LUNDS UNIVERSITET

IVF – hur påverkar ålder och övervikt?

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Eventuellt jäv -
Inget att deklarera

Anna och Beata

Photos by AllGo - An App For Plus Size People

… söker för infertilitet

Anna 37 år. Oförklarad infertilitet > 1 år. BMI 36.

Beata 27 år. Numera mycket glesa menses. BMI 40.

Aktuella ålders- och BMI-gränser för offentligt finansierad IVF

	Ålder för kvinnan	BMI för kvinnan
Sverige*	< 40	<35
* Malmö, Linköping	<40	30

Källa: 1177

Hur påverkar ålder möjligheten till graviditet?

- **Antalet primordialfolliklar avtar snabbt.**
- **Fertiliteten minskar markant efter 35-års åldern.**

Kelsey, et al. Plos One 2011; 6(7):e22024

Menken, et al. Science 1986; 233(4771):1389-94

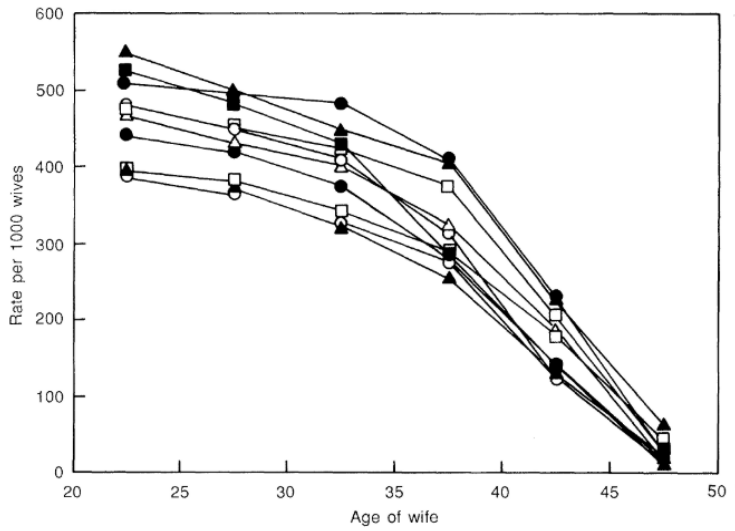


Fig. 1. Marital fertility rates by 5-year age groups (5). The ten populations (in descending order at age 20 to 24) are Hutterites, marriages 1921–30 (▲); Geneva bourgeoisie, husbands born 1600–49 (■); Canada, marriages 1700–30 (●); Normandy, marriages 1760–90 (○); Hutterites, marriages before 1921 (□); Tunis, marriages of Europeans 1840–59 (△); Normandy, marriages 1674–1742 (●); Norway, marriages 1874–76 (□); Iran, village marriages, 1940–50 (▲); Geneva bourgeoisie, husbands born before 1600 (○).

IVF-resultat, USA

All SART Member Clinics

Final National Summary Report for 2018

275786 Total Cycles

LIVE BIRTHS PER INTENDED EGG RETRIEVAL (ALL EMBRYO TRANSFERS)

