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Effect of Closing Facilities on Electroconvulsive Therapy Use in Glasgow

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Objectives: To assess the effect of closure of electroconvulsive therapy (ECT) centers on ECT use. Electroconvulsive therapy remains a recommended and effective treatment for mental disorders. Declining rates of ECT use in the United Kingdom have been observed over the last 20 years with anecdotal observations that use has declined as the result of centralization of provision. In Glasgow, there have been site closures in the north with no such rationing taking place in the south.

Methods: A naturalistic retrospective survey of the number of ECT courses commenced each year in Glasgow, with a comparison made between the north and the south of the city. Data were available from 1996 to 2008.

Results: Our analysis showed no change in the mean number of ECT courses commenced in southern Glasgow (period 1, 42.25; period 2, 41.83; period 3, 31; $F = 1.369$; $P = 0.298$). There was a significant reduction in the mean number of ECT treatments commenced in northern Glasgow (period 1, 91.25; period 2, 51; period 3, 33.33; $F = 10.06$; $P = 0.04$).

Conclusions: In northern Glasgow, where there have been 2 site closures since 1996, ECT use has declined. This trend was not replicated in the south of the city. This would suggest that the closure of ECT centers does reduce the use of ECT. However, there may be a number of confounding variables that could not be factored into the analysis because of lack of available data.

Key Words: electroconvulsive therapy, ECT, treatment, prescriptions, rationing, closure

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Electroconvulsive therapy (ECT) remains a recommended and effective treatment for mental disorders such as major depressive illness. In the United Kingdom, the National Institute for Clinical Excellence (NICE) has recommended that ECT is used only to achieve rapid and short-term improvement of severe symptoms after an adequate trial of other treatments has proven ineffective and/or when the condition is considered to be potentially life-threatening in individuals with severe depression, catatonia, and a prolonged or severe manic episode.¹ Globally, there is a marked variability in prescribing between and within countries.² This is thought to be related to a number of clinical and socio-political factors, such as unfavorable public perception and professional attitudes.^{3,4}

Declining rates of ECT use in the United Kingdom were first formally recognized in the 1990s. A progressive fall in the

annual rate of ECT of 53% over a 5-year period was observed in a population aged 18 to 64 years served by a central ECT clinic in Edinburgh with a defined and standard catchment population.⁵ More recently, administration of ECT in England has been reported to be in decline, with a reduction in the number of ECT applications and the number of patients treated over a 7-year period.⁶ A number of reasons have been postulated to explain the decline in use in the United Kingdom. These include the introduction of newer antidepressants, improved community care, earlier detection of mental illness, and better appreciation of the indications for ECT.²

A national audit of ECT use in Scotland described a 30-fold variation in the rate of ECT use across the country, ranging from 13 to 386 ECT treatments per 100,000 head of population.⁷ In this report, the majority of ECT clinics were on 1 hospital site with only 4 clinics providing services to multiple psychiatric inpatient facilities. Since then, ECT treatment has undergone a process of rationing and centralization nationally. In quality assurance, consideration has been given to the viability of small clinics, particularly in maintaining sufficient standards of treatment with reduced clinical activity.⁸

It has been suggested that the trend of closing small ECT treatment centers will continue with a further decrease in the number of ECT clinics in the next 5 years. There have been anecdotal observations that ECT use has declined as a result of the closure of clinics and the centralization of provision. Until now, there has been no formal research to confirm this assumption in the United Kingdom or internationally, a situation our study sought to rectify.

MATERIALS AND METHODS

Our study was based in Glasgow, the largest city in Scotland and the third largest in the United Kingdom. The city is geographically divided into north and south by the River Clyde. Health and social services are also demarcated by this boundary. Between 2001 and 2006, the city's population has increased by almost 400 per year. There are no data available to compare absolute populations over this period between northern and southern Glasgow. Large areas of the city are impoverished and exposed to multiple risk factors for developing mental illness. According to the latest accessible figures, northern Glasgow has a greater proportion of the population defined as income deprived (28%). This is compared to 22% in southeast Glasgow and 24% in southwest Glasgow.

