

# General practice

## Socioeconomic differences in childhood consultation rates in general practice in England and Wales: prospective cohort study

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### Abstract

**Objective** To establish how consultation rates in children for episodes of illness, preventive activities, and home visits vary by social class.

**Design** Analysis of prospectively collected data from the fourth national survey of morbidity in general practice, carried out between September 1991 and August 1992.

**Setting** 60 general practices in England and Wales.

**Subjects** 106 102 children aged 0 to 15 years registered with the participating practices.

**Main outcome measures** Mean overall consultation rates for any reason, illness by severity of underlying disease, preventive episodes, home visits, and specific diagnostic category (infections, asthma, and injuries).

**Results** Overall consultation rates increased from registrar general's social classes I-II to classes IV-V in a linear pattern (for IV-V *v* I-II rate ratio 1.18; 95% confidence interval 1.14 to 1.22). Children from social classes IV-V consulted more frequently than children from classes I-II for illnesses (rate ratio 1.23; 1.15 to 1.30), including infections, asthma, and injuries and poisonings. They also had significantly higher consultation rates for minor, moderate, and serious illnesses and higher home visiting rates (rate ratio 2.00; 1.81 to 2.18). Consultations for preventive activities were lower in children from social classes IV-V than in children from social classes I-II (rate ratio 0.95; 0.86 to 1.05).

**Conclusions** Childhood consultation rates for episodes of illness increase from social classes I-II through to classes IV-V. The findings on severity of underlying illness suggest the health of children from lower social classes is worse than that of children from higher social classes. These results reinforce the need to identify and target children for preventive health care in their socioeconomic context.

### Introduction

More than a quarter of the workload of general practitioners arises from consultations with children, and about 90% of children are taken to see their general practitioner every year.<sup>1,2</sup> Factors which predict consulting behaviour in children include previous experience of child care by the parents, the extent of

illness, the age of the child, having an unemployed father, material deprivation, living in rented accommodation, and attendance at nurseries.<sup>3-5</sup> Previous studies, however, have usually relied on parental recall of consultations with general practitioners by using cross sectional or retrospective data on selected populations. Moreover, although many of these factors are related to individual socioeconomic circumstances, little is known about how overall socioeconomic differences affect childhood illness and consultations with general practitioners. The few studies that have examined childhood illnesses specific for social class have often had contradictory results. For example, some studies have found that children from social classes I and II have a higher prevalence of asthma, whereas other studies have found that the prevalence of severe asthma was highest among children from lower socioeconomic groups.<sup>6,7</sup>

Social class differences in morbidity and in the use of health services remain important. There are large differences in mortality and morbidity between social classes for the major causes of illness.<sup>8-10</sup> Lifestyle patterns which affect health, such as smoking and material circumstances, also vary according to socioeconomic status.<sup>11</sup> Deprived areas with high morbidity often receive poorer healthcare services, and users of preventive services are often those least in need of such care.<sup>12,13</sup> Furthermore, relative social class differences in health have widened in recent years.<sup>14</sup>

The fourth national survey of morbidity in general practice reported some preliminary findings on socioeconomic differences in consultation rates.<sup>1</sup> We used data from the survey to examine further the association between childhood consultations in general practice and socioeconomic status in children aged 0 to 15 years registered with 60 general practices in England and Wales.

### Methods

The fourth national survey of morbidity in general practice was conducted between September 1991 and August 1992.<sup>1</sup> The main objective of the study was to examine the patterns of disease seen by general practitioners by the age, sex, and socioeconomic status of the patients.

### Practices in study

Sixty volunteer general practices took part in the survey. The practices had a special interest in the collection of morbidity data and were not typical of all practices in England and Wales. For example, they were more likely to record clinical information on practice computers (100% *v* 34%) and had a larger mean list size (7700 *v* 5200).

### Patients in study

The study population comprised a 1% sample of the population of England and Wales. The sample was representative of the population for age, sex, social class, and housing tenure, but there was under-representation of ethnic minority groups because relatively few inner city practices participated in the survey.

