

# Use of ECT in Nepal: A One Year Study From the Country's Largest Psychiatric Facility

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## ABSTRACT

**Introduction:** Electro-Convulsive Therapy (ECT) refers to the electrical stimulation of the brain to produce seizures for therapeutic purpose. Since the development of ECT, its use has been consistent. In spite of the common use, data pertaining to the use of ECT in Nepal is lacking.

**Aim:** This study was undertaken with the aim of exploring the clinico-demographic profile of patients treated with ECT in the largest psychiatry facility in the country.

**Materials and Methods:** It is a retrospective descriptive study of patients who were treated with ECT after admission in the inpatient psychiatry unit of Universal College of Medical Sciences Teaching Hospital, Bhairahawa, Nepal during a period of one year (August 2012 to July 2013).

**Results:** Out of 1095 patients admitted during the specified period, 81 (7.39%) patients received ECT. About 44.44% of the

patients belonged to 20-29 years age group. Female patients constituted more than half of the subjects (55.56%). Review of diagnostic profile showed that majority of patients receiving ECT were suffering from Schizophrenia (44.4%), followed by Bipolar Affective Disorder/Mania (29.6%), Depressive disorder (11.1%), Acute and Transient Psychotic Disorder (6.2%), Post-partum Psychosis (3.7%) and substance induced mood/psychotic disorders (3.7%). A significant majority of subjects (75.3%) received about 5-7 ECT treatments. The mean seizure duration after ECT treatment was 31.13±5.79 seconds. No any major complications were noted during ECT treatment.

**Conclusion:** This study suggests that ECT, use, as a treatment modality is common in young adults and females with Schizophrenia being the most common indication. Direct ECT is safe when used judiciously.

**Keywords:** Diagnostic profile, Electroconvulsive therapy, Psychiatric symptoms, Seizures

## INTRODUCTION

Electro-Convulsive Therapy (ECT) refers to the electrical stimulation of the brain to produce seizures for therapeutic purpose. This seizure is effective in controlling the psychiatric symptoms. In current day practice, it is indicated for various psychiatric and neurological illnesses. Major diagnostic considerations include Major depression (unipolar, bipolar), Mania, Acute schizophrenia, Schizoaffective disorder and Neurological Disorders like Parkinson's disease, Catatonia, Neuroleptic malignant syndrome. Major clinical considerations where ECT is indicated includes: need for rapid response on medical or psychiatric grounds (eg suicidality, inanition), history of treatment-resistance or excessive risk of alternative treatments, severity of illness, history of positive response to ECT, patient's preference [1].

The standards and practices of ECT are strikingly different across the globe. In a country like ours, conditions though non ideal are based upon various practical issues like poverty and poor infrastructure.

There are no national epidemiological data on mental health problems in Nepal, but data from other developing countries can help estimate the situation reasonably well [2]. One study by Khattri et al., found the prevalence of psychiatric illness to be 37.5% [3]. The common mental illness noticed from a health camp included depressive illness, anxiety disorders, schizophrenia, bipolar affective disorder, substance misuse and dementia [4]. Common modes of treatment for these conditions available in the country include Psychotropic drugs, Psychotherapy and ECT. Though commonly used in majority of the centers, such a data pertaining to ECT use in Nepal is lacking.

## AIM

This study was aimed to explore the clinico-demographic profile of patients receiving ECT in one of the tertiary care centers in western region of Nepal.

