

other causes, adjusted for competing causes, ( $q_{x,-\alpha}$ ) is therefore

$$q_{x,-\alpha} = \frac{d_{x,\alpha}}{l_x - \frac{1}{2} d_{x,\alpha}}$$

where  $d_x$  is the number of deaths in age interval ( $x, x + 1$ ) due to the cause  $\alpha$ ,  $d_{x,-\alpha}$  is the number of deaths in age interval ( $x, x + 1$ ) due to all other causes than  $\alpha$ , and  $l_x$  is the number of survivors to age  $x$  (of the all causes life table cohort). The life table cohort is at risk for this adjusted force of mortality from other causes until extinction.<sup>2</sup>

The expected life time costs at birth after elimination of cause  $\alpha$  ( $LEC_{-\alpha}$ ) are given by

$$LEC_{-\alpha} = \sum_x \left( \frac{C_{x,-\alpha}}{N_x} * L_{x,-\alpha} \right)$$

where  $C_{x,-\alpha}$  represents the costs in the age interval ( $x, x + 1$ ) made for all diseases other than  $\alpha$  and  $L_{x,-\alpha}$  gives the life years lived in the age interval ( $x, x + 1$ ) after elimination of cause  $\alpha$ .

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## First sexual intercourse: age, coercion, and later regrets reported by a birth cohort

Nigel Dickson, Charlotte Paul, Peter Herbison, Phil Silva

### Abstract

**Objectives:** To investigate how age at first sexual intercourse is related to the reported circumstances and to determine how these corresponded to views in early adulthood about its timing.

**Design:** Cross sectional study within a birth cohort using a questionnaire presented by computer.

**Setting:** Dunedin, New Zealand in 1993-4.

**Subjects:** 477 men and 458 women enrolled in the Dunedin Multidisciplinary Health and Development Study, comprising 92% of survivors of the cohort.

**Results:** The median age at first intercourse was 17 years for men and 16 years for women. Only one man (0.2%) but 30 (7%) women reported being forced to have intercourse on the first occasion. For women, there were increasing rates of coercion with younger age at first intercourse. More men than women reported that they and their partner were equally willing (77% (316/413) v 53% (222/419)). Mutual willingness of both partners was greater for those who reported that it was also the first time for their partner. Timing of first intercourse was considered about right by 49% (200/411) of men and 38% (148/388) of women. Many women (54% (211/388)) reported that they should have waited longer, and this rose to 70% (90/129) for women reporting intercourse before age 16.

**Conclusions:** Most women regretted having sexual intercourse before age 16. First intercourse at younger

ages is associated with risks that are shared unequally between men and women. This information is important to young people themselves.

### Introduction

In many developed countries, including New Zealand, there has been a substantial lowering of the age at first sexual intercourse over the past 30 years.<sup>1</sup> Early intercourse carries increased risks of sexually transmitted diseases and unwanted pregnancies, which may result in long term health and social disadvantages.<sup>2-3</sup>

Individual (physical and social) and societal factors influence adolescent sexual behaviour.<sup>4</sup> Children are exposed to sexual images through the media. Social and peer pressure may arise from the portrayal of sex as glamorous, pleasurable, and adult, while negative consequences and the responsibilities involved in sexual relationships are seldom portrayed.<sup>5</sup> Although more liberal attitudes of society have influenced the behaviour of the current generation of young people, few studies have considered the views of young people themselves about early intercourse<sup>4-8</sup> even though they have to bear the consequences.

The aim of our study was to investigate the circumstances of first sexual intercourse and to determine how these corresponded to views in early adulthood about its timing. Of interest was the extent of the differences in views between young men and women who reported similar sexual behaviour.

