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Title:

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Date:

2018-09-01

Citation:

Zhang, Q. E., Zhou, F. C., Zhang, L., Ng, C. H., Ungvari, G. S., Wang, G. & Xiang, Y. T. (2018). Knowledge and attitudes of older psychiatric patients and their caregivers towards electroconvulsive therapy. *Psychogeriatrics*, 18 (5), pp.343-350. <https://doi.org/10.1111/psyg.12326>.

Persistent Link:

<https://hdl.handle.net/11343/284209>

Text: 2,544 words
Abstract: 181 words
Tables: 5

Knowledge and attitudes of older psychiatric patients and their caregivers toward electroconvulsive therapy

Running title: ECT for older adults

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This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as doi: [10.1111/psyg.12326](https://doi.org/10.1111/psyg.12326)

ABSTRACT

Background Electroconvulsive therapy (ECT) is an effective treatment for older patients with severe psychiatric disorders, but their knowledge and attitude toward ECT have not been well-studied. This study examined the knowledge and attitudes of Chinese older patients and their caregivers toward ECT.

Method A total of 216 participants, including older patients treated with ECT (n=108) and their caregivers (n=108), were recruited. Their knowledge and attitudes regarding ECT were assessed using self-reported questionnaires.

Results While most caregivers received sufficient information on the therapeutic effects of ECT, inadequate information was provided to caregivers and patients before treatment about the ECT process, its adverse effects and risks. Although ECT was generally viewed as beneficial, effective and safe, around two thirds of patients and caregivers believed that ECT should only be used for critically ill patients. Over half of the patients reported adverse effects caused by ECT, with memory impairment being the most commonly reported.

Conclusions Clinicians in Chinese psychiatric hospitals need to provide sufficient information of ECT to older patients and their caregivers prior to the treatment, particularly the treatment process and adverse effects.

Key words: attitudes, caregivers, electroconvulsive therapy, knowledge, older

patients

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INTRODUCTION

Electroconvulsive therapy (ECT) is widely used in treating severe psychiatric disorders, including depression, bipolar disorders and schizophrenia.^{1,2} Although the mechanism of ECT remains unclear, it is effective particularly for those who are unresponsive to pharmacotherapy or unable to tolerate medications.^{3,4} However, ECT can also result in adverse effects, such as transient memory impairment which may restrict its use in older patients.⁵⁻⁷

Knowledge and attitude of patients and their caregivers toward ECT could significantly influence its acceptance and use of ECT in clinical practice.^{8,9} Misconceptions and negative attitudes toward ECT due to the incorrect portrayal of ECT in mass media, irrational fears of electricity, and excessive fear of memory loss have often created controversy around ECT.^{8,10,11} Studies in past decades have reassuringly found that the attitude of patients and their relatives toward ECT are usually positive.¹²⁻¹⁵ Although ECT is often used in older patients, their attitude and knowledge toward ECT have not been well-studied. One study in India found that older patients with severe psychiatric disorders had poor knowledge and negative attitude toward ECT.¹⁶

The number of older patients receiving ECT is very large in China; a survey of older patients with psychiatric disorders found that 28.1% received ECT, with the corresponding figures of 37.9% for bipolar disorders, 43.6% for major depression,

21.2% for schizophrenia and 10.7% for other disorders.¹⁷ However, there is ongoing debate about ECT use in China with some advocating its use to rapidly improve psychiatric symptoms¹⁸ while others arguing that it should be strictly controlled due to its risk of adverse effects.¹⁹ In order to understand the acceptance of ECT among older patients, it is important to examine patients' and caregivers' attitude and knowledge toward ECT. In addition, given the strong influence of sociocultural factors,^{8,9,20} the findings of attitude and knowledge toward ECT obtained in other settings could not be generalized to China. To date, there has only been one Chinese study published which found positive attitudes of patients and their relatives toward ECT.⁹ However, no data on older patients and their caregivers have yet been reported.

The aim of this study was to examine the knowledge and attitudes of Chinese older patients and their caregivers toward ECT, as well as the patients' subjective experience of ECT.

METHODS

Study design and participants

The study was a cross-sectional survey conducted between June 1, 2016 and July 31, 2017 in Beijing Anding Hospital which serves 20 million people in northern China. The hospital provides 800 psychiatric beds, 1,500 outpatient consultations daily and

around 1,500 ECT treatments monthly. The study protocol was approved by the Research and Ethics Committee of Beijing Anding Hospital. All participants provided written informed consent.

