

KNOWLEDGE AND ATTITUDES OF MASARYK UNIVERSITY MEDICAL STUDENTS TOWARDS ELECTROCONVULSIVE THERAPY (ECT)

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ABSTRACT — **Background:** Electroconvulsive therapy (ECT) is an efficient therapeutic procedure used in contemporary psychiatric practice. It is also considered one of the most controversial and stigmatized treatments in medicine. Studies evaluating the knowledge and attitudes of medical students towards ECT have been conducted in many countries. According to available data (Medline database), no such research has been performed in the Czech Republic.

Objectives: The aims were to evaluate knowledge about and attitudes towards ECT of medical students, to assess the effectiveness of theoretical and practical lessons about ECT at the Department of Psychiatry, and to improve education and awareness about ECT.

Methods: We conducted a prospective observation of medical student knowledge and attitudes concerning ECT and how they change after a two-week psychiatry rotation. These were evaluated using a questionnaire which was completed at the beginning and at the end of the rotation.

Results: In total, 148 students in the 5th year of general medicine were enrolled in the survey. Prior to the psychiatry rotation the majority of students drew their information about ECT from movies and television. Finding indicated a relatively low baseline level of knowledge about ECT before the lessons and a significant increase after two weeks of lessons; students with any previous personal experience with psychiatry had significantly higher scores in the knowledge test at the beginning of the rotation. Personal experience with ECT during the psychiatry lessons after the rotation had no effect on knowledge scores after the rotation. The baseline attitudes of students towards ECT were not overall negative. Positive change was observable, but less pronounced than expected. We did not observe a pronounced effect of ECT demonstration on student knowledge or attitudes.

Conclusions: The depiction of ECT in the mass media is mostly negative and continues to influence student attitudes towards this therapy. We can speculate that the most important factors in improving student knowledge about and attitudes towards ECT are gaining more information about the procedure via theoretical lessons and having direct contact with psychiatry.

INTRODUCTION

Electroconvulsive therapy (ECT) is an efficient therapeutic procedure used in contemporary psychiatric practice. It is also one of the most controversial and most stigmatized treatments in medicine. It was first used in 1938 by Italian neuro-psychiatrists Ugo Cerletti and Lucio Bini in the treatment of schizophrenia [1]. ECT is a medical procedure in which a brief electrical stimulus is used to induce an artificial epileptiform seizure under controlled conditions [2]. This treatment modality has undergone many changes and improvements over the years. In developed countries, ECT is administered under a short general anesthesia.

Muscle relaxants are important for preventing tongue bites, fractures, and other injuries sometimes observed in spontaneous epileptic seizures. ECT should be conducted under strict observation of patient state; breathing, oxygenation, blood pressure, ECG, heart rate, and EEG are usually monitored [3,4]. The efficacy of the procedure was proven in clinical practice, clinical studies, and meta-analyses; ECT is most efficient in the treatment of mood disorders and, to a lesser extent, some other disorders [5].

According to current treatment guidelines, ECT can be used as the first choice in the treatment of major depressive disorders with or without psychotic symptoms, acute manic episodes, catatonic conditions, and

neuroleptic malignant syndrome. In these cases, ECT can be considered if rapid therapeutic response is needed, if there is information about the patient's previous good response to ECT or insufficient positive therapeutic response to other treatment options during a previous episode. It is essential to assess the seriousness of the disorder and the potential risks associated with therapy. It is possible to use ECT as a second choice in poor therapeutic response especially to psychopharmacological treatment, intolerance of other forms of treatment, and presence of suicidality [6]. According to current literature, there are no absolute contraindications to the use of ECT. However, there are many relative contraindications, including diseases of the cardiovascular, respiratory, and central nervous systems. It is very important to carefully consider the potential risks and benefits of both ECT and alternative treatments for a patient [2, 4]. ECT is associated mostly with the common adverse effects of general anesthesia, such as nausea, vomiting, headache, muscle aches, and, rarely, cardiopulmonary complications or prolonged seizures [3,4]. The mortality rate is, however, low – 0.06–0.8%, mostly caused by cardiac complications [3]. The most disturbing adverse effect is memory impairment, which is usually transient [2,7].

Knowledge and attitudes concerning ECT

Although ECT is an efficient and safe therapeutic procedure, part of the general public and some professionals consider ECT to be controversial, dangerous, or even unethical.

Reasons for the stigmatization are various. They are usually associated with outdated ideas of psychiatry, with ignorance, inaccurate information, and prejudice, and with terrifying depictions of ECT in movies and other media, as well as with misunderstandings of this procedure; for example, some people understand ECT as a form of punishment of a patient. Those reasons lead to concern about the overuse or misuse of this procedure. Fear of using electricity in a head area and causing an epileptic paroxysm could be another important factor [7]. However, therapeutic procedures employing electricity are used in other medical fields without similar stigmatization; such procedures include electrocardioversion or electrotherapy in physiotherapy.

