

Sexual habits before multiple sclerosis

A National case-control study

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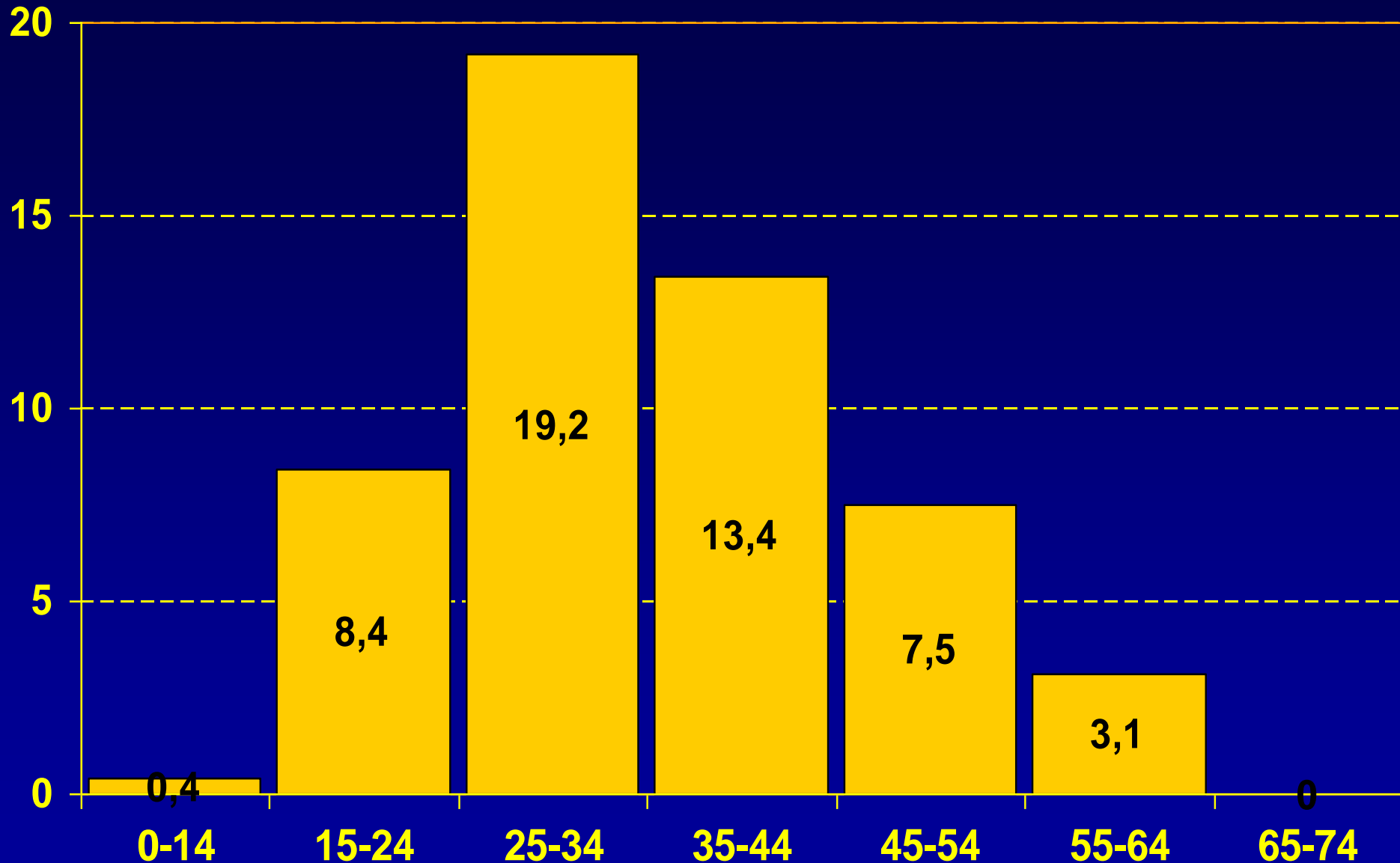
Background

- 1. 2/3 of patients with MS are women**
 2. Clinical debut in young fertile age
 3. Increase on Faeroe Islands after 2ww in cities where English soldiers had been placed for 4-5 years
 4. Geographical high incidence areas coincident with areas of free sexual practice
 5. More frequent in high social classes where oral sex is also more frequent.
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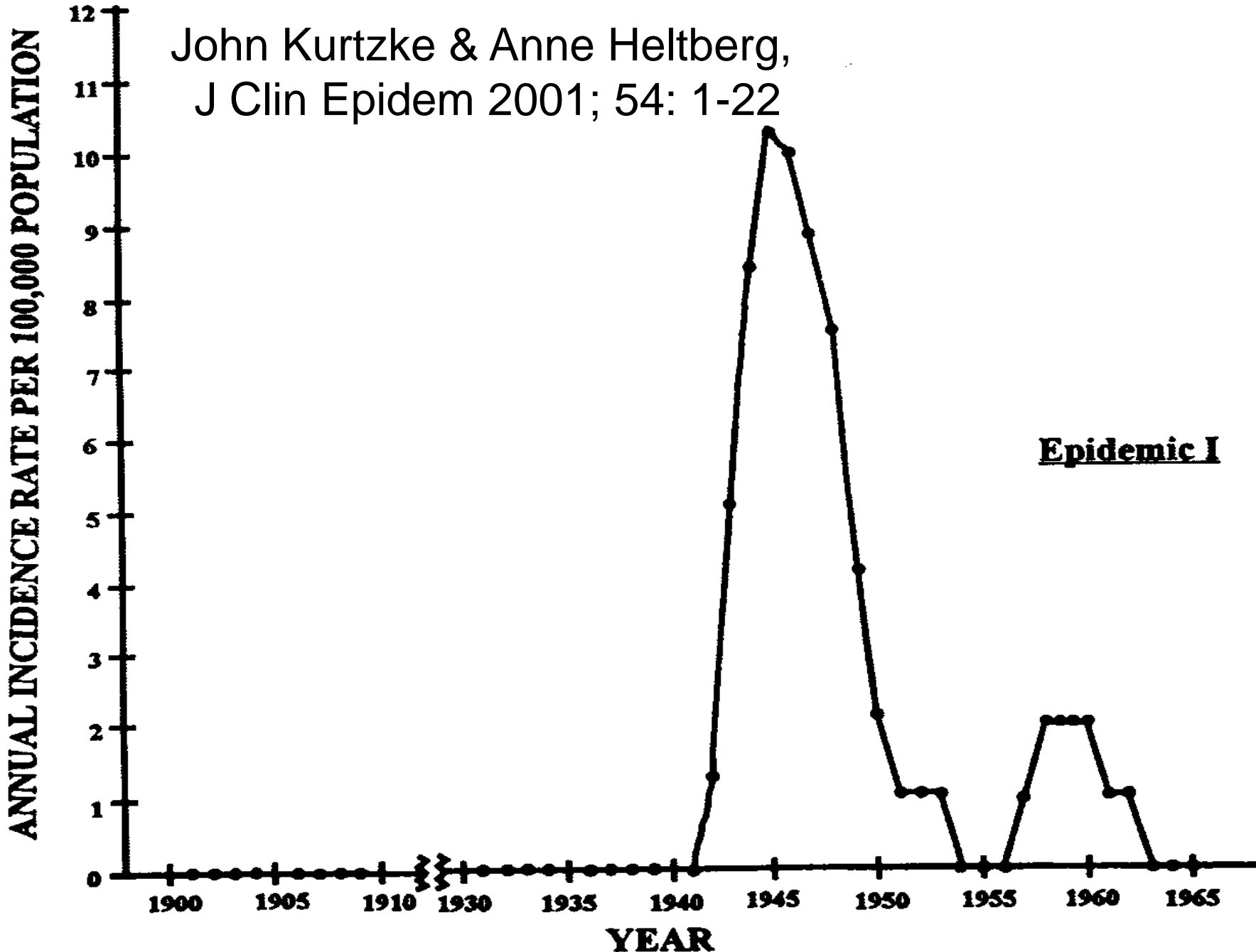
Incidence per 100,000, Sweden 1988-97



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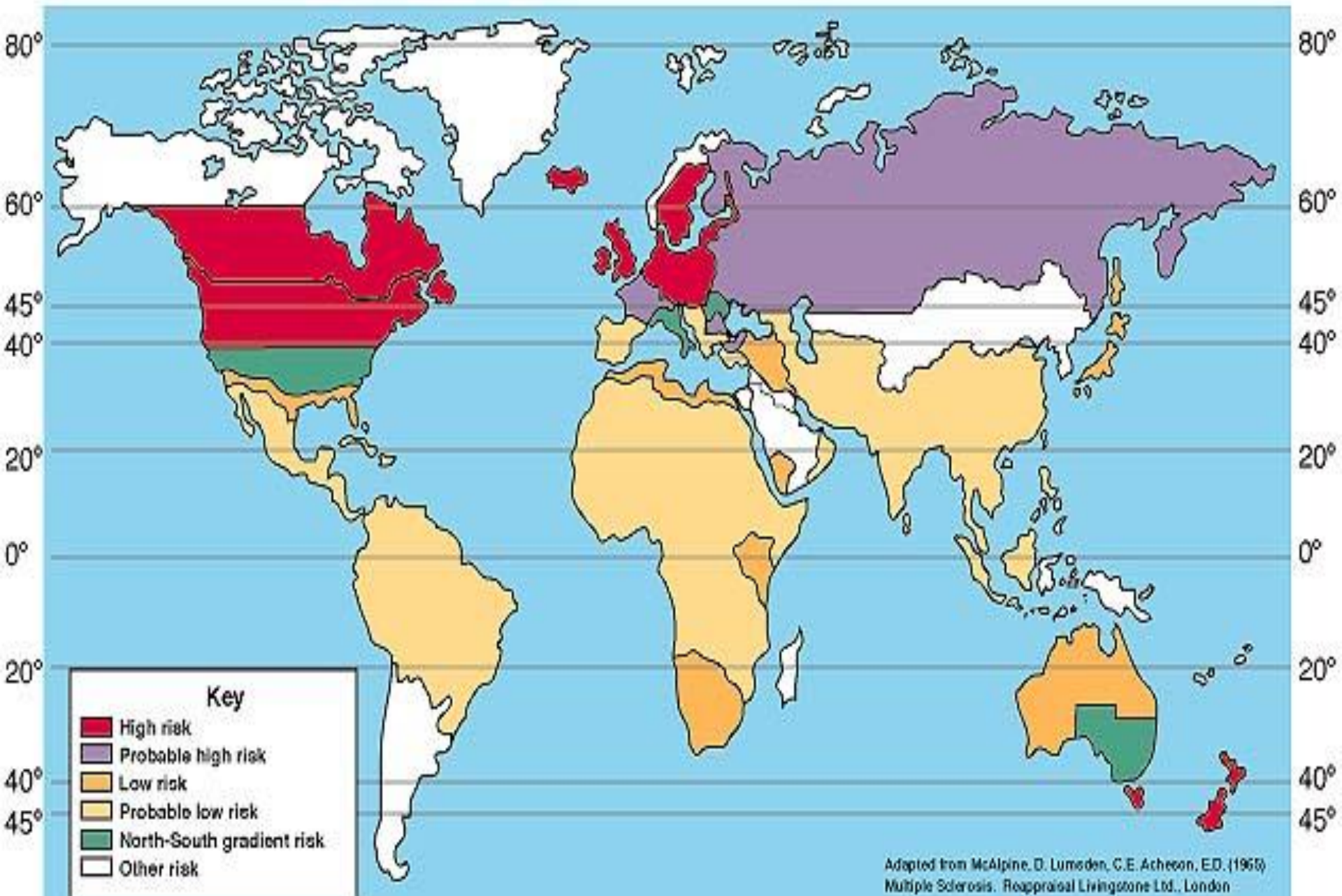
John Kurtzke & Anne Heltberg,
J Clin Epidem 2001; 54: 1-22



