ESPERMOGRAMA NO CONSULTÓRIO GINECOLÓGICO

Edson Borges Jr.

Fertility Medical Group
FERTGROUP
Instituto Sapientiae

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Associação Instituto Sapientiae

Declaração

Sem conflito de interesse para divulgar relacionado ao assunto desta palestra

Resolução do Conselho Federal de Medicina
nº 1.595/2.000

Global fertility in 204 countries and territories, 1950–2021, with forecasts to 2100: a comprehensive demographic analysis for the Global Burden of Disease Study 2021

*GBD 2021 Fertility and Forecasting Collaborators**

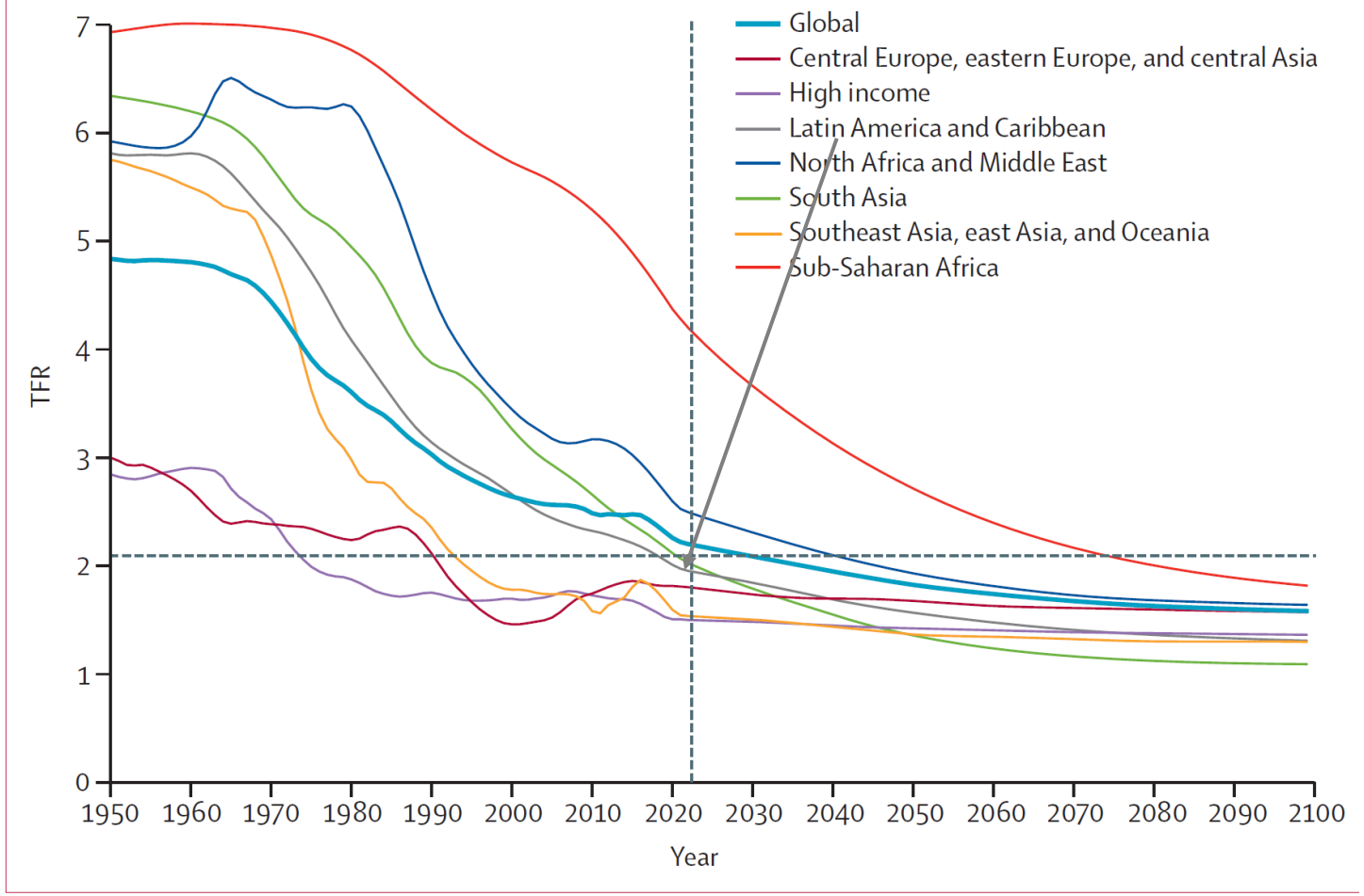

Figure 1: **TFR, globally and by GBD super-region, 1950–2100**

The dashed horizontal line indicates replacement TFR (2·1), and the dashed vertical line indicates the year 2022 (the first forecast year). GBD=Global Burden of Diseases, Injuries, and Risk Factors Study. TFR=total fertility rate.

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www.thelancet.com **Published online March 20, 2024 https://doi.org/10.1016/S0140-6736(24)00550-6**

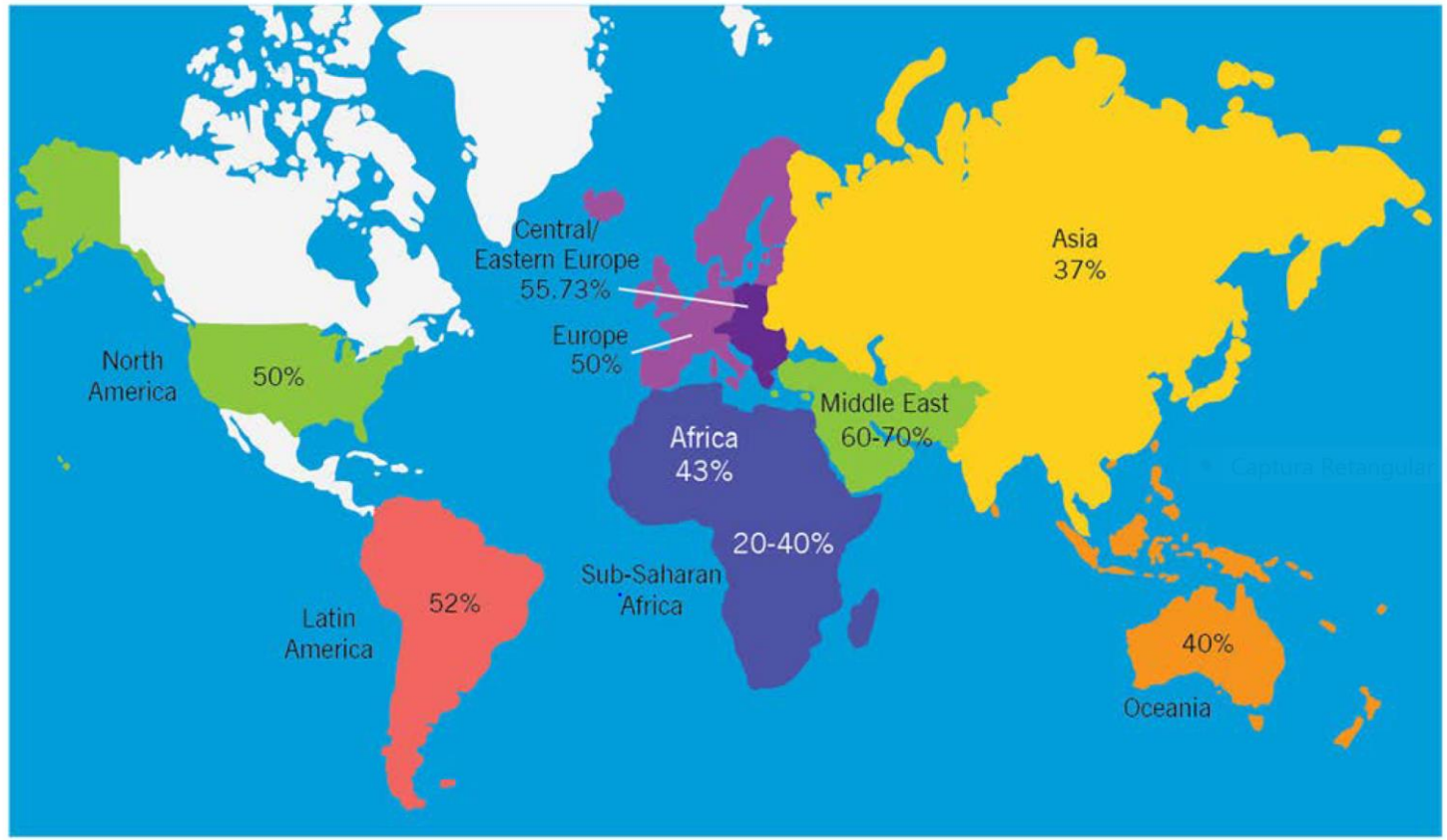

Figure 2 World map containing percentages of infertility cases per region that are due to male factor. This figure demonstrates rates of infertility cases in each region studied (North America, Latin America, Africa, Europe, Central/Eastern Europe, Middle East, Asia, and Oceania) due to male factor involvement.

