Obstetric outcome in homeless women

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Abstract

Objective—To characterise the pregnant homeless population booking and delivering at St Mary's Hospital, London, and ascertain whether their obstetric outcome was adversely affected by their homeless condition.

Design—Retrospective comparison of demographic characteristics of 185 homeless women booking for delivery with those of housed women booking in the same period and with the population of North West Thames region; comparison of obstetric performance of homeless women with subgroup of the housed population (group matched for age, parity, and ethnic origin).

Setting—Consultant obstetric unit, St Mary's Hospital, London.

Subjects—All women booking between April 1987 and March 1988 who subsequently had a registrable birth.

Main results—185 (8%) Of the 2308 women studied were homeless. Compared with the housed population, they had a larger proportion of young women, women of high parity, and Indo-Pakistani women and a smaller proportion of primiparas. Homeless women booked later and had had more previous obstetric problems than housed women. Pregnancy outcome (assessed by birth weight and prematurity rates) was worse than that of both women housed locally and the regional population. Antenatal attendance, complications, intrapartum performance, and perinatal outcome of homeless women did not differ from those in the control group.

Conclusions—This study has been unable to show any significant differences in the outcome of pregnancy in homeless women that can be directly attributed to living in bed and breakfast accommodation, but these women have sociodemographic characteristics and obstetric risk factors that contribute to a poorer outcome in pregnancy than for the general population.

Introduction

Homelessness is a growing national problem: the number of households accepted as homeless by local authorities in England has doubled from 50 000 in 1979 to over 110 000 in 1987.[1] As availability of public sector housing has declined bed and breakfast hotels have been increasingly used as temporary accommodation for families awaiting rehousing. In London alone the number of homeless households rose from 850 in 1981 to 8000 in 1988.[2] Seventy per cent of families are placed outside their original borough of residence, and the average time spent in this "temporary" accommodation has been estimated at 13 months.[3]

The conditions in these hotels have been widely described as deplorable and a risk to health,[4-6] and the Audit Commission said that they were "unsuitable for family life."[7] In many there is overcrowding, dampness, poor cooking facilities, inadequate sanitation, and lack of privacy.

Pregnancy is the main reason for placement in temporary accommodation in 18% of homeless households in London, 11% in other metropolitan boroughs,

and 14% in non-metropolitan boroughs.[7] When these figures are applied to the Department of the Environment's homelessness statistics[1] at least 14 000 (one in 50) births in England and Wales are to homeless women.

There have been anecdotal accounts by health visitors that homeless women often have low birthweight babies.[4] The Prescription for Poor Health, a recent survey of women in bed and breakfast accommodation, found that a high proportion booked in late and were poor attenders at antenatal clinics and that they had more antenatal complications such as anaemia and infections.[6] These researchers also found that 25% of women housed in bed and breakfast hotels had low birthweight babies (<2500 g) compared with 10% of those moving into hotels after the birth and 12·5-15% of controls matched for age and sex in the same boroughs. The differences were not significant and parity and ethnic origin were not considered as confounding variables, but if this rate of low birthweight babies were true for all homeless women, one in 15 of all low birthweight babies would be born to women in this group.

St Mary's Hospital, Paddington, is the main hospital for an inner city district health authority (formerly Paddington and North Kensington, now Parkside South). It is an area of high social deprivation, lying third in the Jarman index,[8] and in 1988 had a low birth weight rate of 9·5% and stillbirth rate of 6·2/1000 (national rates were 7·1% and 4·9/1000 respectively).[9] It includes Bayswater, which has the highest concentration of bed and breakfast hotels in London, and by the end of 1987 more than 2000 families were housed in these hotels.[10] We studied the population of pregnant women housed by the local authority in bed and breakfast accommodation who had a registrable birth at this hospital. We describe the sociodemographic characteristics of these women and, by comparing their obstetric performance with that of housed women, determine whether their accommodation had an adverse effect on the outcome of their pregnancies.

Method

All women who booked for obstetric care at this hospital between 1 April 1987 and 31 March 1988 and gave birth to a single registrable infant were included. Information on all pregnant women is routinely collected throughout their pregnancy, from booking until the infant is 28 days old, by the St Mary's Maternity Information System, an on line data collection system.[11] All women supported by the Department of Social Security and resident in a hotel had their records labelled at booking.

