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Romania-Hungary

European Regional Development Fund



EUROPEAN UNION

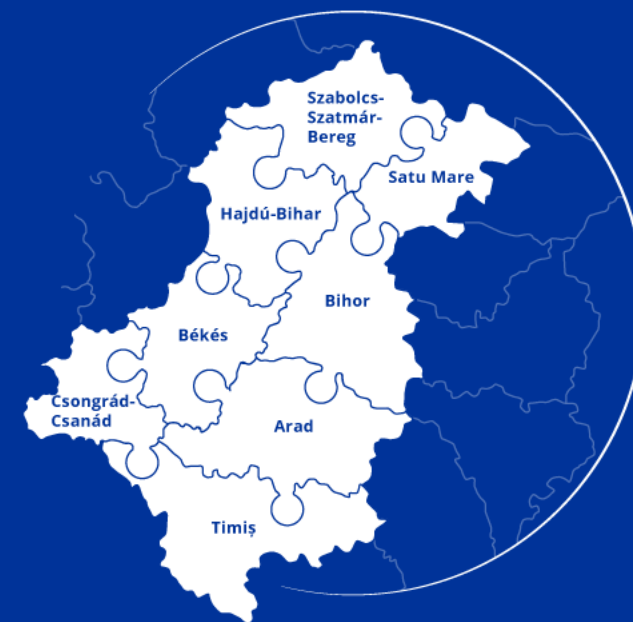


GOVERNMENT OF ROMANIA



HUNGARIAN
GOVERNMENT

Global prevalence and burden of infertility



Partnership for a better future

www.interreg-rohu.eu

Summary

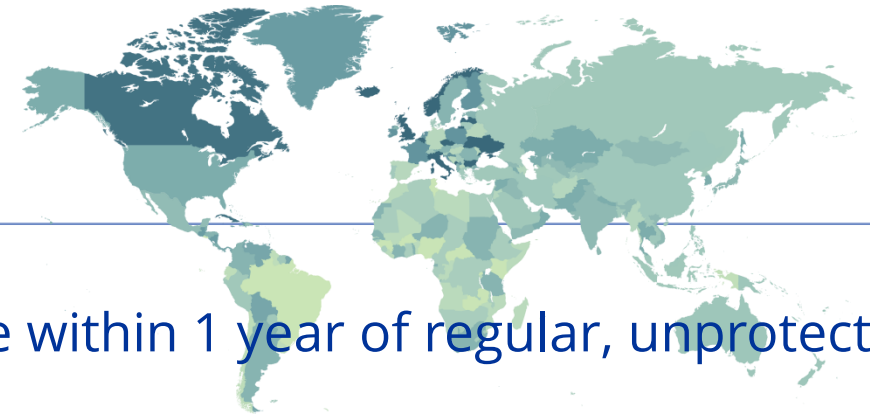
- Introduction
- Epidemiology of infertility around the world
- Impact of infertility on demographics
- Factors that may influence the spontaneous fertility of couples
- Conclusion



Introduction



Infertility facts



- Infertility is defined as the inability to conceive within 1 year of regular, unprotected intercourse
 - Types of infertility
 - Primary→ if pregnancy has never been achieved
 - Secondary→ if at least one prior pregnancy has been achieved
 - It is a public health priority, affecting over **>186 million people** worldwide the majority being residents of developing countries
 - Infertility is more than a quality-of-life issue, with considerable public health consequences including psychological distress, social stigmatization, economic strain, and marital discord
 - Increased women's age at conception is the most powerful negative predictive factor of fertility
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Epidemiology



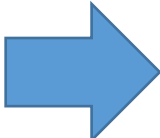
Infertility prevalence

1:7



- The prevalence in reproductive-aged women has been estimated to be **one in every 7 couples** in the western world, and one in every four couples in developing countries
- Infertility is estimated to affect between **8-12%** of reproductive-aged couples worldwide
- Globally, the prevalence of infertility increased by **0.37%** per year in females and **0.29%** per year in males from 1990 to 2017
- Males are found to be solely responsible for **20-30%** of infertility cases but contribute to 50% of cases overall

Primary and secondary infertility

- A woman who is unable to bear a child is classified as having primary infertility
- A woman who has previously conceived and successfully given birth yet is unable to do so subsequently is classified as having secondary infertility
- Secondary infertility is the most common form of female infertility around the globe, especially in regions with
 - **high rates of unsafe abortion**
 - **poor maternity care**