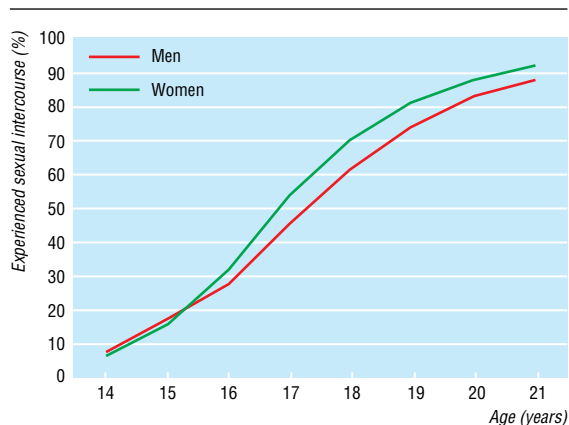
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Cumulative rates of reported age of first heterosexual intercourse among 477 men and 458 women

### Methods

Our subjects were enrolled in the Dunedin multidisciplinary health and development study, a longitudinal study of a cohort born in Dunedin in 1972-3, which has been described elsewhere.<sup>9</sup> At age 18 years, subjects were asked about their sexual behaviour in the previous 12 months, and, at age 21, were questioned more extensively about their sexual behaviour and attitudes. The subjects generally returned to Dunedin for this assessment, even if they were living overseas.

Many of the questions were based on the 1990 British national survey of sexual attitudes and lifestyles.<sup>6 7 10</sup> The subjects were presented with questions by computer and were informed that double

coding would make their responses anonymous. Those subjects who reported having had heterosexual intercourse were asked about their first experience. Subjects were also asked about occurrence of sexually transmitted diseases, as has been described elsewhere.<sup>11</sup>

To examine repeatability of reporting of age at first intercourse, we compared the responses made at the two assessments of the subjects who reported at the second assessment (at age 21) that they had had intercourse after the age at which they attended the first assessment (at age 18).

We compared answers with  $\chi^2$  tests by means of the statistical package Epi-Info.<sup>12</sup>

### Results

Of the 1037 members of the cohort formed at age 3 years, 935 (92%) of the 1020 survivors completed the questions on sexual behaviour at age 21. Of the 477 men, 419 (88%) reported having had heterosexual intercourse (two did not answer this question). Of the 458 women, 421 (92%) reported having had heterosexual intercourse. The median age of first intercourse was 17 years for men and 16 years for women. Of the men, 28% (129/469) reported having had intercourse at age 15 or less, as did 32% (145/457) of the women (figure). Eight men and one woman did not give an age. Among the subjects for whom such a comparison was possible, 94% (112/119) of men and 98% (183/187) of women were consistent in their reporting of age at first intercourse at the assessments for 18 year olds and 21 year olds.

Table 1 shows that, whereas 77% of men reported that they and their partners were "equally willing," only 53% of women reported this. Only one man (0.2%) but 7% of women reported that their first episode of intercourse was "forced." For women, but not for men, there was a tendency for those having earlier intercourse to be more likely to report being forced. For both sexes, with increasing age at first intercourse, more subjects reported that they and their partner were equally willing.

To determine whether gender differences in reported willingness were due to different ages of partners, we did an analysis restricted to those who reported the age of their first partner to be within one year of their own (table 2). In this subgroup there were few differences from the main cohort (table 1), and the differences between men and women were similar among those with earlier and later first intercourse. Hence age differentials did not seem to be driving the gender differences in reported willingness.

In contrast, an analysis restricted to men and women who reported that it was also their partners' first intercourse found no gender differences in reports of both being equally willing (table 3). There were much smaller differences between the proportion of men reporting themselves as more willing and the proportion of women reporting their partners as more willing, and vice versa, and these differences were not significant.

When asked to reflect on their first intercourse (excluding those who reported being forced, who were not asked), 16% of men but 54% of women reported that they "should have waited longer before having sex with anyone," while 11% of men but only 1% of women

**Table 1** Reported age at first sexual intercourse and willingness of respondent and first sexual partner (values are numbers (percentages))

Age (years)	Self more willing	Both equally willing	Partner more willing		Cannot remember or not stated
			Self also willing or persuaded	Self forced	
<b>Men</b>					
≤13 (n=35)	3 (9)	24 (69)	4 (11)	0	4 (11)
14-15 (n=94)	9 (10)	70 (75)	6 (6)	0	9 (10)
16-17 (n=159)	11 (7)	119 (75)	23 (15)	1 (1)	5 (3)
18-19 (n=101)	8 (8)	81 (80)	8 (8)	0	4 (4)
20-21 (n=24)	1 (4)	22 (92)	1 (4)	0	0
Total (n=413)	32 (8)	316 (77)	42 (10)	1 (<1)	22 (5)
<b>Women</b>					
≤13 (n=28)	0	9 (32)	12 (43)	7 (25)	0
14-15 (n=117)	0	59 (50)	42 (36)	9 (8)	7 (6)
16-17 (n=175)	2 (1)	91 (52)	62 (35)	13 (7)	7 (4)
18-19 (n=80)	3 (4)	50 (63)	25 (31)	1 (1)	1 (1)
20-21 (n=19)	0	13 (68)	6 (32)	0	0
Total (n=419)	5 (1)	222 (53)	147 (35)	30 (7)	15 (4)

