FERTİLİZASYONUN KORUNMASI (KRİYOPREZERVASYON)

Prof.Dr.M.Bülent Tıras

◆Acıbadem Maslak Hastanesi

◆Acıbadem Tüp Bebek Koordinatörü

◆Acıbadem Üniversitesi

FERTİLİZASYONUN KORUNMASI

ÜREME KAPASİTESİNDE AZALMAYA YOL AÇABİLECEK HER TÜRLÜ SÜREÇTE FERTİLİTENİN KORUNMASI GÖZ ÖNÜNE ALINMALI

Fertilite Koruyucu Yöntemler Neden Önemli

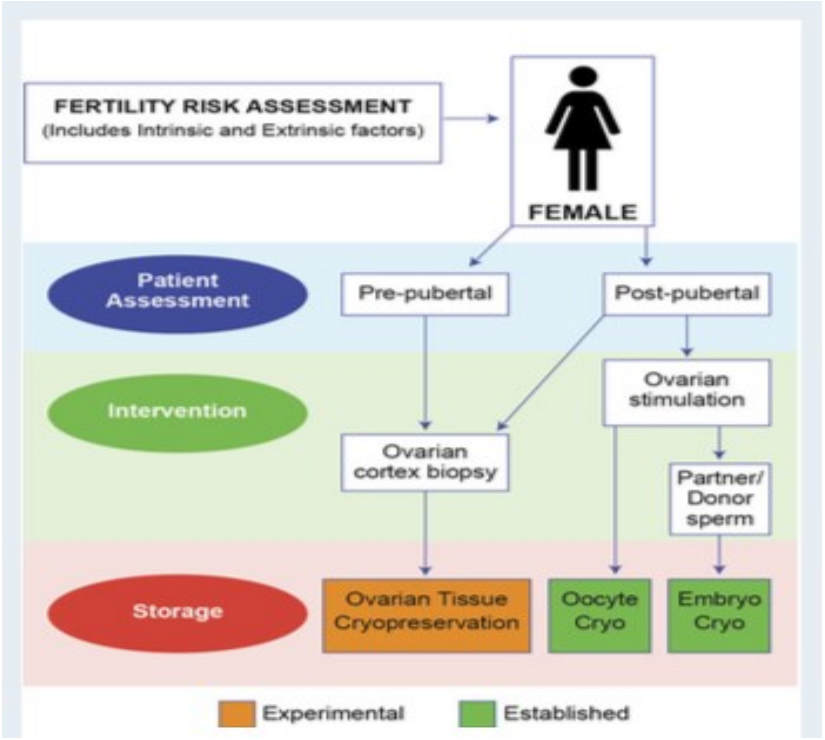
- Kanser tanısı almış kadın sayısının artması
- Kanser hastalarının sağkalım süresinin uzaması
- İlk gebelik yaşının ertelenmesi

FERTİLİZASYONUN KORUNMASI

- KANSER — GONADOTOKSİSİTE
  KT- RT
- NON-ONKOLOJİK — OTOİMMÜN PATOLOJİLER (SLE, RA…)
  HEMATOPOETİK KÖK HÜCRE TRANSPL
  POI’ye YOL AÇABİLEN MEDİKAL DURUMLAR
- SOSYAL NEDENLERLE DOĞUMUN ERTELENMESİ

Fertilite Koruyucu Yöntemler

- Embriyo kriyoprezervasyonu
- Matür oosit kriyoprezervasyonu
- Ovaryan transpozisyon
- Ovaryan supresyon
- Ovaryan doku kriyoprezervasyonu ve transplantasyonu



SOSYAL FERTİLİTE PREZERVASYON

Medikal endikasyon olmaksızın, bir kadının yumurtasının gelecekte kullanmak üzere dondurulması

Yıl	Evlenme sayısı	Kaba Evlenme Hız		Hızı
2001	544 322	8,36		
2002	510 155	7,73		
2003	565 468	8,46		
2004	615 357	9,09		
2005	641 241	9,35		
2006	636 121	9,17		
2007	638 311	9,09		
2008	641 973	9,03		
2009	591 742	8,21		
2010	582 715	7,98		
2011	592 [illegible]	8,02		
2012	603 7[illegible]	8,03		
2013	600 138	7,89		
2014	599 704	7,80		
2015	602 982	7,71		
2016	594493	7,50		
2017	569459	7,09	128411	1,60

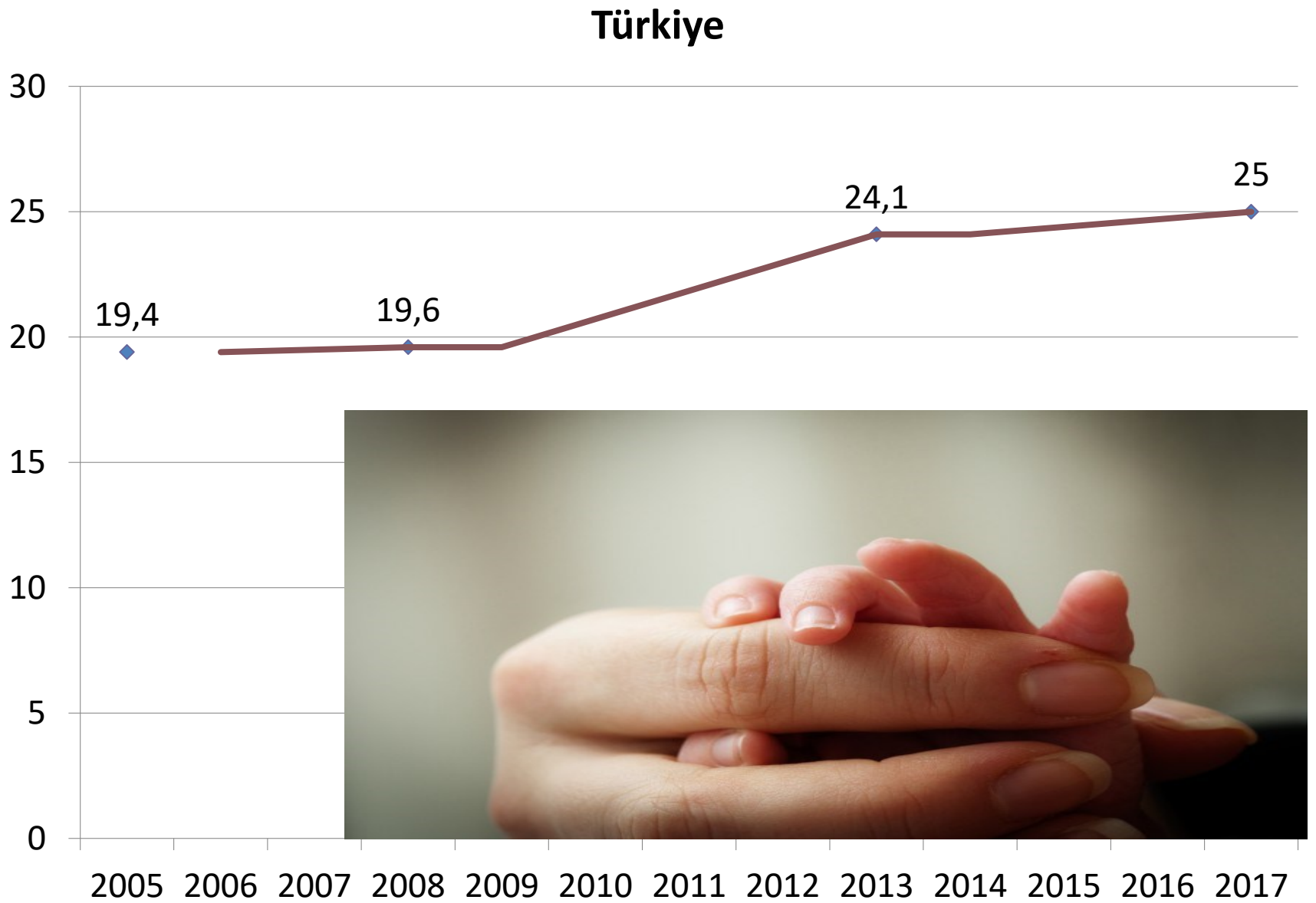
Kaynak: Nüfus ve Vatandaşlık İşleri Genel Müdürlüğü

İlk Evlenme Yaşı

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Erkek	26,1				26,5				27			27,7
Kadın	22,8				23,2				23,9			24,6

Kaynak: Nüfus ve Vatandaşlık İşleri Genel Müdürlüğü

İlk Anne Olma Yaşı



Kaynak: Nüfus ve Vatandaşlık İşleri Genel Müdürlüğü

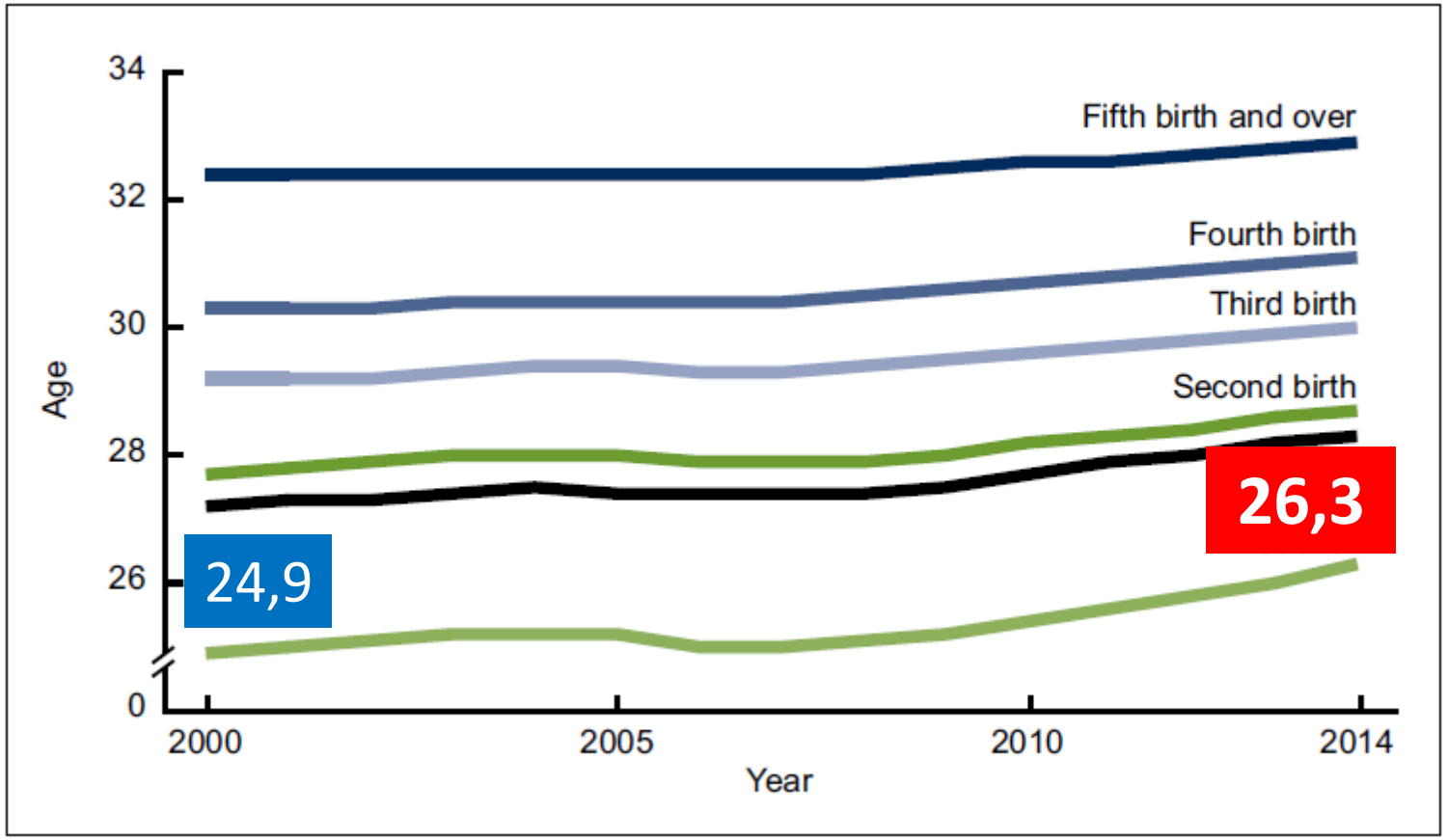
Year	Age at first marriage (years)		Age at divorce (years)	
	Males	Females	Males	Females
1961	25.6	23.1	–	–
1971	24.6	22.6	39.4	36.8
1981	25.4	23.1	37.7	35.2
1991	27.5	25.5	38.6	36.0
2000	30.5	28.2	41.3	38.8

Reproductive BioMedicine Online (2011) 23, 334–340

NCHS Data Brief ■ No. 232 ■ January 2016

Mean Age of Mothers is on the Rise: United States, 2000–2014

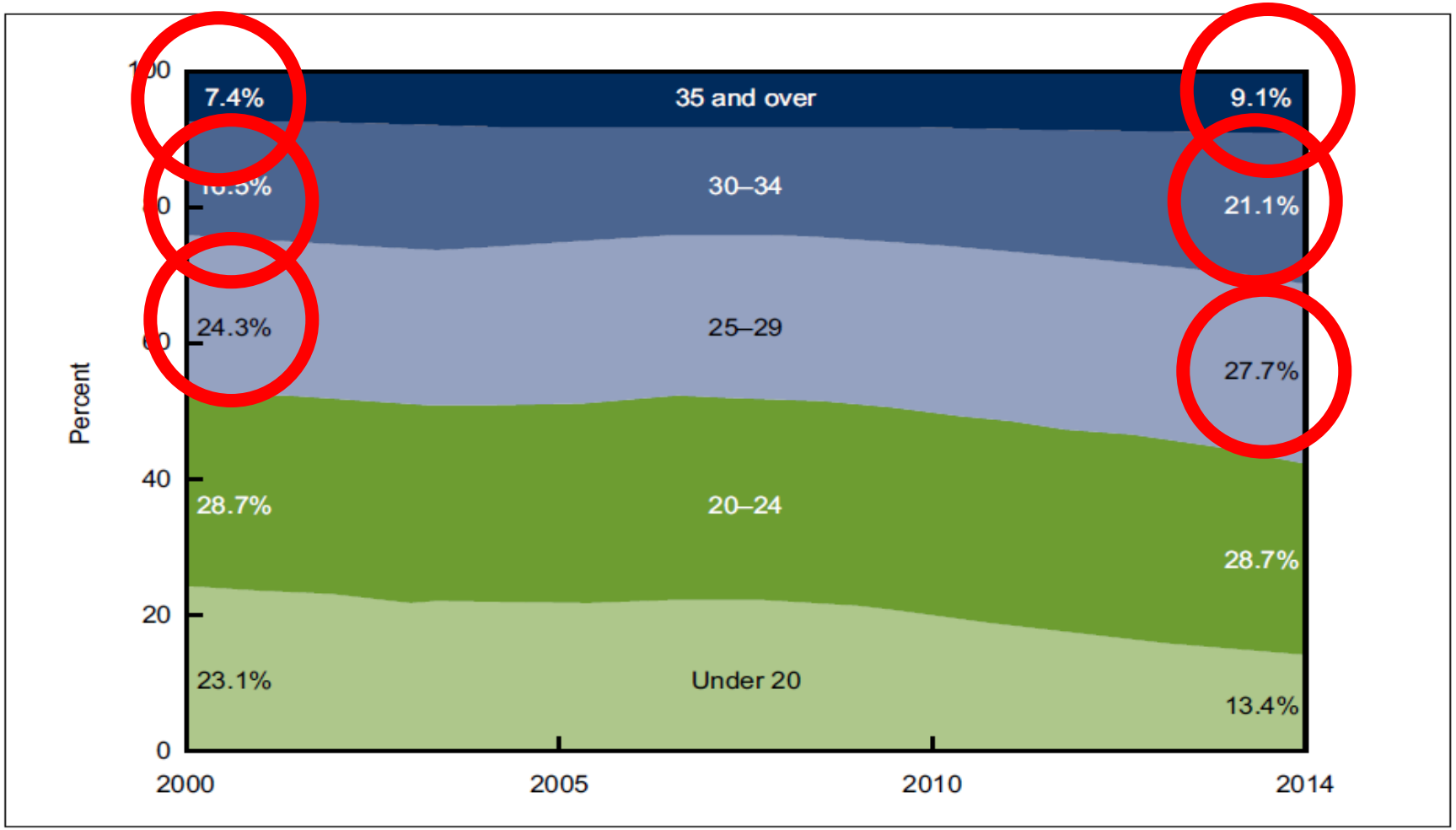
T.J. Mathews, M.S.; and Brady E. Hamilton, Ph.D.