## MATERIALS AND METHODS

It is a descriptive study of patients who received ECT after admission in the psychiatry ward of Universal College of Medical Sciences Teaching Hospital, Bhairahawa, a tertiary care center in western region of Nepal. The hospital has a well-established psychiatry unit (Outpatient and inpatient with special clinic services) with 70 inpatient beds. The department is training undergraduate medical students from last 12 years and postgraduates residents from last 4 years. The department has the largest psychiatry facility in the country. All patients who are admitted in the psychiatry inpatient unit undergo a detailed diagnostic work up under the supervision of a consultant. All the information is then recorded in a case-note. Diagnoses are based on International Statistical Classification of Disease, Tenth Revision (ICD-10) [5]. Decision to deliver ECT was taken individually for each patient based on the indications for the particular case. An informed consent was taken for each patient before the ECT. Consenting patients underwent a thorough physical assessment and relevant investigations were done wherever necessary. Patients who were found fit were administered brief-pulse, bilateral Direct ECT twice a week in the ECT- room of the psychiatry ward. All the patients received ECT by Fixed dosing method. Socio-demographic and clinical details of patients who received ECT were recorded in the Performa developed for the study. The study was approved and given ethical clearance by the Institutional ethical review board and is based on the data of patients who received ECT from August 2012 to July 2013. A total of 81 patients received ECT during the mentioned period.

## RESULTS

During the study period of 1 year, a total of 1095 patients were admitted in Psychiatry ward of the teaching hospital, of which 81 (7.39%) patients received Direct ECT. Thus, about 7.4% of patients admitted in the Psychiatry unit received ECT during the one year

period. The mean age of the subjects was  $28.63 \pm 10.04$  years. Majority (44.44%) of the patients belonged to the age group 20-29 years. Out of the 81 subjects, more than half of the subjects were Female (55.56%). A detail of the distribution of subjects according to the age and sex is shown in [Table/Fig-1].

As shown in [Table/Fig-2], majority of patients receiving ECT were suffering from Schizophrenia (44.4%), followed by Bipolar Affective Disorder/Mania (29.6%), Depressive disorder (11.1%), Acute and Transient Psychotic Disorder (6.2%), Post-partum Psychosis (3.7%). About 3.7% of the patients received ECT for substance induced mood/psychotic disorders.

As shown in [Table/Fig-3], Majority of the patients (75.3%) received about 5-7 cycles of ECT. The maximum number of ECTs given for each individual was 10 and about 2.5% subjects received only a single cycle of ECT. All of the patients received direct ECTs (DECT) only.

The mean seizure duration was  $31.13 \pm 5.79$  (minimum 15 sec and maximum 50 sec). [Table/Fig-4] shows the distribution of subjects according to the duration of seizure after ECT.

No major complications were noted in the patients except minor oral cavity injuries in about 7.4% of the patients. There were no deaths reported.

## DISCUSSION

Age of patients in this study ranged from 16-61 years with the mean age of  $28.63 \pm 10.04$  years. Nearly half (44.44%) of the patients receiving ECT belonged to the age group 20-29 years which is consistent with the studies done by Sherchan et al., and Adhikari et al., [6,7]. This corroborates with the fact that majority of the psychiatric morbidities, including depression; bipolar disorder and schizophrenia have an onset in this age group. In countries such as the United States, patients treated with ECT are mostly elderly, perhaps because elderly subjects have greater medical co-morbidity, take more concurrent medicines, and tolerate antidepressant drugs less well [8]. In contrast, among Asian sample, approximately 73% of patients were aged 18 to 44 years. This difference could be because of the differences in the population demographics than the deliberate exclusion of elderly patients from ECT referrals [8]. A study conducted by Damm et al., confirmed the effectiveness of ECT irrespective of age [9]. Though not contraindicated, ECT is not commonly used in extremes of age. Grover S et al., concluded that Electroconvulsive therapy is used less frequently in children and adolescents compared to the older patients [10]. ECT in adolescents is mostly used for psychotic disorders especially schizophrenia [11].

Gender of a patient has no role in ECT treatment. However many studies report that majority of patients receiving ECT are females (up to 70%). In a study done by Schweder et al., the male-female ratio of patients receiving ECT was 1:2 [12]. A systematic review by Leiknes et al., also confirmed the predominance of patients receiving ECT to be females [13]. Our study is consistent with the findings of these studies with predominance of female patients (55.56%). In a retrospective chart review conducted by Bloch et al., to see the gender differences in electroconvulsive therapy, it was found that depressed female patients underwent significantly fewer antidepressant drug trials than males before being referred to ECT [14]. A similar gender difference was found in the treatment of patients suffering from schizophrenia: female patients underwent fewer pharmacological antipsychotic trials than males before being referred to ECT. ECT was significantly more effective in female patients than in male patients suffering from schizophrenia.

