Maternal and paternal life-style factors and time to pregnancy

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Introduction

- Fertility problems → increasing public health issue

- Subfertility affects 15% of all couples in the Western World:
  - ✓ 20 % male
  - ✓ 38 % female
  - ✓ 27 % both
  - ✓ 15 % no evident cause

- Life-style factors of men and women
  → inconsistent results

Aim

**To determine which life-style factors
of both men and women
are associated with a
prolonged time to pregnancy
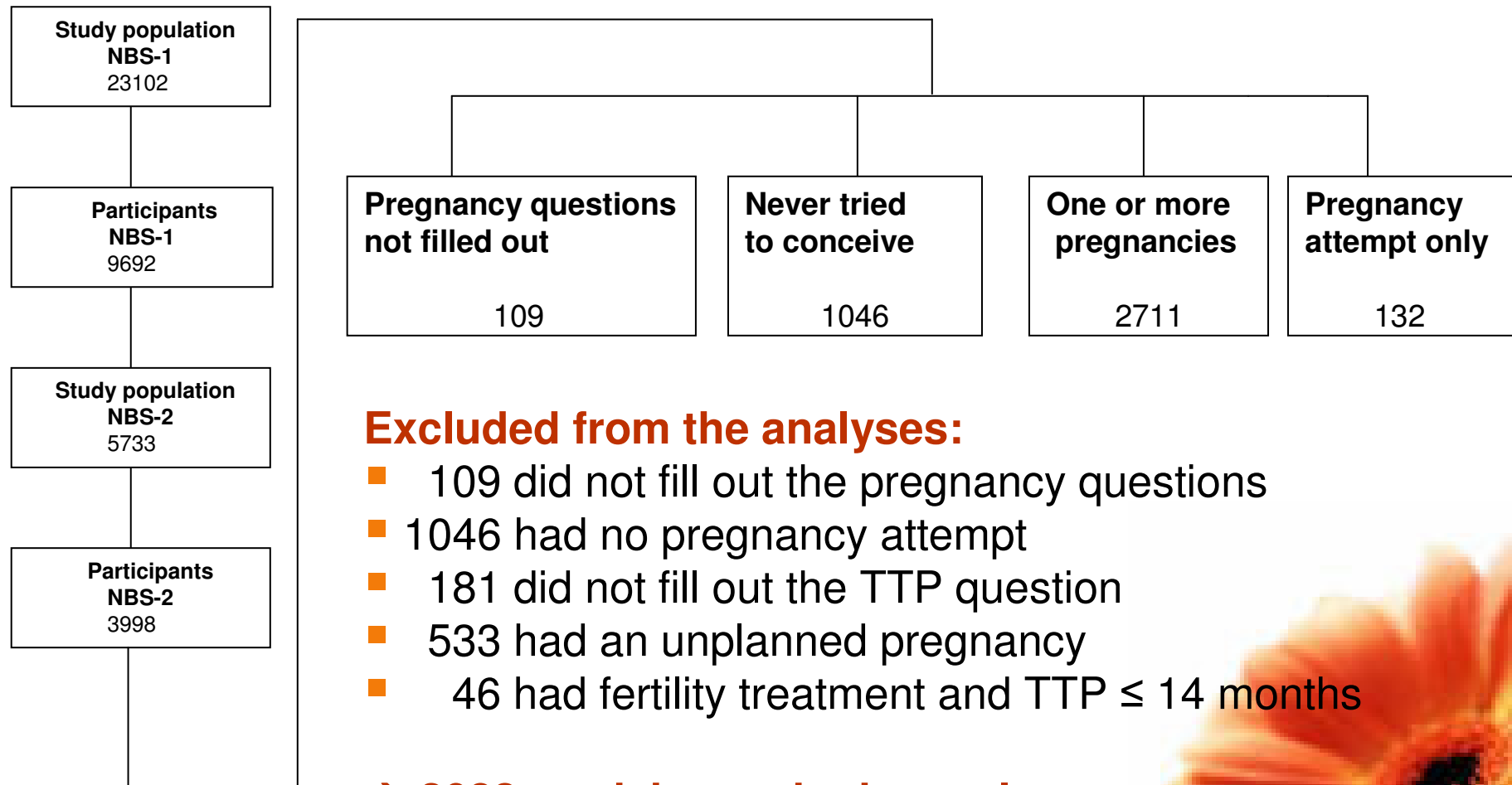in a Dutch population-based sample**