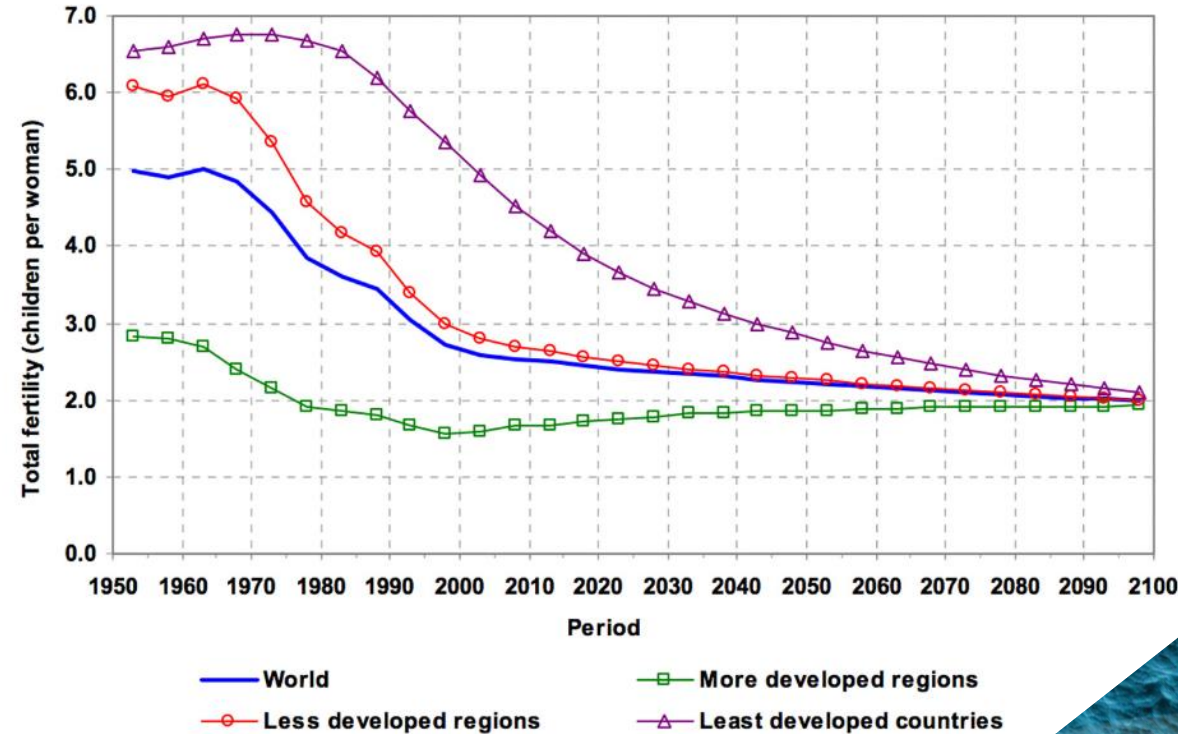
leading to post-abortive & postpartum infections

Impact of infertility on demographics



Fertility estimates (1950-2010) and projections (2010-2050) by region

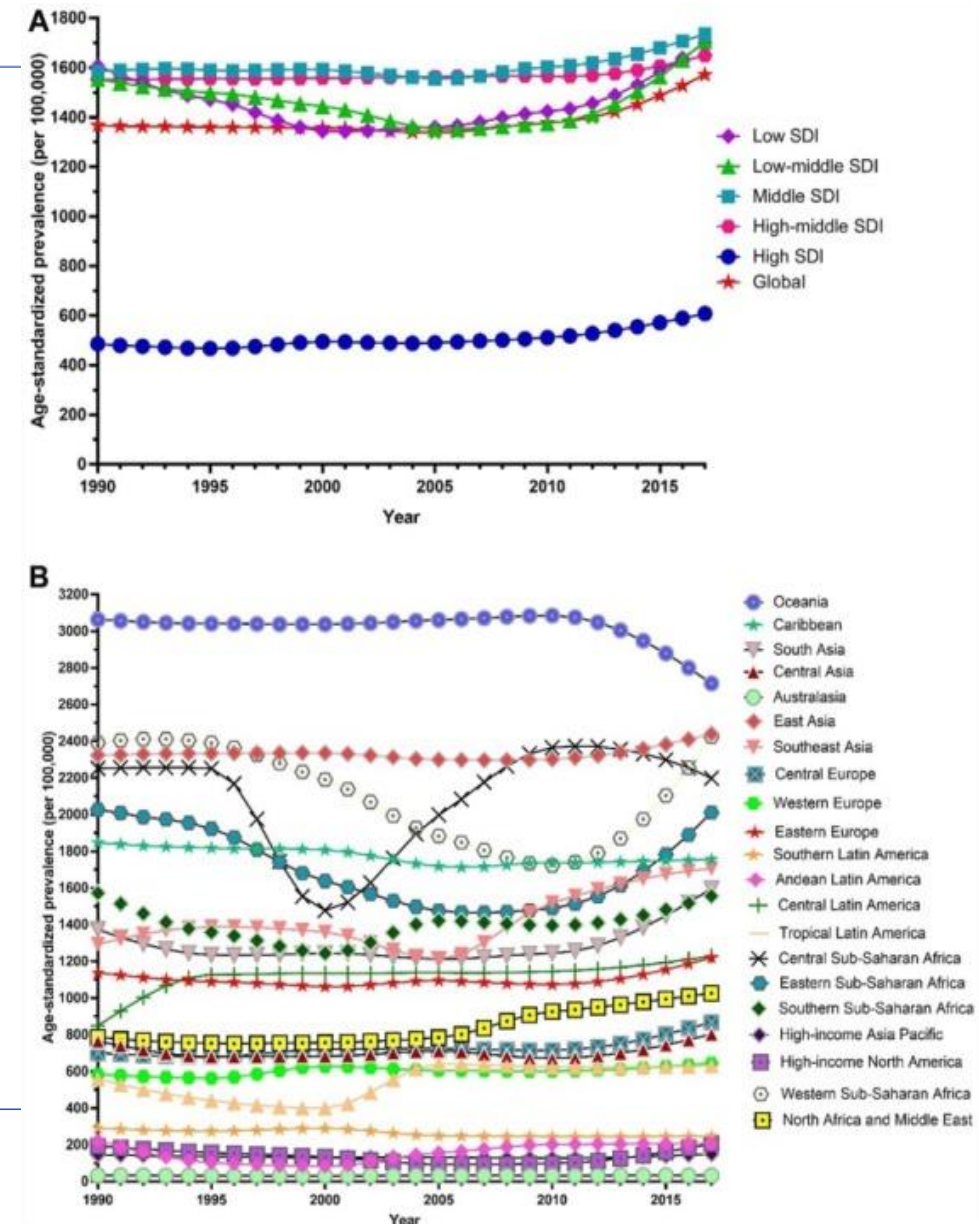
- World regions differ widely in their demographic trends, with
 - rapid population growth and high fertility rates in the poorest countries
 - population decline, ageing and very low fertility rates in many developed countries
- Estimates from 1950 to 2010 and projections to 2050, as measured by the average number of births over a woman's lifetime, reveals a severe decline of fertility