### Recording and validation of morbidity data

Before the survey started doctors and staff from each practice attended three 2 day training sessions on the recording of morbidity data. Practices then collected data for 2 to 4 weeks before the start of the survey. These data were analysed and any errors or inconsistencies reported to the practices. Once the morbidity survey started general practitioners and nurses recorded information on all face to face contacts with patients. Each reason for consulting and the place of contact was directly entered into patient records on the practice computer and defined as one consultation. Every consultation was given a diagnostic Read code and the data then transferred on disk to the Office of Population Censuses and Surveys where an international classification of diseases, ninth revision (ICD-9) code was assigned. The underlying disease for each episode of illness was in turn mapped to a category of severity: serious (for example, diabetes), intermediate (for example, iron deficiency anaemia), or minor (for example, upper respiratory tract infections) (see box). The categories were predefined and independent of doctors' opinions of the clinical condition of the patient at the time of presentation.

After the end of the survey manual practice records were used to identify all patients seen either in the surgery or elsewhere by the 60 practices on four different days. A comparison of the 20 000 patients seen on these days showed that 96% of contacts with doctors in the surgery and 95% at home had been recorded on the data submitted by the practices. Finally, diagnostic data from paper records of a random sample of 999 patients were compared with the electronic data submitted by the practices. This showed that 93% of diagnoses had been recorded correctly.

### Socioeconomic data

Socioeconomic data for all patients registered were collected by interviewers during the year of the study. Occupation of the parent or guardian of the child was recorded and converted to social class with the registrar general's classification (class I the highest and class V the lowest). Other socioeconomic data collected included housing tenure, ethnicity, whether the child was living with a sole adult, and economic position last week of the head of the household. Data for children under 16 years of age were usually provided by a parent or close relative. The response given at interview was assumed to apply for the entire year. Age was

### Assignment of category of severity

#### Serious

- Invariably or commonly serious or possibly life threatening or
- Invariably or commonly requiring major surgery or intensive care or
- With a high probability of serious complications or significant disability  
—for example, diabetes, malignant neoplasms

#### Intermediate

- Other than serious or minor  
—for example, iron deficiency anaemia, acute bronchitis

#### Minor

- Illnesses commonly treated without recourse to medical advice or
- Minor or self limiting illnesses which require no specific treatment or
- Reasons for contact in the ICD-9 supplementary classification  
—for example, upper respiratory tract infections, otitis externa

grouped as 0 to 4, 5 to 9, and 10 to 15 years. Because of the relatively small number of children in classes I and V, social class was grouped as I-II, III non-manual, III manual, and IV-V.

### Statistical methods

The consultation and socioeconomic data supplied by the practices for each child in the survey were linked to produce a record for each child. Consultations in subgroups of social class were examined by tabulating the mean rates of consultation. To overcome clustering dependencies at the individual level a mean consultation rate for each child was calculated and each of these summed over the number of children in each social class category to produce a person based mean consultation rate with 95% confidence interval.<sup>15</sup> All rates were corrected to take into account the fact that not all the children were followed up for the entire year of the study. Because adjustment for age and sex did not make any significant difference to social class differences, unadjusted rates are presented throughout. Rate ratios were calculated as the ratio of mean rates; confidence intervals were estimated with the  $\delta$  method.<sup>16</sup> The outcomes were consultation rates for any reason, illness (ICD-9 chapters 1 to 17), infections (ICD-9 chapter 1), asthma (ICD-9 493), accidents and poisonings (ICD-9 chapter 17), home visits, and prevention (immunisation, screening, surveillance, or antenatal care). Linear trends across categories of social class were compared by constructing a linear regression model. For this last comparison those children whose social class was not known were excluded from the analysis. The trends are presented as  $\beta$  coefficients of the line of best fit, which shows the rate of change in unadjusted mean consultation rate across each social class category. For ease of interpretation these changes were expressed as percentage change from the mean rate across each category.