Glasgow has the lowest life expectancy of any city in the United Kingdom: 70.7 years for men and 77.2 years for women. Residents in northern Glasgow had a consistently lower life expectancy over the years of our study than those living in the south of the city. Rates of mental illness were higher in northern Glasgow during the period of our study. In northern Glasgow, between 2001 and 2005, there was an increased rate of suicide, increased proportion of first psychiatric admission to a hospital, and an increased number of individuals prescribed medication for depression and anxiety disorders.^{9–12}

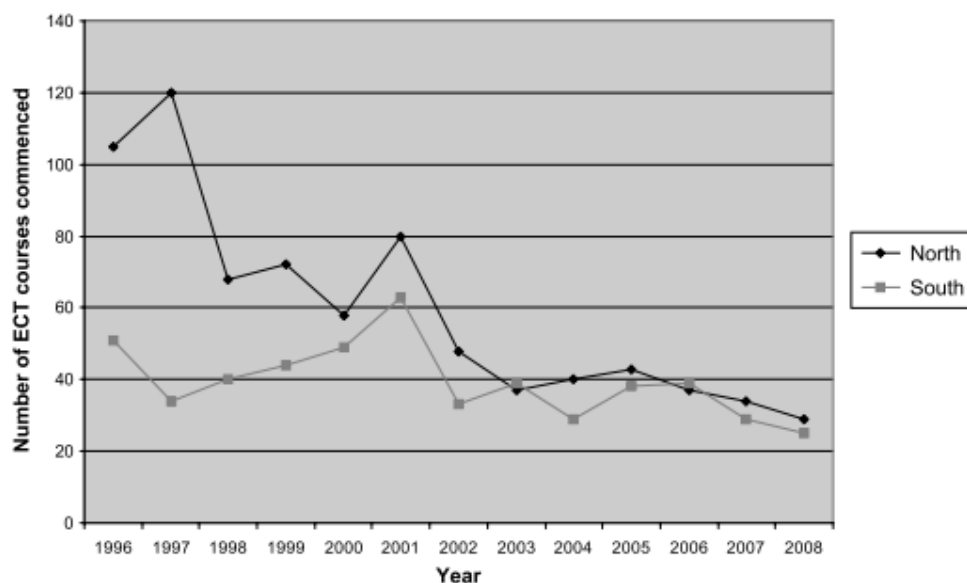


FIGURE 1. ECT Use in Glasgow.

Electroconvulsive therapy treatment centers have been closed in the north of the city over the last decade, with one site shutting in 2000 and another in 2005. No such rationing has taken place in southern Glasgow, meaning a comparison was possible to investigate the effect of site closures on the use of ECT.

Our study was a naturalistic retrospective survey. Two researchers (M.M. and J.C.) gathered information documented in ECT diaries from all the ECT treatment centers in Glasgow and recorded the number of courses of ECT commenced each year. Complete data were available from 1996 to 2008.

RESULTS

There was a general trend to a reduction in the number of ECT courses commenced in northern Glasgow over time. This was not replicated in southern Glasgow where the total number of courses of ECT commenced each year remained reasonably constant (Fig. 1).

Data were analyzed using SPSS version 15 (SPSS, Chicago, Ill).¹³ The data on average number of ECT courses commenced assumed normality. Three periods (fixed factors) were considered corresponding with the periods when ECT treatment centers closed in the city. Period 1 (1996–1999) corresponded with the time leading up to the first site closures in northern Glasgow. Period 2 (2000–2005) corresponded with the second period,

whereas the third period analyzed represented the years since the last of the ECT site closures in northern Glasgow (2006–2008).