The characteristics of these "homeless" women were compared to those of the housed population who had their babies at the hospital. The obstetric outcome was compared both with births at the hospital and with pooled data from the 17 maternity units in North West Thames region that use the hospital's maternity information system. Because of the striking demographic differences between the homeless and housed women a control group was selected from the housed population. Homeless women were categorised

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according to age in five year periods, parity in groups 0, 1-3, and ≥4, and ethnic origin. Controls were selected from the local housed population to give equal numbers of cases and controls in each subgroup. For example, there were eight white (Caucasian) primiparas age 20-24 among the homeless women, and the first eight patients housed locally who fulfilled these criteria were selected as controls. The two groups were compared with regard to antenatal care received, previous and current medical and obstetric problems, obstetric interventions, complications of delivery and the puerperium, and infant outcome. It was not possible to match 17 of the young homeless mothers of high parity with women attending during the study period, but 16 further controls were selected from mothers who had booked between January and March 1987.

Most of the bed and breakfast hotels were within walking distance of the hospital antenatal clinic, and as far as possible mothers saw the same hospital midwife at each visit and were able to form a relationship with her. There was also an open door policy for all pregnant women: they could telephone or visit the labour ward at any hour. There is a well structured system for contacting non-attenders, and the language barrier was

to certain extent overcome as, during the study period, a Bengali health worker was available during normal working hours. The assistance of a hospital social worker was offered to all socially deprived mothers who did not have a local authority social worker.

Data were analysed with the statistical package for the social sciences (SPSS X) and by the χ^2 test and the unpaired t test for the difference between means. Significance is quoted at the 1% level.

Results

Between 1 April 1987 and 31 March 1988 2308 women booked and subsequently delivered at St Mary's Hospital. Of these, 185 (8%) were homeless. There were significant differences in ethnic origin, parity, and age distribution between the homeless women and controls (table I). The homeless group had a larger proportion of high risk women such as Indo-Pakistanis, grand multiparas, and women aged under 20 and had a smaller proportion of the obstetrically low risk 25-29 age group. The young women tended to be single and those in the older group to be married Bengali women.

Table II compares obstetric outcome among homeless women, those housed locally, and the regional population; it shows that birth weight was lowest and the preterm delivery rate was highest in homeless women. The mean birth weight in the region fell outside the 99% confidence intervals of the birth weights of both the homeless and the locally housed women. When the observed values for low birth weight and preterm deliveries in the homeless and the locally housed women were compared with the expected values calculated from the regional rates significant differences were obtained.

COMPARISON OF HOMELESS WOMEN AND CONTROL GROUP

At booking—Table III compares the characteristics at booking of homeless women and the control group. Significantly more of the homeless women were smokers. The heavy smokers were predominantly parous, white mothers (17/21 homeless women and 6/7 controls). The higher proportion of women with a poor command of English in the homeless group consisted mainly of Bengali women. There were no differences in the prevalence of medical problems, but there was a higher proportion of previous stillbirths or neonatal deaths among the homeless women. Fourteen of the eighteen mothers with previous perinatal losses were of Indo-Pakistani origin. Although most of the homeless women were registered with a general practitioner when they booked, fewer were allocated to shared care, partly because some (eight women) had recognised obstetric risk factors but predominantly because shared care was not requested by the general practitioner (98 women) or because the mother specifically requested full hospital care (22 women). The proportion of patients with a haemoglobin concentration <100 g/l at booking was high in both groups, but the difference was most noticeable in white women.

The antenatal period—Homeless mothers made antenatal visits more frequently than did the controls (table IV). This is probably explained by later booking, necessitating more frequent visits than would be needed with earlier presentation. There was no difference in the proportion of women admitted to hospital before their admission for delivery or in the length of such stays before the admission for delivery. Antenatal complications such as diabetes, hypertension induced by pregnancy, and antepartum haemorrhage were rare, and there was no difference between the groups. Homeless mothers gained less weight between booking and delivery than did the controls, but the

TABLE I—*Demographic characteristics of homeless and housed pregnant women*

	No (%) of homeless women (n=185)	No (%) of housed women (n=2123)
Ethnic group:*		
African	16 (9)	125 (6)
White	64 (35)	1196 (56)
Indo-Pakistani	74 (40)	194 (9)
West Indian	14 (8)	266 (13)
Other	17 (9)	342 (16)
Parity:†		
0	54 (29)	1036 (49)
1-3	86 (46)	992 (47)
≥4	45 (24)	95 (4)
Maternal age at delivery:‡		
<20	24 (13)	103 (5)
20-24	52 (28)	493 (23)
25-29	37 (20)	657 (31)
30-34	47 (25)	523 (25)
≥35	25 (14)	347 (16)

*$\chi^2=164\cdot9$, df 4, p<0·001.   ‡$\chi^2=29\cdot8$, df 4, p<0·001.
†$\chi^2=110\cdot9$, df 2, p<0·001.