From Vander Borcht, M. and Wyns, C. (2018) "Fertility and infertility: Definition and epidemiology," *Clinical Biochemistry*, 62, pp. 2-10.

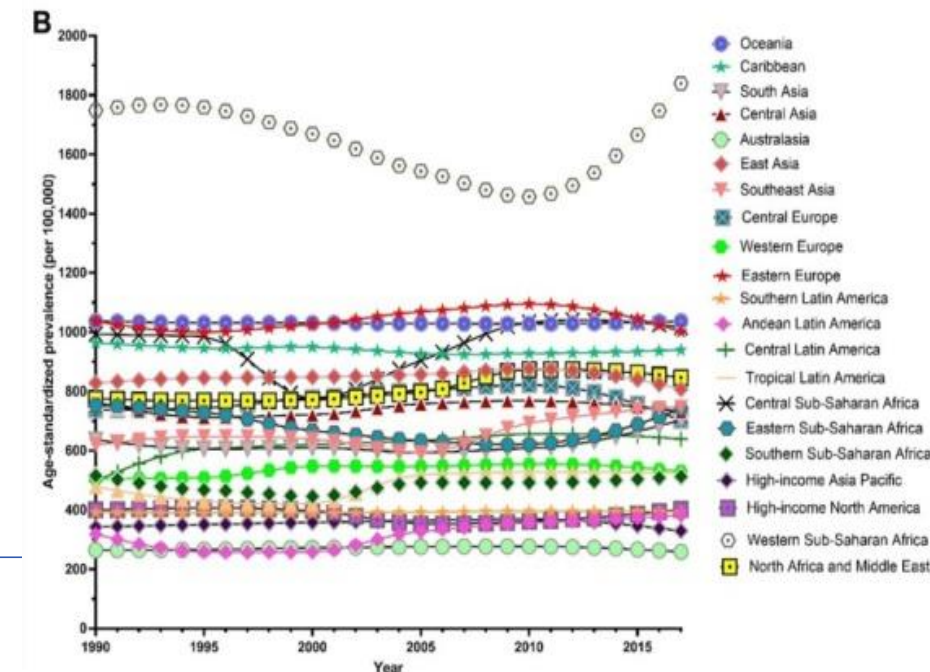
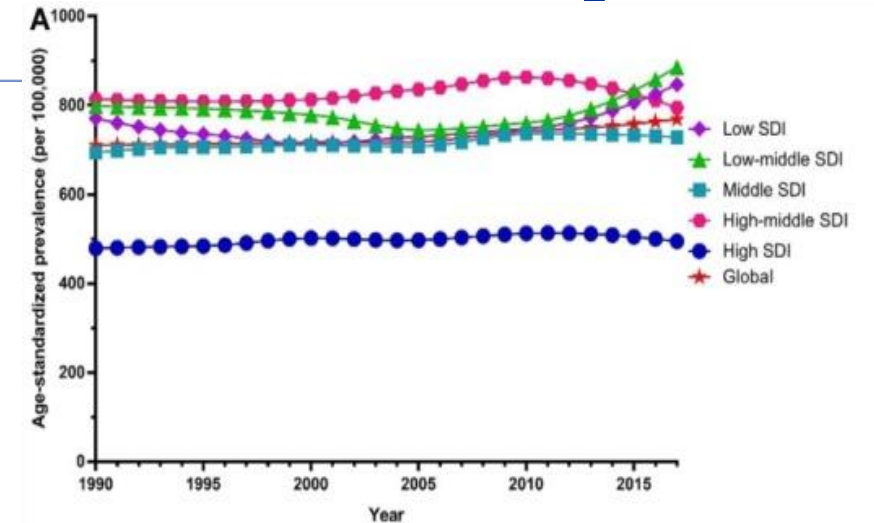
Age-standardized prevalence of female infertility