Subject and methods: Data collection

- Nijmegen Biomedical Study (NBS)

- Large cohort study on health issues in the general population

- NBS 1. Questionnaire 1 + blood sample

- NBS 2. Questionnaire 2
  - ✓ Life-style factors and occupation
  - ✓ Pregnancy (e.g. time to pregnancy)

Subject and methods: Data collection

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Study population
NBS-1
23102
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Participants
NBS-1
9692
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Study population
NBS-2
5733
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```
Participants
NBS-2
3998
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Pregnancy questions not filled out	Never tried to conceive	One or more pregnancies	Pregnancy attempt only
109	1046	2711	132

Excluded from the analyses:

- 109 did not fill out the pregnancy questions
- 1046 had no pregnancy attempt
- 181 did not fill out the TTP question
- 533 had an unplanned pregnancy
- 46 had fertility treatment and TTP ≤ 14 months

→ **2083 participants in the analyses**

Subjects and methods: Time to pregnancy

- Good measure for fecundability
- Provides an estimate of the per cycle probability of conceiving

- **Question:**

  'How many months did it take before you or your partner became pregnant for the first time'

Subjects and methods: Factors

- Age   ♂/♀   ≤ 35 / > 35 years
- Weight   ♀   < 50 / 50-75 / > 75 kg
                         ♂   < 60 / 60-85 / > 85 kg
- Smoking   ♂/♀   yes/no
- Alcohol consumption   ♂/♀   yes/no
- Coffee intake   ♂/♀   yes/no
- Vitamin supplements   ♀   yes/no
- Medication use   ♂/ ♀   yes/no
- Occupation   ♂/♀   yes/no

Subjects and Methods: Statistical analysis

- Cox's proportional hazards model

- Fecundability Ratio (FR):
  Represents fecundability of exposed group (with determinant) relative to non-exposed referent group

- Crude analyses (FR and 95% CI)

- Adjusted analyses: correction for all potential confounders:
  (FR<0.85 or upper bound of 95% CI below 1.05)

Results

- 2083 eligible couples: 1725 conceived within 14 months (83%)
- Median TTP: 3 months (90% range 0-36)
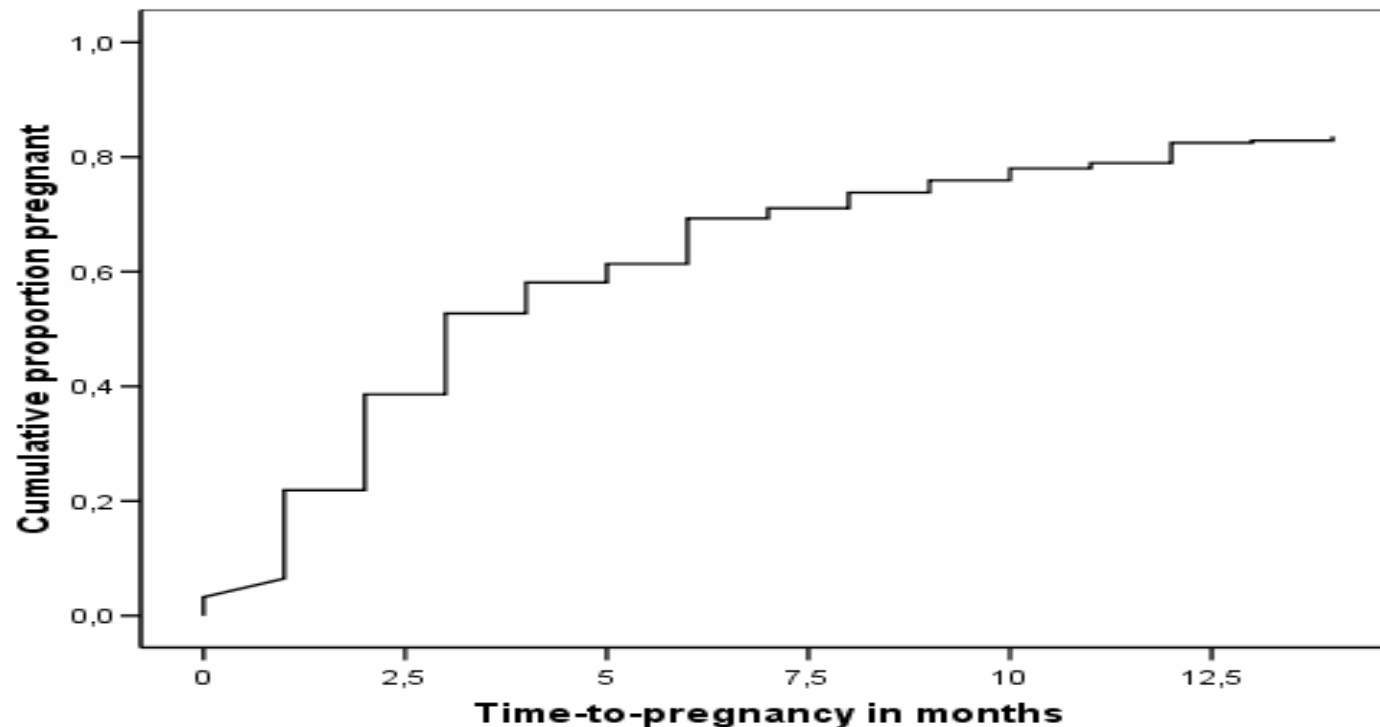
Results: Women

