



Development and Validation of a Workshop-Based Educational Module: “Basic Course in Electroconvulsive Therapy” for Medical Students*

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ABSTRACT

Background: Electroconvulsive therapy (ECT) is a safe and effective treatment option for various psychiatric disorders. However, its widespread use is limited by prevalent negative attitudes and stigma, not only within the general public but also among healthcare professionals. This study aimed to develop and validate a workshop-based educational module, titled the “Basic Course in ECT,” for medical students.

Methods: The curriculum development framework was used to develop the educational module. The content of the educational module was developed through expert consensus involving two rounds of the Delphi method. Faculty members provided feedback to validate the workshop content. A total 33 interns participated in the workshop. Student satisfaction was assessed using a feedback questionnaire.

Results: Eight content areas were identified through a literature review. The Delphi consensus with 15 experts resulted in 10 topics being incorporated into the educational module. The module demonstrated strong face validity, as indicated by a content validity index of 1. Participants expressed high satisfaction with the workshop module regarding content, teaching methods, and time allocation. Feedback indicated an improvement in knowledge and a positive attitude toward ECT.

Conclusions: The “Basic Course in ECT” was developed using expert consensus and validated for use with medical students. It can be integrated into the undergraduate curriculum.

Keywords: Electroconvulsive therapy (ECT), Educational module, Workshop, Medical Students, Undergraduate curriculum

Key Message:

- There is a lack of knowledge and prevalent negative attitudes regarding ECT among medical students.
- Training in ECT needs to be improved in the current undergraduate curriculum.
- The “Basic Course in ECT” was developed and validated for medical students and well perceived.

Electroconvulsive therapy (ECT) is a safe and effective treatment option for several psychiatric disorders, including schizophrenia¹ and mood disorders.² It is a lifesaving option for psychiatric emergencies, such as suicidality and catatonia. Despite its proven efficacy, there is a prevalent negative attitude and stigma among the general public, partly fueled by negative portrayals in the popular media and cinema,³ as well as the influence of

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antipsychiatry movements.⁴ Widespread misconceptions, such as viewing ECT as a “cruel,” “barbaric,” and “outdated form of treatment” option that should be banned or associating it with “punishment for violent patients,” contribute to the prevailing negative sentiments. These factors limit the acceptability of ECT as a treatment option among patients. A similar negative attitude toward ECT is prevalent among medical students,^{5,6} which could be caused by insufficient training and exposure to ECT within the undergraduate curriculum.

Training in psychiatry for undergraduate medical students in India currently needs to be improved, with recent proposals to extend the existing four-week psychiatry posting to six weeks.⁷ The undergraduate medical curriculum needs more exposure to ECT, which receives only cursory mention. Recognizing that medical students are future healthcare professionals, altering their perceptions regarding ECT could significantly impact the public understanding of ECT as a treatment option and its acceptability.

Influence from popular media, including cinema, is a common source of misinformation regarding ECT, often depicting it frighteningly with exaggerated portrayals that do not reflect actual clinical practice.⁸ Furthermore, anti-ECT activism has further eroded public confidence in ECT.^{4,9} Addressing these negative attitudes requires multifaceted strategies, including awareness programs targeting patients, caregivers, and the general public.

Research indicates that firsthand experiences with ECT can reduce negative attitudes among patients and caregivers. Similar strategies have been used to educate medical and other health professionals about the usefulness of ECT. Some evidence suggests that brief educational interventions can improve knowledge and reduce negative attitudes toward ECT.¹⁰⁻¹² Notably, the attitudes are more positive when the source of information is a health professional, potentially reducing stigma toward ECT and increasing its acceptability among medical students, which may translate into improved patient outcomes. There is currently no standard introductory course on ECT for undergraduate medical students in India. Hence, we aimed to develop and validate a workshop-based educational module, “Basic Course in ECT,” for medical students. We also studied medical students’ perceptions of the workshop-based educational module.

