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THE EPIDEMIOLOGY OF PSYCHOSIS IN LUTON

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SUMMARY

Background: *There is a dearth of epidemiological research on psychosis. Little is known about how psychosis rates vary within contrasting urban areas. Variation in rates would have implications for the aetiology of psychosis. The aim was to determine the variation in psychosis prevalence in different areas of a city.*

Subjects and methods: *We conducted a retrospective audit of the caseloads of the four Community Mental Health Teams (CMHTs) in Luton. Caseloads were categorised by diagnoses recorded in the medical notes, and by patient age. We performed a descriptive analysis of the levels of psychosis in each CMHT, considered against parameters including deprivation and ethnicity as recorded in the 2001 UK census.*

Results: *Areas with high indices of deprivation, and a large ethnic minority and migrant population, demonstrated higher rates of psychosis.*

Conclusions: *Our findings are consistent with, the MRC Aetiology & Ethnicity of Schizophrenia & Other Psychoses study. Increased rates of psychosis observed in areas with large migrant and ethnic minority populations, and in areas of high deprivation, have implications for the planning of local services, and in further understanding the role of environmental factors in the aetiology of psychosis. There is a need for further prospective epidemiological studies at this geographical scale.*

Key words: *epidemiology – psychosis - deprivation indeks - inner city – ethnicity – migration - commissioning services*

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INTRODUCTION

Despite an increasing volume of epidemiological work in psychiatry, there remains considerable doubt over whether rates of psychotic illness vary between places, and if so, what factors determine this variance (Kirkbride 2006). Most of the published literature is either at a national scale, (Jablensky 1992, Munk-Jorgensen 1992) (Suvisaari 1999, Munk-Jorgensen 1987), or compares urban and rural areas (Lewis 1992, Allardyce 2001, Sundquist 2004, Pedersen 2001). There is also much interest in the effect of migration and ethnicity on rates of psychosis (Harrison 1997, Fearon 2006). Little however is known about how psychosis rates vary within urban areas. It has been suggested that areas of urban deprivation have higher rates of psychosis compared with more affluent areas (Croudace 2000). Epidemiological research at this geographical scale would help to elucidate the particular factors of the urban environment that are purported to interact with biological factors in the aetiology of psychosis (Kendler 2003). This study was designed to help address this gap by focusing on the variation in rates of psychosis within a city. Our aim was to establish the pattern of psychosis prevalence in Luton, and compare this with the demographic patterns of the city.

SUBJECTS AND METHODS

We performed a retrospective audit. This method suffered from the limitations of all such audits, but had the advantage of using simple data that was readily available. The study utilised exclusively aggregate data for large population tracts, and as such patient anonymity was protected. Specific ethical approval for this epidemiological research was thus not sought.

Under the auspices of the Bedfordshire & Luton Community NHS Trust, four separate Community Mental Health Teams (CMHTs) are responsible for the provision of psychiatric services in Luton. Each CMHT is headed by a separate consultant psychiatrist. In June 2001 one

author (MA) obtained the case-notes for all patients with open files for each CMHT. The audit included both inpatients and those being cared for in the community. No attempt was made to locate cases being managed outside of the CMHTs, either in private practice, or by GPs. Anecdotal evidence suggested that this number of cases would be negligible. There was no restriction on the age of participants. For each case, the most recent diagnosis in the medical notes was recorded. Diagnostic categories were: schizophrenia, first psychotic episode, bipolar disorder, or psychotic depression. Logistical constraints prevented us from being able to conduct a Structured Clinical Interview for DSM-IV (SCID).

Epidemiological data for each CMHT was collected from the United Kingdom Census of 2001 (Neghbourhood Statistics 2007). Census wards did not overlap exactly with the CMHT boundaries. Using the Office of National Statistics (ONS) ward boundaries and the CMHT boundaries as devised by the Bedfordshire and Luton Partnership Trust (BLPT), the authors placed each census ward into the CMHT territory with which it had greatest geographical overlap. Details of which wards were classified into each CMHT can be seen in Table 1. For each ward the following information was collected (Table 1): population; ethnicity (% of White, Asian, Black, Mixed or Other); % of respondents aged 16-74 yrs with: no employment, and no qualifications; and the % of respondents who stated their health was "not good", and those who claimed to be suffering with a "limiting long-term illness". Index of Multiple Deprivation 2004 (IMD 2004) Scores for each ward were also collected. Note that the IMD 2004 is based on the 2001 census data and is thus contemporaneous for the period of case collection (Indices of Deprivation 2004). Summary statistics were calculated for each CMHT using weighted averages (using the ward populations) (Table 2A-D). Formal statistical analysis comparing CMHTs was not appropriate.

