

## RESEARCH REPORT

## Changes in the circumstances of young mothers in Britain: 1990 to 2000

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**Objectives:** To assess changes between 1990 and 2000 in the circumstances of women who became mothers before the age of 18.

**Design:** Two cross sectional probability sample surveys of the general population carried out in 1989–1991 (Natsal 1990) and 1999–2001 (Natsal 2000).

**Setting:** British households.

**Participants:** Women aged 18 to 27 years at time of survey (Natsal 1990: 2575, Natsal 2000: 1757).

**Main outcome measures:** Educational attainment, participation in education/work or training, living in social housing, social class, living as lone adult, parity, ill health, and health related behaviours at the time of the interview.

**Results:** The proportion of women who were sexually active before 18 increased between 1990 and 2000 from 58.9% to 71.3% ( $p < 0.0001$ ). There was no significant change in the proportion who had a child before the age of 18 (4.7% in 1990, 5.3% in 2000,  $p = 0.390$ ). The proportion who had attained no educational qualifications and were not participating in education/work or training was significantly lower in 2000 than in 1990 for all women aged 18–27, but higher among those who were mothers before age 18, although the relative difference was not statistically significant. The proportion living in social housing or reporting a recent long term illness at time of interview was higher and this trend was more pronounced among women who did not experience motherhood before 18 than those who did, but the differences between these groups of women were not statistically significant.

**Conclusion:** Motherhood before the age of 18 continues to be related to a variety of adverse circumstances in adult life, including lack of educational attainment, not being in education/work or training, lone parenthood, and a reduced likelihood of home ownership. There is little evidence of improvement in the circumstances of young mothers between 1990 and 2000 despite improvements in life chances among young women in general.

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A substantial body of evidence has accumulated showing that, despite the benefits of having a child, early motherhood is associated with a range of adverse social and economic consequences<sup>1–6</sup> and with negative health outcomes for both mother and child.<sup>7–11</sup> There is less evidence as to how these outcomes have changed over time. Trends in the circumstances of young mothers are of specific interest in the context of the English Teenage Pregnancy Strategy initiated in 2000, which aims expressly to reduce social exclusion among young mothers who conceived before age 18, by increasing levels of education, participation, material circumstances, psychosocial support, and physical and psychological wellbeing. The purpose of this analysis is to examine changes in the circumstances of women experiencing early childbirth during distinct time periods using data from two national surveys of sexual attitudes and lifestyles conducted 10 years apart.<sup>12–14</sup> We compare the circumstances in 1980s and the 1990s of young mothers who had a child before the age of 18 with those of their contemporaries who did not, with a specific focus on relative likelihood of adverse circumstances.

## METHODS

The national surveys of sexual attitudes and lifestyles (Natsal 1990 and Natsal 2000) are stratified probability sample surveys of the general population resident in Britain. Details of the methodology and question wording are published elsewhere.<sup>12–16</sup> Briefly, 18 876 men and women aged 16 to 59

were interviewed for Natsal 1990, and 11 161 men and women aged 16 to 44 for Natsal 2000. The response rate in Natsal 1990 was 66.8% and in Natsal 2000 65.4%. To examine changes occurring between 1990 and 2000, we restricted these analyses to women aged 18 to 27 years (Natsal 1990: 2575, Natsal 2000: 1757) thereby excluding women who could have participated in both surveys.

Respondents were interviewed in their homes by trained interviewers using a combination of face to face computer assisted personal interviews and computer assisted self interviews in Natsal 2000, while the Natsal 1990 survey used face to face interviews and pen and paper self completion questionnaires. We used questions with identical wording in the two surveys to examine the social, educational, and health related circumstances of the participants at the time of the survey.

As the aim of the English government's teenage pregnancy strategy is to reduce the under 18 conception rate, we categorised the women according to whether or not they had been sexually active before 18 years of age, and whether or not they had given birth before the age of 18 years to examine the circumstances for women according to their early sexual and reproductive history.