REPRODUCTIVE BIOLOGY AND ENDOCRINOLOGY

Agarwal *et al. Reproductive Biology and Endocrinology* (2015) 13:37
DOI 10.1186/s12958-015-0032-1

Physiol Rev 96: 55–97, 2016
Published November 18, 2015; doi:10.1152/physrev.00017.2015

MALE REPRODUCTIVE DISORDERS AND FERTILITY TRENDS: INFLUENCES OF ENVIRONMENT AND GENETIC SUSCEPTIBILITY

Niels E. Skakkebaek, Ewa Rajpert-De Meyts, Germaine M. Buck Louis, Jorma Toppari, Anna-Maria Andersson, Michael L. Eisenberg, Tina Kold Jensen, Niels Jørgensen, Shanna H. Swan, Katherine J. Sapra, Søren Ziebe, Lærke Priskorn, and Anders Juul

Incidência de Criptorquidia

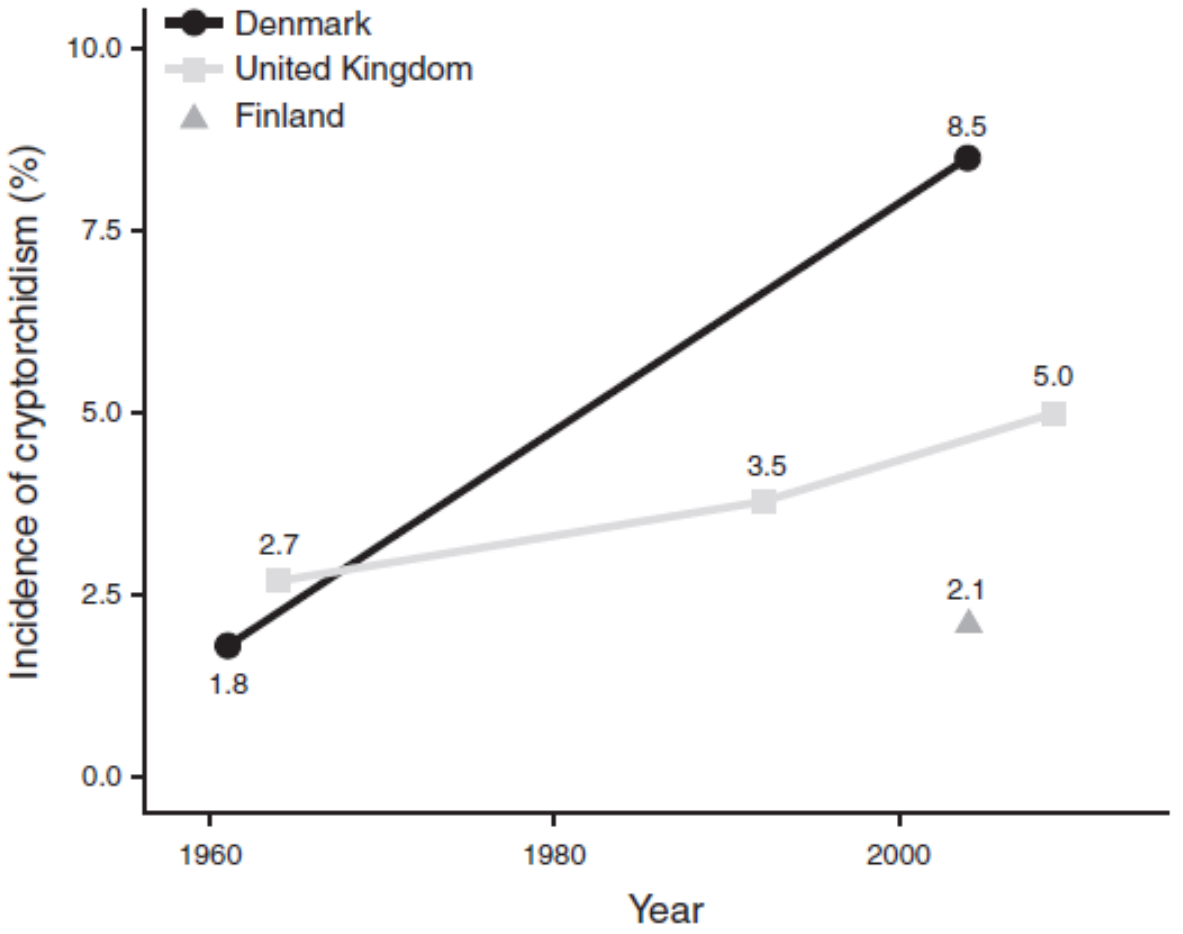

FIGURE 7. Incidence of cryptorchidism at birth on the basis of prospective clinical studies from the 1950s to the 2000s in Denmark, Finland, and United Kingdom. The data points are marked on the year of the publication of the study which represents the preceding incidence rate (3, 47, 61, 184, 377).

Idade da Puberdade

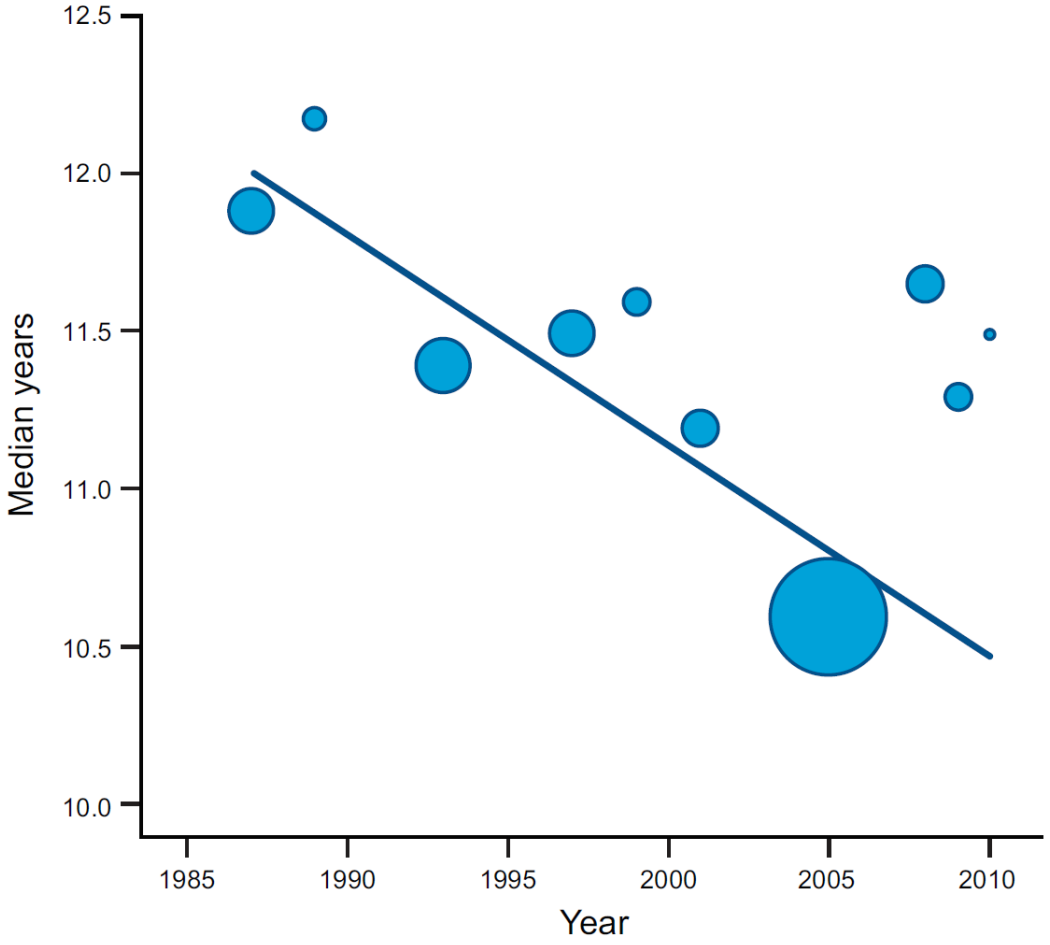

FIGURE 8. Recent changes in male pubertal timing. Testicular volume was >3 ml. [From Mouritsen et al. (293).]

Incidência de Câncer de Testículo

FIGURE 4. Trends in testicular cancer; age-standardized (world) incidence (regional or national), all ages. [Modified from Znaor et al. (481). Courtesy of Dr. Arinana Znaor and statistician Mathieu Laversanne, M.Sc., WHO, International Agency for Research in Cancer (IARC), Lyon, France.]

Article

H E T

Human and Experimental Toxicology
1–9

DOI: 10.1177/0960327117703690
journals.sagepub.com/home/het
SAGE

Decline in sperm count in European men during the past 50 years

P Sengupta[1,2], E Borges Jr[3], S Dutta[4] and E Krajewska-Kulak[2]

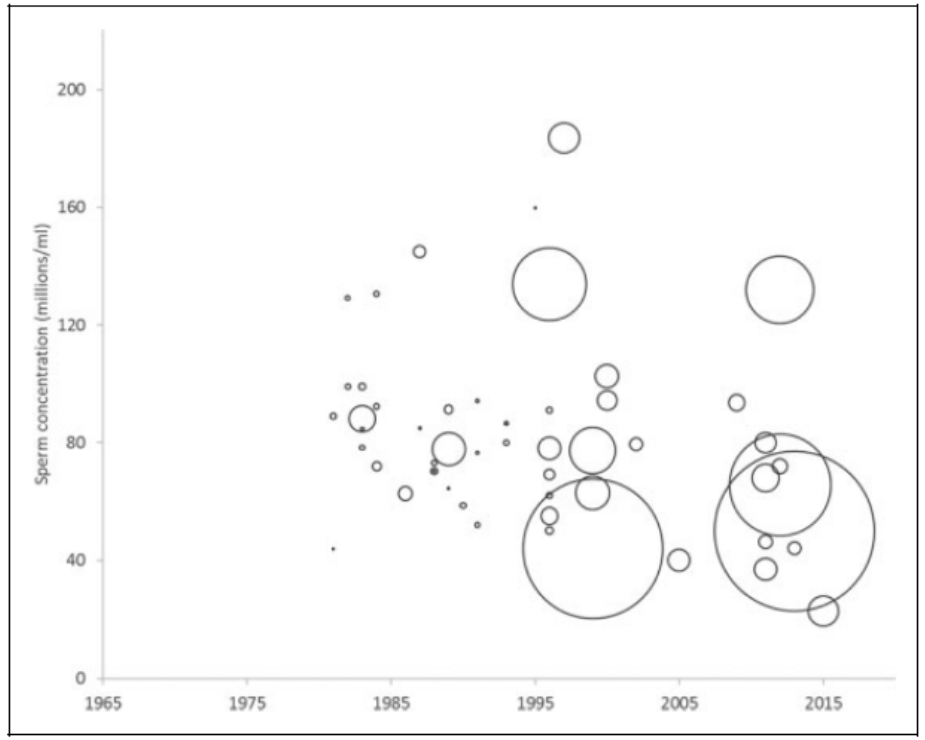

Figure 1. Temporal decline in sperm concentration ($\times 10^6$/ml) from 1965 to 2015, bubble size corresponds to the number of men in the study.