Studies evaluating attitudes of medical students towards ECT, their knowledge, and the effect of different teaching methods have been conducted in many countries. A review of the literature, references, and the findings of these studies is provided further in the text. The reviewed studies were conducted between 1992 and 2016, and contain data obtained from the United Kingdom, United States of America, Australia, India, Greece, Hungary, Turkey, Egypt, and Iraq.

The wide range of years reflects the relative scarcity of data as well as the fact that ECT is an old therapeutic procedure that has been used for more than 70 years [1]. According to available data (Medline database), no similar research has been performed in the Czech Republic.

Studies show that the levels of knowledge about ECT are diverse. Direct associations were found between good knowledge about ECT and more positive attitudes to this therapeutic procedure [8]. Insufficient or incorrect information, commonly obtained from the media or outdated and inaccurate depictions of ECT in movies, usually leads to negative attitudes [9–11].

The role of theoretical lessons and practical demonstrations of ECT procedures in influencing student knowledge and attitudes is unclear. A positive impact was described on the attitudes of students who observed an ECT session or saw an educational video about ECT compared with a group of students who did not experience one of these two teaching methods [12]. Another study came to a similar conclusion, i.e. students who participated in theoretical lectures as well as in direct observation of the procedure had more positive attitudes towards ECT than a group of students who only attended theoretical lectures [13]. Solomon et al. evaluated the effectiveness of theoretical and practical lectures followed by interaction with a patient and his family on medical student knowledge and attitudes towards ECT. Each of these approaches led to improved knowledge about and attitudes towards ECT. The authors suggested that exposure to ECT and interaction with patients should be part of lessons to improve student knowledge and attitudes about this safe, effective, and potentially lifesaving treatment procedure [14]. Another study examined whether direct participation and observation could affect medical student perceptions of ECT. At the end of lessons, most students expressed a more positive view of ECT than at the beginning. This change occurred similarly, regardless of whether medical students observed or participated in ECT. This may indicate that both instructional methods are equivalent in improving medical student perceptions of ECT [15].

The positive impact of any kind of education on medical student attitudes, whether theoretical lessons or practical demonstrations, has been demonstrated in other studies [16–20].

Surveys assessing student knowledge and attitudes regarding ECT repeatedly ascertained that before proper education, many students perceived ECT as a painful, cruel, and barbaric procedure causing brain damage. They thought that it was misused, that it was used to punish violent or uncooperative patients, that it was outmoded, and that it should be banned [21,22]. Many students also believed that the use of ECT should be governed by law [21]. It is clear that it is necessary to improve undergraduate education concerning ECT [9,14,21] because theoretical and practical training in

ECT play an important role in increasing the level of knowledge of ECT and decreasing the prevalence of negative attitudes towards ECT among medical students [23], and therefore among future physicians.

METHODS

Aims and hypotheses of the study

The first aim was to evaluate knowledge about and attitudes towards electroconvulsive therapy among General Medicine undergraduates studying at the Faculty of Medicine of Masaryk University. The second aim was to assess the effectiveness of theoretical and practical lessons about ECT at the Department of Psychiatry. The third aim was to improve education and awareness about ECT and through this improvement to promote the destigmatization of this therapy that has a justified place in contemporary psychiatric practice.

Our hypotheses were as follows:

1. Knowledge of students about ECT will be based on information acquired from mass media more than from specialized literature. They will have limited levels of knowledge about ECT at the beginning of the lessons; their success rate in the knowledge questionnaire will be maximally 50% correct answers. Most of the students will have negative or neutral attitudes towards ECT.
2. Students who have had previous personal contact with psychiatry or whose relatives have been treated by a psychiatrist will have more positive attitudes and better knowledge.
3. At the end of the lessons, most of the students will have a higher level of knowledge about this therapeutic modality and there will be a higher percentage of students with positive attitudes than at the beginning. Students who are present during actual ECT procedure will have better knowledge and more positive attitudes at the end of the lessons.

Design of the study

All of the General Medicine students, studying in Czech, beginning lessons at the Department of Psychiatry of University Hospital Brno and Faculty of Medicine of Masaryk University who were willing to participate in the survey were eligible. The survey was approved by the ethics committee of the Faculty of Medicine of Masaryk University.

At the beginning of the psychiatry lessons, students were informed about the research project, the opportunity to participate, and the conditions of their potential participation. The completion of the questionnaire was absolutely voluntary for students. Students filled in questionnaires with their informed consent. The completion of the questionnaire was also a statement of consent to participate in the study. The

questionnaires were anonymous. Personal student data were not obtained or processed. Students had the opportunity to terminate their participation in the study without giving a reason only in the course of completing the questionnaire; after the questionnaire was completed, termination was no longer possible. Completing or not completing the questionnaires did not influence student assessment during lessons.