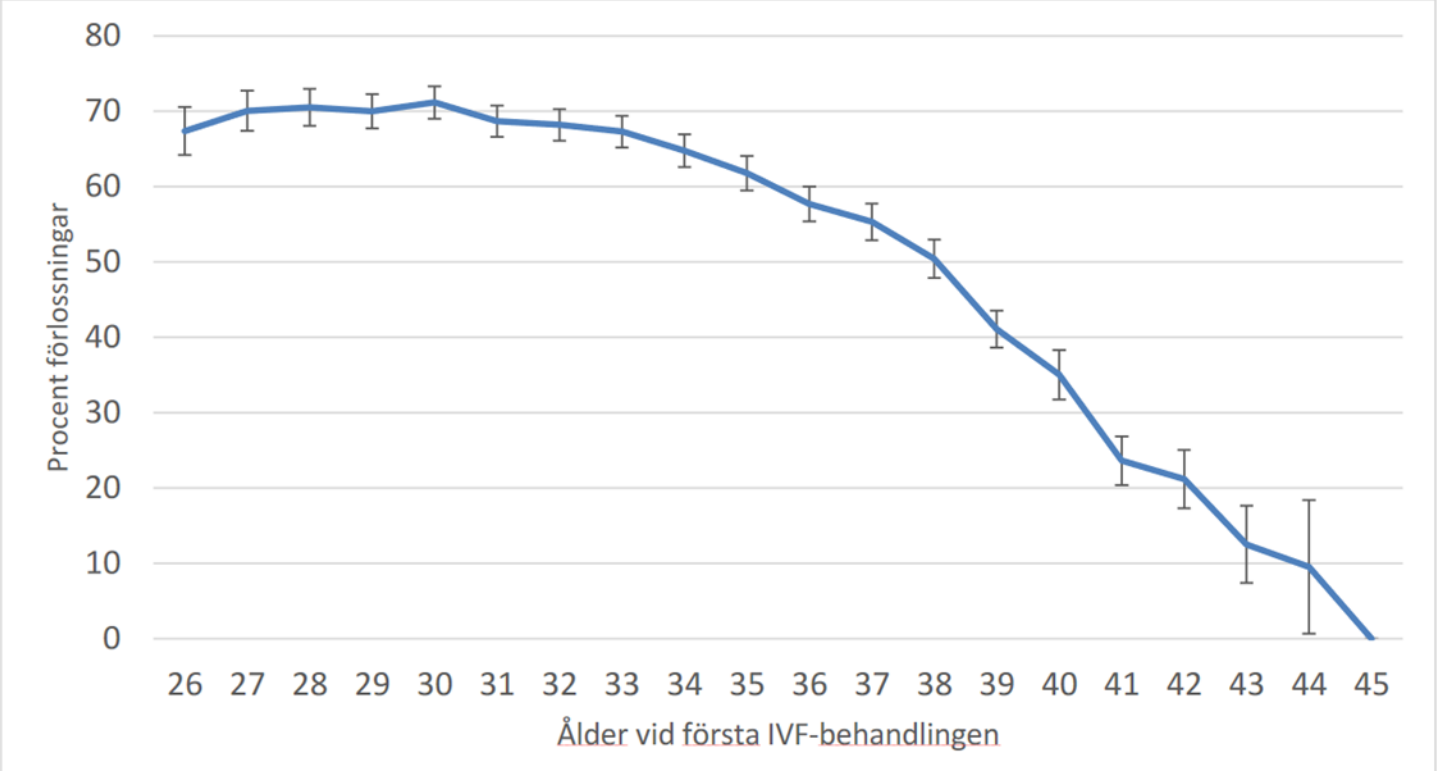
What is the chance of live birth with an intended egg retrieval?

Age of woman	< 35	35 - 37	38 - 40	41 - 42	> 42
Number of cycle starts	45088	27624	26345	13105	8997
Singleton Births	**50.0 %**	**37.2 %**	**24.7 %**	**12.6 %**	**3.9 %**
Live Births	55.6 %	40.8 %	26.8 %	13.4 %	4.1 %

https://www.sartcorsonline.com/CSR/PublicSnapshotReport?ClinicPKID=&reportingYear=2018

IVF-resultat, Sverige

Figur 1 *Andel kvinnor som uppnår förlossning efter behandling som startas inom 18 månader efter den första IVF-behandlingen.*



https://www.medscinet.com/qivf/arsrapporter.aspx

Vad kan man göra åt ålder??

- Fertility awareness
- Äggdonation
- Embryologiska tekniker

Fetma är en sjukdom

Rubino, et al. Nat Med 2020; 26(4):485-97

Hur påverkar fetma möjligheten till graviditet?

- **Dubbelt så lång tid till att uppnå graviditet**
- **Tre gånger ökad risk för anovulatorisk infertilitet**
- **Missfallsrisken ökar med BMI**

Hassan MA, et al. Fertil Steril 2004;81(2):384-92
Rich-Edwards JW, et al. Am J Obstet Gynecol 1994;171(1):171-77
Hahn KA, et al. Paediatr Perinat Epidemiol 2014;28(5):412-23

IVF-resultat vid fetma, USA

TABLE 2

Results for all autologous cycles by BMI category.[a]

