ECT Knowledge in Psychiatrists, Psychiatry Residents, and Medical Students : Effect of Training†

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Abstract

Thirty psychiatrists and 24 psychiatry residents, who participated in the Srinakharinwirot University (SWU)'s ECT workshop, were asked to complete a questionnaire assessing basic knowledge of ECT. Comparison was done with results obtaining from the 'properly trained' 27 SWU medical students. Psychiatrists had much less ECT knowledge than the other two groups. The majority of respondents asked for special training for privileging in ECT practice. All respondents agreed to have a standard curriculum for ECT training, and this should be included in the training syllabus of psychiatry residents.

Key word : ECT Knowledge, Comparison Study, Psychiatrists, Psychiatry Residents, Medical Students, ECT Curriculum for Medical Students, Training Syllabus

ECT has changed markedly during the past few decades. New findings from a substantial number of ECT studies have been published regularly in many psychiatric and medical journals. At the present time, ECT practitioners must be knowledgeable about current advances in ECT practice in addition to competency in comprehensive knowledge of psychiatric illnesses, psychopharmacology and other psychiatric treatments(1).

The American Psychiatric Association (APA) recommends that a psychiatrist receives special training and is accredited prior to delivering ECT unsupervised(2). In Thailand, there has been no formal training and supervision in ECT. In many university and psychiatric hospitals, ECT is usually administered in a solo by psychiatry residents or junior psychiatrists working to a roster. The majority of psychiatry residents have to rotate to an ECT unit, for such a wide varying period of time, with very limited or no supervision. Their training syllabus has no requirement for qualification in ECT.

The Srinakharinwirot University (SWU) medical students rotating to the department of psychiatry require a one-week duty in our ECT

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Research Unit for their psychiatry clerkship. During this period, they have been scheduled to have: a two-hour lecture regarding theory and practice of ECT administrations, observation of all ECT treatments, one ECT conference, and, an assignment for each to take care of at least one patient throughout. This pioneering project has been conducted since the 1997 academic year, in order to develop an appropriate ECT training syllabus for psychiatry clerkship and possibly for psychiatry residents.

There has been no previous survey of ECT knowledge in ECT practitioners in Thailand. This study aimed to determine whether there were any differences in knowledge of ECT among psychiatrists, psychiatry residents, and the 'properly trained' SWU medical students.

METHOD

Subjects

Thirty psychiatrists and 24 psychiatry residents, who participated in the survey during the first ECT workshop of Thailand conducted on November 18-19, 1998, were asked to complete a questionnaire. Twenty-seven SWU medical students rotating to our ECT Research Unit for their required psychiatry clerkship were asked to complete the same questionnaire on their last day of rotation, two weeks prior to the workshop.

Questionnaire

The questionnaire was composed of 30 questions, and each demanded a true/false response (Table 1). Twenty-seven questions assessed basic knowledge of ECT, with the last three items asking for opinions about : a special training for privileging in ECT, a clear-cut guideline and recommendation for ECT practice, and, incorporation of the training syllabus in psychiatry residency training programs.

Statistical analysis

Only twenty-seven questions assessing ECT knowledge were used in the statistical analysis. One way analyses of variance (ANOVA) was used to compare the results of the three groups, and two-tailed Fisher's exact test was used to test for significant differences among groups. Significant main effects between groups were followed by post hoc comparisons of the three groups using the Scheffe's test. Reliability analysis of the questionnaire was assessed using reliability coefficients. Correlations were done using the point biserial correlation to determine Pearson correlation coefficients.

RESULTS

There was a significant main effect of total scores among the three groups, as shown in Table 1 ($F = 11.1$, $df = 2,80$; $p < 0.0001$). Both the psychiatry residents and medical students had higher scores than the psychiatrists [mean $\pm$ SD (range) = 17.5 ± 3.6 (9-22) and 17.3 ± 2.2 (13-22) *vs* 14.1 ± 3.2 (9-21), respectively; both ps = 0.001], but there was no significant differences between the first two groups. Reliability analysis of 27 questions yielded the alpha value of 0.58. Discrimination indices assessed by Pearson correlation coefficients are also shown in Table 1.

Table 1. Responses to the questionnaire & statistical analyses.