The questionnaire was filled at the beginning and at the end of the lessons, that means at the beginning and after the completion of all theoretical and practical lessons. In this way, it was possible to evaluate student knowledge and attitudes that were not influenced by lessons and any changes after finishing the course.

The questionnaire used in the study had three parts. The first part contained questions about basic demographic data, previous experiences with psychiatry, and sources of information about ECT before the lessons. The second part consisted of questions focused on knowledge about ECT (29 questions), and the third part dealt with attitudes (16 questions). Questions in the questionnaire were mainly of closed format and Likert-type questions. Questionnaires contained a combination of questions that had been repeatedly used in the reviewed studies. This approach ensured the comparability of our results with results from previous studies. Two versions of the questionnaire were created. Version A was used at the beginning of the psychiatry course and version B was used at the end of the course. The knowledge and attitude questions were the same in both versions.

STATISTICS

The variables compared across groups of students were the number of correct answers in the knowledge part of the questionnaire and the proportions of favorable answers for each question in the attitude part of the questionnaire. The results obtained before the lessons were compared with those after the lessons. When taking into account just the results from the questionnaire administered before the lessons, two groups of students were contrasted – those with previous experience with psychiatry and those without such experience. Similarly, two groups of students were compared when processing the results of the questionnaires administered after the lessons: students who had the opportunity to be present during ECT administration and students who were not able to observe the procedure.

Distribution of knowledge scores was evaluated by the Shapiro-Wilk test. As the distribution was not normal, Wilcoxon rank-sum test was used for the comparison of the aforementioned group pairs. Differences in attitude proportions were tested using Fisher's exact test. P-values lower than 0.05 were considered statistically significant.

Statistical analysis was conducted using R statistical library.

RESULTS

Demographics, descriptive statistics and sources of information about ECT

Demographics and a basic description of the sample are summarized in Table 1 and Figure 1. In total, 148 students were enrolled in the survey, all students in the 5th year of general medicine. All the enrolled students filled in both the first and second questionnaire. However, some of the students did not fill in all of the questions, which led to some discrepancies in further processing of the data. The sources of information and the numbers of students who did or did not observe ECT during the lessons is depicted in Figure 2. The influence of different sources of information on student attitudes towards ECT is summarized in Figure 3.

Knowledge scores

There were 29 questions in the knowledge part of the questionnaire. The numbers of correct answers among the different groups of students are summarized in Table 2. Before the lessons, the median of correct answers was 15 (interquartile range, IQR = 7). Students with previous personal experience with psychiatry were generally more successful (median = 18, IQR = 6) than students without previous experience with psychiatry (median = 15, IQR = 8). This difference was statistically significant ($p = 0.005$).

After the lessons, the number of correct answers increased (median = 25, IQR = 5). The difference in the number of correct answers before and after the lessons was statistically significant ($p < 0.001$). There was not a statistically significant difference between the success rates of students who were present during an ECT procedure (median = 25, IQR = 6) and those who were not (median = 25, IQR = 4).

Attitudes

The texts of the questions in the attitude part of the questionnaire as well as the percentages of different answers to each question are summarized in Figures 3, 4, and 5. It is important to note that a favorable answer to a question can mean a positive or negative attitude, depending on the question.

The number of students who answered all of the questions in the attitude part of the questionnaire were: 137 (92.57%) before the rotation, 144 (97.3%) after the rotation, 24 (96%) with previous experience with psychiatry, 113 (91.87%) without previous experience with psychiatry, 50 (89.29%) students who observed ECT during the rotation, and 86 (94.51%) students who did not observe ECT.

When comparing student responses to the attitude questions before and after the lessons, there was a statistically significant shift in attitude question 2 (before lessons 86 – 62.77%, after lessons 138 – 95.83%, $p < 0.001$), question 3 (before lessons 30 – 21.90%, after lessons 17 – 11.81%, $p < 0.02$), question 6 (before lessons 33 – 24.09%, after lessons 17 – 11.81%, $p < 0.001$), question 9 (before lessons 22 – 16.06%, after lessons 92 – 63.89%, $p < 0.001$), question 10 (before lessons 80 – 58.39%, after lessons 107 – 74.31%, $p < 0.001$), question 13 (before lessons 122 – 89.05%, after lessons 140 – 97.22%, $p < 0.001$), the C variant of question 15 (before lessons 12 – 8.76%, after lessons 32 – 22.22%, $p = 0.001$) and the C variant of question 16 (before lessons 8 – 5.84%, after lessons 35 – 24.31%, $p = 0.001$).

In responses gathered before the lessons, statistically significant differences were found between students with and without previous experience with psychiatry in question 9 (with previous experience 8 – 33.33%, without previous experience 14 – 12.39%, $p = 0.01$), the C variant of question 15 (with previous experience 5 – 20.83%, without previous experience 7 – 6.19%, $p = 0.03$) and the C variant of question 16 (with previous experience 4 – 16.67%, without previous experience 4 – 3.54%, $p = 0.03$).

