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Social inequalities and the common mental disorders
A systematic review of the evidence

■ **Abstract** *Background* Of two large-scale government-commissioned studies of common mental disorders in the UK, one found occupational social class to be the strongest marker of risk while the other showed no clear relationship. This study reviews the published evidence on the links between conventional markers of social position and the common mental disorders in developed countries. *Methods* Inclusion criteria covered general population based studies with broad social class variation; samples of 3,000 or more adults of working age; identification of mental illness by validated instruments; social position identified by explicit standard markers; fieldwork undertaken since 1980; published output on key areas of interest. Incompatible study methods and concepts made statistical pooling of results invalid. *Results* Of nine studies, eight provide evidence of an association between one or more markers of less privileged social position and higher prevalence of common mental disorders. For some individual indicators in particular studies, no clear trend was evident, but no study showed a contrary trend for any indicator. The more consistent associations were with unemployment, less education and low income or material standard of living. Occupational social class was the least consistent marker. *Conclusions* Common mental disorders are significantly more frequent in socially disadvantaged populations. More precise indicators of education, employment and material circumstances are better markers of increased rates than occupational social class.

■ **Key words** common mental disorders – neurosis – population surveys – prevalence – social inequalities

Introduction

Social inequalities are established features of the distribution of physical disease and disability in the UK and many other developed countries [1], and efforts to reduce these inequalities are a stated government priority [2].

Severe 'psychotic' mental illnesses are clearly distributed unequally by social position [3] but, although they are often highly disabling to sufferers, they are relatively rare. The majority of the burden of mental illness in the community arises from the less severe but more numerous 'neurotic' conditions, dominated by anxiety, depression or a combination of both, now called the 'common mental disorders'. For these disorders, the links with social position in the general population have been less clear: for example, of two recent large-scale government-commissioned studies covering mental health in the UK, one found occupational social class to be the strongest risk factor while the other showed no association [4, 5]. Similarly, in a review of studies internationally at the end of the 1980s, Dohrenwend [6] reported that findings were inconsistent.

As the common mental disorders contribute substantially to all morbidity, clarifying the socio-economic distribution of these disorders is an important step in providing an evidence base for efforts to reduce inequalities. This study, therefore, aimed to provide a systematic review of published evidence on the links between the range of conventional markers of social position and the common mental disorders in the general population in developed countries. Because of the greater problem of publication bias from small studies,

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and the presence of multiple, poorly defined variables, the review was limited to population studies of at least 3,000 subjects.

It is clear that understanding the social importance of these common mental disorders requires examination of more precise markers of social inequality than social status, traditionally indicated in the UK by occupation. Defining and measuring common mental disorders in populations is not easy. However, since 1980 there have been substantial developments in taxonomy and questionnaire techniques, tried and tested against clinical examination, standardised for repeated use, and able to identify defined syndromes, though problems remain [7]. This review, therefore, included large-scale population studies conducted since 1980, and concentrated on associations with education, income, material circumstances and employment, as well as occupational social status. Parallel studies present a quantitative analysis of associations with inequality markers in the British National Psychiatric Survey of 1993, with additional data on limiting and disabling common mental disorders (see Melzer et al. 'Social position and the common mental disorders with disability: estimates from the National Psychiatric Survey of Great Britain' in this journal, pp. 238), and a review of current evidence on ethnic differentials in the British population [8, 9].

Subjects and methods

Table 1 shows the criteria used to identify studies for inclusion in the review. The search strategy for this poorly defined and ill-standardised field was necessarily broad. MESH heading searches were of very limited use. For example, a Medline search using 'mental disorders' and 'prevalence' yielded 16,627 citations in March 2001, far too many to process. Using 'neurotic disorders' and 'prevalence' yielded 154 papers; 'neurotic disorders' and 'incidence' 150. In combination, these two yielded 162 separate papers, which, after screening, revealed 22 studies for checking. However, only one of these studies fulfilled our inclusion criteria!

