

## Electroconvulsive Therapy: Safety and Efficacy Above Age 75 Years

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### ABSTRACT

**Introduction:** Electroconvulsive Therapy (ECT) is a type of brain stimulation therapy used to treat a variety of mental illnesses. ECT is used most commonly to treat severe depression, especially when other treatments have not worked. The safety of electroconvulsive therapy in patients over the age of 75 has been questioned by several American studies, which have reported high complication rates in this age group. **Aim and Objectives:** To study the safety and efficacy of electroconvulsive therapy in patients over the age of 75 years. **Methodology:** Retrospective study of all patients over 75 years treated with ECT in three hospitals between January 2014 and December 2016 for a period of 3 years. The Treatment Intensity Scale was used to rate the adequacy of the anti depressant treatment if the index episode. The complication rate was determined by review of medical and nursing notes. **Results:** A total of 103 ECT courses were administered during the study period. Ten patients (9.71%) suffered complications following ECT. The most common adverse events were prolonged confusion and hypomania, all of which resolved within 2 weeks of the cessation of treatment. Eighty five per cent of patients made a marked or moderate response to treatment. **Conclusions:** ECT is a very safe treatment and doesn't cause brain damage or changes in personality because the amount of electricity used is too small. ECT is a relatively safe and effective procedure in patients over age 75.

**Keywords:** *Electroconvulsive therapy, safety, efficacy*

Electroconvulsive therapy (ECT) is well established as an effective treatment of severe depression in elderly people. ECT was developed in 1938 and has changed a great deal since that time. Studies show that ECT is effective almost in 70-90% of the time (NIMH 2008). ECT is most effective with multiple treatments and for people who receive the full course of ECT treatment. ECT treatment may bring full recovery, partial recovery or, in some cases, no recovery at all.

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ECT works by passing electrical currents through the brain. The electrical currents cause changes in brain chemistry that relieve symptoms of certain mental illnesses. People who undergo ECT do not feel pain or discomfort during the procedure. It can be used safely by people who are pregnant, elderly or living with a variety of medical conditions. Research has shown that ECT can be one of the most effective treatments available. The primary concern in clinical practice is its relative safety. With the growth of the elderly population, particularly the 'older-old' age group, the risks associated with ECT in elderly patients will become an increasingly important clinical issue. The most common complications encountered in these studies were confusion, falls and cardio respiratory problems. This study examines the complication rates and outcome of a group of patients aged over 75 treated with brief-pulse ECT.

### *Aim and objectives*

- To determine the safety and efficacy of electroconvulsive therapy among patients above 75 years of age.

## **MATERIAL AND METHODS**

The study examined the case notes of all patients over age 75 receiving ECT between January 2014 and December 2016 for a period of 3 years at three psychiatric renowned hospitals. Information was gathered on socio-demographic characteristics, clinical diagnosis and past psychiatric history, as well as previous and current drug treatment. The Treatment Intensity Scale was used to rate the adequacy of the antidepressant treatment of the index episode. Patients who failed to respond to at least 75 mg imipramine or its equivalent for 3 weeks were considered to be medication-resistant. Physical illness was recorded using the scheme described by Burvillet al. For each organ system a severity score was determined using a four-point scale (0 - nil, 1-mild, 2- moderate, 3- severe) for acute and chronic illness, giving overall acute and chronic illness scores. In addition, the number of systems affected by acute or chronic illness was recorded.

Response to treatment, based on the patient's clinical state as described in the case notes, was rated as nil (no change in clinical state), minimal (significant residual depressive symptoms), moderate (clinical improvement, with mild residual depressive symptoms) or marked (clinical improvement, without residual depressive symptoms).

A complication was defined as any event occurring during, or immediately following, a course of ECT which required a change of treatment plan, a medical consultation or premature conclusion of treatment, or any event considered unusual during ECT. The complication rate was determined by review of medical and nursing notes. Confusion or memory impairment was considered to be a complication if it was unusually prolonged or severe. Brief-pulse ECT was administered. ECT was administered twice weekly in the majority of cases.

