freezing_the_ethical_and_medical_issues_of_egg_cryopreservation-152947...)
<http://www.ncbi.nlm.nih.gov/pubmed/22610722>
<http://lawjournal.mcgill.ca/userfiles/other/3865172-40.Lippman.pdf>
<http://www.fertstert.org/article/S0015-0282%2813%2900418-4/pdf>
<http://onlinelibrary.wiley.com/doi/10.1002/ijc.29235/abstract;jsessionid=31B5364EF50A830667DC578D400A963F.f04t02?userIsAuthenticated=false&deniedAccessCustomisedMessage=>
<http://www.bioeticahoy.com.es/2011/11/el-negocio-de-la-donacion-de-ovulos.html>
http://elpais.com/diario/2007/06/26/salud/1182808801_850215.html
http://sociedad.elpais.com/sociedad/2013/08/16/actualidad/1376675418_689262.html
<http://anthropologyandpractice.com/2013/04/15/hot-debate-over-frozen-eggs/>
<http://parenting.blogs.nytimes.com/2014/11/24/you-can-freeze-your-eggs-you-cant-freeze-time/>
<http://www.nytimes.com/roomfordebate/2014/10/15/freezing-plans-for-motherhood-and-staying-on-the-job/freezing-eggs-puts-women-and-infants-health-at-stake>
http://takingnote.blogs.nytimes.com/2015/03/20/the-problem-with-egg-freezing/?_r=0
<http://hipertextual.com/2015/08/ovulos-congelados>

Links to the basic bibliography in favour of eggs and ovarian fragments freezing

<http://reason.com/archives/2012/05/22/the-ethics-of-freezing-eggs>
<http://edition.cnn.com/2013/04/09/opinion/inhorn-egg-freezing/>
<http://reason.com/archives/2012/05/22/the-ethics-of-freezing-eggs> <http://www.mdpi.com/2075-471X/3/2/282>
https://www.dovepress.com/articles.php?article_id=23241

<http://humrep.oxfordjournals.org/content/27/5/1231.full.pdf+html>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3987355/>

<http://link.springer.com/article/10.1007/s10552-014-0429-8#page-1>

https://www.asrm.org/uploadedFiles/ASRM_Content/Resources/Patient_Resources/Fact_Sheets_and_Info_Booklets_en_Espanol/BOOKLET%20Age%20and%20fertility%20corrected%20blueline%203-5-13.pdf

https://www.asrm.org/uploadedFiles/ASRM_Content/Resources/Patient_Resources/Fact_Sheets_and_Info_Booklets_en_Espanol/BOOKLET%20Medicamentos%20para%20inducir%20la%20ovulacion%20rev%2011-7-12.pdf

<http://www.lne.es/sociedad-cultura/2013/05/03/negocio-donar-ovulos-semen/1406589.html>

<http://www.elmundo.es/yodona/2014/11/02/54523cf2268e3ef6498b4576.html>

<http://www.livescience.com/50519-is-freezing-your-eggs-worth-cost.html>