

## Electroconvulsive Therapy: Effect of An Educational Experience on Medical Students Knowledge and Attitudes

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### Abstract

**Objective:** The purpose of this study is to determine the effect of an educational experience including a lecture on Electroconvulsive therapy (ECT) and demonstration of ECT procedure on medical student's knowledge and attitude towards ECT.

**Methodology:** This is a cross-sectional quasi-experimental study done at tertiary care hospital, Khammam, India. Using random sampling, 76 medical students participated in this study. Socio-demographic data, Knowledge and attitude of the medical students towards ECT were assessed using questionnaire developed by Kinnair and Dawson. The questionnaire has two parts; first part consists of 21 items which are aimed at assessing the knowledge of the students. In the second part of questionnaire, 13 items are included which are aimed at assessment of medical student's attitudes towards ECT. Statistical analysis was done by paired sample t-test ( $P < 0.05$ ) and Pearsons correlation.

**Results:** There is a significant difference in knowledge and attitude towards ECT before and after their educational experience.

**Conclusion:** Awareness regarding knowledge of ECT and its procedure will pave the way for more favorable outcome towards its usage.

**Keywords:** *Electroconvulsive Therapy; Knowledge; Attitude; Khammam*

### Introduction

Electroconvulsive therapy (ECT) involves passage of electrical current through patient's brain under anesthesia which induces seizure activity and improves the mental status of the patient [1]. Mechanism of action of ECT is unknown, nevertheless it is attributed to biochemical theory [1-3]. ECT was first introduced into psychiatry more than seven decades back in 1938 in Rome by an Italian neuropathologist and psychiatrist Ugo Cerletti [4,5]. ECT is widely prescribed worldwide and first indicated in the emergency treatment of severe depression with suicide or psychosis, medication - resistant schizophrenia [3]. Effectiveness of ECT in the treatment of depression was established in 1941 [6]. The introduction of psychopharmacology in the 1970s and 1980 reduced the use of ECT in the treatment of mental illnesses [7]. Modified and non - modified ECT are the two forms of the treatment, modification comes in the form of using anesthesia together with muscle relaxant to limit the intensity of convulsion and reduce its side effects as bone and teeth fractures, muscular and tendon damage. Most of the internationally established guidelines recommended the modified ECT in the last decade (1990 - 2000) as the standard routine treatment [8-10]. Unilateral treatment is prescribed for some patients instead of bilateral treatment

to overcome the most frequently occurring side effects as temporary memory loss, mental confusion and headache, while permanent cognitive impairment remains obscure. ECT remains a source of controversy to the public and even among some in the medical profession despite the documented effectiveness of it in the treatment of depression [11]. Several studies are looking forward for medical student's attitudes towards ECT [12-14] inspite of studies regarding patients attitudes towards ECT [15,16].

Limited literature is available on attitude and knowledge of medical students towards ECT from Asian and African countries [17-20]. Previous study from India reported less favorable attitudes among medical students towards ECT.

Medical curriculum in India for undergraduates has been criticized for inadequately preparing medical students to handle the burden of psychiatric illnesses. Small amount of time is allotted for Psychiatric teaching and training for medical undergraduates in India [21,22]. One possible way to overcome this is for health professionals to be adequately educated and informed about ECT practice.

The present study is done to see whether demonstration of ECT procedure has greater impact on student's knowledge and attitude.

### Materials and Methods

Quasi-experimental research design was used to study the impact of lecture and demonstration of ECT on knowledge and attitude of students. The present study is a cross-sectional one which was done at a tertiary care multispecialty hospital. Random sampling method was used. The medical college runs undergraduate, postgraduate and super-specialty courses. Study sample includes medical students coming to psychiatry department as part of their psychiatry clinical rotation. The study was conducted over a duration of 6 months in which students attending clinical psychiatry postings for a period of 15 days in rotation were taken.

Design of the study and ECT procedure was explained to students; among them who gave informed consent were included. The students were administered the study questionnaire, following this they underwent training. ECT procedure was explained and demonstration of modified ECT on a patient was shown to the students. The curriculum of ECT was taken from the standard textbooks of Psychiatry [23-25]. They were sensitized about historical aspects, indications, contraindications, procedure, adverse effects, and effectiveness of ECT.

Demonstration of modified ECT on a patient was carried out as per feasibility. We excluded students who are not adept with the ECT procedure. Final evaluation was conducted at the end of ECT demonstration where the students were re-administered the questionnaire.

### Study questionnaire

Questionnaire developed by Kinnair and Dawson was used [26]. The questionnaire used in the study was aimed at assessment of medical student's knowledge and attitudes towards ECT. There are two parts in the questionnaire; first part consists of 21 items which are aimed at assessing the knowledge of the students about indications (6 items), procedure (10 items) and adverse effects (5 items) of ECT. Students have to mark items as true or false. Each correct response is scored as 1 and incorrect response scored as 0. The final score was calculated by summing up the number of correct responses in each of the three domains.

In the second part of questionnaire, 13 items are included which are aimed at assessment of medical student's attitudes towards ECT. The responses are marked as "agree" or "disagree". Student's identity was kept confidential and institutional ethical guidelines were followed.

