

**KNOWLEDGE AND ATTITUDES TOWARDS ELECTROCONVULSIVE THERAPY (ECT) AMONG HEALTHCARE PROVIDERS AND MEDICAL STUDENTS IN HA'IL, SAUDI ARABIA**

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### Abstract:

**Background:** Electroconvulsive therapy (ECT) is controversial, yet its use is well established for various psychiatric disorders. Nevertheless, its utilization and acceptance among healthcare providers and medical students is significantly influenced by their knowledge of ECT and attitudes towards it. This study aimed to assess the knowledge of and attitudes towards ECT among healthcare providers and medical students in Ha'il, Saudi Arabia.

**Materials & Methods:** A cross-sectional survey was conducted between DEC 2022 and AUG 2023, in which participants were asked to complete a questionnaire assessing their knowledge of and attitudes towards ECT. A structured questionnaire was administered to collect data on demographic characteristics, ECT-related knowledge, and attitudes. Data were analyzed using chi-square tests and t-tests to identify any associations and differences, respectively.

**Results:** A total of 266 participants (healthcare providers and medical students) were included in the study. The majority of healthcare providers exhibited higher levels of knowledge compared with medical students ( $p < 0.05$ ). Participants aged 19–25 demonstrated significantly better knowledge than older age groups ( $p < 0.05$ ). Healthcare providers also showed more positive attitudes towards ECT and were more willing to consent to ECT treatment. Age, education, and specialty were significantly associated with knowledge of ECT, whereas gender and nationality were not. Additionally, healthcare providers with a specialty in psychiatry exhibited more positive attitudes towards ECT compared with other specialties ( $p < 0.05$ ).

**Conclusion:** These findings highlight the need for targeted educational interventions to improve knowledge of and attitudes towards ECT among medical students and healthcare providers, ultimately leading to better patient outcomes and informed decision-making regarding ECT as a treatment option.

### Introduction

Electroconvulsive therapy (ECT) is the delivery of a brief-pulse electrical current to the brain under anesthesia and muscle paralysis, to induce a series of generalized epileptic seizures for therapeutic purposes [1]. In most cases, ECT is used when other treatments such as medications and psychotherapy have failed to provide a satisfactory result. In addition, it is used when a rapid response is required due to the severity of a patient's condition, such as when suicide risk is present [2]. Furthermore, it has remained the most rapid and effective treatment for major depression and several other psychiatric and neurologic conditions [3]. A significant stigma has been attached to ECT as a consequence of the falsely barbaric and cruel portrayals of the procedure in many films and television series [4]. Nonetheless, in the over 80 years since ECT was first introduced,

clinicians have continuously improved its efficacy and safety [5], as can be seen in the administration of muscle relaxants and short-acting anesthetic agents [6]. With a mortality rate of approximately 0.002%, ECT is currently considered a low-risk medical intervention [7, 8]. Remarkably, ECT has generated suspicion due to the potential negative cognitive effects, including amnesia, even though these effects are mostly temporary [9].

Worldwide, many studies have been conducted regarding attitudes towards and knowledge of ECT. One of these studies was carried out in the UK, and indicated notable disparities in attitudes to and knowledge of the therapy between four professional disciplines, with psychiatrists being the most favorably disposed and most knowledgeable, followed by nurses, social workers, and psychologists [10]. Another survey was conducted in Hungary among 127 fifth-year medical students, and is discussed below... A further paper described Indian psychiatrists' attitudes toward ECT in India. A general attitude in favor of the treatment was expressed by 81.4% of respondents. The psychiatrists considered that for many patients ECT may be the safest, cheapest, and most effective treatment (79.8%), disagreed that ECT should be used as a last resort (68.4%), and disagreed that drugs have made ECT obsolete (81%). While many (44.1%) opined that the use of ECT should be curtailed, few (5.3%) considered that ECT should be abandoned; in fact, most respondents (86.3%) stated that comprehensive psychiatric care should include ECT services. A need was expressed for explicit guidelines for the proper use of ECT (77.2%). Conflicting opinions were expressed about the use of ECT in children. Many psychiatrists (38%) thought that ECT can produce subtle brain damage: nevertheless, of those actively using ECT, 82.9% expressed willingness to receive ECT themselves, if indicated [12].