Materials and Methods

The framework on *curriculum development* by Thomas et al.¹³ was used to develop the educational module. The following six steps were used for the study:

- a. *Problem identification and general needs assessment*: The literature on knowledge and attitudes regarding ECT among the general population was reviewed to identify the need for educational intervention and to understand the current approaches to addressing this need.
- b. *Needs assessment of the target learners*: The literature on the knowledge and attitude toward ECT among medical students was reviewed. Additionally, the existing curriculum was examined to identify the need for formal training in ECT.
- c. *Goals and objectives*: The overall goal of the intervention was to improve knowledge and attitudes regarding ECT. Another objective was to evaluate the perceptions of medical students regarding the educational intervention.
- d. *Educational strategies*: The “curriculum content” was identified and validated using expert consensus. The content included discussions on myths and misconceptions about ECT, the standard procedure for assessment and treatment, and efficacy and safety data. The “educational methods” were chosen based on the feasibility of the intervention, incorporating interactive lectures, short videos, and case-based discussions.
- e. *Implementation*: Permission was obtained from the Dean for the educational intervention. A pilot study was conducted with a group of students to assess the feasibility of the intervention. Other faculty members were also involved in administering the intervention to the medical students.
- f. *Evaluation and feedback*: Feedback from the participants was collected regarding the curriculum content. This feedback will be incorporated into the educational module to enhance its quality. The educational module is planned to be integrated into the existing curriculum.

Development of the Educational Module

Educational interventions previously conducted to improve knowledge and change

attitudes toward ECT were reviewed. Based on the identified deficiencies, the content of the educational module was prepared. The module was intended for medical students with no or minimal prior knowledge and exposure to ECT. A consensus method (the modified Delphi method),¹⁴ using experts in the field, was used to finalize the curriculum content. The educational methods chosen were based on the module content. Initially, 24 experts in ECT were selected through purposive sampling. Two rounds of opinion generation were conducted. The experts were asked to suggest at least six components for the module. After the first round, the data were analyzed, and the summary of the results was sent back to the experts. Components with more than 70% agreement after the second round were included in the final module.¹⁴

Validation of the Educational Module

Face validity was assessed through feedback from the faculty. A content validity index (CVI)¹⁵ for the module was calculated based on the inputs from the experts using a 4-point Likert scale (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant). The CVI was calculated as the number of experts rating the content as 3 or 4 (i.e., relevant) divided by the total number of experts. A CVI score of 1 was considered acceptable.¹⁵

Perception of Students Regarding the Educational Module

Basic Course in ECT was delivered in a workshop format to a group of consenting interns at the Department of Psychiatry, Kasturba Medical College, Manipal, from December 2023 to January 2024. It was planned for 30 interns posted in the psychiatry, dermatology, or respiratory medicine department during the study period. The department faculty delivered the content in two sessions over half a day. Learning objectives were specified before the workshop. Participants completed an online Google form containing informed consent, sociodemographic details, and a feedback form. The *feedback questionnaire* included eight Likert-scale items ranging from “strongly disagree” to “strongly

agree” and five open-ended questions for comments on positive and negative aspects and suggestions for improvement. This outcome measured only level 1 (reaction) on Kirkpatrick’s model of levels of learning evaluation.¹⁶ Deductive content analysis¹⁷ was conducted for the open-ended responses on the feedback forms.

Results

Based on the *curriculum development* framework by Thomas et al.,¹³ the needs of the learners were identified through a literature review. Then, the module was developed using a consensus method involving two rounds of Delphi for content generation.

Needs of the Learners Based on the Literature Review

Previous studies^{10-12,18-21} identified several deficiencies in the knowledge and attitudes toward ECT among medical

students. These studies informed the development of the following content areas, which have been used in other intervention programs to enhance knowledge and attitudes regarding ECT: (a) relevance of ECT in modern psychiatric practice, (b) safety and efficacy of ECT, (c) administration of ECT, (d) practice standards in ECT, (e) legal aspects of ECT practice in India, (f) myths related to ECT, (g) how ECT is different from other forms of brain stimulation, and (h) recent advances in ECT. These areas were identified as critical for improving the knowledge and attitudes of medical students toward ECT, addressing existing gaps and enhancing the educational experience.