Patients and their caregivers were invited to participate in this survey. All patients fulfilled the following inclusion criteria: 1) diagnosis of schizophrenia or bipolar disorder or major depression according to International Classification of Diseases, 10th Revision (ICD-10) based on a review of medical records and a clinical interview (these diagnoses accounted for over 90% of inpatients in the psychogeriatric ward of this hospital, while the remaining had behavioural and psychological symptoms of dementia); 2) aged 55 years or older. Although patients aged ≥ 60 or 65 years are defined as 'older patients' according to international consensus, in this local hospital setting patients aged ≥ 55 were eligible to receive treatment in the psychogeriatric department; 3) received ECT in the past six months, but the last ECT treatment completed at least four weeks prior to this survey; 4) able to understand the content of the survey; 5) did not have cognitive impairment as judged by the treating psychiatrist. In China, most clinically stable older psychiatric patients could not be discharged into the community because of the lack of community services and their family members are unable to provide appropriate care. Therefore, a lot of patients were still in the hospital even after 4 weeks had passed since the end of the ECT treatment. Inclusion criteria for the caregivers were

as follows: 1) identified as family members or friends who provided primary personal care for the patients in the past six months; 2) aged at least 18 years; 3) able to communicate and understand the content of the survey; 4) did not have cognitive impairment as judged by the treating psychiatrist.

ECT Parameters

The ECT was only provided for inpatients and was delivered by the ECT Unit in Beijing Anding Hospital. A course of ECT, prescribed by treating psychiatrists, usually comprises 6–12 sessions under general anesthesia. Traditionally, 5 treatments were conducted in the first week, and subsequently two or three times per week. Anesthesia included the use of succinylcholine (0.3–0.7 mg/kg), propofol (1–1.5 mg/kg), and mask oxygen inhalation. A square-wave equipment (Spectrum 5000Q ECT machine, MECTA Corp., Lake Oswego, OR, USA) provided the stimulus intensity standardized at 900 mA for 1–8s using bitemporal electrode placement in all sessions. Electroencephalography was used to monitor the seizures.

ECT Consent Process

According to the regulations of this hospital, all patients needed to consent to ECT at least verbally, while their caregivers must all provide written informed consent prior to ECT. Moderate to severe adverse events, such as sudden death, allergic reaction

to anesthesia, or bone/teeth fracture, were included in the informed consent forms in the ECT Unit of this hospital.

Assessments

Demographic and clinical data of patients were collected using a data collection form designed for the study based on an interview and a review of medical records. A self-reported questionnaire for patients was administered consisting of three sections: 1) questions about subjective experience of ECT; 2) knowledge and attitudes towards ECT; 3) adverse effects of ECT. Another questionnaire with similar contents on the knowledge of and attitudes toward ECT was given to the caregivers. There were 3 options for each item including "agree/yes," "disagree/no," and "I don't know." Similar questionnaires were used previously in other studies.^{9,21}

Statistical analysis

Data were analyzed by the Statistical Package for Social Sciences (SPSS), version 21.0. Chi-square tests were used to compare the differences of the knowledge of and attitudes towards ECT between patients and caregivers. The level of significance was set at 0.05 (two-tailed test).

RESULTS

Basic demographic and clinical characteristics

All patients were hospitalized prior to having a course of ECT. Out of all inpatients, only 150 patients received ECT during the study period; of them, 122 were invited to participate in the survey but 4 refused participation. Therefore, finally 118 patients and 118 caregivers fulfilled the study entry criteria and completed the assessment, giving a participation rate of 96.7%. Of the patients, 77.1% were diagnosed with major depressive disorder, 14.4% with bipolar disorder and 8.5% with schizophrenia. Most patients were females (71.2 %); 62.7% of patients had primary and junior secondary school education. The mean age, age of illness onset and duration of illness were 63.6 ± 4.5 years, 50.0 ± 13.7 years and 15.3 ± 19.0 years, respectively. The mean number of ECT was 6.7 ± 2.3 . Most patients received antidepressants (81.8%) followed by antipsychotics (48.2%) while receiving ECT (Table 1).