- The systematic analysis: the global burden of infertility from 1990 to 2017 shows that the age-standardized prevalence rate of female infertility increased by **14.96%**
- Among females, 14 regions showed an increasing trend among the 21 regions, the highest was observed in **Latin America** followed by **North Africa** and the **Middle East**, which contributed **53.78%** to the overall increasing trend



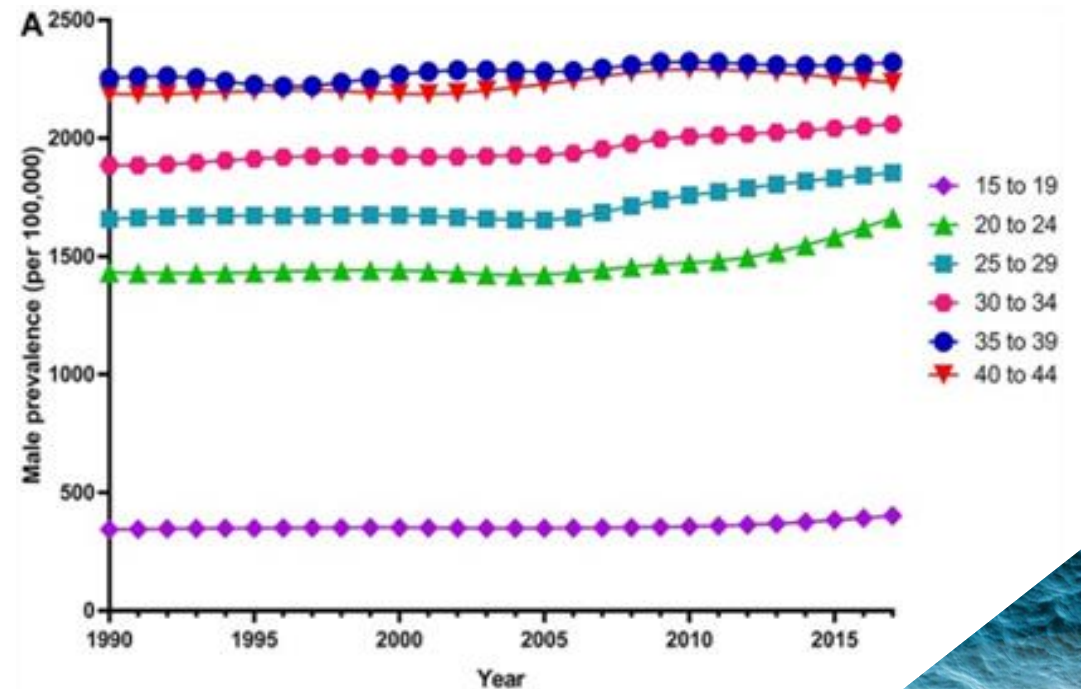
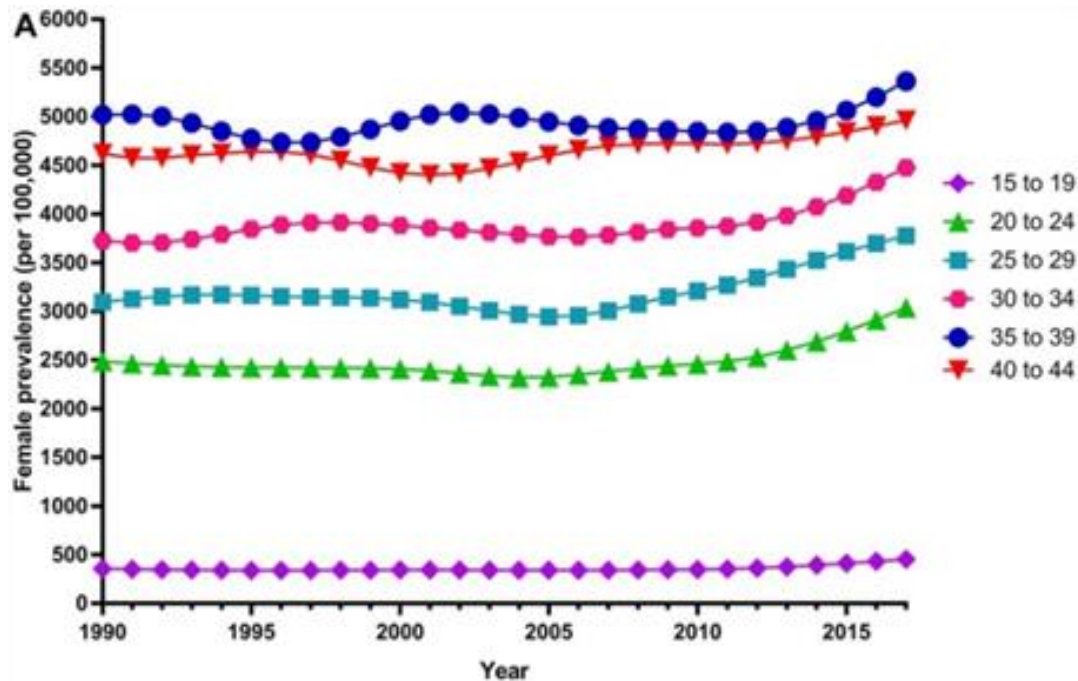
Age-standardized prevalence of male infertility