In responses after the lessons, there was a statistically significant difference between students who were present during ECT and those who were not present only in question 2 (were present during ECT 56 – 100%, were not present during ECT 81 – 93.10%, $p = 0.04$) and question 3 (were present during ECT 2 – 3.57%, were not present during ECT 14 – 16.09%, $p = 0.02$).

DISCUSSION

We conducted a survey concerning knowledge about and attitudes towards ECT in students of General Medicine. General Medicine is a 6-year study program; students are supposed to complete their psychiatry rotation in the 5th year of their study. A total of 313 Czech-speaking students attended their psychiatry rotation in the 2015–2016 school year. This survey took place in the fall semester, during which 148 students were enrolled.

Sources of information about ECT

Consistently with our hypothesis, before the lessons the majority of students got their information about ECT from movies and television. Most of such students considered the depiction of ECT in the media to be negative and more than one third of the students stated that this depiction had a negative effect on their own attitudes.

Our finding that prior to their psychiatry rotation, medical students got their information about ECT mostly from the mass media is consistent with previous similar studies [9,11,21]. The fact that students

considered the depiction of ECT in films to be negative and felt that this depiction influenced their attitudes in a negative way supports the findings of the interventional study by Walter et al. [10] in which clips from several popular movies had a profound negative effect on student attitudes. The influence of negative depictions of ECT on attitudes can even be covert, as shown in a study by Clothier et al. in which students who considered themselves more knowledgeable about psychiatric illnesses had a more negative bias towards ECT, with the sources of their knowledge being college lessons as well as movies [9]. On the other side, several studies found that improvements in student attitudes are usually accompanied by increases in student knowledge [12,14,16–18,20,24,25]. In other studies, even theoretical lessons about ECT were sufficient to increase both student knowledge and attitudes [16].

It appears that the two most important factors in shaping the attitudes of students about ECT are the amount of knowledge and the depiction of the treatment procedure in sources to which students are exposed. As the knowledge about psychiatry and psychiatry treatment procedures in medical students prior to their psychiatry rotation is rather low, and the depiction of ECT in the mass media is mostly negative, it could be expected that students approach ECT with a priori negative attitudes, as demonstrated by previous studies [9,10,17,21,22].

However, in our sample, the baseline attitudes of students were not generally negative (see below). There are several possible explanations: It is possible that the exposure of students in the Czech Republic to negative depictions of ECT is limited in comparison with other countries. Another explanation is the good theoretical preparation of students in previous years. We can also hypothesize that students tried to complete the survey as they thought psychiatrists would like them to. Because the student knowledge about ECT in our sample was not optimal (see below) and previous results in other countries have shown differences in attitudes towards ECT [26], the most probable explanation appears to be the first one.

From the results of our own and previous studies we can conclude that: (i) students do not use appropriate sources of objective information about ECT before formal psychiatry lessons; (ii) before the psychiatry rotation, student information about ECT comes

predominantly from mass media; and (iii) depictions of ECT in popular media are, in general, negative.

Knowledge

Our findings of a relatively low baseline level of knowledge about ECT in students before the lessons and its significant increase after a two-week rotation at the Department of Psychiatry was in accordance to our hypothesis, as was the fact that students with previous personal experience with psychiatry were significantly more successful in the knowledge test. On the other side, there was no effect of personal experience with ECT during psychiatry lessons on knowledge scores after the two-week rotation at Department of Psychiatry.

Limited knowledge about ECT in students of medicine before the psychiatry lessons was repeatedly demonstrated [9,10,14,17,22,26]. The extent of baseline student knowledge about this topic tends to vary in different countries, with possible reasons for this being cultural differences and differences in educational systems [26]. Our results, of approximately 51% correct answers in the knowledge test before the rotation, is within the range of results from other comparable studies [14,17].

The improved student knowledge after the lessons was consistent with our hypothesis and in accordance with other similar studies [12,14,16,17,18,20,24,25]. In our sample, the overall improvement in the percentage of correct answers was highly significant; it went from approximately 51% to 86% correct answers.

