Socio-economic deprivation and duration of hospital stay in severe mental disorder

MELANIE AMNA ABAS, JANE VANDERPYL, ELIZABETH ROBINSON, TRIX LE PROU and PETER CRAMPTON

Summary Adults from South Auckland, New Zealand were followed from admission to discharge. After adjusting for demographic factors, diagnosis, chronicity, severity, consultant psychiatrist and involuntary admission, the length of stay for those from more deprived areas was significantly longer by 7 days than for those from less deprived areas. Information on socio-economic deprivation should be used in discharge planning and in optimising access to community care. Research is needed on group-level factors that may affect recovery from mental disorders.

Declaration of interest None. Funding detailed in Acknowledgements.

Socio-economic deprivation, which measures the disadvantage of an individual or group relative to the local community or wider society (Townsend, 1987), is an indicator of socio-economic position. Three studies have shown an association between area deprivation and length of psychiatric admission (Hirsch, 1988; Thornicroft et al, 1993; Glover et al, 1998), but did not control for potentially important confounders. In this study we used the level of deprivation of area of residence as an indicator of individual socio-economic position (Salmond & Crampton, 2001).

METHOD

Counties Manukau Mental Health Services cover the mostly urban South Auckland district which has 378,000 residents. South Auckland has a high proportion of Maori (18%) and Pacific Islanders (17%) and is deprived relative to most of New Zealand. The study site was the 45-bedded psychiatric in-patient unit, which is managed by three consultants. Community care is provided by five teams, with no day hospital. The cohort comprised consecutive admissions from within the district from 1 November 1999 to 31 July 2000. We excluded patients from outside the area, patients readmitted during the study period and homeless people who had no address to code for area deprivation.

Depetration was measured using the NZDep96 deprivation index, which was created from 1996 census data (Salmond et al, 1998) available for all small areas in New Zealand. A small area is defined as one meshblock (the smallest geographical area for statistical purposes (median population about 90 persons) or two meshblocks. The NZDep96 index is a weighted combination of the proportions, in a small area, of nine variables, such as being on a means-tested benefit or lacking a specified resource (e.g. qualifications or a household telephone). The index is split into a quintile scale where 1 represents the least deprived 20% of small areas and 5 the most deprived 20%.

The cohort comprised consecutive admissions (n = 291) October 1999 to 31 July 2000. We excluded patients from outside the area, patients readmitted during the study period. Potential confounding variables at individual patient level were obtained from case notes and from interviews with the patient’s primary nurse, using structured questionnaires, such as the 10-item form of the Health of the Nation Outcome Scales (Amin et al, 1999), the Global Assessment of Functioning (American Psychiatric Association, 1994) and the Reasons for Admission schedule (Flannigan et al, 1994). We used the DSM-IV principal diagnosis and any comorbid diagnosis stated in the discharge summary.

We analysed the data using STATA version 6 using the log of the length of stay and the geometric mean, because of the log-normal distribution of length of stay. We used generalised linear modelling for the effect of deprivation, in three categories, using a multiplicative model.

RESULTS

Of the 379 index admissions in the study period, 7 patients were homeless and 50

<table>
<thead>
<tr>
<th>Deprivation</th>
<th>Comparison with least deprived group</th>
<th>Length of stay, days</th>
<th>Likelihood ratio test for effect of deprivation, (df = 2) ( \chi^2 )</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Least deprived (quintiles 1–3)</td>
<td></td>
<td>11.8</td>
<td>13.48</td>
<td>0.001</td>
</tr>
<tr>
<td>Moderately deprived (quintile 4)</td>
<td>0.52</td>
<td>19.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most deprived (quintile 5)</td>
<td>0.55</td>
<td>20.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Adjusted for demographic factors; diagnosis; severity; non-adherence; physical disability;

2. Least deprived quintiles (1–3): 0.33

Most deprived quintiles (5): 0.36

An independent firm assigned a geographical small area code to each patient’s address at the time of admission, which enabled the correct area deprivation score to be derived. We defined the most deprived as those living in one of the areas ranked as the most deprived 20% (in accordance with the New Zealand definition of ‘poor populations’), the least deprived as those living in areas ranked among the least deprived 60% and the moderately deprived as those living in areas ranked among the intermediate 20%.

