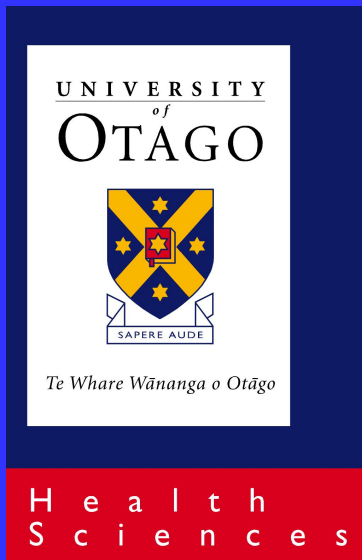


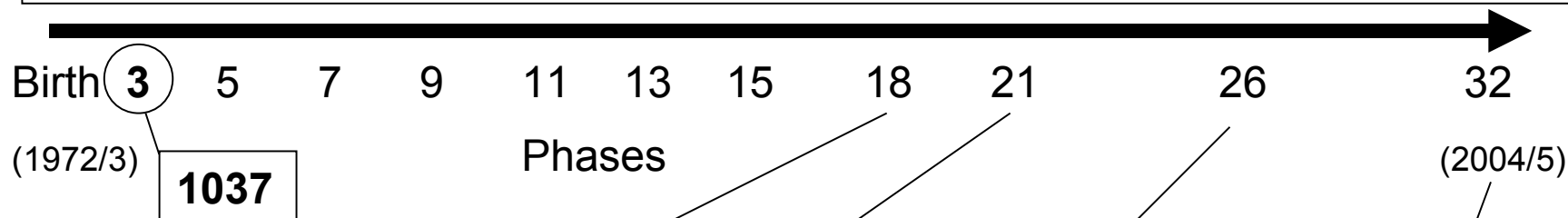
# Three brief reports from the Dunedin Multidisciplinary Health and Development Study



Nigel Dickson, Charlotte Paul,  
Thea van Roode, Peter Herbison  
Department of Preventive and  
Social Medicine,  
University of Otago Medical School

# Dunedin Multidisciplinary Health and Development Study

Perinatal, developmental, family, psychological, injuries, smoking, mental health, personality, asthma, blood pressure etc.



## **18yr (Phase 18)**

Sexual experience in past 12 months

## **21yr**

Sexual behaviour, STIs (HSV2 serology), 1<sup>st</sup> SI, sexual attraction, pregnancies.

Used Natsal 1990 questionnaire

## **26yr**

As per Phase 21yr  
+ opinions/attitudes, retrospective reports of CSA, more information on all pregnancies

**Computer presented questionnaire**

## **32yr**

As per Phase 21 & 26  
+ sexual dysfunction, satisfaction, recent unwanted experience, infertility

# Representativeness

- Slightly socio-economically advantaged
  - At age 26, 15% of cohort seen no school qualification, compared to 26% of general population of same age
  - Nevertheless all social strata involved
- Fewer Maori than in whole population

# Follow up

- “Very good”
  - 1037 children born in Dunedin still living there at age 3 and assessed
  - 1015 known survivors at Phase 32
  - 958 (94%) answered first question and 936 (92%) last question on sexual and reproductive health at P32

# #1. Child sexual abuse and persistence of risky sexual behaviours and negative sexual outcomes over time

Thea van Roode, Nigel Dickson,  
Peter Herbison, Charlotte Paul

Aim: To determine the association between child sexual abuse (CSA) and adult sexual behaviours and outcomes over three age periods.

# Measures of CSA

- Phase 26 using previously validated questions
- “Before you turned 16, did someone touch your genitals when you didn’t want them to?”
  - Similar questions were asked about...
    - forced to touch someone else’s genitals
    - attempted intercourse
    - completed intercourse
    - any ‘other’ unwanted sexual activity.
- Only contact abuse considered in this analysis
- Or if first SI “forced” at age <16 years

*Inadequate sample size to look at severity of CSA*

# Outcomes

- “Unhappy” pregnancies
  - “Did not want to get pregnant” + “rather/very unhappy”
- Abortions
- Self reported STIs
- HSV-2 incidence
- Number of sexual partners