The rationale of the present study is primarily based on the fact that electroconvulsive therapy (ECT) is an effective treatment method for severe and/or treatment-resistant mental disorders. Hence, the aim of the present research is to assess the level of knowledge and attitudes towards electroconvulsive therapy (ECT) among healthcare providers and medical students in Ha'il city. There have been no previous studies conducted regarding this subject in Ha'il, Saudi Arabia (as far as our knowledge from the literature reviewed).

### Review of Literature

Worldwide, many studies have been conducted regarding attitudes towards and knowledge of ECT. One such study was carried out in the UK, and aimed to compare attitudes and knowledge of staff from four mental health disciplines (psychiatrists, psychologists, nurses, and social workers). Two hundred and sixty-eight participants were sent the Questionnaire on Attitudes and Knowledge of ECT (QuAKE) and their demographic details were surveyed. Attitudes and knowledge were compared by discipline and the results analyzed using the Kruskal–Wallis test. Results: The response rate was 74% (n =198). The questionnaire revealed significant differences in attitudes to and knowledge of the therapy between the four disciplines, with psychiatrists being most favorably disposed and most knowledgeable, followed by nurses, social workers, and

psychologists. The attitude scale was shown to have good internal consistency and split-half reliability [10]. A survey using self-administered questionnaires was conducted among fifth-year medical students beginning their psychiatry clerkships in Hungary, to assess their attitudes towards and their basic knowledge of electroconvulsive therapy (ECT). The questionnaire consisting of 28 questions was completed by 127 students. Ten rated their own knowledge on ECT as mediocre, the rest of them as minimal. A total of 67% of the students would not consent to undergoing ECT themselves, not even if they had severe depression with psychotic features. ECT was believed by 35% of the students to be used to bring violent patients under control, 54%, believed it to be painful, and 50% even to be dangerous. A total of 61% of the participants believed that ECT should only be used as a last resort, 35% found ECT outmoded, 32% thought that ECT causes permanent brain damage, and 14% would ban its use. Among the students refusing to be treated with ECT, the proportion of women was higher, and their attitudes towards ECT were significantly more negative ( $P = 0.031$ ) than those who would consent to ECT. Answers indicating respondents' belief that psychiatrists often misuse ECT, that ECT is an outmoded therapy causing brain damage, and that its use should be forbidden were given more frequently by those who would refuse to be treated with ECT. Furthermore, the attitudes of those describing themselves as more knowledgeable about psychiatry were found to be significantly ( $P = 0.005$ ) more negative than the attitudes of those with minimal psychiatric knowledge. The frequent occurrence of incorrect beliefs about and negative attitudes towards ECT supports the necessity of covering ECT more thoroughly and in more detail in the medical school curriculum [11]. Another study aimed to examine knowledge of and attitudes towards ECT among medical students, psychology students, and the public in Turkey. A Likert-type questionnaire was administered to fifth-year medical students ( $n = 28$ ), Master of Science and Doctor of Philosophy clinical psychology students ( $n = 35$ ), and a sample of the public ( $n = 26$ ). The questionnaire included questions about the general principles of and indications for ECT, and sources of knowledge of and attitudes towards ECT. The medical students were the most knowledgeable about ECT, as expected. The medical students also had more positive attitude towards ECT than the other two groups. Despite being more knowledgeable, more psychology students than the public sample reported negative attitudes towards some aspects. A major factor in improving medical students' awareness of and attitudes regarding ECT was the theoretical and practical training they received in medical school. Psychology students must receive comparable education in order to attain comparable outcomes [13]

Several studies had been conducted in the Kingdom of Saudi Arabia regarding the same or related subjects. One of these was a study evaluating attitudes towards and knowledge of ECT among psychiatrists and family doctors. A total of 126 participants (29% response rate) returned completed surveys from the 434 that were sent by email. Participants were 35 years old on average; psychiatrists made up two-thirds of the total participants, males (70.6%) and Saudis (95.2%) made up the majority, about half of them were consultants, and nearly two-thirds had experience working in ECT facilities. In their responses, psychiatrists demonstrated greater knowledge than family doctors, scoring a mean total knowledge of 8.12 out of 10 compared with 6.15. Most of the

psychiatrists considered that general anesthesia was necessary for ECT, compared with about one third of family physicians. The same study included discussion on additional ECT knowledge. With mean scores of 9.54 and 7.85, respectively, psychiatric physicians demonstrated better attitudes than family physicians towards ECT in all responses [14].