Experts’ Selection for Delphi Consensus

For consensus generation, 24 experts from various regions in India were invited via emails. Reminders were sent through WhatsApp and emails for prompt responses. Of the invited experts,

15 (62.5%) agreed to participate. Informed consent was obtained via email. Among the invitees, one (4.2%) refused to participate, one (4.2%) submitted a late response, and seven (29.2%) did not respond.

The First Round of Delphi

In the first round, the subject experts received a response sheet containing eight themes, which they could mark as “agree” or “disagree” and provide reasons or comments. Additionally, they could suggest other areas to be included in the module. Experts were requested to propose at least six topics to be covered. Fifteen participants completed the first round of the Delphi process. The analysis of the responses from the first round resulted in the identification of 17 topics suggested by the experts, including the eight topics initially proposed (Table 1).

The Second Round of Delphi

The results of the first round were sent to all 15 experts, which included a list of

TABLE 1.

Summary of the Delphi Consensus (N = 15).

	Content	Delphi Rounds		
		First Round (% Agreed)	Second Round (% Agreed)	>70% Agreement
1.	Is ECT relevant in modern psychiatry practice?* (e.g., lifesaving, effective, fast effect, use in treatment resistance)	100	100	Y
2.	Is ECT safe and effective?* (efficacy, adverse effects, evidence base, use in special population)	100	100	Y
3.	How is ECT administered?* (steps of modified ECT)	100	100	Y
4.	Myths related to ECT* (brain damage, danger, punishment, dependence, last resort, forced)	100	100	Y
5.	Practice standards in ECT* (indications, contraindications, pre-ECT evaluation, modified brief pulse ECT as standard, monitoring for seizure, post-ECT monitoring, ECT course)	87	100	Y
6.	Legal aspects of ECT practice in India* (consent, no direct ECT, permission for children)	87	93	Y
7.	How is ECT different from other forms of brain stimulation?* (difference from TMS and tES briefly)	80	64	N
8.	Recent advances in ECT* (methods to reduce cognitive adverse effects)	80	71	Y
9.	History of ECT (evolution)	33	77	Y
10.	Mechanism of action of ECT (LTP, neuroplasticity, rewiring)	27	69	N
11.	Demonstration of ECT (live or video)	20	77	Y
12.	The ethical aspect of ECT	7	77	Y
13.	Barriers to the use of ECT	7	54	N
14.	ECT and media	7	39	N
15.	Reliable sources of information for ECT	7	69	N
16.	Complications of ECT	7	46	N
17.	Cost-effectiveness of ECT	7	69	N

*Content suggested by the researcher; ECT: electroconvulsive therapy; TMS: transcranial magnetic stimulation; tES: transcranial electrical stimulation; LTP: long-term potentiation.

17 topics and the percentage agreement for each. Fourteen experts responded within the allotted time. From the summary of the second-round results, 10 topics reached the 70% agreement threshold established prior to the study (Table 1). Except for one topic “How is ECT different from other forms of brain stimulation?,” all other topics initially suggested by the researcher were endorsed by the experts.

ECT Workshop Modules

Based on the topics developed through the consensus process, two one-hour modules were developed (Table 2). The modules were delivered through interactive lectures. The specific learning objectives included: (a) to understand the evolution of ECT, (b) to understand whether ECT is relevant to modern psychiatry practice, (c) to understand whether modern ECT is safe and effective, (d) to explain the myths related to

ECT, (e) to understand the practice standards in ECT, (f) to appraise the legal and ethical aspects of ECT, (g) to list the recent advances in ECT, and (h) to describe the procedure of ECT.

Validation of the ECT Modules

Face validity was assessed through feedback from three experts in the Department of Psychiatry. All three faculty members rated the content as highly relevant, with a score of 4. The CVI score was calculated to be 1, indicating good face validity.