- Global burden of infertility shows that the age standardized prevalence rate of male infertility increased by **8.22%** from 1990 to 2017
- Among males, increasing trends were observed in 16 of the 21 regions, the highest was detected in **Latin America**, followed by **Southeast Asia** which contributed **47.39%** to the overall increasing trend



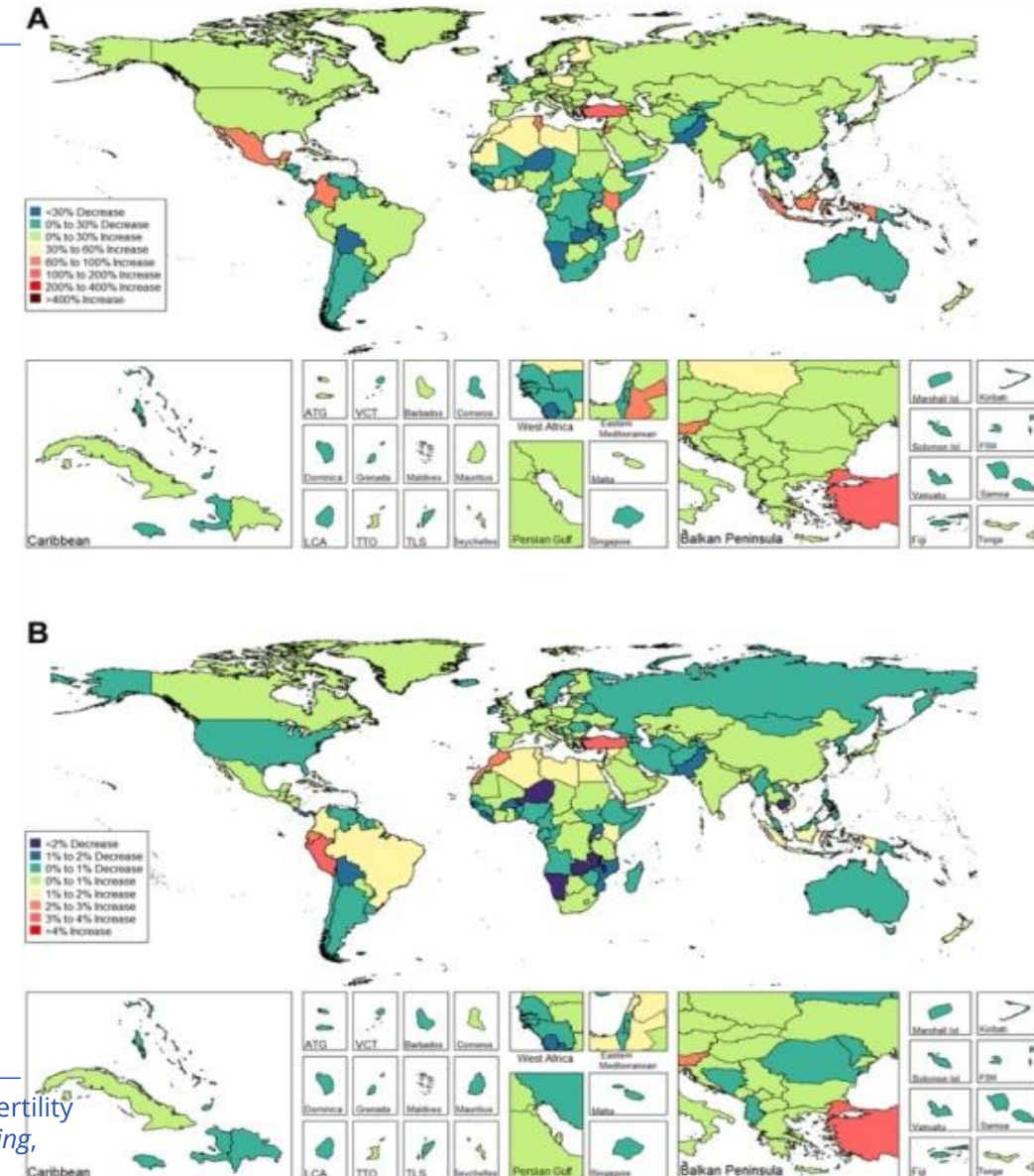
Age-standardized prevalence of infertility

