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

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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 post-partum 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. \( \chi^2 \) 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.

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. 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. 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 at used the three distinct age groups that form the west
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.10 The impact of such factors is likely to differ depending on the point in the lifespan being considered. Elliott and Huppert11 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.12 13 The most detailed population study of health after childbirth to date13 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 unemployed, even though they themselves could have been employed. But, as Judge and Be

Methods
The sample used was the Avon longitudinal study of pregnancy and childhood; all women who had had a baby between April 1990 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
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,\textsuperscript{13,14} 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, \( \chi^2 \) 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\textsuperscript{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 \( \chi^2 \) 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)** \( \chi^2 \) 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
more than one child was associated with higher self reported morbidity for both depression ($\chi^2 = 15.9, \text{df} = 1, p < 0.001$) and anxiety ($\chi^2 = 9.4, \text{df} = 1, p < 0.01$) it was not consistently linked to a particular set of socioeconomic and demographic characteristics defining cluster membership – for depression it was more characteristic of women in cluster 1, for anxiety women in clusters 1 and 3.

COMMON PROBLEMS FOLLOWING CHILDBIRTH (TABLE 3)

A different picture emerged for backache and haemorrhoids. For backache $\chi^2$ tests indicated that it was the older, more affluent women characterising cluster 1 who were more likely to report this condition and there was little difference between clusters in the probability of consulting the doctor. Primiparous women were more likely to report backache ($\chi^2 = 22.5, \text{df} = 1, p < 0.001$) but this was not linked to socioeconomic and demographic variables in defining cluster membership.

For haemorrhoids it was once again the older, more affluent women definitive of cluster 1 who were more likely to report this condition, but women in cluster 2 who were more likely to consult the doctor. Self reported morbidity was also higher for women with more than one child who predominated in clusters 1 and 3.

MINOR AILMENTS (TABLE 4)

The two minor ailments cough/cold and headache/migraine showed different patterns. For cough/cold, $\chi^2$ tests indicated that it was the older, more affluent women in cluster 1 who were more likely to report this condition. The probability of GP consultation was very low and there was little difference between clusters.
Headache/migraine on the other hand showed patterns similar to those for anxiety and depression. Those women who were more socially disadvantaged (cluster 3) were more likely to report headache/migraine and more likely to consult the doctor about this condition. Having more than one child was also associated with higher self reported morbidity for this condition ($\chi^2 = 32.8$, df=1, p<0.0001) but in the clusters for headache/migraine, this was most characteristic of women in cluster 1.

**Discussion**

Consideration of age- and cause-specific morbidity lends a sharper focus to our understanding of inequalities in health and health service use for women. The evidence presented in this paper confirmed the fact that for women with young children material deprivation was more strongly associated with higher rates of self reported morbidity and GP consultation for some conditions than for others. For instance for the population sampled in this study, higher levels of self reported morbidity and GP consultation for stress related conditions such as depression, anxiety and headache/migraine were associated with a cluster of characteristics indicative of social disadvantage – material deprivation, lower age and educational status and non-employment. For common conditions following childbirth such as backache and piles, however, variation in self reported morbidity and GP consultation was not associated with social disadvantage. Where variation was identified, higher levels of morbidity and consultation were related to greater affluence and to parity. Similarly for minor respiratory symptoms such as cough/cold, it was those who were less deprived who reported more symptoms and there was little variation in GP consultation associated with socioeconomic, demographic, and maternal characteristics.

These findings raise the question as to whether action for reducing inequality in health for women should be targeted more specifically to age and condition specific morbidity. For example, the provision of cheap and accessible child care facilities for impoverished mothers with young children would surely do much to alleviate the negative effects of social disadvantage on their mental health. Social variation in the distribution and effectiveness of treatment for depression and anxiety in primary care could also be examined.

It was also clear from the analyses presented in this paper that employment status was a central component in delineating variations in levels of self reported morbidity and GP consultation for mothers of young children. It is interesting in this regard that the employment status of the women in this sample had a different relationship to health status to that of their partners. “Partner being employed” was consistently associated across the conditions studied with other indicators of relative advantage such as use of car and house ownership. Being employed for women, however, was not an important correlate of either greater affluence or better health. It was non-employment that was more important for defining the clusters, and this was consistently associated with both social disadvantage and poorer mental health. This pattern may well be specific to women in their postpartum year, when the contrast between male and female employment status is likely to be greatest. But it reinforces the view that measurement based on male occupational and employment characteristics does not capture the nature or diversity of social inequality and its effect on health for women.16 In this study, women’s own employment status had an important influence on their health; further research is required to examine the changing employment histories of women across the lifespan and its impact on health.

The relationship between parity, condition specific morbidity, and service use was, as expected,11 somewhat independent of that es-
Established 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" to 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.

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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