The length of hospital stay was the number of days for the index admission in the study period. Potential confounding variables at individual patient level were obtained from case notes and from interviews with the patient’s primary nurse, using structured questionnaires, such as the 10-item form of the Health of the Nation Outcome Scales (Amin et al, 1999), the Global Assessment of Functioning (American Psychiatric Association, 1994) and the Reasons for Admission schedule (Flannigan et al, 1994). We used the DSM-IV principal diagnosis and any comorbid diagnosis stated in the discharge summary.

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RESULTS

Of the 379 index admissions in the study period, 7 patients were homeless and 50
were from outside the catchment area. For 291 of the remaining 322 patients (90%),

enough information was available to enable
coding at small area level. There were 166
males (57%) and the mean age of the sam-
ple was 36 years. Ninety-nine patients
(34%) identified themselves as Maori, 116
as European (40%), 32 as Pacific Islander
(11%) and 44 as Asian or other (15%).

Three-quarters of the sample were single,
widowed, divorced or separated and 43% lived in areas defined as ‘most deprived’,
compared with 20% of the national popu-
lion. One hundred and forty-three
patients (49%) had a principal diagnosis
defined as schizophrenia, 108 (37%) of a mood dis-
order and 41 (14%) another principal diag-

nosis, with 140 (48%) having a comorbid
diagnosis. The geometric mean length of
hospital stay was 16.6 days. One hundred
and ninety-eight patients (68%) had been
admitted involuntarily. The mean number
of previous admissions to the psychotic
in-patient unit was 1.6 and the mean length
of illness was 101 months.

For those from most deprived areas, the
length of hospital stay was 21 days, com-
pared with 12 days for those from the least
deprived areas. After full adjustment for con-
ounding variables (Table 1), this was 22
days for those from the most deprived areas,
compared with 15 days for those from the
least deprived areas. Those from moderately
deprived areas also had a longer length of
stay than those from the least deprived areas.

Principal diagnosis was the main contri-
butor to variance (13%), followed by
psychiatric symptom severity/functioning
or chronicity (8%), small area deprivation
(6%) and the identity of the consultant
psychiatrist (3%).

Individual measures of socio-economic
position (individual unemployment, occupa-
tional class, housing tenure, being on a
benefit) each added only 1–2% to the
explanatory power of a model for length of
hospital stay containing demographic, clinical and service factors.

**DISCUSSION**

Lower socio-economic position, as mea-
sured by deprivation of small area of resi-
dence, was independently associated with
increased length of hospital stay. Although
principal diagnosis explained more of the
variance, the association between depriva-
tion and length of hospital stay remained
after accounting for demographic and
clinical factors and differences between
clinicians. This is consistent with ecological
studies (Hirsch, 1988; Glover et al, 1998)
and with a study which stratified according to
diagnosis (Thorncroft et al, 1993).

Our findings may be at variance with a study that found no association (Weinberg
et al, 1998) because we used a measure of deprivation (the NZDep96) that is less
prone to measurement error, being applied
at a spatial level of 90 persons (Salmond

Selection bias is an unlikely explana-
tion, as healthcare is geographically sec-
tered and little private care is available.
Furthermore, the association remained after
diagnosis, severity and length of illness
had been controlled for. We controlled for
most potentially important confounders
other than social support. We are not able
to say whether the effect of deprivation is
at the individual, household or area level.
Our data suggest that place may be at least
as important as person and that moderate
deprivation also has an effect.

Conditions in deprived neighbourhoods
(few employment opportunities, restrictive
work environments, social fragmentation
and poor services) might have an adverse
effect on those with mental disorders and
their carers (Macintyre et al, 2002; Allar-
dyce et al, 2005). Several study participants
would have been left alone all day if dis-
charged, either because they lived alone or
their families worked long and unsociable
hours. This, combined with poor opportu-
nities for local employment and poor public
transport, contributed to a long length of
hospital stay while awaiting daytime
placement. Other patients had comorbid
physical illness which was aggravated by
poor housing. Individual, household and
neighbourhood social circumstances should
be taken into account in discharge planning
and in optimising access to community

Research is needed to develop
hyposes about group-level factors that
may explain the onset and outcome of
mental disorders (O’Campo, 2003).

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