*For three age periods:*

- *18-21y*
- *21-26y*
- *26-32y*

# Possible Confounders

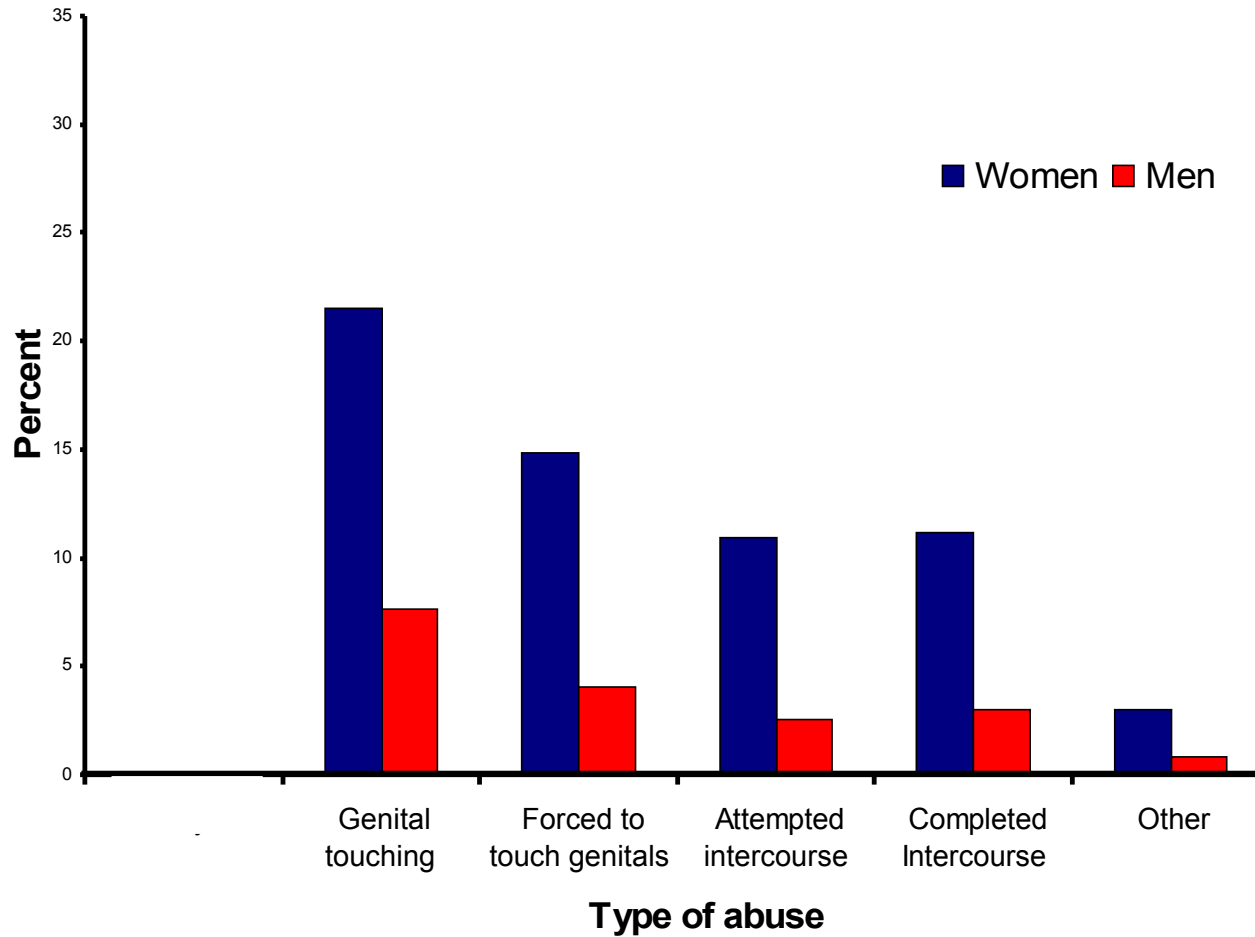
- Summary indicators of family environment from age 3 to 9yr
  - “Socioeconomic disadvantage”
    - SES, low maternal age at 1<sup>st</sup> pregnancy, maternal education, single parenting
  - “Poor family climate”
    - Within family social support, expressiveness of feeling, conflict, maternal depression, parental separation, other adverse family circumstances
  - “Harsh parent-child interaction”
    - Maternal rejection, egalitarianism, authoritarianism, consistency and strictness of discipline