Patients' and caregivers' knowledge of ECT

Most caregivers reported they had received adequate information on the therapeutic effects of ECT, but the adequacy of information provided to patients was less. In contrast, the information about the ECT process, adverse effects and risks provided prior to the ECT was inadequate to both caregivers and patients. Older patients and caregivers both had the view that ECT was more effective and quicker

acting than drugs (Table 2).

Patients and Caregivers' Attitudes toward ECT

Most patients and caregivers reported positive attitudes toward ECT. They endorsed the statement that ECT was safe and could be used again if necessary. Also, they did not view that ECT is a punitive treatment or should only be used as the last resort. However, around two thirds of patients and caregivers had the view that ECT should be used for critically ill patients. More caregivers than patients had endorsed the statement "Would you/your relative like to receive ECT again?", ($P < 0.05$) (Tables 3). Of note, 81.3% of patients were worried during the ECT treatment, particularly in the following settings: "Waiting for the treatment" (39.3%), "Wearing an oxygen mask" (29.9%), and "Thinking of the treatment associated with electricity" (25.2%) (Table 4).

Patients' Experience of Adverse Effects of ECT

Altogether, 57% of the patients reported adverse effects associated with ECT treatment; the most common adverse effects included memory impairment (62.6%), headache (33.6%) and muscle pain (29.9%) (Table 5).

DISCUSSION

Previously, a survey in Asia found that the most common indications for ECT were schizophrenia (41.8%), major depression (32.4%) and mania (14.0%).²² In this study, however, 77.1% of the patients treated by ECT were diagnosed with major depressive disorder, 14.4% with bipolar disorder and 8.5% with schizophrenia, which is consistent with the convention that treatment-resistant mood disorders is the main indication for ECT in China.^{23,24} Not surprisingly, this study found that most patients received antidepressants, while the minority received mood stabilizers and benzodiazepines during ECT. Benzodiazepines and mood stabilizers could raise seizure threshold, which negatively impacts on the efficacy of ECT and should therefore be avoided or reduced where possible.^{25,26} In this study, around half of the patients received antipsychotic medications, although only 22.9% were diagnosed with schizophrenia or bipolar disorder. As this hospital mainly served patients with acute and severe psychiatric disorders, many patients with major depression had psychotic symptoms which justified the high percentage of antipsychotic use.

The mean number of ECT sessions was 6.7 ± 2.3 , which was in the lower range of the usual recommended number of sessions (6–12) in treatment guidelines in China.²⁴ The possible reasons may include the poor general health in older patients who may not tolerate many ECT sessions.¹⁷ Poor general health and advanced age are not contraindications for ECT in China. However, poor general health in older

patients is often associated with increased risk of anesthesia-related complications, therefore fewer numbers of ECT sessions are recommended in Chinese guidelines.²⁴ In addition, there is an association between older age and more rapid remission after ECT, particularly for depressed patients.²⁷ Finally, older patients may be more vulnerable to pre-existing cognitive impairment⁵ and have more severe cognitive side effects of ECT than adult patients^{3,28} which may limit the number of ECT sessions prescribed. Apart from reducing the number of treatments, unilateral electrode placement is also associated with less severe memory impairment than bitemporal electrode placement.²⁹

Similar to previous findings in adult patients,^{9,30,31} the majority of older patients and their caregivers appear to receive adequate information about the therapeutic effects of ECT. However, inadequate information was provided about the ECT process, adverse effects and risks prior to ECT. In China, hospitalized older patients were prescribed ECT after their caregivers had signed the consent form which was permissible under the mental health legislation in China.³² Hence, hospitalized older patients' understanding and knowledge were often neglected in clinical practice.

Misconceptions about ECT are common, which is a major reason limiting its use in many countries.³³ The negative public image of ECT was believed to originate in early 1970s when it was seen as an inhumane and punitive treatment.^{15,34} Mass media including print and films have also contributed significantly to the negative

attitude toward ECT while inadequate information about ECT was provided by the mental health professionals.^{8,16} In this study, older patients and caregivers mostly reported positive attitudes and they agreed that ECT is safe and could be used again if necessary. Unlike many Western countries, ECT has been used for decades in China with little controversy since prior to 1980s Chinese psychiatry had been isolated from the international psychiatric community.³⁵ With increasing expertise and implementation of clinical best practice, ECT has been frequently prescribed and highly acceptable by patients and clinicians in China.³⁵ However, we found that the vast majority of older patients reported being worried during the ECT, particularly while waiting for the treatment, wearing oxygen masks, and associating the treatment with electricity. Hence, clinicians in Chinese psychiatric hospitals should provide education about ECT, including the nature of the treatment, medical procedures and common adverse effects.