**Table 2** Reported willingness at first sexual intercourse of respondent and sexual partner, who was reported to be the same age (within 1 year), by age at first intercourse. (Values are numbers (percentages))

	Age at first intercourse			
	≤15 years		≥16 years	
	Men (n=81)	Women (n=49)	Men (n=195)	Women (n=150)
Self more willing	10 (12)	0	14 (7)	3 (2)
Both equally willing	62 (77)	29 (59)	149 (76)	83 (55)
Partner more willing	3 (4)	17 (35)	27 (14)	60 (40)
Cannot remember	6 (7)	3 (6)	5 (3)	4 (3)

reported that they “should not have waited so long” (table 4). There was also a marked gender difference in those who responded “don’t know or no opinion.” For women only, those who first had sex at younger ages were more likely to say that they should have waited longer. For both sexes, subjects who were older at first intercourse were more likely to report that it was about the right time. But the proportion of men who thought that they waited too long was not related to age.

Being “curious about what it would be like” was the commonest reason given by both sexes for first intercourse (table 5). Fewer men than women reported the main reason as being “carried away by [their] feelings” or being “in love,” and more men than women reported that they “wanted to lose [their] virginity.” Ten per cent of both sexes reported the main reason as being “a bit drunk at the time,” and more reported alcohol as being one factor. Men who first had intercourse under the age of 16 were significantly more likely to report the main reason to be curiosity, and less likely to report being in love, than later initiators. Women who first had intercourse under age 16 were more likely to report the main reason to be that “most people of [their] age were doing it” and were also less likely to report being in love than later initiators.

More men had “just met [their partner] for the first time,” and fewer were in a “steady relationship.” Similarly, more men reported having had sex only once with their first partner, and for fewer men the relationship continued for more than one year. For half the men but 30% of women, first intercourse happened “on the spur of the moment.” Men were more likely to be the same age or older than their first partner, and women more likely to be younger. First intercourse before age 16 for men was more commonly associated with a transient relationship than later intercourse, and less commonly associated with alcohol consumption. For women, these factors did not seem to be age related.

There were differences in the circumstances of first intercourse between those who reported that it was also their partner’s first time and the remainder. The former group were more likely to be in a “steady relationship” (54% *v* 24% for men, 84% *v* 41% for women), more likely to have planned the event with their partner (21% *v* 5% for men, 28% *v* 10% for women), less likely to have been influenced by alcohol (17% *v* 28% for men, 9% *v* 23% for women), and less likely to have no subsequent relationship (23% *v* 47% for men, and 11% *v* 29% for women).

Sexually transmitted diseases were reported by 13% of men who first had intercourse under 16 years old and by 6% of later initiators. The corresponding proportions for women were 28% and 12%.

**Table 3** Reported willingness at first sexual intercourse of respondent and of sexual partner for whom it was also the first intercourse. (Values are numbers (percentages))

	Men (n=123)	Women (n=86)
Self more willing	13 (11)	1 (1)
Both equally willing	100 (81)	68 (79)
Partner more willing	7 (6)	16 (19)
Cannot remember	3 (2)	1 (1)

**Table 4** Men’s and women’s views, at age 21, of timing of their first sexual intercourse (excluding those who reported being “forced” in first intercourse). (Values are numbers (percentages))