# Analysis

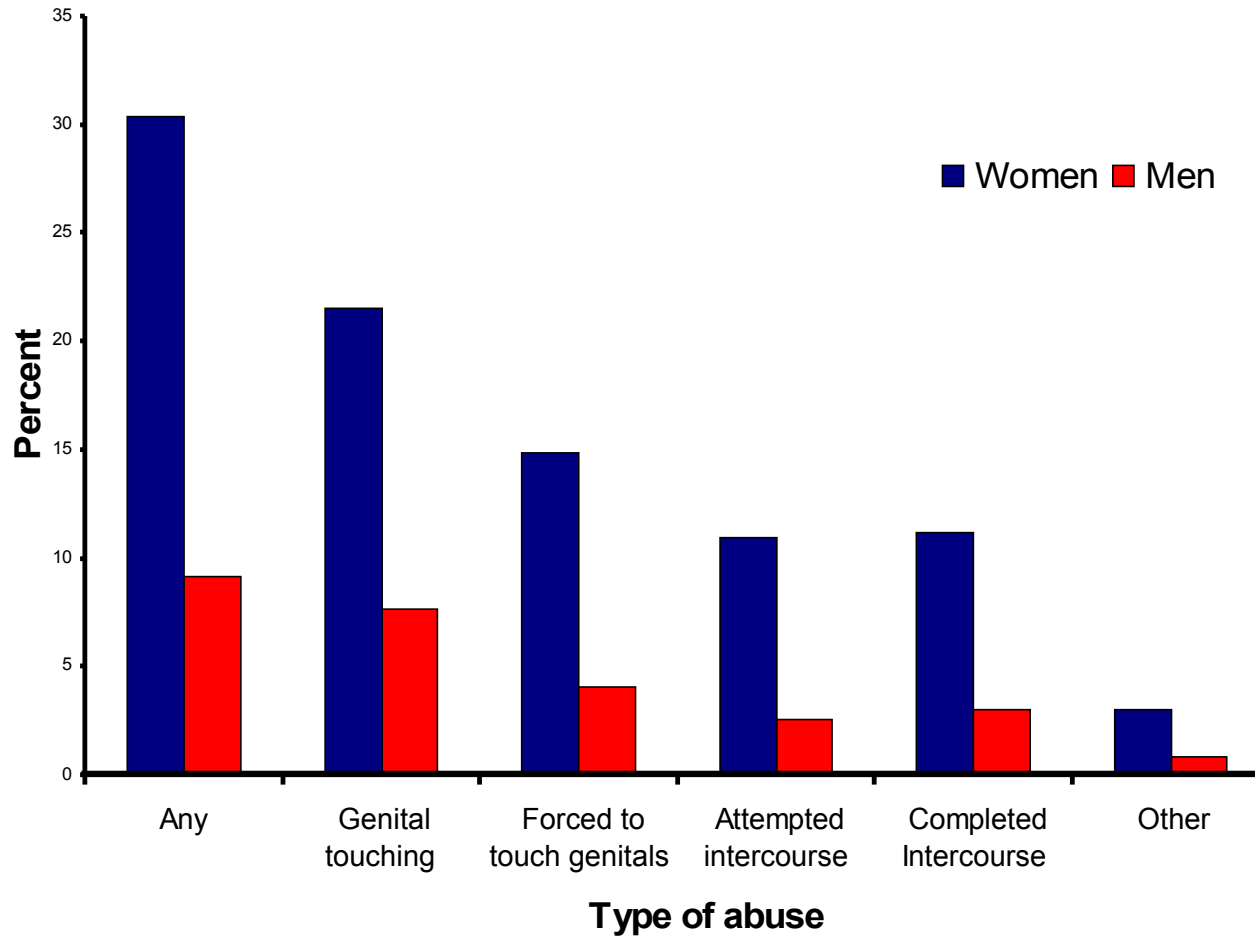
- Incidence rate among abused and non-abused
- Reported here comparisons...
  - incidence rate ratios (IRR)
    - rate among abused compared to rate among non-abused
  - 95% confidence interval around IRR
    - if does not include 1.0 unlikely a chance difference
  - “Adjusted” for confounders if deemed appropriate and possible