Variables have been selected to examine the circumstances relating to four different domains—that is, educational attainment and participation in education, work or training; material circumstances; relationship and family formation; and health status. We constructed a measure of participation

**Table 1** Outcomes for women aged 18 to 27 according to whether or not they experienced motherhood before the age of 18, and whether or not they had sexual intercourse before 18. Figures are percentages unless otherwise stated

Circumstances at time of survey	Natsal 1990			Natsal 2000			Overall difference between 1990 and 2000	P Value
	Sexual intercourse before 18 years			Sexual intercourse before 18 years				
	Yes			Yes				
	No	Yes	All	No	Yes	All		
Base: unweighted/weighted	1028/1016	166/116	2575/2475	510/465	1136/1069	1757/1619		
Proportion	0.41 (0.39, 0.43)	0.05 (0.04, 0.06)	100	0.29 (0.26, 0.31)	0.66 (0.63, 0.69)	100	<0.0001	
Age (mean (SE))	23.1 (0.10)	22.2 (0.26)	22.7 (0.07)	22.7 (0.16)	22.6 (0.10)	22.6 (0.08)	0.490	
<b>Education and participation</b>							0.006	
Highest academic qualification							0.0001	
A level or higher	47.1 (43.6, 50.7)	7.0 (3.5, 13.5)	37.6 (35.4, 40.0)	56.4 (51.1, 61.4)	39.4 (36.0, 42.9)	42.5 (39.5, 45.4)		
O level/GCSE/other	44.0 (40.6, 47.6)	46.8 (38.6, 55.1)	49.2 (46.9, 51.4)	38.8 (33.8, 43.9)	51.1 (47.6, 54.5)	47.3 (44.4, 50.2)		
None	8.8 (7.0, 11.1)	46.2 (38.1, 54.6)	13.2 (11.8, 14.8)	4.9 (3.3, 7.1)	9.5 (7.8, 11.5)	10.2 (8.8, 11.9)		
<b>In education/work/training</b>							0.788	
Yes	78.1 (75.3, 80.6)	29.9 (22.1, 39.1)	70.8 (68.7, 72.8)	86.5 (82.9, 89.4)	76.9 (74.3, 79.4)	77.0 (74.7, 79.1)		
No	21.9 (19.4, 24.7)	70.1 (60.9, 77.9)	29.2 (27.2, 31.3)	13.5 (10.6, 17.1)	23.1 (20.6, 25.7)	23.0 (20.9, 25.3)		
<b>Material circumstances</b>							0.102	
Tenure							0.054	
Council/housing association	18.5 (16.0, 21.2)	65.2 (56.1, 73.3)	25.2 (23.2, 27.4)	18.4 (14.9, 22.4)	25.3 (22.6, 28.1)	25.6 (23.4, 28.1)		
Other	81.5 (78.8, 84.0)	34.8 (26.7, 43.9)	74.8 (72.6, 76.8)	81.6 (77.6, 85.1)	74.7 (71.9, 77.4)	74.4 (71.9, 76.6)		
<b>Social class</b>							0.068	
I/II	28.7 (25.2, 32.5)	6.5 (2.4, 16.6)	23.3 (21.2, 25.6)	25.3 (21.0, 30.2)	21.5 (18.9, 24.4)	21.6 (19.4, 24.0)		