Age at first intercourse (years)	Should have waited longer	About right	Should not have waited so long	Don’t know or no opinion
<b>Men</b>				
≤13 (n=35)	F8 (23)	12 (34)	4 (11)	11 (31)
14–15 (n=94)	15 (16)	40 (43)	9 (10)	30 (32)
16–17 (n=157)	21 (13)	79 (50)	18 (12)	39 (25)
18–19 (n=101)	18 (18)	55 (55)	8 (8)	20 (20)
20–21 (n=24)	2 (8)	14 (58)	4 (17)	4 (17)
Total (n=411)	64 (16)	200 (49)	43 (11)	104 (25)
<b>Women</b>				
≤13 (n=22)	16 (73)	2 (9)	0	4 (18)
14–15 (n=107)	74 (69)	28 (26)	0	5 (5)
16–17 (n=162)	91 (56)	61 (38)	1 (1)	9 (6)
18–19 (n=78)	23 (30)	47 (60)	2 (3)	6 (8)
20–21 (n=19)	F7 (37)	10 (53)	0	2 (11)
Total (n=388)	211 (54)F	148 (38)	3 (1)	26 (7)

## Discussion

In our study the median age at first intercourse was lower for women than for men; being “forced” at first intercourse was more common for women, especially girls who had intercourse before age 14; and reported mutual willingness at first intercourse and views on whether the timing was right differed substantially between men and women.

These findings are similar to what is known about recent sexual behaviour in Britain. Median age at first intercourse for the New Zealand women (16 years) was lower than for British women (17 years), while the age for men was the same (17 years).<sup>6,7</sup> Convergence between men and women in age at first intercourse has been reported for younger cohorts in Britain.<sup>6,7</sup> In New Zealand we have observed a crossover in the past 20 years, with more women than men now having first intercourse before age 18.<sup>1</sup> This has also been observed in Norway<sup>13</sup> and Sweden<sup>14</sup> but not in the United States.<sup>15</sup>

Being forced at first intercourse was reported less commonly by women of all ages in the British national survey (2%)<sup>6,7</sup> compared with our study (7%) or the American national survey (4%).<sup>4</sup> This may reflect cultural differences, but that fewer American women in younger cohorts wanted first intercourse to happen when it did suggests an increase in coercion in younger cohorts or at younger ages at first intercourse. Differences between men’s and women’s accounts of mutual willingness and timing were also more extreme in New Zealand than in Britain.<sup>6,7</sup> Our results suggest that such differences may become greater in younger cohorts in Britain in the future.

### Reliability of study

There are advantages in our sample and methods, including an unusually high response<sup>16</sup>; computer presentation, which seems to facilitate disclosure<sup>17</sup>; and the chance to check the repeatability of some responses at ages 18 and 21. Moreover, comparison of the responses at age 18 with national survey findings supports the likelihood of greater disclosure.<sup>18</sup>

Views of appropriateness of timing and willingness may be influenced by biased reporting. Respondents’ conforming to social expectations should have been

**Table 5** Factors and circumstances reported to be associated with first sexual intercourse by to gender and age at first intercourse (excluding those who reported being "forced" in first intercourse). (Values are numbers (percentages) unless stated otherwise)