We observed that students with previous personal experience with psychiatry were significantly more successful in the knowledge test before the rotation than students without such experience. It appears that previous personal experience with psychiatry can give students an edge in knowledge over other students even about such specialized types of treatment as ECT. The explanation can be that those students tried to

TABLE 2. Knowledge scores of the students. Median and interquartile range (IQR) is depicted. Note that groups of students with and without experience with psychiatry were assessed before the lessons; groups of students who had or had not seen ECT were assessed after the lessons. Statistically significant results are highlighted: a) $p < 0.001$, b) $p = 0.005$

Student group	Median	IQR
Before the lessons	15 ^a	7 ^a
After the lessons	25 ^a	5 ^a
With personal experience with psychiatry	18 ^b	6 ^b
Without personal experience with psychiatry	15 ^b	7,5 ^b
Have seen ECT during the lessons	24,5	6
Have not seen ECT during the lessons	25	4

TABLE 1. Basic demographics of the sample

Age	Median	IQR
	23	1
Gender	Male	Female
	41 (27.70%)	107 (72.30%)
Place of residence	City	Village
	94 (63.51%)	54 (36.49%)

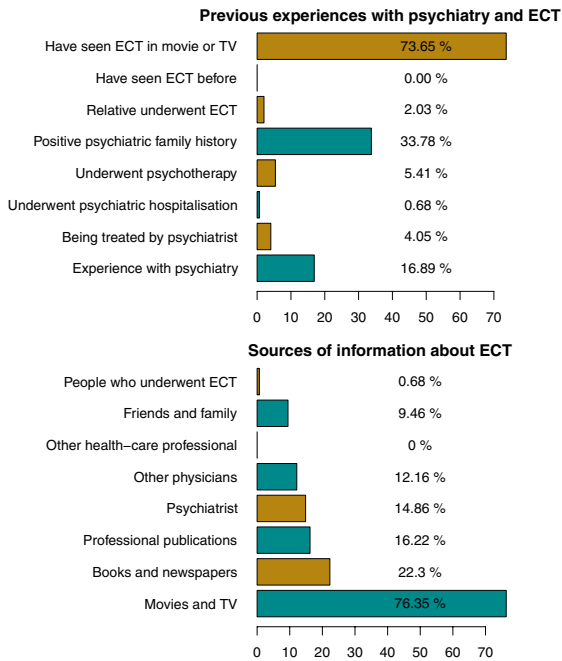


FIGURE 1. Student experiences with psychiatry and ECT and their source of information about ECT before the lessons

get more information about the field of psychiatry beforehand or that previous exposure to problematics of mental disorders and psychiatry allowed them to have a more realistic view over the whole of this medical field.

On the other side, we did not observe any significant difference in student knowledge after the rotation when comparing students who were able to observe an ECT procedure personally and those who were not. This means that theoretical lessons were sufficient for improving student knowledge about ECT. There are several studies with similar results to our own [12,18,19,25], but also several works that have shown an advantage in seeing an ECT procedure over pure theoretical lectures or texts [13,14]. It can be expected that theoretical lessons improve student theoretical knowledge, but it is interesting that several authors observed that witnessing an ECT procedure further enhances that knowledge. One possible explanation is that students might have had more opportunities to ask additional questions and thus were able to get more relevant information. In any case, it appears

that a system of theoretical lessons and the amount of information conveyed by them are the most important factors that influence student knowledge. In some situations, direct demonstrations of ECT procedures can be advantageous; however, it is possible to significantly improve student knowledge even without it.

Attitudes

With the relatively high number of attitude questions with different levels of emotional salience, it is not possible to summarize student attitudes similarly to their knowledge. The questions that can be considered the “ultimate test of attitudes” are questions 15 and 16 – whether the student or the student’s relatives should undergo ECT if needed. Surprisingly, in spite of relatively low knowledge scores, the baseline attitudes of students towards ECT were not overall negative. Because of this, changes of attitudes towards more positive ones were observable, but less pronounced than we expected.

Even before the lessons, the majority of students generally admitted that ECT still had a place among other treatment modalities; they did not consider it an obsolete procedure and they did not think that this procedure was abused. The acceptance of electricity use in medicine was also exceptionally high. Another interesting result was the relatively high number of students who would undergo ECT (question 15) or encourage ECT use in their relatives (question 16) if needed.

As was already mentioned, the lessons did not dramatically change student attitudes. The change was more in the form of a slight shift that possibly reflected greater understanding of this procedure after the rotation. It was apparent that the students began to look at ECT similarly to other therapeutic procedures. There was a decrease in the percentage of students who considered ECT a dangerous procedure that needed to be regulated by a law. As a result, acceptance of this treatment rose and students were more willing to undergo this procedure or persuade their relatives if needed.

Results before the lessons were similar even when analyzing groups of students with and without previous experience with psychiatry separately. Attitudes remained relatively positive in both groups. However, there was apparently a greater acceptance of ECT and willingness to undergo this procedure without

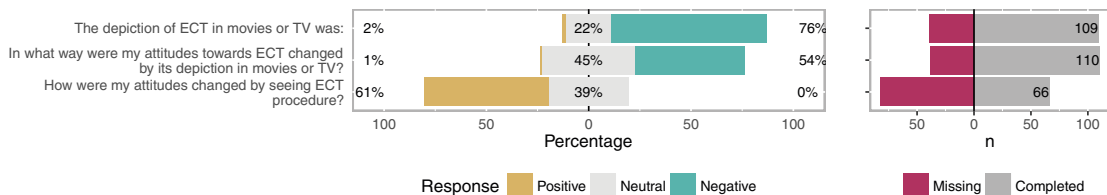


FIGURE 2. Student opinions of how their attitudes towards ECT were influenced by movies and television as well as perceived changes in their attitudes after they observed ECT during the lessons. Percentages of missing answers are depicted in the second bar plot