A time dependent decline in sperm concentration was observed from 1965 to 2015 (r=0.307, p=0.02)

An overall 32.5% decrease in mean sperm concentration

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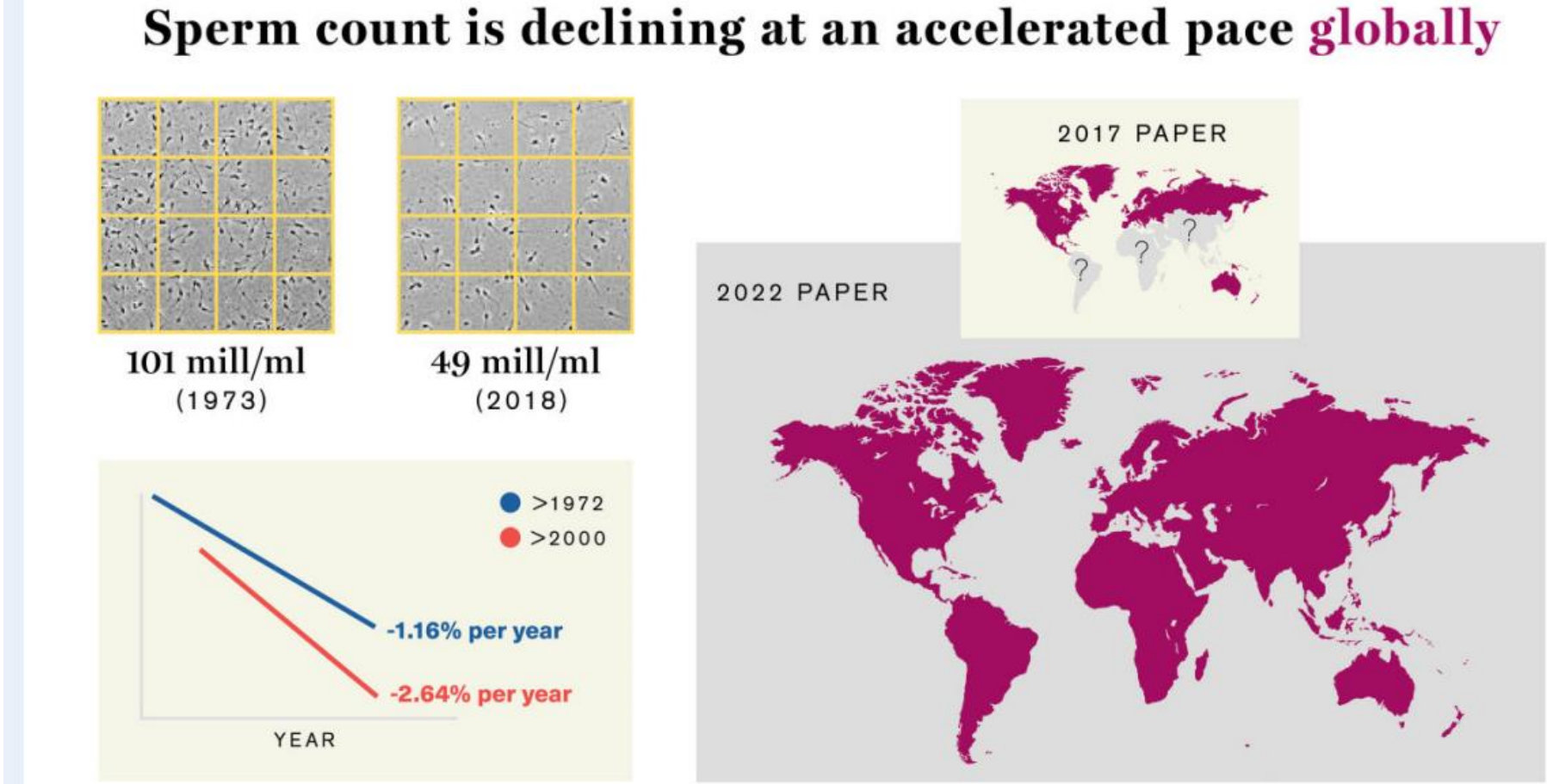
GRAPHICAL ABSTRACT



Sperm count is declining at an accelerated pace globally.

Human Reproduction Update, Vol.29, No.2, pp. 157–176, 2023
Advance Access Publication on November 15, 2022 https://doi.org/10.1093/humupd/dmac035

QUANDO INICIAR A AVALIAÇÃO ?

➲ Para mulheres < 35 anos: casais com vida sexual normal, após 1 ano de tentativas, sem anticoncepção e sem gestação

➲ Para mulheres ≥ 35 anos: casais com vida sexual normal, após 6 meses de tentativas, sem anticoncepção e sem gestação

➲ Iniciar antes:

- Caso ♂ tenha um fator de risco conhecido para infertilidade (criptorquidia, patologia endócrina, varicocele, etc..)
- Caso ♀ tenha um fator de risco conhecido para infertilidade (idade > 35 anos, SOP, etc..)
- Caso ♂/ ♀ questionem seu potencial fértil

ETIOLOGIA DA INFERTILIDADE MASCULINA

- ***fator masculino: 30% - 40%***
- Infertilidade idiopática: 25-30% dos homens
- Doença multifatorial com fenótipo heterogêneo

Envolver o marido na investigação e tratamento!!

Propedêutica em infertilidade

- fator masculino: 30-40%
- fator ovulatório: 15%
- fator tubo peritoneal
- fator uterino

} 35%

- fator cervical
- fator imunológico

} 5%

- ISCA: 10 %
- combinados: 35%
- fator psicossomático ?

Propedêutica em infertilidade

- fator masculino: 30-40%

fator ovulatório: 15%
fator tubo peritonial
fator uterino
} 35%
fator cervical
fator imunológico
} 5%
ISCA: 10 %
combinados: 35%
fator psicossomático ?

Propedêutica em infertilidade

Propedêutica Básica Homem

- Espermograma com morfologia estrita
- Total Motile Sperm Count (TMSC)
- Processamento seminal Prognóstico
- Cariótipo
- Quando alteração seminal importante

(conc < 2,0 milhões/ml): avaliação genética (cariótipo, microdeleção Y)

- Quando agenesia de deferentes: pesquisa de CFTR


WHO manual for t
standardized inves
diagnosis and ma
of the infertile ma
PATRICK J. ROWE, FRANK H. COMHA
TIMOTHY B. HARGREAVE,
AHMED M. A. MAHMOUD
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ESHR
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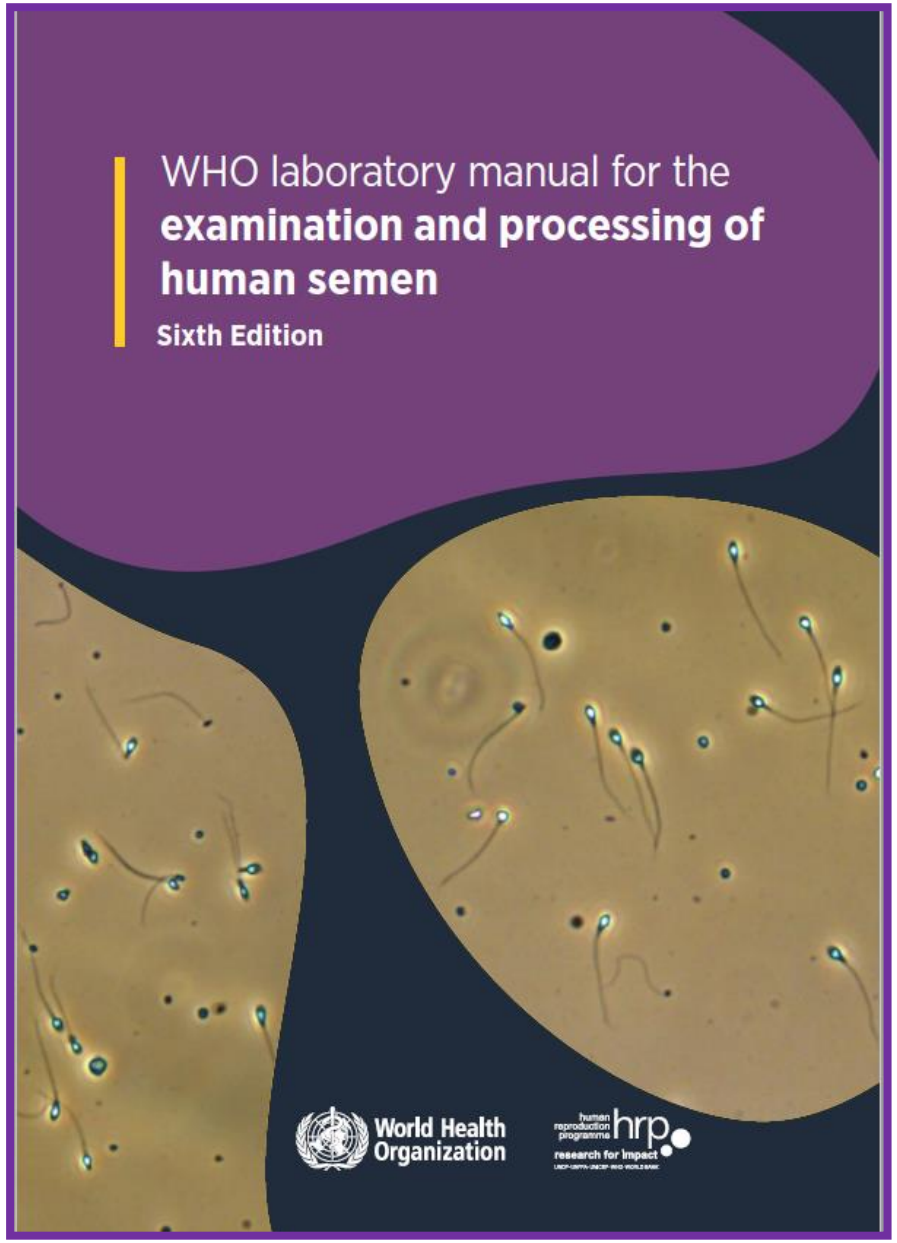
Manual on Ba
Editors: U.Kvist a
Published in association with ESHRE by Oxford University Press
WHO laboratory manual for the
examination and processing of
human semen
Sixth Edition
World Health
Organization
human reproduction programme
hrp
research for impact
Pre-publication version
ual for the
rocessing
II Consenso Brasileiro
Infertilidade
Masculina
SBU
Sociedade Brasileira de Urologia