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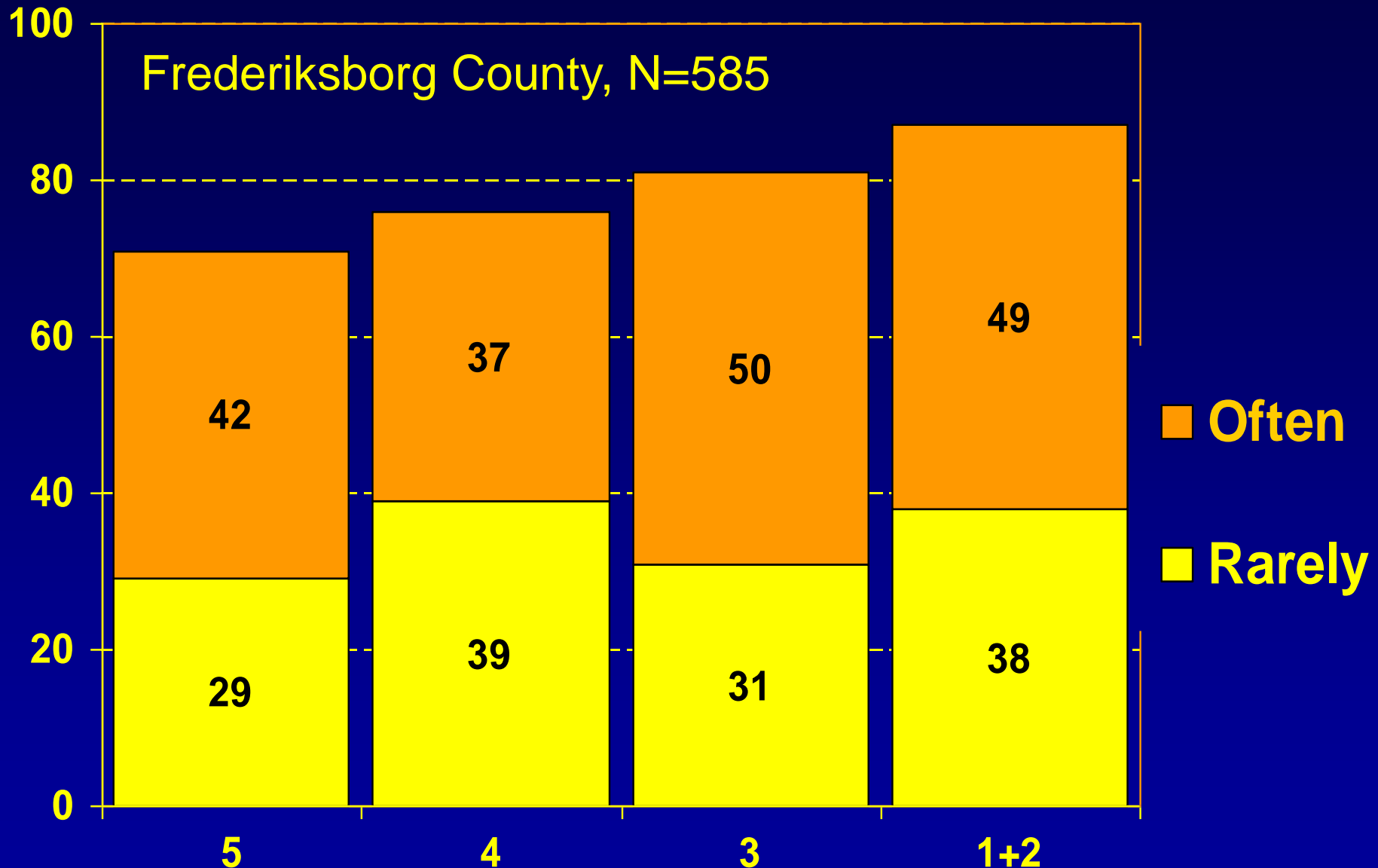
World Distribution of Multiple Sclerosis



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-

Oral sex (%) in Denmark 1985



Background (cont)

6. Emigration studies suggest that women are exposed for their triggering agent at a young age; between 15 and 20 years.
 7. Oral sex is a taboo in many cultures
 8. The pathogenesis is well described and antibodies against myelin is the key finding. Women exposed for antigens which are similar to myelin antigens, could make a cross-reaction against myelin when exposed for these antigens.
-

Hypothesis

- Women are exposed for a triggering agent in young age related to their sexual practice*
 - Specifically, sperm antigens could after oral exposure be the precipitating agent leading to an immunological cross reaction with myelin.
 - Some women are genetically susceptible for making an immunological cross-reaction when exposed orally for sperm antigens
-

Hawkes. Is multiple sclerosis a sexually transmitted infection?
J Neurol Neurosurg Psychiatry 2002; 73: 439-43

Perspective

If MS is associated with oral exposure to sperm antigens, the next steps could be

- Lifestyles decreasing this exposure
 - Identification of those antigens
 - Development of a vaccine against MS which should prevent women developing the for MS damaging antibodies
 - Problems: Not inducing MS and not induce infertility in women (antibodies against sperm).
-

Material

- Danish women with diagnosed MS ≤ 40 years of age during the period 1998-2005 (8 years)
 - Identified in National Register of Patients
 - Discharge diagnosis only from neurological departments
 - Alive May 2006
 - A control group of women matched for date of birth and postal code but otherwise randomly selected from the Central Person Register
-

Methods

Design

- Case-control study
- Postal questionnaires, 1 reminder after 4 w
- Permissions from neurological departments

Exclusions


- Women with a MS diagnosis 1980-1997
 - No permission to contact (n=0)
 - Women denying having MS
 - No available address
 - Women declining to participate
-

Methods (cont)

Included discharge diagnoses

- Multiple sclerosis (unspecified) DG359
 - Multiple sclerosis attack type DG359A
 - Multiple sclerosis primary DG359B
 - Multiple sclerosis progressive DG359C
 - Multiple sclerosis (ICD 8) 80-93 340
 - In- as well as out-patients
 - Neurological departments only
 - Main as well as secondary diagnoses
-

Included information (cont)

- Confirmation of diagnosis
 - Time of first symptom
 - Time of getting inform. about diagnosis
 - Place of origin (born)
 - Place of growing up
 - Family disposition for MS 
 - Mother
 - Farther
 - Sisters
 - Brothers
 - Years of schooling
 - Smoking
 - Blood transfusions
-

Included information (cont)

- Oral herpes (number of times, age at first)
 - Genital herpes (number of times, age at first)
 - Sexual debut (age)
 - Coital debut (age)
 - Sexual partners before 20 years
 - Sexual partners after 20 years
 - Frequency of anal sex
 - Oral sex before 20 years
 - Type of oral sex (fellatio, cunnilingus, both)
-

Included information (cont)

- Frequency oral sex today
 - Oral sperm exposure entertaining oral sex
 - Oral sperm exposure (age at first exposure)
 - Condyloma (number and age at first incidence)
 - Chlamydia infections (no and age at first incidence)
-

Results

RESEARCH PAPER

Multiple Sclerosis 2008; 14: 67–72

Sexual habits before multiple sclerosis: a National case–control study

Øjvind Lidegaard and Anne Louise Svendsen

The triggering off agent for multiple sclerosis (MS) is despite intensive epidemiological and biomedical research still unknown. The disease is typically diagnosed in reproductive age and recent findings have suggested that MS could be a sexually transmitted disease.

Aim To assess the influence of different sexual practices in young age on the risk of developing MS, and specifically to explore the possible impact of oral sex and oral sperm exposure on this risk.

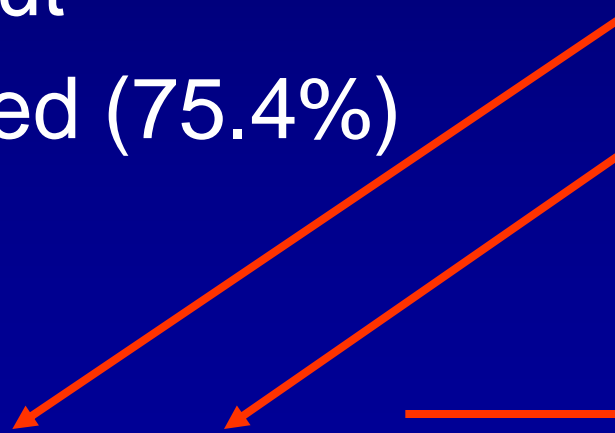
Design National case–control study.

Methods Inclusion: Danish women with a first time MS discharge diagnosis from a neurological department at most 40 years old during the period 1998–2005, and an age and geographically matched control group. The response rate to our postal questionnaires was 75% for cases and 61% for controls. A total of 604/619 completed case/control questionnaires were included in the analysis. Data underwent logistic regression analysis.