# Results



# Results



|       | Any CSA - Number (%) - by<br>Socioeconomic disadvantage score* |           |           |           | p-value<br>for trend |
|-------|--|-----------|-----------|-----------|----------------------|
|       | 0  | 1         | 2         | 3/4       |                      |
| Women | 26 (22.6)  | 54 (30.0) | 32 (30.5) | 26 (52.0) | 0.003                |
| Men   | 5 (4.5)  | 18 (9.9)  | 13 (10.4) | 6 (13.6)  | 0.184                |

\*SES, low maternal age at 1st pregnancy, maternal education, single parenting

No statistically significant relationships with CSA and  
“Poor family climate” or “Harsh parent-child interaction”



# Conclusions

- While little pervasive effect of CSA on these outcomes overall, clearer picture when examined by age period
  - Impact younger women – unwanted pregnancies, abortions, STIs
  - ... and - in terms of HSV2 and number of partners - on men aged 26-32 years
- Plan to look...
  - at association between CSA and positive relationships at age 32
  - Behaviour and STI risk between 32 and 38 (funding permitting)

# #2. Self reported sexually transmitted infections by age and sex

Charlotte Paul, Thea van Roode, Peter Herbison,  
Nigel Dickson,

Aim: To examine how incidence of self-reported sexually transmitted infections (STIs) varies by gender and age

# Methods - 1

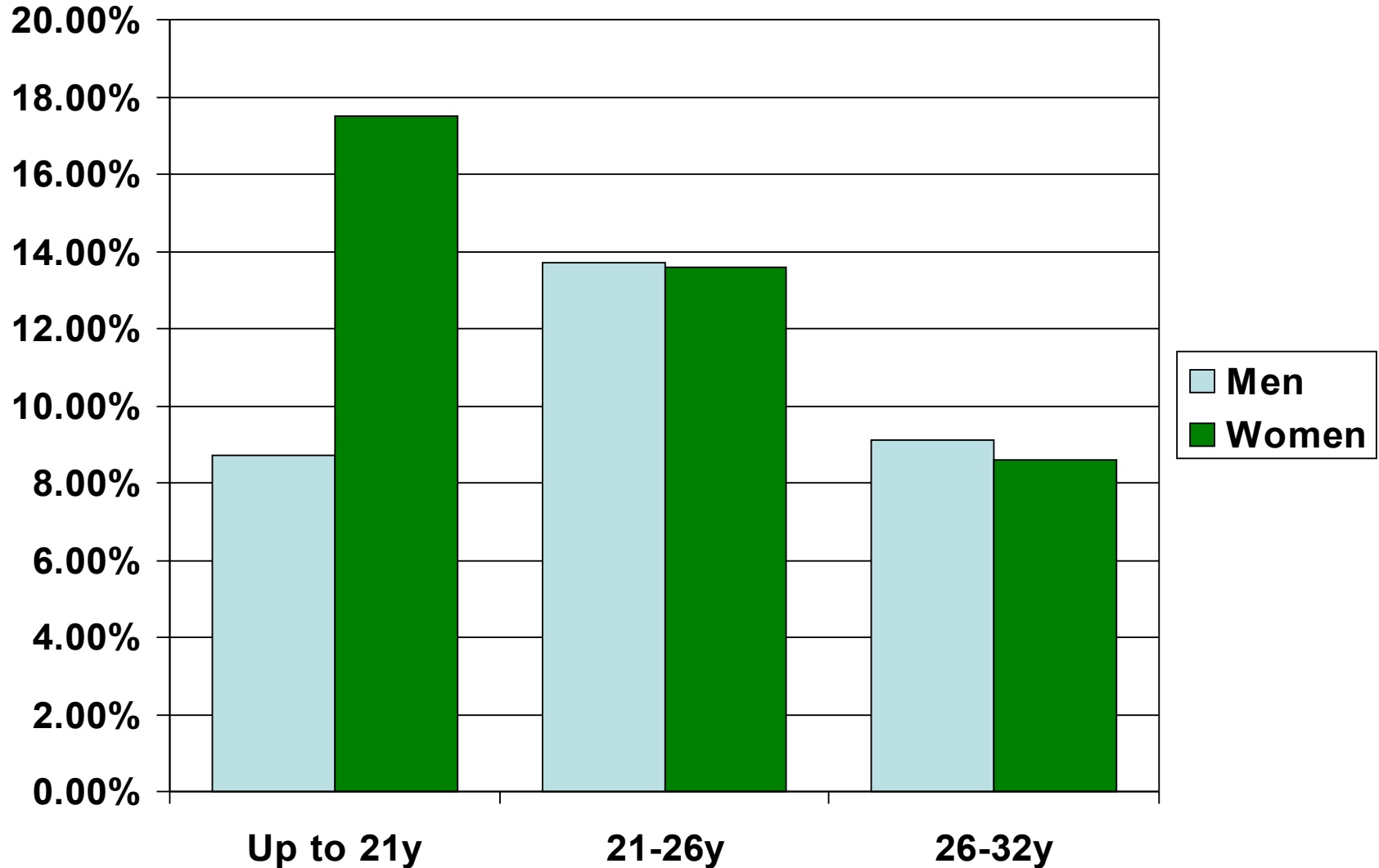
- Questions almost identical across assessments.
- Sexually experienced asked at age 21 if they had ever had one or more STIs and at ages 26 and 32 if an STI since the previous assessment.
- Conditions identified from a list of the common STIs
  - Candidiasis or scabies excluded from this analysis
- If “another STI” they could type the name or indicate problem it caused
- Asked if the STI was detected when attending (a) doctor for symptoms, (b) for another reason, or (c) because a sexual contact had an STI

