Inequality in health and health service use for mothers of young children in south west England

Deborah Baker, Hazel Taylor, and the Survey Team of the Avon Longitudinal Study of Pregnancy and Childhood Team

Abstract

Objective – To establish the degree of association between relative deprivation and any variation in condition specific morbidity and in consultations with general practitioners for mothers of young children.

Study design – Condition specific morbidity and general practitioner consultation (GP) rates were recorded by means of self reports on a postal questionnaire. Subjects were asked to record whether they had suffered from any of 16 common conditions and, if so, whether they had consulted the GP. Relative deprivation was measured using indicators such as home ownership, overcrowded living conditions, car ownership, and partners' employment status. Information was also collected about the women's own employment status, their ages, and parity.

Setting – The three district health authorities of Bristol. All women expecting a baby between April 1991 and December 1992 were invited to participate.

Subjects – Altogether 11 040 mothers who completed questionnaires about their own health and well being at 8 months postpartum as part of the Avon longitudinal study of pregnancy and childhood.

Outcome measures – The percentage of mothers reporting any of 16 common conditions since the birth of their child and the proportion of them who consulted the GP if a condition was reported. χ^2 tests of independence were used to examine the association between condition specific morbidity and social, demographic, and maternal characteristics. Latent class analysis was used to "cluster" mothers according to the particular configuration of social, demographic, and maternal characteristics associated with levels of morbidity for each of the six most commonly reported conditions. The probability of consulting a GP was then compared between clusters.

Results – Relative deprivation had a greater impact on morbidity and GP consultation for stress related conditions such as depression, anxiety, and headache/migraine. For all these conditions, higher levels of self reported morbidity and a greater probability of consulting the doctor were associated with a cluster of social

disadvantage – living in rented accommodation, non-employment, younger age, and lower educational status. For other conditions such as backache, haemorrhoids, and cough/cold, however, higher morbidity was associated with a cluster of advantage – home ownership, uncrowded living conditions, use of car, and partner in employment. Where there was variation in the probability of consulting the GP for these conditions, it was linked to parity rather than socioeconomic factors. Higher levels of morbidity for all but one condition (backache) were also associated with having more than one child, but this cross-cut socioeconomic and demographic cluster characteristics; both more affluent, older mothers and younger, more deprived mothers were likely to be multiparous.

Conclusions – Relative deprivation was associated with poorer mental but not physical health for this population of mothers of young children. These findings have implications for a more targeted approach to reducing inequality in health. The importance of examining inequality in health for women in relation to their own material circumstances, their employment status, and parity, is emphasised.

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Identifying and explaining inequalities in health for women is a relatively neglected area of epidemiological enquiry. Studies using "broad sweep" measures of health status such as all cause mortality and limiting longstanding illness standardised for age have detected little difference between the sexes in health differentials associated with social disadvantage. For women, as for men, higher levels of morbidity are associated with relative deprivation and this is the case whether women's social status is measured by their own or their husband's social class or by household measures of material deprivation such as housing tenure and car ownership.¹⁻⁴ Other studies have examined the link between socioeconomic status and men and women's health at particular ages and over a wider range of outcomes.⁵⁻⁸ But they have reached the conclusion that relative deprivation is a more potent explanation for inequality in health at some ages and for some outcomes than for others. For example, Ford *et al*⁷ used the three distinct age groups that form the west

Institute of Child Health, University of Bristol, Royal Hospital for Sick Children, St Michael's Hill, Bristol BS2 8BJ
D Baker
H Taylor

Correspondence to:
Dr D Baker.

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of Scotland twenty-07 study and showed that there were social class inequalities in mental health and the presence of chronic illness between the ages of 35–55 for both sexes, but not in adolescence; there were no identifiable differences in age- and sex-specific patterns of general practitioner consultation in relation to social class.

However, studies that focus on comparisons of the health of men and women tend to overlook factors that may be particularly relevant to understanding the social correlates of health inequality for women. For instance, parity and employment status are important determinants of health differentials for women for some conditions over and above the influence of relative deprivation.^{9–12} The impact of such factors is likely to differ depending on the point in the lifespan being considered. Elliott and Hupert¹² examined the impact of social class, parity, and employment status on the health of 1000 married women under 44 across a range of 16 conditions. Employment was associated with better physical health for middle class women, but not for working class women. The age of the youngest child had no significant effect on physical health. The picture for mental health was quite different. There was no association between good or poor mental health and either social class or employment status. Rather the most important predictor of mental health was age of the youngest child; women with one or more children under 5 had the poorer mental health.

