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from patients homes to the hospital in which they are treated and comparison of this with the distance to the nearest location in which the relevant type of care is available. However, while this will provide a useful further dimension to analysing the basic question of whether patients are treated locally, this approach is still imperfect for two reasons. First, patterns of public transport and natural obstacles like rivers and mountains sometimes mean that the nearest hospital as the crow flies is not the easiest to reach. Second, as the patient's care after discharge is dependent on a catchment area team, in the wider perspective proximity to the community team may be more important than to the hospital.

The Department of Health could take two major steps that would help in exploring this issue. First it could establish and maintain a central listing of hospital catchment areas. The current mental health service mapping exercise could provide an initial set of data for this. If this were defined in terms of established administrative geography (probably local authority electoral wards), this would allow automated identification of the hospital catchment area patients live in directly from their postcode, using the directory already maintained by the Department's Organisational Coding Service. Second, it could initiate a requirement that independent sector hospitals providing care funded by the NHS should make standard returns detailing these for inclusion within the HES.

Conclusion

The concept of local as opposed to out of area admissions is an intuitively appealing one. It broadly reflects the way English services are structured, and has evident relevance as a marker of service quality. Its operationalisation is, however, far from simple. As a benchmark figure, it will be principally useful for local year to year comparison.

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JAMES STALLARD AND EILEEN JOYCE

The impact of olanzapine on attitude to medication and quality of life in schizophrenia

AIMS AND METHOD

This study aimed to compare the subjective quality of life and attitudes to medication between groups of patients with schizophrenia taking either olanzapine or traditional antipsychotic medication.

RESULTS

The two groups were matched for age, gender, length of illness and antipsychotic group demonstrated more extrapyramidal side-effects (EPS) and akathisia. Within this group, those with EPS scored lower on the affect balance scale of the Lancashire Quality of Life Scale than those without. More patients in the olanzapine group reported that medication was taken to prevent symptoms returning.

CLINICAL IMPLICATIONS

These results lend support to the hypothesis that the presence of EPS impairs quality of life and suggest that olanzapine therapy may improve patients' attitudes to medication.

Poor rates of compliance are a problem for the treatment of schizophrenia and have been estimated to be between 11% and 80% (Kane, 1989). One of the many possible factors that can influence compliance is adverse medication effects and reduction of these may have a favourable effect on compliance rates (Barnes, 1989).

Since the reintroduction of clozapine (Kane *et al*, 1988), a number of antipsychotic drugs have been produced that attempt to mimic its pharmacological profile – the so-called 'atypical' antipsychotic agents. One such compound is olanzapine. This drug has been shown in several large trials to be as efficacious at

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controlling the symptoms of schizophrenia as haloperidol, but not to differ from placebo in incidence of extrapyramidal side-effects (EPS) (Beasley *et al*, 1996*a*, *b*, 1997; Tollefson *et al*, 1997). Whether the greater tolerability of such atypical drugs translates into better compliance has yet to be shown.

This study aimed to compare the attitude to medication of two groups of patients with schizophrenia, one taking olanzapine and another taking traditional antipsychotic medications. The hypothesis was that the greater tolerability of olanzapine owing to a lower incidence of EPS would lead to an improved attitude to medication in the olanzapine group. In addition, subjective quality of life in the two groups was assessed anticipating that decreased EPS in the olanzapine group would also result in better quality of life.

Method

All patients were recruited from acute adult services at South Kensington and Chelsea Mental Health Centre, London. Two groups of patients with a clinical diagnosis of schizophrenia were studied. These were 20 patients (five in-patients, 15 out-patients) receiving between 10 mg and 20 mg of olanzapine and 20 patients receiving depot traditional antipsychotic medication. All patients had been receiving their respective treatment for at least 6 weeks prior to entering the study. Patients were excluded if they were receiving any other psychotropic medication or if they were considered, on clinical grounds, to have been non-compliant in the 6 weeks prior to interview. Anticholinergic medication was not an exclusion factor.

For each subject, the following data were collected: age, gender, length of illness in years and length of time on medication in weeks. The following rating scales for assessing symptoms and side-effects were used: Clinical Global Impressions – Severity of Illness Scale (Guy, 1976), the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962), the Simpson–Angus Scale for EPS (Simpson & Angus, 1970) and the Barnes Akathisia Rating Scale (BARS; Barnes, 1989). In addition, the Rating of Medication Influences in Schizophrenia (ROMI; Weiden *et al*, 1994) and the Lancashire Quality of Life Profile (LQOLP, Oliver, 1991) were administered. The ROMI is a scale designed to explore attitudes to medication, which underpin compliance and non-compliance. The LQOLP is a scale that measures quality of life in each of nine domains and also contains three general sub-scales for global well-being, affect balance and self-concept.