## Methods - 2

- Questions on sexual activity based on 1990 Natsal
  - Number of sexual partners so far at age 21, in the past five years at age 26, and in the past six years at age 32,
    - Relative level of sexual experience of their last partner compared with themselves (fewer, more, or about the same number of sexual partners)
    - Concurrent sexual partners at the start of their last relationship
    - Frequency of condom use in last year grouped as 'always/usually' and 'sometimes/never'



# Proportion reporting one or more STI



## Number of sexually transmitted infections by type of infection over three time periods

|                         | Up to 21 years   |                  | Between 21 to 26 years |                  | Between 26 to 32 years |                  |
|-------------------------|------------------|------------------|------------------------|------------------|------------------------|------------------|
|                         | Men              | Women            | Men                    | Women            | Men                    | Women            |
|                         | n (%)            | n (%)            | n (%)                  | n (%)            | n (%)                  | n (%)            |
| <b>Chlamydia</b>        | <b>10 (26.3)</b> | <b>38 (42.7)</b> | <b>22 (31.0)</b>       | <b>19 (27.1)</b> | <b>14 (25.0)</b>       | <b>17 (42.5)</b> |
| <b>Genital warts</b>    | <b>20 (52.6)</b> | <b>30 (33.7)</b> | <b>23 (32.4)</b>       | 17 (24.3)        | <b>13 (23.2)</b>       | 8 (20.0)         |
| <b>Genital herpes</b>   | 4 (10.5)         | 13 (14.6)        | 17 (23.9)              | <b>24 (34.3)</b> | <b>13 (23.2)</b>       | <b>11 (27.5)</b> |
| <b>Gonorrhoea</b>       | 1 (2.6)          | 5 (5.6)          | 1 (1.4)                | 0 (0.0)          | 0 (0.0)                | 0 (0.0)          |
| <b>NSU</b>              | 1 (2.6)          | 0 (0.0)          | 1 (1.4)                | 1 (1.4)          | 0 (0.0)                | 0 (0.0)          |
| <b>Other/Not stated</b> | 2 (5.3)          | 3 (3.4)          | 7 (9.9)                | 9 (12.9)         | 16 (28.6)              | 4 (10.0)         |
| <b>Total</b>            | 38 (100.0)       | 89 (100.0)       | 71 (100.0)             | 70 (100.0)       | 56 (100.0)             | 40 (100.0)       |