RESULTS

As expected from anecdotal observations, there was a wide variation in the population parameters recorded between CMHTs (Table 1). The South-East (SE) and South-West (SW) CMHTs had broadly similar population parameters with: high IMD 2004 scores (29.71 and 29.28 respectively), high unemployment (4.6 and 4.8% respectively), high % of respondents with no formal qualifications (31.7 & 36.8 respectively) and a high proportion of respondents with health listed as "not good" (9.8 & 8.9% respectively) or "living with a long-term illness" (18.1 & 16.3% respectively). The SE CMHT also had the highest proportion of non-white respondents (44.0%), of which the majority were Asian (31.7%). The key difference between these multiply deprived areas was in the % of non-white respondents, with the SW having only 20.7% non-white respondents. The North-East (NE) and North-West (NW) CMHTs had markedly more affluent parameters with: low IMD 2004 scores (18.57 and 18.02 respectively), low unemployment (3.0 and 3.2% respectively), low % of respondents with no formal qualifications (27.0 & 29.1% respectively) and a low proportion of respondents with health listed as "not good" (7.0 & 7.3% respectively) or living with a long-term illness (13.8 & 14.2% respectively). The NE CMHT had the lowest proportion of non-white respondents (13.5%). The NW had 24.8% non-white respondents.

There was also considerable variation in population parameters within some of the CMHTs. The NW CMHT for example, comprises seven electoral wards, including the ward with the lowest IMD score of the 19 wards in Luton (Bramingham at 7.27) and the ward with the third highest score (Northwell at 33.19). Similar heterogeneity is seen with respects to ethnicity, health and employment in the NW CMHT. In contrast, the SE CMHT is the smallest team and constitutes only two electoral wards (Farley and South), each of which had very similar population parameters.

The prevalence of psychosis varied more than three-fold between the CMHTs (Table 3). The lowest rates were reported in the SE CMHT (312 per 100 000) and the highest in the SW CMHT (940 per 100 000). When examining the variation in psychosis prevalence against variations in the population parameters, it can be seen that the multiply deprived SW CMHT has the highest rates of psychosis. The other multiply deprived CMHT was SE, which only differed significantly from the SW CMHT in having a much lower proportion of non-white individuals (20.7 vs. 44.0%). It is interesting to note that the SE CMHT had the lowest rates of psychosis of any of the CMHTs (312 per 100 000). The more affluent NE and NW CMHTs reported intermediate rates of psychosis (538 and 354 per 100 000 respectively).

Table 1. 2001 Census data for Luton by electoral ward

CMHT	Census ward	Population	Deprivation (IMD)	Health		Ethnicity					Unemployed (%)	No qualifications (%)
			2004	"Not good"	"Long-term illness"	White	Mixed	Asian	Black	Other		
NE	Crawley	7113	20.92	7.1	14.0	81.7	2.5	9.8	5.2	0.8	3.6	32.5
	High Town	7062	26.03	8.6	17.0	78.3	2.5	9.7	8.0	1.5	4.2	24.7
	Round Green	10868	21.21	8.1	15.3	86.7	2.4	6.2	4.3	0.5	3.4	31.1
	Stopsley	7105	12.49	7.0	14.6	92.5	1.4	3.6	1.9	0.7	2.2	26.8
	Wigmore	11681	13.88	5.0	10.0	90.6	2.0	3.8	3.0	0.7	2.0	21.2
	CMHT average	43829	18.57	7.0	13.8	86.5	2.2	6.3	4.3	0.8	3.0	27.0
NW	Barnfield	7032	7.69	5.1	11.2	79.5	2.6	12.9	4.0	1.1	2.2	17.0
	Bramingham	7584	7.27	4.6	10.7	87.9	1.4	6.5	2.9	1.3	1.3	18.6
	Icknield	7556	13.66	8.3	16.3	84.3	1.7	10.0	3.5	0.7	2.5	28.4
	Limbury	7675	14.39	7.4	15.0	83.7	2.3	8.4	5.1	0.6	2.7	30.7
	Northwell	8258	33.19	9.3	16.2	73.9	4.0	12.0	9.7	0.5	5.1	35.5
	Saints	11724	24.3	8.4	15.3	48.1	2.1	42.4	6.8	0.7	4.5	35.0
	Sundon Park	7585	20.16	7.0	13.9	83.8	2.5	6.9	6.1	0.6	3.4	34.0
	CMHT average	57414	18.02	7.3	14.2	75.2	2.4	16.2	5.6	0.8	3.2	29.1
SE	Farley	10986	29.18	9.6	18.1	79.9	3.3	10.2	5.8	0.8	4.6	36.7
	South	10364	30.27	10.1	18.0	78.7	2.0	9.5	7.6	2.2	4.7	26.5
	CMHT average	21350	29.71	9.8	18.1	79.3	2.7	9.9	6.7	1.5	4.6	31.7
SW	Biscot	12957	34.02	9.0	15.7	35.0	2.1	53.8	7.8	1.4	5.8	37.1
	Challney	11819	21.07	8.2	16.7	61.0	2.7	26.6	8.4	1.3	3.2	33.2
	Dallow	13154	37.01	8.9	15.6	33.3	2.7	55.1	7.6	1.2	6.2	41.3
	Leagrave	11194	25.74	8.6	16.3	74.8	3.9	10.3	10.2	0.7	4.6	34.2
	Lewsey	12654	27.17	9.5	17.2	79.6	3.7	8.2	8.0	0.4	3.9	37.6
	CMHT average	61778	29.28	8.9	16.3	56.0	3.0	31.7	8.3	1.0	4.8	36.8
LUTON		184371	23.27	8.1	15.3	71.9	2.6	18.3	6.3	0.9	3.7	31.3
E&W		-	-	9.2	18.2	91.3	1.3	4.4	2.2	0.9	2.6	29.1