	Psychiatrists (N = 30)	Residents (N = 24)	Students (N = 27)	Pearson correlation coefficients
1. ECT is more effective than drugs in treating Major depressive disorder. (true)*				
correct responses (%)	- 10 (33%)	15 (63%)	14 (52%)	0.27**
2. ECT is more dangerous than drug treatments. (false)				
correct responses (%)	- 21 (70%)	21 (88%)	27 (100%)	0.47***
3. ECT should be used exclusively in medication-resistant patients. (false)				
correct responses (%)	- 17 (57%)	22 (92%)	23 (85%)	0.64***
4. Manic patients require more number of treatments than the depressives. (false)				
correct responses (%)	- 15 (50%)	14 (71%)	17 (63%)	0.37***
5. ECT should not be used in the elderly patients (i.e., $\geq$ 70 yrs). (false)				
correct responses (%)	- 14 (47%)	19 (79%)	23 (85%)	0.56***
6. Use of ECT is prohibited in children (< 15 yrs). (false)				
correct responses (%)	- 22 (73%)	14 (58%)	23 (85%)	0.37***
7. ECT must not be used in patients with increased intracranial pressure. (false)				
correct responses (%)	- 2 (7%)	3 (13%)	4 (15%)	0.34***

Table 1. Responses to the questionnaire & statistical analyses.

	Psychiatrists (N = 30)	Residents (N = 24)	Students (N = 27)	Pearson correlation coefficients
8. ECT must not be used in patients with prior history of myocardial infarction. (false)				
correct responses (%)	- 10 (33%)	16 (67%)	9 (33%)	0.58***
9. ECT causes brain damage. (false)				
correct responses (%)	- 16 (53%)	21 (88%)	18 (67%)	0.33***
10. Cardiovascular changes during ECT treatment is usually a life-threatening condition. (false)				
correct responses (%)	- 23 (77%)	23 (96%)	13 (48%)	0.26**
11. ECT treatment is dangerous for patients with cardiac pacemakers. (false)				
correct responses (%)	- 4 (13%)	8 (33%)	7 (26%)	0.25**
12. All patients should receive spinal X ray before ECT. (false)				
correct responses (%)	- 19 (63%)	16 (67%)	24 (89%)	0.34***
13. All patients who improved with ECT should receive additional 2-3 treatments for prophylactic effects. (false)				
correct responses (%)	- 10 (33%)	8 (33%)	17 (63%)	0.34***
14. The efficacy of ECT depends on producing a condition of memory impairment enabled the patient forgetting troublesome psychosocial stressor(s). (false)				
correct responses (%)	- 30 (100%)	21 (88%)	24 (89%)	0.03
15. The efficacy of ECT depends only on producing a generalized tonic-clonic convulsion with $\geq$ 20 seconds of motor seizure duration. (false)				
correct responses (%)	- 13 (43%)	21 (88%)	1 (4%)	0.35***
16. Increasing electrical stimulus intensity above that in Q15 in unilateral ECT does not increase either the efficacy of treatment or the speed of clinical response. (false)				
correct responses (%)	- 9 (30%)	8 (33%)	5 (19%)	0.23**
17. It is more difficult to produce an adequate seizure with unilateral ECT than with bilateral ECT. (false)				
correct responses (%)	- 17 (57%)	12 (50%)	8 (30%)	- 0.1
18. The longer the seizure duration is the more effective treatment. (false)				
correct responses (%)	- 26 (87%)	22 (92%)	27 (100%)	0.27**
19. Number of ECT treatment accepted as adequate uses for all patients, irrespective of psychiatric diagnoses, is between 8-12 sessions. (false)				
correct responses (%)	- 7 (23%)	7 (29%)	12 (44%)	0.32***
20. More intense seizures are likely to be more effective. (true)				
correct responses (%)	- 7 (23%)	4 (13%)	17 (63%)	-0.03
21. The anesthetic level during ECT should be as deep as possible. (false)				
correct responses (%)	- 28 (93%)	23 (96%)	26 (96%)	0.13
22. Complete paralysis is always the primary objective of muscle relaxation. (false)				
correct responses (%)	- 21 (70%)	16 (67%)	25 (93%)	0.49***
23. There is no differences in the therapeutic efficacy between unilateral and bilateral ECT using the same amount of stimulus intensity as low as that produces an adequate seizure (i.e., motor $\geq$ 20s). (false)				
correct responses (%)	- 12 (40%)	12 (50%)	18 (67%)	0.17
24. Determination of seizure threshold should be done exclusively for patients in research study. (false)				
correct responses (%)	- 20 (67%)	19 (79%)	27 (100%)	0.29***
25. Monitoring of motor seizure responses is not required during ECT treatment, if there is simultaneous EEG recordings. (false)				
correct responses (%)	- 15 (50%)	19 (79%)	23 (85%)	0.23**
26. EEG monitoring has the only objective for detection of prolonged seizure. (false)				
correct responses (%)	- 25 (83%)	21 (88%)	26 (96%)	0.15
27. Cerebral oxygen consumption increases up to 100% during the seizure. (false)				
correct responses (%)	- 10 (33%)	12 (50%)	10 (37%)	0.15
28. Proper training is required for treating psychiatrists authorized in the ECT suite. (true)				
correct responses (%)	- 20 (67%)	22 (92%)	25 (93%)	
29. There should be a clear-cut recommendation and guideline for ECT training. (true)				
correct responses (%)	- 30 (100%)	24 (100%)	27 (100%)	
30. Proper ECT training should be included in the training syllabus of psychiatry residents. (true)				
correct responses (%)	- 30 (100%)	24 (100%)	27 (100%)	
Total scores (Q1-Q27) [mean $\pm$ SD (range)]	14.1 $\pm$ 3.2 (9-21)	17.5 $\pm$ 3.6 (9-22)	17.3 $\pm$ 2.2 (13-22)	