There are thus good reasons for examining the relative importance of material deprivation, employment status, and parity in explaining inequality in health for women over a range of outcomes and at different points in the lifespan. The particular focus of this study is on health inequalities in condition specific morbidity and general practitioner (GP) consultation for mothers of young children. These women are likely to be particularly vulnerable to the effects of relative deprivation on health; they are among the poorest sections of the population as they often work part time or are not employed outside the home because of caring for their children.^{13,14} The most detailed population study of health after childbirth to date¹⁵ found that the impact of social disadvantage on morbidity and GP consultation was not consistent across conditions and that parity was also an important source of variation in health status and service use. There were, however, a number of aspects of the design of the study which could have been sources of bias. The main aim of the study was to examine the short and long term effects of epidural anaesthesia on maternal health. The self report of morbidity after childbirth was as a consequence reported from 1–9 years after childbirth. It was noted that the proportion of women reporting different symptoms increased as the recall interval decreased, but it was not possible to judge the extent to which recall of symptoms was socially determined. Also, the measurement of socioeconomic status was based on the husband's occupation and excluded single parents and those women whose husbands were un-

employed, even though they themselves could have been employed. But, as Judge and Benzeval¹⁶ have suggested, judgements about the size and nature of health inequalities run the risk of becoming seriously biased if the socioeconomic circumstances of the women themselves are not measured. They found that the "failure to include the children of lone mothers who are economically inactive, a group which is larger than even social class I or V in analyses of childhood mortality, substantially underestimates the extent of the problem". The current paper reports on the findings of a population study of condition specific morbidity and GP consultation for mothers of young children in which these difficulties were overcome.

Methods

The sample used was the Avon longitudinal study of pregnancy and childhood; all women having a baby between April 1991 and December 1992 in the three health districts of Bristol were approached and invited to participate. Aspects of their health and the health of their partners and children have been and will continue to be monitored during pregnancy and early motherhood and at yearly intervals from 8 months postpartum. Information was collected by means of a self completion questionnaire administered at 8 months postpartum. At this time the study sample consisted of 11 040 mothers. Mothers were asked to report whether they had suffered from any of 16 common conditions since the baby had been born and, if so, whether they had consulted the GP. Thus data about morbidity and utilisation were interlinked. The conditions included minor ailments such as headache or migraine and cough or cold; acute conditions such as urinary infections; problems associated with pregnancy and childbirth such as haemorrhoids (the term "piles" was used on the questionnaire) and backache; chronic conditions such as rheumatism, arthritis and eczema; and mental health problems such as anxiety and depression. A full list of the conditions appears in table 1. While self reports of morbidity are

Table 1 Self reported morbidity and GP consultation for 16 conditions in a sample of 11 040 mothers of young children

Symptom	Incidence		Consultation	
	No	% of sample	No	% of those reporting the condition
Cough or cold	8271	74.5	702	8.5
Headache	7369	66.5	589	8.0
Backache	6654	60.1	773	11.6
Depression	3487	31.6	885	25.4
Haemorrhoids	3274	29.7	913	27.9
Anxiety	2308	21.0	484	21.0
Indigestion	1971	17.9	99	5.0
Influenza	1316	12.0	332	25.2
Eczema	1307	11.9	463	35.4
Wheezing	846	7.7	254	30.0
Urinary infection	842	7.7	653	77.6
Psoriasis	287	2.6	107	37.3
Rheumatism	221	2.0	53	24.0
Bronchitis	209	1.9	141	67.5
Arthritis	198	1.8	91	46.0
Stomach ulcer	29	0.3	20	69.0

inevitably based on subjective assessments of health, for certain purposes it is more appropriate to measure people's perceptions of their health than to attempt a more objective or clinical assessment of their condition. Perceptions are thought, for example, to be more meaningfully related to demand for health services.⁴¹⁴ In addition, it would be difficult, if not impossible, to record objectively every incident of minor ailments such as headache or cold, although such conditions do on occasion result in GP consultation.

Socioeconomic variables were also obtained at 8 months postpartum. These included car ownership, housing tenure, and overcrowding. Use of such measures of relative deprivation has the major advantage of being applicable to all of the women participating in the study, thus avoiding the complications of measuring social class for non-employed women. Information was also collected about the employment status of both the woman and her partner (if she was married or cohabiting), single parenthood, mother's age, educational level, and parity.

ANALYSIS

To examine the relationship between self reported morbidity and consultation for the 16 conditions, the percentage of the sample reporting a particular condition was calculated, together with the percentage of this group who consulted the GP. For each of the conditions, χ^2 tests were used to determine whether levels of self reported morbidity were associated with the socioeconomic and maternal characteristics listed above.

To examine the relationship between GP consultation and social, demographic, and maternal variables latent class analysis was used^{19 20} to group mothers with similar socioeconomic and maternal characteristics. This reduced the data from many correlated variables into easily interpretable groups, but retained all the variables so there was no loss of information. The relationship variables and their stability over conditions could therefore be clearly described and understood.