Groups were compared using non-parametric statistical tests (SPSS statistical package). Data on a nominal scale were compared using the Chi-square (χ^2) test. Data on ordinal or interval scales were analysed using the Mann–Whitney *U* Test. Correlations were calculated using Spearman's test.

Table 1. Group characteristics

	Olanzapine group (n=20)	Traditional antipsychotic group (n=20)	Statistical significance
Age (years)	Mean: 41.1	Mean: 46.45	U=141.0
	Range: 21–60	Range: 27–67	NS
Gender	Male: 17 (85%)	Male: 16 (65%)	χ^2=1.2
	Female: 3 (15%)	Female: 7 (35%)	NS
Length of illness (years)	Mean: 12.31	Mean: 18.0	U=138.0
	Range: 0.5–30	Range: 1–36	NS
Severity of illness (CGI–S)	Mean: 4.40	Mean: 4.35	U=198.5
	Range: 2–7	Range: 2–6	NS
BPRS Score	Mean: 30.05	Mean: 29.15	U=153.0
	Range: 21–43	Range: 19–55	NS
Length of time on medication (weeks)	Mean: 10.50	Mean: 533.27	U=19.5
	Range: 6–21	Range: 10–1300	$P<0.001$

U, Mann–Whitney *U* test; CGI–S, Clinical Global Impressions – Severity of Illness Scale; BPRS, Brief Psychiatric Rating Scale.

Table 2. Medication side-effects

	Olanzapine group	Traditional antipsychotic group	Statistical significance
Simpson–Angus EPS score	EPS present: 1 EPS absent: 19	EPS present: 8 EPS absent: 12	χ^2=7.025 $P<0.01$
BARS Score			
Absent (0)	17	13	χ^2=10.53
Questionable (1)	3	0	$P<0.05$
Mild (2)	0	2	
Moderate (3)	0	5	

EPS, Extra pyramidal side-effects; BARS, Barnes Akathisia Rating Scale.

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Findings

As can be seen in Table 1, the two groups were well matched for age, gender, length of illness, severity of illness and psychopathology (using the BPRS). Accurate data on length of treatment were available for all patients in the olanzapine group and for 11 in the traditional antipsychotic group; this was significantly longer in the latter group.

Table 2 shows that significantly more patients receiving traditional antipsychotic medication demonstrated EPS than those receiving olanzapine. In addition, akathisia was more prominent in the traditional antipsychotic group than in the olanzapine group (using the BARS).

There were no significant differences between the two groups with respect to the global quality of life scores: affect balance, self concept and global well-being; or for the nine more specific domains (range of Mann–Whitney *U*s=137.5–198.5, NS). To examine whether quality of life might be related to EPS in the traditional antipsychotic group, the global quality of life scores were compared for those with (*n*=8) and without (*n*=12) EPS. While there was no significant difference between the groups for self concept (Mann–Whitney *U*=35, NS) or global well-being (Mann–Whitney *U*=33.5, NS), the EPS group scored significantly lower on the affect balance scale (Mann–Whitney *U*=21, $P<0.05$).

On the ROMI, patients were shown seven statements that might reflect reasons for compliance and 13 for non-compliance, and were required to indicate the level of agreement between each statement and their own attitude to medication with the aid of a three-point scale: strong, mild, none. More patients in the olanzapine group agreed with the statement that they were taking their medication because they felt it stopped their symptoms returning (85% *v.* 55%, $\chi^2=3.903$, $P<0.05$). There were no differences for the remaining statements (range of $\chi^2=0.04$–1.71, NS). Following Weiden (1991), the seven compliance factors were collapsed into broader reasons: medication affinity, influence of others and prevention. Table 3 shows that there was no difference between the two groups for the former two factors. However, significantly more patients receiving olanzapine scored full marks for the 'prevention' factor. There was no significant difference between the groups for any of the non-compliance factors. However, there was a trend for more patients on traditional depot antipsychotic medication to cite "embarrassment about taking medication" as a reason for potential non-compliance (90% *v.* 65%, $\chi^2=3.584$, $P=0.058$).

Comment

No significant difference was found between the two groups with respect to subjective quality of life measures. However, within the traditional antipsychotic group presence of EPS was found to be related to lower affect balance scores. In the LQOLP, the affect balance and self concept scales can be seen as measuring mood and morale, respectively. Both have been shown to influence quality of life outcomes in patients with severe mental illness (Oliver, 1991).