III non-manual/manual	53.1 (48.9, 57.2)	24.7 (13.9, 40.0)	53.6 (51.0, 56.1)	52.2 (46.8, 57.6)	53.6 (50.2, 57.0)	52.7 (49.8, 55.4)		
IV/V	17.1 (14.2, 20.4)	49.1 (36.2, 62.1)	21.6 (19.6, 23.8)	21.6 (17.4, 26.4)	24.3 (21.5, 27.3)	24.8 (22.4, 27.3)		
unemployed	1.2 (0.6, 2.3)	19.7 (12.4, 29.7)	1.5 (1.1, 2.1)	0.9 (0.3, 2.4)	0.5 (0.2, 1.2)	0.9 (0.5, 1.6)		
<b>Family relationships and parity</b>							0.744	
Currently living as lone adult							0.0003	
No	91.0 (89.0, 92.7)	66.3 (57.9, 73.7)	87.9 (86.5, 89.1)	91.3 (89.0, 93.1)	85.4 (83.4, 87.1)	86.0 (84.4, 87.4)		
Yes	9.0 (7.3, 11.0)	33.7 (26.3, 42.1)	12.1 (10.9, 13.5)	8.7 (6.9, 11.0)	14.6 (12.9, 16.6)	14.0 (12.6, 15.6)		
<b>Number of children</b>							0.006	
0	75.6 (72.7, 78.3)	0.0	66.1 (63.9, 68.2)	84.7 (80.9, 87.9)	69.0 (66.0, 71.8)	69.9 (67.4, 72.2)		
1	14.8 (12.7, 17.1)	37.2 (29.2, 45.8)	19.2 (17.6, 20.9)	8.8 (6.5, 11.8)	20.5 (18.1, 23.1)	17.9 (16.0, 19.9)		
2	7.7 (6.2, 9.4)	34.5 (27.1, 42.7)	10.8 (9.7, 12.0)	6.2 (4.2, 9.0)	8.2 (6.7, 9.9)	9.2 (7.9, 10.7)		
3+	2.0 (1.3, 2.9)	28.4 (21.4, 36.5)	4.0 (3.3, 4.8)	0.3 (0.1, 1.6)	2.4 (1.6, 3.4)	3.1 (2.4, 4.0)		
<b>Health related factors</b>							0.0006	
Smoking							0.744	
Non/former smoker	73.5 (70.4, 76.4)	32.2 (24.9, 40.4)	58.4 (56.2, 60.6)	78.8 (74.4, 82.7)	50.2 (46.9, 53.5)	57.8 (55.0, 60.5)		
Current smoker	26.5 (23.6, 29.6)	67.8 (59.6, 75.1)	41.6 (39.4, 43.8)	21.2 (17.3, 25.6)	49.8 (46.5, 53.1)	42.2 (39.5, 45.0)		
<b>BMI (kg/m<sup>2</sup>)</b>							0.0003	
<20	25.0 (22.1, 28.1)	24.7 (17.7, 33.4)	23.0 (21.2, 25.0)	22.5 (18.4, 27.2)	21.9 (19.2, 24.9)	22.1 (19.9, 24.5)		
20-24	58.4 (55.0, 61.8)	54.0 (45.3, 62.5)	58.7 (56.5, 60.9)	57.0 (51.7, 62.2)	53.8 (50.4, 57.1)	54.5 (51.8, 57.2)		
25-29	13.2 (11.0, 15.6)	14.2 (12.3, 16.3)	13.7 (12.4, 15.2)	13.7 (10.6, 17.6)	16.6 (14.2, 19.2)	15.8 (13.9, 17.8)		
30+	3.4 (2.4, 4.8)	7.5 (4.3, 12.6)	4.5 (3.7, 5.5)	6.7 (4.8, 9.4)	7.8 (6.2, 9.7)	7.6 (6.4, 9.1)		
<b>Ill for three months or more in past five years</b>							0.0006	
No	92.5 (90.6, 94.1)	89.8 (80.6, 94.9)	90.3 (88.9, 91.6)	89.3 (86.3, 91.7)	86.8 (84.6, 88.8)	87.4 (85.7, 90.0)		
Yes	7.5 (5.9, 9.4)	10.2 (5.1, 19.4)	9.7 (8.4, 11.1)	10.7 (8.3, 13.7)	13.2 (11.2, 15.4)	12.6 (11.0, 14.3)		