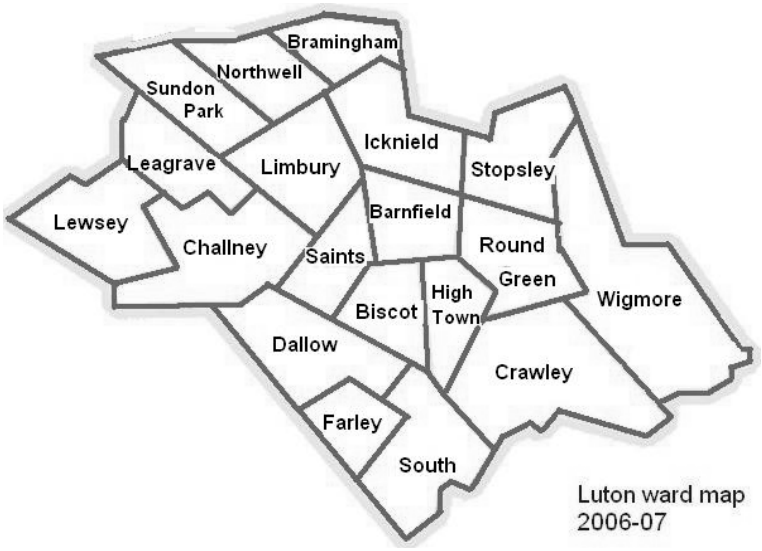

Figure 1. Map of Luton electoral wards (wikipaedia 2007)

Table 2. Population parameters and rates of psychosis for Luton CMHTs

Table 2A. North-East CMHT

	Population	50000
	IMD (2004)	18.57
	Psychosis prevalence	538 per 100 000
	No qualifications (%)	3.0
	Unemployed (%)	27.0
Health (%)	"Not good"	7.0
	"Long term illness"	13.8
Ethnicity (%)	White	86.5
	Mixed	2.2
	Asian	6.3
	Black	4.3
	Other	0.8

Table 2B. North West CMHT

	Population	50000
	IMD (2004)	18.02
	Psychosis prevalence	354 per 100 000
	No qualifications (%)	3.2
	Unemployed (%)	29.1
Health (%)	"Not good"	7.3
	"Long term illness"	14.2
Ethnicity (%)	White	75.2
	Mixed	2.4
	Asian	16.2
	Black	5.6
	Other	0.8

Table 2C. South-East CMHT

	Population	25000
	IMD (2004)	29.71
	Psychosis prevalence	312 per 100 000
	No qualifications (%)	4.6
	Unemployed (%)	31.7
Health (%)	"Not good"	9.8
	"Long term illness"	18.1
Ethnicity (%)	White	79.3
	Mixed	2.7
	Asian	9.9
	Black	6.7
	Other	1.5

Table 2D. South West CMHT

	Population	40000
	IMD (2004)	29.28
	Psychosis prevalence	940 per 100 000
	No qualifications (%)	4.8
	Unemployed (%)	36.8
Health (%)	"Not good"	8.9
	"Long term illness"	16.3
Ethnicity (%)	White	56.0
	Mixed	3.0
	Asian	31.7
	Black	8.3
	Other	1.0

Table 3. CMHT rates of psychosis, IMD scores and % non-white respondents

CMHT	Rate of psychosis (per 100 000)	IMD 2004	% non-white
SE	312	29.71	20.7
NW	354	18.02	24.8
NE	538	18.57	13.5
SW	940	29.28	44.0

Finally, it was noted that each CMHT reported a similar percentage breakdown of psychosis cases in terms of schizophrenia, first psychotic episode, bipolar depression and psychotic depression (Table 4). This similarity in diagnostic patterns occurred despite the fact that each CMHT was headed by a separate consultant psychiatrist.