Further searches used a wide range of search-terms in Embase and Medline international databases to explore medical, psychiatric, psychological, epidemiological, sociological and other journals, followed up published references, contacted known researchers in the field, and eventually contacted those discovered to be directly involved in large-scale studies. This resulted in a database of almost 1,000 references of published work broadly related to, or relevant to,

Table 1 Criteria for inclusion of studies in review

1. Community-based studies (general household populations)
2. Populations encompassing a broad spectrum of social class variation
3. Samples of 3,000 or more people, encompassing adults of working age
4. Use of validated standard instruments to identify mental illness and social position
5. A diagnostic range encompassing the common mental disorders
6. Individual data linking mental health measures and social class markers
7. Relevance to UK policy development – i. e. studies from developed countries
8. Fieldwork undertaken since 1980
9. Published output on the key areas of interest

inequalities in mental health. (Copies of this are available to future researchers from the corresponding author.)

Published work relating to identified large-scale population studies, including informal reports from research units, government departments and other agencies where relevant, was reviewed by two independent researchers in respect of their methods and their findings regarding socio-economic status differentials in the prevalence of the common mental disorders.

Because of the diversity of populations, instruments, analytical methods and presentation of results, no meta-analysis was possible. Indeed, there was so little consistency and standardisation of measures that detailed comparison and collective consideration were barely possible. We were, therefore, limited to examining differential prevalences, with odds ratios wherever possible.

Results

Studies identified

Nine major studies were identified which fulfilled our inclusion criteria. The studies are identified and their chief characteristics described in Table 2. Four of the studies are from the UK. The annual Health Survey of England (HSE) [5] has included mental health screening measures (the General Health Questionnaire – GHQ-12) most years since 1993, and data are available relating to 1993, 1995 and 1998. The first National Psychiatric Morbidity Survey of 1993 [4, 10], using the Revised Clinical Interview Schedule (CIS-R), will soon be supplemented with detailed data from the second survey of 2000/2001; early data confirm the findings of the 1993 survey [11]. The Health and Life-style Survey of 1984/1985 also did a 7-year follow-up in 1991/1992, both using the GHQ-30 [12]. The British Household Panel Survey (BHPS) of 1991, using GHQ-12, followed respondents up 1 year later [13]. The instruments used record psychological symptoms recently experienced, and identify recognised disorders.

In the USA, the Epidemiologic Catchment Area Program of 1980 to 1983 [14, 15] used the Diagnostic Interview Schedule (DIS), designed to produce DSM-III diagnostic categories. Though it had representative samples of the five chosen areas, it did not represent the US population as a whole, so was followed by the National Comorbidity Study in 1990 to 1992 [16, 17] using a development of the DIS, the Composite International Diagnostic Interview (CIDI), producing DSM-IV and ICD-10 categories. The Edmonton Survey of Psychiatric Disorders [18] also used the DIS in 1983 to 1986. The two most recent surveys, the Netherlands Mental Health Survey and Incidence Study (NEMESIS) of 1996 [19] and the Australian National Survey of 1997 [20], both used the CIDI.

It can be seen that there was considerable diversity in the instruments used. Even the same instrument could be applied in different ways; for example, the HSE, using the GHQ-12, applied a cut-off score of 4 to represent a 'positive' response, whereas the BHPS used a cut-off of 3. This necessarily produces different results. Case-identification was, thus, approached in many different ways,

Table 2 Details of the cross-sectional and limited follow-up studies that met the inclusion criteria for the review