SOURCE: CDC/NCHS, National Vital Statistics System.

Mean Age of Mothers is on the Rise: United States, 2000–2014

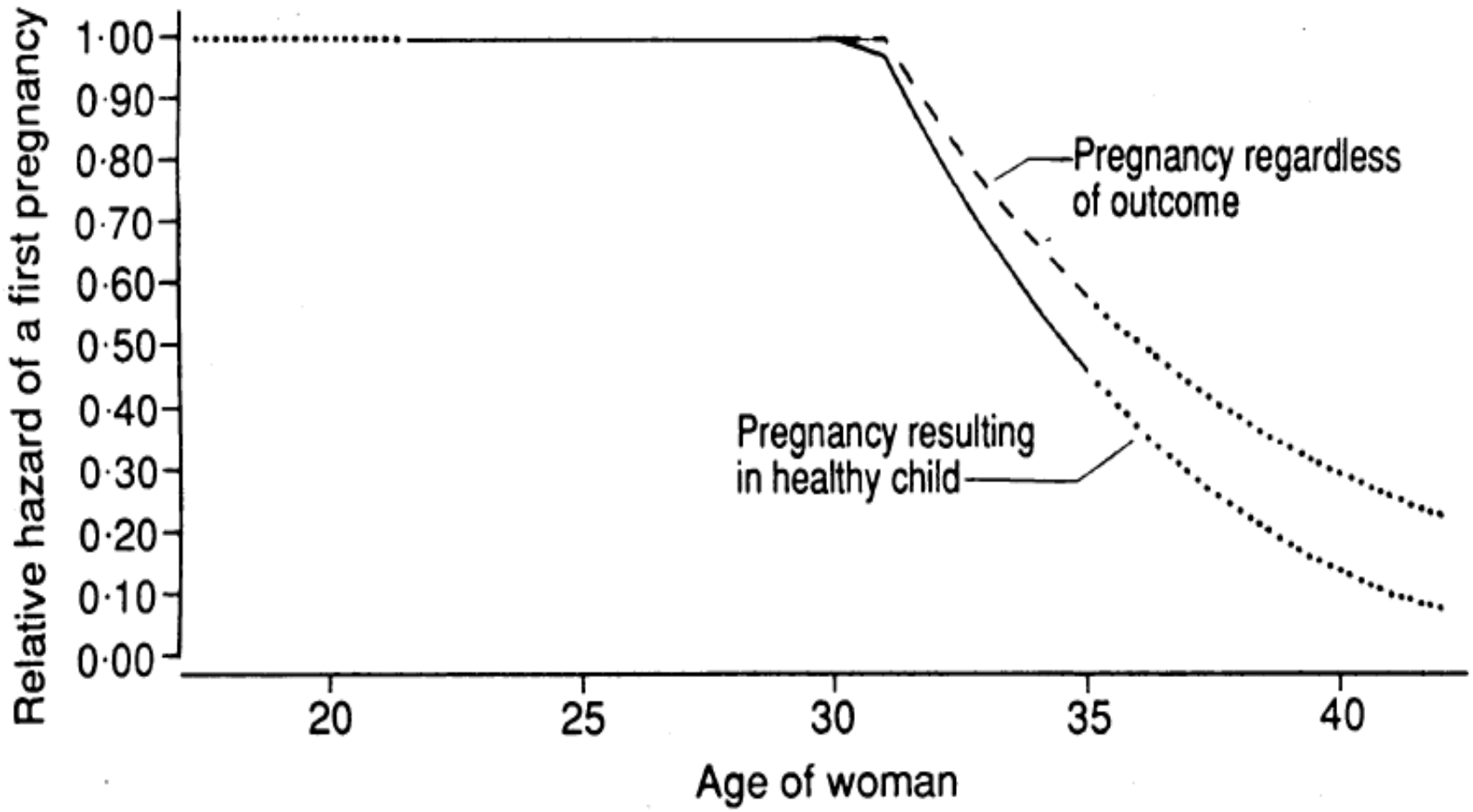
T.J. Mathews, M.S.; and Brady E. Hamilton, Ph.D.



SOURCE: CDC/NCHS, National Vital Statistics System.

Delaying childbearing: effect of age on fecundity and outcome of pregnancy

Boukje M van Noord-Zaadstra, Caspar W N Looman, Hans Alsbach, J Dik F Habbema, Egbert R te Velde, Jan Karbaat




Yaş 10


Yaş 40

human reproduction ESHRE PAGES

Oocyte cryopreservation for age-related fertility loss†

ESHRE Task Force on Ethics and Law, including, W. Dondorp[1,*], G. de Wert[1], G. Pennings[2], F. Shenfield[3], P. Devroey[4], B. Tarlatzis[5], P. Barri[6], and K. Diedrich[7]

ABSTRACT: The recent introduction of oocyte vitrification has significantly advanced the outcome of oocyte cryopreservation, leading to clinical results comparable to those achieved in IVF using fresh oocytes, as reported by experienced centres. This has lead to new debate, both in the professional community and in society at large, about the acceptability of offering this technology to reproductively healthy women who want to cryopreserve their oocytes against the threat of time. Given the many demands calling for simultaneous realization in a relatively short period of their lives, many women who want to have children feel to be under considerable pressure. The option of oocyte cryopreservation may in fact give them more breathing space. In this document, it is concluded that the arguments against allowing this application of the technology are not convincing. The recommendations include the need for adequate information of women interested in oocyte cryopreservation, also in order to avoid raising false hopes. The message must remain that women's best chances of having a healthy child are through natural reproduction at a relative early age. Centres offering this service must have the necessary expertise to employ oocyte cryopreservation efficiently with the so far non-standardized protocols. As data about long-term safety is still lacking, centres also have a responsibility to contribute to the collection of these data.

Key words: oocyte cryopreservation / oocyte vitrification / fertility preservation / ethics / non-medical reasons

Human Reproduction, Vol.27, No.5 pp. 1231–1237, 2012

Mature oocyte cryopreservation: a guideline

The Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology

There is good evidence that fertilization and pregnancy rates are similar to IVF/ICSI with fresh oocytes when vitrified/warmed oocytes are used as part of IVF/ICSI for young women. Although data are limited, no increase in chromosomal abnormalities, birth defects, and developmental deficits has been reported in the offspring born from cryopreserved oocytes when compared to pregnancies from conventional IVF/ICSI and the general population. Evidence indicates that oocyte vitrification and warming should no longer be considered experimental. This document replaces the document last published in 2008 titled, "Ovarian Tissue and Oocyte Cryopreservation," Fertil Steril 2008;90:S241-6. (Fertil Steril® 2013;99:37–43.

Earn online CME credit related to this document at www.asrm.org/elearn

Discuss: You can discuss this article with its authors and with other ASRM members at http://fertstertforum.com/goldsteinj-mature-oocyte-cryopreservation-guideline/

Use your smartphone to scan this QR code and connect to the discussion forum for this article now.*

* Download a free QR code scanner by searching for "QR scanner" in your smartphone's app store or app marketplace.

Human Reproduction, Vol.32, No.9 pp. 1802–1811.e2, 2017
Advanced Access publication on July 21, 2017 doi:10.1093/humrep/dex218

human reproduction ESHRE PAGES

Update on fertility preservation from the Barcelona International Society for Fertility Preservation–ESHRE–ASRM 2015 expert meeting: indications, results and future perspectives†,‡

Francisca Martinez*, on behalf of the International Society for Fertility Preservation–ESHRE–ASRM Expert Working Group[1]

Hospital Universitario Dexeus, Gran Via Carlos III, 71-75, 08208 Barcelona, Spain

MAIN RESULTS AND THE ROLE OF CHANCE: Several oncological and non-oncological diseases may affect current or future fertility, either caused by the disease itself or the gonadotoxic treatment, and need an adequate FP approach. Women wishing to postpone maternity and transgender individuals before starting hormone therapy or undergoing surgery to remove/alter their reproductive organs should also be counselled accordingly. Embryo and oocyte cryopreservation are first-line FP methods in post-pubertal women. Metaphase II oocyte cryopreservation (vitrification) is the preferred option. Cumulative evidence of restoration of ovarian function and spontaneous pregnancies after ART following orthotopic transplantation of cryopreserved ovarian tissue supports its future consideration as an open clinical application. Semen cryopreservation is the only established method for FP in men. Testicular tissue cryopreservation should be recommended in pre-pubertal boys even though fertility restoration strategies by autotransplantation of cryopreserved testicular tissue have not yet been tested for safe clinical use in humans. The establishment of international registries on the short- and long-term outcomes of FP techniques is strongly recommended.

MANAGEMENT

At Work | New Silicon Valley Perk: Paying for Egg Freezing

Apple, Facebook Offer to Cover Costs for Female Employees

By LAUREN WEBER

4 COMMENTS

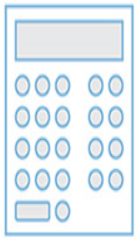
Oct. 14, 2014 7:09 p.m. ET

As tech companies address the challenges of gender, work and family in Silicon Valley, some are offering to cover the costs for female employees who want to freeze their eggs.

Apple Inc. and Facebook Inc. are adding this perk to their arsenal in an escalating battle to recruit and retain technical talent, especially female workers. Facebook says it has

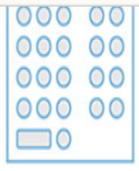
TREATMENT OPTIONS

Egg Banking Calculator



This calculator uses data from multiple sources to estimate the potential benefit of egg freezing for women. It takes into account your age when making this decision, how long you think you may wait before attempting pregnancy and whether you feel a male partner is necessary prior to trying to conceive (or if you would be willing to use donor sperm). The tool indicates the likelihood of having a child in the future, depending on whether or not you chose to freeze eggs.

We assume that when a woman decides to attempt conception in the future, she will try without medical assistance for six months. If she has not conceived within six months, she will proceed with medical assistance such as In Vitro Fertilization (IVF). IVF will occur with either eggs she banked at a younger age or, if she has not banked eggs, she will try IVF using her current eggs.



and whether you feel a male partner is necessary prior to trying to conceive (or if you would be willing to use donor sperm). The tool indicates the likelihood of having a child in the future, depending on whether or not you chose to freeze eggs.

We assume that when a woman decides to attempt conception in the future, she will try without medical assistance for six months. If she has not conceived within six months, she will proceed with medical assistance such as In Vitro Fertilization (IVF). IVF will occur with either eggs she banked at a younger age or, if she has not banked eggs, she will try IVF using her current eggs.

1. What is your current age?

30

2. How long do you think you will wait before attempting to conceive?

5 years

3. If you do not have an intimate male partner in the time frame chosen above, would you use donor sperm to help you conceive without a partner?

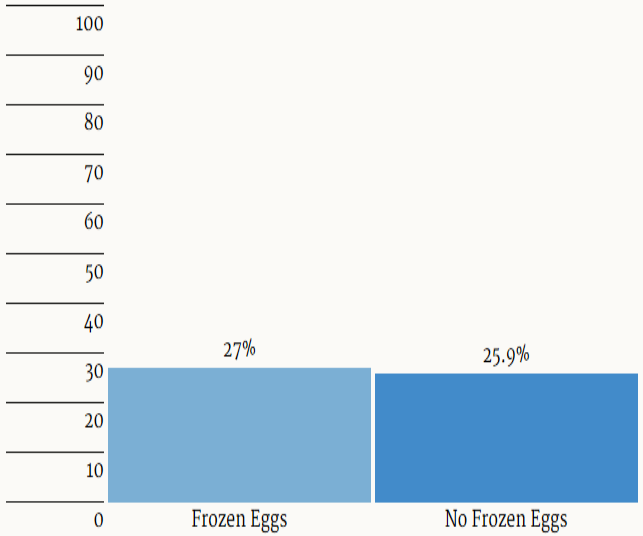
No

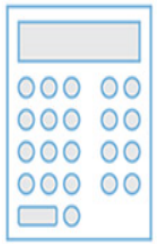
Calculate

Related Content
Diagnostic Procedures
Surgical Procedures
Intrauterine Insemination (IUI)
In Vitro Fertilization (IVF)
Egg Freezing

Chance of having a baby if trying to conceive in 5 years:

Chance of having a baby in 5 years if you choose to freeze your eggs at age 30: **27%**
Chance of having a baby in 5 years if you choose not to freeze your eggs at age 30: **25.9%**
If you freeze your eggs now, your chances of having a baby in 5 years will improve by **1.1%**





This calculator uses data from multiple sources to estimate the potential benefit of egg freezing for women. It takes into account your age when making this decision, how long you think you may wait before attempting pregnancy and whether you feel a male partner is necessary prior to trying to conceive (or if you would be willing to use donor sperm). The tool indicates the likelihood of having a child in the future, depending on whether or not you chose to freeze eggs.