A review of 36 studies has found that around two thirds of patients who received ECT experienced adverse effects,³⁶ which is consistent with this study. This did not appear to cause negative attitudes possibly because ECT side effects were mild, transient and well tolerated by patients.^{37,38} Of the adverse effects, memory impairment is the most common concern to patients.³⁸⁻⁴⁰ About two thirds of older patients reported memory impairment in our study, which similar to the figure (65.7%) reported in adult studies.⁹

The results should be interpreted with caution due to several limitations. First, no standardized interviewer-based instruments on knowledge and attitudes towards ECT were available, thus following other studies^{9,21} only a self-reported questionnaire was used with all its obvious limitations. Second, the findings could not be applied to all areas in China since participants were only recruited from one major city hospital. Third, some variables influencing attitudes of patients toward ECT, such as illness severity and use of psychotropic medications, were not included.

In conclusion, older patients and their caregivers reported positive attitudes toward ECT and satisfaction with its therapeutic effects. However, information provided about the treatment process and adverse effects of ECT were lacking. Adequate information about ECT should be provided by Chinese psychiatric hospital clinicians to both older patients and caregivers.

Competing Financial Interests

The authors had no conflicts of interest in conducting this study or preparing the manuscript.

Acknowledgements

The study was supported in part by grants from the Beijing Municipal Administration of Hospitals Incubating Program (code: PX2016016), the Capital City Clinical Practice and Research Funding of Beijing Municipal Science & Technology Commission (Z141107002514033; Z151100004015042), the Clinical Medicine Development Funding of Beijing Municipal Administration of Hospitals (ZYLX201403; ZYLX201607), and Beijing Municipal Administration of Hospital's Ascent Plan (DFL20151801).

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Table 1. Basic demographic and clinical characteristics of patients receiving ECT

Variables	The whole sample (n=118)	
	N	%
Male gender	34	28.8
Married	102	86.4
Education		
Junior secondary school and below	74	62.7
senior secondary school	31	26.3
College and above	13	11.0
Principal diagnosis		
Schizophrenia	10	8.5
Major depression	91	77.1
Bipolar disorder	17	14.4
Past ECT treatment	34	28.8
First hospitalization	27	22.9
On antipsychotics	53	48.2
On FGAs	2	1.8
On SGAs	51	46.4
On antidepressants	90	81.8
On benzodiazepines	14	12.7
On mood stabilizers	14	12.7
	Mean	SD
Age (years)	63.6	4.5
Age of onset (years)	50.0	13.7
Duration of illness (years)	15.3	19.0
Hospital duration (days)	38.2	15.7
Number of hospitalizations	2.0	1.3
Number of ECT sessions in the recent hospitalization	6.7	2.3

ECT: electroconvulsive therapy. FGAs: first-generation antipsychotics; SGAs: second-generation antipsychotics

Table 2. Patients' and caregivers' knowledge and views of ECT

Items	Patients		Caregivers		statistic	
	n	%	n	%	χ^2	p
1) Were you given any information before ECT?					16.5	<0.001
Disagree	33	30.8	15	13.9		
Agree	56	52.3	85	78.5		
Don't know	18	16.8	8	7.4		
2) Were you given adequate information concerning the therapeutic effects of ECT?					10.1	0.006
Disagree	30	28.0	13	12.0		
Agree	60	56.1	81	75.0		
Don't know	17	15.9	14	13.0		
3) Were you given adequate information concerning the process of ECT?					1.7	0.41
Disagree	39	36.4	33	30.6		
Agree	41	38.3	51	47.2		
Don't know	27	25.2	24	22.2		
4) Were you given adequate information concerning the side effects of ECT?					8.4	0.01
Disagree	37	34.6	24	22.2		
Agree	34	31.8	55	50.9		
Don't know	36	33.6	29	26.9		
5) Were you given adequate information concerning the risks of ECT?					12.2	0.002
Disagree	44	41.1	24	22.2		
Agree	27	25.2	49	45.4		
Don't know	36	33.6	35	32.4		
6) Do you think health professionals provide adequate information about ECT?					8.2	0.01
Disagree	26	24.3	12	11.1		
Agree	57	53.3	76	70.4		
Don't know	24	22.4	20	18.5		
7) Do you feel ECT has been beneficial?					8.6	0.01
Disagree	10	9.3	3	2.8		
Agree	80	74.8	97	89.8		
Don't know	17	15.9	8	7.4		
8) Do you feel ECT has made you/your relative worse?					2.8	0.24
Disagree	69	64.5	75	69.4		
Agree	14	13.1	18	16.7		
Don't know	24	22.4	15	13.9		
9) Do you feel ECT has been more effective than drugs?					0.3	0.82
Disagree	10	9.3	8	7.4		
Agree	71	66.4	71	65.7		
Don't know	26	24.3	29	26.9		
10) Do you think the effect of ECT is more rapid than drugs?					2.8	0.24
Disagree	8	7.5	8	7.4		