Population surveys	Year	Population sampled	Size of sample (achieved)	Response rate	Mental health instrument	Markers of social position
A	**UK Surveys**					
1 Annual Health Surveys for England	1993, repeated annually	All adults in England, children from 1995	16,569 (in 1993)	76 % for full interview, 66 % for nurse tests (1993)	GHQ-12, cut-off 4+	Occupational social class; employment status, material standard of living
2 National Psychiatric Morbidity Survey of Great Britain (household sample)	1993	All adults in England, Wales and Scotland (excluding Highland and Islands)	10,108	80 %	Clinical Interview Schedule (revised)	Occupational social class; employment status; material standard of living; education
3a Health and Life-style Survey	1984–85	Adults 18+, England, Wales, Scotland	9,003	73 % for interview, 54 % for self-completed questionnaire	GHQ-30 (+ a malaise measure)	Occupational social class (of head of household); employment status; material standard of living; education
3b Health and Life-style Survey – follow-up of 1984–85 respondents	1991–92	Adults 18+, England, Wales, Scotland	5,352	59 % of those interviewed in 1984/5 were re-interviewed	GHQ-30 (+ a malaise measure)	Occupational social class (of head of household); employment status; material standard of living; education
4 British Household Panel Survey with 1-year follow-up	1991	Adults aged 16+, households in Great Britain, south of Caledonian Canal	10,264	74 % of 7,488 households	GHQ-12, cut-off 3+	Occupational social class (personal and head of household); employment status; material standard of living
B	**Other countries**					
5 USA National Co-morbidity Study	1990–92	Continental US residents, adults 15–54	8,098	83 %	Composite International Diagnostic Interview	Employment status; material standard of living; education
6 USA Epidemiologic Catchment Area Program – five sites	1980–83	Age 18+, not institutional residents	approx. 15,000 (3,000 per site)	68 %–80 %	Diagnostic Interview Schedule	Socio-economic status (Nam-Powers index); employment status; material standard of living; education
7 Australian National Survey	1997	Australian population aged 18+	10,641	78 %	Composite International Diagnostic Interview	Employment status; education
8 Edmonton Survey of Psychiatric Disorders (Canada)	1983–86	Adult (all ages) population of Edmonton City, Alberta, Canada	3,258	72.6 %	Diagnostic Interview Schedule; GHQ-30	Employment status
9 Netherlands Mental Health Survey and Incidence Study (NEMESIS) with 1- and 3-year follow-up	1996	Adults 18–64 resident in The Netherlands	7,147	64.2 %	Composite International Diagnostic Interview; GHQ-12	Employment status; material standard of living; education

Note: material standard of living may include income of subject or household, housing status, and ownership of material goods; education may be measured in either years of completed full-time education or highest qualifications achieved

even though the instruments used were all to some extent standardised and validated. However, this process of validation is a continuing need for all of them.

Underlying the use of different instruments is a variety of concepts of mental disorder. Some research teams were more interested in serious mental illness, with other 'less serious' disorders getting less attention. Those using the DIS and CIDI were, generally speaking, aspiring to identify clinically recognisable, treatable disorders which might be expected to need specialist psychiatric attention, but the levels of identification could not be validated against clinical experience and opinion, which, in any case, are themselves extremely variable. Both, especially the CIDI, tend to over-identify cases [7]. On the other hand, those using the various versions of the GHQ (designed as a screening instrument) were trying to identify people with 'mental health problems' which would not necessarily be expected to be seen by specialists, though it can be argued that they should be recognised by primary care physicians. However, in each case there are results which represent 'the common mental disorders', which mostly means either or both anxiety and depression, as disorders producing significant distress and often limitation or disability in daily life [9].

There is a similar problem with regard to comparing markers of social position, as there was virtually no standardised usage. Occupational social class has a long history of use in the UK, but the UK classification is not very useful elsewhere. There is a superficially similar classification for the USA, but we cannot assume that it has the same social status implications, indeed it almost certainly does not [17, 21]. Educational measures also vary according to the culture and school system; age of finishing full-time education, using ranked groups within each community, is more comparable than qualifications achieved.

Income data from questionnaire informants are not necessarily reliable, and some studies have examined assets – 'wealth' – rather than income. Harder data are probably gained by recording material standard of living in terms of, for example, housing and car ownership. The data themselves are not comparable between studies, but, again, ranked groups are a means of legitimate comparison. Employment status might seem to be more consistent, but the complications of part-time work, household duties, self-employment and early retirement render many categories insecure. The social context of varying unemployment rates must also have an impact, but one which is very difficult to predict. However, ranking respondents from full-time employed to unemployed and economically inactive permits comparison.

■ Overview of associations

In spite of the difficulties of comparing these disparate studies, we have nine large-scale population studies providing data on the common mental disorders related to markers of social position, and each one has published analyses on at least some of these markers. To obtain an overview of the results, we first present a qualitative summary (Table 3).