Parameter	BMI, kg/m²							
	< 18.5	**18.5–24.9**	**25–29.9**	**30–34.9**	**35–39.9**	**40–44.9**	**45–49.9**	**> 50**
n	7,149	134,588	54,822	24,922	11,747	4,084	1,292	463
Implantation rate, %	30.4	29.5	28.3	26.9	25.8	23.6	22.9	20.3
aOR (95% CI)[b]	0.99 (0.98–1.00)	REF	0.99 (0.99–0.996)	0.98 (0.97–0.99)	0.96 (0.95–0.97)	0.95 (0.93–0.97)	0.91 (0.88–0.95)	0.91 (0.88,0.95)
P value[c]	.26		< .001	< .001	< .001	< .001	< .001	< .001
Clinical pregnancy rate, %	37.7	37.9	36.8	35.7	33.7	32.0	30.6	30.0
aOR (95% CI)[b]	0.93 (0.88–0.99)	REF	0.97 (0.95–0.99)	0.90 (0.87–0.93)	0.81 (0.76–0.85)	0.80 (0.74–0.87)	0.75 (0.65–0.85)	0.66 (0.53–0.82)
P value[c]	.06		.013	< .001	< .001	< .001	< .001	.002
Pregnancy loss rate, %[d]	11.4	11.3	12.7	14.6	15.3	14.8	17.6	20.3
aOR (95% CI)[b]	1.11 (0.97–1.28)	REF	1.14 (1.08–1.21)	1.33 (1.23–1.43)	1.40 (1.26–1.56)	1.26 (1.06–1.51)	1.59 (1.19–2.14)	1.87 (1.18–2.95)
P value[c]	.21		< .001	< .001	< .001	.009	.002	.007
Live birth rate, %	31.2	31.4	29.8	28.0	26.3	24.3	22.8	21.2
aOR (95% CI)[b]	0.92 (0.86–0.97)	REF	0.94 (0.91–0.96)	0.84 (0.81–0.87)	0.76 (0.72–0.79)	0.73 (0.67–0.77)	0.67 (0.58–0.77)	0.52 (0.41–0.66)
P value[c]	.022		< .001	< .001	< .001	< .001	< .001	< .001

Note: aOR = adjusted odds ratio; BMI = body mass index; CI = confidence interval.
[a] All outcomes are per cycle start except for pregnancy loss (per clinical pregnancy).
[b] Odds ratios adjusted for age, smoking status, number of oocytes retrieved, number of embryos transferred, and percentage of blastocysts transferred.
[c] *P* values calculated by means of analysis of variance for each category compared to the reference group. Statistical significance defined as $P < .05$.
[d] Calculated for cases in which a pregnancy outcome was recorded in SART CORS.

Provost. Pregnancy declines with increasing BMI. Fertil Steril 2016.

Provost, et al. Fertility and Sterility 2016; 105(3):663-9

IVF-resultat vid fetma, Danmark

Table 3 Per-cycle-based characteristics of all fresh IVF and intracytoplasmic sperm injection treatments ($n = 1181$) according to body mass index (BMI).

Variable	*Body mass index (kg/m²)*				*P-value*[a,b]
	<18.5	18.5–24.9	25.0–29.9	≥30.0	
Started cycles	44	702	257	178	–
Total dose gonadotrophin (IU, median, range)	1950 (900–6075)	2025 (162–7075)	2250 (300–5800)	2400 (300–5850)	<0.01
Cancelled cycles	9 (20.5)	57 (8.1)	22 (8.6)	32 (18.0)	<0.01
Reason for cancellation					0.02
Poor response to stimulation	1 (11.1)	18 (36.7)	3 (14.3)	5 (16.1)	–
No eggs retrieved	0 (0.0)	14 (28.6)	6 (28.6)	12 (38.7)	–
No fertilization	8 (88.9)	17 (34.7)	12 (57.1)	14 (45.2)	–
Total	9	49	21	31	–
Oocytes collected	9.6 ± 6.1	9.9 ± 5.3	9.4 ± 5.1	8.3 ± 5.8	<0.01
Embryos	6.2 ± 5.5	6.2 ± 4.0	6.0 ± 4.4	4.7 ± 3.7	<0.01
Pregnancy outcome					
Positive HCG	14 (31.8)	221 (31.5)[b]	75 (29.2)	43 (24.2)[b]	<0.01 (NS)[b]
Biochemical pregnancy	0 (0.0)	10 (1.4)	4 (1.6)	1 (0.6)	NS
Ectopic pregnancy	0 (0.0)	5 (0.7)	3 (1.2)	3 (1.7)	NS
Ongoing pregnancy[c]	14 (31.8)	199 (28.3)[b]	68 (26.5)	37 (20.8)[b]	NS (0.04)[b]
Miscarriage	1 (2.3)	24 (3.4)	8 (3.1)	9 (5.1)	NS
Live birth	9 (20.5)	151 (21.5)[b]	45 (17.5)	27 (15.2)[b]	NS (0.06)[b]
Lost to follow-up	4 (9.1)	31 (4.4)	15 (5.8)	3 (1.7)	–