**RESULTS**

*Table 01: ICD-10 primary diagnoses of patients receiving ECT*

Sr. No	Diagnosis	Number	Percentage
1	Depressive episode, without psychotic features	04	03.88
2	Depressive episode, with psychotic features	03	02.91
3	Recurrent depressive disorder, without psychotic features	43	41.75
4	Recurrent depressive disorder, with psychotic Features	38	36.89
5	Bipolar disorder, depressed without psychotic features	07	06.80
6	Bipolar disorder, depressed with psychotic features	08	07.77

*Table 02: ECT-related complications following 103 courses*

Complication	Patients with complications (N=10)	
	Number	Percentage
Confusion/disorientation	06	60%
Hypomania	05	50%
Hypertension	02	20%
Headache	01	10%

Eighty one patients over age 75 were treated with ECT during the study period, nine of whom were excluded because their case notes were missing. Almost 103 ECT courses were administered to the remaining 72 patients over the 3-year period, and each course was considered separately for data analysis.

Forty one (56.94%) patients were female. The mean age of the sample was 79.4 (range 75 to 91) years. Twelve patients (16.67%) had at least one acute physical condition and 51 (70.83%) at least one chronic physical condition at the time of Treatment. Physical illnesses were mild to moderate in severity in the majority of cases, with only three patients rated as having a severe acute and three a severe chronic physical condition.

The average number of ECT treatments per course was 6.7 (range 1-19). ECT was administered bilaterally in 95 (92.23%) cases, unilaterally in 5(4.85%) cases; while a further 3 (2.92%) patients were switched from bilateral to unilateral administration during their treatment course.

The most common indication for ECT was recurrent depressive disorder (81cases, Table 1). Eleven patients (10.70%) met International Classification of Diseases ICD-10 (World Health Organization, 1992) criteria for dementia. Virtually all patients (N =93, 90.29%) were medication-resistant prior to ECT. The most common psychotropic drugs administered during the treatment course were antidepressants (N = 86, 83.49%), followed by benzodiazepines (N = 37, 35.92%) and antipsychotics (N = 34, 33.01%). Fifty five patients (53.39%) made a marked response to ECT, while a further 40(38.83%) had a moderately good response. Nineteen (18.44%) patients displayed no or minimal response to treatment.

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There were no significant differences between the three hospitals in the clinical features of patients treated with ECT.

### DISCUSSION

Previous studies have reported high complication rates for 'older-old' patients treated with ECT. Burke et al. found that six of the eight patients over age 75 in their study experienced an untoward event, most commonly cardio respiratory difficulties, falls and severe confusion. Cattaneo et al. compared the safety of ECT in 39 patients over age 80 with 42 patients aged 65-80 years. The 'older-old' age group had significantly more cardio-vascular complications compared to 'younger-old' patients.

This study has found that approximately 11% of ECT-treated patients aged over 75 experienced a complication. The most common adverse events were prolonged confusion and hypomania, which resolved in all cases within 2 weeks of the cessation of treatment. No serious cardiovascular complications occurred in our sample. The low rate of confusion/disorientation was, perhaps, surprising when one considers that bilateral ECT was administered in the majority of cases. There was no significant relationship in our study between complication rate and general health, although the low number of adverse events limits the analysis of the data.

The higher complication rates of ECT in elderly patients must be interpreted in the context of the severity of the depressive illness and the possible consequences of no treatment. The associated risks must also be balanced against the side-effects of pharmacotherapy, as well as the increased mortality associated with depression, in frail elderly people. The relatively low rates of marked confusion/disorientation in our sample may be associated with the use of brief-pulse, rather than sine wave ECT.

The main methodological weakness of this study is that it is retrospective in nature. The assessment of complications and outcome was based on the observations recorded in the medical and nursing notes, and not on standardized measures. This limits, in particular, the full assessment of memory loss and disorientation following ECT. Minor adverse events, in many cases, may not have been documented in medical and nursing records.

### CONCLUSIONS

ECT is effective and relatively well tolerated in patients over age 75. A significant minority of patients suffered from complications, which underlines the importance of careful assessment of the patient's physical health prior to ECT and the monitoring of cognitive function and physical state during the course of treatment.<sup>1</sup> The results of this study support the continued use of ECT in the treatment of severe depressive illnesses in 'older-old' patients.

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