Perception of Students Regarding the Workshop

During the study period, 33 interns attended the workshop. Participants (N=33) included 22 females (66%), with a mean age of 24.1 years (SD 1.9), mostly from urban backgrounds (93.9%), nuclear families (90.9%),

and middle socioeconomic status (66.7%). Regarding prior exposure to mental illness, six participants (18.2%) had personal experience, 15 (45.5%) had a relative with mental illness, and 18 (54.5%) had a friend with mental illness. Only one participant (3%) reported prior experience with ECT administration in a friend. Most of the participants agreed that the module was relevant, participation was encouraged, content was well organized and useful, teaching methods were appropriate, and time was adequate (Table 3).

Content Analysis of the Qualitative Feedback

The qualitative feedback obtained is summarized below with examples.

1. *How the workshop helped the participants:*
The workshop helped the participants gain knowledge regarding ECT and develop positive attitudes toward ECT.

TABLE 2.
Content of the “Basic Course in ECT” Workshop Modules.

	Topic	Content	Technique
Module 1			
1.	Historical evolution of ECT	Evolution of ECT and other somatic treatments, including malaria therapy, insulin shock therapy, chemical convulsive therapy, and electrically induced seizures From unmodified to modified ECT	Opening questions, presenting historical facts, sharing of experience
2.	How is ECT different from other NIBS	Difference of ECT from TMS and tES as it involves seizures	Presenting facts in an interactive manner
3.	Relevance of ECT in modern practice	ECT is the first-line treatment for several disorders. ECT can be lifesaving. Research evidence for efficacy and safety of ECT from systematic reviews.	Interactive discussion, presenting evidence
4.	ECT in media	Negative portrayal of ECT in media (e.g., One Flew Over Cuckoo’s Nest) Anti-ECT protests	Depiction in movies, media, visuals, and sharing experience
5.	Myths about ECT	ECT causes brain damage. ECT is dangerous. ECT is given only to control violent behavior. ECT experience is painful and horrifying. ECT is used as a last-resort treatment. ECT is a cruel treatment as it uses electricity.	Eliciting concerns regarding ECT, survey techniques, presenting facts, and contrary evidence challenging each myth
6.	Legal and ethical aspects of ECT	Practice of ECT under MHCA 2017. Consent and decision-making regarding ECT. Challenges in practice.	Presenting facts, eliciting concerns, comparing with other medical treatment
7.	Recent advances in ECT	Advances in ECT technique to minimize cognitive adverse effects. Advances in ECT anesthesia.	Presenting evidence, research being carried out in ECT
Module 2			
1.	Standard ECT practice	Pre-ECT evaluation (Evaluation by anesthesia team and psychiatry team) Administration of ECT (Modification procedure, seizure monitoring) Post-ECT monitoring (Recovery from anesthesia and ECT, monitoring of cognitive adverse effects)	Presenting guidelines, sharing actual practice experiences, and clarifying doubts
2.	ECT Demonstration	Steps in ECT administration	Simulated ECT video, discussion on the content of video

ECT: electroconvulsive therapy; TMS: transcranial magnetic stimulation; tES: transcranial electrical stimulation; MHCA: Mental Health Care Act; NIBS: noninvasive brain stimulation.

TABLE 3.

Feedback from Students on the Workshop (N = 33).

	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	The module was relevant to my medical training.	0	0	2 (6.1)	8 (24.2)	23 (69.7)
2.	Participation and interaction were encouraged.	0	0	2 (6.1)	4 (12.1)	27 (21.8)
3.	The content was well organized and easy to follow.	0	0	2 (6.1)	4 (12.1)	27 (21.8)
4.	The module will be useful in my professional career.	0	0	3 (9.1)	8 (24.2)	22 (66.7)
5.	The teaching methods used in the module were appropriate.	0	0	2 (6.1)	8 (24.2)	23 (69.7)
6.	The time allotted for the module was adequate.	0	1 (3.0)	3 (9.1)	7 (21.2)	27 (21.8)
7.	Overall experience with the module was satisfactory.	0	0	2 (6.1)	6 (18.2)	25 (75.8)
8.	This module should become part of the psychiatry curriculum.	0	0	2 (6.1)	7 (21.2)	24 (72.7)

All values are n (%).