Análise Seminal

VAN LEEUWENHOEK	**1677**
SIMS	**1866**
WEISMAN	**1940**
AMERICAN FERTILITY ASS	**1951**
FREUND	**1966**
ELIASSON	**1971**
O.M.S.	***1980/ 87/ 92/ 99/ 2010/ 2021***



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WHO laboratory manual for the
examination and processing of human semen
Sixth Edition

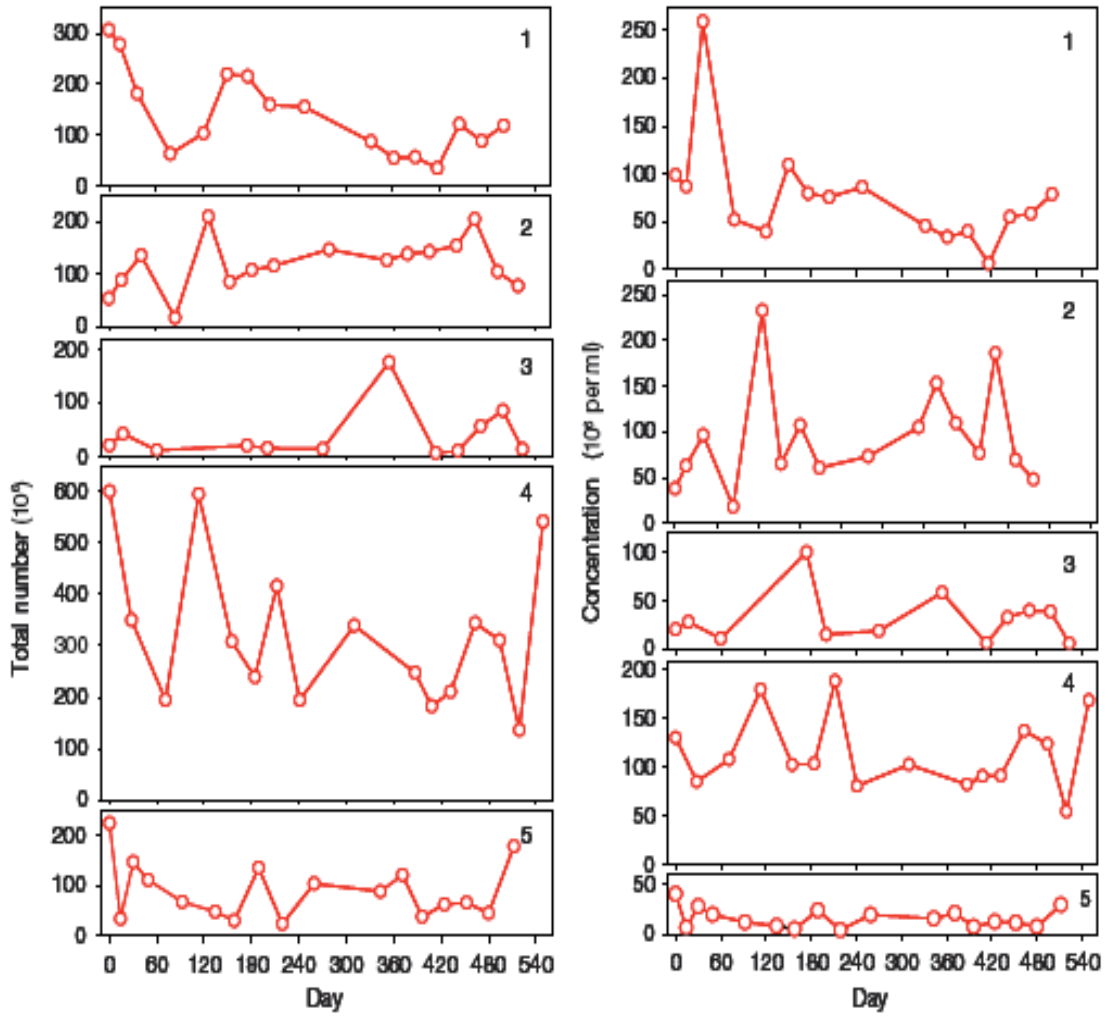
		Centiles									
	N	2.5th	5th	(95% CI)	10th	25th	50th	75th	90th	95th	97.5th
Semen volume (ml)	3586	1.0	1.4	(1.3–1.5)	1.8	2.3	3.0	4.2	5.5	6.2	6.9
Sperm concentration (10^6 per ml)	3587	11	16	(15–18)	22	36	66	110	166	208	254
Total sperm number (10^6 per ejaculate)	3584	29	39	(35–40)	58	108	210	363	561	701	865
Total motility (PR + NP, %)	3488	35	42	(40–43)	47	55	64	73	83	90	92
Progressive motility (PR, %)	3389	24	30	(29–31)	36	45	55	63	71	77	81
Non-progressive motility (NP, %)	3387	1	1	(1–1)	2	4	8	15	26	32	38
Immotile spermatozoa (IM, %)	2800	15	20	(19–20)	23	30	37	45	53	58	65
Vitality (%)	1337	45	54	(50–56)	60	69	78	88	95	97	98
Normal forms (%)	3335	3	4	(3.9–4.0)	5	8	14	23	32	39	45

O.M.S. 1980/87/92/99/2010

Table 1. Cut-off values for semen variables as published in consecutive WHO manuals [6–9] and as proposed in the fifth World Health Organization (WHO) manual [1].

Semen variable	1980	1987	1992	1999	2010[1]
Volume (mL)	–	≥ 2.0	≥ 2.0	≥ 2.0	1.5
Concentration (10^6 mL^{-1})	20–200	≥ 20	≥ 20	≥ 20	15
Total sperm number (10^6/ejaculate)	–	≥ 40	≥ 40	≥ 40	39
Motility (% motile)	≥ 60	≥ 50 (a + b)[2]	≥ 50 (a + b)	≥ 50 (a + b)	40 (a + b + c)
Forward progression (for 1980 only)	≥ 2[3]	≥ 25 (a)	≥ 25 (a)	≥ 25 (a)	32 (a + b)
Morphology (% normal)	80.5[4]	≥ 50	≥ 30[5]	(14)[6]	4
Viability/vitality (% live)	–	≥ 50	≥ 75	≥ 75	58
White blood cells (10^6 mL^{-1})	< 4.7	< 1.0	< 1.0	< 1.0	< 1.0

Fig. 2.1 Variation in total number of spermatozoa and sperm concentration over a one-and-a-half-year period



Análise Seminal

Análise Macroscópica

cor, viscosidade, pH, volume, liquefação

Análise Microscópica

concentração, motilidade, morfologia

Pelo menos duas amostras!

Análise Seminal

Investigação:

➢ Análise seminal com morfologia estrita

- 2 amostras (intervalo de 15 dias) ou no intervalo de abstinência ejaculatória
- padronização da coleta
- profissional experiente

✶ ***Fornece dados sobre espermatogênese e permeabilidade do trato reprodutivo***

✶ ***Ondas de espermatogênese ocorrendo simultaneamente, num mesmo túbulo seminífero***

Abnormal sperm count and motility on semen analysis are not sufficiently predictive of abnormal Kruger morphology

Sara S. Morelli, M.D.[a]
Aimee Seungdamrong, M.D.[a,b]
David H. McCulloh, Ph.D.[a,b]
Peter G. McGovern, M.D.[a,b]

Fertility and Sterility® Vol. 94, No. 7, December 2010

Abnormal morphology by Kruger's strict criteria cannot be predicted reliably by the presence of other abnormal parameters on semen analysis. Assessment of Kruger morphology therefore remains a necessary component of a complete semen analysis in the workup of the infertile couple. (Fertil Steril® 2010;94:2882–4. ©2010 by American Society for Reproductive Medicine.)

TABLE 1

Classification of semen analyses.