**Table 1** Baseline characteristics of children and mean consulting rates with general practitioners

Detail	No (%)	Mean consulting rate	Rate ratio (95% CI)
<b>Sex:</b>			
Boys*	54 312 (51.2)	3.67	1.00
Girls	51 790 (48.8)	3.73	1.02 (1.00 to 1.04)
<b>Age group (years):</b>			
0 to 4*	37 904 (35.7)	6.11	1.00
5 to 9	31 963 (30.1)	2.52	0.41 (0.39 to 0.43)
10 to 15	36 235 (34.1)	2.21	0.36 (0.28 to 0.44)
<b>Tenure:</b>			
Owner occupied*	63 832 (60.2)	3.63	1.00
Council	21 155 (19.9)	4.43	1.22 (1.19 to 1.26)
Other rented	8306 (7.8)	4.29	1.18 (1.15 to 1.22)
Communal	641 (0.6)	2.79	0.77 (0.61 to 0.93)
Not known	12 168 (11.5)	2.40	0.66 (0.49 to 0.84)
<b>Single parent family:</b>			
No*	82 373 (77.6)	3.88	1.00
Yes	10 938 (10.4)	3.81	0.98 (0.95 to 1.01)
Not known	12 746 (12.0)	2.42	0.63 (0.45 to 0.80)
<b>Ethnic group:</b>			
White*	89 713 (84.6)	3.86	1.00
Afro-Caribbean	735 (0.7)	3.79	0.98 (0.89 to 1.08)
South Asian	1415 (1.3)	4.30	1.11 (1.02 to 1.21)
Other	1158 (1.1)	3.95	1.02 (0.95 to 1.10)
Not known	13 081 (12.3)	2.50	0.65 (0.49 to 0.81)
<b>Social class of parent or guardian:</b>			
I-II*	31 306 (29.5)	3.54	1.00
III non-manual	10 825 (10.2)	3.95	1.12 (1.06 to 1.18)
III manual	28 499 (26.7)	3.95	1.12 (1.10 to 1.14)
IV-V	18 499 (17.4)	4.18	1.18 (1.14 to 1.22)
Other	4199 (4.0)	4.15	1.17 (1.13 to 1.21)
Not known	12 774 (12.0)	2.43	0.68 (0.52 to 0.85)
<b>Employment status of parent or guardian:</b>			
Employed full time*	71 008 (66.9)	3.77	1.00
Employed part time	3463 (3.3)	3.34	0.89 (0.84 to 0.94)
Waiting/seeking	8472 (8.0)	4.34	1.15 (1.08 to 1.22)
Student	693 (0.7)	4.18	1.11 (1.02 to 1.20)
Permanently sick	1688 (1.6)	3.47	0.92 (0.86 to 0.98)
Other	7939 (7.5)	4.58	1.22 (1.19 to 1.25)
Not known	12 839 (12.1)	2.43	0.65 (0.48 to 0.82)

\*Baseline group.

## Results

### Baseline characteristics

A third of the 106 102 children were from social classes I-II, 10% from III non-manual, 27% from III manual, and 17% from IV-V (table 1). When we compared our figures with the results of the 1991 census a greater proportion of households had parents or guardians in full time employment (67% v 45%), and there was some under-representation of non-white ethnic groups. Other characteristics were similar to those found in the 1991 census.

### Consultation rates

There were 324 064 consultations, and the corrected mean annual consultation rate was 3.7 consultations per child per year (95% confidence interval 3.64 to 3.75; table 1). Of these consultations, 87% were for illness episodes, 11% for preventive episodes, and 2% for other reasons. Of the episodes of illness, the underlying disease was classed as of minor severity in 50%, moderate in 43%, and serious in 7%. Infectious diseases and respiratory episodes made up over 40% of the diagnoses.

There was no significant difference between boys and girls in overall consulting rates. The highest consulting rates were in the 0 to 4 years age group. Children in council and rented accommodation consulted most frequently over the year (rate ratio compared with children in owner occupied accommodation 1.22; 1.19 to 1.26). There was no significant difference in overall consulting rates between children living in one parent and two parent households. Children of students and unemployed parents had higher consulting rates than children of full time working parents. Non-white ethnic minorities made up only 2% of the children studied but within this group south Asian children had significantly higher consulting rates.

### Differences in consulting rates across social class

Overall consulting rates were 18% higher in children from social classes IV-V than in children from social classes I-II (table 1). A larger increase of 23% was seen for consultations for episodes of illness (table 2). Home visiting rates doubled from social classes I-II to IV-V. There was a small decrease in consultation rates for preventive episodes from social class I-II through to IV-V, but this was not significant (table 2).

Comparison by social class of consultations by severity of underlying illness showed consultation rates increased consistently from social classes I-II through to IV-V for all illnesses and for serious, moderate, and minor illnesses (table 3). This pattern was repeated when the consultation rates were examined for three common diagnostic categories in children: infections, asthma, and accidents and poisonings (table 4). Table 5 shows the linear trends for changes in rates across social class categories. For each increase in the social class groupings used in this study there were clear increases in home visits (21.2%) and in consultations for episodes of illness (6.8%), infections (11.7%), and respiratory illnesses (7.3%).

