Key messages

- Although surgery improves stress incontinence in most women (87%), only 28% are continent one year later
- The need for preoperative urodynamic testing should be reappraised
- Urgency and urge incontinence should not be considered contraindications to surgery
- Women considering surgery should receive more accurate information on the probability of an improvement in symptoms and possible complications
- There is a need for a rigorous, pragmatic, randomised trial of surgery for stress incontinence

urgency and urge incontinence are contraindications to surgery; indeed, surgery was associated with a reduction in the prevalence of this problem. Fifthly, the role of urodynamic testing needs reappraisal. As patients were not randomised it is not possible to conclude with certainty that urodynamic testing has little or no prognostic value. The only alternative explanation for our findings is that the 39% of women who had surgery without urodynamic confirmation of genuine stress incontinence were carefully (and accurately) selected by surgeons on the basis of their medical history and clinical examination. And finally, the consistent reports of outcome between 3 and 12 months after surgery suggest that care of these patients can be audited at any time during this period. This allows follow up of patients in batches rather than necessitating the organisation of a continuous system in which all women are followed up at the same point in time after their operation.

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Change in social status and risk of low birth weight in Denmark: population based cohort study

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Abstract

Objective: To estimate the risk of having a low birthweight infant associated with changes in social, environmental, and genetic factors.
Design: Population based, historical cohort study using the Danish medical birth registry and Statistic Denmark's fertility database.
Subjects: All women who had a low birthweight infant (<2500 g) (index birth) and a subsequent liveborn infant (outcome birth) in Denmark between 1980 and 1992 (exposed cohort, n = 11 069) and a random sample of the population who gave birth to an infant weighing ⩾2500 g and to a subsequent liveborn infant (unexposed cohort, n = 10 211).
Main outcome measures: Risk of having a low birthweight infant in the outcome birth as a function of changes in male partner, area of residence, type of job, and social status between the two births.
Results: Women in the exposed cohort showed a high risk (18.5%) of having a subsequent low birthweight infant while women in the unexposed cohort had a risk of 2.8%. After adjustment for initial social status, a decline in social status increased the absolute risk of having a low birthweight infant by about 5% in both cohorts, though this was significant only in the unexposed cohort. Change of male partner did not modify the risk of low birth weight in either cohort.
Conclusion: Having had a low birthweight infant and a decline in social status are strong risk factors for having a low birthweight infant subsequently.

Introduction

Low birth weight (birth weight <2500 g) is one of the main risk factors for infant mortality. Low birth weight occurs frequently in industrialised countries—for example in 5.3% of all births in Denmark.[1] Fetal growth is determined by genetic as well as other factors[2–6] and low birth weight and impaired fetal growth run in families.[4 7–11] Maternal height and weight, socioeconomic group, smoking,[2 5 12 13] and the intrauterine environment[3 5 14 15] are important determinants of birth weight. Height of the father is correlated with the birth weight of the infant,[5 16] but less so than height of the mother, and the correlation may depend on assortative mating—that is, women tend to choose men of similar height and weight as themselves.[3] Studies of twins indicate that 40% of the variation in birth weight is attributable to genetic factors.[15] However, the aetiology of birth weight in twins differs from that of birth weight in singletons.[17]

We studied the effect on birth weight in a subsequent pregnancy of changes in putative risk factors between pregnancies.[18] Couples who have had a low birthweight infant are assumed to have been exposed to a sufficient set of causal factors to trigger this outcome (exposed cohort). Couples who had had a normal birthweight infant (unexposed cohort) are assumed not to have been exposed to a sufficient set of causes. The effect of eliminating or introducing possible exposures in the subsequent pregnancy was also studied. A similar design was used by Lie et al to study the recurrence of birth defects.[19]

Subjects and methods

Data were obtained from the Danish medical birth registry and the national bureau of statistics. The birth registry, established in 1973, contains data on all births in Denmark; 24 077 low birthweight infants born between 1980 and 1992 were identified among mothers who had at least two children.