Table 4. % of psychosis cases by diagnostic code for each CMHT

CMHT	Schizophrenia	First psychotic episode	Bipolar depression	Psychotic depression
NE	63	17	16	4
NW	60	20	12	7
SE	58	22	12	9
SW	57	25	13	5

DISCUSSION

Variations in rates of psychosis have been reported between: countries, (Jablensky 1992) rural and urban areas, (Allardyce 2001, Pedersen 2001) and different cities (Kirkbride 2006). These studies used aggregate rates of psychosis for large geographical areas. Our results focus on a smaller geographical scale. We found a three-fold variation in psychosis rates within one city (Table 3). This indicates that previous research has obscured underlying variations in both the population characteristics and the rates of psychosis, thus making it more difficult to determine the aetiological role of environmental factors in causing psychosis. It is not therefore surprising that uncertainty remains over which factors in the urban environment or features of urban dwellers are associated with psychosis and how they can be causally linked (Pedersen 2001, Amaddeo2006). Associations with increased rates of psychosis have been reported with: urban birth (Mortensen 1999), years living in urban environment, (Pedersen 2001) migrant status, (Aesop Study Team 2002) and deprivation (Croudace 2000).

Our results show that in Luton there is not a simple linear relationship between deprivation and psychosis. Of the two CMHTs with greatest levels of deprivation, the SW reported the highest psychosis rates of any CMHT in Luton, whilst the SE reported the lowest. The only notable difference between these areas was that the SW had a significantly larger non-white population (44 *vs.* 13.5%) (Table 3). This suggests that areas with greater proportions of ethnic minorities have higher rates of psychosis. This would be consistent with research showing that migrants and ethnic minorities are at increased risk of psychsosis (Harrison 1997, Fearon 2006). Again however, our data does not support a similar linear correlation. The two CMHTs with the greatest proportion of ethnic minorities (SW & NW) have the first and third highest rates of psychosis (Table 3). This suggests that psychosis results from a complex interplay both between multiple environmental factors and the between the environment and the genetic predisposition of an individual. It is difficult to elucidate from our study specific factors from within the urban environment that have aetiological significance. Firstly, our study was not powered to do so. Secondly, the overlap between: lack of qualifications, unemployment, poor health, migrant status, ethnic minority status and deprivation means that even much more highly powered studies will struggle to disentangle these dependent variables.

The method adopted posed certain constraints on our study. Firstly, data was opportunistically collected and geographical areas of collection did not overlap. Our method of allocating wards to CMHTs is one source of error. Furthermore, the smallest area for which we could calculate psychosis rates was the CMHT. These areas obscured considerable social variability. Secondly, the findings are reliant on the diagnoses made by different psychiatrists in each CMHT. The fact that amongst cases of psychosis in each CMHT, similar proportions of each type of psychosis were found (Table 3) indicates similarity in diagnostic practice. Thirdly, our audit grouped all types of reported psychosis, thus was not able to elucidate factors specific in aetiology to particular types of psychosis. Fourthly, our study was not sufficiently powered to perform statistical analysis for evidence of significance.

CONCLUSIONS

Like most diseases, psychosis seems to result from the interaction of environmental factors and genetic predisposition. Epidemiological research has helped identify potential environmental factors that are important. Living in an urban area has consistently been found to infer increased risk. This audit contributes to research trying to disentangle which particular factors of the urban environment or differences of the individuals who inhabit these cities, contribute to this increased risk. We found that whilst urban areas of high deprivation and high proportions of ethnic minorities tend to have higher rates of psychosis, there is not a simple linear relationship. This highlights the difficulty and potential futility of trying to consider environmental factors in isolation. It seems likely that there is an interaction between multiple environmental factors that is then mediated against an individual's particular genetic background in determining the ultimate risk of psychosis.

Finally, we must explain our reason for publishing this study. Precisely because of the complexity of these environmental factors, we suggest that it is necessary that planners and commissioners should carry out such an epidemiological study before planning new mental health services. One of us has proposed such an epidemiological study as a standard to be observed in developing

community psychiatry services (Agius 2005) . It is only by carrying out such a study that the resources required for community mental health services can be determined. Furthermore, such a study will indicate how these resources will be best deployed in order that the best care should be given to the target population. There is, however little evidence that such epidemiological work is in fact carried out by commissioners before planning mental health services. We therefore present this study as an example of what useful planning information can be derived from such studies.

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