## Discussion

Overall consultation rates in children increased linearly from social classes I-II to classes IV-V. Children

**Table 2** Mean annual consultation rates per child per year by social class for illness, prevention, and home visits

Social class	Illness		Prevention		Home visits	
	Rate	Rate ratio (95% CI)	Rate	Rate ratio (95% CI)	Rate	Rate ratio (95% CI)
I-II*	2.89	—	0.53	—	0.21	—
III non-manual	3.23	1.12 (1.09 to 1.16)	0.57	1.09 (0.96 to 1.21)	0.32	1.55 (1.32 to 1.79)
III manual	3.30	1.14 (1.12 to 1.17)	0.52	0.98 (0.89 to 1.08)	0.33	1.61 (1.47 to 1.75)
IV-V	3.53	1.23 (1.15 to 1.30)	0.51	0.95 (0.86 to 1.05)	0.41	2.00 (1.81 to 2.18)
Other	3.37	1.17 (1.11 to 1.23)	0.61	1.15 (1.00 to 1.30)	0.38	1.86 (1.55 to 2.17)
Not known	1.90	0.66 (0.60 to 0.70)	0.40	0.76 (0.66 to 0.86)	0.33	1.59 (0.56 to 2.63)

\*Baseline group.

**Table 3** Mean annual consultation rates per child per year by social class for illness episodes and severity of illness

Social class	Minor illness		Moderate illness		Serious illness	
	Rate	Rate ratio (95% CI)	Rate	Rate ratio (95% CI)	Rate	Rate ratio (95% CI)
I-II*	1.87	—	1.45	—	0.23	—
III non-manual	2.13	1.14 (1.09 to 1.20)	1.57	1.08 (1.04 to 1.12)	0.26	1.13 (1.02 to 1.24)
III manual	2.07	1.11 (1.08 to 1.14)	1.60	1.11 (1.08 to 1.14)	0.27	1.21 (1.12 to 1.29)
IV-V	2.21	1.18 (1.14 to 1.23)	1.71	1.18 (1.07 to 1.28)	0.27	1.18 (1.08 to 1.27)
Other	2.25	1.20 (1.13 to 1.28)	1.67	1.15 (1.08 to 1.22)	0.24	1.04 (0.82 to 1.27)
Not known	1.39	0.74 (0.69 to 0.80)	0.91	0.63 (0.55 to 0.70)	0.13	0.57 (0.50 to 0.63)

\*Baseline group.

**Table 4** Mean annual consultation rates per child per year by social class for infectious diseases, asthma, and accidents and poisoning

Social class	Infectious diseases		Asthma		Accidents and poisoning	
	Rate	Rate ratio (95% CI)	Rate	Rate ratio (95% CI)	Rate	Rate ratio (95% CI)
I-II*	0.35	—	0.18	—	0.17	—
III non-manual	0.42	1.19 (1.11 to 1.27)	0.20	1.12 (1.00 to 1.25)	0.18	1.07 (0.99 to 1.16)
III manual	0.42	1.22 (1.16 to 1.27)	0.21	1.18 (1.08 to 1.27)	0.20	1.15 (1.09 to 1.21)
IV-V	0.50	1.44 (1.11 to 1.77)	0.20	1.13 (1.02 to 1.23)	0.21	1.19 (1.12 to 1.26)
Other	0.48	1.38 (1.23 to 1.53)	0.18	0.99 (0.75 to 1.22)	0.20	1.17 (1.02 to 1.33)
Not known	0.24	0.70 (0.62 to 0.67)	0.08	0.44 (0.38 to 0.51)	0.11	0.67 (0.59 to 0.75)

\*Baseline group.

from social classes IV-V were more likely to consult their general practitioner for an episode of illness, including for disorders such as infections, asthma, and injuries and poisonings. While these children have higher consulting rates for minor illness they also seem to have poorer health, with higher consultation rates also for intermediate and serious categories of illness. The one exception to this pattern was for preventive care, where children from social class IV-V consulted less frequently when compared with children from social classes I-II.

#### Comparison with other studies

The findings reported in our paper contradict those from another recently published study. In an analysis of data from the general household survey, Cooper et al found no evidence of socioeconomic differences in childhood consultation rates.<sup>17</sup> Their sample, however, was substantially smaller than our own (20 473 *v* 106 102) and covered a wider age range (0-19 years *v* 0-15 years). Furthermore, the consultation rates were based on parental recall of consultations during a 2 week period, whereas our own study used validated data that were prospectively collected over 1 year. Hence, the findings of our study are likely to be a more accurate reflection of the association between childhood consultation rates and social class. Cooper et al did, however, find a higher consultation rates in children classed as south Asian, and this is consistent with the findings of our own study.

