Crowe Critical Appraisal Tool (CCAT) Form (v1.4)

Reference: No 1.

Reviewer: MH

This form must be used in conjunction with the CCAT User Guide (v1.4); otherwise validity and reliability may be severely compromised.

Citation

	Year
Effectiveness of NeuroStar transcranial magnetic stimulation (TMS) in patients with major depressive disorder with postpartum onset Brock et al. 2016	2016

Research design (add if not listed)

❑ Not research	Article | Editorial | Report | Opinion | Guideline | Pamphlet | ...	
❑ Historical	...	
❑ Qualitative	Narrative | Phenomenology | Ethnography | Grounded theory | Narrative case study | ...	
❑ Descriptive, Exploratory, Observational	A. Cross-sectional | Longitudinal | Retrospective | Prospective | Correlational | Predictive | ...	
	B. Cohort | Case-control | Survey | Developmental | Normative | Case study | ...	
Experimental	❑ True experiment	Pre-test/post-test control group | Solomon four-group | Post-test only control group | Randomised two-factor | Placebo controlled trial | ...
	☒ Quasi-experiment	Post-test only | Non-equivalent control group | Counter balanced *(cross-over)* | Multiple time series | Separate sample pre-test post-test [no Control] [Control] | ...
	❑ Single system	One-shot experimental *(case study)* | Simple time series | One group pre-test/post-test | Interactive | Multiple baseline | Within subjects *(Equivalent time, repeated measures, multiple treatment)* | ...
❑ Mixed Methods	Action research | Sequential | Concurrent | Transformative | ...	
❑ Synthesis	Systematic review | Critical review | Thematic synthesis | Meta-ethnography | Narrative synthesis | ...	
☒ Other	... Conference paper	

Variables and analysis

Intervention(s), Treatment(s), Exposure(s)	Outcome(s), Output(s), Predictor(s), Measure(s)	Data analysis method(s)
Left DLPFC TMS Tx, 4-8 weeks	Edinburgh Postnatal Depressive Scale	Descriptive analysis

Sampling

		Group 1	Group 2	Group 3	Group 4	Control
Total size	19					
Population, sample, setting	Nineteen women with PPD received left DLPFC Tx over 4-8 weeks					

Data collection (add if not listed)

Audit/Review	a) Primary | Secondary | ... b) Authoritative | Partisan | Antagonist | ... c) Literature | Systematic | ...	Interview	a) Formal | Informal | ... b) Structured | Semi-structured | Unstructured | ... c) One-on-one | Group | Multiple | Self-administered | ...
Observation	a) Participant | Non-participant | ... b) Structured | Semi-structured | Unstructured | ... c) Covert | Candid | ...	Testing	a) Standardised | Norm-ref | Criterion-ref | Ipsative | ... b) Objective | Subjective | ... c) One-on-one | Group | Self-administered | ...

Scores

Preliminaries	2	Design	1	Data Collection	1	Results	1	Total [/40]	8
Introduction	1	Sampling	1	Ethical Matters	0	Discussion	1	Total [%]	20

General notes

Majority of patients achieved remission of their depressive symptoms at the end of 8 weeks of TMS Tx, according to the EPDS.

This paper was a conference paper. Major limitations involve lack of data and explanation of the experiment.

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Appraise research on the merits of the research design used, not against other research designs.