at the time of the interview combining participation in training, work, or education. With respect to material circumstances, we included housing tenure and social class. Responses to questions on current accommodation allowed us to determine whether or not respondents rented the property in which they lived, and from whom. Respondents' social class was derived from the nature of their employment at the time of the survey, using the registrar general's classification. Variables relating to family relationships include support (currently living as the lone adult in the household) and parity. We included a measure of recent long term illness (illness or accident in the past five years affecting health for at least three months). We also included health related factors: smoking; and body mass index (BMI) calculated as weight in kilograms divided by height in meters squared. Adverse circumstances at the time of the survey were defined as not having any educational qualifications; not being in education, work or training; living in social housing (rented from council or housing association); being in social class IV/V or unemployed; being divorced or separated; living as a lone adult in the household; having three or more children; smoking; being overweight ( $BMI \geq 25 \text{ kg/m}^2$ ); and having a recent long term illness.

### Statistical analyses

All statistical analyses were carried out using the survey functions of Stata (version 8.1) to account for stratification, clustering, and weighting of the samples. The data in each survey were weighted to correct for unequal selection probabilities and to match the corresponding age/sex population profile. Natsal 1990 data were weighted for differential selection probabilities and then post-stratified to the 1991 census estimates, thereby differing slightly from the method reported in previous publications. We used  $\chi^2$  tests to compare the differences in prevalence for each characteristic in all women between the two surveys. We used logistic regression to obtain odds ratios to compare estimates of adverse outcomes in women who reported being sexually active before age 18 but did not have a child and those who had a child before 18, relative to women who were not sexually active before 18, separately for Natsal 1990 and Natsal 2000. Logistic regression was also used to assess change in prevalence of adverse circumstances between 1990 and 2000 separately for women who became mothers before

18 and those who did not. We included interaction terms to test whether the magnitude of change in the adverse circumstance between the two surveys differed according to whether or not the woman had a child before the age of 18.

Natsal 1990 and 2000 was approved by University College Hospital and LSHTM, and Natsal 2000 was additionally approved by the North Thames Multi-Centre Research Ethics Committee and all the local research ethics committees in Britain.

### RESULTS

The proportion of women aged 18 to 27 years reporting they were sexually active before 18 increased between 1990 and 2000 from 58.9% (95% confidence intervals: 56.8, 61.0) to 71.3% (68.7, 73.8). There was no significant change in the prevalence of women who reported having a child before the age of 18 (4.7% (4.0, 5.5) in 1990, 5.3% (4.3, 6.5) in 2000.

Table 1 shows, for each survey, the prevalence of the characteristics for all women aged 18 to 27 at the time of the survey according to whether they had been sexually active or had a child before 18 years. Table 2 shows, for each survey, the odds ratios for adverse outcomes for women who were sexually active before 18 but did not have child and those who had a child before 18 relative to women who were not sexually active before 18. Table 3 shows the change in adverse circumstances between the two surveys according to whether the women had a child before the age of 18 or not.

### Education and participation

There was an overall improvement in level of educational achievement and in participation in economic activity between 1990 and 2000 (table 1). A higher proportion of all women aged 18 to 27 achieved A levels or higher and a lower proportion had no educational qualifications in 2000 compared with 1990. A higher proportion of young women were participating in education, work, or training at the end of the 1990s compared with a decade earlier (77.0% in Natsal 2000 compared with 70.8% in Natsal 1990). However, the circumstances varied according to whether or not women were sexually active or had a child before 18 (table 2). In both 1990 and 2000, compared with women who were not sexually active before 18, those who had a child before 18 were much more likely to have no academic qualification

**Table 2** Odds ratio (95% confidence interval) for adverse outcomes according to whether or not women had a child before the age of 18 years compared with women who were not sexually active before the age of 18 years, by year of survey