A separate latent class analysis was carried out for the six most common conditions – cold, headache, backache, haemorrhoids, and depression and anxiety. Only mothers who reported the condition were included in the analysis. The nine socioeconomic, demographic, and maternal variables listed above were used in this analysis. Single parenthood and partner working were amalgamated to give one variable with the levels, single parent, partner unemployed, and partner employed. An additional variable of whether the mother consulted the GP with the condition was also included. Two, three, and four class solutions were obtained for the six symptoms. The analysis was repeated 20 times to ensure that the maximum value of the likelihood had been found (or the minimum of $-2 \log(\lambda)$). In the cases, where two or more maxima were found, the solution with the minimum value of $-2 \log(\lambda)$ was always used. The three class

solution for each condition was eventually selected as being the one that best summarised the results of the initial χ^2 analyses.

Results

Table 1 shows the proportion of mothers that reported a condition and the percentage of these that consulted the doctor about it; the relationship between self reported morbidity and general practitioner consultation varied considerably across conditions. There were three discernible patterns: for some conditions levels of self reported morbidity were high, but consultation was low. For example cough or cold, headache/migraine, and backache were reported by 74.5%, 66.5%, and 60.1% of women respectively, but only 8.5%, 8%, and 11.6% respectively consulted the GP. For other conditions reported less frequently, consultation rates were higher. This was a typical pattern for bronchitis and for urinary infections. For the latter, 7.7% of those sampled reported this condition, but 77.6% of them went to see the doctor. Yet other conditions revealed relatively high levels of both morbidity and consultation. Typical of this group were anxiety, depression, and haemorrhoids for which 21.0%, 31.6%, and 29.7% of the sample respectively reported symptoms and 21%, 25.4%, and 27.9% of these went to see the doctor.

Latent class analysis consistently produced three core clusters of socioeconomic and demographic characteristics across the six most common conditions as follows:

1. Cluster 1 was composed of women who lived in uncrowded, mortgaged accommodation, who had use of a car, whose partner was employed and who were over thirty years old.
2. Cluster 2 was similar in all respects to cluster 1 except that cluster membership was defined by younger age (<30) and lower educational status.
3. Cluster 3 in contrast was characterised by women who lived in rented accommodation, who had not worked since the baby was born and who were younger (<30) with lower educational status.

The extent to which parity combined with socioeconomic and demographic characteristics to define cluster membership varied in relation to the condition.

Tables 2, 3, and 4 show the relationship between the membership of either clusters 1, 2, and 3, self reported morbidity and the probability of consulting the doctor for the six most common conditions.

MENTAL HEALTH (TABLE 2)

χ^2 tests indicated that both depression and anxiety were more likely to be reported by women with the combination of characteristics definitive of social disadvantage (cluster 3). The probabilities of consulting the doctor with these conditions, although relatively low, were highest for women in cluster 3 ($p=0.31$ for depression, $p=0.29$ for anxiety). While having

Table 2 The relationship between socioeconomic and demographic variables, self reported morbidity, and GP consultation for depression and anxiety

		Depression						Anxiety					
		Self reported morbidity			Cluster probabilities†			Self reported morbidity			Cluster probabilities		
Variable		No	%	χ ²	1	2	3	No	%	χ ²	1	2	3
Crowding	<1 people/room	2823	30	47.1****	0.93	0.92	—	1896	20	8.9**	0.93	0.93	—
	>1 people/room	547	40		—	—	—	329	24		—	—	—
Have use of a car	Yes	3015	30	94.3****	0.99	0.98	—	2044	21	9.1**	0.99	0.98	—
	No	452	45		—	—	—	245	25		—	—	—
Housing tenure	Mortgage	2395	28	187.1****	0.93	0.90	—	1694	20	20.6****	0.94	0.91	—
	Rented	1068	43		—	—	0.86	602	24		—	—	0.85
Worked since birth	No	2098	35	53.4****	—	—	0.84	1307	22	3.6	—	—	0.82
	Yes	1325	28		—	—	—	956	20		—	—	—
Partner employed	Yes	2698	30	76.5****	0.89	0.92	—	1839	20	8.4**	0.89	0.91	—
	No	569	41		—	—	—	323	24		—	—	—
Single parenthood	No	3107	31	63.1****	—	—	—	2071	21	25.0****	—	—	—
	Yes	350	44		—	—	—	220	28		—	—	—
Parity	1	1397	29	15.9****	—	—	—	925	20	9.4**	—	—	—
	>2	1924	33		0.68	—	—	1275	22		0.67	—	0.67
Educational level	<O level	2236	34	41.4****	—	0.72	0.88	1357	20	2.0	—	0.71	0.85
	>O level	1083	28		—	—	—	847	22		—	—	—
Age	<30	1973	33	16.4****	—	0.97	0.76	1146	19	19.4****	—	0.98	0.7
	>30	1513	30		0.99	—	—	1161	23		0.99	—	—
Consulted GP	Yes				0.22	0.24	0.31				0.18	0.21	0.29
	No				0.78	0.76	0.69				0.82	0.79	0.71
% of those reporting condition in a cluster					38	36	26						