Main factor	Age at first sexual intercourse (years)							
	Men				Women			
	All ages	≤15	≥16	P value*	All ages	≤15	≥16	P value*
	n=409	n=129	n=280		n=387	n=129	n=258	
Curious about what it would be like	141 (35)	57 (44)	84 (30)	0.007	105 (27)	38 (30)	67 (26)	0.54
Carried away by my feelings	25 (6)	9 (7)	16 (6)	0.78	51 (13)	17 (13)	34 (13)	0.87
Most people of my age group doing it	14 (3)	3 (2)	11 (4)	0.56	22 (6)	12 (9)	10 (4)	0.052
Seemed like natural follow on in relationship	58 (14)	12 (9)	46 (16)	0.077	62 (16)	19 (15)	43 (17)	0.73
I was a bit drunk at the time	42 (10)	12 (9)	30 (11)	0.79	40 (10)	13 (10)	27 (11)	0.95
I wanted to lose my virginity	56 (14)	17 (13)	39 (14)	0.96	18 (5)	5 (4)	13 (5)	0.80
I was in love	42 (10)	7 (5)	35 (13)	0.044	63 (16)	12 (9)	51 (20)	0.013
None of the above apply	23 (6)	8 (6)	15 (5)	0.91	17 (4)	6 (5)	11 (4)	0.93
Cannot remember	8 (2)	4 (3)	4 (1)	0.26	9 (2)	7 (5)	2 (1)	0.008
<b>Any factor (multiple responses possible)</b>	n=412	n=129	n=283		n=390	n=130	n=260	
Curious about what it would be like	242 (59)	78 (61)	164 (58)	0.71	225 (58)	81 (62)	144 (55)	0.23
Carried away by my feelings	50 (12)	13 (10)	37 (13)	0.48	68 (17)	20 (15)	48 (19)	0.54
Most people of my age group doing it	86 (21)	19 (15)	67 (24)	0.052	82 (21)	31 (24)	51 (20)	0.38
Seemed like natural follow on in relationship	111 (27)	19 (15)	92 (33)	<0.001	115 (30)	27 (21)	88 (34)	0.012
I was a bit drunk at the time	103 (25)	23 (18)	80 (28)	0.032	78 (20)	24 (19)	54 (21)	0.69
I wanted to lose my virginity	124 (30)	44 (34)	80 (28)	0.28	62 (16)	18 (14)	44 (17)	0.52
I was in love	70 (17)	12 (9)	58 (21)	0.008	108 (28)	23 (18)	85 (33)	0.003
None of the above apply	23 (6)	11 (9)	12 (4)	0.13	30 (8)	14 (11)	16 (6)	0.16
Cannot remember	17 (4)	9 (7)	8 (3)	0.090	8 (2)	7 (5)	1 (<1)	0.002
<b>Length of subsequent sexual relationship</b>	n=404	n=124	n=280		n=380	n=124	n=256	
Only once with first partner	163 (40)	63 (51)	100 (36)	0.006	98 (26)	37 (30)	61 (24)	0.26
Continued for <3 months	84 (21)	30 (24)	54 (19)	0.32	89 (23)	27 (22)	62 (24)	0.69
Continued for 3-12 months	69 (17)	16 (13)	53 (19)	0.18	71 (19)	30 (24)	41 (16)	0.076
Continued, but ended after >12 months	38 (9)	12 (10)	26 (9)	0.91	61 (16)	19 (15)	42 (16)	0.90
Still continuing (at 21 year assessment)	50 (12)	3 (2)	47 (17)	<0.001	61 (16)	11 (9)	50 (20)	0.012
<b>Nature of relationship</b>	n=396	n=127	n=269		n=390	n=130	n=260	
Prostitute	7 (2)	1 (1)	6 (2)	0.44	0	0	0	
Just met for first time	45 (11)	10 (8)	35 (13)	0.18	25 (6)	5 (4)	20 (8)	0.21
Met recently	72 (18)	31 (24)	41 (15)	0.039	49 (13)	23 (18)	26 (10)	0.046
Knew each other, but not in a steady relationship	138 (35)	56 (44)	82 (31)	0.011	106 (27)	43 (33)	63 (24)	0.08
Steady relationship at the time	134 (34)	29 (23)	105 (39)	0.009	197 (50)	54 (42)	143 (55)	0.016
Living together (but not engaged or married)	0	0	0		4 (1)	4 (3)	0	0.012
Married	0	0	0		3 (1)	0	3 (1)	0.55
Other	0	0	0		6 (2)	1 (1)	5 (2)	0.67
<b>Circumstances</b>	n=410	n=129	n=281		n=387	n=130	n=257	
Happened on spur of the moment	203 (50)	64 (50)	139 (50)	0.94	117 (30)	45 (35)	72 (28)	0.22
I expected it to happen, but was not sure when	100 (24)	36 (28)	64 (23)	0.32	142 (37)	46 (35)	96 (37)	0.79
I expected it to happen at that time	25 (6)	4 (3)	21 (8)	0.13	38 (10)	12 (9)	26 (10)	0.92
I planned it to happen at that time	13 (3)	3 (2)	10 (4)	0.76	18 (5)	5 (4)	13 (5)	0.78
We planned it together beforehand	40 (10)	9 (7)	31 (11)	0.27	54 (14)	14 (11)	40 (15)	0.16
Cannot remember	29 (7)	13 (10)	16 (6)	0.16	18 (5)	8 (6)	10 (4)	0.46
<b>Partner's sexual experience</b>	n=414	n=129	n=285		n=389	n=129	n=260	
Partner's first time also	123 (30)	38 (30)	85 (30)	0.97	85 (22)	23 (18)	62 (24)	0.22
Think it was partner's first time	31 (8)	11 (9)	20 (7)	0.73	17 (4)	7 (5)	10 (4)	0.65
Think it was not partner's first time	26 (6)	11 (9)	15 (5)	0.24	21 (5)	8 (6)	13 (5)	0.80
Not partner's first time	191 (46)	46 (36)	145 (51)	0.006	243 (63)	84 (64)	159 (61)	0.52
Don't know	43 (10)	23 (18)	20 (7)	0.002	23 (6)	7 (5)	16 (6)	0.95
<b>Partner's age</b>	n=410	n=128	n=282		n=388	n=129	n=259	
Partner ≥2 years younger	34 (8)	0	34 (12)	<0.001	1 (<1)	0	1 (<1)	0.99
Partner same age or within 1 year	276 (67)	81 (63)	195 (69)	0.29	189 (49)	45 (35)	144 (56)	<0.001
Partner 2-4 years older	76 (19)	40 (31)	36 (13)	<0.001	147 (38)	65 (50)	82 (32)	<0.001
Partner ≥5 years older	24 (6)	7 (6)	17 (6)	0.99	52 (13)	19 (15)	33 (13)	0.70