Circumstances at time of survey	Natsal 1990			Natsal 2000		
	Sexual intercourse before 18 years			Sexual intercourse before 18 years		
	No	Yes		No	Yes	
		No	Yes		No	Yes
<b>Education and participation</b>						
No academic qualification	1.00	1.63 (1.22, 2.20)	8.86 (5.79, 13.6)	1.00	2.03 (1.30, 3.20)	19.0 (10.5, 34.3)
Not in education/work/training	1.00	1.62 (1.34, 1.95)	8.37 (5.38, 13.0)	1.00	1.92 (1.42, 2.62)	17.5 (10.1, 30.3)
<b>Material circumstances</b>						
Living in social housing	1.00	1.63 (1.32, 2.00)	8.27 (5.48, 12.49)	1.00	1.50 (1.14, 1.99)	10.2 (6.10, 17.2)
Social class IV/V/unemployed	1.00	1.44 (1.10, 1.88)	9.86 (5.08, 19.1)	1.00	1.14 (0.84, 1.55)	5.15 (2.93, 9.05)
<b>Family relationships and parity</b>						
Currently living as lone adult	1.00	1.47 (1.12, 1.94)	5.17 (3.38, 7.91)	1.00	1.79 (1.34, 2.40)	5.64 (3.52, 9.04)
3+ children	1.00	1.73 (1.07, 2.80)	19.6 (11.4, 33.8)	1.00	7.22 (1.45, 36.0)	111 (21.8, 563)
<b>Health related factors</b>						
Current smoker	1.00	2.88 (2.36, 3.50)	5.86 (3.96, 8.69)	1.00	3.70 (2.79, 4.89)	5.93 (3.66, 9.63)
BMI $\geq 25 \text{ kg/m}^2$	1.00	1.20 (0.95, 1.52)	1.36 (0.89, 2.08)	1.00	1.25 (0.92, 1.69)	1.44 (0.82, 2.50)
Ill for three months or more in past five years	1.00	1.57 (1.14, 2.17)	1.41 (0.64, 3.10)	1.00	1.27 (0.91, 1.76)	1.53 (0.80, 2.92)

**Table 3** Odds ratio (95% confidence interval) for change in prevalence of adverse circumstances in Natsal 2000 compared with Natsal 1990 in women aged 18 to 27 years by motherhood before the age of 18

	Birth before age 18 years		Test for interaction
	No	Yes	p Value
<b>Education and participation</b>			
No academic qualification	0.67 (0.53, 0.85)	1.14 (0.66, 1.96)	0.080
Not in education/work/training	0.68 (0.57, 0.80)	1.16 (0.62, 2.18)	0.100
<b>Material circumstances</b>			
Living in social housing	1.00 (0.84, 1.18)	1.23 (0.68, 2.23)	0.500
In social class IV/V/unemployed	1.15 (0.96, 1.39)	0.68 (0.30, 1.51)	0.207
<b>Family relationships and parity</b>			
Currently living as lone adult	1.19 (0.99, 1.43)	1.06 (0.63, 1.81)	0.702
Have three or more children	0.62 (0.40, 0.97)	0.94 (0.52, 1.70)	0.276
<b>Health related factors</b>			
Current smoker	1.03 (0.89, 1.20)	0.76 (0.44, 1.31)	0.277
BMI $\geq 25$ kg/m <sup>2</sup>	1.37 (1.15, 1.63)	1.37 (0.73, 2.55)	0.998
Ill for three months or more in past five years	1.33 (1.07, 1.65)	1.61 (0.63, 4.12)	0.699

Test for interaction: a statistical test to examine whether the change between 1990 and 2000 was statistically significantly different for women who had a child before 18 compared with those who did not.

(OR: 8.86 in 1990, 19.0 in 2000) and to be in neither education, work, nor training (OR: 8.37 in 1990, 17.5 in 2000) than those who were sexually active but did not have a child before 18.

#### Material circumstances: housing and socioeconomic group

There was little overall change in the proportion of all young women living in social housing between 1990 and 2000 ( $p = 0.788$ ) (table 1). The odds of being in social housing were much higher for the women who had a child before 18 relative to those who were not sexually active before 18 at both time points (ORs: 8.27 in 1990; 10.2 in 2000) but only slightly higher for women who were sexually active and did not have a child before 18 (table 2).

There was little overall change in the social class distribution among young women between 1990 and 2000 (table 1). The circumstances at time of interview varied according to sexual and reproductive history. The odds of being in social class IV/V or unemployed were much higher among women who had a child before 18 (OR 9.86 in 1990, 5.15 in 2000), and somewhat higher among those who were sexually active before 18 (1.44 in 1990, 1.14 in 2000) compared with women who were not sexually active before 18 (table 2).