According to the literature reviewed, there have been no previous studies conducted regarding this or related subjects in the Ha'il region.

## Objective

### General Objective

The main aim of this study is to assess knowledge of and attitudes towards electroconvulsive therapy (ECT) among healthcare providers and medical students in Ha'il, Saudi Arabia

### Specific Objectives

- To assess the overall knowledge of and attitudes towards electroconvulsive therapy (ECT) among healthcare providers and medical students in Ha'il, Saudi Arabia
- To determine the factors associated with knowledge of and attitudes towards electroconvulsive therapy and associated misunderstandings.

## Materials and Methods

A cross-sectional study was carried out to assess awareness levels, knowledge of, and attitudes towards electroconvulsive therapy and its associated misunderstandings. The University of Ha'il Research Ethics Standing Committee (REC) revised the study protocol and instrument. On January 23, 2023, the research was given unconditional approval (study ID: H-2023-058). A self-administered online validated questionnaire was used to collect the data from DEC 2022 to AUG 2023

The study population included male and female medical students in the College of Medicine, University of Ha'il, and healthcare workers of different age groups and nationalities in Ha'il city. sample size of two hundred from the total population was collected using the Raosoft sample size calculator, with a confidence level of 95% and a margin of error of 5%. The questionnaire was distributed via various social media apps and the data were entered into Excel. A questionnaire was created using Google Forms and authored in both Arabic and English. The questionnaire was divided into three sections. The first section included informed permission and demographic data; the second section included a series of questions about knowledge of ECT. The final included a series of questions about attitude toward ECT. The questionnaire was distributed via various social media apps. The statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS) software version 25 (SPSS Inc., Chicago, IL, USA). The objective of the research was clarified to each participant at the beginning of the questionnaire. Everyone was given the option whether to take part or abstain. Participants were told that their comments would be confidential and would be used for research purposes only.

**Results:**

Our study included a total of 266 participants from the University of Ha'il, Saudi Arabia. All of the participants agreed to participate in the study and completed the questionnaire. Among 266 participants, male respondents represented 48.1% of the total sample (n = 128) and females represented 51.9% (n = 138). In total, 62.4% of the respondents (166 out of 266) were aged between 19 and 25, 23.3% of the respondents (62 out of 266) were aged between 26 and 35, and 14.3% of the respondents (38 out of 266) were aged above 35. A majority of the participants in this study were Saudi nationals, accounting for 85% (n = 226) of the sample, while non-Saudi participants comprised 15% (n = 40) of the total sample. Among all the participants, 133 (50%) were medical students, 73 (27.4%) were residents, and 58 (21.8%) were healthcare providers. Among the healthcare providers, a very small proportion (8.5%) were specialists in psychiatry. A further 108 participants were specialists in other fields, accounting for 91.5% of the healthcare provider subgroup. These findings were used for further analysis in the research.