Other researchers have also used data from the fourth national survey of morbidity in general practice to examine socioeconomic differences in consultation rates. Carr-Hill et al examined individual socioeconomic determinants of rates of consultation.<sup>18</sup> Higher rates were found in those who were permanently sick, unemployed, or living in rented accommodation. Another study found that among children from lone parent households a higher proportion consulted for infections and accidents and had correspondingly

lower rates of attendance for immunisation and preventive health care compared with other children.<sup>19</sup> Aylin et al found a nearly twofold difference in standardised home visiting ratios between patients from social class I and patients from social class V.<sup>20</sup>

#### Generalisability of findings

The general application of our findings is potentially limited because the practices taking part in the survey were volunteers. This resulted in fewer practices from inner city areas and hence lower rates of unemployment and ethnicity among the patients in the study. The ecological fallacy, however, was avoided as social class was recorded at the individual level. The data were also collected prospectively, and validation studies suggested that there was good recording. The study sample was also reasonably similar to the population of England and Wales for most socioeconomic characteristics. Hence, it seems unlikely that biases could account for the large differences seen in consultation rates between children from different social classes. Because of the well known association between social

**Table 5** Percentage change in annual mean consultation rate for each increase in social class group

Reason for consultation	Unadjusted mean rate per child	$\beta$ coefficient	Percentage change in rate
Any reason	3.69	0.20	5.5
All episodes of illness	3.04	0.22	6.8
Prevention	0.52	-0.01	-1.8
Home visits	0.31	0.07	21.2
By severity of illness:			
Serious	0.24	0.02	6.6
Moderate	1.49	0.08	5.5
Minor	1.97	0.11	5.4
By specific illness:			
Infection	0.40	0.05	11.7
Respiratory disease	1.08	0.08	7.3
Asthma	0.18	0.01	5.2
Injuries	0.18	0.01	6.3

## Key messages

- Childhood consultation rates for episodes of illness, including infections, asthma, and injuries, increase from social classes I-II through to social classes IV-V
- Children from lower socioeconomic groups make more use of home visits and consult more often for minor and serious illnesses
- Consultation rates for preventive care are slightly lower in children from social classes IV-V than in children from classes I-II
- Members of the primary healthcare team should be aware of socioeconomic factors when children are targeted for preventive activities and when health services are planned

class and ill health the differences in consultation rates are unlikely to be entirely due to inappropriate use of general practitioner services by children from social classes IV and V. This conclusion is supported by the findings on consultation rates by severity of underlying illness. The higher consultation rates for illnesses of serious and moderate severity suggest that morbidity levels in children in this study were higher in children from social classes IV-V than from social classes I-II.

## Conclusions

This study has highlighted the importance of the socioeconomic background of children when the use of primary care services is examined. Our findings have implications for targeting children for preventive practices such as immunisation and the prevention of injury and poisoning.<sup>14</sup> Members of the primary healthcare team and planners of health services need to be aware of the impact of socioeconomic circumstances on morbidity when planning health services.

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## One hundred years ago

## Child labour

A reprint of a series of articles published by the *Daily Mail* has been published under the title, *The Children's Labour Question*. The importance of the question can hardly be overrated; putting aside all sentiment, there is the wide issue involved of the common weal. These children are the future begetters of the race, and the nation for its own good must see to it that the stock does not deteriorate. We have no sympathy with those who employ child labour for the sake of lower wage, and were this the only issue legislation would be simple enough, but in the hard struggle for life where unskilled labour is followed at home, and where the cruel system of sweating sets a price which is only one remove from starvation, the little ones have to forego the game in the street, or the half-day at school, to keep the bare home over their heads. It is here that the pinch comes, and it is here that the question of child labour touches the complications of trade unions, elementary education, Poor-law relief. Regarding this question from the educational standpoint, it is shown by test

examinations that the girls suffer more from dullness and apathy than the boys. This touches on the physiological side of child life; the girl at the critical time of her development is handicapped by living the double life of school and the mill, showing that these conditions are unfavourable to the sexual development. This fact is a strong argument against the employment of the immature girl in factories. Again, when the half-timer is subjected to the height and weight test, the advantage is decidedly on the side of the full-timer, though the home conditions must also be considered as putting up the scale. But allowing that the half-timer starts at a disadvantage, this fact should be an argument against his taking any share in factory work until he has overcome the adverse conditions of his family history and home life. From the medical point of view there can be no question that the circumstances of child life should be such as will favour the fullest development of the physical nature. (*BMJ* 1899;i:926)