### Statistical analysis

Student paired sample t-test was used to assess the knowledge and attitude of medical students towards ECT by comparing pre-score values with the post score values following lecture and demonstration on ECT and Pearsons correlation was used to calculate the correlation between pre-score and postscore values.

**Results**

100 medical students who attended psychiatry clinical rotation postings were approached for participation in the study. Of these, 86 agreed to participate and 10 were excluded as they did not attend one or the other part of ECT orientation. A series of questions on knowledge followed by questions related to attitude towards ECT were given before and after ECT orientation.

This study found that there was significant improvement in the scores of overall knowledge and attitude of medical students after receiving a lecture and demonstration on ECT ( $P < 0.009, P < 0.002$ ) (Table 1).

Description	Pre-test			Post-test			P Value
	Mean	SEM	SD	Mean	SEM	SD	
Knowledge	11.14474	0.37822	3.2	13.42105	0.36575	3.1	0.009*(s)
Attitude	7.34211	0.251	2.18	8.09211	0.20535	1.79	0.002*(S)

**Table 1:** Medical students total scores of ECT knowledge and attitudes (n = 76).

There was a significant improvement in knowledge of medical students in all domains of the questionnaire for assessment of knowledge about ECT related facts. There is also a change in the attitude of medical students towards ECT following the lecture and demonstration of ECT ( $P < 0.002$ ) (Table 2).

Description	Pre-test			Post-test			P Value
	Mean	SEM	SD	Mean	SEM	SD	
Indications	2.96053	0.13304	1.15	3.61842	0.14864	1.29	0.01*(s)
Procedure	5.22368	0.24178	2.10	7.19737	0.22635	1.97	0.02*(s)
Side Effects	3.0	0.122	1.07	4.59211	0.10459	0.91	0.004*(s)
Attitude	7.34211	0.251	2.18	8.09211	0.20535	1.79	0.002*(s)

**Table 2:** Medical students pre and post experience ECT knowledge and attitude scores (n = 76).

The association between students knowledge and attitudes towards ECT, Pearson Correlation revealed positive relationship between student knowledge and attitudes both before and after their experience ( $r = 0.22, P < 0.04, r = 0.24, p < 0.03$ ) respectively. This finding indicated that the more information the student had, the more positive attitude they held.

**Discussion**

The current study explored the pre and post knowledge and attitude of ECT among medical students after giving a lecture and demonstration on ECT. In India as well as in other countries, the medical curriculum is criticized for not incorporating ECT awareness to undergraduate medical students [22,34]. Medical students when taught about ECT procedure, improved their knowledge and attitude towards it [14,27,28]. Making all medical student’s to view ECT was difficult because of practical issues and it was preferred option over viewing video ECT. Previous study reported that, watching video about ECT didn’t alter student’s attitude towards ECT. [14]As there is uncertainty about its efficacy and safety [29,30] and lack of proper training [31], there is marked variation in practicing ECT all over the world. As reported by previous study, there was misinformation regarding the procedure related to ECT which led to poor knowledge among medical students [17]. ECT lecture and demonstration improved student’s knowledge regarding its indication, procedure and adverse effects. Those who attended demonstration as a part of ECT awareness, there is marked improvement in knowledge regarding procedure. Knowledge about ECT procedure was found to be poor among American second year medical students [32]. Hungarian study found that 92% of fifth year medical students have poor knowledge about ECT [33]. 39% medical students linked ECT to brain damage in an Irish study [34].

Andrade and Rao [17] found unfavorable attitudes towards ECT among Indian medical students. In the current study, medical students showed improvement in their knowledge and attitude towards ECT in all domains following lecture and demonstration. Rather than witnessing ECT alone, giving lecture and demonstrating ECT procedure has shown greater benefits in shaping positive attitudes among medical students [26].

High percentage of positive attitudes towards ECT among medical students were reported in studies done by Benbow [14] and Clothier, *et al* [15]. An overall favorable attitude towards ECT was reported in a study done on Greek medical students [14]. Making medical students to interact with these patients during follow-up may also improve their attitude towards ECT by mitigating their misconceptions surrounding ECT.

### Limitations

Size of the sample is small. In the present study, we included students from one medical college and therefore we can't generalize our findings regarding their knowledge and attitude towards ECT. If previous experiences of medical student's knowledge regarding ECT was known, we could help them in improving their orientation towards ECT further. After ECT orientation they were assessed only once and their stability regarding the knowledge and attitude change remain unexplored. Finally, certain biases are likely to be inculcated in the responses as students are completing their training in the same department.

### Conclusion

Currently, ECT is still the most widely available non-pharmacologic treatment procedure for severe and treatment-resistant psychiatric disorders. The present study suggests that awareness about usage of ECT showed greater results in improving medical student's knowledge and attitude towards ECT. It teaches both theoretical and practical aspects related to ECT. Time taken for this awareness is worthwhile. Future clinical and research studies should focus on how and when to utilize ECT as powerful synergistic therapy, to enhance other biological therapies and psychotherapy, and to prevent symptom relapse or recurrence. Hence, incorporation of such ECT orientation in undergraduate medical curriculum should be given a consideration for better outcome.

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