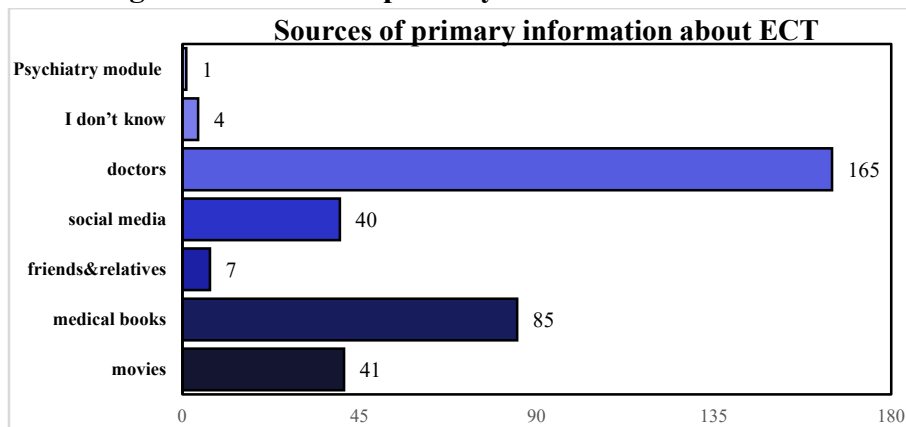
**Table 1: Demographics data**

<b>Variables</b>	<b>Overall (266)</b>
<b>Age</b>	
19–25	166 (62.4%)
26–35	62 (23.3%)
>35	38 (14.3%)
<b>Gender</b>	
Male	128 (48.1%)
Female	138 (51.9%)
<b>Nationality</b>	
Saudi	226 (85%)
Non-Saudi	40 (15%)
<b>Education</b>	
Medical student	133 (50%)
Resident	73 (27.4%)
Specialist	58 (21.8%)
Others	2 (0.8%)

Specialty—only for healthcare providers	
Psychiatry	10 (8.5%)
Others	108 (91.5%)

Figure 1 shows the graphic representation of each group, indicating their sources of information about ECT. The major sources of primary information about ECT were doctors. A large percentage of our participants reported that they obtained their information about ECT mainly from doctors, followed by medical books, movies, social media, then family and relatives. Only a small proportion of respondents did not know what ECT is.

**Figure 1: Sources of primary information about ECT**



**Knowledge:**

The results of our study compared the knowledge scale of healthcare providers and medical students regarding electroconvulsive therapy (ECT) and related factors. The frequencies and percentages of participants in each category both for healthcare providers and medical students were also calculated. The p-values indicate the statistical significance of the differences observed between the two groups. Compared with 12.1% of medical students, about 87.9% of healthcare providers had higher knowledge about ECT. Additionally, healthcare providers showed a significantly higher percentage (82.1%) of experience of working in departments that utilized ECT, compared with medical students (17.9%). Regarding the referral of patients for ECT, all healthcare providers had referred patients for ECT, while none of the medical students had done so. There was no significant difference between healthcare providers and medical students in terms of having psychiatric illness in their family or among their acquaintances or having individuals in their family or among their acquaintances who had undergone ECT treatment. About 62.9% of healthcare providers stated that they would be willing to consent to ECT treatment, compared with 37.1% of medical students. Overall, the results suggest that healthcare providers have higher levels of knowledge about ECT than medical students. These findings highlight the differences in

knowledge and experience between these two groups and may have implications for their roles and responsibilities in the field of care and treatment for mental health.

**Table 2:** Knowledge differences between healthcare providers and medical students

Variables	Health care providers	Medical student	p-value
My knowledge about ECT:			
Minimal	29 (40.3%)	43 (59.7%)	0.00 <sup>*^</sup>
Medium level	53 (39.0%)	83 (61.0%)	
High level	51 (87.9%)	7 (12.1%)	
Have you ever worked in a department utilizing ECT?			
Yes	64 (82.1%)	14 (17.9%)	0.00 <sup>*^</sup>
No	69 (36.9%)	118 (63.1%)	
Have you ever referred patients for ECT?			
Yes	15 (100.0%)	0 (0%)	0.00 <sup>*^</sup>
No	118 (47.0%)	133 (53.0%)	
Do you have a psychiatric illness in your family or among your acquaintances?			
Yes	19 (45.2%)	23 (54.8%)	0.501
No	114 (50.9%)	110 (49.1%)	
Is there an ECT-treated person in your family or among your acquaintances?			
Yes	8 (44.4%)	10 (55.6%)	0.625
No	125 (50.4%)	123 (49.6%)	
I would consent to my ECT treatment if I were in a psychotic/depressive condition.			





Yes	73 (62.9%)	43 (37.1%)	0.00* <sup>^</sup>
No	60 (40.0%)	90 (60.0%)	
Total knowledge score: mean (SD)	1.42 (1.18)	0.73 (1.04)	0.00* <sup>#</sup>

# p-values were calculated using the t-test.

<sup>^</sup> p-values were calculated using the chi-square test.