We assume that when a woman decides to attempt conception in the future, she will try without medical assistance for six months. If she has not conceived within six months, she will proceed with medical assistance such as In Vitro Fertilization (IVF). IVF will occur with either eggs she banked at a younger age or, if she has not banked eggs, she will try IVF using her current eggs.

1. What is your current age?

35

2. How long do you think you will wait before attempting to conceive?

5 years

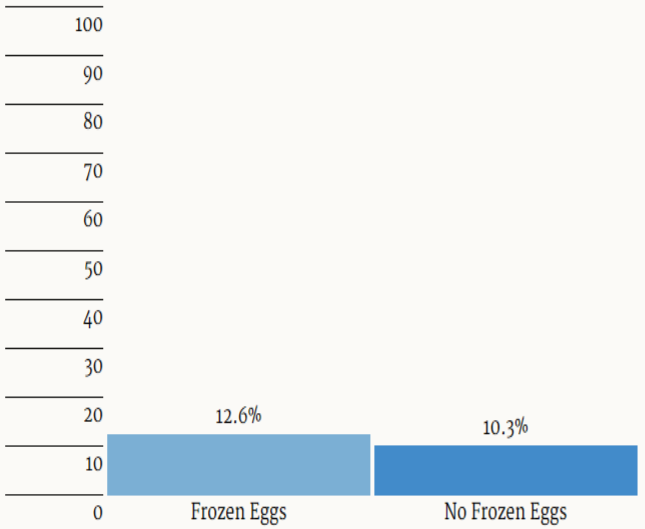
3. If you do not have an intimate male partner in the time frame chosen above, would you use donor sperm to help you conceive without a partner?

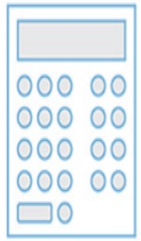
No

Calculate

Chance of having a baby if trying to conceive in 5 years:

Chance of having a baby in 5 years if you choose to freeze your eggs at age 35: **12.6%**
Chance of having a baby in 5 years if you choose not to freeze your eggs at age 35: **10.3%**
If you freeze your eggs now, your chances of having a baby in 5 years will improve by **2.3%**





This calculator uses data from multiple sources to estimate the potential benefit of egg freezing for women. It takes into account your age when making this decision, how long you think you may wait before attempting pregnancy and whether you feel a male partner is necessary prior to trying to conceive (or if you would be willing to use donor sperm). The tool indicates the likelihood of having a child in the future, depending on whether or not you chose to freeze eggs.

We assume that when a woman decides to attempt conception in the future, she will try without medical assistance for six months. If she has not conceived within six months, she will proceed with medical assistance such as In Vitro Fertilization (IVF). IVF will occur with either eggs she banked at a younger age or, if she has not banked eggs, she will try IVF using her current eggs.

1. What is your current age?

40

2. How long do you think you will wait before attempting to conceive?

3 years

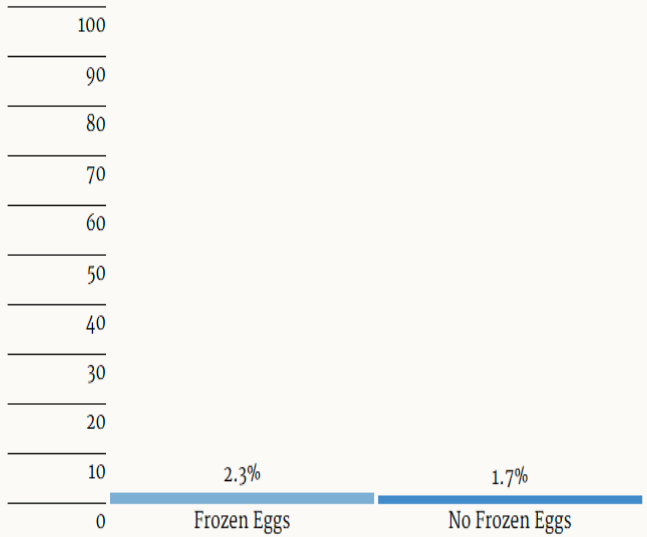
3. If you do not have an intimate male partner in the time frame chosen above, would you use donor sperm to help you conceive without a partner?

No

Calculate

Chance of having a baby if trying to conceive in 3 years:

Chance of having a baby in 3 years if you choose to freeze your eggs at age 40: **2.3%**
Chance of having a baby in 3 years if you choose not to freeze your eggs at age 40: **1.7%**
If you freeze your eggs now, your chances of having a baby in 3 years will improve by **0.6%**



Tarihçe

- Hayvan spermatozooası (1776)
- Dondurulmuş-çözülmüş spermde motilite (1938)
- Tavşan oositlerinin kriyoprezervasyonu (1947)
- Fare oositlerinin çözülmesi ve fertilizasyonu ile ilk başarılı gebelik (1977)
- Oosit kriyopreservasyonu ile ilk gebelik **1986** yılında bildirildi.
- Oosit vitrifikasyonu ile ilk gebelik **1999** yılında bildirildi

Çocuk Sahibi Olabilmek İçin İDEAL YAŞ?

Realizing a desired family size: when should couples start?

J. Dik F. Habbema[1,*], Marinus J.C. Eijkemans[2], Henri Leridon[3], and Egbert R. te Velde[1]

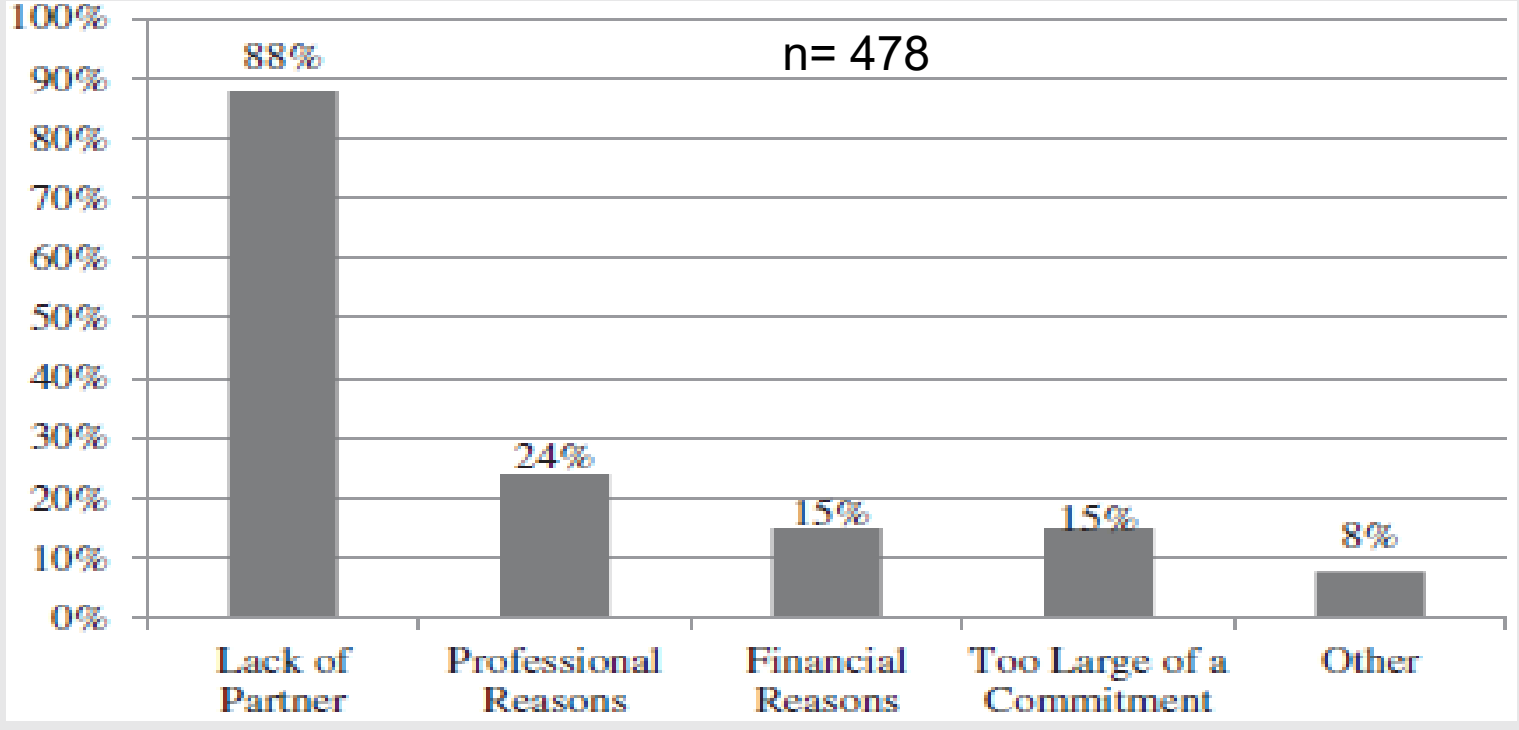
Chance of realization	1-child family	2-child family	3-child family
Without IVF			
50%	41	38	35
75%	37	34	31
90%	32	27	23
With IVF			
50%	42	39	36
75%	39	35	33
90%	35	31	28

Human Reproduction, Vol.30, No.9 pp. 2215–2221, 2015

NEDENLER ?

What do reproductive-age women who undergo oocyte cryopreservation think about the process as a means to preserve fertility?

Brooke Hodes-Wertz, M.D., M.P.H.,[a] Sarah Druckenmiller, B.A.,[b] Meghan Smith, M.D.,[a] and Nicole Noyes, M.D.[a]



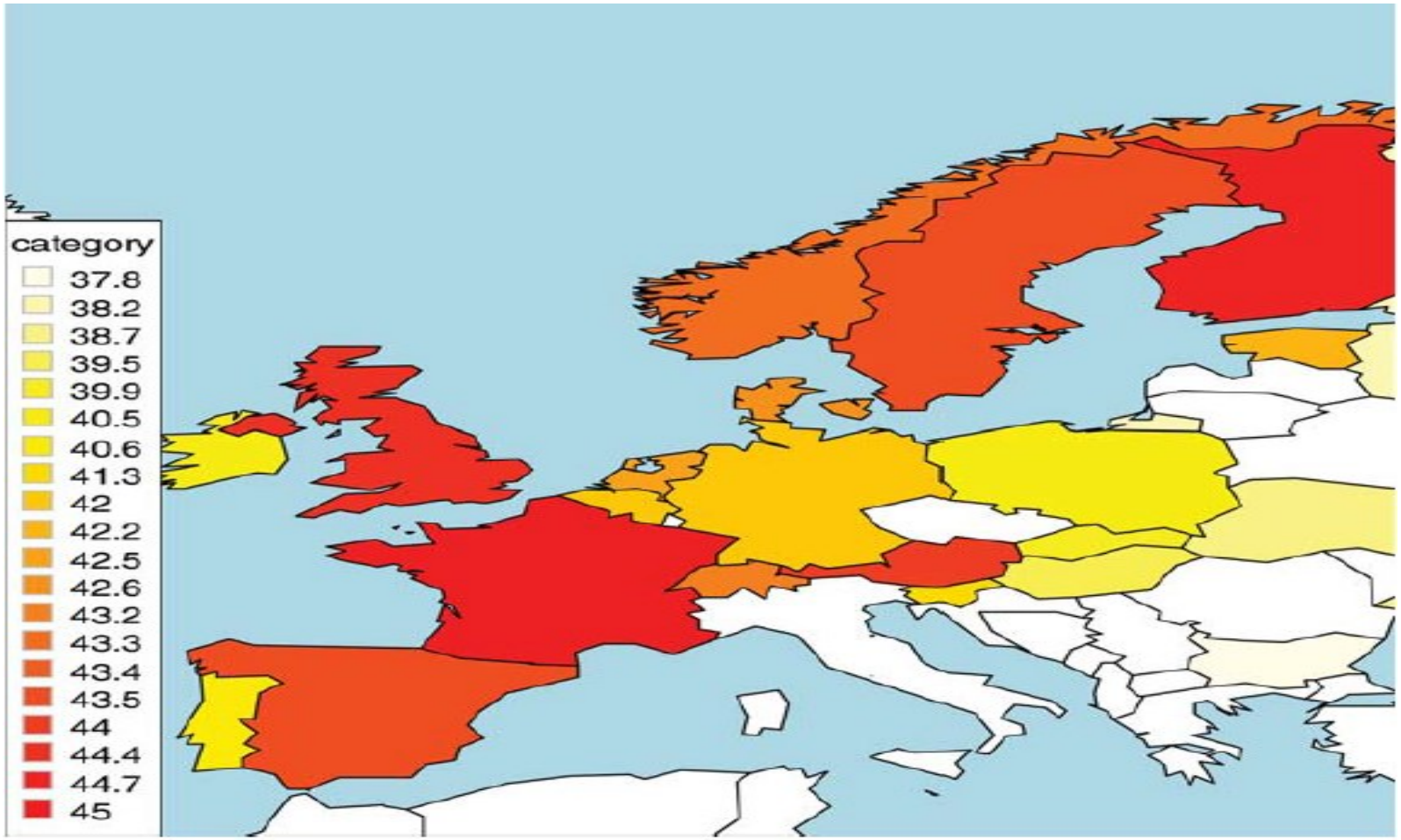
Reasons for not pursuing childbearing earlier.