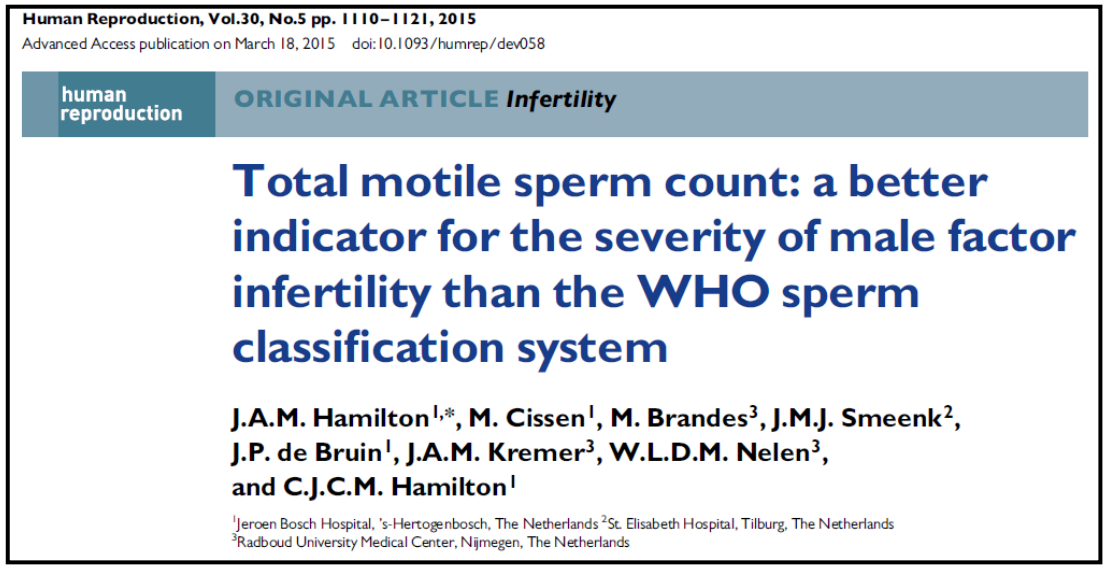
Count ($\geq 2 \times 10^7$/mL)	Motility (≥50%)	Kruger morphology (>4%)	No.	Percentage of total
Low	Low	Low	158	11
Low	Low	Normal	58	4
Low	Normal	Low	48	3
Low	Normal	Normal	41	3
Normal	Low	Low	69	5
Normal	Low	Normal	92	7
Normal	Normal	Low	187	14
Normal	Normal	Normal	731	53
Total			1,384	

Morelli. Correspondence. Fertil Steril 2010.

TMSC (total motile sperm count)

Número total de espermatozoides móveis

= volume x conc/ml x % A+B / 100%



Human Reproduction, Vol.30, No.5 pp. 1110–1121, 2015
Advanced Access publication on March 18, 2015 doi:10.1093/humrep/dev058

human reproduction

ORIGINAL ARTICLE *Infertility*

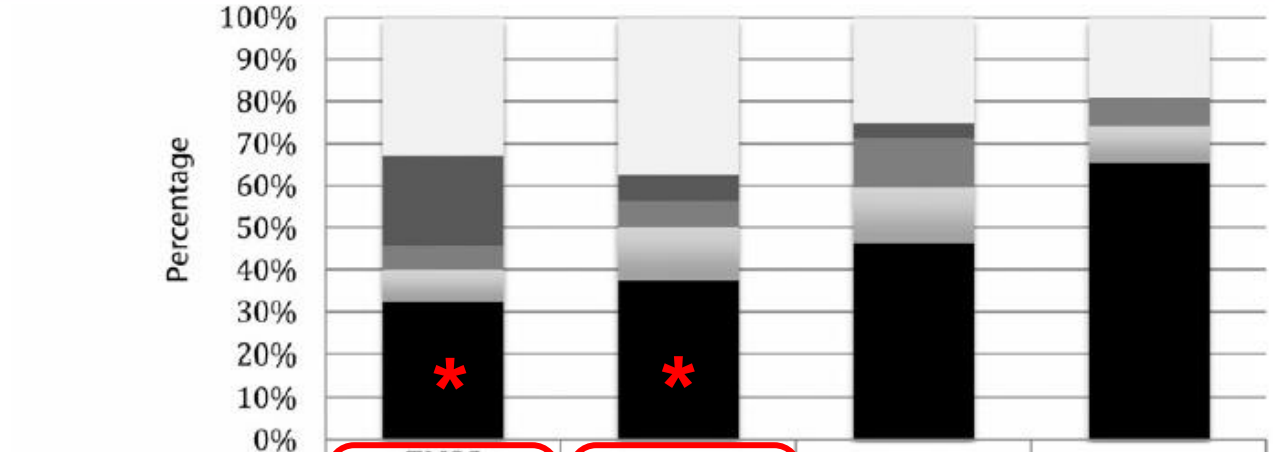
Total motile sperm count: a better indicator for the severity of male factor infertility than the WHO sperm classification system

J.A.M. Hamilton[1,*], M. Cissen[1], M. Brandes[3], J.M.J. Smeenk[2], J.P. de Bruin[1], J.A.M. Kremer[3], W.L.D.M. Nelen[3], and C.J.C.M. Hamilton[1]

[1]Jeroen Bosch Hospital, 's-Hertogenbosch, The Netherlands [2]St. Elisabeth Hospital, Tilburg, The Netherlands [3]Radboud University Medical Center, Nijmegen, The Netherlands

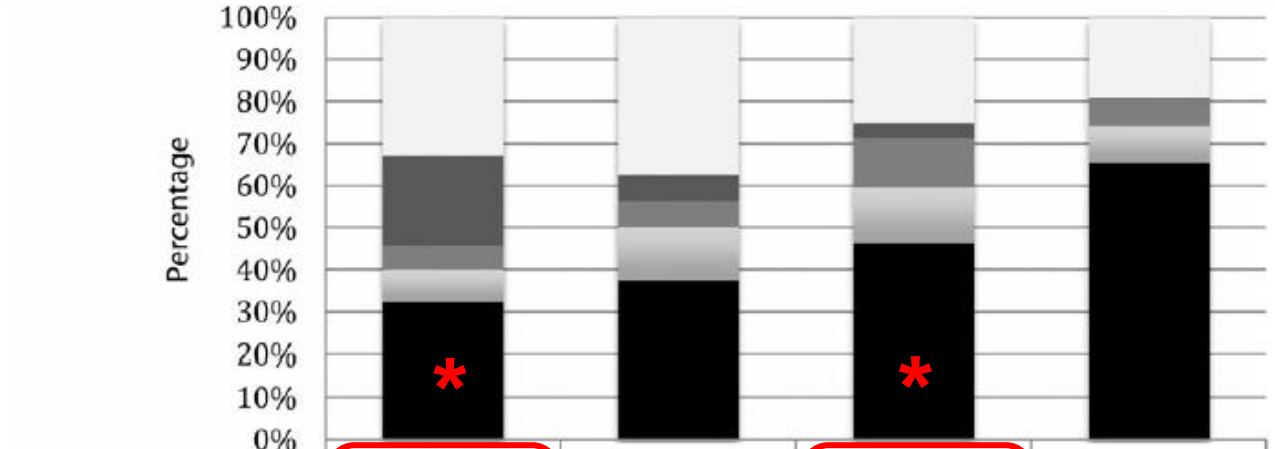
Total Motile Sperm Count: *3 grupos com prognósticos diferentes:*

- TMSC < 5 milhões de espermatozóides
- TMSC 5 - 20 milhões de espermatozóides
- TMSC > 20 milhões de espermatozóides



	TMSC abnormal - WHO abnormal	TMSC abnormal - WHO normal	TMSC normal - WHO abnormal	TMSC normal - WHO normal
No pregnancy	205	6	57	59
Pregnancy after ICSI	133	1	8	1
Pregnancy after IVF	36	1	27	20
Pregnancy after IUI	48	2	30	27
Spontaneous	201	6	105	202

Figure 4 Results showing where the TMSC and WHO classification systems overlap or disagree. The bars on the right and left show the outcome if the two systems are in agreement. The middle bars show the outcome if both systems give contradictory results. TMSC normal – WHO normal = 'real unexplained' infertility.