- Among both groups (M & F), aged 15-44 years in 2017, the **highest prevalence rate of infertility was in 35-39 age group**, whereas the 15-19 age group had the lowest prevalence rate



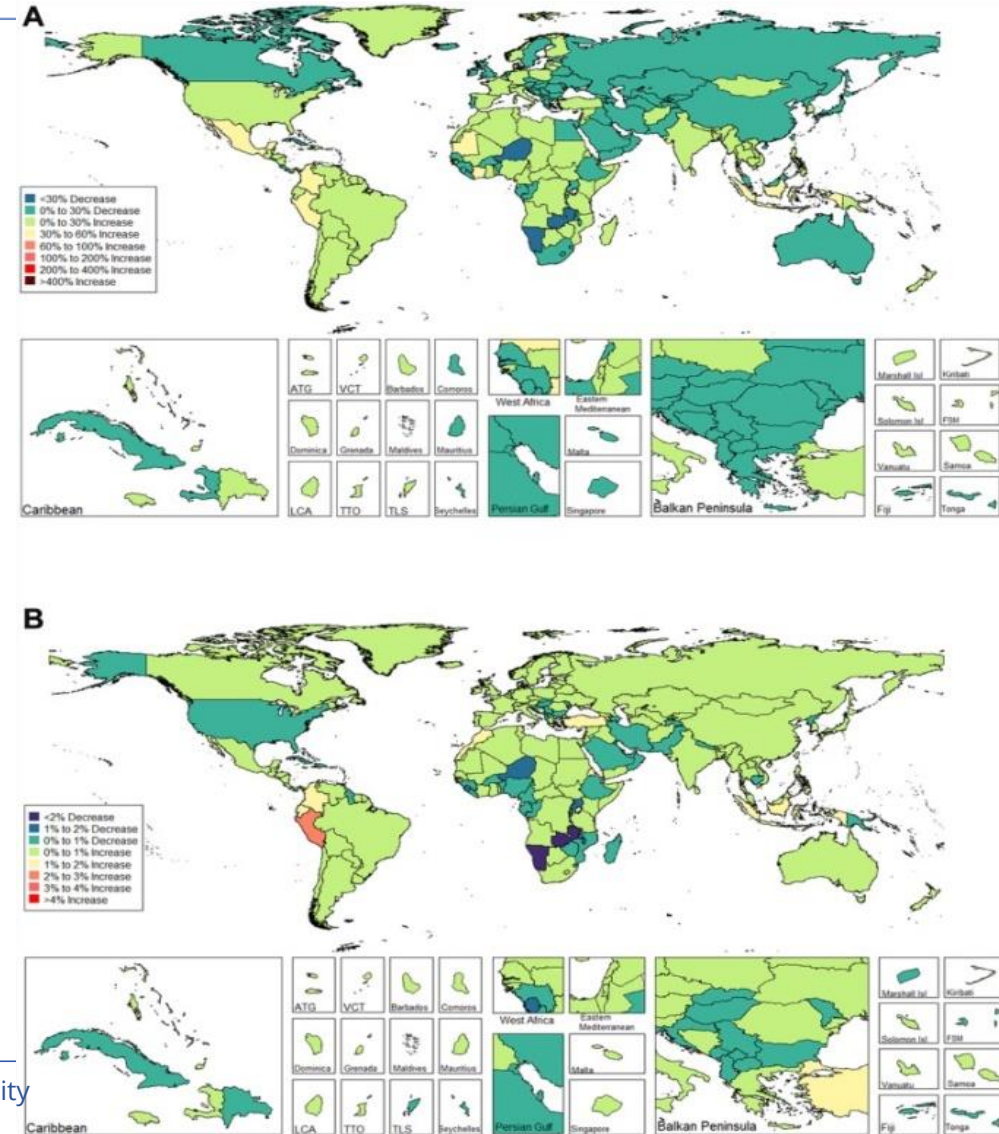
Countries with increased female infertility rate