Fertility and Sterility® Vol. 100, No. 5, November 2013

human
reproduction
update

Why do people postpone parenthood? Reasons and social policy incentives

Melinda Mills[1,*], Ronald R. Rindfuss[2,3], Peter McDonald[4], and Egbert te Velde[5†], on behalf of the ESHRE Reproduction and Society Task Force

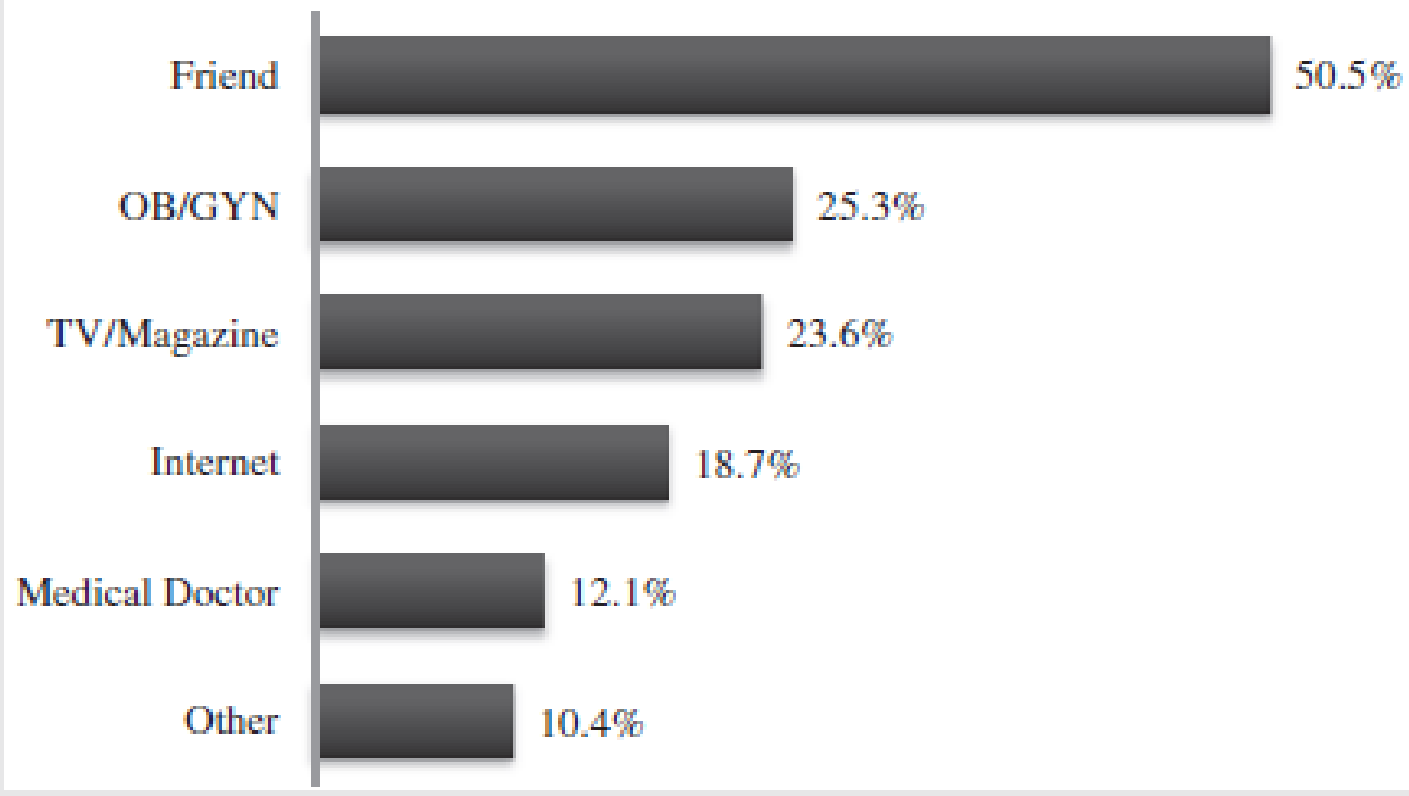


Human Reproduction Update, Vol.17, No.6 pp. 848–860, 2011

Ne Kadar HABERDARIZ?

What do reproductive-age women who undergo oocyte cryopreservation think about the process as a means to preserve fertility?

Brooke Hodes-Wertz, M.D., M.P.H.,[a] Sarah Druckenmiller, B.A.,[b] Meghan Smith, M.D.,[a] and Nicole Noyes, M.D.[a]



How patients first learned about oocyte cryopreservation. OB/GYN = obstetric/gynecologist practitioner.

human reproduction ORIGINAL ARTICLE *Psychology and counselling*

A survey on the intentions and attitudes towards oocyte cryopreservation for non-medical reasons among women of reproductive age

D. Stoop*, J. Nekkebroeck, and P. Devroey

Table I Intentions to freeze oocytes among women aged 21–40 years.

Would you consider to freezing oocytes for social reasons?	*n*	%	Group	%
	1914			
Yes	32	3.1	Potential freezers	31.5
Maybe	291	28.4		
I don't know	171	16.7	Doubtful group	16.7
No	530	51.8	Non-freezers	51.8

Human Reproduction, Vol.26, No.3 pp. 655–661, 2011

The fertility myth: Israeli students' knowledge regarding age-related fertility decline and late pregnancies in an era of assisted reproduction technology

Yael Hashiloni-Dolev[1,*], Amit Kaplan[1], and Shiri Shkedi-Rafid[2,3]

Table 2 At what age do you plan to have your first child?

n = 410

Age, years	*n* (%)
21–25	1 (0.8)
26–30	73 (64.3)
31–35	42 (32.6)
36–39	1 (0.8)
>40	2 (1.6)

		If no suitable partner	
		Yes	No
To focus on career and postpone family building	Yes	40 (31.0%)	19 (14.7%)
	No	20 (15.5%)	50 (38.8%)

What age will you freeze your oocytes?	*n*	%
21–25 years	16	12.4
26–30 years	48	37.2
31–35 years	49	38.0
36–40 years	9	7.0
>40 years	7	5.4
Total	129	100

Human Reproduction, Vol.26, No.11 pp. 3045–3053, 2011

THE JOURNAL OF
Obstetrics and Gynaecology Research

Social oocyte freezing: A survey among Singaporean female medical students

Shu Qi Tan[1], Andy Wei Keat Tan[1], Matthew Sie Kuei Lau[2], Heng Hao Tan[2] and Sadhana Nadarajah[2]

Table II Students' estimates of healthy women's chances of becoming pregnant spontaneously compared with published medical data[a].

Age group (years)	Student estimates[b] mean % (SD)	Medical data[c] mean % (SD)	*P*
20–25	77.7 (18.2)	55	0.000***
26–30	76.8 (17.0)	40–50	0.000***
31–35	67.3 (18.0)	35–48	0.000***
36–40	57.3 (19.2)	28–43	0.000***
41–45	43.3 (19.0)	2–20	0.000***
46–50	31.9 (19.4)	0–5	0.000***

n = 129

Kimlerin Oositlerini Donduralım?

30 Eylül 2014, 29135 sayılı ÜYTE yönetmeliği

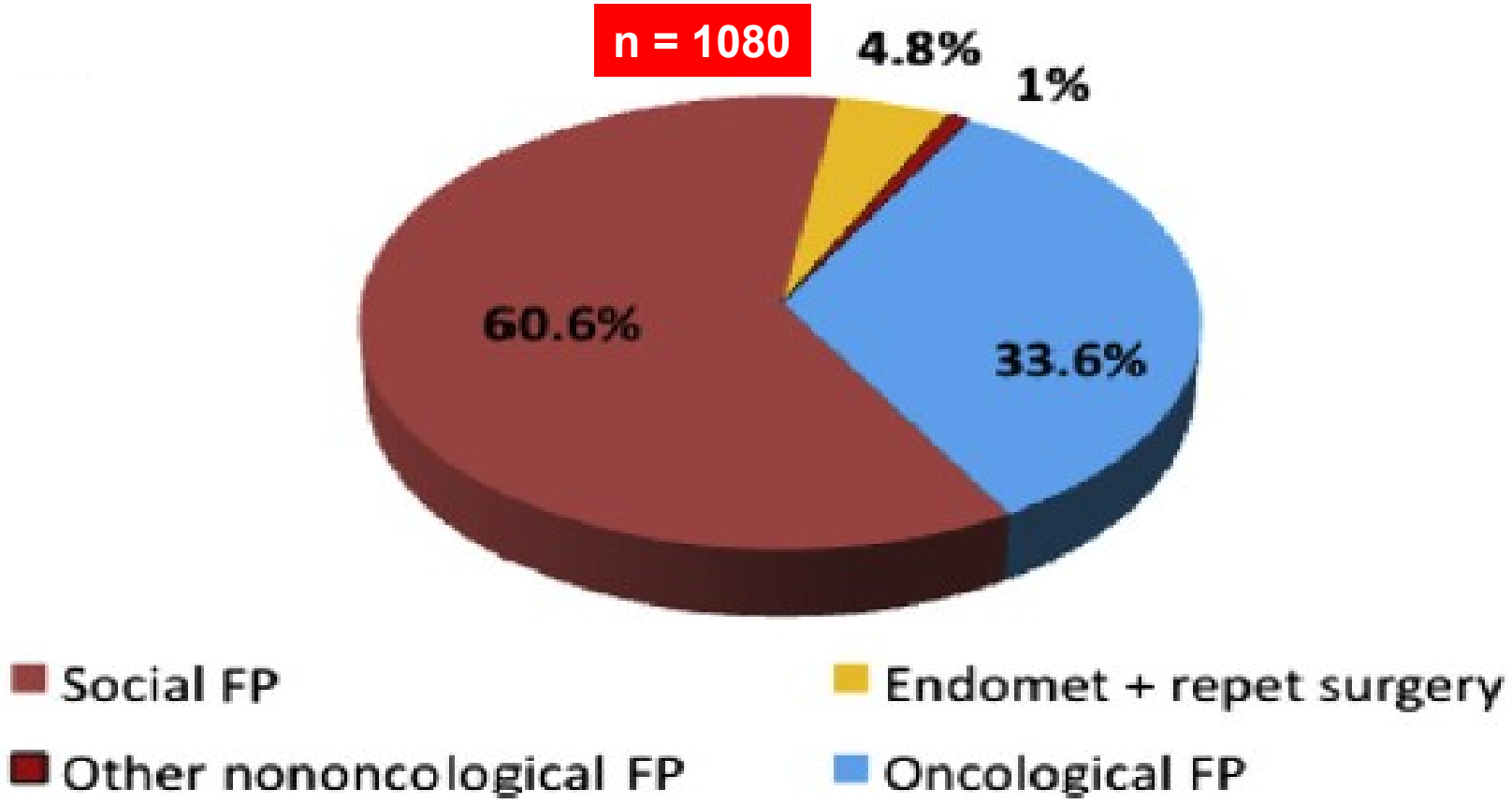
a) Kemoterapi ve radyoterapi gibi gonad hücrelerine zarar veren tedaviler öncesinde,

b) Üreme fonksiyonlarının kaybedilmesine yol açacak olan ameliyatlar (yumurtalıkların alınması gibi operasyonlar) öncesinde

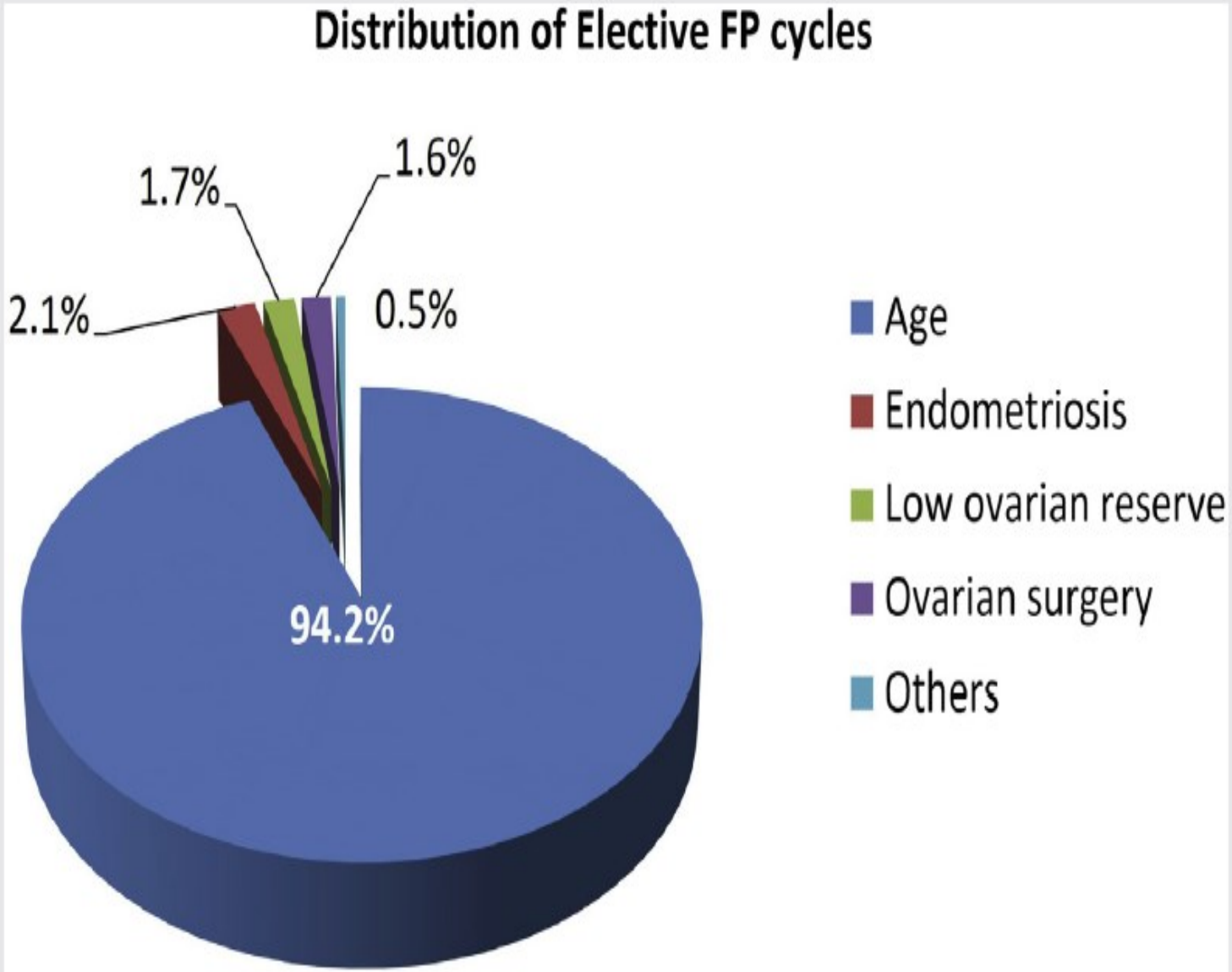
c) Düşük over rezervi olup henüz doğurmamış veya aile öyküsünde erken menopoz hikayesinin üç uzman tabipten oluşan sağlık kurulu raporu ile belgelendirilmesi durumunda

Five years' experience using oocyte vitrification to preserve fertility for medical and nonmedical indications

Juan A. Garcia-Velasco, M.D.,[a,d] Javier Domingo, M.D.,[b] Ana Cobo, Ph.D.,[c] Maria Martínez, M.D.,[a] Luis Carmona, M.D.,[b] and Antonio Pellicer, M.D.[c]