More patients taking olanzapine said that they were compliant because they felt their medication stopped their symptoms returning. At the same time there was a trend for patients taking traditional antipsychotics to cite "embarrassment about taking medication" as a potential reason for non-compliance. The reasons for this difference in attitude between the groups are not clear. It may be owing in part to the route of administration rather than the medication itself. The patients were receiving traditional antipsychotic medication in depot form, which might be less acceptable than oral medication for several reasons. These include the need for more frequent contact with services and perceived loss of dignity. Receiving depot medication may also cause physical problems such as painful injection sites. The 'embarrassment' cited could also be related to motor dysfunction experienced owing to EPS or akathisia.

Some authors, however, have hinted that improvements in attitude to medication in patients taking olanzapine may be related to more subtle intra-psychic factors. Beasley *et al* (1996*b*) found an improvement in quality of life in patients with schizophrenia and that this appeared to be owing to an impact on intra-psychic foundations, a sense of purpose, motivation and emotional interaction. Conversely, although data regarding weight gain in patients taking olanzapine were not available, significant weight gain may have resulted in a negative impact on attitude to medication.

This study provides indirect support for the hypothesis that reduced EPS in patients receiving olanzapine may improve quality of life. However, as patients receiving traditional drugs had been treated for longer than those receiving olanzapine, it is possible that prolonged treatment with olanzapine may also lead to increased rates of EPS with an adverse impact on quality of life. Further, an emerging adverse effect in patients receiving olanzapine is weight gain, which was not assessed in this study. It is possible that this may contribute to self-assessed quality of life in the same way as EPS in those receiving

Table 3. Rating of medications influence (ROMI): collapsed factors for compliance

	Score	Olanzapine group (%)	Traditional antipsychotic group (%)	Statistical significance
Medication affinity	<3	7 (35)	10 (50)	$\chi^2=10.921$
	3	13 (65)	10 (50)	
Influence of others	<3	16 (80)	16 (80)	$\chi^2=0.143$
	3	4 (20)	4 (20)	NS
Prevention	<3	10 (50)	17 (85)	$\chi^2=5.584$
	3	10 (50)	3 (15)	$P<0.05$

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traditional drugs. The study also showed an improvement in attitude to medications in patients taking olanzapine. The reasons for this change in attitude, however, remain unclear. A clear link between the greater tolerability of atypical medications and better compliance rates has yet to be shown, but this study suggests that olanzapine and the newer atypicals represent an advance in the drug treatment of schizophrenia and one that may lead to greater patient satisfaction and, therefore, compliance.

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OLUDEMILADE ONALAJA, RUTH SAFFREY, ELAINE JONES AND PETER BENTHAM

Audit of in-patient prescription and administration records on acute psychogeriatric wards in a teaching hospital

AIMS AND METHOD

An audit of in-patient prescription and administration records on acute psychogeriatric wards in a teaching hospital measured the extent of conformity to NHS trust drug policy and improvements following specific interventions. The audit also measured doctors' knowledge of the trust drug policy. Prescription cards of all patients present on the wards were re-audited after 12 months.

RESULTS

The audit identified important shortcomings in prescription writing, recording and policy awareness. A targeted series of interventions resulted in significant improvements in some of these areas.

CLINICAL IMPLICATIONS

Continuous evaluation and feedback via audit can reduce omissions in prescription writing and recording.

The most common intervention performed by physicians is the writing of a prescription. All elements in the complex process of prescribing and administering drugs are susceptible to error (Ferner & Upton, 1999). Bates *et al* (1995) reported 6.5 adverse drug events per 100 patients admitted to a Boston hospital, over a quarter of which were preventable. Drug errors are an important cause of morbidity, accounting for one-fifth of the deaths due to adverse drug events, and are therefore becoming an increasingly common subject for litigation (Ferner, 1995).

Department of Health guidelines advise that legal responsibility for prescribing lies with the doctor who signs the prescription and the *British National Formulary* (*BNF*; British Medical Association & Royal Pharmaceutical Society of Great Britain, 1999) has explicit guidance on prescription writing.

An audit into the effects of introducing accessible hospital prescribing guidelines for opioid analgesia demonstrated an improvement in prescribing practice (Humphries *et al*, 1997). Similarly Hollingsworth and Wilson (1997) in a primary care study showed that good compliance with standards is achievable.

Aims

(a) To measure the extent to which information recorded on in-patient prescription cards conforms to South Birmingham Mental Health NHS Trust regulations (1998)

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