* correct answer is given at the end of each question.

** $p < 0.05$ (2-tailed)

*** $p < 0.01$ (2-tailed)

In order to confirm the above findings, the results were further re-examined by excluding the questions with poor correlations (Q 14, 17, 20, 21, 23, 26 & 27), and statistical analysis was done in the remaining 20 questions. The 'corrected' results were also similar to that of the initial findings, that there was a significant main effect of the 'corrected' scores among the three groups ($F = 9.72$, $df = 2,80$; $p < 0.0001$), that both the psychiatry residents and medical students had higher scores than the psychiatrists [mean $\pm$ SD (range), 13.1 ± 3.3 (4-18) and 12.6 ± 2.0 (8-17) *vs* 9.8 ± 3.6 (2-16), respectively; $p = 0.001$ and 0.004, respectively], and, that there were no significant differences between the first two groups. Reliability analysis of 20 questions obtained the alpha value of 0.84.

Only 33 per cent of psychiatrists knew that ECT had more therapeutic efficacy than antidepressants, compared to 63 per cent and 52 per cent of psychiatry residents and medical students, respectively, which is strikingly low[2-5]. The majority of psychiatrists and psychiatry residents and all of the medical students did not believe that ECT was more dangerous than drugs[2,6]. The majority of respondents denied that ECT should be used exclusively in medication-resistant patients[2], and that manic patients required a greater number of treatments than the depressives in which there has been no confirmatory evidence of such a claim, and ECT is very effective in treating manic patients[2,7,8].

Psychiatrists had an incorrect belief that ECT should not be used in elderly patients more than the two other groups[2,7,9,10]. The majority of respondents denied that ECT was prohibited in children[2]. Few respondents knew that ECT could be used cautiously by an experienced practitioner in patients with increased intracranial pressure[2,4,11]. The majority of psychiatrists and medical students had an incorrect belief that ECT must not be used in patients with a prior history of myocardial infarction[2,6].

A substantial number of respondents believed that ECT did not cause brain damage[5]. Many psychiatrists and psychiatry residents knew that cardiovascular changes during ECT treatment was usually not life-threatening[5]. A relatively small number of respondents knew that ECT was not dangerous for patients with cardiac pacemakers[5,7,10]. The majority of respondents denied routine use of spinal X-ray before ECT[5]. Many medical students denied the common practice of giving few additional ECT treatments after achieving maximal clinical improvement, which have no prophylactic effects[12]. Nearly all respondents knew that the ECT efficacy did not relate to a condition of ECT-induced memory impairment.

The majority of psychiatry residents knew that the ECT efficacy did not depend solely on producing a generalized tonic-clonic convulsion with at least 20 seconds of motor seizure, but a small proportion of all respondents knew that using electrical stimulus intensity above that level would increase the treatment responsiveness and the speed of clinical response[13-17]. The majority of medical students had an incorrect belief that an adequate seizure could be produced with more difficulty in unilateral than bilateral ECT[16]. Nearly all respondents knew that the treatment efficacy did not increase with the duration of seizure. Of particular note, the majority of respondents stated incorrectly that a total number of 8-12 sessions was accepted as adequate treatment for all patients, irrespective of psychiatric diagnoses.