Results We found no difference between women with and without MS for years of schooling, oral herpes infections, genital herpes, blood transfusions, age at sexual debut, age at coital debut, number of sexual partners before and after age 20 years, anal sex, condyloma attack or chlamydia infections. Family disposition with an affected father, mother or sibling, increased the risk of MS 9.1, 6.9 and 4.1

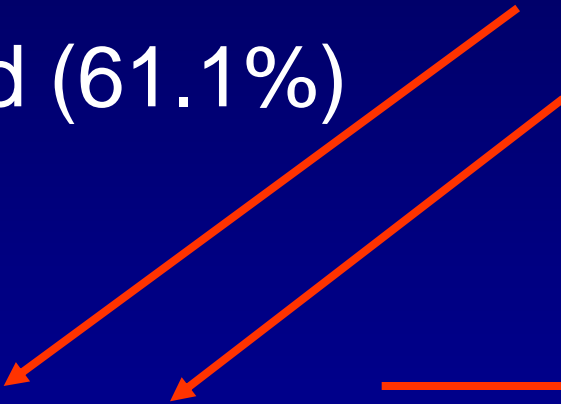
Results cases

• Identified in NRP alive Nov. 2005	1,166
• Address protection/no address	-210
• No permission to contact	0
• Not at the address	-6
• Questionnaires sent out	950
• Questionnaires returned (75.4%)	716
• Decline to participate	-80
• Denying MS	-32
• Included in analysis 64%/84%	604



Results controls

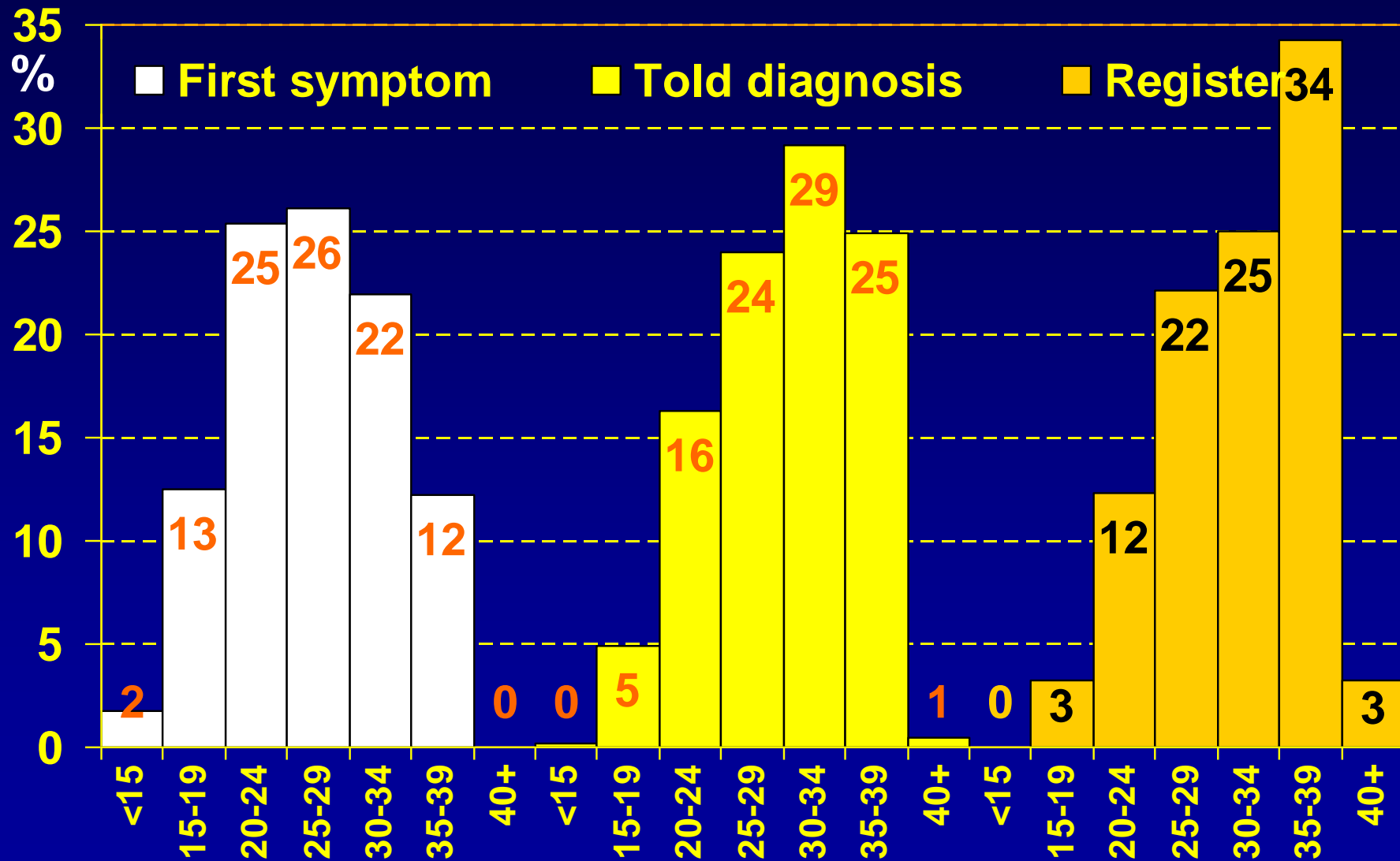
• Matched to cases Nov. 2005	1.166
• Not at the address	5
• Questionnaires sent out	1.161
• Questionnaires returned (61.1%)	709
• Indicated to have MS	-3
• Refused to participate	-87
• Included in analysis 53%/87%	<hr/> 619



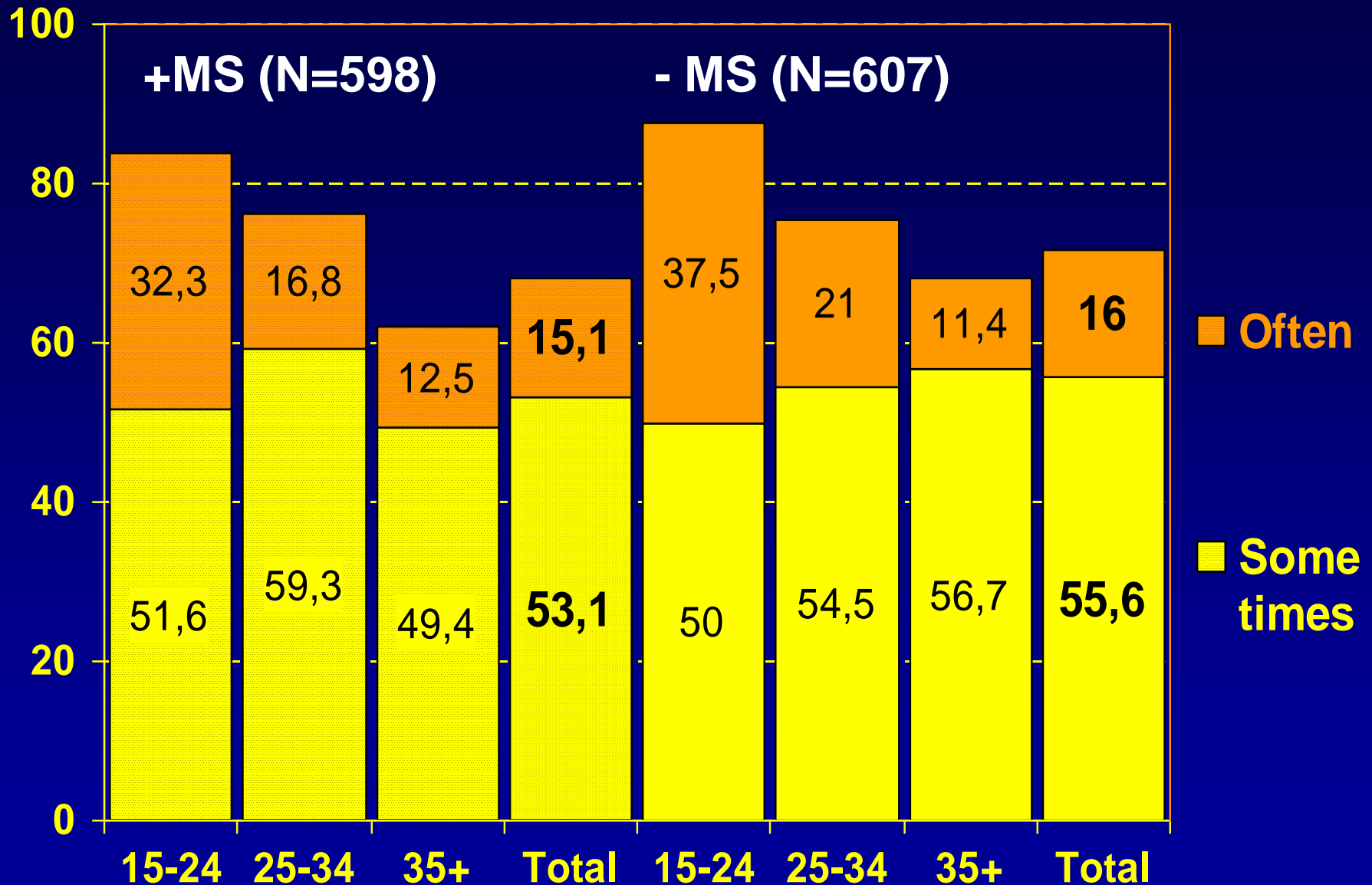
Included, age distribution

	Cases	Controls	Total
15-24 years	32	29	61
25-34 years	217	226	443
35+ years	355	364	719
Total	604	619	1.223
Average age			

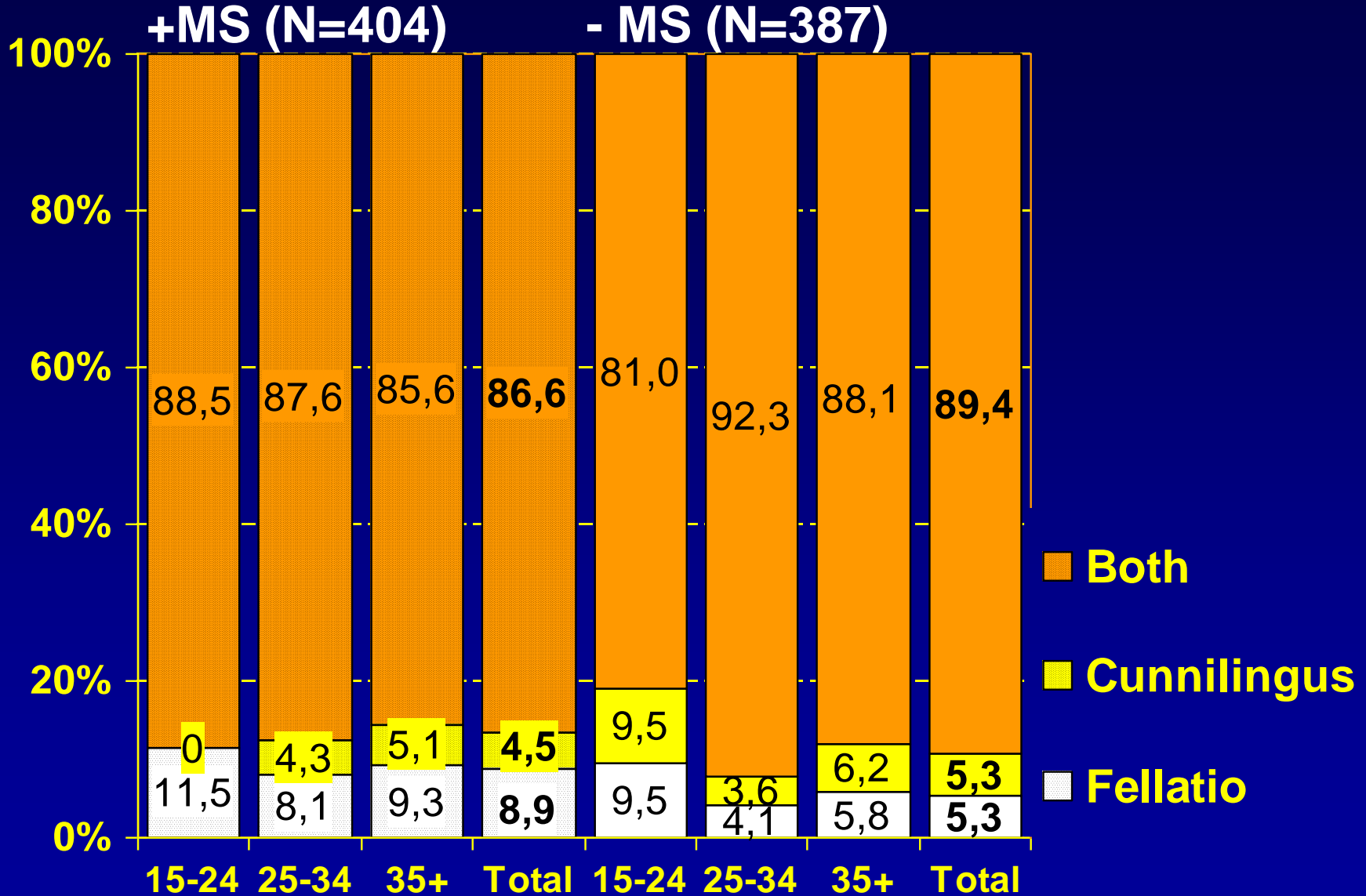
Age at first symptom, diagnosis and appearing in the diagnosis register