\*Comparison between those who experienced first intercourse when aged ≤15 years and those who experienced it when ≥16 years.

minimised by the use of a computer presentation and anonymity. Gender based stereotyping in reported willingness is possible but is unlikely to be the main explanation because we found few gender differences in willingness for those who reported it was also the first time for their partner. Moreover, views constructed several years after first intercourse should not be construed simply as rationalisation of past events but,

as Giddens suggests, as part of the narrative reconstruction of the past within which we make sense of our lives.<sup>19</sup> What happens after first intercourse may be more important than what happens at the time in influencing subsequent regret. Considerably more young men than women were unable to give an opinion about past events, suggesting less reflection by young men, as others have found.<sup>20</sup>

## Key messages

- We questioned a cohort of young New Zealand adults about the circumstances of their first sexual intercourse and their views about the timing of first intercourse
- Median age at first intercourse was 17 years for men and 16 years for women.
- Being forced at first intercourse was commonly reported by women, especially those who experienced intercourse before age 14, and most women who had intercourse before age 16 reported that they should have waited longer
- More men than women said that both they and their partner were equally willing at first intercourse, and reporting of equal willingness was greater among those who reported that it was also the first sexual intercourse for their partner
- As well as pronounced gender differences in mutual willingness and retrospective views of appropriate timing, more women reported occurrence of sexually transmitted disease, especially among those who had intercourse before age 16

## Gender differences

Discrepancies between the interpretation of apparently similar events by young men and women were considerable. We found that 77% of men but only 53% of women claimed they were as equally willing as their partner at first intercourse, suggesting that, at younger ages, a gender difference in reported willingness remains despite convergence in behaviour. There are, however, difficulties in interpreting men's and women's reporting of their partner's willingness in a population sample. Only among those for whose partner it was also first intercourse could the accounts possibly match. In this subgroup the differences between men and women in reported willingness were much smaller. Though this is reassuring, the men and women who reported that their partner was also inexperienced were a special group who differed in other ways from the rest of the sample. It is not possible to sort these effects out, but is noteworthy that, for women, an inexperienced partner was associated with greater mutual willingness at any age at first intercourse up to 20 years.

Feelings about the timing of first intercourse also varied greatly by gender, especially for those reporting first intercourse before age 16. This was not obviously related to the reasons given for first intercourse. The explanation for the apparent divergence of views of timing of first intercourse in this generation needs further examination. One factor may be that young women who reported having intercourse before age 16 were more likely to have an older partner. One implication of these findings is that earlier first intercourse is associated with risks that are shared unequally between young men and women. As well as pronounced gender differences in mutual willingness and retrospective views of appropriate timing, we found greater absolute differences in reported occurrence of sexually transmitted diseases in those reporting early intercourse.

The risks of early and unwanted pregnancies are also borne by women.

It is unclear whether young age at first intercourse was itself responsible for the lack of willingness and subsequent regret reported by many young women. Whatever the explanation, these results show that a substantial proportion of young women regret early intercourse. These findings need to be considered by young people themselves.

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