#### Support: family relationships and parity

There has been a small increase between 1990 and 2000 in the proportion of all women living as a lone adult in a household (12.1% in 1990 to 14.0% in 2000) but this failed to reach statistical significance. Compared with women who were not sexually active before 18, the odds of living as a lone adult were higher among women who were sexually active and did not have a child before 18 and very much higher among women who became mothers before 18 (table 2).

A slightly higher proportion of all women had no children and a lower proportion had two or more children in 2000 compared with 1990 but this difference was not statistically significant (table 1). The odds of having three or more children were very much higher among women who had a

child before 18 compared with those who were not sexually active before 18 at both time points (table 2).

#### Health behaviours and health status

There was no significant change between 1990 and 2000 in the proportion of women who reported smoking at the time of the interview (table 1). Compared with women who were not sexually active before 18, the odds of smoking were higher among those reporting sexual intercourse before 18 (2.88 in 1990, 3.70 in 2000) and in those who had a child before 18 (5.86 in 1990, 5.93 in 2000) (table 2).

The proportion of all women who were obese (BMI  $\geq 30$  kg/m<sup>2</sup>) or overweight (BMI  $\geq 25$ – $30$  kg/m<sup>2</sup>) increased significantly between 1990 and 2000 (table 1). The odds of being overweight or obese (BMI  $\geq 25$ ) were higher among women who were mothers before 18, and in those who were sexually active before 18 compared with women who were not sexually active before 18 but this did not reach statistical significance (table 2).

The proportion of all women reporting a period of three months or more of ill health in the five years before interview increased from 9.7% in 1990 to 12.6% in 2000 (table 1). Compared with women who reported not having sexual intercourse before 18, women who were sexually active before 18, whether or not they had a child before 18, were more likely to report long term illness but there was considerable overlap in the 95% confidence intervals for the odds ratios (table 2).

#### Relative changes in circumstances between 1990 and 2000 according to motherhood before 18

We calculated odds ratios to assess the changes in prevalence of adverse circumstances between 1990 and 2000 separately for women who had a child before 18 and those who did not. To find out if any changes in prevalence over the decade differed in the two groups of women, we conducted a formal test of interaction for each adverse circumstance examined.

In 2000, the odds of having no educational qualifications, and the odds of not being in education, work, or training, for women who remained childless before age 18 had decreased compared with 1990, (ORs: 0.67 and 0.68 respectively), while for those who had a child before 18 they had increased (ORs: 1.14 and 1.16 respectively) (table 3).

Comparison between 2000 and 1990 showed that the odds of living in social housing was higher in 2000 compared with 1990 for women who had a child before 18 (OR: 1.23), and no different for those who did not (ORs 1.00). The odds of being

#### What is already known on this topic

Early motherhood has adverse social, economic, and health related outcomes.



### What this study adds

- Despite the noticeable increase in the proportion of women who are sexually active before 18, the proportion having a child before 18 has changed little between 1990 and 2000.
- Circumstances of women who enter motherhood early in life—in terms of personal achievement, life chances, material circumstances, and physical wellbeing—have not improved over the past decade.

in social class IV or V or being unemployed were a little higher in women who did not have a child before 18 and slightly lower in those who did, in 2000 compared with 1990.

The decrease in odds between 1990 and 2000 of having three or more children was greater for women who did not have a child before age 18 than in those who did.

There was no statistically significant difference in the changes from 1990 to 2000 between women who had a child before 18 and those who did not (table 3).

### DISCUSSION

Despite the noticeable increase in the proportion of women becoming sexually active before 18 between 1990 and 2000, the incidence of motherhood before 18 has not changed significantly over this period; 11.4% of women who were sexually active before 18 had a child before 18 in 1990, compared with 9.6% in 2000.