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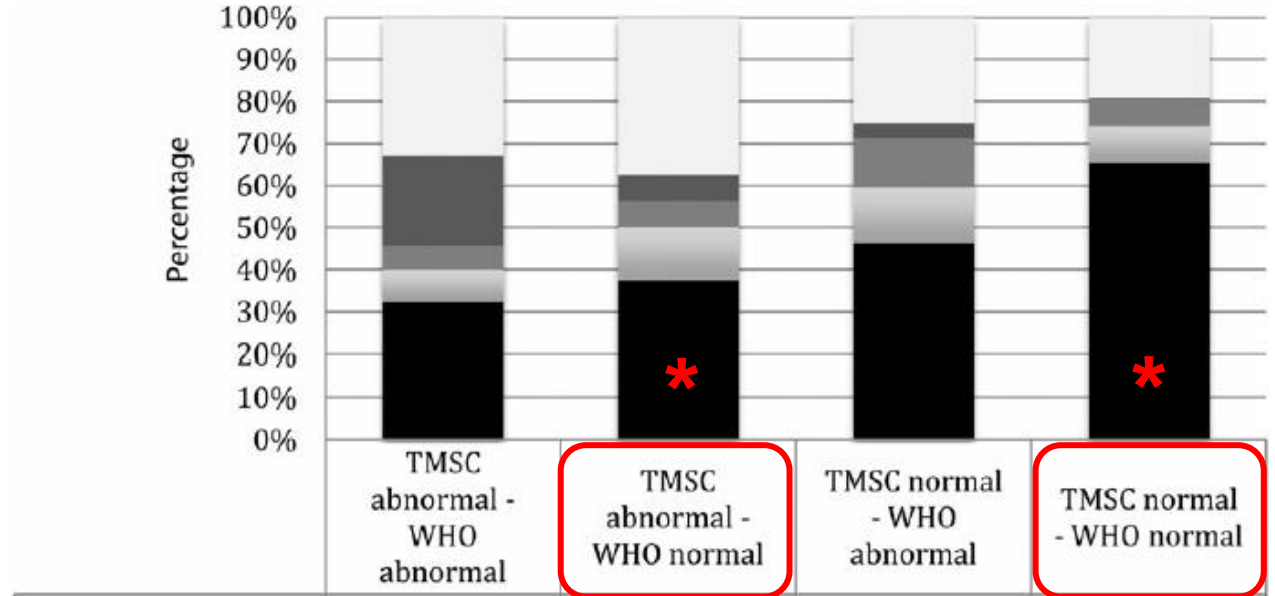

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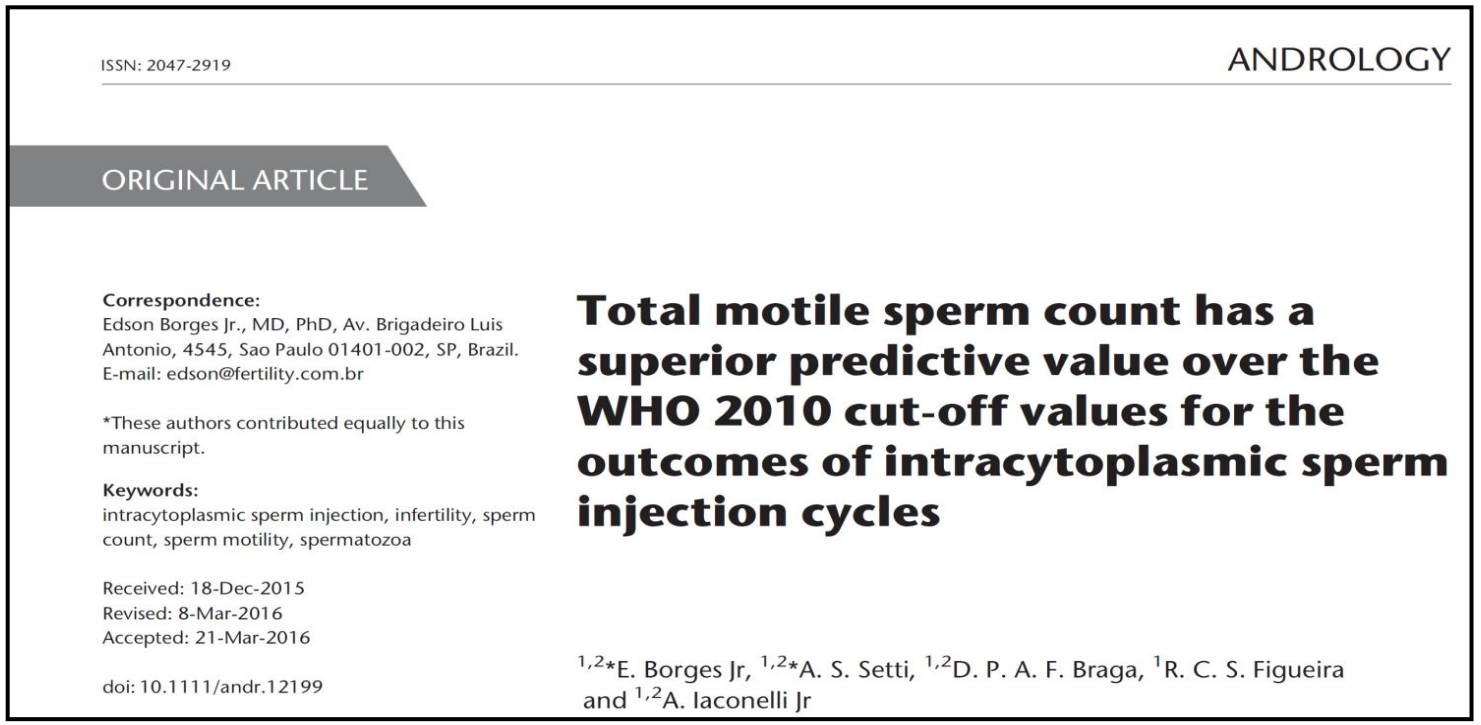

ISSN: 2047-2919

ORIGINAL ARTICLE

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Keywords:
intracytoplasmic sperm injection, infertility, sperm count, sperm motility, spermatozoa

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doi: 10.1111/andr.12199

Total motile sperm count has a superior predictive value over the WHO 2010 cut-off values for the outcomes of intracytoplasmic sperm injection cycles

[1,2]*E. Borges Jr, [1,2]*A. S. Setti, [1,2]D. P. A. F. Braga, [1]R. C. S. Figueira and [1,2]A. Iaconelli Jr

- ***Definição: TMSC = volume x conc/ml x % A+B / 100%***
- 518 ciclos de ICSI
- TMSC normal: > 20 milhões

Table 4 Comparison of ICSI outcomes between normal and abnormal TMSC groups

Variables	Normal TMSC group (n = 328)	Abnormal TMSC group (n = 190)	p-value
Paternal age (year-old)	37.4 ± 4.8	38.1 ± 6.1	0.187
Maternal age (year-old)	35.4 ± 3.9	33.5 ± 4.0	<0.001
Number of aspirated follicles	17.8 ± 9.7	20.8 ± 11.2	0.002
Number of obtained oocytes	12.7 ± 7.2	15.1 ± 8.1	0.001
Number of mature oocytes	9.7 ± 5.5	11.2 ± 6.2	0.003
Number of injected oocytes	9.4 ± 4.3	10.2 ± 4.9	0.067
Fertilization rate (%)	84.9 ± 14.4	81.1 ± 15.8	0.016
Number of obtained embryos	8.2 ± 3.8	8.7 ± 4.4	0.204
Number of transferred embryos	2.2 ± 0.6	2.2 ± 0.5	0.469
Implantation rate (%)	25.1 ± 36.0	25.8 ± 35.2	0.832
Pregnancy rate (%)	134/328 (40.9)	94/190 (49.5)	0.060
Miscarriage rate (%)	29/162 (17.9)	23/78 (29.5)	0.041

SD, standard deviation; TMSC: total motile sperm count.

Table 5 Linear and binary regression analysis results for the influences of TMSC and WHO cut-off values on ICSI outcome

Variables	Method	OR or RC	CI or R^2	*p*-value
Fertilization rate	Concentration	3.994	1.4%	0.015
	Motility	0.097	0.0%	0.957
	Progressive motility	2.299	0.5%	0.163
	Morphology	8.735	0.9%	0.047
	TMSC	3.784	1.5%	0.013
	Normal TMSC	−0.253	0.1%	0.592
Formation of high-quality zygotes on D1	Concentration	1.64	1.09–2.46	0.018
	Motility	1.34	0.85–2.12	0.208
	Progressive motility	1.22	0.80–1.85	0.355
	Morphology	0.89	0.65–1.22	0.461
	TMSC	1.13	1.01–1.28	0.049
	Normal TMSC	0.99	0.97–1.02	0.629
Formation of high-quality embryos on D2	Concentration	0.93	0.76–1.09	0.101
	Motility	0.91	0.79–1.06	0.222
	Progressive motility	1.06	0.92–1.22	0.420
	Morphology	0.84	0.60–1.18	0.314
	TMSC	1.18	1.03–1.35	0.013
	Normal TMSC	0.97	0.94–1.01	0.098
Formation of high-quality embryos on D3	Concentration	0.91	0.79–1.06	0.229
	Motility	0.93	0.79–1.09	0.379
	Progressive motility	1.00	0.85–1.17	0.969
	Morphology	1.18	0.83–1.67	0.354
	TMSC	1.12	1.07–1.29	0.037
	Normal TMSC	0.98	0.95–1.02	0.319
Formation of blastocyst on D5	Concentration	1.11	0.97–1.27	0.116
	Motility	1.03	0.90–1.19	0.660
	Progressive motility	0.91	0.70–1.23	0.303
	Morphology	1.13	0.83–1.55	0.427
	TMSC	1.16	1.04–1.26	0.011
	Normal TMSC	1.00	0.97–1.04	0.802

Blastocyst expansion grade on D5	Concentration	0.83	0.66–1.05	0.120
	Motility	1.01	0.79–1.29	0.948
	Progressive motility	1.08	0.85–1.38	0.533
	Morphology	0.99	0.57–1.71	0.962
	TMSC	1.27	1.01–1.60	0.042
	Normal TMSC	1.03	0.98–1.07	0.287
Implantation rate	Concentration	2.387	0.1%	0.492
	Motility	−2.916	0.1%	0.453
	Progressive motility	−1.754	0.0%	0.616
	Morphology	6.084	0.0%	0.502
	TMSC	−0.688	0.0%	0.833
	Normal TMSC	1.705	1.0%	0.222
Pregnancy	Concentration	0.71	0.49–1.05	0.083
	Motility	0.77	0.50–1.19	0.242
	Progressive motility	0.72	0.49–1.05	0.089
	Morphology	2.17	0.78–6.07	0.132
	TMSC	1.40	0.98–2.01	0.066
	Normal TMSC	0.94	0.86–1.03	0.200
Miscarriage	Concentration	0.57	0.30–1.08	0.089
	Motility	1.32	0.61–2.85	0.478
	Progressive motility	1.05	0.54–2.05	0.886
	Morphology	0.84	0.17–4.08	0.826
	TMSC	0.52	0.28–0.90	0.045
	Normal TMSC	1.12	0.91–1.26	0.084

CI, confidence interval; OR, odds ratio; RC, regression coefficient; TMSC, total motile sperm count; WHO, World Health Organization.