- a. *Gained knowledge regarding ECT:* Participants reported a better understanding of ECT in current practice.

After the workshop, four participants reported that they had gained specific knowledge regarding ECT. Some positive statements included:

“Gained the required basic knowledge about ECT to be able to answer relatives/patients.” (P2)

“ECT can be a treatment modality, and contrary to the myths, it is rather a safe modality of treatment.” (P13)

- b. *Developed positive attitudes toward ECT:* The participants' negative attitudes toward ECT changed.

Six participants indicated that they developed a more positive attitude toward ECT and were more open to its use. Some comments were:

“Have a more holistic approach and opinion on ECT.” (P3)

“Changed mindset about ECT.” (P21)

“I would not hesitate to give ECT as a treatment option.” (P26)

One participant mentioned,

“Media portrayal of ECT has done a disservice to the procedure, and hopefully, I will not fall victim to similar disinformation campaigns.” (P11)

Seventeen participants acknowledged that they would educate others and advocate for ECT when clinically appropriate. Some statements were:

“To help people break their perception about ECT and actually use it as a line of treatment in psychiatric illnesses if required according to patient needs.” (P12)

“Encourage ECT for people in need and attempt to remove the stigma surrounding it.” (P8)

“Incorporate ECT into practice.” (P17)

“Make people more aware of ECT.” (P23)

2. *Positive feedback regarding the workshop:* The positive feedback obtained included interactive style, interesting content, and positive intent.

- a. *Interactive style:* Students appreciated the module content (n = 11) and the interactive presentation style (n = 11).

One student mentioned,

“How it focused on removing the negative image of ECT developed over the years due to false media and reassured through data that ECT is the safe and first-line treatment in many life-saving scenarios.” (P10)

Many (n = 7) felt that all doubts were clarified during the sessions.

“... cleared the doubts efficiently.” (P9)

“Clearing out myths which most people, including health professionals, have regarding ECT.” (P15)

“Myths were tackled well.” (P27)

- b. *Interesting content:* The content was appreciated by the participants, including the flow and video demonstration.

Another student mentioned,

“... Liked the part where the history of medical procedures was discussed. Helped ease into the discussion regarding how induction of convulsions as a therapy should not be seen far-fetched ...” (P11)

Several students (n = 5) expressed satisfaction with the video demonstration of ECT.

- c. *Positive intent:* Participants recognized the intent of the researchers.

Two participants appreciated the intent behind the workshop:

“Intention of the staff to spread information for the benefit of the society.” (P6)

“It is a novel idea to implant a seed in the minds of young doctors and dispel myths and educate them regarding ECT.” (P14)

One student identified that it was not covered well in the curriculum,

“Learnt a new concept never touched upon during ug course.” (P3)

3. *Suggestions for change*

- a. *Experiential content:* This includes adding live demonstrations, videos, images, case studies, and patient experiences for experiential learning.

Ten students suggested improving the module by including a live demonstration of ECT with an actual patient:

“I would have liked a more practical approach and have hands-on experience.” (P13)

“The practical aspect could be done alongside a patient who has undergone ECT for a better understanding of the outcome.” (P5)

Four participants suggested including more videos and images, and three suggested incorporating case studies.

- b. *Balancing the content:* Some older concepts can be reduced, while newer concepts can be added or elaborated.