Pinborg, et al. Reproductive BioMedicine Online 2011; 23(4):490-9

IVF-resultat vid fetma

Minskad sannolikhet för levande fött barn hos kvinnor med BMI ≥ 30 kg/m2 jämfört med normalviktiga kvinnor; risk ratio (RR) (95% CI)

0.85 (0.82–0.87)

human reproduction update

Female obesity is negatively associated with live birth rate following IVF: a systematic review and meta-analysis

Nathalie Sermondade[1], Stéphanie Huberlant[2], Vanessa Bourhis-Lefebvre[3], Elisangela Arbo[4], Vanessa Gallot[5], Marina Colombani[3], and Thomas Fréour[6,*]

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Sermondade, et al. Hum Reprod Update 2019; 25(4):439-51

Vad kan man göra åt vikten?

Diet/ livsstilsförändring

Överviktskirurgi

IVF-resultaten förbättras ej av viktnedgång genom diet/livsstilsförändring

Randomiserad holländsk studie, 290/287, BMI 36, intervention 6 mån livsstilsförändring (mål 5-10% viktnedgång) vs prompt IVF.

Levande fött barn inom 24 mån: 43.9% vs 53.9 % hos kontroller, 38% nådde målvikt.

Mutsaerts, et al. N Engl J Med 2016; 374(20):1942-53

Randomiserad skandinavisk studie, 160/157, BMI 33, 12 veckor LCD vs prompt IVF.

Ingen signifikant skillnad i antal levande födda barn, 9.44 kg viktnedgång.

Einarsson, et al. Human reproduction 2017; 32(8):1621-30

Hur påverkas IVF-resultaten av dramatisk viktnedgång efter överviktskirurgi?

Fransk retrospektiv multicenter studie.

Grupp 1: 83 efter överviktskirurgi BMI 28.9

Grupp 2: 166 icke-op matchade kontroller BMI 28.8

Grupp 3: 83 icke-op kontroller BMI 37.7

Ingen signifikant skillnad i andelen levande födda barn, men signifikant fler födda barn per transfer I grupp 1 och 2.

Grzegorczyk-Martin, et al. Human reproduction 2020; 35(12):2755-62

Anna och Beata, hur rådge?

Photos by AllGo - An App For Plus Size People

BMI-gräns för IVF?

- Ökad risk för misslyckad behandling
- Ökad risk för komplikationer i samband med IVF
- Perinatala risker för mor och barn
- Andra med komplicerande sjukdomar får göra IVF
- Viktnedgång ger ej fler födda barn

Human Reproduction, Vol.31, No.12 pp. 2662–2664, 2016
Advanced Access publication on October 19, 2016 doi:10.1093/humrep/dew253

human reproduction INVITED COMMENTARY

Mr. Fertility Authority, Tear Down That Weight Wall!

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Many countries and clinics use weight cutoffs to select women eligible for fertility care. Women who exceed the cutoff point are ineligible or prohibited from receiving fertility treatment. The rationale is that obese women are at higher risk for treatment failure and treatment complications, including perinatal risks to mother and infant. Implicit in the cutoff

common clinical cutoffs where differential response might be expected. These subgroups included age (<36 versus ≥36y), BMI (<35 versus ≥35 kg/m^2), Waist-Hip Ratio (<0.8 versus ≥0.85) and ovulatory status (ovulatory versus anovulatory). While it is more difficult to hypothesize what weight group and what weight distribution

Sammanfattning

Kvinnans ålder är den enskilt viktigaste prediktiva faktorn för förlossning vid IVF.

Fetma är en sjukdom.

Viktnedgång med diet vid BMI 30 - 40 påverkar inte chansen till levande fött barn vid IVF.

Vid BMI > 40 kan ev. överviktskirurgi postoperativt ge IVF-resultat motsvarande dem hos icke-opererade kvinnor med samma BMI.

TACK!

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