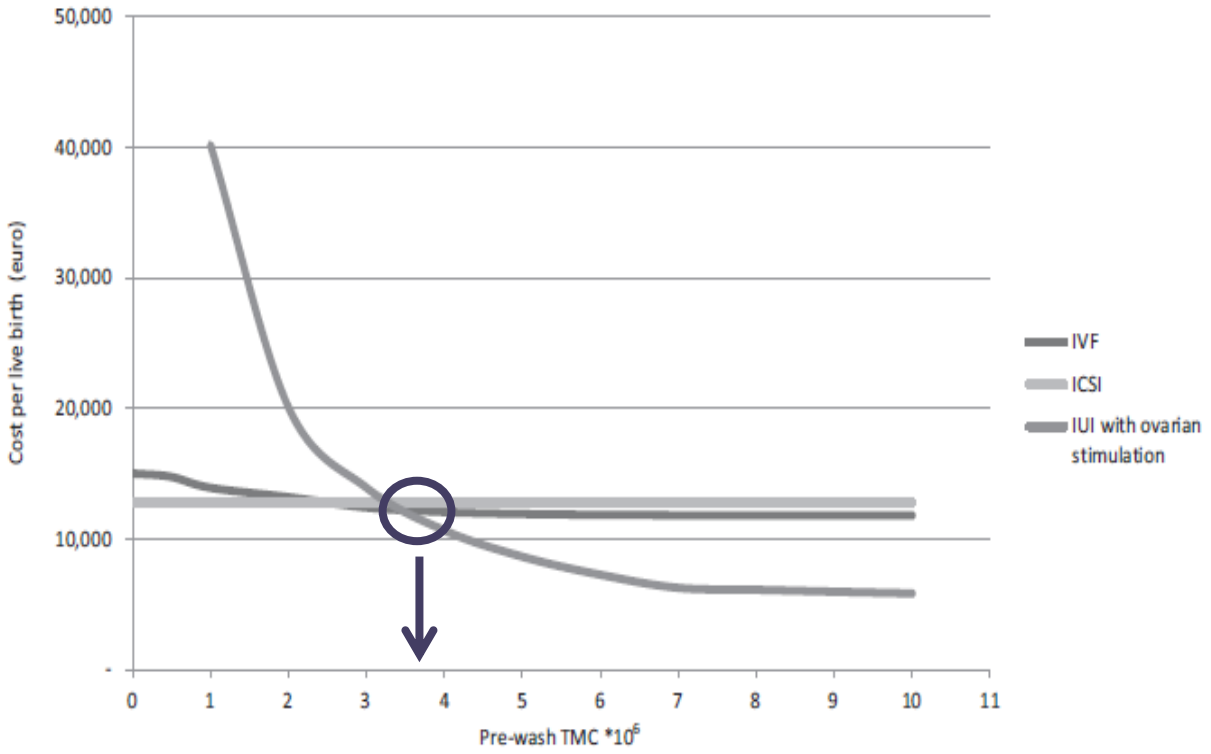


Figure 1 Cost per live birth. IUI = intrauterine insemination; ICSI = intracytoplasmic sperm injection; TMC = total motile count.

TMSC (x10^6)	IIU	FIV/ICSI
0,1	0%	21,8%
10,0	10,2%	27,7%

FERTGROUP FERTILITY MEDICAL GROUP

human
reproduction
update

Intrauterine insemination

The ESHRE Capri Workshop Group[1]

Although widely utilized, there is little evidence of the effectiveness in male infertility (Bensdorp *et al.*, 2007), and one large trial found that stimulated IUI was not effective in the treatment of unexplained infertility (Steures *et al.*, 2006).

Approaches to improve the diagnosis and management of infertility

human reproduction update

P. Devroey[1,4], B.C.J.M. Fauser[2] and K. Diedrich[3] on behalf of the Evian Annual Reproduction (EVAR) Workshop Group 2008†

Human Reproduction Update, Vol.15, No.4 pp. 391–408, 2009

AS adequada para alterações seminais graves;
para alterações moderadas/leves: inadequada

Approaches to improve the diagnosis and management of infertility

human reproduction update

P. Devroey[1,4], B.C.J.M. Fauser[2] and K. Diedrich[3] on behalf of the Evian Annual Reproduction (EVAR) Workshop Group 2008†

Human Reproduction Update, Vol.15, No.4 pp. 391–408, 2009

- *Fator masculino leve/moderado:*

FIV / ICSI = 6 ciclos IIU

- *ESCA e IIU: eficiência ??*
- *Quando indicada TRA: FIV / ICSI em todos casos de fator masculino*
- *ICSI leva < falha fertilização*

REPRODUÇÃO ASSISTIDA

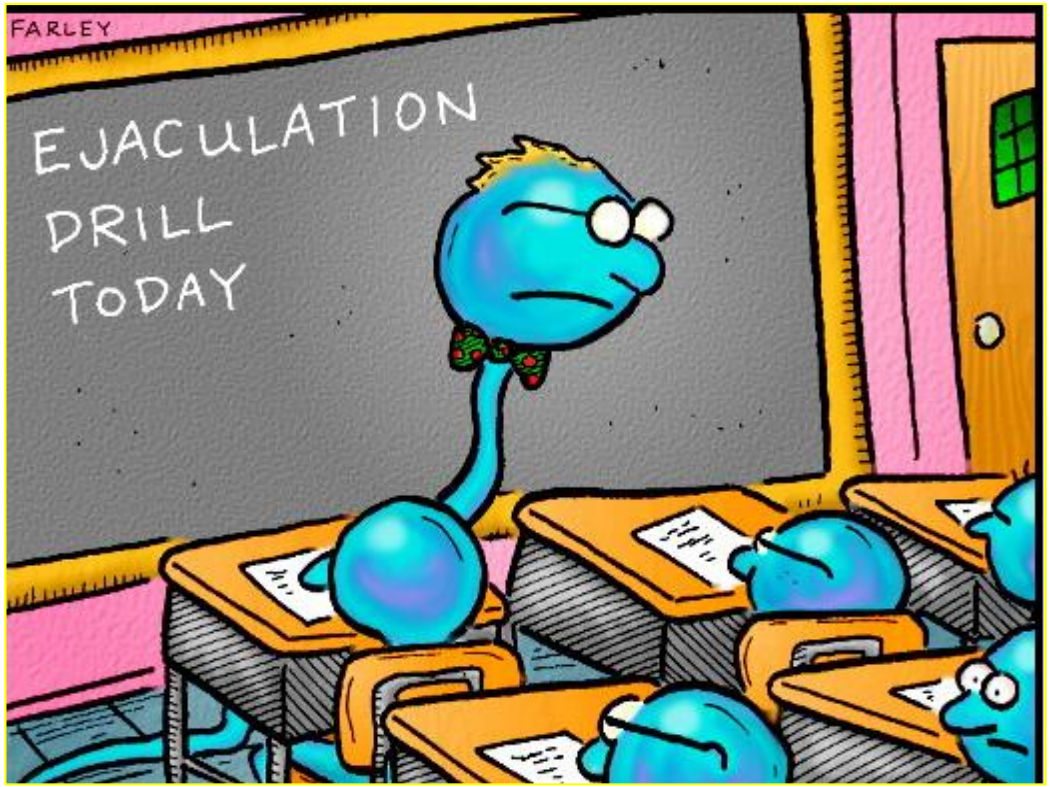
"QUANDO INDICAR"

- ***COITO PROGRAMADO:***
  . TMSC > 20 milhões, morfologia estrita > 4 %

- ***INSEMINAÇÃO ARTIFICIAL (IIU):***
  . TMSC > 5 milhões, morfologia estrita > 4%

- ***FERTILIZAÇÃO "IN VITRO" (FIV):***
  . TMSC 1 - 5 milhões, morfologia estrita > 4%, falha em 3 IIU

- ***INJEÇÃO INTRA-CITOPLASMÁTICA (ICSI):***
  . TMSC < 1 milhão, morfologia estrita < 4%,
  . falha de fertilização FIV,
  . ESCA



Qualidade do Espermatozoide
X
Chances de Sucesso

Qualidade seminal e resultados de T.R.A.