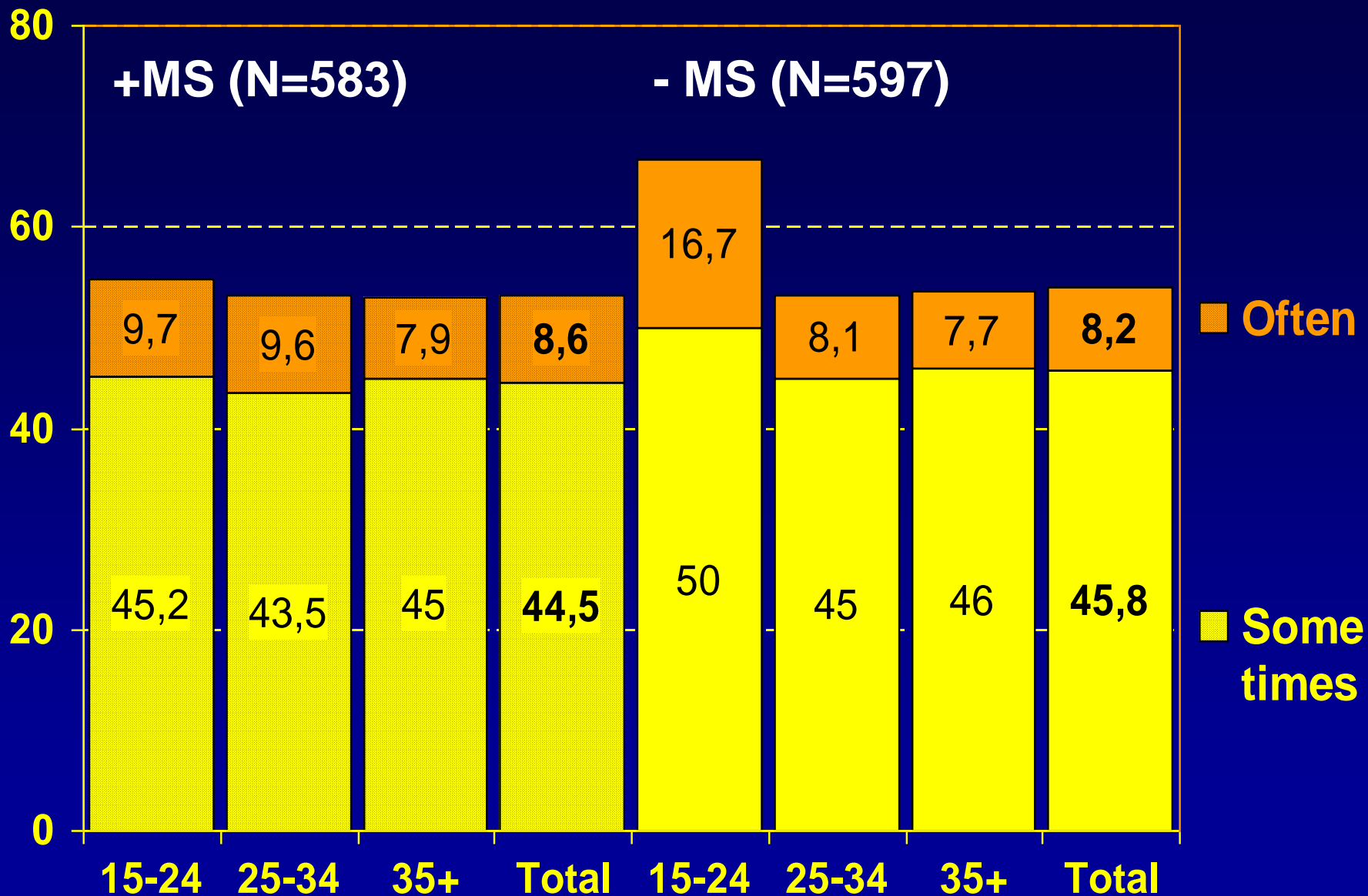
Oral sex (%) before age 20 years



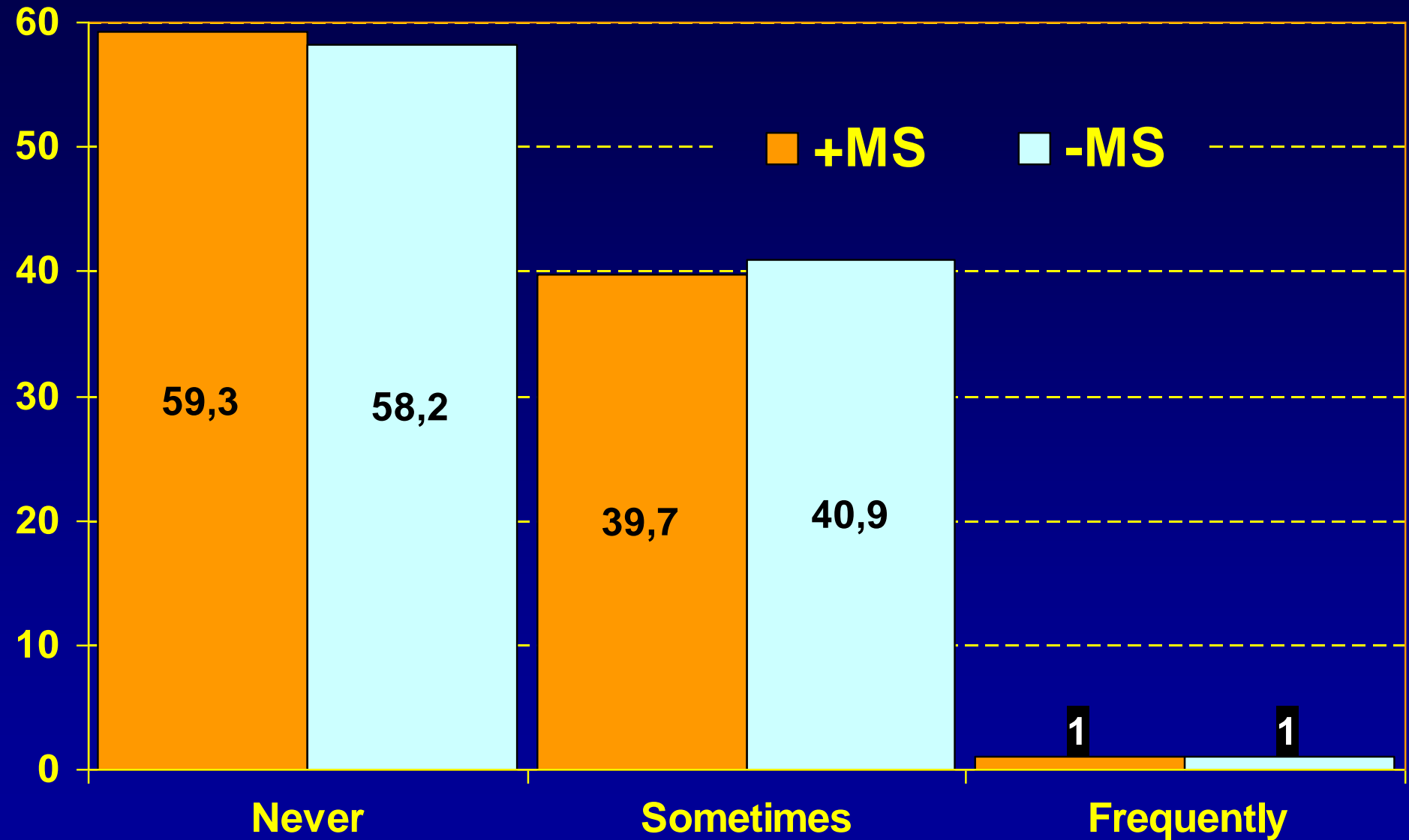
Type of oral sex



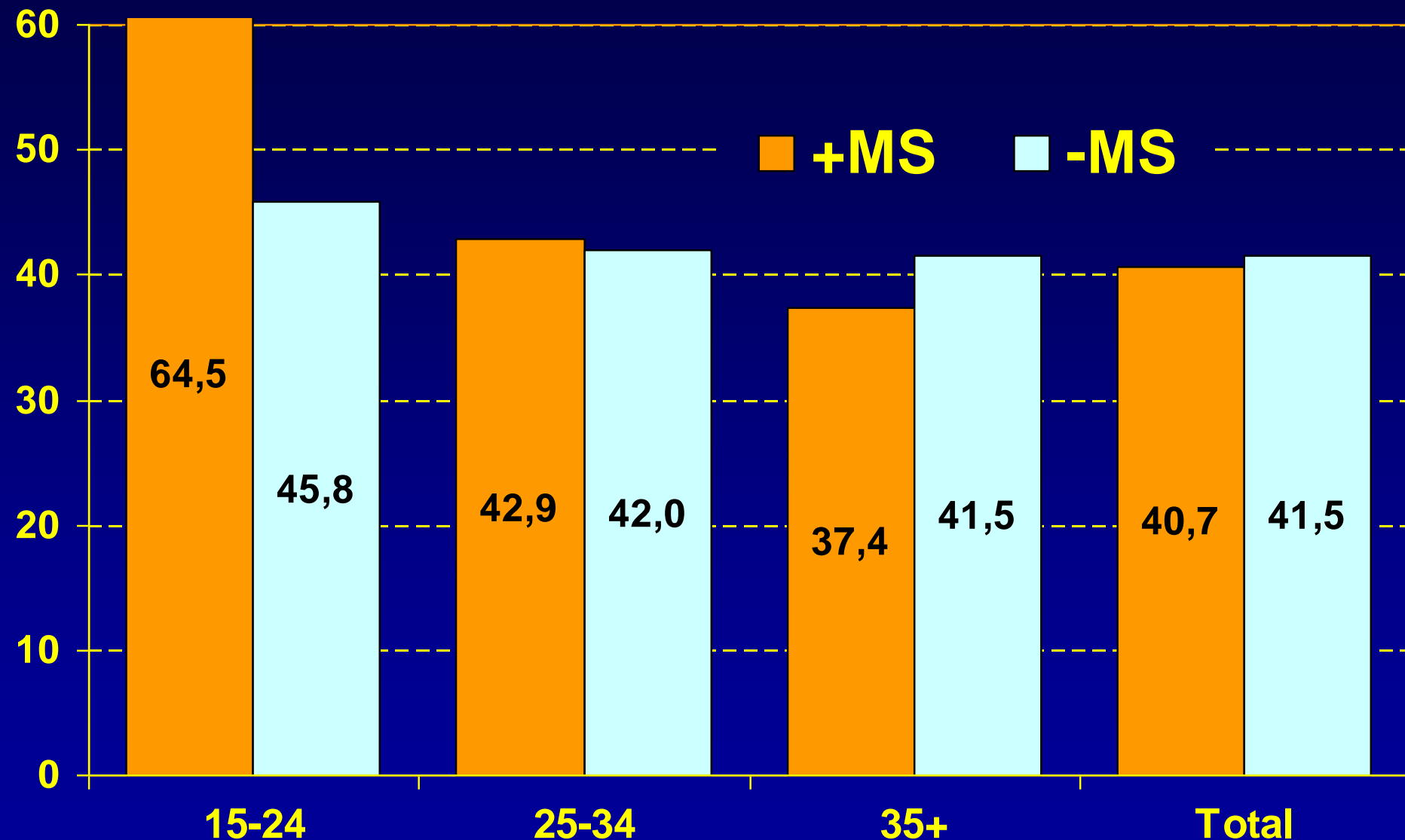
Swallowing sperm entertaining oral sex