- The top three countries and territories with **increasing infertility rate**: Turkey (3.92%), Peru (3.59%), and Morocco (2.71%)
- The top three countries and territories with **decreasing infertility rate**: Zambia (-5.95%), Namibia (-5.94%), and Burundi (-3.11%)



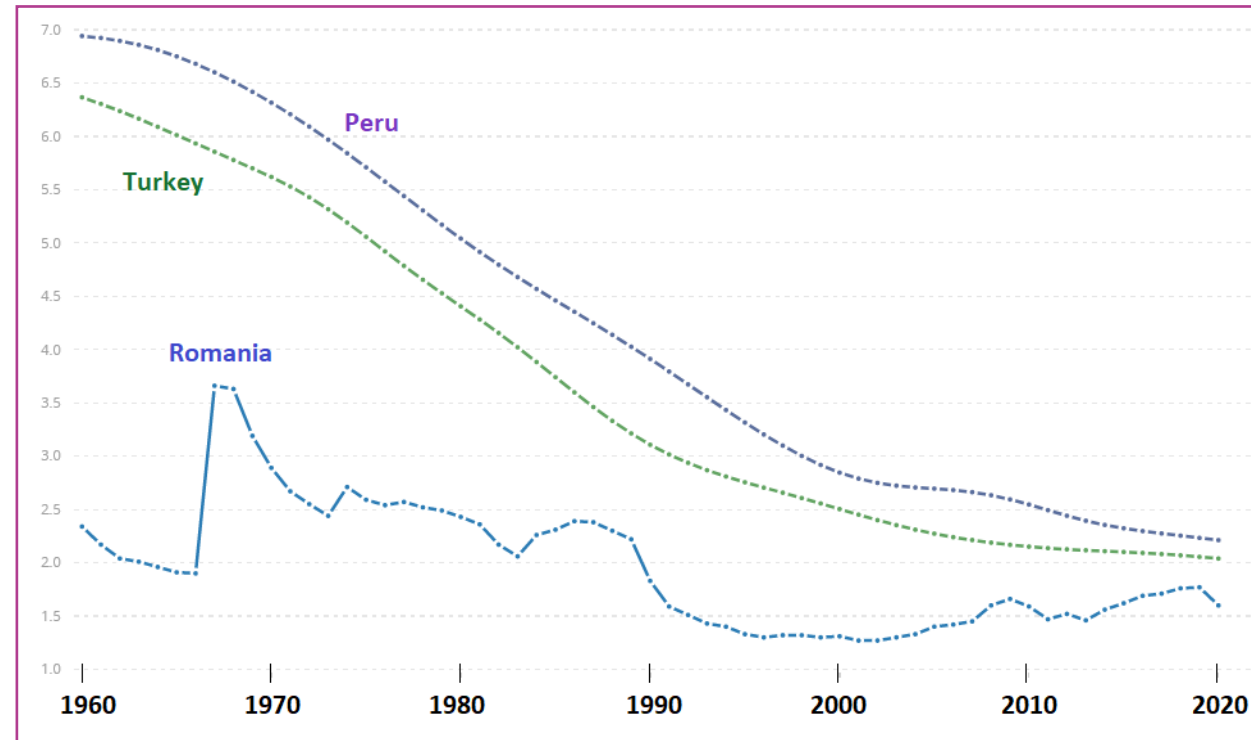
Countries with increased male infertility rate

- The top three countries and territories with **increasing trends**:
Peru (2.26%), Morocco (1.67%), and Turkey (1.49%)
- The top three countries and territories with **decreasing trends**:
Zambia (-2.90%), Namibia (-2.18%), and Niger (-1.75%)



Fertility in Romania from 1960-2020

- The rate of fertility in **Romania** is decreasing since 1970 with a more significant value after 1990 – data compared to **Turkey** (lowest rate in women) and **Peru** (lowest rate in men)
- **Romanian Society of Obstetrics and Gynecology** provides guidelines and protocols to reduce variability in the diagnosis and treatment of infertility



Fertility rate, total (births per woman) - Romania Data.

Available at: <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=RO> (Accessed: October 27, 2022).

Factors that influence fertility of couples



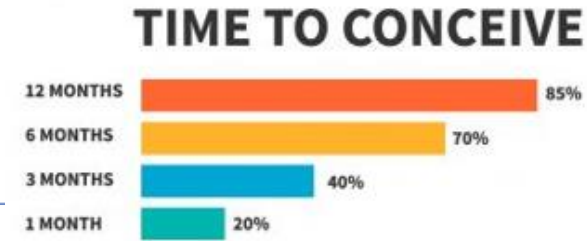
Risk factors



- **Major factors** affecting the spontaneous probability of conception:
 1. Time of unwanted non-conception
 2. Age of the female partner and
 3. Disease-related infertility
- Other factors that may affect the spontaneous probability of conception
 1. Semen decline that has been observed over time,
 2. Endocrine disrupting chemicals
 3. Consanguinity