The majority of medical students knew that more intense seizures were likely to be more effective[2,5]. Nearly all of respondents disagreed that anesthetic level during ECT should be as deep as possible[5,7]. Almost all the medical students disagreed that complete paralysis was the goal of muscle relaxation[2,5,7,10].

Psychiatrists had a false belief that there was no differences in the therapeutic efficacy between unilateral and bilateral ECT using the threshold dosage of stimulus intensity, more than psychiatry residents and medical students[17]. All medical students and many of the psychiatrists and psychiatry residents knew that determination of seizure threshold should be done in every patient[2]. The majority of respondents knew that monitoring of motor seizures was still valuable albeit with simultaneous EEG recordings[5]. Nearly all respondents knew that EEG monitoring was not only for detection of prolonged seizures[5,7]. A substantial number of respondents did not know that cerebral oxygen consumption increased up to 200 per cent during the seizure[2,18].

The majority of respondents opined that proper training was required for treating psychiatrists authorized in the ECT suite[1,2]. All the respondents agreed that there should be a clear-cut recommendation and guideline for ECT training,

and inclusion of proper ECT training in the training syllabus of psychiatry residents[1].

DISCUSSION

This is the first study directly comparing the basic knowledge in ECT between psychiatrists, psychiatry residents, and medical students. Psychiatrists had much less ECT knowledge than either psychiatry residents or 'properly trained' medical students. The results do not represent the whole characteristics of ECT practitioners in Thailand, but rather bias to only those who participated in the survey who are interested in ECT treatment. The findings appear to benefit effect of training in the medical students, and may emphasize the requirement for urgent development of an ECT training syllabus for both the psychiatry residents and medical students.

ECT practice should no longer be regarded as an emerging discipline capable of attention by any untrained physician[1]. Our knowledge in ECT has changed substantially during the past few decades, it has become more complex and more precise.These technological advances have had a great impact on ECT practice.

ECT has been used in Thailand since 1945 [19]. At the present time, the number of treatments is roughly estimated to be about 25,000 a year, and the majority of patients being treated are schizophrenics[20]. All ECT treatments are delivered by inadequately trained personnel, working to a roster. A few psychiatry residency training programs provide very limited supervision, of which, at best, is only about how to use the device and adjustment of the electrical stimulus intensity, which depends on the judgement of the treating physician. The electrical stimulus dosing schedule has never been acknowledged to any treating physicians or even the directors or consultants of all ECT units. No attempts have ever been made to develop such a policy in any institution. Only a small number of psychiatry residents and physicians who are interested in the treatment learn ECT through their own curiosity, and recommendations and guidelines suggested by the APA Task Force on ECT are most frequently used[2,21]. There has never been a qualification program in ECT developed in any institution. All psychiatry residency training programs provide no training syllabus despite the fact that the majority of residents have to rotate to the ECT unit. In summary, the major pattern of ECT practice in Thailand is not different from that described in Great Britain[22-24].

The questionnaire in this study was prepared recently in an attempt to assess the basic knowledge, current advances, and false beliefs which dominate the practice of ECT. It was newly developed or adopted from a number of ECT textbooks and extremely important ECT studies; therefore, further improvement is certainly needed.

In conclusion, this study demonstrates that psychiatrists have much less ECT knowledge than either psychiatry residents or 'properly trained' medical students. The findings appear to benefit ECT training in the medical students. The results do not represent all the characteristics of ECT practitioners in Thailand.