Agree	69	64.5	80	74.1		
Don't know	30	28.0	20	18.5		

ECT: electroconvulsive therapy.

Table 3. Patients' and caregivers' attitudes toward ECT

Items	Patients		Caregivers		Statistics	
	n	%	n	%	χ^2	p
1) Is ECT safe?					9.8	0.007
Disagree	14	13.1	2	1.9		
Agree	70	65.4	80	74.1		
Don't know	23	21.5	26	24.1		
2) Does ECT generate fear?					1.4	0.48
Disagree	63	58.9	63	58.3		
Agree	29	27.1	24	22.2		
Don't know	15	14.0	21	19.4		
3) Do you think ECT is more dangerous than drugs?					1.2	0.54
Disagree	56	52.3	51	47.2		
Agree	36	33.6	36	33.3		
Don't know	15	14.0	21	19.4		
4) Do you think ECT is dangerous and should not be used?					2.7	0.25
Disagree	77	72.0	88	81.5		
Agree	8	7.5	5	4.6		
Don't know	22	20.6	15	13.9		
5) Is ECT used for people who don't need it?					0.2	0.88
Disagree	50	46.7	48	44.4		
Agree	12	11.2	11	10.2		
Don't know	45	42.1	49	45.4		
6) Is ECT used for critically ill patients?					0.3	0.84
Disagree	24	22.4	24	22.2		
Agree	61	57.0	65	60.2		
Don't know	22	20.6	19	17.6		
7) Should ECT be the last resort?					0.1	0.94
Disagree	47	43.9	45	41.7		
Agree	29	27.1	31	28.7		
Don't know	31	29.0	32	29.6		
8) Is ECT used to punish patients?					0.5	0.76
Disagree	88	82.2	88	81.5		
Agree	3	2.8	5	4.6		
Don't know	16	15.0	15	13.9		
9) Would you/your relative like to receive ECT again?					6.4	0.04
Disagree	19	17.8	10	9.3		

Agree	58	54.2	76	70.4		
Don't know	30	28.0	22	20.4		

ECT: electroconvulsive therapy.

Table 4. Patients' experience in ECT process

What made you worried during the process of ECT?	patients			
	yes		no	
	n	%	n	%
Did you feel worried?	87	81.3	20	16.9
1) Waiting for the treatment	32	29.9	75	70.1
2) Wearing an oxygen mask	27	25.2	80	74.8
3) Being tied with a headband	9	8.4	98	91.6
4) Being injected intravenously	7	6.5	100	93.5
5) Being in a comatose state	19	17.8	88	82.2
6) Waking up after the treatment	23	21.5	84	78.5
7) Thinking of the treatment being associated with electricity	42	39.3	65	60.7

Table 5. Patients' experience of adverse effects of ECT

	patients					
	disagree		agree		Don't know	
	n	%	n	%	n	%
1) Have you had any adverse effects?	23	21.5	61	57.0	23	21.5
2) Did you have headache?	65	60.7	36	33.6	6	5.6
3) Did you have muscle pain?	68	63.6	32	29.9	7	6.5
4) Did you have poor appetite or nausea?	89	83.2	11	10.3	7	6.5
5) Did you have short-lived confusion?	82	76.6	15	14.0	10	9.3
6) Did you have memory impairment?	34	31.8	67	62.6	6	5.6

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