Time of unwanted non-conception

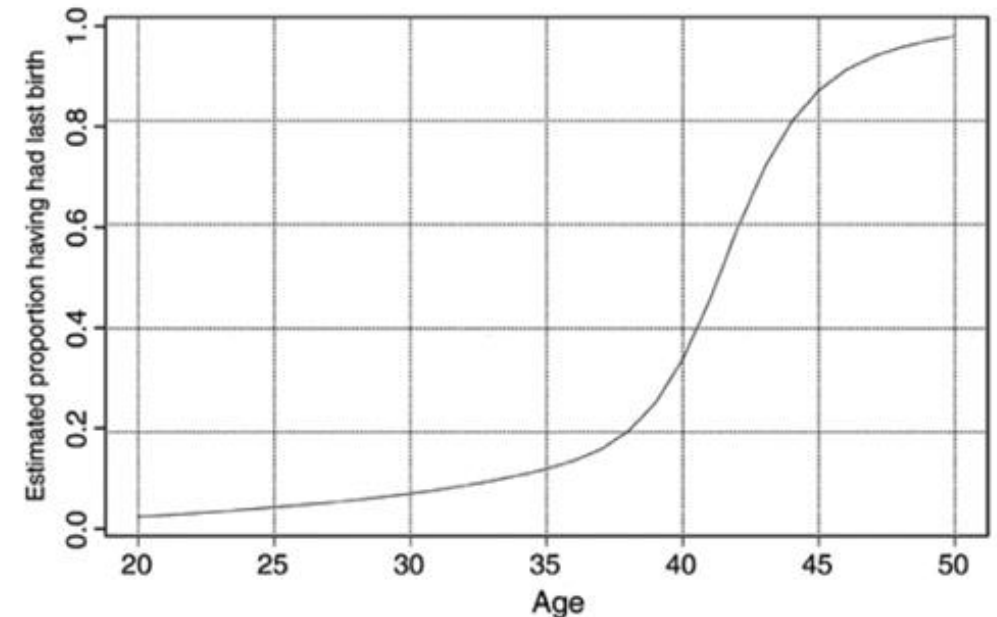


- **80%** of the pregnancies occur in the first **6 cycles with regular intercourse** in the fertile period
- After 12 unsuccessful cycles, **10% of the couples are defined as infertile** but spontaneous live birth rates among them will reach nearly **55% in the next 36 months**
- After 48 months, **5% of the couples are definitively infertile** with a nearly **zero chance** of becoming spontaneously pregnant

The age of conception



- Currently, the mean maternal age at first birth is over **30 yrs of age** in several European countries and many women deliver their first child at age **35 or older**
- The problem arising with delayed child wish is that the **fertility decline already starts around 25–30 yrs of age**
- The median age at **last birth for females is 40–41 yrs** in most natural fertility populations



The biological age at last birth curve (Eijkemans, M.J., et al., Too old to have children? Lessons from natural fertility populations. *Hum Reprod*, 2014. 29(6): p. 1304–12).

Lifestyle and disease related infertility

- Lifestyle related infertility
 - Dietary restriction and over-exercise: can lead to a reduction in the frequency of ovulation, poor endometrial development and amenorrhea
 - Stress: in men affects the quality of semen, severe depression appears to be associated with decreased levels of testosterone
 - Obesity: women who are overweight are less likely to ovulate
 - Cigarette smoking and alcohol intake: for women each stage of reproductive function is impaired, in men the sperm production and motility is affected

BOTH GENDERS
•Hypogonadotropic hypogonadism
•Hyperprolactinemia
•Disorders of ciliary function
•Cystic fibrosis
•Infection
•Systemic disease
•Lifestyle related factors/ diseases

FEMALE
•Premature ovarian insufficiency
•Polycystic ovary syndrome
•Endometriosis
•Uterine fibroids
•Endometrial polyps
•Systemic disease
•Lifestyle related factors/ diseases

MALE
•Testicular deficiency
•Post-testicular impairment

Vander Borgh, M. and Wyns, C. (2018) "Fertility and infertility: Definition and epidemiology," *Clinical Biochemistry*, 62, pp. 2-10

Conclusion



4 OF 10 FERTILITY PROBLEMS CAN BE ATTRIBUTED TO MALES



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- Infertility affects between **8 and 12%** of reproductive-aged couples worldwide
 - Males are responsible for **20–30%** of infertility cases but contribute to 50% of cases overall
 - **Secondary infertility** is the most common form of female infertility around the globe, often due to **reproductive tract infections**
 - The fertility decline in female already starts around **25–30 years** of age
 - Infertility is a **public health priority**, causing psychological distress, social stigmatization, economic strain, and marital discord
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Thank you for your attention!

Name: Panaitescu Carmen

Institution: OncoGen Timisoara

Email address: cbunu@umf.ro



Partnership for a better future