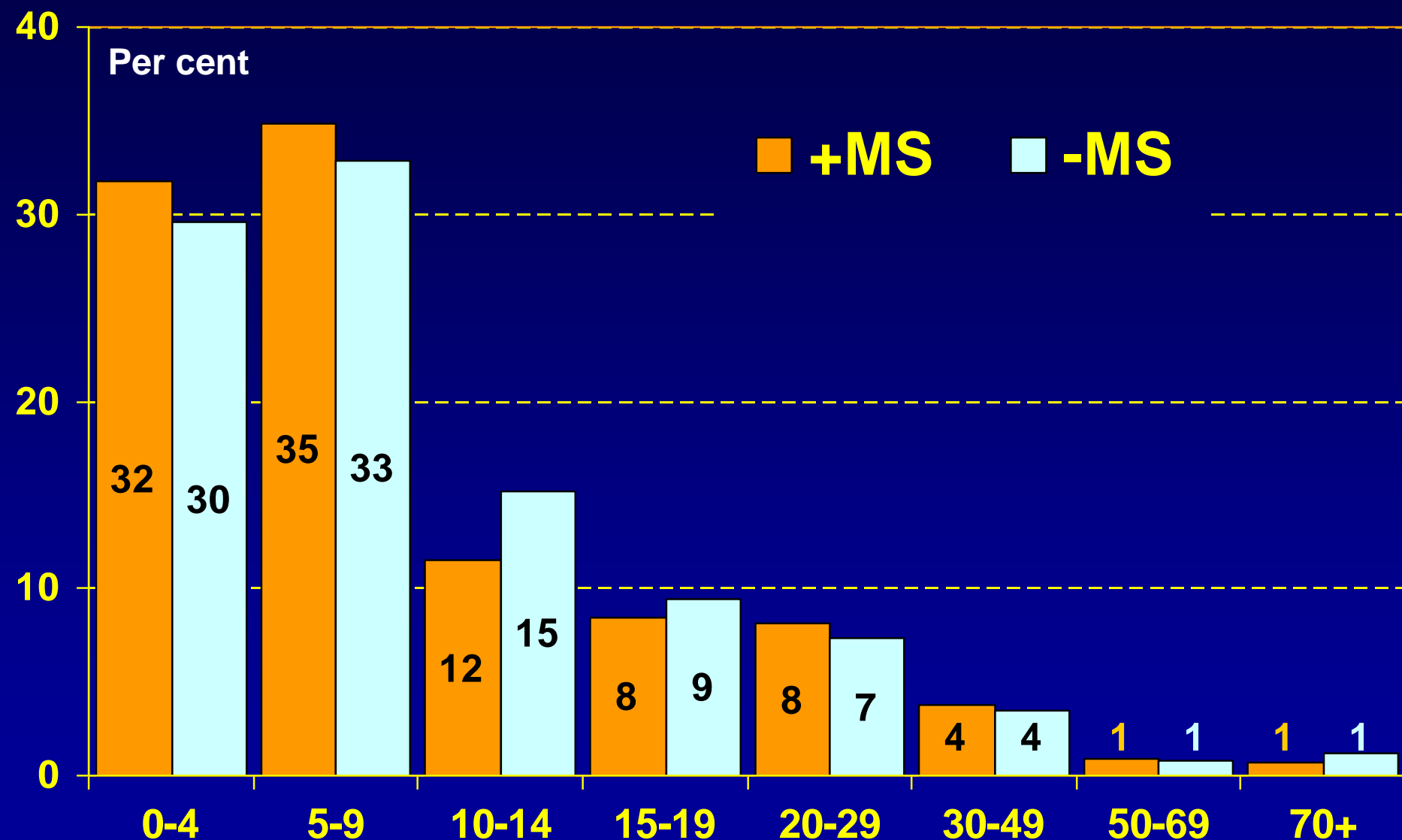
Frequency of anal sex



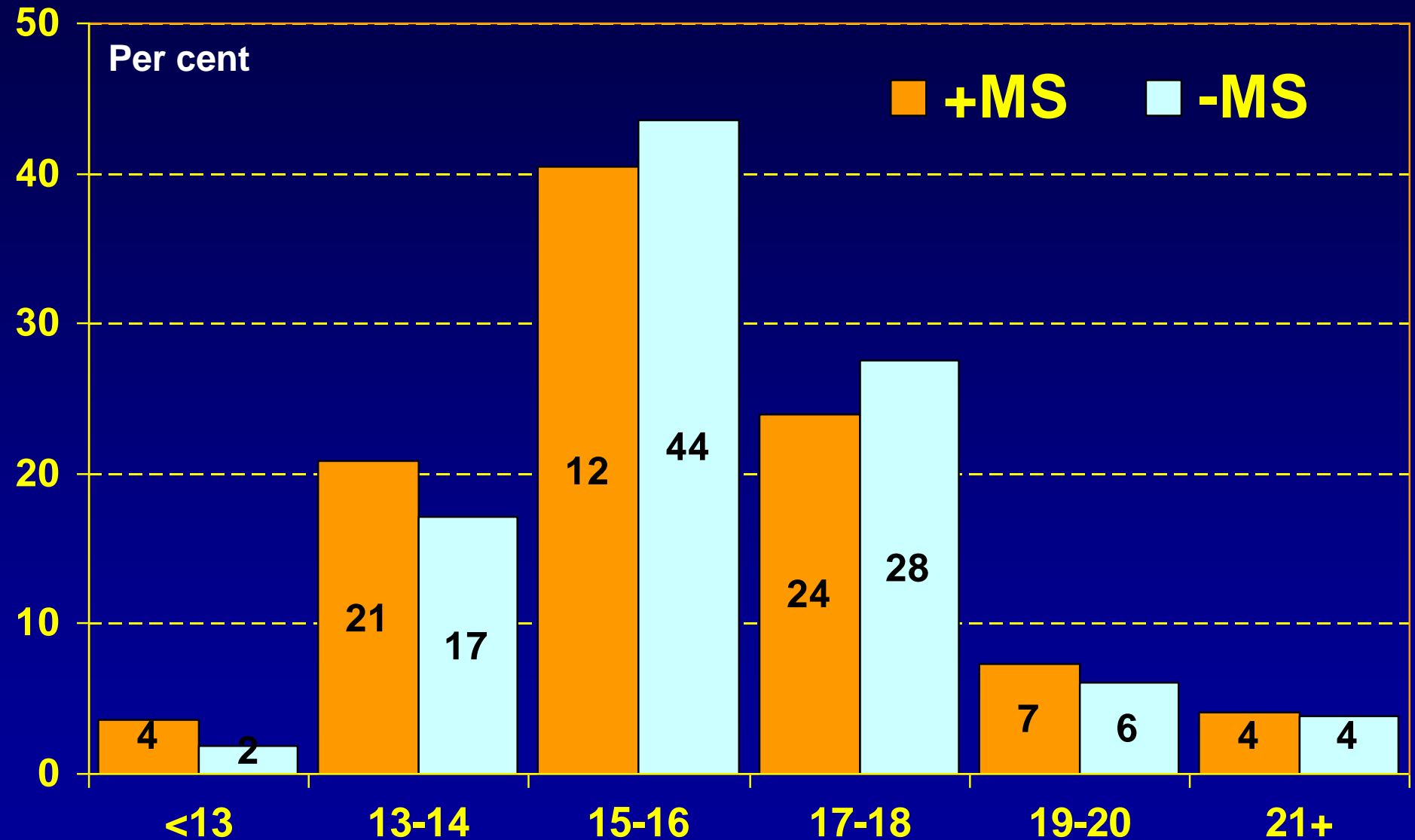
Sometimes anal sex according to age



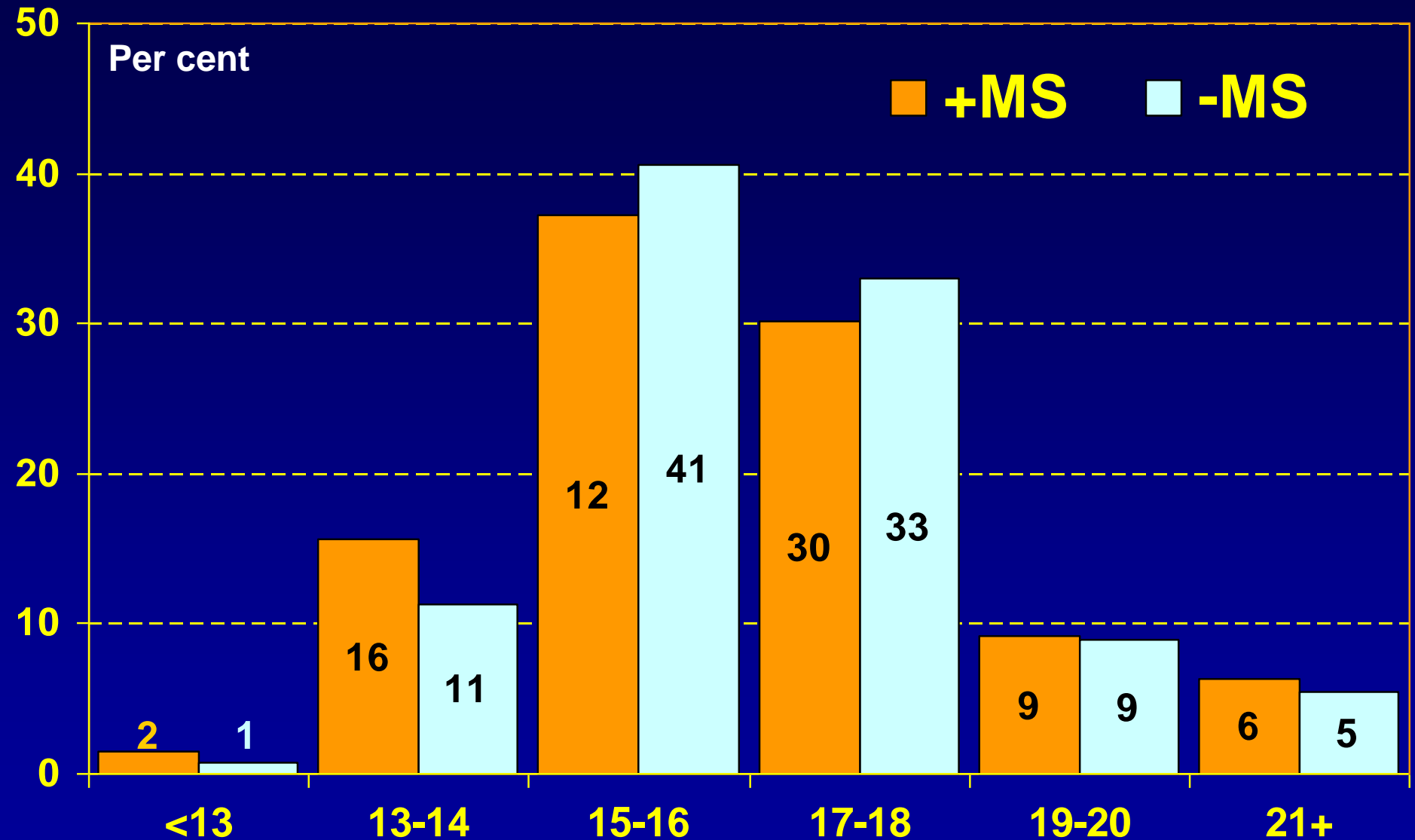