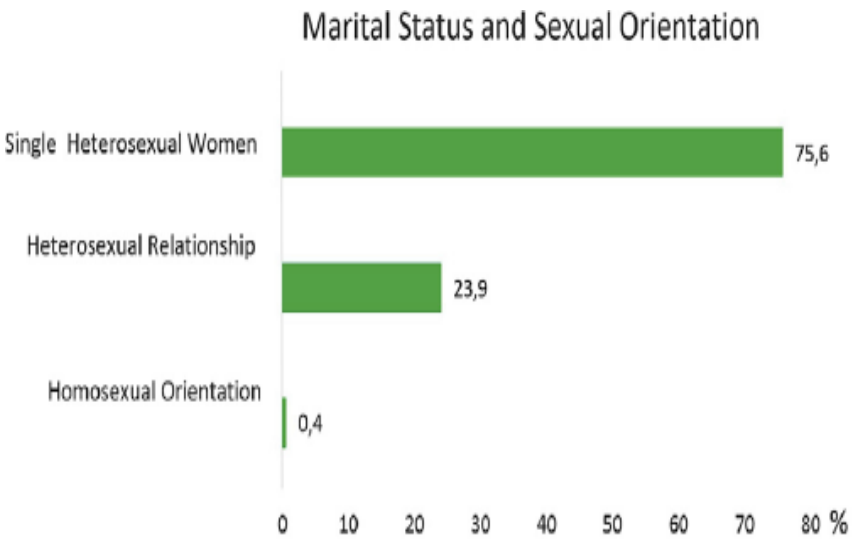


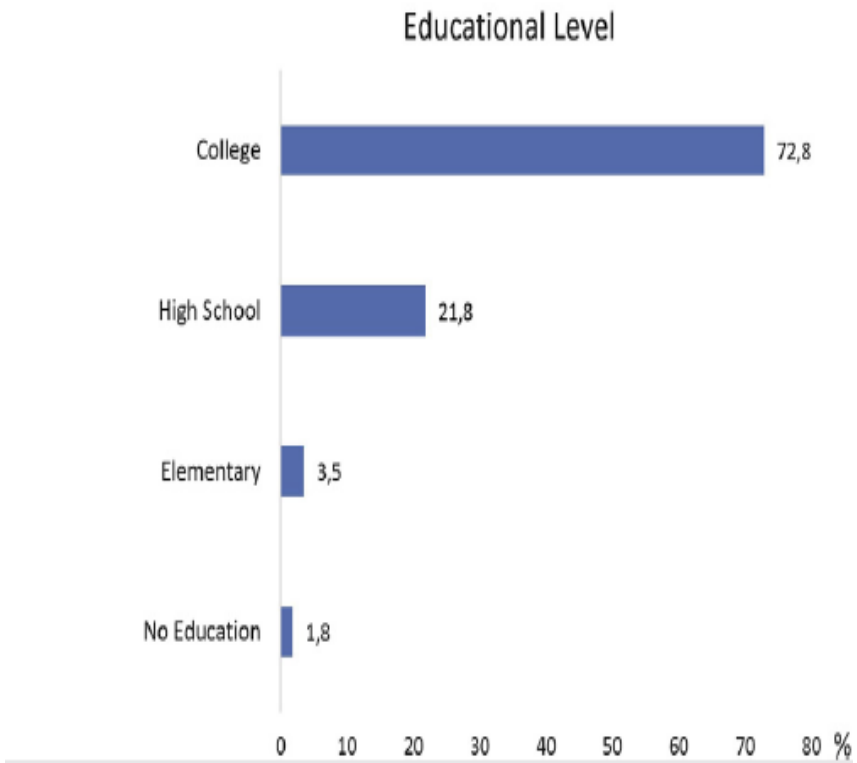
Fertility and Sterility® Vol. 99, No. 7, June 2013

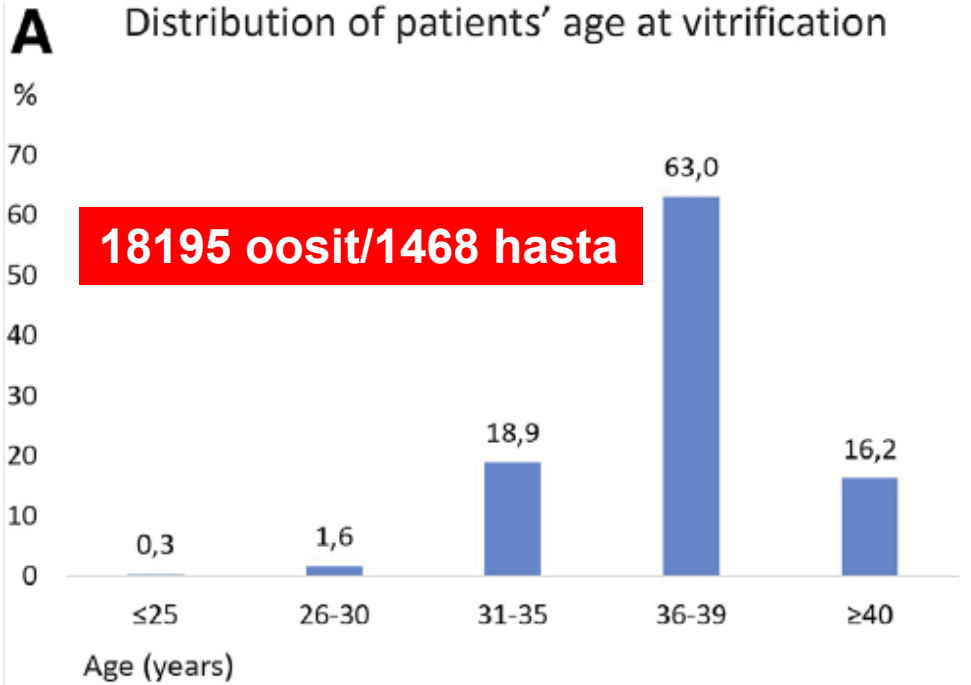


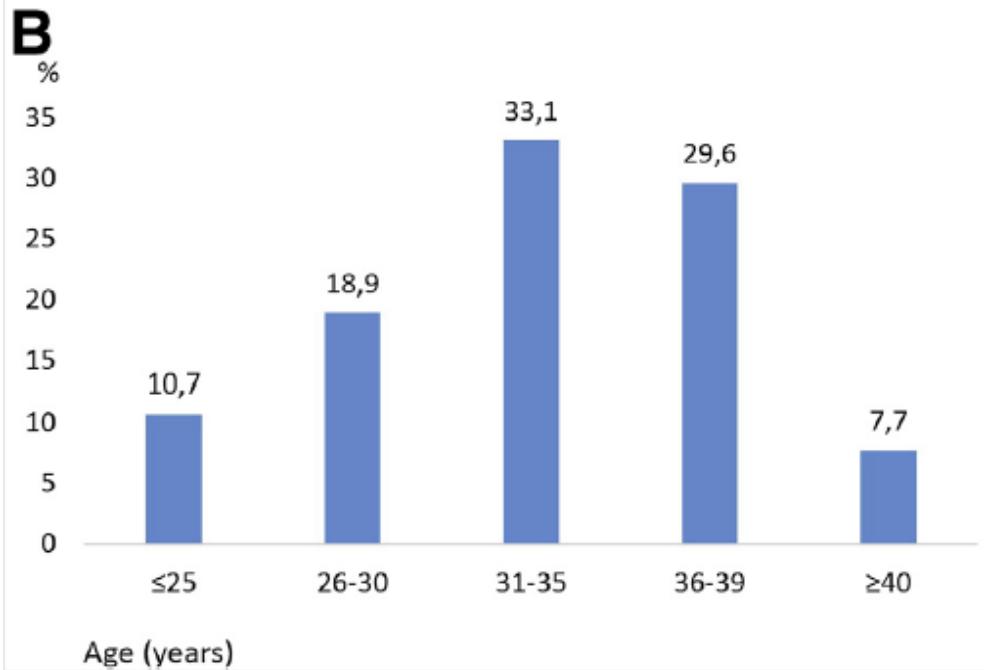
Distribution of elective fertility preservation (FP) cycles.

Cobo. Oocyte vitrification for elective FP. Fertil Steril 2016.





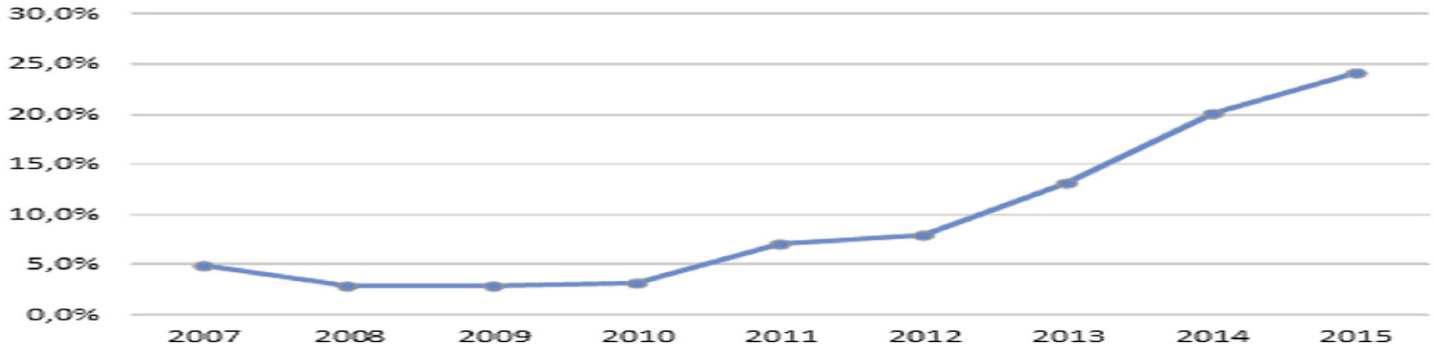




Fertility and Sterility® Vol. 105, No. 3, March 2016

Oocyte vitrification as an efficient option for elective fertility preservation

Ana Cobo, Ph.D.,[a] Juan A. García-Velasco, M.D.,[b] Aila Coello, Ph.D.,[a] Javier Domingo, M.D.,[c] Antonio Pellicer, M.D.,[d] and José Remohí, M.D.[a]



Year	Total vit. Cycles*	EFP due to age	EFP due to medical no oncological	Total EFP	%EFP**
2007	570	25	3	28	4.9
2008	2.057	39	20	59	2.9
2009	2.739	58	22	80	2.9
2010	3.178	90	13	103	3.2
2011	3.500	230	16	246	7.0
2012	3.395	245	27	272	8.0
2013	3.129	347	66	413	13.2
2014	3.234	569	82	651	20.1
2015	1.179	262	23	285	24.2
Total	**22.981**	**1.865**	**272**	**2.137**	**9.3**

Oosit Dondurma vs. Embryo Dondurma

Prospective controlled study to evaluate laboratory and clinical outcomes of oocyte vitrification obtained in in vitro fertilization patients aged 30 to 39 years

Ching-Chien Chang, Ph.D., Thomas A. Elliott, B.Sc., Graham Wright, B.Sc., Daniel B. Shapiro, M.D., Andrew A. Toledo, M.D., and Zsolt Peter Nagy, M.D., Ph.D.

The outcome comparison between young age versus advanced age patients' oocytes after vitrification.

	Young age group 30–36 y (n = 11)	Advanced age group 37–39 y (n = 11)	*P* value
Patient age (mean y ± SD)[a]	32.91 ± 1.97	37.90 ± 0.83	<.0001
Mean basal FSH (mean mIU/mL ± SD)	6.20 ± 2.26	6.20 ± 0.92	NS
			>.9999
Survival rate (%)	80/97 (82.5)	68/89 (76.4)	NS
			.3639
Fertilization rate (%)	68/97 (70.1)	56/89 (62.9)	NS
			.3509
No. of good-quality embryos on day 3 (%)[a]	54/97 (55.6)	36/89 (40.4)	<.05
No. of embryos transferred (mean ± SD)[b]	24 (2.18 ± 0.6)	29 (2.64 ± 1.0)	NS
			.2056
No. of clinical pregnancies (%)	7/11 (63.6)	3/11 (27.3)	NS
			.1984
No. of implantations (%)	10/24 (41.7)	6/29 (20.7)	NS
			.1357
No. of take home babies (%)	6/11 (54.5)	2/11 (18.2)	NS
			.1827
No. of live births	8	3	–
Percentage of oocyte to achieve a live birth (%)	8/97 (8.2)	3/89 (3.3)	NS
			.2173

Successful elective and medically indicated oocyte vitrification and warming for autologous in vitro fertilization, with predicted birth probabilities for fertility preservation according to number of cryopreserved oocytes and age at retrieval

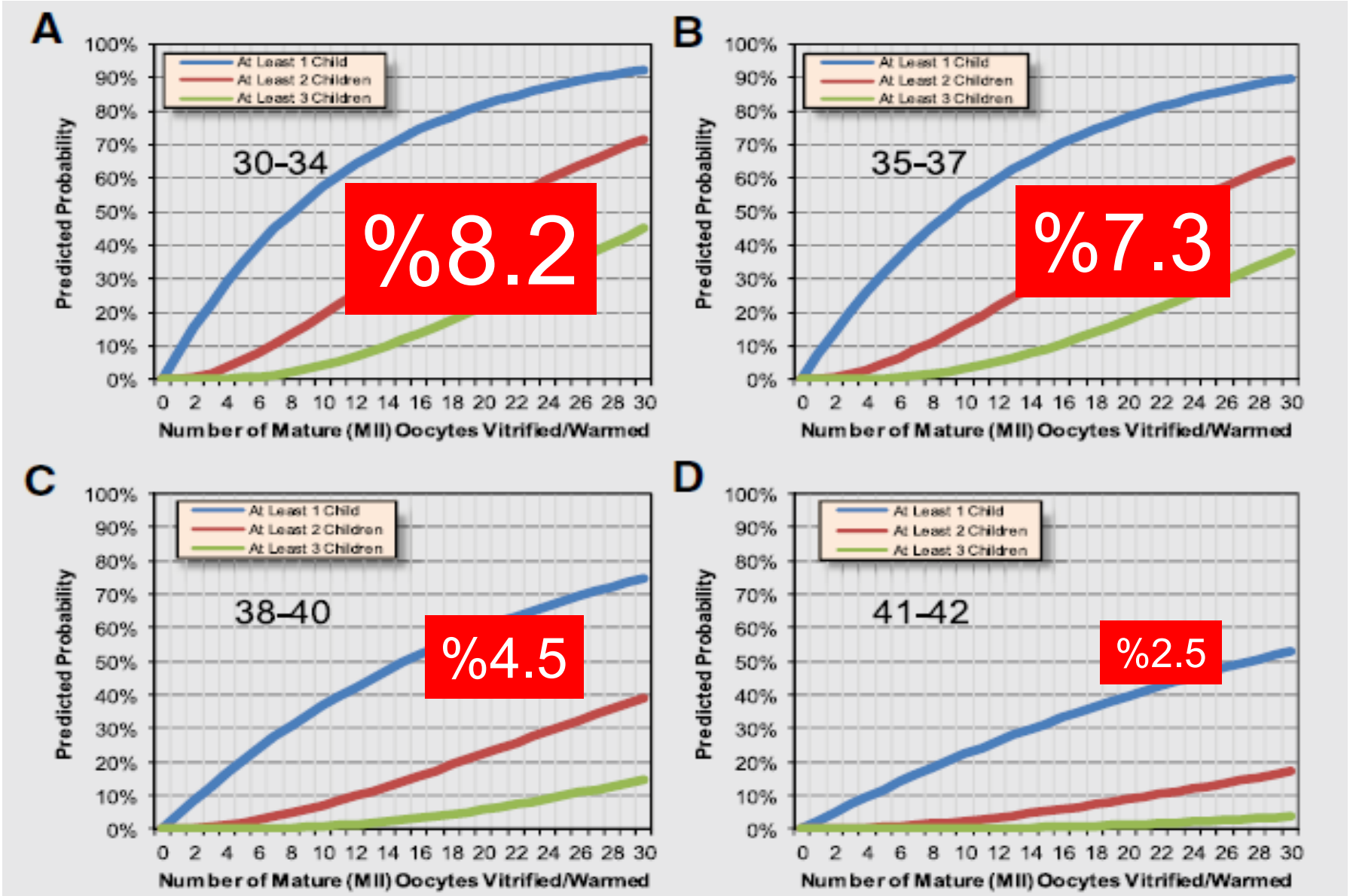
Patient and cycle characteristics and treatment outcomes of autologous ICSI cycles compared between vitrified and freshly retrieved oocytes.