Where a positive association is recorded, there is a statistically significant odds ratio for the indicator in question in the published source. In some cases there are very few of these measures published; in others there are many, applied to detailed subdivisions of the indicators, but not necessarily to summary or overall indicators.

The positive results reported vary in almost every aspect of analysis, and in order to clarify this diversity of presentations in the various sources, the overall results are presented in very simple summary form in Table 4.

In eight of the nine studies, there was evidence of positive associations between less privileged social position and a higher prevalence of the common mental disorders on at least one of the available indicators. The one study showing no clear relationships, the UK Health and Life-style Survey [12], had the lowest response rate for its mental health measure (54 %), which may have seriously affected the capacity of the study to demonstrate statistical associations.

Perhaps the most important single point to emerge from this comparison of diverse and disparate studies is that no study found evidence of a negative association of any marker of social position and higher prevalence of the common mental disorders.

It can be seen from Table 4 that, in this collection of large-scale population surveys, occupational social class does not produce the weightiest evidence; of six studies providing data, three showed no clear association. Less education (four out of five studies), unemployed status (six out of seven studies), and lower income, assets or material standard of living (all of six studies), provide substantially more evidence.

While this qualitative overview indicates the balance of the diverse evidence, the quantitative results for education and material circumstances are presented in Table 5, to allow consideration of the sizes of effect. (A full set of extracted individual results are presented elsewhere [8].) Education has been shown to be a very good marker of long-term economic position and the table again illustrates the diversity of measures used in different studies. It is clear, however, that odds ratios comparing least educated with most educated groups show consistent and substantial differences between these groups. Similar patterns are evident for markers of material circumstances.

Discussion

Because the common mental disorders are not readily defined or measured in standard ways, the most likely source of evidence on their relationship in populations to markers of social disadvantage is likely to arise from very large population studies with the statistical power to demonstrate associations in spite of ambiguities.

Table 3 Summary of results from studies meeting inclusion criteria ('positive' indicates association between less privileged status and the common mental disorders)

	Education	Employment status	Income and material standard of living	Occupational social status
A UK Surveys				
1 Annual Health Surveys for England	–	–	Progressive positive association for income in 1998 data for both men and women	No clear social class distribution for either men or women
2 National Psychiatric Morbidity Survey of Great Britain (household sample)	Positive for least years of education or no qualifications for both men and women	Positive for unemployed in both men and women	Positive for income, housing type/ tenure, and car ownership	Positive for women (SC I + II compared to SC IV + V); positive for men (SC I compared to all other classes)
3a Health and Life-style Survey – base-line	–	Positive for unemployment in men in both age groups	–	No clear social class distribution: mixed results by gender and age group
3b Health and Life-style Survey – follow-up	–	No clear relationship (but low response rate)	–	No clear social class distribution: mixed results by gender and age group
4 British Household Panel Survey	–	Unemployment associated with maintenance, not onset in 1-year follow-up; symptoms reduced on gaining employment (men and women combined)	Positive for low income and 'poverty index'. Positive for index of material standard of living (men and women combined)	Positive association for both men and women
B Other Countries				
5 USA National Co-morbidity Study	Positive for least education (men and women combined)	Positive for unemployment (men and women combined)	Positive for income. Positive for financial assets – wealth (men and women combined)	Positive association with certain occupational groups, but social status implications unclear
6 USA Epidemiologic Catchment Area Program	Differences between sites	–	Positive for low income in main study (men and women combined)	Positive for SES indicated by NAM index (mix of income, education and occupation) only for anxiety disorders;
Baltimore follow-up (1993–1996)	No clear relationship	–	Positive for income but equivocal for assets	Occupation groups no association
7 Australian National Survey	Positive for lowest qualifications, especially for women; in men only for affective disorders	Positive for unemployment in both men and women	–	–
8 Edmonton Survey of Psychiatric Disorders	–	No clear relationship (positive but not statistically significant)	–	–
9 Netherlands Mental Health Survey and Incidence Study (NEMESIS)	Positive for least education (men and women combined)	Positive for unemployment (men and women combined)	Positive for income (men and women combined)	–