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Virginia Medical School, No

Andrology: The resu
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Z.P. Nagy, J. Liu, H. Joris, G. Verheye

Human Reproduction, Volume 10, Is
https://doi.org/10.1093/oxfordjour

Journal Article

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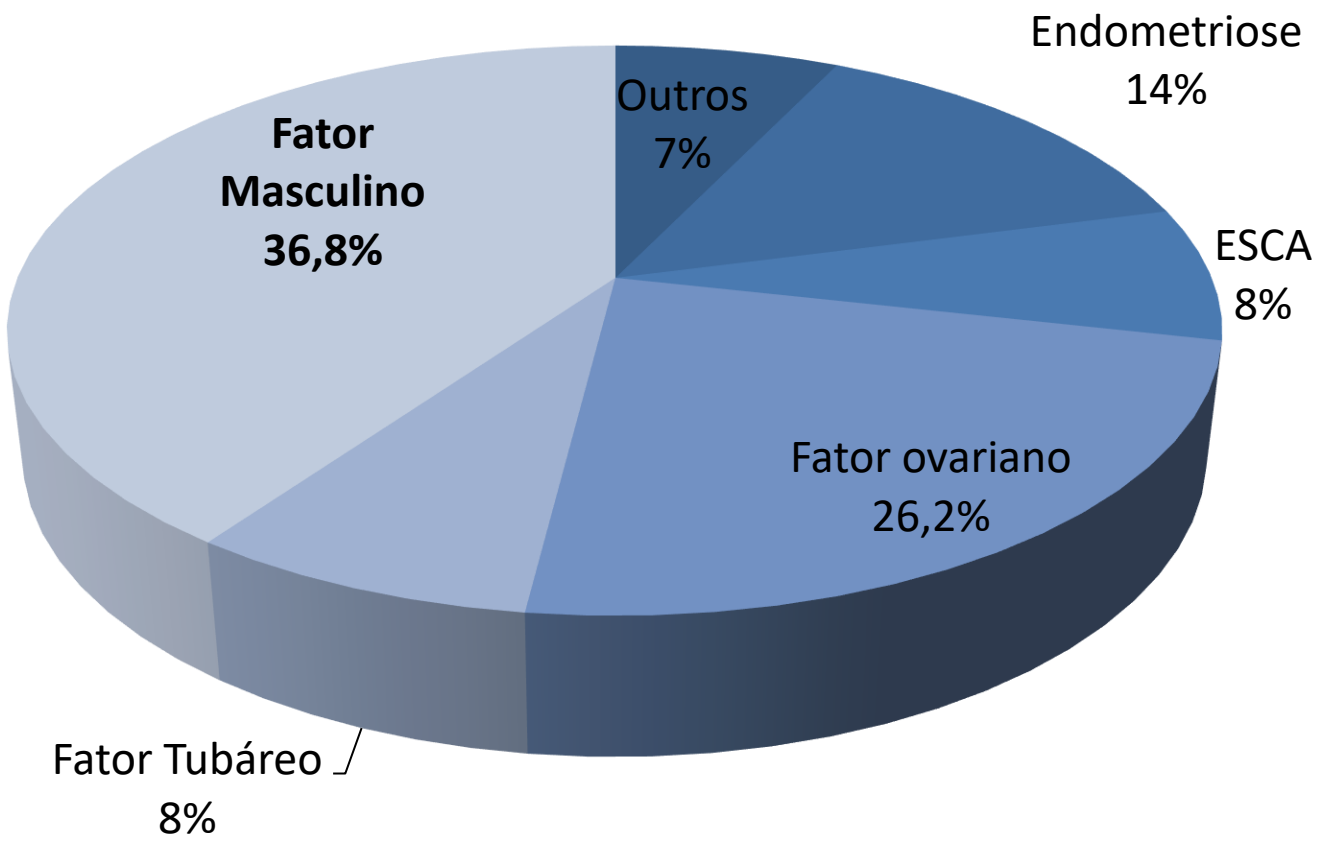
Consequências da Alteração Espermática

- menores taxas de fertilização
- desenvolvimento embrionário inadequado
- maiores taxas de aborto
- piores condições perinatais
- maior incidência de doenças epigenéticas
- maiores taxas de malformações...

Slama et al, 2005, Nybo Anderson et al, 2004, Bille et al, 2005, Nieschlag et al, 2004, Tesarik et al, 2006, Wyrobek et al, 2006, Borini et al, 2007. Middelburg et al, 2008 ...

FERTILITY MEDICAL GROUP
2005 - 2023



Influência da qualidade do espermatozoide ejaculado nos resultados de ICSI – *JBRA, 5: 22-26, 2001*

Borges Jr. E., et al

	< 1 x 10⁶/ml motilidade <10%	***sem fator masculino***	***P***
Ciclos / pacientes	105 / 82	184/141	
Fertilização Normal (2PN)	**628 (36,0%)**	**1256 (67,8%)**	**0,014**
Oocitos não-fertilizados	**942 (54,1%)***	**362 (19,6%)**	**0,025**
Bons embriões	**44,5%**	**87,1%**	**0,029**
Gestação / ciclo	31,4%	29,9%	0,216
Gestação/ paciente	40,8%	38,9%	0,067
Abortamento	**43,5% (10/33)**	**25,4 % (14/55)**	**0,012**

** Idade materna ≤ 35 anos e Número de ovócitos recuperados ≥ 4*

Use of suboptimal sperm increases the risk of aneuploidy of the sex chromosomes in preimplantation blastocyst embryos

Alison Coates, B.Sc.,[a,b] John S. Hesla, M.D.,[a] Amanda Hurliman, M.D.,[a] Breanne Coate, B.S.,[a] Elizabeth Holmes, M.S.,[a] Rebecca Matthews, Ph.D.,[a] Emily L. Mounts, M.S.,[a] Kara J. Turner, Ph.D.,[b] Alan R. Thornhill, Ph.D.,[b,c] and Darren K. Griffin, D.Sc.[b]

- A infertilidade masculina grave está associada a ***um aumento significativo na ocorrência de anormalidades dos cromossomos sexuais em blastocistos***, em comparação com embriões derivados de amostras de sêmen normais.

- As ***taxas de aneuploidia*** em embriões derivados de sêmens com ***parâmetros normais*** não foram significativamente diferentes se ***ICSI ou inseminação padrão*** foi usada para obter a fertilização.

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ORIGINAL ARTICLE: ANDROLOGY

Effect of the male factor on the clinical outcome of intracytoplasmic sperm injection combined with preimplantation aneuploidy testing: observational longitudinal cohort study of 1,219 consecutive cycles

Rossella Mazzilli, M.D.,[a,b] Danilo Cimadomo, M.Sc.,[b,c] Alberto Vaiarelli, M.D.,[b,d] Antonio Capalbo, Ph.D.,[b,e] Lisa Dovere, Ph.D.,[b] Erminia Alviggi, M.Sc.,[f] Ludovica Dusi, Ph.D.,[g] Carlo Foresta, M.D.,[h] Francesco Lombardo, M.D.,[i] Andrea Lenzi, M.D.,[i] Herman Tournaye, M.D.,[j] Carlo Alviggi, M.D.,[k] Laura Rienzi, M.Sc.,[b,f,g] and Filippo Maria Ubaldi, M.D.[b,f,g]

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- O fator masculino grave prejudica a competência embrionária precoce em termos de *taxa de fertilização e potencial de desenvolvimento*.

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Journal of Assisted Reproduction and Genetics (2019) 36:2047–2055
https://doi.org/10.1007/s10815-019-01584-w

ASSISTED REPRODUCTION TECHNOLOGIES

Male factor infertility impacts the rate of mosaic blastocysts in cycles of preimplantation genetic testing for aneuploidy

Nicoletta Tarozzi [1] · Marco Nadalini [1] · Cristina Lagalla [1] · Giovanni Coticchio [1] · Carlotta Zacà [1] · Andrea Borini [1]

- Taxa significativamente *maior taxa de blastocistos em mosaico* foi observada no *grupo MF (3,6% vs. 0,5%, respectivamente; P = 0,03)*.
- Taxa significativamente *maior de blastocistos em mosaico* foi observada *no grupo SMF (7,7% e 1,8%, respectivamente; P = 0,008)*.

FERTILITY

dados nao publicados

Table 1. Comparison of cycle characteristics and clinical outcomes between ICSI cycles with Normal Sperm Parameters, Male Factor Infertility (< 20M sptz /mL), and Severe Male Factor Infertility (< 1M sptz /mL) .

Variable	Normal sperm parameters	Male factor infertility	Severe male factor infertility	p
Cycles n=3678	2583	795	300	
Female age (years)	33.1 ± 3.8	33.3 ± 2.4	33.8 ± 2.8	0.451
Male age (years)	37.545 ± 0.5	37.870 ± 0.4	37.490 ± 0.2	0.478
Retrieved oocytes (n)	11.2 ± 1.2	17.4 ± 1.0	17.8 ± 4.6	0.384
Fertilization (%)	89.5 ± 8.4	89.8 ± 2.3	88.9 ± 2.8	0.475
High quality embryos rate (%)	31.8± 1.0[a]	27.1 ± 2.4[b]	24.9 ± 3.0[c]	**<0.001**
Blastocyst formation (%)	43.3 ± 4.4	44.3 ± 4.4	38.5 ± 3.8	0.263
Implantation rate	40.4 ± 0.8[a]	33.6 ± 0.5[b]	28.5 ± 1.0[c]	**< 0.001**
Pregnancy Rate	47.0 ± 5.8[a]	44.0 ± 2.5[a,b]	35.0 ± 7.3[b]	**0.045**
Miscarriage Rate	8.4 ± 6.8[a]	10.3 ± 5.7	12.4 ± 8.4	0.351

Note: Values are means ± standard errors. a≠b≠c

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Table 2. Incidence of euploidy among ICSI cycles with Normal Sperm Parameters, Male Factor Infertility (< 20M sptz /mL), and Severe Male Factor Infertility (< 1M sptz /mL) .

Variable	Normal sperm parameters	Male factor infertility	Severe male factor infertility	p
Cycles n=813	540	198	75	
Biopsied Embryos	1,140	270	120	
Euploidy rate	71.0 ± 17.1[a]	50.2 ± 35.4[a,b]	44.0 ± 6.4[b]	**0.035**

Considerações

- Diminuição da fertilidade masculina, mais acentuada nas últimas duas décadas;
- Análise seminal deve ser realizada segundo as normas da OMS 2021;
- IIU ineficiente para o fator masculino, principalmente para os casos de grande alteração seminal;
- TMSC mais preciso que a AS tanto para a concepção natural quanto para as TRA;
- Quanto maior a alteração seminal, menor a eficiência do espermatozoide nas TRA.

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