\*significant at p-value < 0.05

The results in Table 3 show the factors associated with knowledge of ECT. The p-values indicate the statistical significance of the associations. The table shows the distribution of respondents with poor and good knowledge, according to their ages. A p-value of 0.00\* suggests there was a significant association between respondents' age and their knowledge of ECT. Specifically, younger individuals (19–25 years old) had a higher percentage of good knowledge compared with older groups. A p-value of 0.314 indicates that gender did not have a significant association with knowledge of ECT, and a p-value of 0.251 suggests that nationality did not have a significant association with knowledge of ECT. Meanwhile, a p-value of 0.048\* indicates a significant association between education and knowledge of ECT. Medical students had a higher percentage of good knowledge compared with residents and specialists. A p-value of 0.00\* suggests a significant association between specialty and knowledge of ECT. Specifically, healthcare providers specializing in psychiatry had a higher percentage of good knowledge compared with those in other specialties.

**Table 3:** Factors associated with knowledge of ECT

Variables			p-value
Age	Poor Knowledge	Good Knowledge	
19–25	156 (94.0%)	10 (6.1%)	0.00*
26–35	45 (72.6%)	17 (27.4%)	
>35	30 (78.9%)	8 (21.1%)	
<b>Gender</b>			
Male	114 (89.1%)	14 (10.9%)	0.314
Female	117 (84.8%)	21 (15.2%)	
<b>Nationality</b>			

Saudi	194 (85.8%)	32 (14.2%)	0.251
Non-Saudi	37 (92.5%)	3 (7.5%)	
<b>Education</b>			
Medical student	123 (92.5%)	10 (7.6%)	0.048*
Resident	59 (80.8%)	14 (19.2%)	
Specialist	47 (81.0%)	11 (19.0%)	
Others	2 (100.0%)	0 (0.0%)	
<b>Speciality—only for health care providers</b>			
Psychiatry	2 (20.0%)	8 (80.0%)	0.00*
Others	92 (85.2%)	16 (14.8%)	

p-values were calculated using the chi-square test.

\*significant at p-value < 0.05

#### *Attitude:*

The results of our study also indicate a significant difference between healthcare providers and medical students in terms of their attitudes towards ECT. For all the variables listed in Table 4, healthcare providers showed a higher percentage of agreement compared with medical students. This includes beliefs such as ECT being used to control violent patients, causing pain, causing permanent brain damage, being dangerous and potentially causing death, requiring deep anesthesia, being an outdated procedure, and being dangerous during pregnancy and lactation. Healthcare providers also included a higher percentage who believed that ECT should only be used as a last resort, that it can be done without muscle relaxants, that it can be used over the age of 65, and that the longer the seizure duration during ECT, the more effective the treatment. The total attitude score, which reflects overall attitudes towards ECT, was significantly higher for healthcare providers compared with medical students.

**Table 4:** Attitude differences between healthcare providers and medical students

Variables	Health care providers	Medical student	p-value

ECT is used to control violent patients (F)	83 (75.5%)	27 (24.5%)	0.00 <sup>^</sup>
ECT causes pain (F)	108 (71.5%)	43 (28.5%)	0.00 <sup>^</sup>
ECT causes permanent brain damage (F)	108 (70.1%)	46 (29.9%)	0.00 <sup>^</sup>
ECT is dangerous and may cause death (F)	108 (71.5%)	43 (28.5%)	0.00 <sup>^</sup>
The anesthesia level during ECT should be as deep as possible (F)	82 (70.7%)	34 (29.3%)	0.00* <sup>^</sup>
ECT can be performed without muscle relaxant (F)	105 (55.6%)	84 (44.4%)	0.005* <sup>^</sup>
ECT should only be used as a final resort (F)	38 (74.5%)	13 (25.5%)	0.00* <sup>^</sup>
ECT is more effective, and helps to lift depression faster than drugs do (T)	29 (52.7%)	26 (47.3%)	0.650 <sup>^</sup>
ECT must not be used in patients with prior history of myocardial infarction (F)	47 (45.2%)	57 (54.8%)	0.209 <sup>^</sup>