Two participants suggested reducing the historical aspects, and one suggested including details of the mechanism of action of ECT:

“As a course for medical students, a bit more information on the method by which ECT works would be beneficial. I am not aware whether it is well understood in the first place, but by the tenets of evidence-based medicine, I would be more confident recommending ECT if I were more aware of how it works.” (P11)

Discussion

The “Basic Course in ECT” was developed using the curriculum framework of Thomas et al.,¹³ which includes needs assessment, goal identification, content development through expert consensus and validation, appropriate educational strategies, feasibility testing, and feedback integration. Students appreciated the workshop, recognizing it as an effective means to change their knowledge and attitudes toward the use of ECT for the treatment of mental illnesses (Kirkpatrick’s level 1).¹⁶

We used a modified Delphi technique^{14,22} to develop the contents of the educational module. The Delphi technique is particularly useful for obtaining consensus from a group, as suggested by Turoff.¹⁴ This technique has been effectively used in developing educational content, such as the Stigma, Empathy, and Attitude educational module for medical students by Praharaj et al.²³ Our expert panel was selected based on their expertise and willingness to participate, with two-thirds of the invited experts agreeing to contribute. To enhance response rates and quality, we used written communication and sent reminders via emails and WhatsApp, as recommended in previous studies.¹⁴ Responses with more than 70% agreement after the second round were included in the final module, following Sumison’s recommendation.²⁴ It is worth noting that other cutoffs have been proposed, ranging from less stringent (e.g., 50% by McKenna²²) to more stringent (e.g., 80% by Green et al.²⁵).

The “Basic Course in ECT” effectively improved knowledge and attitudes among medical students, consistent with the findings from previous studies on brief educational interventions.^{10-12,18-21} Balhara et al.¹⁰ used a “Brief ECT Orientation Module,” comprising a one-hour lecture on ECT and, where feasible, a demonstration of modified ECT during psychiatry postings. This lecture covered “historical aspects, indications, mechanism of action, procedure, adverse effects, and effectiveness of ECT,” as detailed in standard textbooks.¹⁰ In contrast, our module, developed through expert consensus, included additional elements such as myths, standard practices, legal and ethical aspects, and recent advances in ECT. Participant feedback highlighted their appreciation for these additional components. One notable feature of the module by Balhara et al.¹⁰ was the actual demon-

stration of ECT, which our participants also suggested for more hands-on experience. This aligns with the concept of experiential learning, where learning is “situated” and practice-based, providing authentic experiences.²⁶ However, as Balhara et al.¹⁰ noted, providing such exposure to a large group of students may be challenging.

A video demonstration of ECT could be a suitable alternative, as shown in our study. Similar video-based education for ECT was carried out by Nagarajan et al.,¹² who used simulated patients for the caregivers of patients. Video-based educational materials have been used for training students regarding ECT in previous studies (e.g., Panwala et al.²⁰ and Kitay et al.²⁷) and have proven effective in improving knowledge and attitudes toward ECT. Indeed, Warnell et al.¹⁹ demonstrated that both live demonstration and video-based methods were almost equally effective in improving knowledge and attitudes toward ECT, with live demonstration being marginally superior. They reported that the duration of clerkship is more important than the instructional methods.¹⁹ It is possible that more time spent during actual postings increases interaction with psychiatry faculty, thereby significantly affecting the knowledge and attitudes toward mental illnesses, including ECT. In our study, students also identified “more interactions” and “effectively clearing doubts” as particularly helpful.

A similar “Brief ECT Orientation Module” for nursing students, comprising a lecture, video demonstration of direct and modified ECT, and preparation of patient and equipment during live ECT, was studied by Panwala et al.²⁰ and found to improve knowledge and positive attitudes toward ECT. Lecture-based methods alone may not be very effective in changing knowledge and attitudes, as shown by Kinnair et al.,¹⁸ who found that a combination of watching ECT and attending a lecture was superior to a “lecture-only” intervention. Another study from India by Sai et al.²⁸ found that interns who had observed ECT during their clinical rotations had more positive attitudes toward ECT.