Table 4 Number of included studies reporting associations with higher rates of the common mental disorders, by dimensions of less privileged social position

		Less education	Unemployment	Lower income or material circumstances	Low social status
Number of studies reporting associations	Total reporting	5	7	6	6
Positive association	Men and women separately	2	3*	2	2
	Men and women combined (separate data not given)	2	3	4	1
	Total positive	4	6	6	3
No clear association		1	1	0	3
Inverse association		0	0	0	0

Note: * one study, positive only for men; women equivocal

Even so, the lack of common instruments and standards of application pose serious problems for comparing results; there are no 'gold standards'. It is not possible to combine data for meta-analysis, or even to draw up tables of strictly comparative data, since each study has presented different indices, different methods of analysis and different statistics.

However, each of the studies reviewed has used instruments validated over a period of years, and, although this difficult process needs to continue, they can each claim to identify a broad group of mental disorders that does not include the 'severe' disorders such as schizophrenia, depressive psychosis, bi-polar disorder, organic psychoses and the dementias. It represents the widespread 'neuroses', mostly anxiety and depression, often combined, that are generally now called the common mental disorders.

These are indeed common (about 16 % in the first UK national household survey) [4], but they are the cause of much distress and dysfunction in individuals and families, and can usually be treated by primary care teams in one way or another. They may also reveal serious personal and social problems, because causal relationships may well be either way. These problems are also potentially ameliorable and important to address.

Although the precise results cannot readily be compared, their relationship in each study with various indicators of social position can. However, there are also problems with a lack of standardisation of these indicators. The traditional use of occupation in the UK to indicate social status involves many problems. Although it has been updated periodically, it is not necessarily consistent with current perceptions of social status, which are much more fluid and ill-defined than in previous generations. It has never applied well to women, or to students, armed forces, retired or unemployed people, which together constitute a large proportion of the population. In spite of these major inadequacies, it has proved useful over many years in the UK, though it cannot be applied elsewhere, and comparable taxonomies in other cultures are not generally available.

For this reason, it has become common practice to collect data on more precise and more easily defined indicators of social position, especially education, income or related data, and employment. Again, there is a variety of definitions and measures, and it is obvious that none of them is an independent variable. Having finished formal education early tends to lead to lesser-paid jobs and to greater vulnerability to unemployment. In the same way these tend towards lower occupational social class, and it seems reasonable to view the more precise indicators all as representing factors which contribute to overall perceived social class or status. Thus, the two recent surveys in England show disparities related to occupational social class, but, in spite of method differences, show similar results related to income.

Of course, this does not imply that status represents a social mechanism by which people are rendered more vulnerable to the common mental disorders. It is likely that poor education, unemployment and low income or assets have a direct effect on people's experience of anxiety and depression. In either case, it may not be gross and objective disadvantage which mediates mental symptoms; the importance of relative, *perceived* inequality has support in the literature [22, 23]. It is also possible that cause operates in the opposite direction, a constitutional tendency to anxiety and depression leading to low levels of education, income and employment. These largely cross-sectional studies and this review cannot inform causal direction, nor can they disentangle the risks associated with each indicator. There are, however, some relevant data available from the UK 1946 and 1958 birth cohort studies [23–25].

There are possible confounding factors which cannot be addressed in this paper. There is evidence that multiple disadvantage in childhood [26, 27], recent physical disease [4, 28], stressful life-events [29, 30], work characteristics [31, 32], and perceived lack of a social support network [29, 33] are associated with both the common mental disorders and the various indicators of social disadvantage.

In considering the results of these studies, we must acknowledge that response rates varied from 54 % to 80 %, which may have biased results for both mental dis-

Table 5 Reported odds ratios (95% CI) of prevalence of disorders in most vs. least educated, and most vs. least materially privileged groups, by study (excluding ECA – see text)