ECT is an outdated, obsolete procedure (F)	81 (67.5%)	39 (32.5%)	0.00* <sup>^</sup>
ECT can be used over the age of 65 (T)	62 (71.3%)	25 (28.7%)	0.00*
The longer the seizure duration, the more effective is the treatment (F)	38 (38.8%)	60 (61.2%)	0.005* <sup>^</sup>
ECT is dangerous and unsafe during pregnancy (F)	101 (57.4%)	75 (42.6%)	0.001* <sup>^</sup>
ECT is dangerous and unsafe during lactation (F)	84 (70.0%)	36 (30.0%)	0.00* <sup>^</sup>
The recommended frequency of ECT sessions is two or three per week (T)	68 (71.6%)	27 (28.4%)	0.00* <sup>^</sup>
Total attitude score: mean (SD)	8.58 (3.29)	4.77 (3.15)	0.00# *

# p-values were calculated using the t-test.

<sup>^</sup> p-values were calculated using the chi-square test.

\* significant at p-value < 0.05

Factors associated with attitudes towards ECT were also evaluated. Participants aged 19–25 had a significantly higher percentage of positive attitudes towards ECT compared with older age groups ( $p < 0.05$ ). Males had a significantly higher percentage of negative attitudes towards ECT compared with females ( $p < 0.05$ ). Non-Saudi participants had a significantly higher percentage of positive attitudes towards ECT compared with Saudi participants ( $p < 0.05$ ). Medical students had a significantly higher percentage of positive attitudes towards ECT compared with residents and specialists ( $p < 0.05$ ). There was no significant difference in attitudes towards ECT between healthcare providers specializing in psychiatry and those in other specialties ( $p > 0.05$ ).

**Table 5: Factors associated with attitudes towards ECT**

Variables	Poor Attitude	Good Attitude	p-value
<b>Age</b>			
19–25	118 (71.1%)	48 (28.9%)	0.00*
26–35	28 (45.2%)	34 (54.8%)	
>35	8 (21.1%)	30 (78.9%)	
<b>Gender</b>			
Male	83 (64.8%)	45 (35.2%)	0.027*
Female	71 (51.4%)	67 (48.6%)	
<b>Nationality</b>			
Saudi	141 (62.4%)	85 (37.6%)	0.00*
Non-Saudi	13 (32.5%)	27 (67.5%)	
<b>Education</b>			
Medical student	111 (83.5%)	22 (16.5%)	0.00*
Resident	18 (24.7%)	55 (75.3%)	
Specialist	24 (41.4%)	34 (58.6%)	
Others	1 (50.0%)	1 (50.0%)	
<b>Speciality—only for healthcare providers</b>			
Psychiatry	5 (50.0%)	5 (50.0%)	0.352
Others	38 (35.2%)	70 (64.8%)	

p-values were calculated using the chi-square test.

\*significant at p-value < 0.05

**Knowledge and Attitude:**

Table 6 shows the correlation between knowledge and attitude towards electroconvulsive therapy (ECT). The table presents the correlation coefficients between the two variables. The correlation coefficient between knowledge and attitude is 0.590, which indicates a positive correlation. The correlation coefficient of 1.000 between attitude and itself represents perfect correlation, as it compares the variable to itself.

The asterisks (\*) denote the level of significance. In this case, the correlation between knowledge and attitude is significant at the  $p < 0.05$  level. The double asterisks (\*\*) indicate that the correlation is highly significant at the same level ( $p < 0.05$ ).

**Table 6:** Correlation between knowledge of and attitudes towards ECT

Scale	Knowledge	Attitude
Knowledge	1	0.590**
Attitude		1

\*  $p < 0.05$  (significant)

\*\*  $p < 0.05$  (highly significant)

### Discussion:

The findings of our study reveal that healthcare providers and medical students differed in their levels of knowledge about and attitudes towards ECT. A higher percentage of healthcare providers showed positive attitudes towards ECT, comparable to similar studies [15]. In our study, the attitudes of healthcare providers towards ECT were generally more positive than expected. These findings can be compared to an Australian study that reported negative attitudes towards ECT [16]. In another study, knowledge of and attitudes towards ECT were also reported to be affected by sociocultural differences [17]. However, some studies found no association between attitudes towards ECT and sociocultural factors [18]. Compared with healthcare providers, medical students had a lack of knowledge regarding ECT basics and working principles. These findings are consistent with previous studies conducted by Gazdag et al [11] and Clothier et al [19], which reported that students had a lack of knowledge about what ECT is; 30% of the students had a perception that ECT is a way of punishment for uncontrollable and violent patients, and 40% of students agreed that ECT is considerably misused by psychiatrists. Our findings are somewhat comparable to a study conducted in 2013, which reported that medical students showed a positive response to ECT and they were very knowledgeable about ECT [13].