The teaching methods employed in the workshop involved interactions leading to active engagement of the students, which the participants also perceived. Discussions during interactive lectures provided opportunities for participation, active learning, cooperative learning, and the development of critical thinking.²⁹⁻³¹ Including common

myths related to ECT helped engage the students in the discussion and offered more opportunities for clarifying their concepts and understanding of ECT. This was apparent in the feedback from one participant who noted, “How it focused on removing the negative image of ECT developed over the years due to false media and reassured through data that ECT is the safe and first-line treatment in many lifesaving scenarios” (P10). Challenging popular beliefs with scientific evidence can be an effective way to change negative attitudes among students. Additionally, debates could be another effective method to involve students in discussing controversial topics.³²

Implications of the Study

The “Basic Course in ECT” was found to be effective and acceptable among medical students. It can be integrated into the existing undergraduate curriculum after incorporating student feedback to refine the module and recommendations from the curriculum committee and undergraduate board of studies. Specific suggestions include discussing the mechanism of ECT in more detail, adding more videos and images, using case studies, and potentially including live demonstrations. The course can also be offered to medical students at other colleges to spread awareness about ECT. Furthermore, it can be suitably modified and offered to other course students in other disciplines, such as dental and nursing programs. Once this educational innovation is implemented, it will likely increase the awareness of ECT as a treatment modality among medical students and potentially reduce negative attitudes and stigma related to ECT. This could translate into greater awareness and acceptability of ECT among the patient population, thereby improving clinical outcomes.

Limitations

The study had a few noteworthy limitations. Although a wide range of experts were invited to participate in the consensus, researchers’ bias could have excluded potential experts, and some were excluded because of nonparticipation. Only the face validity of the workshop content could be established; therefore, more studies are needed to establish content and ecological validity. Additionally, because of feasibility issues, only interns could be included in this preliminary study.

Conclusion

The “Brief Course in ECT” was developed and validated using expert consensus. Preliminary findings from this study suggest that the content of this educational module is effective in improving knowledge and changing negative attitudes. The course was well received by the students and could be integrated into the psychiatry curriculum with suitable modifications. Further studies are needed to document the effectiveness of this educational intervention beyond Kirkpatrick’s level 1. Additionally, incorporating this “Brief Course in ECT” into nursing, dental, and other curricula could generalize its applicability in diverse settings.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Declaration Regarding the Use of Generative AI

The authors assume full responsibility for the entire content of the manuscript. No parts of this manuscript were generated by any AI tool.

Ethical Approval

The study protocol was approved by the Departmental Scientific Committee and Institutional Ethics Committee of Kasturba Medical College and Kasturba Hospital (IEC 351-2023 dated 16.10.2023). Permission was obtained from the Dean of Kasturba Medical College, Manipal to conduct the study.

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Written informed consent was obtained from all the participants.