## Reason for attendance at a health professional for people with sexually transmitted infections

|  | Up to 21yr       |                  | 21-26yr          |                  | 26- 32yr         |                  |
|--|------------------|------------------|------------------|------------------|------------------|------------------|
|  | Men<br>(N=416)   | Women<br>(N=416) | Men<br>(N=460)   | Women<br>(N=463) | Men<br>(N=472)   | Women<br>(N=465) |
|  | n (%)            | n (%)            | n (%)            | n (%)            | n (%)            | n (%)            |
| <b>Symptomatic</b>                       | <b>30 (78.9)</b> | <b>44 (49.4)</b> | <b>44 (62.0)</b> | <b>42 (60.0)</b> | <b>24 (42.9)</b> | <b>24 (60.0)</b> |
| <b>Contact with a person with an STI</b> | 5 (13.2)         | 14 (15.7)        | <b>18 (25.4)</b> | 5 (7.2)          | 10 (17.9)        | 5 (12.5)         |
| <b>Attending for another reason</b>      | 0 (0.0)          | <b>20 (22.5)</b> | 2 (2.8)          | <b>19 (27.1)</b> | 9 (16.1)         | <b>10 (25.0)</b> |
| <b>Can't remember</b>                    | /                | /                | 6 (8.5)          | 3 (4.3)          | 7 (12.5)         | 1 (2.5)          |
| <b>Other/Not stated</b>                  | 3 (7.9)          | 11 (12.4)        | 1 (1.4)          | 1 (1.4)          | 6 (10.7)         | 0 (0.0)          |
| <b>Total</b>                             | 38               | 89               | 71               | 70               | 56               | 40               |

Women

Age period

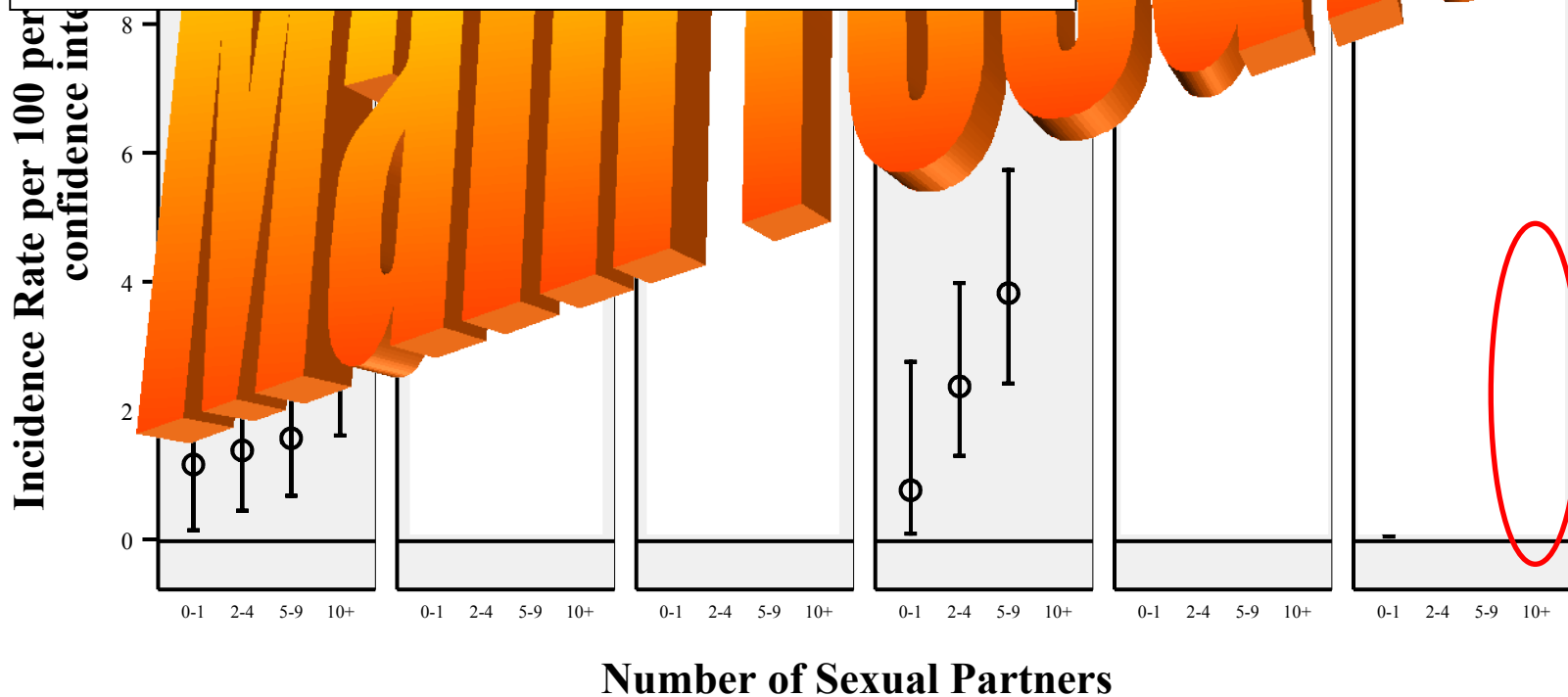
21-26

26-32

### Self reports

- Prevalence in partners
- Length of and sex in partnerships
- Risk of transmissison/acquistion

# Sexual Intercourse



# Summary of main findings

We found...