The debate on whether to continue Direct ECT or not is still on. Many western countries have already banned Direct ECT. In India, direct ECT has been placed as a controversial and contested issue before the Supreme Court recently. However, in Nepal, one

	Age Group	Number (n=81)	Percentage (%)
Age (Years)	≤ 19	14	17.3
	20-29	36	44.4
	30-39	21	26.0
	40-49	5	6.2
	50-59	4	4.9
	≥ 60	1	1.2
	Total	81	100
Sex	Male	36	44.4
	Female	45	55.6
	Total	81	100

[Table/Fig-1]: Distribution of subjects according to Age and Sex.

Diagnoses	Number of patients (n= 81)	Percentage (%)
Substance induced mood/ Psychotic Disorder	3	3.7
ATPD	5	6.2
BPAD/ Mania	24	29.6
Depn Severe with PF	9	11.1
Late Onset Psychosis	1	1.2
Post Partum Psychosis	3	3.7
Schizophrenia	36	44.5
Total	81	100

[Table/Fig-2]: Clinical Diagnosis of patients receiving ECT.

No of ECT treatments received	Frequency (n = 81)	Percentage (%)
1	2	2.5
3	5	6.2
4	2	2.5
5	16	19.7
6	32	39.5
7	13	16.0
8	8	9.9
9	2	2.5
10	1	1.2
Total	81	100

[Table/Fig-3]: Number of ECT treatments received by each individual.

Duration of Seizure (seconds)	Frequency (n = 438)	Percentage (%)
≤20	1	1.2
20-25	2	2.5
25-30	16	19.8
30-35	38	46.9
35-40	14	17.3
≥40	10	12.3
Total	81	100

[Table/Fig-4]: Showing distribution of subjects according to duration of seizure following ECT.

can choose between these two forms of treatment without any hesitation since there is no guideline developed for the use of ECT. A Survey [8] of the Practice of Electroconvulsive Therapy in Asia revealed that Unmodified ECT was administered to 22,194 (55.7%) patients at 141 (54.9%) institutions in 14 countries. Direct ECT is very commonly used in many parts of the world accounting for the largest ECT population in the world [15]. In a survey [16] conducted in Indian teaching hospitals, 10,234 patients (52% of total patients) received 52,450 unmodified ECT treatments (46% of total number of treatments) at 33 institutions. Unmodified ECT was always used

in 20 institutions. Reasons of using Direct ECT included lack of anaesthesiologist, lack of equipment, convenience, economic purpose, being safer than modified ECT, conventional, and avoiding anaesthetic risk.

Studies show that unmodified ECT causes more physical morbidity than the modified one [15]. However, an Indian study reported the opposite findings [17]. The incidence of musculoskeletal complication reported in this study was less than 1% whereas, among patients receiving modified ECT the frequency of potentially fatal complications like cardiac arrest was greater. Thus, in absence of trained anaesthetic personnel, the administration of unmodified ECT by trained staffs may seem to be justified [18].

In this study, all patients received Direct ECTs only. It is because of the high cost of Modified ECT (almost about 10 times that of Direct ECT per treatment). Studies have documented that unmodified ECT is safe compared to the much-advocated modified ECT. One recent study advocated the use of unmodified ECT if enforcing modified procedure discourages the use of ECT [19].

The number of ECT treatments delivered to a particular patient varies according to the diagnosis and clinical improvement. In general, textbooks recommend that the course of treatment of major depressive disorder can take 6-12 treatments, manic episode can take 8-20 treatments, schizophrenia can take more than 15 treatments, catatonia and delirium can take as few as 1-4 treatments [20]. However, it is not so high in practice. In our study, majority (39.5%) of subjects received 6 cycles of ECT. This was consistent with the study done by Sherchan et al., [6]. About 2.47% patients received a single ECT treatment. This group includes patient with catatonia and patient who left ECT treatment.