Distribution in sexual partners (%)



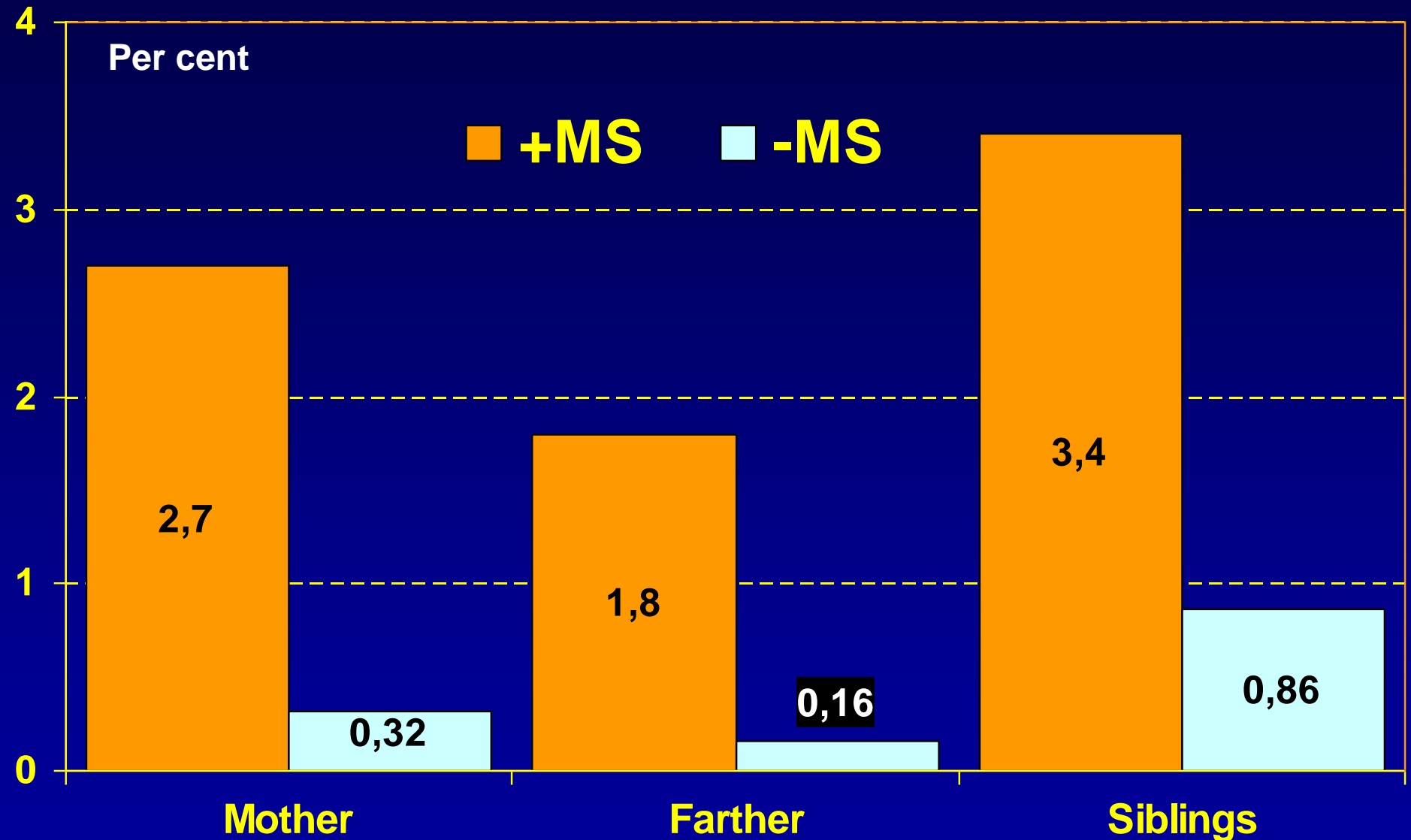
Distribution in sexual debut (%)



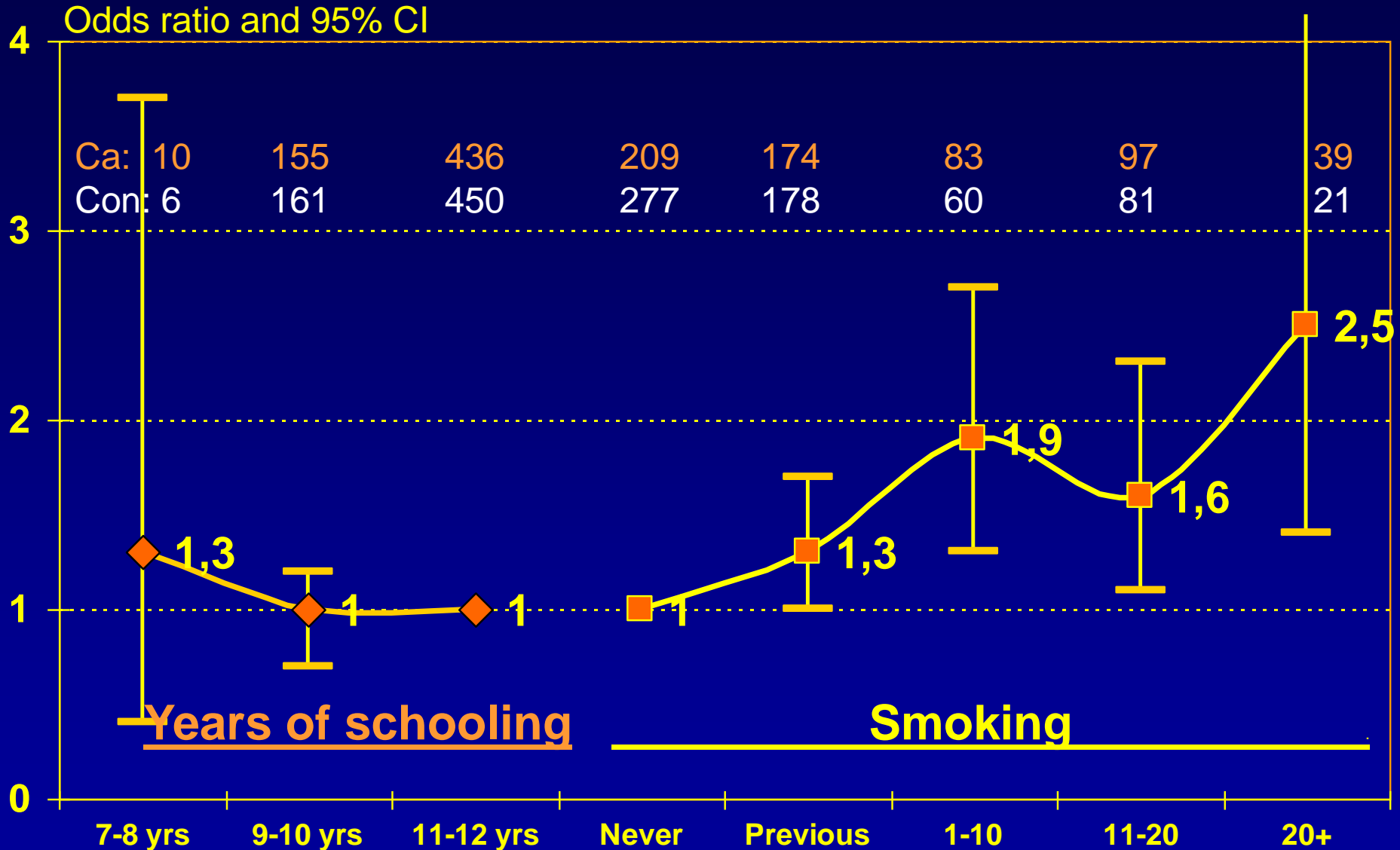
Distribution in coital debut (%)