		Crude	(95% CI)	Adjusted	(95% CI)
Age	≥ 35	0.86	(0.72-1.03)*	0.91	(0.75-1.09)
Weight	Low	0.90	(0.69-1.17)	0.86	(0.66-1.12)
	High	0.80	(0.66-0.96)*	**0.81**	**(0.67-0.99)**
Smoking	Yes	0.92	(0.83-1.02)*	**0.91**	**(0.82-1.01)**
Alcohol	Yes	0.89	(0.81-0.98)*	0.93	(0.84-1.03)
Coffee	Yes	1.09	(0.95-1.25)	1.12	(0.96-1.29)
Vitamins	Yes	0.89	(0.68-1.19)	0.99	(0.73-1.33)
Medication	Yes	0.80	(0.62-1.03)*	0.80	(0.61-1.05)
Occupation	Yes	0.88	(0.79-0.97)*	**0.91**	**(0.81-1.02)**

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Results: Men

		Crude	(95% CI)	Adjusted	(95% CI)
Age	≥ 35	0.86	(0.72-1.03)*	0.88	(0.73-1.06)
Weight	Low	0.94	(0.73-1.21)	0.86	(0.69-1.11)
	High	0.78	(0.67-0.91) *	**0.78**	**(0.67-0.91)**
Smoking	Yes	0.98	(0.89-1.08)	0.95	(0.85-1.04)
Alcohol	Yes	0.86	(0.76-0.97) *	**0.86**	**(0.76-0.98)**
Coffee	Yes	1.02	(0.86-1.21)	1.00	(0.86-1.25)
Medication	Yes	0.91	(0.70-1.20)	0.93	(0.70-1.24)
Occupation	Yes	0.88	(0.79-1.03) *	0.91	(0.77-1.07)

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Discussion

- Overweight ♀: impact on ovulation, conception, and implantation; polycystic ovarian syndrome

- Overweight ♂: lower semen quality / hormones

- Alcohol consumption ♂: affects Leydig cells and Sertoli cells

- Smoking ♀: impair implantation

- Occupation ♀: work hours, stress, and exposure

Conclusion

- Overweight, smoking, alcohol consumption,

  and occupation seem to be important determinants of prolonged TTP

- Potential implications for preventive counseling ?

- Changes in these factors:
  - ✓ **shorter time to pregnancy**
  - ✓ **better chance of healthy baby**

Thank you for your attention

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