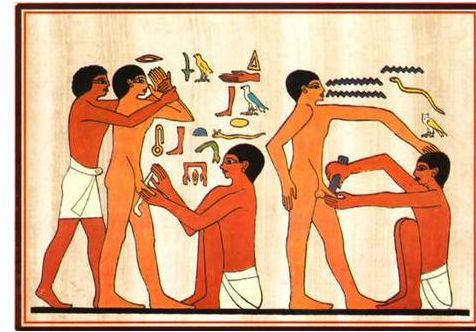
- Up to age 26yr is a time of special risk for women
- The age period 21-26 a time of special risk for men
- Surprisingly low rates for women with 10 or more partners between 26 to 32 years
  - applied to both bacterial and viral infections
  - Remained when removing screen detected (“attending for another reason”)
- Consistent with relative protection as a result of unrecognised prior infection

# #3. Early circumcision and risk of STIs

Nigel Dickson, Thea van Roode, Peter Herbison,  
Charlotte Paul

Aim: Does early childhood circumcision reduce the risk of men acquiring common STIs in New Zealand

# Background



- National surveys of sexual behaviour found no relationship between common STIs and circumcision (except candidiasis in Australia)

- US – 1990
- UK (Natsal) – 2000
- Australia – 2001

- In Christchurch Child Development Study report published in 2006 found a protective effect

- OR among uncircumcised of 3.1 (1.3-7.8)

“The population attributable risk for circumcision was 48.2% (95% CI:17.7%–60.9%), suggesting that if all of the cohort members were circumcised, the overall rate of STI would reduce by 48.2%.”

# Measurement of Exposure

- Circumcision by age 3yr reported by mother
  - 40.3% (87%  $\leq$  one month)



**Table I. Socioeconomic characteristics and sexual behavior by circumcision status**

|  | Circumcised, n (%) | Uncircumcised, n (%) | P value |
|--|--------------------|----------------------|---------|
| Socioeconomic characteristic                               |                    |                      |         |
| Childhood socioeconomic status (ages 0-15 years)           |                    |                      | .959    |
| Low  | 39 (19.4)          | 57 (19.3)            |         |
| Medium   | 132 (65.7)         | 192 (64.9)           |         |
| High   | 30 (14.9)          | 47 (15.9)            |         |
| Maternal education   |                    |                      | .334    |
| Low  | 130 (66)           | 204 (69.2)           |         |
| Medium   | 57 (28.9)          | 70 (23.7)            |         |
| High   | 10 (5.1)           | 21 (7.1)             |         |
| Participant's highest qualification (age 32 years)         |                    |                      | .699    |
| Low  | 65 (33)            | 101 (35.8)           |         |
| Medium   | 90 (45.7)          | 118 (41.8)           |         |
| High   | 42 (21.3)          | 63 (22.3)            |         |
| Subject's occupational socioeconomic status (age 32 years) |                    |                      | .94     |
| Low  | 59 (30)            | 87 (30.7)            |         |
| Medium   | 102 (51.8)         | 142 (50.2)           |         |
| High   | 36 (18.3)          | 54 (19.1)            |         |
| Sexual behavior  |                    |                      |         |
| Age, in years at first intercourse                         |                    |                      | .463    |
| <15  | 33 (16.4)          | 48 (16.1)            |         |
| 15-17  | 89 (44.3)          | 117 (39.3)           |         |
| ≥18  | 79 (39.3)          | 133 (44.6)           |         |
| Engaged in same-sex contact*                               |                    |                      |         |
| Up to age 21   | 4 (2.4)            | 17 (6.8)             | .073†   |
| Between ages 21 and 26                                     | 12 (6.2)           | 16 (5.8)             | .992†   |
| Between ages 26 and 32                                     | 9 (4.9)            | 16 (5.7)             | .844†   |
| Up to age 32   | 17 (9.1)           | 26 (9.3)             | .922†   |
| Condom use "usually" or "always" in previous 12 months‡    |                    |                      |         |
| Age 21 assessment  | 100 (63.3)         | 144 (60.3)           | .614†   |
| Age 26 assessment  | 79 (42.5)          | 103 (39)             | .523†   |
| Age 32 assessment  | 44 (24.2)          | 64 (25.2)            | .896†   |
| Mean number of sexual partners per annum                   |                    |                      |         |
| Up to age 21   | 2.3                | 2.1                  | .287    |
| Between ages 21 and 26                                     | 1.5                | 1.7                  | .19     |
| Between ages 26 and 32                                     | 1.1                | 1.2                  | .647    |
| Up to age 32   | 1.4                | 1.7                  | .047    |
| Total  | 201 (40.3)         | 298 (59.7)           |         |