TABLE II—*Comparison of obstetric outcome in homeless, locally housed, and regional populations*

	Homeless women (n=185)	Locally housed women (n=2123)	Regional population (n=36 727)
Mean (SD) birth weight (g)	3187 (538)	3240 (574)	3312 (560)
99% Confidence interval	3085 to 3289	3208 to 3272	
No (%) low birthweight (<2500 g) babies	16 (9) $\chi^2=2\cdot28$	176 (8) $\chi^2=19\cdot95$**	2207 (6)
No (%) of preterm deliveries (<37 weeks)	21 (11) $\chi^2=7\cdot24$*	189 (9) $\chi^2=19\cdot97$**	2391 (7)

*p<0·01, **p<0·001 on χ^2 test for observed compared to expected frequencies when regional rates applied to housed or homeless populations.

TABLE III—*Comparison of homeless and control women at booking*

		Homeless women (n=185)	Controls (n=184)
No (%) married		126 (68)	132 (72)
No (%) smoking:		64 (35)	38 (21)*
>20/day	21 (11)	7 (4)	
<20/day	43 (23)	31 (17)	
No (%) requiring interpreter		68 (37)	39 (21)**
Median (interquartile range) gestation at booking (weeks)		25 (14-31)	17 (13-23)
Obstetric history:			
No (%) with previous stillbirth		10 (5)	4 (2)
No (%) with previous neonatal death		8 (4)	3 (2)
No (%) certain of date of last menstrual period		124 (67)	140 (76)
No (%) with shared antenatal care		54 (29)	95 (52)***
No (%) with haemoglobin <100 g/l at booking		21 (11)	18 (10)
White (n=64)	7 (11)	1 (2)	
Indo-Pakistani (n=74)	13 (18)	14 (19)	

*$\chi^2=8\cdot97$, df 1, p<0·01.   **$\chi^2=11\cdot06$, df 1, p<0·001.   ***$\chi^2=19\cdot30$, df 1, p<0·001.

average weekly weight gain (352 g v 372 g) was not significantly different.

Labour—There were no differences in the rates of induction and augmentation of labour, the presence of meconium stained liquor, or abnormal cardiotocography between homeless and control mothers. There was a non-significant increase in the rate of intrapartum fever (>38° C) in homeless women (5% v 3% for controls). The spontaneous delivery rates in the homeless and control groups were higher than in the total housed population (table V). This probably reflects the higher parity of women in these groups.

Outcome of pregnancy—Infants born to homeless mothers tended to take longer to establish respiration, but all other outcome factors were similar in the homeless mothers and the controls (table V). There was one stillbirth and one early neonatal death in each group. In the homeless group both losses occurred in Bengali mothers. One had an unexplained intrauterine death of a growth retarded 2900 g infant at 42 weeks' gestation, and the early neonatal death occurred soon after delivery at 27 weeks' gestation of a 860 g infant. This mother had been leaking amniotic fluid intermittently since 22 weeks' gestation, and the infant had hypoplasic lungs and was never satisfactorily oxygenated. In the control group a Bengali mother had an unexplained intrauterine death at 30 weeks' gestation and delivered a 1000 g infant. The early neonatal death

was a 1460 g infant born at 32 weeks' gestation with a tracheo-oesophageal fistula. There were more infants with congenital abnormalities in the homeless group: two with cleft palate, one with Down's syndrome, and one with rectal atresia. The mother of the infant with Down's syndrome was a 40 year old Bengali woman who had booked at 13 weeks' gestation but declined amniocentesis, and the infant with rectal atresia was booked at 16 weeks' gestation but the abnormality was not diagnosed until birth. There were two abnormal infants in the control group: one infant had a cleft palate, and the infant who died had a tracheo-oesophageal fistula.