Analysis of variance was used to look at the difference in the mean number of ECT courses commenced between the 3 periods: 1996–1999, 2000–2005, and 2006–2008. This analysis showed no change in the mean number of ECT courses commenced in southern Glasgow over all 3 periods ($F = 1.369$; $P = 0.298$). There was a significant reduction ($F = 10.063$, $P = 0.04$) in the number of ECT courses commenced in northern Glasgow over the 3 periods (Table 1). Post hoc least significant analysis of the data from northern Glasgow showed that there was a statistically significant decrease in the mean number of ECT courses commenced after the first closure (mean difference, 40.25; 95% CI, 14.37–66.13). There was no statistically significant difference between the number of ECT courses commenced after the second closure (mean difference, 17.67; 95% CI, -10.69 to 46.023).

DISCUSSION

The use of ECT has declined in northern Glasgow over the years 1999 to 2008. The trend in the north of the city seems to be in keeping with national trends observed by others such as Glen et al.⁵ The constancy of ECT courses commenced in southern Glasgow over time is striking compared with the constancy of ECT courses commenced in the north, suggesting that closing

TABLE 1. Mean Number of ECT Courses Commenced Over 3 Periods

	Period 1 (1996–1999)	Period 2 (2000–2005)	Period 3 (2006–2008)	F*	P	Post hoc LSD
North	91.25 (25.34)	51 (16)	33.33 (4.04)	10.63	0.004	1 > 2 = 3†
South	42.25 (7.13)	41.83 (12.36)	31 (7.2)	1.37	0.298	1 = 2 = 3

*Analysis of variance with time periods as the fixed factor and mean number of ECT courses commenced as the dependent variables.

†Statistically significant difference between mean numbers of ECT courses commenced during periods 1 and 2.

LSD indicates least significant difference.

ECT treatment centers does reduce the use of ECT. It is important to consider demographic, population, and clinical variables in the context of this study. Northern Glasgow has greater physical and psychiatric morbidity and mortality compared with southern Glasgow as previously outlined. Such variables would be expected to result in increased use of ECT as a treatment. However, in reality, our study observed the opposite trend.

Developments in psychiatric practice and treatment described by Eranti et al² may explain declining rates of ECT use, for example, newer antidepressants, improved community care, and earlier detection. However, such developments and treatments were introduced simultaneously across the whole of Glasgow. It is our view, therefore, that these clinical factors were unlikely to have influenced our study's findings. There may be a number of mechanisms that explain the reduction in ECT use in northern Glasgow. As ECT sites close and treatment centers become more distant, psychiatrists may become less skilled and confident in the use of ECT as a treatment.

Psychological research has demonstrated that individuals are less likely to believe, cooperate, or be persuaded by others or a process as geographical distance increases.¹⁴ As previous generations of physicians who were advocates of ECT retire and as psychiatric trainees have increasingly less exposure to this intervention, this effect is likely to become more pronounced over time. This may explain why rates of ECT use have fallen in northern Glasgow and why rates remained constant in southern Glasgow compared to other parts of the UK. The effect of role model physicians on influencing practice is often used when implementing guidelines or changing practice,¹⁵ and this may have been a factor in the findings observed in our study. It came to our attention that a number of senior physicians who were strong exponents of ECT retired during the period of our study. This may, in part, explain the sharp, statistically significant reduction in ECT prescriptions measured during the first period analyzed in our study (1995–1999), which was not replicated during later periods in the north. We attempted to analyze the data to explore this area in more detail; however, useful clinical information such as the identity of the prescribing doctor, which would have made this possible, was not available to us.

Our study was limited by other factors: we only examined ECT use in a single city, and our statistical analysis showed wide confidence intervals, therefore, our results should be interpreted with caution. It would also be informative to examine our findings in the context of other psychiatric treatments that use specialist centers, such as clozapine and lithium clinics, to ascertain if closing these services led to a reduction in use. A systematic search of the literature showed that this seems to be the first study investigating the effect of closing treatment centers on prescription rates indicating the need for further research in this important area.

The factors influencing decisions to close specialist centers will be many and will most likely vary according to national and local circumstances. Our study would seem to suggest, however, that closing ECT treatment centers may lead directly to less use of a proven, effective, and, in some cases, potentially life-saving psychiatric treatment for patients. Further research in the UK

is indicated to explore physicians' attitudes and knowledge of ECT as a treatment.

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