Regarding the higher knowledge of ECT among healthcare providers, healthcare providers have more experience in the field and are more likely to encounter patients who have undergone or may benefit from ECT. As a result, they may have acquired more observational experience of ECT during their training and clinical practice. On the other hand, medical students who are still in the early stages of their medical education may not have had the same level of exposure to ECT practices. This could explain their lower level of knowledge and perhaps their more negative attitudes towards this treatment modality. It is crucial to address this knowledge gap among medical students to ensure that they are well-informed about ECT as a potential treatment option for certain psychiatric conditions [20].

Based on results of the current study, a controversial issue exists regarding the duration of seizures. It is undoubtedly true that “the longer the duration of seizures, the more effective the treatment.”

However, some studies report that there is no relationship between the duration of seizures and the effectiveness of treatment [14, 21]. Moreover, there is a better explanation to understand the difference, which necessitates an understanding of brain physiology. Members of both groups in our study held the opinion that ECT is dangerous and potentially causes death; these findings are in conflict with two studies reporting that ECT is not dangerous and does not cause death [14, 22]. Our study supports the belief that educational improvements in the medical colleges of Saudi Arabia have greatly influenced outcomes. In our study, both groups (healthcare professionals and medical students) agreed that ECT helps lift depression faster than other drugs. However, a large proportion of non-psychiatric physicians in a Greek study reported that medications are better than ECT [23]. This can be explained by the fact that family physicians are more exposed to ECT cases and interact with psychiatric physicians (surgeons) more frequently in Greece.

The sources of knowledge also determine the attitudes of the two groups towards ECT. In our study, the primary sources of information about ECT were doctors, medical journals/books, social media, and TV/movies. Some studies report that the media plays a key role in negatively depicting ECT as a procedure that destroys memories. Inadequate clinical exposure and short psychiatry rotation are also factors responsible for poor knowledge and negative attitudes towards ECT among future psychiatrists, as reported in studies from Nigeria and Texas [24, 25]. Despite this, one study reported no association between knowledge of and attitudes towards ECT [26]. Based on our findings, we believe that having strong knowledge of ECT is pivotal. We noticed that healthcare providers are more positive towards ECT, with higher knowledge scores compared with medical students. These findings are supported by a positive correlation between knowledge and attitudes.

The findings of this study have significant implications for clinical practice and medical education. Improving knowledge of and attitudes towards ECT among medical students and healthcare providers can lead to better patient outcomes and informed decision-making regarding ECT as a treatment option. It is crucial to develop and implement educational programs that focus on ECT, ensuring that healthcare providers and medical students are equipped with accurate, up-to-date information about the procedure, its indications, benefits, and potential risks. Moreover, involving healthcare providers with expertise in ECT in educational sessions can provide firsthand insight and experience, thereby enhancing the impact of such programs.

Our study has some limitations. Firstly, the study's cross-sectional design allows the assessment of knowledge and attitudes at a single point in time. This design does not permit the observation of changes in knowledge and attitudes over time, limiting the ability to establish causality. Secondly, the study's sampling method and recruitment process may have introduced selection bias. Participants who volunteered for the study may have had specific interests or motivations related to ECT, which could influence their attitudes and knowledge. Future research could include longitudinal designs to track changes in knowledge of and attitudes towards ECT over time, as well as including a broader representation of healthcare providers from various specialties and institutions.

### Conclusion:

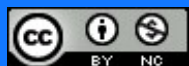
The present study sheds light on the knowledge of and attitudes towards ECT among healthcare providers and medical students. The findings reveal that both knowledge and attitudes play significant roles in shaping perceptions and utilization of ECT as a psychiatric treatment. This study underscores the significance of education, age, and specialty in influencing knowledge and attitudes. By targeting these factors through tailored educational initiatives, the medical community can ensure a well-informed and positive approach to ECT, thus promoting its appropriate use as a valuable treatment option for patients with psychiatric disorders.

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