Columns may not equal 100% because of rounding.

\*Each of the rows refers to

†Yates continuity correction

‡Each row refers to the proportion usually or always using condoms in the 12 months before the current assessment.

Moral/religious emphasis of family p=0.089

# Outcome

Self-reported STI by age 32yr based on cumulative reports at ages 21, 26 and 32 years

- 23.4%

**Table 2 Socioeconomic characteristics and sexual behaviour by self reports of STIs (one or more)**

| <b>Socioeconomic Characteristic</b>                   | <b>P-value</b>      |                  |                  |
|---|---------------------|------------------|------------------|
|   | <b>Up to age 21</b> | <b>Age 21-26</b> | <b>Age 26-32</b> |
| Childhood SES (0-15 years)                            | <b>NS</b>           |                  |                  |
| Maternal Education                                    |                     |                  |                  |
| Highest qualification (at 32)                         |                     |                  |                  |
| Own SES (at 32)                                       |                     |                  |                  |
| <b>Sexual behaviour</b>                               |                     |                  |                  |
| Age at first intercourse                              | <b>NS</b>           | 0.017            | 0.095            |
| Engaged in same sex contact*                          |                     | <b>NS</b>        | <b>NS</b>        |
| Condom use 'usually' or 'always' (in past 12 months)* |                     |                  |                  |
| Mean number of sexual partners*                       | 0.040               | 0.008            | 0.015            |

Any self-reported STI history 32

Primary Results

# Incidence rate and adjusted incidence rate ratio

|         | Incidence Rate<br>(per 1000 person-years) | Adj. IRR (95% CI) |
|---------|---|-------------------|
|         | <b>All STIs</b>                           |                   |
| Circ.   |   |                   |
| Uncirc. |   |                   |
|         | <b>Bacterial STIs</b>                     |                   |
| Circ.   |   |                   |
| Uncirc. |   |                   |
|         | <b>Viral STIs</b>                         |                   |
| Circ.   |   |                   |
| Uncirc. |   |                   |

# Incidence rate and adjusted incidence rate ratio

|         | Incidence Rate<br>(per 1000 person-years) | Adj. IRR (95% CI) |
|---------|---|-------------------|
|         | All STIs                                  |                   |
| Circ.   | 24.4                                      | Ref.              |
| Uncirc. | 23.4                                      | 0.96 (0.70-1.3)   |
|         | Bacterial STIs                            |                   |
| Circ.   | 6.5                                       | Ref.              |
| Uncirc. | 7.5                                       | 1.1 (0.64-2.0)    |
|         | Viral STIs                                |                   |
| Circ.   | 13.4                                      | Ref.              |
| Uncirc. | 12.3                                      | 0.91 (0.60-1.4)   |

- No clear reasons why our results different from Christchurch?
- Our study has same advantages and disadvantages
- Our previously published work shows serological evidence of HSV-2 infection at age 26 doesn't vary by circumcision status
- Our findings consistent with three large population based cross-sectional studies

# The future ...

## CSA

- Association with sexual relationships
- ? Still/more divergence in behaviour with increasing age

## STIs

- What are risks in older adults 32-38 years

## Circumcision and STIs

- Is the issue still alive?



# Acknowledge

- Participants in the DMHDS and their families
- Staff of the DMHDS
- Funding of Health Research Council of New Zealand