Puerperium—There were no serious postnatal complications in either group. The rate of postnatal fever was 9·2% in homeless mothers and 6·0% in controls, and in most cases no focus of infection was found. The median postnatal stay was three days for all mothers, but there were fewer homeless mothers breast feeding at the time of discharge from hospital.

Discussion

The pregnancy outcome of the homeless women was worse than in women housed locally, who in turn had a worse outcome than the regional population. This is not unexpected—firstly, because of the known social deprivation in this inner city district, and, secondly, because the characteristics of the homeless women put them at higher risk than those housed locally. To determine the contribution of accommodation the group of homeless mothers was matched for age, parity, and ethnic origin. Compared with the control group the homeless mothers remained at higher risk because they were less likely to be certain of the dates of their last menstrual period; they usually booked too late to have a scan at 18-20 weeks for dating and detection of anomalies; and they were more likely to have a history of stillbirth or neonatal death. Many could not speak English, and few had a stable relationship with their general practitioner. White mothers in particular were more likely to be anaemic and to smoke heavily.

Despite these factors the homeless women had unremarkable antenatal courses and performed well in labour. The only significant quantifiable difference from the control group was the delay in onset of regular respiration in the neonates. We were not able to explain this, and there was no evidence of increased morbidity as judged by the proportion of infants staying more than 24 hours in the special care baby unit. Contrary to previous reports showing that a quarter of infants of homeless mothers were of low birth weight[6] we found no significant difference in mean birth weight, the proportion of infants weighing less than 2500 g, or infants below the 10th centile for gestational age when compared to the control group. Although the proportions of low birthweight infants and preterm infants born to homeless mothers were high (9% and 11% respectively), this was also true in the control group and therefore may reflect ethnic mix or deprivation other than that resulting from residence in a hotel.

It was surprising that the homeless mothers did not stay longer in hospital, but those with children and poor social support were particularly anxious to leave quickly. The low rate of breast feeding was disturbing because breast feeding may protect against gastro-intestinal infection in children.[12] This is particularly relevant to the homeless as an increase in childhood infections in bed and breakfast hotels has been reported.[6] The rate of breast feeding was particularly low among the Indo-Pakistani and white mothers (36% and 32%). Community midwives say that the lack of privacy and poor bathing facilities discourage mothers living in hotels from breast feeding.

TABLE IV—*Comparison of characteristics during antenatal period in homeless women, controls, and all women housed locally. Values are numbers (percentages) unless otherwise indicated*

	Homeless women (n=185)	Controls (n=184)	Locally housed women (n=2123)
Insulin dependent diabetes	1 (1)	1 (1)	17 (1)
Urinary tract infection	11 (6)	8 (4)	97 (5)
Cardiac disease	2 (1)	0	42 (2)
Renal disease	1 (1)	0	17 (1)
Sterile (2+) proteinuria	3 (2)	2 (1)	42 (2)
Highest diastolic blood pressure ≥100 mm Hg	4 (2)	0	92 (4)
Antepartum haemorrhage	4 (2)	5 (3)	92 (4)
Mean (SD) weight gain /wk (g)	352 (273)	372 (226)	380 (230)
Antenatal admissions	68 (37)	63 (34)	791 (37)
Mean interval between antenatal visits (weeks)	2·2	2·4	2·6

TABLE V—*Comparison of delivery and outcome among homeless women, controls, and all women housed locally. Values are numbers (percentages) unless otherwise indicated*

	Homeless women (n=185)	Controls (n=184)	Locally housed (n=2123)
Mode of delivery:			
Spontaneous vaginal	154 (83)	149 (81)	1538 (72)
Operative vaginal	9 (5)	13 (7)	248 (12)
Caesarean section	22 (12)	22 (12)	337 (16)
Condition of infant at delivery:			
Apgar score at 1 min <3	5 (3)	3 (2)	36 (2)
Apgar score at 5 min <7	5 (3)	3 (2)	41 (2)
>2 min to regular respiration	2 (1)	9 (5)	99 (5)
Admission to special care baby unit within 24 h	10 (5)	9 (5)	130 (6)
Mean (SD) birth weight (g)	3187 (538)	3180 (550)	3240 (574)
95% Confidence interval	3108-3265	3101-3261	3215-3265
Low birth weight (<2500 g)	16 (9)	16 (9)	176 (8)
Birth weight <10th centile	13 (7)	17 (9)	213 (10)
Preterm delivery (<37 weeks)	21 (11)	21 (11)	189 (9)
Perinatal mortality rate	10·8/1000	10·8/1000	8·5/1000