Table 4 The relationship between socioeconomic and demographic variables, self reported morbidity, and GP consultation for cough/cold and headache/migraine

		Cough/cold						Headache/migraine					
		Self reported morbidity			Cluster probabilities†			Self reported morbidity			Cluster probabilities		
Variable		No	%	χ ²	1	2	3	No	%	χ ²	1	2	3
Crowding	<1 people/room	6993	75	1.9	0.94	0.94	—	6166	66	9.3**	0.93	0.94	—
	>1 people/room	1024	73		—	—	—	981	70		—	—	—
Have use of a car	Yes	7480	75	3.8	0.99	0.99	—	6631	66	1.0	0.99	0.99	—
	No	725	72		—	—	—	682	68		—	—	—
Housing tenure	Mortgage	6383	75	7.5**	0.95	0.93	—	5591	66	5.5*	0.95	0.92	—
	Rented	1818	73		—	—	0.82	1714	69		—	—	0.80
Worked since birth	No	4487	73	9.5**	—	—	0.82	4092	67	1.0	—	—	0.82
	Yes	3631	76		—	—	—	3151	66		—	—	—
Partner employed	Yes	6866	75	5.3*	0.91	0.93	—	6073	67	0.7	0.92	0.94	—
	No	998	72		—	—	—	931	68		—	—	—
Single parenthood	No	7635	75	4.2*	—	—	—	6795	68	0.2	—	—	—
	Yes	575	72		—	—	—	525	66		—	—	—
Parity	1	3546	74	0.3	—	—	—	3029	64	32.8****	—	—	—
	>2	4391	75		0.66	—	—	4039	69		0.69	—	—
Educational level	<O level	4843	72	59.8****	—	0.67	0.87	4631	69	50.4****	—	0.70	0.89
	>O level	3122	79		—	—	—	2462	62		—	—	—
Age	<30	4379	74	7.0**	—	0.99	0.78	4064	68	17.5****	—	0.99	0.81
	>30	3891	76		0.99	—	—	3304	65		0.99	—	—
Consulted GP	Yes				0.08	0.07	0.10				0.06	0.06	0.14
	No				0.92	0.92	0.90				0.94	0.94	0.86
% of those reporting condition in a cluster					44	37	19						

tablished for socioeconomic and demographic variables. Having more than one child was associated with higher levels of morbidity for all but one condition (backache), but this was a characteristic of both more or less socially disadvantaged women. There was no consistent association across conditions between having more than one child and higher levels of GP consultation. Thus, parity, like employment status, is integral to the interpretation of inequality in health for women at this particular point in the lifespan, although the power of its independent effect on health and its consistency across a wider range of conditions was not established by this analysis and requires further investigation.

Two more general points arise from the comparison in this study of self reported morbidity and GP consultation for the same condition. The first is that higher levels of morbidity did not, as a matter of course, result in proportionately greater consultation. For some conditions, particularly minor ailments such as cough/cold, headache/migraine, and backache, self reported morbidity far outstripped GP consultation, illustrating that for conditions such as these those attending the doctor's surgery represent only the tip of "the iceberg of illness"²¹ in the community. In contrast, self reported morbidity was lower for chronic conditions such as eczema and bronchitis, but GP consultation was proportionately greater. It was also the case that levels of self reported morbidity and GP consultation for the same condition were not always predicted by the identical clusters of socioeconomic, demographic, and maternal characteristics. For haemorrhoids, for example, more affluent women who were older, with more than one child were more likely to report the condition whereas a higher probability of consulting the doctor was associated with affluent women who were younger.

Thus, neither levels of consultation nor the socioeconomic and demographic characteristics of this population were good approximations for levels of morbidity over a range of conditions. Their use as proxies for "need" in formulating measures for equitable resource allocation in primary health care thus requires careful consideration.²²

In conclusion, this study has shown that explanations of inequality in health and health service use for mothers of young children varied in relation to the condition. Relative deprivation had its most visible impact on the mental health of this group of women. Further detailed research is needed at different points

in the lifespan to identify conditions for which social disadvantage is likely to have its greatest effect, so that specific policy implications can be addressed.

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