All people born from 1945 onward and who are considered to be of reproductive age are included on the fertility database. This database links several databases to obtain the most complete possible data on family composition, cohabitation, education, and employment.[20] Since 1968 all residents have been assigned a unique identification number at birth. We used this unique number to link children from the birth registry with their biological father, to obtain information on the employment status of both parents, and to determine the stability of the mother's relationship with her partner.

The exposed cohort consisted of all women who had given birth between 1980 and 1992 to a singleton weighing <2500 g (index child) and then to a subsequent liveborn infant (outcome child) (11 069). A 5% random sample of the general population of women who had had at least two singleton births during the same period served as the unexposed cohort (10 211). Since the time of death is often unknown for stillborn infants, they were excluded from analysis both in the index and outcome pregnancies.

The risk of having a low birthweight infant after the birth of the index infant was estimated as a function of the mother's status with respect to changes in partner, residence in one of Denmark's 275 municipalities, type of job, and social status between the births. The comparisons were performed within each cohort; couples without changes in any of the factors served as the reference group.

Social status was categorised as low, middle, or high, according to the job held at the time of pregnancy on the basis of the 10 point classification used by Statistics Denmark. Subjects were grouped by social status before analysis. The type of job was classified on the basis of the International Standard Classification of Industries.[21]

The partner with the highest social status determined the couple's social status at each birth. If data on both partners were missing in both pregnancies the couple was defined as not having experienced a change in social status (54 in the exposed cohort, 27 in the unexposed cohort). The mother's social status was used for women who were not cohabiting: 588 women in the exposed cohort and 351 in the unexposed cohort were not cohabiting within a year of the birth of the outcome child. The category of low social class included those who were unemployed or retired, those who performed unskilled manual work, and those with unspecified and unknown jobs. The middle category included office workers, students, skilled manual workers, and those working for or with their spouse or partner. The high social class category included all high ranking managers (responsible for at least 20 employees), high ranking office workers, (includes professors, doctors in a hospital, etc), self employed office workers (includes lawyers, accountants, business people, and medical specialists who own their own firm or practice), and owners of small businesses or shops.

Changes were examined using a logistic regression model in which low birth weight was the outcome variable and results were adjusted for potential confounders (parity, age of the mother, gestational age, gestational age squared (to obtain better control of confounding by a variable that is not linearly associated with the outcome on a logarithmic scale), interpregnancy interval (time from a birth to the next conception; ≤4 months v >4 months), and social status at the birth of the index child). Birth weight was also dichotomised at ≤2000 g. Additional analyses were made for the first two children and for outcome

Table 1 Characteristics of exposed and unexposed cohorts. Values are numbers (percentages) unless indicated otherwise

	Exposed cohort* (n=11 069)	Unexposed cohort† (n=10 211)
Low birth weight in outcome pregnancy	2044 (18.5)	284 (2.8)
Biological father not recorded on birth certificate	372 (3.4)	203 (2.0)
Change in:		
Partner	1288 (11.6)	871 (8.5)
Area of residence	2305 (20.8)	2067 (20.2)
Type of job	4470 (40.4)	3993 (39.1)
Social status:		
Decline	965 (8.7)	738 (7.2)
Rise	2185 (19.7)	2291 (22.4)
Social status at birth of index child:		
Low	3817 (34.5)	2938 (28.8)
Middle	4869 (44.0)	4348 (42.6)
High	2383 (21.5)	2925 (28.6)
Parity at birth of index child:		
1	8644 (78.1)	8668 (84.9)
>1	2371 (21.4)	1498 (14.7)
Not known	54 (0.5)	45 (0.4)
Age (years) of mother at birth of outcome child:		
≤20	328 (3.0)	176 (1.7)
21-25	3055 (27.6)	2428 (23.8)
26-30	4637 (41.9)	4594 (45.0)
31-35	2386 (21.6)	2401 (23.5)
>35	663 (6.0)	612 (6.0)

*Women who had previously given birth to a low birthweight infant.
†Women who had previously given birth to a normal birthweight infant.