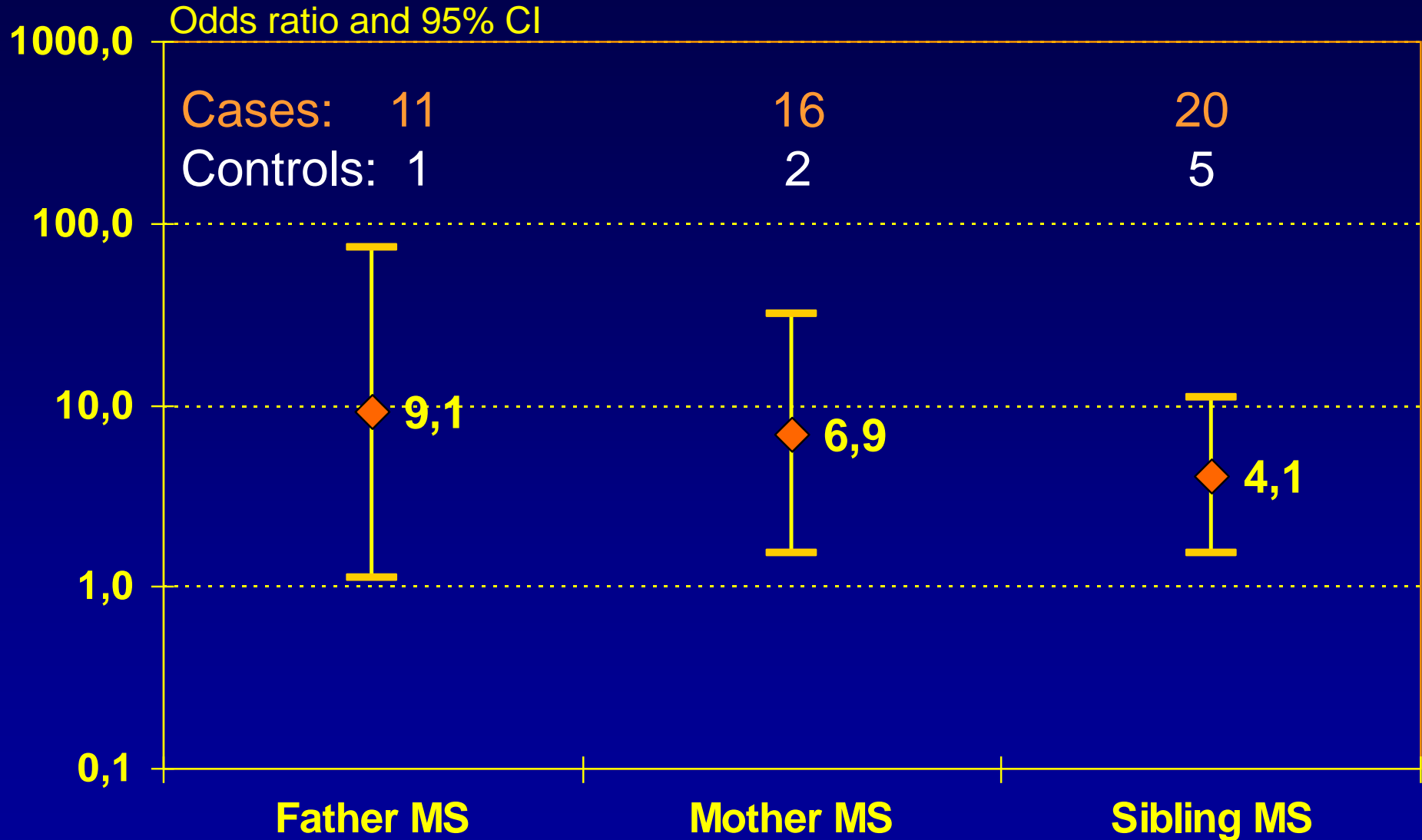
Family sclerosis disposition



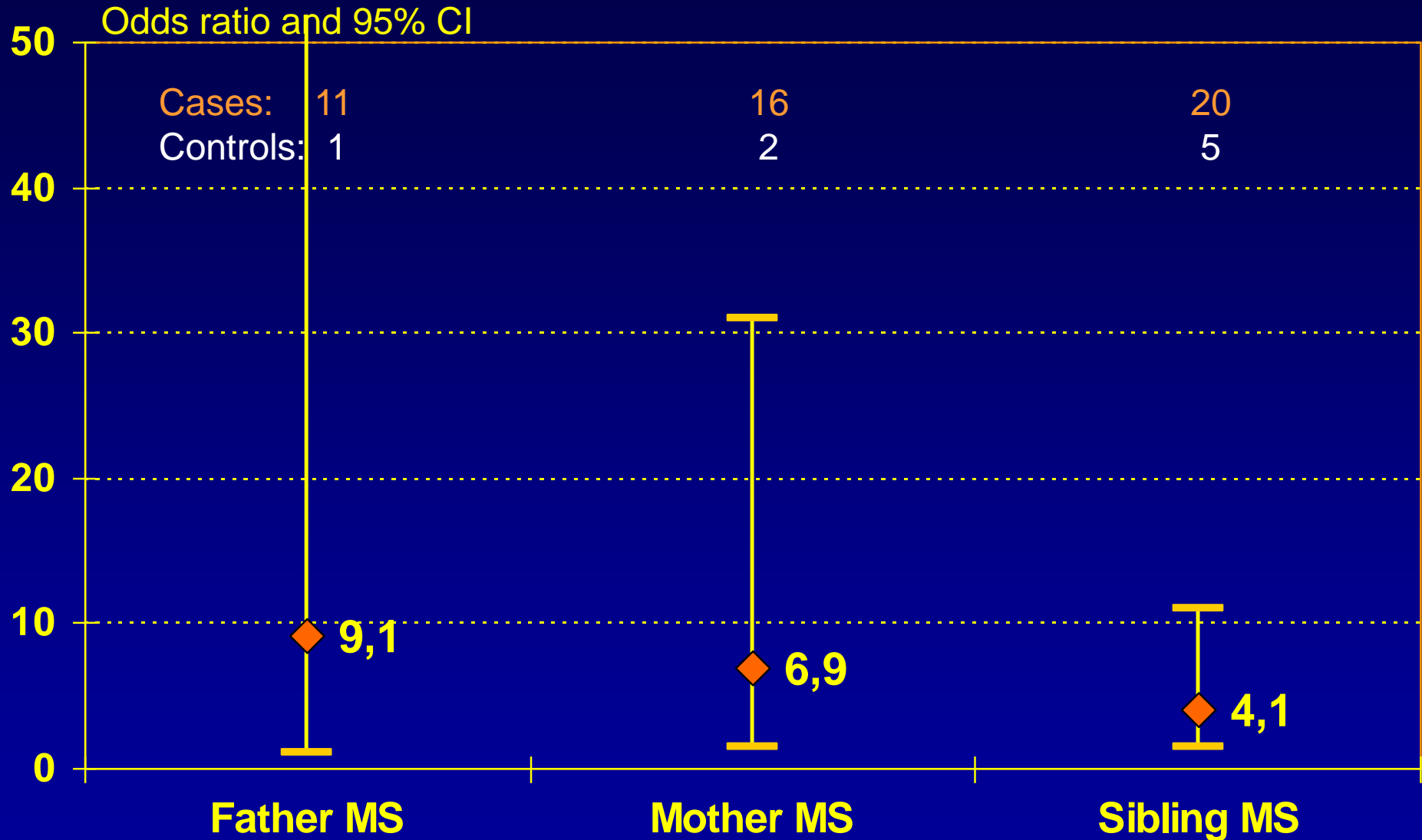
Years of schooling and smoking



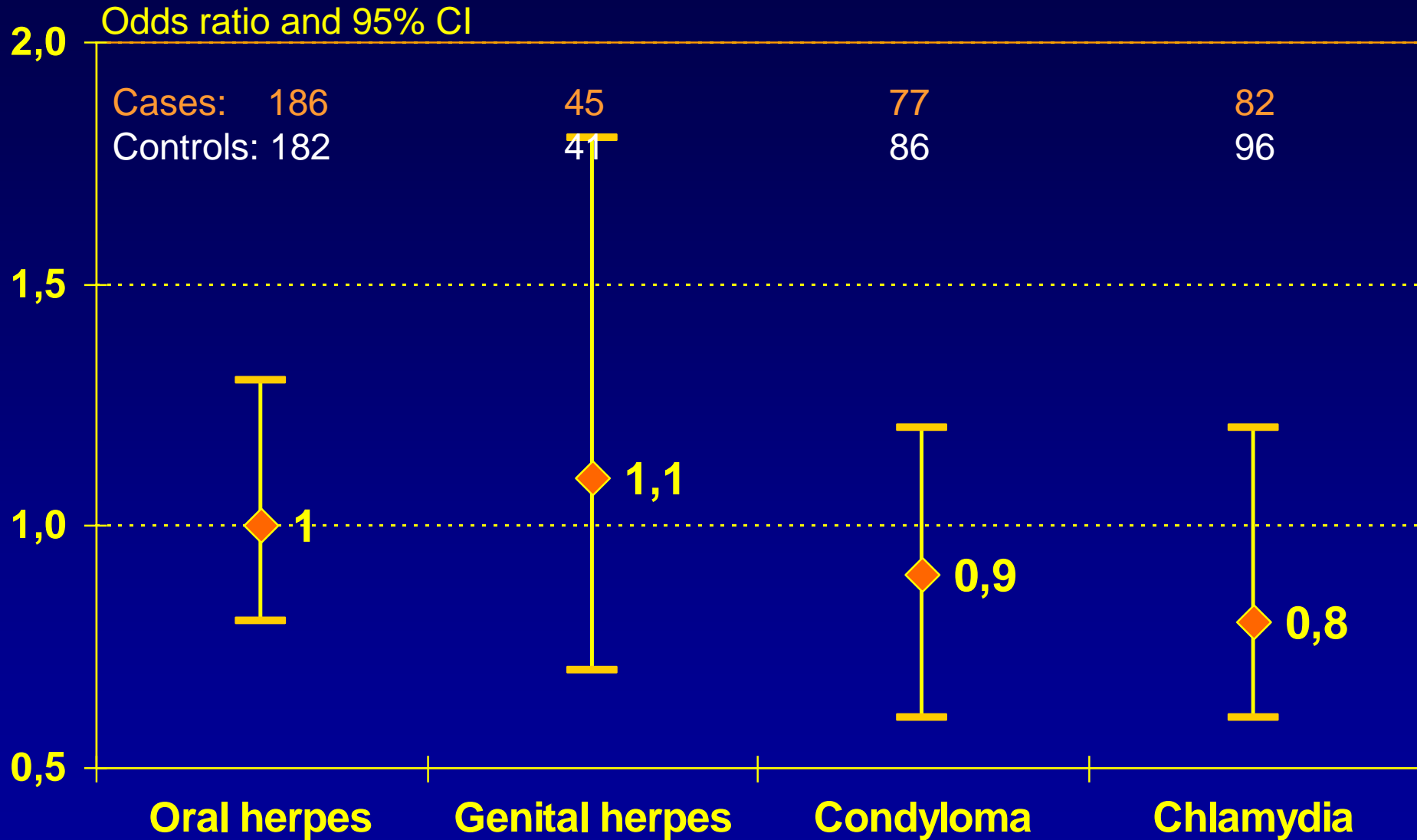
Family sclerosis disposition



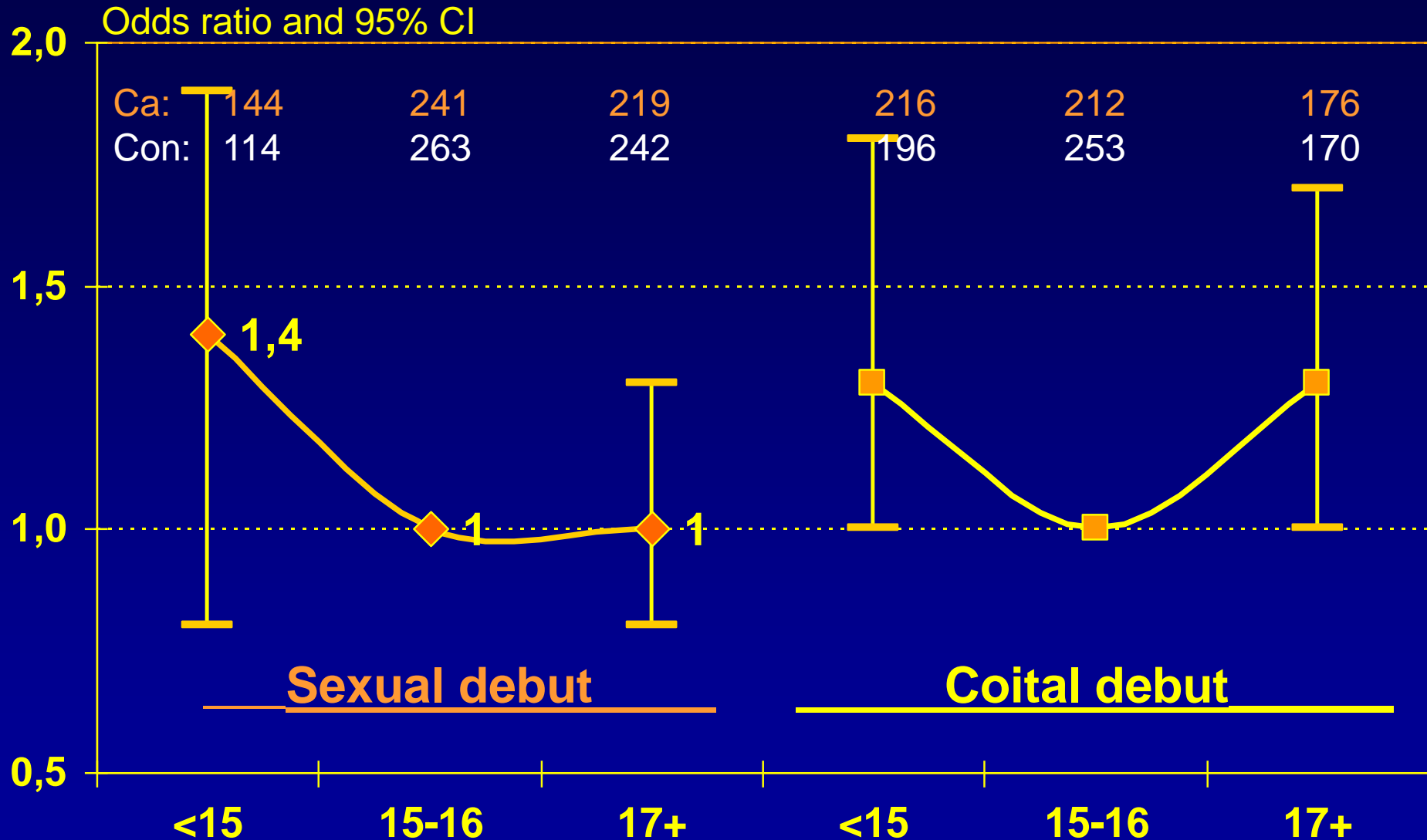