TABLE VI—*Comparison of the puerperium among homeless mothers, controls, and mothers housed locally*

	Homeless mothers (n=185)	Controls (n=184)	Mothers housed locally (n=2123)
No (%) with fever	17 (9)	11 (6)	98 (5)
No (%) breast feeding	83 (45)	96 (52)	1400 (66)
Median (interquartile range) postnatal stay (days)	3 (2-4)	3 (2-4)	3 (2-5)
No (%) with <100 g/l haemoglobin on discharge	18 (10)	14 (8)	258 (12)

How valid are these findings? As the study was based on a hospital rather than a community population there may have been some selection bias. St Mary's is near the hotels, but it is possible that some residents of bed and breakfast hotels in Paddington continued to attend maternity hospitals in their original district of residence. Our definition of homelessness was restricted to women resident in a bed and breakfast hotel at booking. No data were available on the length of stay in the hotel or whether women were resident at conception. It is unlikely that women in their first pregnancy had conceived while resident in a hotel as pregnancy was usually the reason for placement. The study was therefore unable to look at the problems of pregnancy in the first trimester and early fetal loss. Three per cent of the women who were homeless at booking were rehoused during pregnancy, and it is possible that some of the housed population moved into temporary accommodation after they had booked for delivery, but such misclassification is likely to be small.

The characteristics of homeless populations vary as the boroughs placing people in hotels change; since this study the proportion of Bengali women has fallen. The findings of this study in 1988 may not be valid for 1990 and should be interpreted with caution in different populations.

The outcome of pregnancy in these women remains less good than that among the general population, but this seems to reflect their social deprivation rather than their place of residence. Obstetric care might be improved by earlier booking, which would allow the early detection and treatment of anaemia or other medical disorders, education about smoking, and assistance with obtaining appropriate social security benefits; an ultrasound scan could be performed at the optimal time of gestation. It is difficult to resolve the problem of late booking, but districts need to ensure that adequate information about local antenatal services is made available in social security offices and in the hotels known to accommodate these women. The placing district should also take responsibility for informing women of such services.

There has been much debate about the difficulty faced by the homeless people in registering with a general practitioner,[13][14] and because of this difficulty there is a greater onus on the hospital to provide comprehensive maternity care when needed. This may include providing interpreters and social workers.

Our study used routinely collected data to evaluate the obstetric outcome in homeless mothers. It was not able to consider the material and emotional experiences that have been described elsewhere.[6][15] Despite this limitation it has shown an important application of the computerised maternity information system: to make possible the obstetric audit of specific subgroups of women who may be cause for concern.

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Prevalence of asthma in Finnish young men

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Abstract

Objective—To determine the prevalence of asthma in cohorts of Finnish young men in the period 1926-89.

Design—A retrospective analysis using reports and statistics of Finnish defence forces.

Setting—Call up examinations of candidates for military conscription and examination of conscripts discharged because of poor health.

Subjects—Roughly 900 000 men—that is, 98% of men of conscription age—examined in 1966-89 and a proportional but unknown number examined in 1926-61.

Main outcome measures—Asthma recognised at call up examination, exemption from military service, and discharge from military service because of asthma.

Results—During 1926-61 the prevalence of asthma recorded at call up examinations remained steady at between 0·02% and 0·08%. Between 1961 and 1966, however, a continuous, linear rise began, the prevalence increasing from 0·29% in 1966 to 1·79% in 1989—that is, representing a sixfold increase. Compared with 1961 the rise was 20-fold. From 1966 to 1989 the sum of exemptions and discharges from military service due to asthma increased analogously sixfold.

Conclusions—If the apparent increase in asthma detected in Finnish young men was due entirely to improved diagnostic methods and other confounding effects then some 95% of cases must have gone undiagnosed in the years before 1966. This seems inconceivable, which suggests that much of the increase was real. This conclusion is strengthened by the observed rise in exemptions and discharges due to asthma.

Introduction

Reports from several countries suggest that the incidence and severity of asthma are on the increase.[1][2] Much of the apparent increase, however, may be due to