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Table 2 Results of logistic regression for risk of having low birthweight infant according to changes in partner, municipality, type of job, and social status. Values are odds ratios (95% confidence intervals)

Risk factor*	Exposed cohort (n=10 929)†	Unexposed cohort (n=10 115)†
No changes	1.00	1.00
Change in:		
Partner:		
Yes	1.06 (0.86 to 1.31)	1.26 (0.76 to 2.08)
Unknown	0.84 (0.57 to 1.24)	0.84 (0.30 to 2.34)
Municipality	0.93 (0.79 to 1.10)	1.02 (0.68 to 1.53)
Type of job	1.00 (0.87 to 1.15)	0.91 (0.65 to 1.28)
Social status:		
Decline	1.24 (0.98 to 1.57)	2.32 (1.33 to 4.06)
Rise	0.85 (0.71 to 1.02)	0.59 (0.38 to 0.93)

*All odds ratios are adjusted for social status of the couple at birth of index child, age of mother at birth of outcome child, parity of mother (1, >1), interpregnancy interval (<4 months, ≥4 months), gestational age of outcome child (and gestational age squared).
†Cohort totals differ from those in table 1 because some values are missing.

children born at term (39-41 weeks). A description of the two cohorts is given in table 1.

To examine the effect of social mobility and change in partners on continuous birth weight we used a multiple regression model for each cohort after adjustment for the most important determinants.

Results

The overall risk of having an infant with low birth weight in the outcome pregnancy was 18.5% in the exposed cohort and 2.8% in the unexposed cohort. Women in the exposed cohort were younger, had lower social status, a lower degree of upward social mobility, and a higher rate of changing partner. In this cohort the biological father was less frequently recorded on the birth certificate. The average interpregnancy interval was 2.7 years in both cohorts (table 1).

There was a higher risk of having a low birthweight infant when the social status of the couple declined between the two births and a lower risk when social status rose; this was significant in the unexposed cohort (table 2). In the unexposed cohort the effect of changing social status was substantially the same regardless of the starting social status. In the exposed cohort the effect is mainly seen for those who changed from middle to low status. Adjustment for the cohabitation status of the mother did not change the impact of social mobility in either of the cohorts. No significant variation in risk was associated with change of male partner, municipality, or type of job.

Analyses of different subgroups of the two cohorts are summarised in table 3. When analyses were restricted to first and second children and to children born at term, a decline in social status was a significant risk factor only in the unexposed cohort. A rise in social status was associated with a decreased risk of low birth weight in children born at term in both cohorts. Among the 4036 women in the exposed cohort whose index child weighed ≤2000 g at birth, the overall risk of recurrence of a similar birth weight was 11% and the risk associated with a decline in social status was 2.18 (95% confidence interval 1.23 to 3.85). In the unexposed cohort only 1% of the outcome children had a birth weight of ≤2000 g, and the effect of a decline in social status was significantly less than for infants with a birth weight of <2500 g.

In the unexposed cohort the outcome infant was on average 80 g heavier than the index infant, but among infants born to women who had had a decline in social status the outcome infant was only about 40 g heavier (table 4).

On multiple regression analysis gestational age and birth weight of the index infant were the most important predictors of birth weight for the outcome infant, but social mobility and social status were also

Table 3 Logistic regression for risk of having low birthweight infant adjusted for changes in social status in different subgroups of exposed and unexposed cohorts. Values are odds ratios (95% confidence intervals)*

Change in social status	Exposed cohort	Unexposed cohort
Women whose index child was the first born		
No of women	8585	8623
Decline	1.17 (0.90 to 1.53)	2.20 (1.20 to 4.05)
Rise	0.81 (0.66 to 1.00)	0.69 (0.42 to 1.14)
Outcome children born between 39 and 41 weeks' gestation†		
No of women	6032	7666
Decline	1.44 (0.90 to 2.31)	3.23 (1.20 to 8.70)
Rise	0.65 (0.45 to 0.95)	0.30 (0.13 to 0.69)
Low birth weight defined ≤2000 g‡		
No of women	4036	10 115
Decline	2.18 (1.23 to 3.85)	1.25 (0.36 to 4.32)
Rise	1.24 (0.79 to 1.96)	0.90 (0.41 to 1.96)

*Odds ratios are adjusted for social status of couple at birth of index child, age of mother at birth of outcome child, interval between pregnancies (<4 months, ≥4 months), gestational age of outcome child (and gestational age squared).
†Odds ratios are adjusted for social status of couple at birth of index child, age of mother at birth of outcome child, parity of the mother (1, >1), interpregnancy interval (<4 months, ≥4 months), gestational age of outcome child (and gestational age squared).
‡Odds ratios are adjusted for social status of couple at birth of index child, age of mother at birth of outcome child, parity of the mother (1, >1), and interpregnancy interval (<4 months, ≥4 months).