Family sclerosis disposition



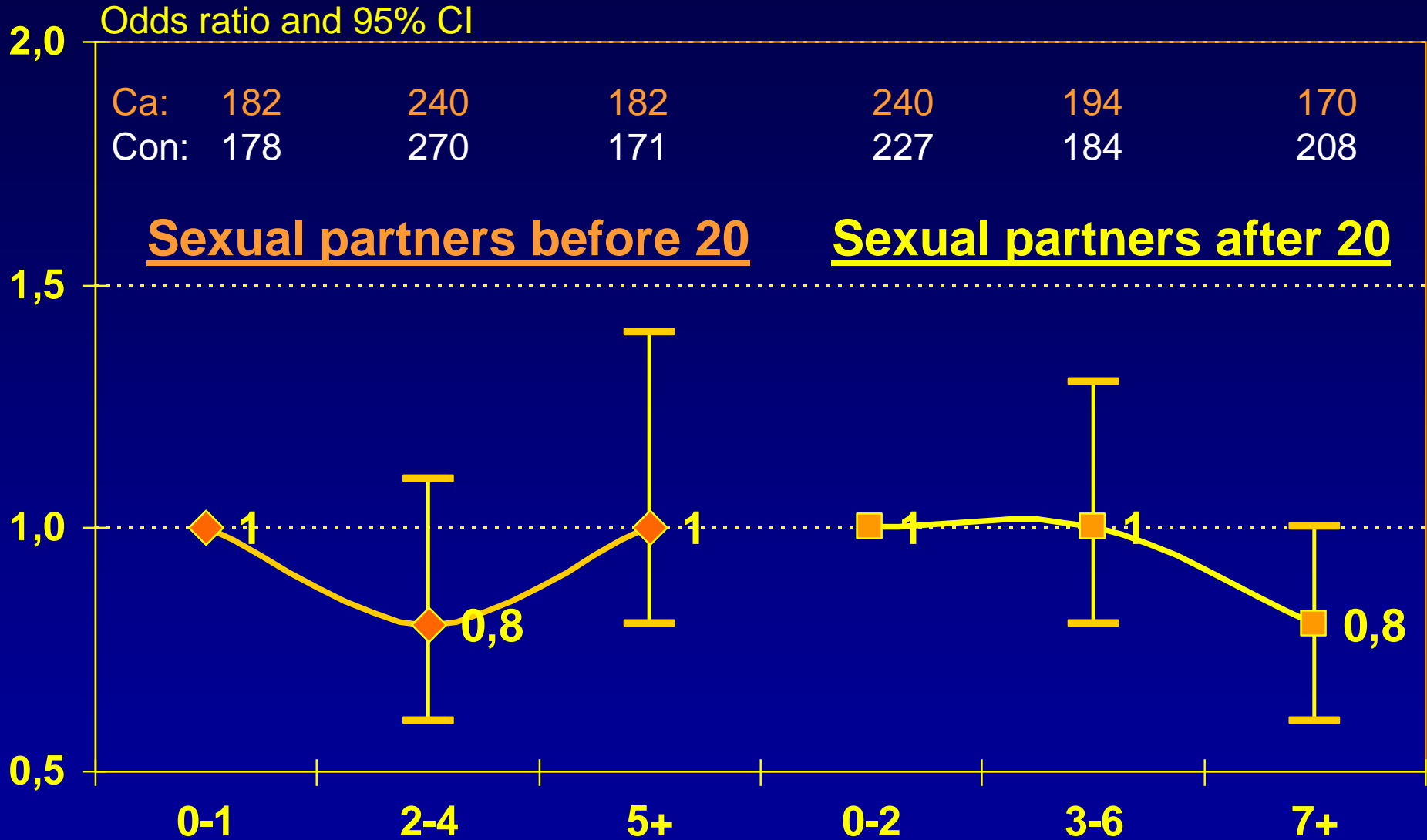
Infections ever and risk of MS



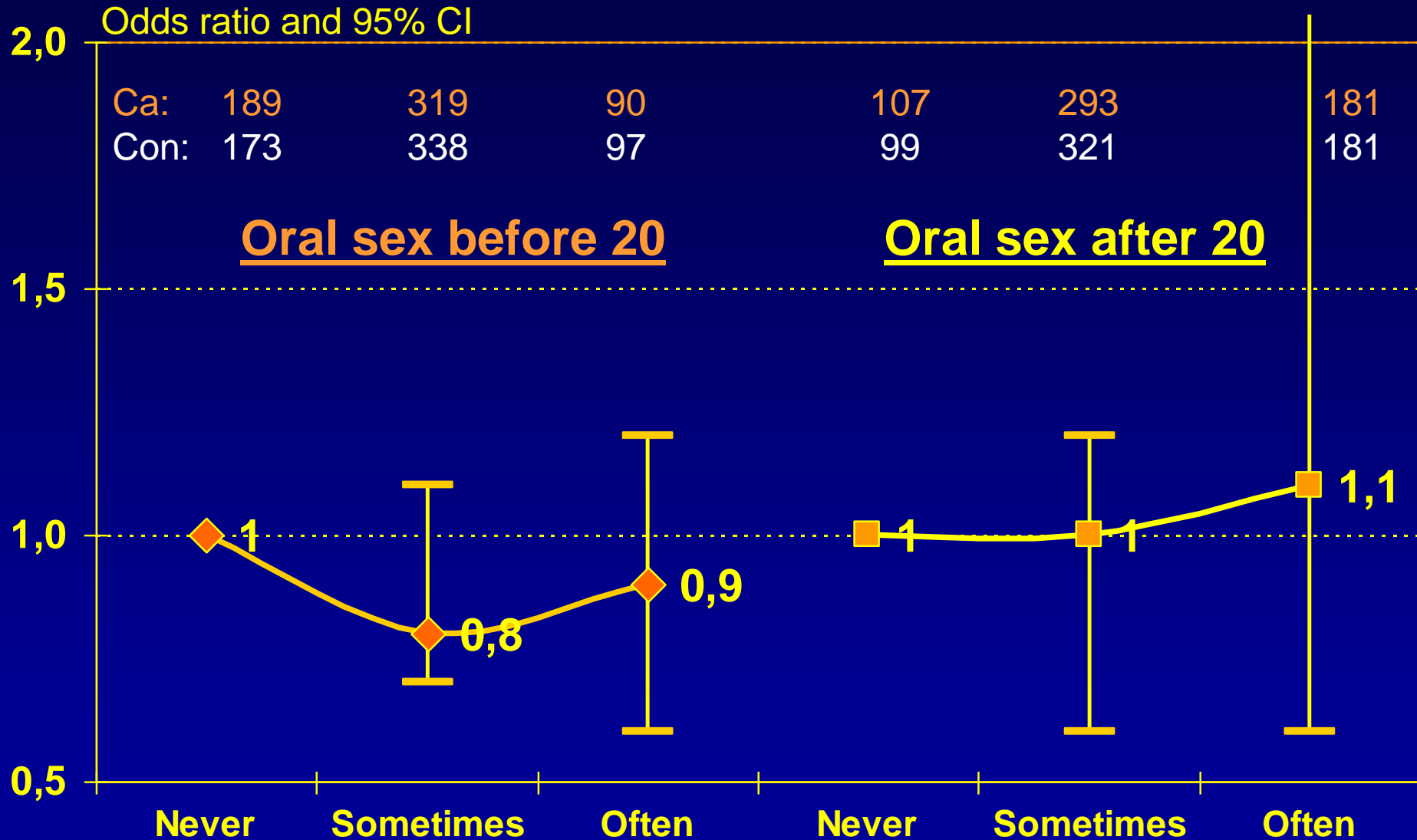
Sexual debut and risk of MS



Sexual partners and risk of MS



Oral sex and risk of MS



Anal sex and oral sperm exposure