Characteristic	Vitrified oocytes	Fresh oocytes	*P* value
Cycles (n)	128	2,963	
Age (y) at oocyte retrieval	34.9	35.5	NS
BMI (kg/m^2)	24.6	25.9	.006
Ethnicity (%)			
European	64.1	62.0	NS
African	17.2	13.6	NS
Asian	10.9	15.8	NS
Hispanic	3.1	4.7	NS
Other/unknown	4.7	3.9	NS
Diagnoses (%)			
Diminished ovarian reserve	8.6	16.9	.014
Endometriosis	5.5	4.2	NS
Male factor	43.8	44.5	NS
Ovulation disorders/PCOS	4.7	10.6	.031
Tubal factor	4.7	10.7	.029
Uterine factor	0.8	2.5	NS
No. of MII oocytes inseminated	8.0	10.1	.0002
Fertilization per MII inseminated (%)	69.5	71.7	NS
Cycles without ET or cryopreservation (%)	4.7	4.2	NS
Blastocyst-stage ET (%)	50.9	66.1	.001
Embryos per transfer	1.8	1.9	NS
Implantation per embryo transferred (%)	41.2	35.4	NS
Implantation per embryo transferred (adjusted) (%)	43.1[a]	32.3[a]	.040
Clinical pregnancy per transfer cycle (%)	54.4	45.1	.050
Clinical pregnancy per transfer cycle (adjusted) (%)	57.1[a]	44.4[a]	.011
Pregnancy loss per clinical pregnancy (%)	29.0	20.1	NS
Pregnancy loss per clinical pregnancy (adjusted) (%)	29.9[a]	19.0[a]	.048
Live birth/ongoing pregnancy per transfer cycle (%)	38.6	36.0	NS
Live birth/ongoing pregnancy per transfer cycle (adjusted) (%)	38.6[a]	34.7[a]	NS

1283 vitrifiye oosit

Fertility and Sterility® Vol. 105, No. 2, February 2016

Successful elective and medically indicated oocyte vitrification and warming for autologous in vitro fertilization, with predicted birth probabilities for fertility preservation according to number of cryopreserved oocytes and age at retrieval



Ne Zaman Donduralım?

Yaş

Successful elective and medically indicated oocyte vitrification and warming for autologous in vitro fertilization, with predicted birth probabilities for fertility preservation according to number of cryopreserved oocytes and age at retrieval

Children born per warmed vitrified blastocyst according to patient age at oocyte retrieval and embryo cryopreservation, for all autologous vitrified blastocyst transfers performed between January 2009 and April 2012.

Age at cryopreservation (y)	Blastocysts warmed (n)	Children born (n)	Children per blastocyst (%)
<30	451	162	35.9
30–34	1211	419	34.6
35–37	762	260	34.1
38–40	437	76	17.4
41–42	103	16	15.5
43–44	30	4	13.3

Doyle. Autologous vitrified oocyte IVF outcomes. Fertil Steril 2016.

Oocyte vitrification as an efficient option for elective fertility preservation

Survival and clinical outcomes according to age at time of vitrification, n (%).

18195 oosit/1468 hasta

Age, y	Patients, n	Cycles, n	Survival rate, n (%)	CPR/cycle, n (%)	CPR/ET, n (%)	OPR/cycle, n (%)	OPR/ET, n (%)	Live births/patients, n (%)
Survival and clinical outcomes in patients aged ≤35 y and ≥36 y at vitrification								
≤35	32	41	257/272 (94.6)[a]	24/41 (58.5)[a]	24/39 (61.5)[a]	21/41 (51.2)[a]	21/39 (53.9)[a]	16/32 (50)[a]
≥36	105	150	750/910 (82.4)[b]	47/150 (31.3)[b]	47/118 (39.8)[b]	27/150 (18.0)[b]	27/118 (22.9)[b]	24/105 (22.9)[b]
Total	137	191	1,007/1,182 (85.2)	71/191 (37.1)	71/157 (45.2)	48/191 (25.1)	48/157 (30.5)	40/137 (29.2)
Survival and clinical outcomes according to different groups of age at vitrification								
≤29	6	9	59/62 (94.5)[a]	6/9 (66.6)[a]	6/9 (66.6)[a]	6/9 (66.6)[a]	6/9 (66.6)[a]	6/6 (100)[a]
30–34	20	23	155/161 (96.1)[a]	14/23 (60.9)[a]	14/21 (66.7)[a]	13/23 (56.5)[a]	13/21 (61.9)[a]	9/20 (45)[b]
35–39	84	127	601/734 (81.8)[b]	48/127 (37.8)[b]	48/112 (42.9)[b]	27/127 (21.3)[b]	27/112 (24.1)[b]	24/84 (28.5)[b]
≥40	27	32	192/225 (85.3)[b]	3/32 (9.8)[c]	3/15 (20)[c]	2/32 (6.3)[c]	2/15 (13.3)[b]	1 (3.7)[c]
Total	137	191	1,007/1,182 (85.2)	71/191 (37.1)	71/157 (45.2)	48/191 (25.1)	48/157 (30.5)	40/137 (29.2)

Note: Abbreviations as in Table 1.

[a,b,c] Different superscripts in the same column indicate statistical differences ($P < .05$).

Cobo. Oocyte vitrification for elective FP. Fertil Steril 2016.

Fertility and Sterility® Vol. 105, No. 3, March 2016

Ne Kadar Süre Sonra Çözdürelim?

Six years' experience in ovum donation using vitrified oocytes: report of cumulative outcomes, impact of storage time, and development of a predictive model for oocyte survival rate

Ana Cobo, Ph.D., Nicolás Garrido, Ph.D., M.Sc., Antonio Pellicer, M.D., and José Remohí, M.D.

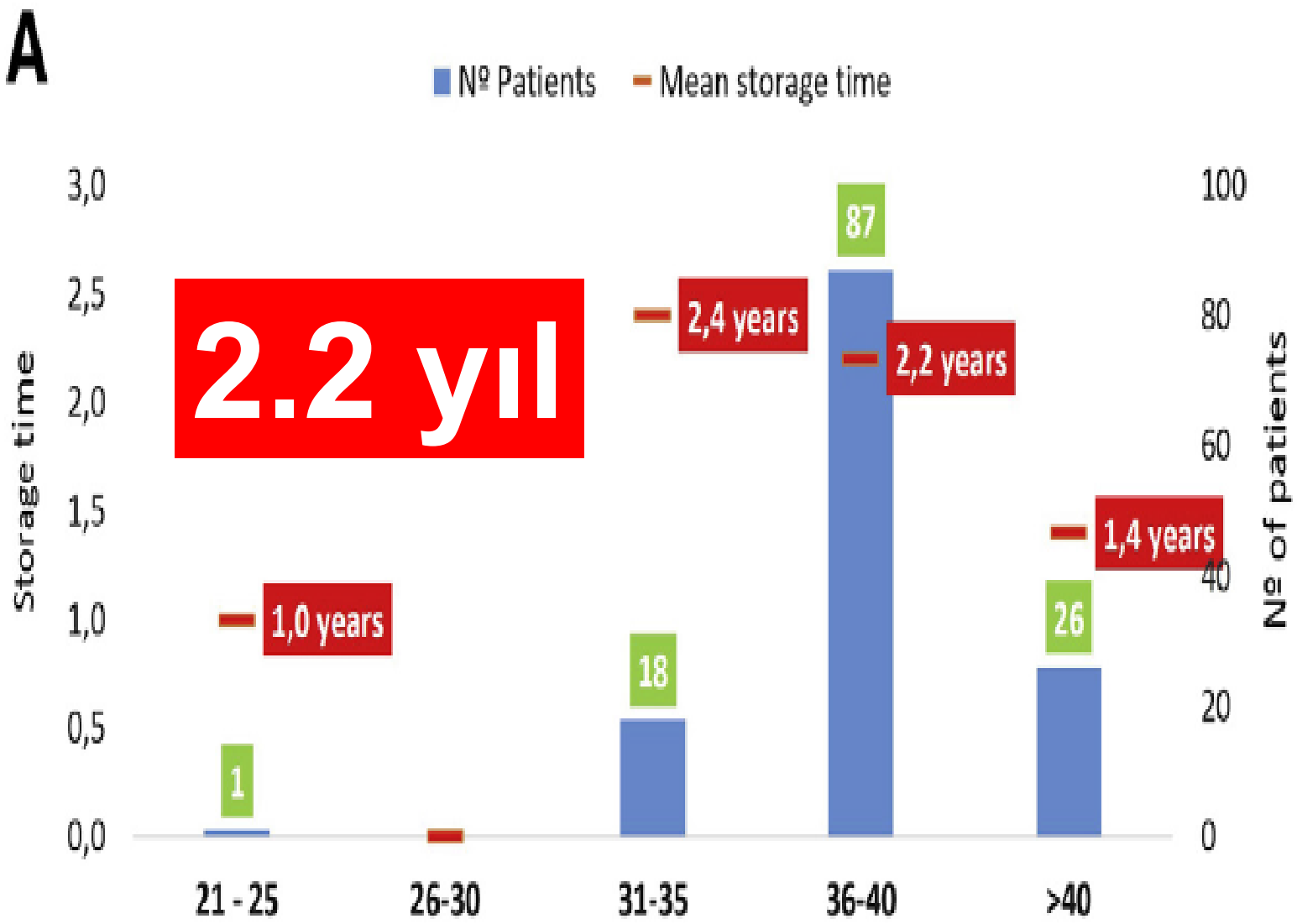
Survival and clinical outcome according to storage time.

Storage time, months	No. of WP	No. of surviving oocytes (SR/WP)	95% CI	CPR/WP	95% CI	OPR/WP	95% CI	IR	95% CI
≤6	2,312	24,427 (90.1)	89.7–90.5	1,090 (47.5)	45.5–49.5	902 (39.4)	37.4–41.4	39.7	37.9–41.5
>6 and ≤12	646	6,855 (90.2)	89.4–90.9	296 (45.1)	41.3–48.9	237 (36.1)	32.4–39.8	37.9	35.7–40.1
>12 and ≤18	315	3,495 (91.1)	90.2–92	135 (42.7)	37.3–48.2	117 (37)	31.7–42.3	38.1	35.3.–40.9
>18 and ≤24	184	1,938 (94.3)	93.3–95.3	90 (46.4)	39.4–53.4	75 (38.7)	31.9–45.5	38.4	34.3–42.4
>24 and <36	123	1,153 (87.5)	85.6–89.5	56 (45.5)	36.7–54.3	40 (32.5)	24.2–40.8	35.6	21.9–41.3
>36 and ≤48	23	160 (88.4)	83.7–93.1	7 (30.4)	11.6–49.2	7 (30.4)	11.6–49.2	36	21.9–50.1
>48 and ≤60	6	45 (91.8)	84.1–99.5	3 (50)	6.2–93.8	3 (50)	10–90.1	100	100–100
>60	1	14 (93.3)		1 (100)		1 (100)		50	–
Total	3,610	38,087 (90.3)		1,678 (46.5)		1,382 (38.3)		39	

Note: Data are expressed as means and proportions with their corresponding 95% CI. No statistical differences were observed while comparing each outcome parameter according to all categories of storage time. SR = survival rate; WP = warming procedures; CPR = clinical pregnancy rate (%).

Fertility and Sterility® Vol. 104, No. 6, December 2015

Distribution of patients' when returning according to age at vitrification and storage time



Fertility and Sterility® Vol. 105, No. 3, March 2016

İdeal Oosit Sayısı?

human reproduction ORIGINAL ARTICLE Embryology

Consistent and predictable delivery rates after oocyte vitrification: an observational longitudinal cohort multicentric study

Delivery	%	N
▪ 0.000	71.6	322
▪ 1.000	28.4	128
Total	100.0	450

Number of vitrified MII phase oocytes

≤ 8 MII phase oocytes

Delivery	%	n
▪ 0.000	77.4	263
▪ 1.000	22.6	77
Total	75.6	340

n=486
2304/2721

> 8 MII phase oocytes

Delivery	%	n
▪ 0.000	53.6	59
▪ 1.000	46.4	51
Total	24.4	110

Female age

≤ 38 years

Delivery	%	n
▪ 0.000	72.5	166
▪ 1.000	27.5	63
Total	50.9	229

> 38 years

Delivery	%	n
▪ 0.000	87.4	97
▪ 1.000	12.6	14
Total	24.7	111

Day of transfer

≤ 3 days

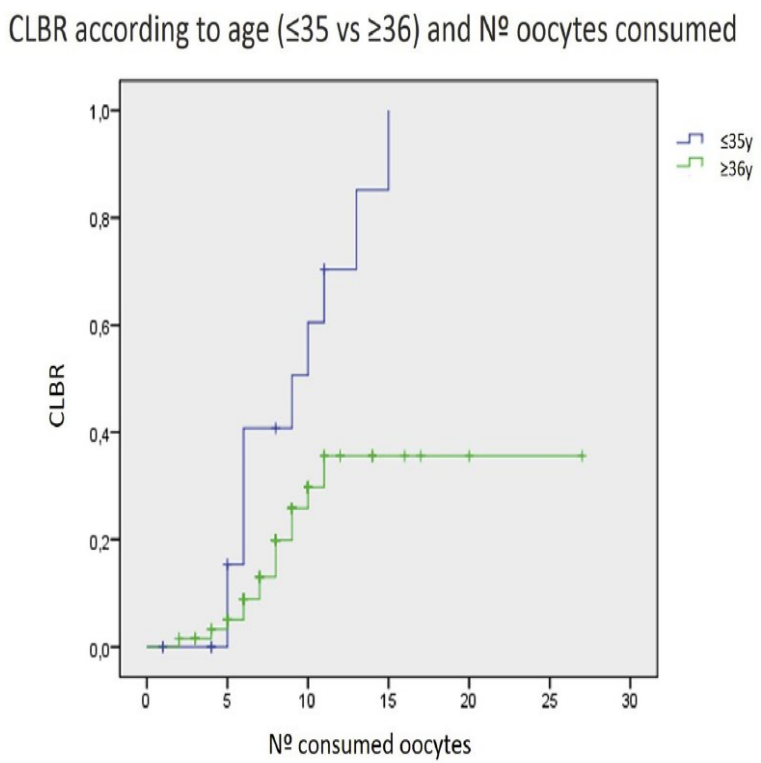
Delivery	%	n
▪ 0.000	59.3	48
▪ 1.000	40.7	33
Total	18.0	81

> 3 days

Delivery	%	n
▪ 0.000	37.9	11
▪ 1.000	62.1	18
Total	6.4	29

Human Reproduction, Vol.27, No.6 pp. 1606–1612, 2012

Oocyte vitrification as an efficient option for elective fertility preservation



≤35 years old		≥36 years old	
Nºoocytes	CLBR (IC95%)	Nºoocytes	CLBR (95% CI)
5	15,4 (-4.2-35.0)	5	5,1 (-0.6-10.7)
8	40.8 (13.2-68.4)	8	19,9 (8.7-31.1)
9	50,6 (31.6-79.6)	9	25.8 (12.7-38.9)
10	60,5 (34.5-89.5)	10	29,7 (15.2-34.2)
15	85,2 (60.5-100)	11	35,6 (18.4-52.8)

O-73 Monday, October 17, 2016 11:15 AM

PREDICTING THE LIKELIHOOD OF LIVE BIRTH FOR ELECTIVE OOCYTE CRYOPRESERVATION: A COUNSELING TOOL FOR PHYSICIANS AND PATIENTS.