Table 4 Mean differences in birth weight between index and outcome infant in unexposed cohort according to changes in social status for all women, women whose index child was first born, and stratification by social status at time of birth of index child

	No change in social status		Decline in social status		Rise in social status	
	No of women	Mean (SE) difference (g)	No of women	Mean (SE) difference (g)	No of women	Mean (SE) difference (g)
All women	7182	82.57 (6.1)	738	38.61 (19.0)	2291	86.71 (10.8)
Index child is first born	6169	98.49 (6.6)	650	36.81 (19.9)	1849	100.28 (12.0)
Stratification by social status at time of birth of index child:						
Low	1449	26.11 (14.0)	NA	NA	1489	75.76 (14.0)
Middle	3071	89.45 (9.3)	475	32.72 (22.5)	802	107.05 (16.7)
High	2662	105.36 (9.9)	263	49.24 (34.6)	NA	NA

NA=not applicable.

associated with birth weight (table 5). In the unexposed cohort the correlation coefficients between the two pregnancies calculated separately for women who changed partners ($r=0.372$; 0.314 to 0.329) and those who did not ($r=0.471$; 0.455 to 0.487) indicated more similarity in birth weight among those who did not change partners between the two pregnancies than among those who did.

Discussion

Our study corroborates the finding that women who have a low birthweight infant are more likely to give birth to another low birthweight infant than women who have had infants of normal birth weight.[9–11] The most likely cause is related to maternal genes or the intrauterine environment. A decline in social status was found to be a comparatively strong predictor of low birth weight, which suggests that fetal growth is reduced under poor social circumstances. All results were adjusted for gestational age, and the effect was also seen in the subgroup of outcome children born at term in the unexposed cohort. In the exposed cohort the effect of a decline in social status was larger for newborn infants with a birth weight of ≤2000 g.

In the unexposed cohort a decline in social status was more closely associated with low birth weight than social status at the time of birth of the index child. The odds ratio of 1.24 in the exposed cohort represents an increase from 20% to almost 25% in the risk of having another low birthweight infant when compared with couples for whom none of the indicators of risk changed. The odds ratio of 2.32 in the unexposed cohort is a similar increase in excess risk (from 4.5% to 10%). The findings from the two cohorts are therefore similar on an additive scale, but the association was significant only in the unexposed cohort.

Many expect that lone mothers are at a higher risk of having a low birthweight infant, but including cohabitation status in the analysis did not change the risk associated with social mobility in either cohort.

In some cases poor health may have triggered a decline in social status,[22–24] and health conditions rather than the change in social status may have caused low birth weights. These factors would, however, explain but a small part of the association since only severe diseases trigger a decline in social status in Denmark, which has an extensive social support system. Most women with health poor enough to initiate a decline in social status would probably also have low fertility and therefore not be considered in this study. Changes in social status have not previously been associated with low birth weight, but unemployment and low social status have been linked with poor reproductive outcome in several studies.[12 13 25]

The impact of paternal factors on birth weight remains unclear, but maternal half siblings have a much higher correlation for birth weight than paternal half siblings,[3 14] and this is supported by our findings of little effect on birth weight of a change in partner. A change in male partner is not, however, expected to change the distribution of birth weight. If a paternal effect is randomly distributed, the average difference in birth weight between the two pregnancies would be expected to be unaffected by a change in male partner, but the correlation coefficient would be expected to be lower for those who change partner, which is what this study found.