Monitoring of seizure duration remains an important part of ECT practice. The mean seizure duration in our study was 31.13±5.79 seconds (maximum 50 seconds and minimum 15 seconds). For an ECT to achieve a therapeutic response, it is necessary to induce a generalised tonic-clonic seizure. It is also noted that ECT that fails to induce a seizure and immediate termination of a seizure after induction does not result in clinical improvement [21]. On the contrary, some of the latest research suggests that the length in time of the cerebral seizure activity or the tonic-clonic convulsion is not related to clinical effectiveness. The effectiveness of ECT is related to the quality of cerebral seizure activity and cannot simply be related to its length in time alone. One of the important parameters in predicting clinical response is the degree to which electrical stimulus exceeds the seizure threshold [22].

ECT was originally used for treating patients with schizophrenia. However, studies subsequently proved ECT's effectiveness in major depressive disorder thus changing the trend of its use in developed countries. Studies from developed countries show that significantly higher number of patients receiving ECT is suffering from mood disorder especially depression. This is in contrast to the findings from Asian studies which show that schizophrenia is the commonest diagnosis among patients receiving ECT. A survey [16] of practice of ECT in India showed that Patients with schizophrenia received ECT most frequently (36.5%), followed by patients with major depression (33.5%), mania (17.9%) and a similar trend has also been reported for Asian countries by the same group of authors [8]. The finding of our study was consistent with the finding of these surveys as majority of patients receiving ECT in our study were suffering from Schizophrenia. It is in contrast to the findings of the study by Sherchan et al., [6] where the indication in majority of patients was Acute and Transient Psychotic Disorder. Proportion of patients with depressive disorder receiving ECT in our study was less (11.1%) as compared to other studies. This could be because of including patients with bipolar depression into a single group of Bipolar affective disorder. This has led to a slightly higher rate of ECT use in bipolar patients as compared to other studies.

Out of 81 patients enrolled in this study, 3(3.7%) of the subjects receiving ECT were suffering from Substance induced Mood/Psychotic disorders. Though not commonly used to treat these conditions, ECT can be used to control agitation and psychosis in this group of patients. There are few case reports available in the current literature regarding this off-label use of ECT. Bruce et al., used ECT to treat steroid induced depressive psychosis. Similarly Dwight et al., were successful in treating organic psychosis in Huntington's disease by using ECT. Dinwiddie et al., reported three cases of PCP-associated psychosis that did not respond to at least 2 weeks of antipsychotic treatment but subsequently responded rapidly to ECT [23]. Thus, concluded that ECT should be considered as a treatment early in the course of drug-associated psychoses in which an adequate trial of antipsychotic medication has not been effective. In a survey [8], it was found that ECT was an indication in drug abuse in 1.8% of the subjects and maintenance ECT (MECT) was used for the same indication in 0.4% of the population receiving MECT. Other factors can justify use of ECT, including a patient's treatment history and the severity of a patient's condition. ECT may reasonably be considered for certain life-threatening conditions, particularly when other treatment options have been exhausted or when the patient has a history of a positive response to ECT. Though, it has been used in various conditions, a detailed study should be conducted to conclude whether it's really appropriate to use ECT in such conditions [24].

## LIMITATION

The important limitation of this study is that sample size is small. Hence it is difficult to generalize the findings of this study. However, it has revealed some significant findings pertaining to use of ECT in Nepal.

## CONCLUSION

Our study suggested that use of ECT treatment was common among young adult patients and females. The most common indication for ECT was Schizophrenia which was consistent to the findings of other Asian studies. DECT is safe when used judiciously. A larger study of similar type can be done involving the hospitals of the country, that provide psychiatric care, to know whether our result represent the overall national trend. This will also help us to compare the trend of ECT use in Nepal with the other countries.

## DECLARATION

We would like to declare that this research has been presented in the 8<sup>th</sup> SAARC Psychiatric Federation International Conference held in Lumbini, Nepal on 27<sup>th</sup>-29<sup>th</sup> Nov 2014.

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