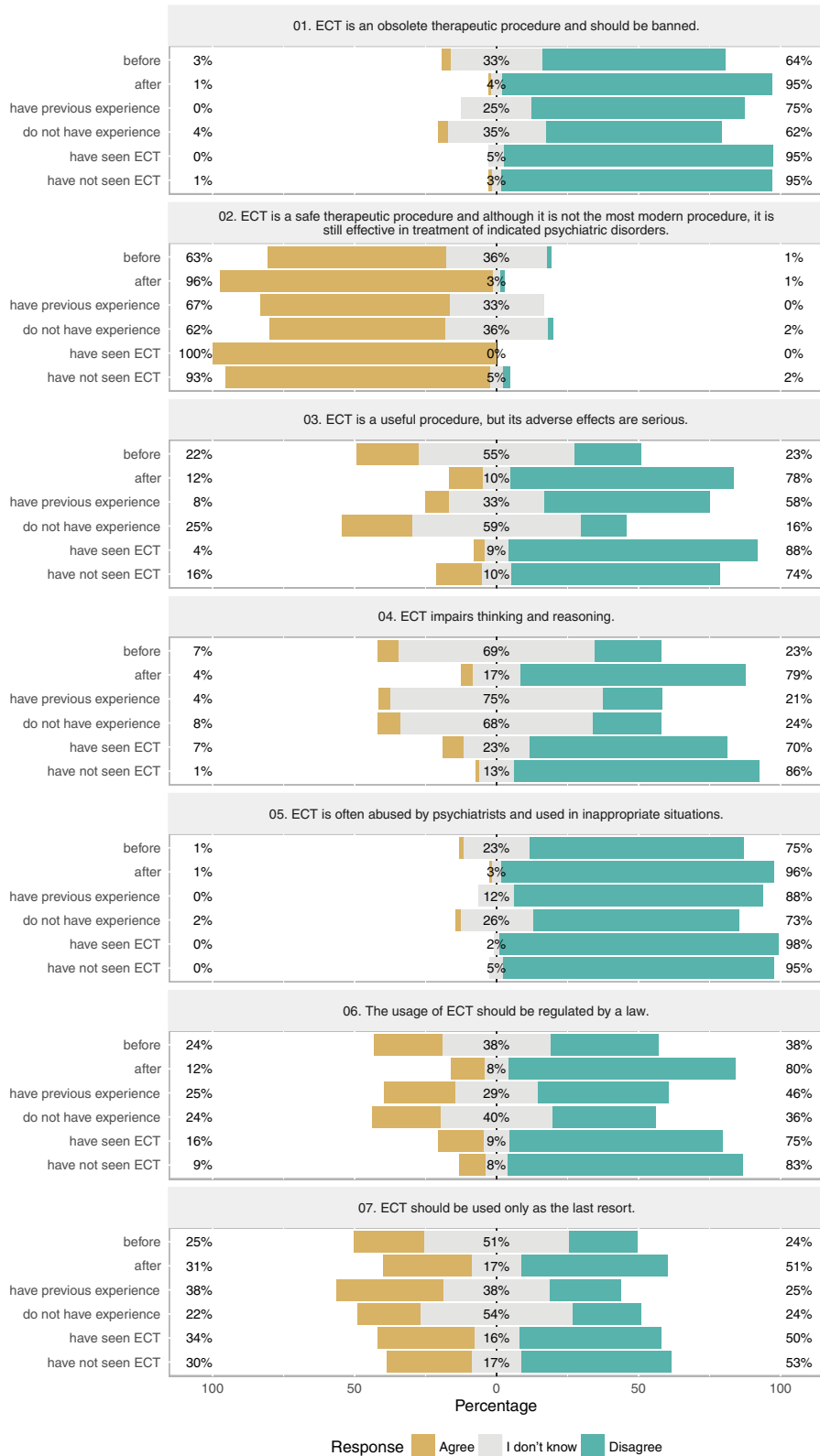


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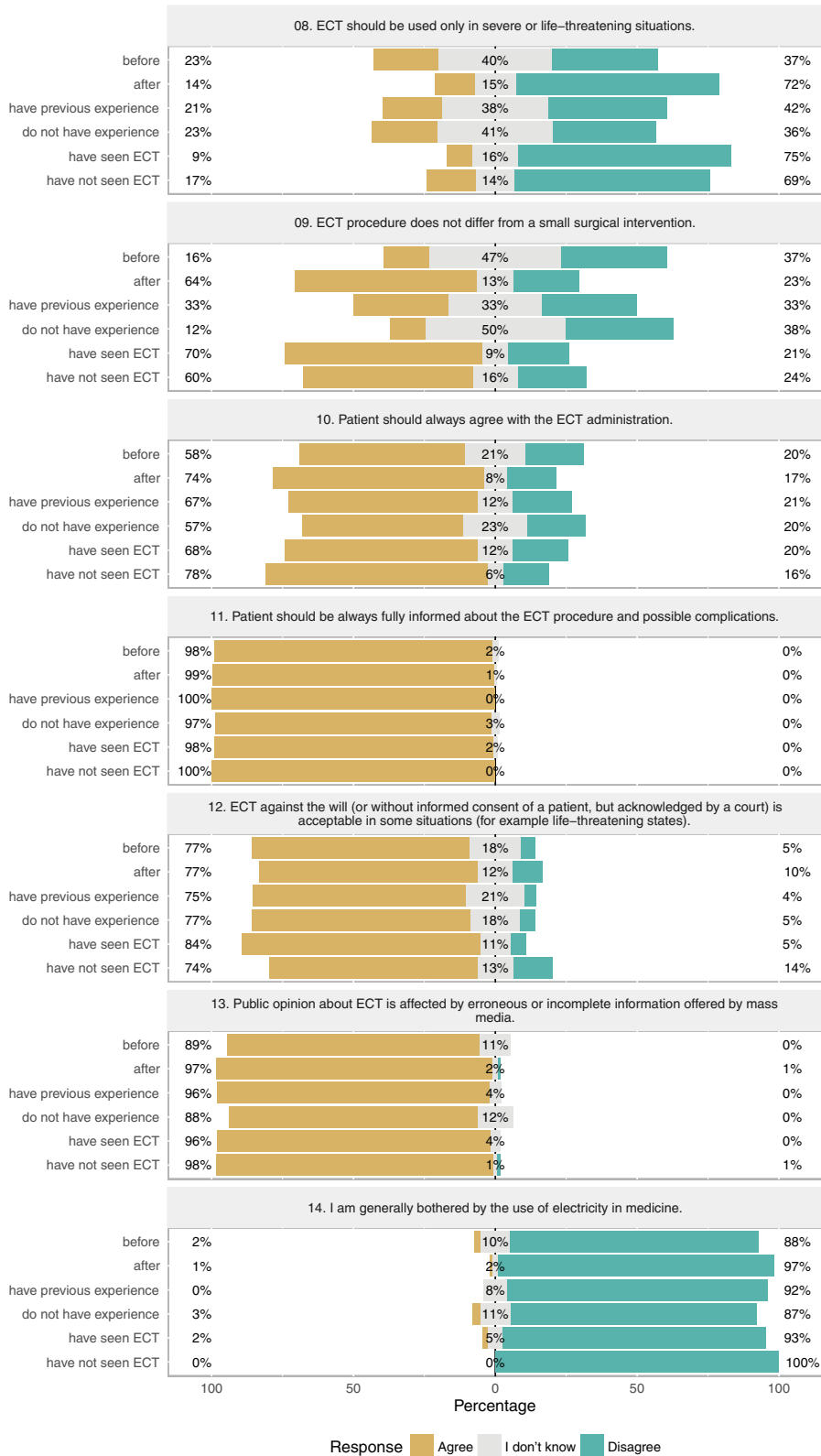


FIGURE 4. Diverging stacked bar plots and summary of the second 7 questions in the attitude part of the questionnaire and student responses

reservation in the group of students with previous experience with psychiatry.

Contrary to our expectations, we did not observe a pronounced effect of ECT demonstration on student attitudes. Students who were present during ECT administration had similar attitudes to students who had no opportunity to see this procedure. Attitudes were similarly positive in both groups. The only difference was that in the group of students who had seen the procedure there were significantly more students with more positive views of ECT efficacy and its adverse effects.

A majority of previous studies found negative attitudes towards ECT in students before psychiatry lessons [9,10,12,14,16,17,21,22]. As stated above, the attitudes in our sample can hardly be described as generally negative; for example, only 2.7% students would reject ECT if ill and the same percentage would be against their relatives undergoing ECT. To compare, in another study, the percentage of students who would dissuade family members or relatives from ECT was 10% [10]. Possible causes for our results differing from the majority of other studies were discussed in the section dealing with sources of information about ECT.

Changes in attitudes after proper education about ECT and psychiatry has been repeatedly observed [10,13,14,16–18,20,24–27]. In this regard, our results do not differ. As already mentioned, there was an observable and significant shift in many attitude questions towards more positive attitudes.

Whether being present during an ECT procedure influences student attitudes more than theoretical information can be a subject of debate. An effect of ECT demonstration was observed by some authors [20,24], but not by others [18,25,27]. Our study belongs to the

second mentioned group. We can speculate that this result stems from relatively positive baseline attitudes and probably from the possibility that students in the Czech Republic are exposed to negative images of ECT less than students in other countries.