Table 5 Multiple linear regression coefficients (B) and standard errors of B between birth weight and selected variables

	Exposed			Unexposed		
Main effects	**B**	**SE (B)**	**P value**	**B**	**SE (B)**	**P value**
Birth weight of index child (g)	−0.09	(0.01)	<0.001	0.47	(0.01)	<0.001
Gestational age (weeks)	178.43	(1.66)	<0.001	149.16	(2.52)	<0.001
Parity (2,>2)	32.00	(11.01)	0.004	−26.01	(12.59)	0.040
Age of mother (years)	0.30	(1.08)	0.784	3.28	(1.12)	0.003
Social status at birth of index child (3 levels)	50.00	(6.83)	<0.001	31.68	(6.76)	<0.001
Change in social status:						
Decline	−58.16	(16.00)	<0.001	−34.83	(16.58)	0.036
Rise	30.68	(11.85)	0.010	35.49	(11.36)	0.002
Change in partner (yes/no)	−7.81	(13.47)	0.562	−54.07	(14.89)	<0.001

For exposed cohort coefficient of determination of linear regression, R^2=0.525, df=10 581; for unexposed cohort R^2=0.427, df=9926

Key messages

- The risk of having a subsequent low birthweight infant after the birth of a first is high, but changes in social factors may alter the risk
- A decline in social status increases the risk of having a low birthweight infant, especially among women who have not previously had a low birthweight infant
- A rise in social status is associated with a reduced risk of having a low birthweight infant
- Women who have had a decline in social status need special attention in antenatal units

Only limited data were available on environmental exposures, and these factors are probably more important in fetal growth than those that could be captured in this study. Area of residence is, for example, only a proxy measure for some environmental exposures such as clean drinking water or air pollution. A decline in social status may be related to lack of compliance in medical care[26], and smoking or other factors that are linked with growth retardation may be related to downward social mobility, as they are for low social status.[12] This study does not permit identification of the actual determinants responsible for low birth weight that may be related to a decline in social status.

Our study analysed a large cohort and was carried out without loss to follow up. The data are of good quality with regard to the timing of pregnancies, paternity, birth weight, residence, and job titles. Further research should identify changes in proximal fetal growth factors influenced by changes in social status. Women in poor social conditions should be given special attention during antenatal care.

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Case-control study of oral contraceptives and risk of thromboembolic stroke: results from international study on oral contraceptives and health of young women

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Abstract

Objective: To determine the influence of oral contraceptives (particularly those containing modern progestins) on the risk for ischaemic stroke in women aged 16-44 years.
Design: Matched case-control study.
Setting: 16 centres in the United Kingdom, Germany, France, Switzerland, and Austria.
Subjects: Cases were 220 women aged 16-44 who had an incident ischaemic stroke. Controls were 775 women (at least one hospital and one community control per case) unaffected by stroke who were matched with the corresponding case for 5 year age band and for hospital or community setting. Information on exposure and confounding variables were collected in a face to face interview.
Main outcome measures: Odds ratios derived with stratified analyses and unconditional logistic regression to adjust for potential confounding.
Results: Adjusted odds ratios (95% confidence intervals) for ischaemic stroke (unmatched analysis) were 4.4 (2.0 to 9.9), 3.4 (2.1 to 5.5), and 3.9 (2.3 to 6.6) for current use of first, second, and third generation oral contraceptives, respectively. The risk ratio for third versus second generation was 1.1 (0.7 to 2.0) and was similar in the United Kingdom and other European countries. The risk estimates were lower if blood pressure was checked before prescription.
Conclusion: Although there is a small relative risk of occlusive stroke for women of reproductive age who currently use oral contraceptives, the attributable risk is very small because the incidence in this age range is very low. There is no difference between the risk of oral contraceptives of the third and second generation; only first generation oral contraceptives seem to be associated with a higher risk. This small increase in risk may be further reduced by efforts to control cardiovascular risk factors, particularly high blood pressure.

Introduction

The transnational case-control study on oral contraceptives and the health of young women was launched in 1991. There were three substudies for cardiovascular events (venous thromboembolism, myocardial infarction, and thromboembolic stroke). The results for venous thromboembolism[1] and myocardial infarction[2] have been reported. We report the results of the