Study and comparison	OR	95% CI
Education*		
UK National Survey – 1-week prevalence of all neurotic disorders, by educational qualification [34]		
'A' level or above	1	
No qualifications (men)	1.29	1.03–1.62
No qualifications (women)	1.26	1.06–1.49
National Co-morbidity Study – 12-month prevalence, by years of education [35]		
Any affective disorder		
16+	1	
0–11	1.79	1.31–2.43
Any anxiety disorder		
16+	1	
0–11	2.82	2.26–3.51
NEMESIS – 12-month prevalence controlled for age and sex, by years of education [19]		
Mood disorders		
16+	1	
0–11 years	1.55	1.22–1.98
Anxiety disorders		
16+	1	
0–11 years	2.44	1.98–3.00
Australian National Survey – 12-month prevalence [20]		
Any affective disorder		
Bachelor degree or above	1	
High school only	1.50	1.00–2.20
Any anxiety disorder		
Bachelor degree or above	1	
High school only	1.70	1.30–2.30
Material standard of living		
Health Survey for England – GHQ-12 scores of 4 or more, by annual equivalised household income (£) [5]		
> 27,705	1	
< 7,186 (men)	1.53	1.12–2.09
< 7,186 (women)	1.11	0.87–1.41
UK National Survey – any neurotic disorder, adjusted for age and household size, by access to cars (number) [34]		
Two or more	1	
None (men)	2.59	1.99–3.37
None (women)	2.25	1.85–2.74
British Household Panel Survey – 5-point index of material standard of living [36]		
0 (most privileged)	1	
5 (least privileged)	2.51	1.77–3.55
National Co-morbidity study – 12-month prevalence of any affective disorder and any anxiety disorder, by income ($000) [35]		
Any affective disorder		
70+	1	
0–19	1.73	1.29–2.32
Any anxiety disorder		
70+	1	
0–19	2.12	1.63–2.77
NEMESIS – 12-month prevalence of mood disorders and anxiety disorders, by quartiles of income, controlled for age and gender [19]		
Mood disorders		
Top 25%	1	
Lowest 25%	1.56	1.20–2.03
Anxiety disorders		
Top 25%	1	
Lowest 25%	1.77	1.43–2.21

order and social position. For many of these studies, only limited attention has been given in published analyses of associations with markers of social position; more would appear possible from the data collected, and from the most recent, more can be expected.

Despite the limitations, the accumulated evidence derives from nine large-scale community-based studies carried out during the last 20 years. Eight of these nine well-conducted studies included in the review showed consistent links between the common mental disorders and one or other marker of social disadvantage, with none showing any inverse trends. This consistency, in spite of the variety of instruments, measures, analyses and settings, suggests considerable robustness for the findings.

Conclusions

The research available for review in this field is beset by both methodological weaknesses and methodological inconsistency. There is a need for better research, especially hypothesis-driven research, but it must be acknowledged that this requires large populations and is both expensive and difficult to perform.

People of lower socio-economic status, however measured, are disadvantaged and tend to live in communities and cultures that are disadvantaged. This has already-known policy implications. These disadvantages include higher frequencies of the common mental disorders, which produce a significant amount of suffering and dysfunction in working-age adults. No large study provides any evidence of negative associations.

Prevalence rates have been shown repeatedly to be higher in social groups exhibiting less education, unemployment and lower income or material assets. These are generally better indicators of disadvantage than occupational social class, though they all interact. Education emerges strongly as a useful indicator, partly because it is the only one for which we have evidence from these large-scale population studies, which must necessarily operate before the identification of anxiety and depression in adult populations. This does not, of course, mean that educational achievement is not affected by pre-existing mental states, inter-personal family factors, and social conditions. However, it may be fruitful to focus more on education indicators, suitably honed, to identify vulnerable groups for preventive action.

Income, assets and unemployment interact with education, and together constitute substantial disadvantage. This is consistent with more precise identification in related studies of some particularly vulnerable or needy groups, particularly single mothers, as worthy of special targeting with regard to anxiety and depression, especially where there is direct evidence of limitation of normal daily activity (Melzer et al. 'Social position and the common mental disorders with disability: estimates from the National Psychiatric Survey of Great Britain', pp. 238–243). It is important that primary care teams take more seriously the prevalence of the common mental disorders and their association with social disadvantage. There are many strong arguments for placing poor education, poverty, deprivation and social stress high on the political agenda; the inequitable distribution of the common mental disorders adds yet another.

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