It appears that in our sample the most important factor influencing attitudes is the greater knowledge about ECT which students get during lessons. It is probable that changes in attitudes are dependent on how the information about this procedure is conveyed to students. In some situations, proper theoretical lessons appear to be sufficient to improve student attitudes about this topic.

Study limitations

Several factors could have influenced our results.

Although the questionnaire was administered during the lessons, actual control of whether the students completed it independently was limited. We tried to increase this possibility by informing the students that completing the questionnaire was voluntary and anonymous and that it would not influence their final grades for the psychiatry rotation.

There is a possibility that some students answered questions untruthfully. This is probably the case with several students who answered most of the questions ‘I don’t know’. However, the number of students replying in this way was low.

Another limitation is similar to the previous one and mostly regards the attitude part of the questionnaire. Students might have answered questions not according to their actual convictions but in a way they thought we would like them to. This is a serious limitation which might have influenced the results of the

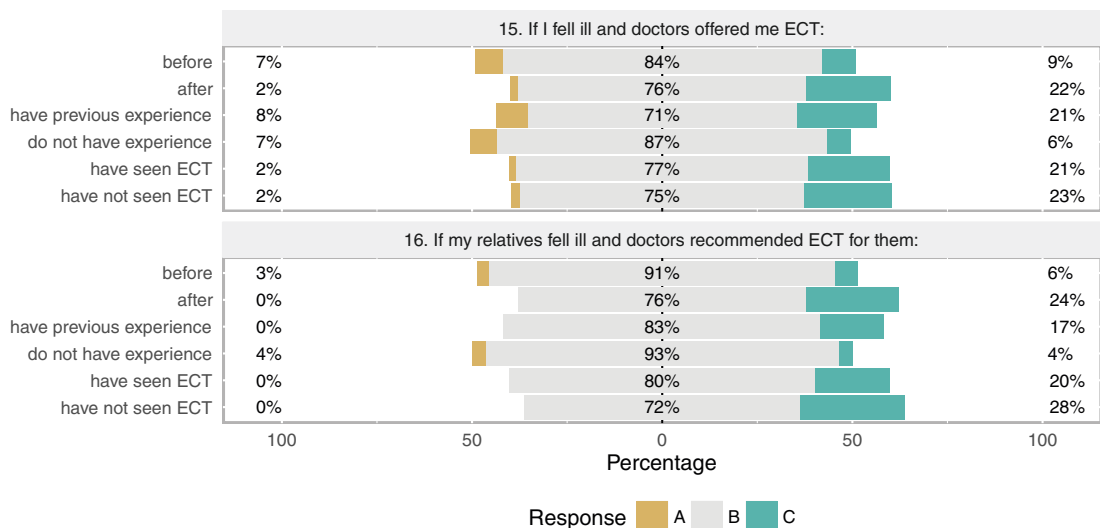


FIGURE 5. Diverging stacked bar plots of the last two questions in the attitude part of the questionnaire and student responses. Responses were formulated as follows: A) “I would strongly oppose it” B) “I would be worried, but I would support the recommendation” C) “I don’t have any reservations against ECT, it is a therapeutic procedure not different from other procedures. I would support the recommendation”

attitude part. However, the extent of this limitation remains unknown.

The last limitation is related to the way the attitude questions were worded. It is not possible to objectively measure how strongly these questions reflect student attitudes. Therefore, it is not possible to summarize this part of the questionnaire in the same way as the knowledge part. We tried to solve this by evaluating every question independently, as stated in the section concerning the methodology.

SUMMARY

The depiction of ECT in the mass media is mostly negative and it is also perceived as such by medical students. This negative depiction influences student attitudes towards this treatment procedure. Knowledge of students about ECT prior to their psychiatry rotation is very limited. However, the attitudes of Czech students towards ECT are not generally negative. For example, a majority of students would undergo ECT if needed and even more would agree with ECT for their relatives. A two-week psychiatry rotation positively influences student knowledge and attitudes.

Knowledge is influenced dramatically. The change in attitudes is positive, yet less pronounced. It appears that the attitudes of students towards ECT is the result of knowledge about the topic and how this procedure is depicted in the mass media. After the lessons and after the knowledge of students increases, their attitudes also improve. We can speculate that the most important factors in improving student knowledge about and attitudes towards ECT are gaining more information about the procedure via theoretical lessons and having direct contact with psychiatry.

Two to three months after the lecture, one quarter of the participants of the youngest age category (N = 299) were called on to answer the same questions as they were given before the lecture and immediately after, in order to ascertain the long-term effect of the educational event. Table 2 shows principal results of the study. Figure 2 shows the distribution of number of correct answers. Unfortunately, we are not able to link data from questionnaires before lectures and after 2 to 3 months, so the results are not shown for the same group of participants (n value is different).

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