An inescapable conclusion of these analyses is that the social, material, and physical circumstances of women who become mothers early in life are a great deal worse than those of women who do not. These seem to be a consequence of early motherhood rather than early sexual activity, as the differences between those who became sexually active early in life (but did not have a child) and those who did not are much smaller than the differences between mothers and non-mothers. Our results add further to the evidence that early motherhood continues to be associated with a variety of adverse adult life course circumstances.

These analyses show that, among all young women, many indicators of personal circumstances, for example, educational qualifications, and participation in education, work, or training, show an improvement in absolute terms during the 1990s. By contrast, there is evidence of unfavourable trends relating to psychosocial support, reported recent long term illness, and obesity.

There is some suggestion that the improvement in circumstances was less evident among women who entered motherhood early in life compared with those who did not. For six of the nine circumstances examined, the relative disadvantage had worsened between 1990 and 2000 for women who entered motherhood early compared with those who did not. While our findings are also consistent with there being little change in the circumstances of young mothers relative to other young women, we note that demonstrating statistically significant changes in the 5% of women aged 18 to 27 who had a child before 18 in 1990 and in 2000 is likely to be difficult, even in large national surveys.

In general, longitudinal studies provide the best opportunities to examine trends in life course events. Even though early motherhood occurred before most of the factors listed (although not always for education) causality cannot necessarily be inferred. Our findings do not take into account the role of differences in family of origin between women who became mothers early in life and those who did not, and these background factors would also have been subject to

### Policy implications

These findings add further evidence of growing differentials in health status between rich and poor in Britain in the past two decades. Despite improvements in life chances among young women in general, there is little evidence of improvement in the circumstances of young mothers between 1990 and 2000. The failure of young mothers to benefit from improvements in educational attainment over the period suggests that between 1990 and 2000 school systems may not have adapted to the needs of young mothers. Public health interventions to date have focused more on reducing rates of teenage conception than on mitigating the adverse outcomes of early motherhood.<sup>22–24</sup> By contrast, the government's teenage pregnancy strategy, set up in 2000, aims to achieve both these ends. These findings will be of interest in establishing baseline trends from which to assess progress towards these goals.

secular change. The strength of these cross sectional studies, however, is that they are based on large samples of women, conducted 10 years apart using the same set of questions, and provide up to date information on the current circumstances of young women.

These findings need to be set in the context of secular changes that have affected all women during this period. The 1980s and 1990s saw important social and economic changes in Britain. There has been a widening of the income gap,<sup>18</sup> growing differentials in health status between rich and poor,<sup>19</sup> and between the circumstances of lone and couple mothers<sup>1</sup> in Britain, and evidence of an increasing differential between early mothers and others in terms of educational level in the USA.<sup>20–21</sup> Our findings extend and support these findings. Despite the secular changes occurring in the 1990s leading to generally improved circumstances for young women, the level of disadvantage of early mothers relative to their childfree peers seems, at best, to have remained essentially unchanged over recent decades and, at worst, to have deteriorated in relative terms.

Although we cannot infer causality, our data suggest that women who entered motherhood early in life have obtained little benefit from the more benign influences on the lives of women. These discrepancies have increased the gap between those who had a child early in life, and those who did not, between the 1980s and the 1990s. The failure of young mothers to benefit from improvements in educational attainment over the period suggests that between 1990 and 2000 school systems may not have adapted to the needs of young mothers. Public health interventions to date have focused more on reducing rates of teenage conception than on mitigating the adverse outcomes of early motherhood.<sup>22–24</sup> By contrast, the government's teenage pregnancy strategy, set up in 2000, aims to achieve both these ends.<sup>25</sup> Our findings will be of interest in establishing baseline trends from which to assess progress towards these goals.

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### CONTRIBUTORS

KW, GB, and KN designed this study; KN conducted the statistical analysis with assistance from GB, CM, and AC; KN and KW drafted the paper. KW, BE, KF, and AJ were principal investigators and participated in the design and management of the Natsal surveys. All authors contributed to writing the paper. KW is as guarantor.

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