R. H. Goldman,[a] C. Racowsky,[a] L. V. Farland,[a] S. Munne,[b] L. Ribustello,[b] J. H. Fox.[a] [a]Dept of Obstetrics and Gynecology, Brigham and Women's Hospital and Harvard Medical School, Boston, MA; [b]Reprogenetics, Livingston, NJ.

Likelihood (%) of at least one live birth

No. Mature Oocytes Frozen	Age (y)						
	<35	35	37	39	40	42	44
1	7	7	5	3	2	1	1
2	14	13	9	6	4	2	1
3	20	19	13	9	7	3	2
4	25	24	17	11	9	5	2
5	30	29	21	14	11	6	3
10	52	50	37	26	20	11	6
20	77	75	60	45	36	21	11
40	95	94	84	70	59	37	21
50	97	97	90	77	68	44	25

34	3
37	2
41	1

Maliyet?

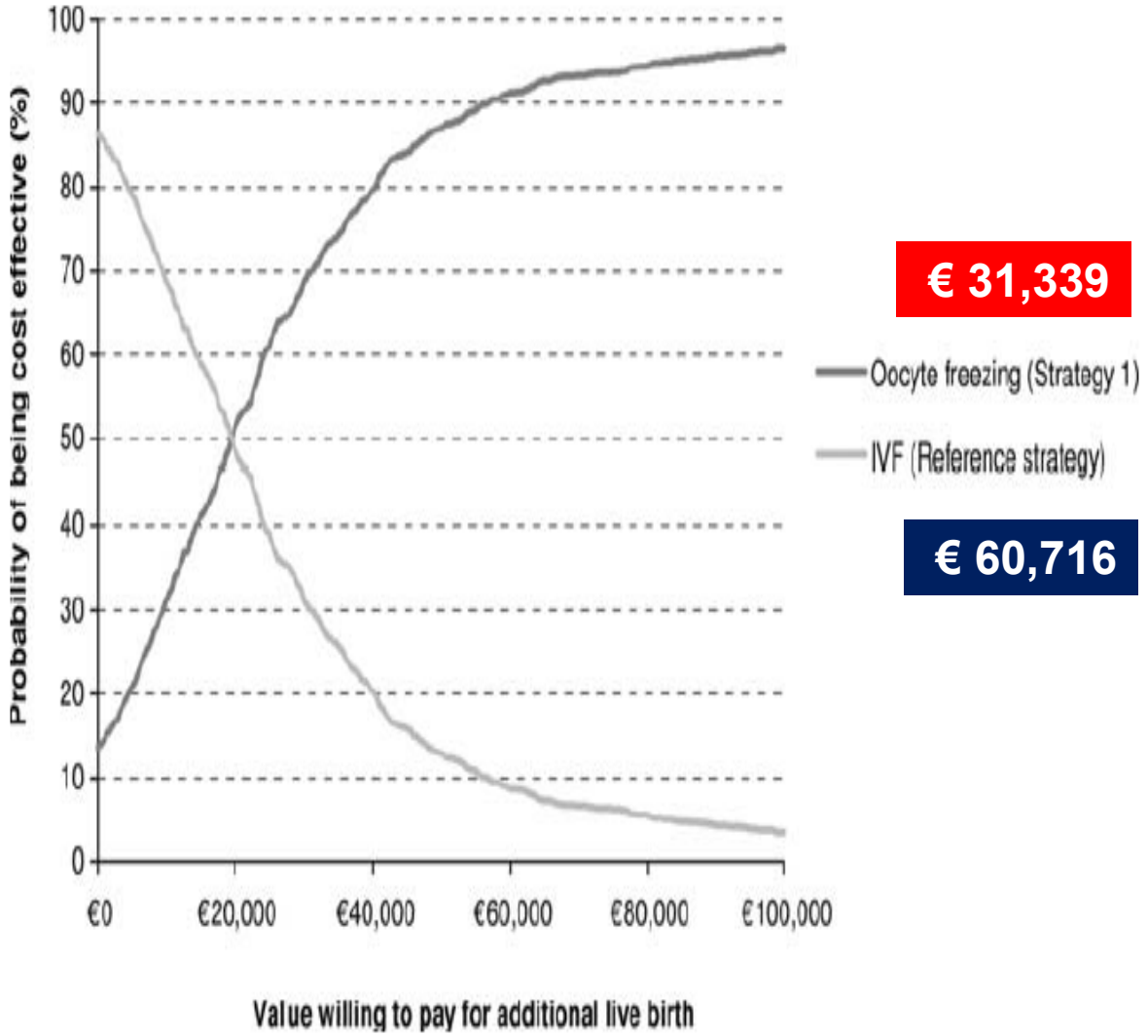
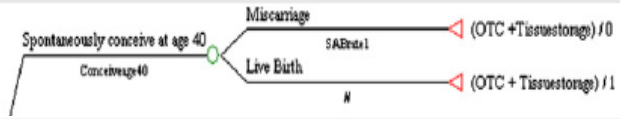


Figure 3 Cost-effectiveness acceptability curve showing the threshold for the willingness to pay for an additional live birth.

Human Reproduction, Vol.26, No.11 pp. 3054–3060, 2011

Fertility preservation for social indications: a cost-based decision analysis

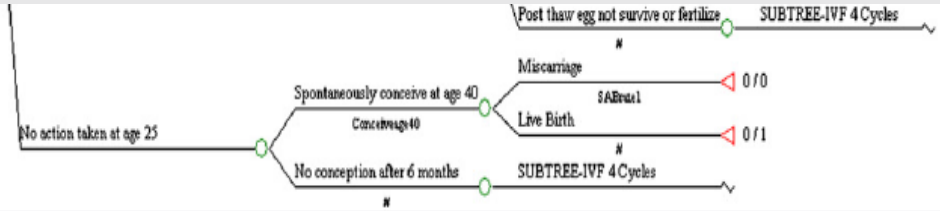
Jennifer Hirshfeld-Cytron, M.D., M.S.C.I.,[a] William A. Grobman, M.D., M.B.A.,[b] and Magdy P. Milad, M.D., M.P.H.[a]



Cost and effectiveness outcomes.

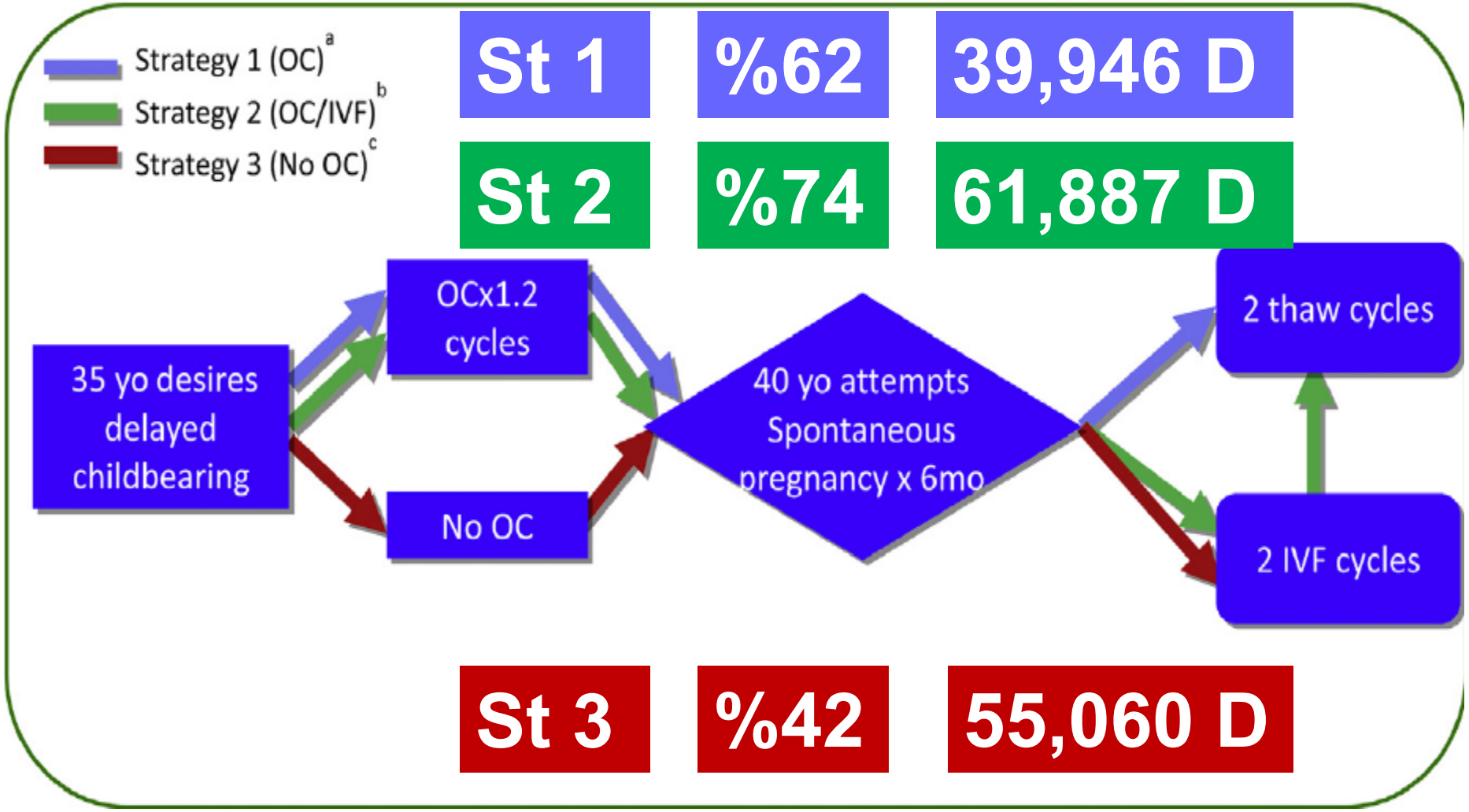
Strategy	Cost	Marginal cost	Effectiveness	Marginal effectiveness	Marginal cost-effectiveness
No action taken at age 25	16,000		0.7183		
Oocyte cryopreservation	26,000	10,000	0.7922	0.0738	135,520
OTC	27,000	2,000	0.7320	–0.0601	Dominated

Hirshfeld-Cytron. Fertility preservation for social reasons. Fertil Steril 2012.



Baby budgeting: oocyte cryopreservation in women delaying reproduction can reduce cost per live birth

Kate Devine, M.D.,[a] Sunni L. Mumford, Ph.D.,[b] Kara N. Goldman, M.D.,[c] Brooke Hodes-Wertz, M.D., M.P.H.,[c] Sarah Druckenmiller, B.S.,[c] Anthony M. Propst, M.D.,[d] and Nicole Noyes, M.D.[c]

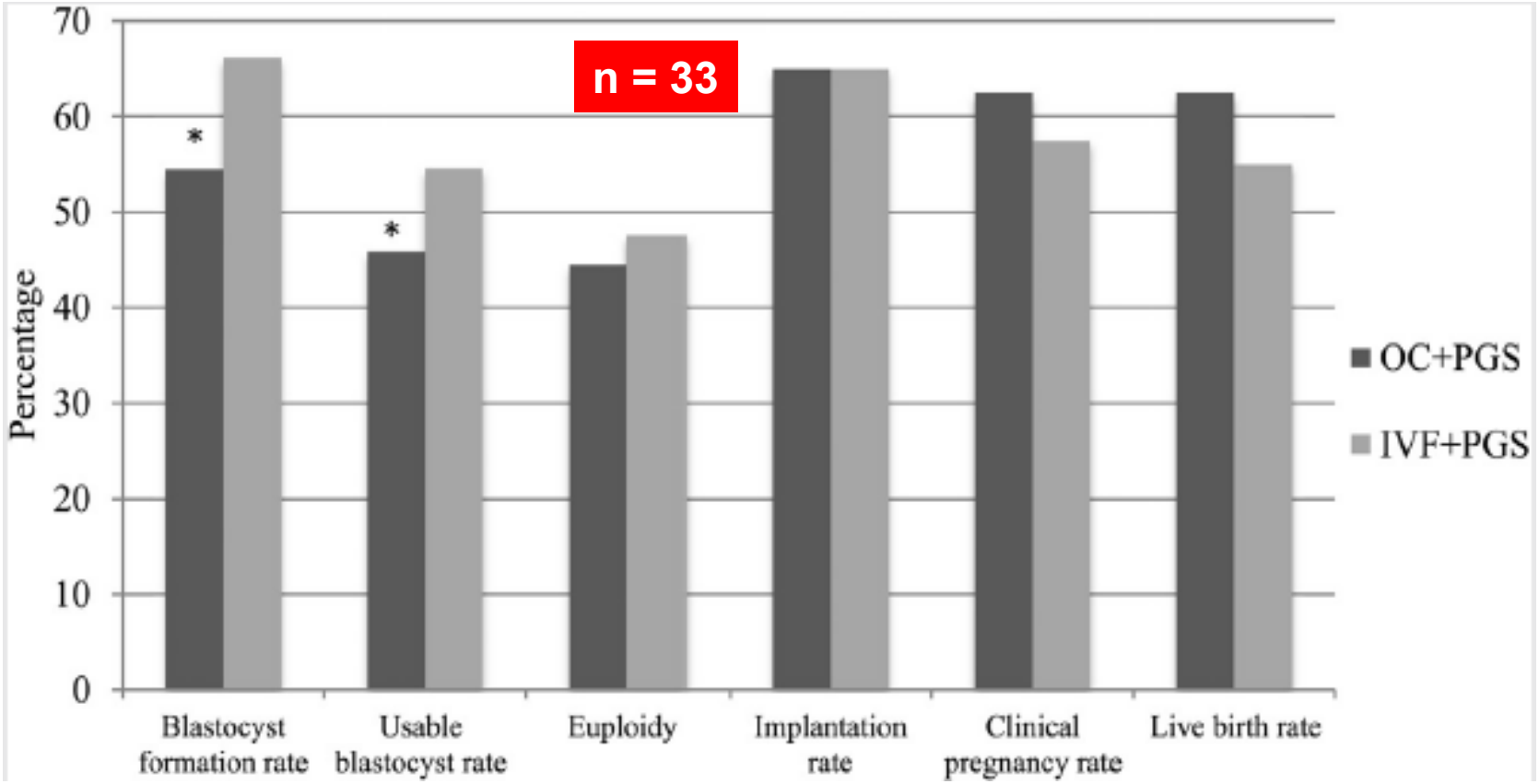


Fertility and Sterility® Vol. 103, No. 6, June 2015

Aneuploidi?