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REFERENCES

1. Fink M, Kellner CH. Certification in ECT (ed.). J ECT 1998; 14: 1-4.
2. American Psychiatric Association. The Practice of Electroconvulsive Therapy: Recommendations for Treatment, Training, and Privileging. A Task Force Report, Washington, DC, APA, 1990: 2-48.
3. Devanand DP, Sackeim HA, Prudic J. Electroconvulsive therapy in the treatment-resistant patient. Psychiat Clin North Am 1991; 14: 905-23.
4. Kellner CH, Pritchett JY, Beale MD, Coffey CE. Handbook of ECT. Washington, DC, American Psychiatric Press, 1997: 15-6.
5. Beyer JL, Weiner RD, Glenn MD. Electroconvulsive Therapy: A Programmed Text. 2nd ed. Washington, DC, American Psychiatric Press, 1998: 5-8.
6. Abrams R. The mortality rate with ECT. Convulsive Ther 1997; 13: 125-7.
7. Royal College of Psychiatrists. The ECT handbook: The second report of the Royal College of Psychiatrists' special committee on ECT. London, Gaskell, 1995: 3-5.
8. Expert Consensus Panel for Bipolar Disorder. J Clin Psychiatry 1996; 57: (12A, suppl): 18.
9. Consensus Development Conference. Diagnosis and treatment of depression in late life: The NIH consensus development conference statement. Psychopharm Bull 1993; 29: 87-100.
10. Abrams R. Electroconvulsive therapy. 3rd ed. New York, Oxford University Press, 1997: 91-7.
11. Weiner RD, Coffey CE. Electroconvulsive therapy in the medical and neurologic patient. In: Stoudsmire A, Fogel BS (ed): In psychiatric care of the medical patient. New York, Oxford University Press, 1993: 207-24.
12. Barton JL, Mehta S, Snaith RP. The prophylactic value of extra ECT in depressive illness. Acta Psychiatr Scand 1973; 49: 386-92.
13. Sackeim HA, Decina P, Kanzler M, et al. Effects of electrode placement on the efficacy of titrated, low-dose ECT. Am J Psychiatry 1987; 144: 1449-55.
14. Sackeim HA, Decina P, Prohovnik I, et al. Seizure threshold in electroconvulsive therapy. Arch Gen Psychiatry 1987; 44: 355-60.
15. Sackeim HA, Decina P, Portnoy S, et al. Studies on dosage, seizure threshold, and seizure duration in ECT. Biol Psychiatry 1987; 22: 249-68.
16. Sackeim HA, Devanand DP, Prudic J. Stimulus intensity, seizure threshold, and seizure duration: Impact on the efficacy and safety of electroconvulsive therapy. Psychiat Clin North Am 1991; 14: 803-43.
17. Sackeim HA, Prudic J, Devanand DP, et al. Effects of stimulus intensity and electrode placement on the efficacy and cognitive effects of electroconvulsive therapy. N Engl J Med 1993; 328: 839-46.
18. Ingvar M. Cerebral blood flow and metabolic rate during seizures: Relationship to epileptic brain damage. Ann NY Acad Sci 1986; 462: 194-206.
19. Panpreecha C, Udomratn P, Teeramork V. Electroconvulsive therapy: Past and present I. History and evolution. J Psychiat Assoc Thai 1984; 29: 225-37.
20. Chanpattana W. Continuation ECT in schizophrenia: A pilot study. J Med Assoc Thai 1997; 80: 311-8.
21. American Psychiatric Association. Task Force Report 14: Electroconvulsive Therapy. Washington, DC, APA, 1978: 13-55.
22. Pippard J, Ellam L. Electroconvulsive treatment in Great Britain. Br J Psychiatry 1981; 149: 563-8.
23. Pippard J. Audit of electroconvulsive treatment in two national health service regions. Br J Psychiatry 1992; 160: 621-37.
24. Duffett R, Lelliott P. Junior doctors' training in the theory and the practice of electroconvulsive therapy. Psychiatric Bull 1997; 21: 563-5.

ความรู้พื้นฐานของการรักษาด้วยไฟฟ้าในจิตแพทย์ แพทย์ประจำบ้าน และนิสิตแพทย์ : ผลของการฝึกอบรม†

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จิตแพทย์ 30 คน และแพทย์ประจำบ้านจิตเวชศาสตร์ 24 คน ได้ตอบแบบสอบถามเพื่อประเมินความรู้พื้นฐานของการรักษาด้วยไฟฟ้า และเปรียบเทียบผลกับการประเมินโดยใช้แบบสอบถามชุดเดียวกันในนิสิตแพทย์ของมหาวิทยาลัยศรีนครินทรวิโรฒจำนวน 27 คน พบว่าจิตแพทย์ มีความรู้พื้นฐานของการรักษาด้วยไฟฟ้าน้อยมากเมื่อเทียบกับแพทย์ประจำบ้าน และนิสิตแพทย์ ผู้ตอบแบบสอบถามทั้งหมดเห็นว่าต้องมีการฝึกอบรมเป็นพิเศษของการรักษาด้วยไฟฟ้าที่ถูกต้องตามมาตรฐานสากล และต้องมีการจัดการฝึกอบรมนี้เข้าไว้ในหลักสูตรการฝึกอบรมแพทย์ประจำบ้านจิตเวชศาสตร์

คำสำคัญ : ความรู้พื้นฐานการรักษาด้วยไฟฟ้า, การศึกษาเปรียบเทียบ

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