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References

- Grover S, Sahoo S, Rabha A, et al. ECT in schizophrenia: A review of the evidence. *Acta Neuropsychiatr* 2019; 31: 115–127.
- Pagnin D, de Queiroz V, Pini S, et al. Efficacy of ECT in depression: A meta-analytic review. *J ECT* 2004; 20: 13–20.
- McDonald A and Walter G. Hollywood and ECT. *Int Rev Psychiatry* 2009; 21: 200–206.
- Bahji A. The rise, fall, and resurgence of electroconvulsive therapy. *J Psychiatr Pract* 2022; 28: 440–444.
- Chakrabarti N, Basu A, Das D, et al. Attitudes towards electroconvulsive therapy among nonpsychiatrist medical graduates and postgraduates. *J ECT* 2003; 19: 177–178.
- McFarquhar TF and Thompson J. Knowledge and attitudes regarding electroconvulsive therapy among medical students and the general public. *J ECT* 2008; 24: 244–253.
- National Medical Commission. *Graduate medical education regulations 2023*. https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/GMER2023_compressed.pdf
- Sharma N, Ghai S, Grover S. Knowledge and attitude of nursing students toward electroconvulsive therapy. *J Neurosci Rural Pract* 2017; 8: S7–S12.
- Kerr RA, McGrath JJ, O’Kearney RT, et al. ECT: Misconceptions and attitudes. *Aust N Z J Psychiatry* 1982; 16: 43–49.
- Balhara Y, Yadav T, Mathur S, et al. The impact of a “Brief ECT Orientation Module” on the knowledge and attitudes of medical students towards ECT in India. *Ann Med Health Sci Res* 2012; 2: 140–145.
- Solomon S, Simiyon M, Vedachalam A. Effectiveness of an educational intervention on medical students’ knowledge about and attitude towards electroconvulsive therapy. *Acad Psychiatry* 2016; 40: 295–298.
- Nagarajan P, Balachandrar G, Menon V, et al. Effect of a video-assisted teaching program about ECT on knowledge and attitude of caregivers of patients with major mental illness. *Indian J Psychol Med* 2021; 43: 45–50.
- Thomas PA, Kern DE, Hughes MT, et al. *Curriculum development for medical education: A six-step approach*. 4th ed. Baltimore: Hopkins University Press, 2022.
- Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. *J Adv Nurs* 2000; 32: 1008–1015.
- Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health* 2007; 30: 459–467.
- Kirkpatrick DL and Kirkpatrick JD. *Evaluating training programs: The four levels*. 3rd ed. San Francisco: Berrett-Koehler, 2006.
- Elo S and Kyngäs H. The qualitative content analysis process. *J Adv Nurs* 2008; 62: 107–115.
- Kinnair D, Dawson S, Perera R. Electroconvulsive therapy: Medical students’ attitudes and knowledge. *Psychiatrist* 2010; 34: 54–57.
- Warnell RL, Duk AD, Christison GW, et al. Teaching electroconvulsive therapy to medical students: Effects of instructional method on knowledge and attitudes. *Acad Psychiatry* 2005; 29: 433–436.
- Panwala ZZ, Dadarwala DD, Mehta RY. The impact of a “Brief ECT Orientation Module” on the knowledge and attitude of nursing students toward electroconvulsive therapy. *Ann Indian Psychiatry* 2020; 4: 140–147.
- Kitay BM, Walde T, Robertson D, et al. Addressing electroconvulsive therapy knowledge gaps and stigmatized views among nursing students through a psychiatrist-APRN didactic partnership. *J Am Psychiatr Nurses Assoc* 2022; 28: 225–234.
- McKenna HP. The Delphi technique: A worthwhile approach for nursing? *J Adv Nurs* 1994; 19: 1221–1225.
- Praharaj SK, Salagre S, Sharma PSVN. Stigma, Empathy, and Attitude (SEA) educational module for medical students to improve the knowledge and attitude towards persons with mental illness. *Asian J Psychiatr* 2021; 65: 102834.
- Sumsion T. The Delphi technique: An adaptive research tool. *Br J Occup Ther* 1998; 61: 153–156.
- Green B, Jones M, Hughes D, et al. Applying the Delphi technique in a study of GP’s information requirements. *Health Soc Care Community* 1999; 7: 198–205.
- Yardley S, Teunissen PW, Dornan T. Experiential learning: AMEE Guide No. 63. *Med Teach* 2012; 34: e102–e115.
- Kitay B, Martin A, Chilton J, et al. Electroconvulsive therapy: A video-based educational resource using standardized patients. *Acad Psychiatry* 2020; 44: 531–537.
- Sai J, Latha P, Kumar L, et al. Knowledge and attitude towards electroconvulsive therapy among medical interns (abstract). *Indian J Psychiatry* 2022; 64: S567.
- White C, Bradley E, Martindale J, et al. Why are medical students “checking out” of active learning in a new curriculum? *Med Educ* 2014; 48: 315–324.
- Torralla KD and Doo L. Active learning strategies to improve progression from knowledge to action. *Rheum Dis Clin North Am* 2020; 46: 1–19.
- Kumar S, McLean L, Nash L, et al. Incorporating active learning in psychiatry education. *Australas Psychiatry* 2017; 25: 304–309.
- Praharaj SK, Bhandary RP, Veeramreddy S. Igniting minds: Debates enhance engagement in small group teaching for postgraduates. *Natl Med J Irendia* 2021; 34: 188–189.