Long-term cryopreservation of human oocytes does not increase embryonic aneuploidy

Kara N. Goldman, M.D., Yael Kramer, M.S., Brooke Hodes-Wertz, M.D., M.P.H., Nicole Noyes, M.D., Caroline McCaffrey, Ph.D., H.C.L.D., and Jamie A. Grifo, M.D., Ph.D.



Fertility and Sterility® Vol. 103, No. 3, March 2015

Yavaş Dondurma vs. Vitrification

Vitrification versus slow freezing for women undergoing oocyte cryopreservation (Review)

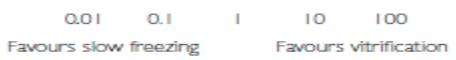
Glujovsky D, Riestra B, Sueldo C, Fiszbajn G, Repping S, Nodar F, Papier S, Ciapponi A

Cochrane Database of Systematic Reviews

Outcome: 1 Ongoing pregnancy rate

Study or subgroup	Vitrification n/N	Slow freezing n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Schiewe 2010	7/15	1/13		100.0 %	6.07 [0.86, 43.04]
Total (95% CI)	**15**	**13**		**100.0 %**	**6.07 [0.86, 43.04]**

Total events: 7 (Vitrification), 1 (Slow freezing)
Heterogeneity: not applicable
Test for overall effect: Z = 1.80 (P = 0.071)
Test for subgroup differences: Not applicable



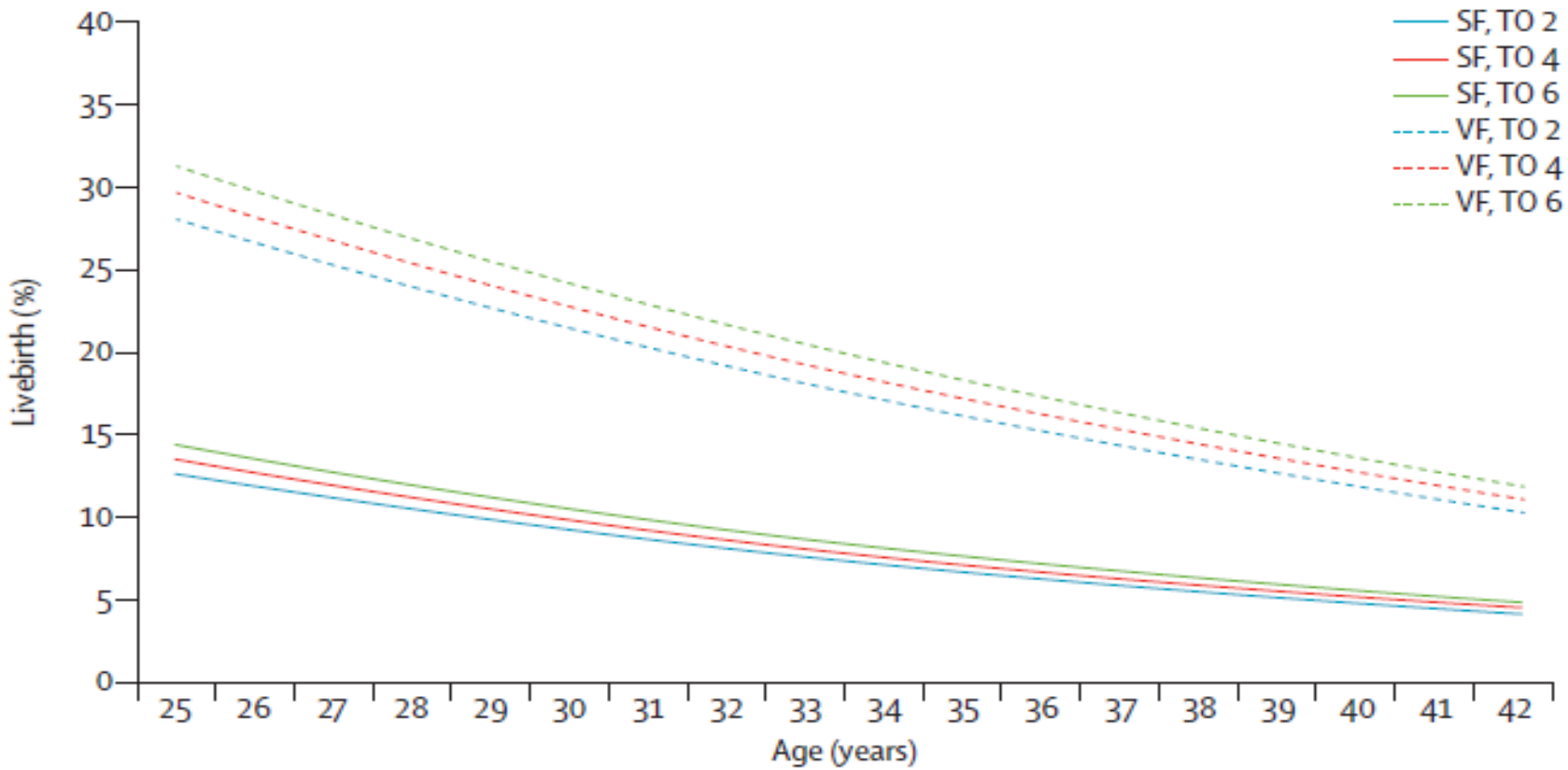
Outcome: 2 Clinical pregnancy rate

Study or subgroup	Vitrification n/N	Slow freezing n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Smith 2010	18/48	4/30		82.1 %	2.81 [1.05, 7.51]
Schiewe 2010	10/15	1/13		17.9 %	8.67 [1.27, 58.92]
Total (95% CI)	**63**	**43**		**100.0 %**	**3.86 [1.63, 9.11]**

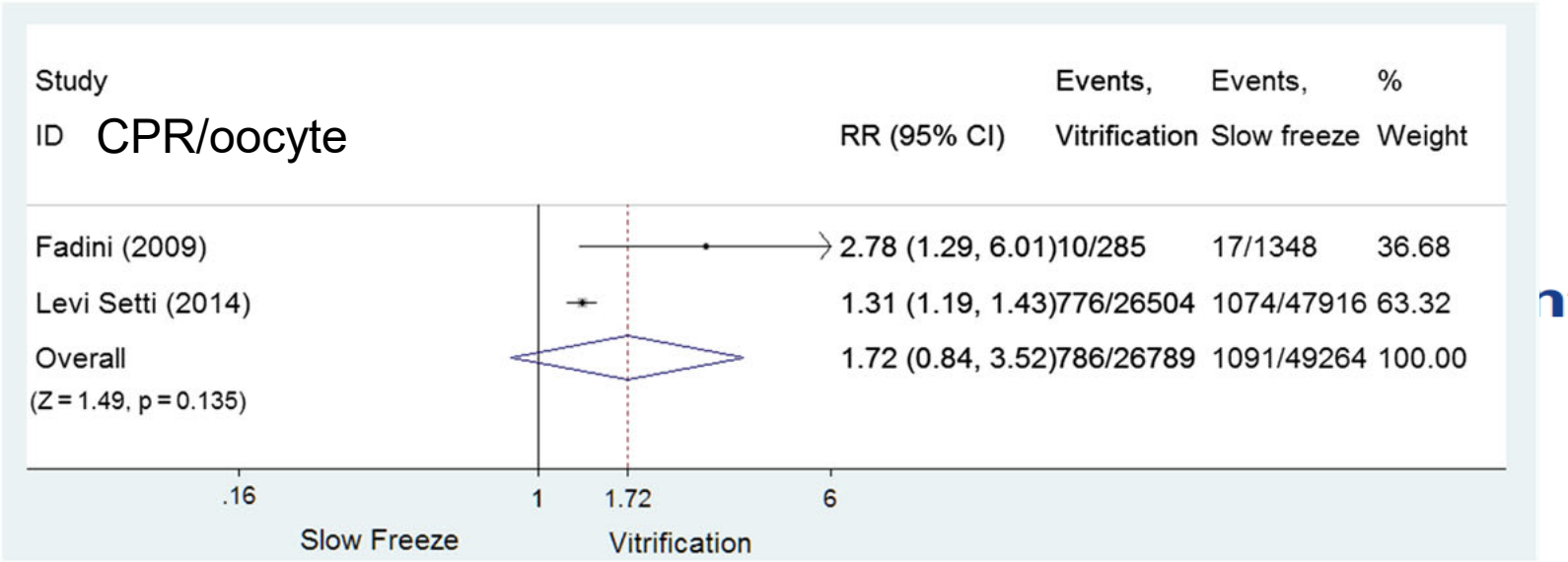
Total events: 28 (Vitrification), 5 (Slow freezing)
Heterogeneity: $Chi^2 = 1.08$, df = 1 (P = 0.30); $I^2 = 8\%$
Test for overall effect: Z = 3.08 (P = 0.0021)
Test for subgroup differences: Not applicable

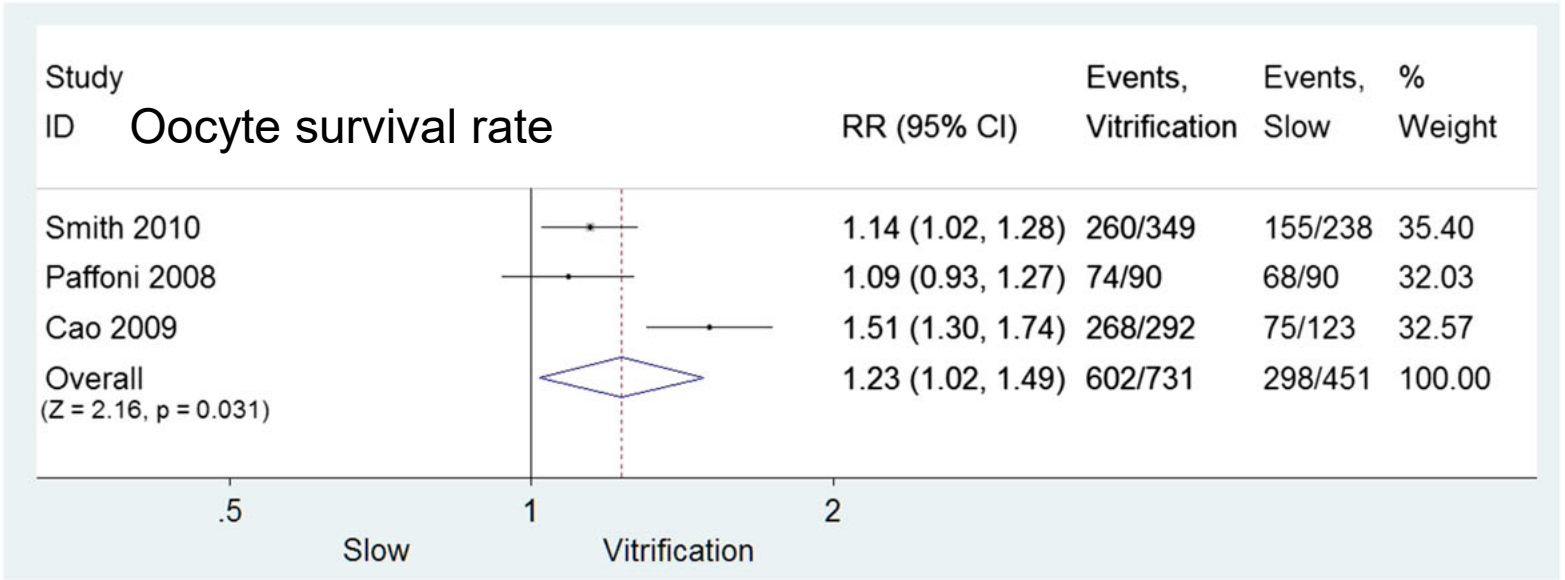
Age-specific probability of live birth with oocyte cryopreservation: an individual patient data meta-analysis

Aylin Pelin Cil, M.D.,[a,b] Heejung Bang, Ph.D.,[c] and Kutluk Oktay, M.D., F.A.C.O.G.[a]



Fertility and Sterility® Vol. 100, No. 2, August 2013


Study
ID
CPR/oocyte
RR (95% CI)
Events, Vitrification
Events, Slow freeze
% Weight
Fadini (2009) 2.78 (1.29, 6.01) 10/285 17/1348 36.68
Levi Setti (2014) 1.31 (1.19, 1.43) 776/26504 1074/47916 63.32
Overall 1.72 (0.84, 3.52) 786/26789 1091/49264 100.00
(Z = 1.49, p = 0.135)
.16
1
1.72
6
Slow Freeze
Vitrification


Study
ID
Oocyte survival rate
RR (95% CI)
Events, Vitrification
Events, Slow
% Weight
Smith 2010 1.14 (1.02, 1.28) 260/349 155/238 35.40
Paffoni 2008 1.09 (0.93, 1.27) 74/90 68/90 32.03
Cao 2009 1.51 (1.30, 1.74) 268/292 75/123 32.57
Overall 1.23 (1.02, 1.49) 602/731 298/451 100.00
(Z = 2.16, p = 0.031)
.5
1
2
Slow
Vitrification

SONUÇ

- Oosit kriyoprezervasyonu sadece prematür ya da iatrojenik fertilite kaybı riski olan kadınlar için değil, tüm kadınlar için değerlendirilmeli

- Yeterli ve doğru bilgilendirme yapılmalı, uzun dönem sonuçların henüz net olmadığı vurgulanmalı ve gereksiz ümit vermekten kaçınılmalı

- SFP ile ilgili yasal düzenlemeler gözden geçirilmeli, farkındalık konusunda çalışmalar planlanmalı ve mümkün olduğu kadar <38 yaş kadınlarda uygulanılmalı