Category Item	Item descriptors [☑ Present; ☒ Absent; ■ Not applicable]	Description [Important information for each item]	Score [0–5]
1. Preliminaries			
Title	1. Includes study aims ☑ and design ☒		
Abstract (assess last)	1. Key information ☑ 2. Balanced ☒ and informative ☒	Concise abstract, language used	
Text (assess last)	1. Sufficient detail others could reproduce ☒ 2. Clear/concise writing ☑, table(s) ☐, diagram(s) ☐, figure(s) ☐	is sometimes unclear	
		Preliminaries [/5]	2
2. Introduction			
Background	1. Summary of current knowledge ☒ 2. Specific problem(s) addressed ☑ and reason(s) for addressing ☑	No formal introduction	
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ☒ 2. Secondary question(s) ☒	Brief background information	
	Is it worth continuing?	**Introduction [/5]**	1
3. Design			
Research design	1. Research design(s) chosen ☑ and why ☒ 2. Suitability of research design(s) ☒	Limited information about	
Intervention, Treatment, Exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ☑ and why ☒ 2. Precise details of the intervention(s)/treatment(s)/exposure(s) ☒ for each group ☐ 3. Intervention(s)/treatment(s)/exposure(s) valid ☒ and reliable ☒	type of stimulation protocol	
Outcome, Output, Predictor, Measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ☑ and why ☒ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ☒ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ☒ and reliable ☒	No mention about number of sessions	
Bias, etc	1. Potential bias ☒, confounding variables ☒, effect modifiers ☒, interactions ☒ 2. Sequence generation ☐, group allocation ☐, group balance ☐, and by whom ☐ 3. Equivalent treatment of participants/cases/groups ☑	Outcome measure stated	
	Is it worth continuing?	**Design [/5]**	1
4. Sampling			
Sampling method	1. Sampling method(s) chosen ☒ and why ☒ 2. Suitability of sampling method ☒	Only sample size stated, no	
Sample size	1. Sample size ☑, how chosen ☒, and why ☒ 2. Suitability of sample size ☒	other demographics mentioned	
Sampling protocol	1. Target/actual/sample population(s): description ☒ and suitability ☒ 2. Participants/cases/groups: inclusion ☒ and exclusion ☒ criteria 3. Recruitment of participants/cases/groups ☒		
	Is it worth continuing?	**Sampling [/5]**	1
5. Data collection			
Collection method	1. Collection method(s) chosen ☒ and why ☒ 2. Suitability of collection method(s) ☒	No specics about how the	
Collection protocol	1. Include date(s) ☒, location(s) ☒, setting(s) ☒, personnel ☒, materials ☒, processes ☒ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ☒ 3. Manage non-participation ☒, withdrawal ☒, incomplete/lost data ☒	data was collected	
	Is it worth continuing?	**Data collection [/5]**	1
6. Ethical matters			
Participant ethics	1. Informed consent ☒, equity ☒ 2. Privacy ☒, confidentiality/anonymity ☒	No ethical protocol	
Researcher ethics	1. Ethical approval ☒, funding ☒, conflict(s) of interest ☒ 2. Subjectivities ☒, relationship(s) with participants/cases ☒	stated	
	Is it worth continuing?	**Ethical matters [/5]**	0
7. Results			
Analysis, Integration, Interpretation method	1. A.I.I. method(s) for primary outcome(s)/output(s)/predictor(s) chosen ☒ and why ☒ 2. Additional A.I.I. methods (e.g. subgroup analysis) chosen ☒ and why ☒ 3. Suitability of analysis/integration/interpretation method(s) ☒	Brief statement about	
Essential analysis	1. Flow of participants/cases/groups through each stage of research ☒ 2. Demographic and other characteristics of participants/cases/groups ☒ 3. Analyse raw data ☑, response rate ☒, non-participation/withdrawal/incomplete/lost data ☒	patient scores	
Outcome, Output, Predictor analysis	1. Summary of results ☑ and precision ☒ for each outcome/output/predictor/measure 2. Consideration of benefits/harms ☒, unexpected results ☒, problems/failures ☒ 3. Description of outlying data (e.g. diverse cases, adverse effects, minor themes) ☒		
		Results [/5]	1
8. Discussion			
Interpretation	1. Interpretation of results in the context of current evidence ☒ and objectives ☒ 2. Draw inferences consistent with the strength of the data ☒ 3. Consideration of alternative explanations for observed results ☒ 4. Account for bias ☒, confounding/effect modifiers/interactions/imprecision ☒	Short statement about	
Generalisation	1. Consideration of overall practical usefulness of the study ☑ 2. Description of generalisability (external validity) of the study ☒	future research	
Concluding remarks	1. Highlight study's particular strengths ☒ 2. Suggest steps that may improve future results (e.g. limitations) ☒ 3. Suggest further studies ☑		
		Discussion [/5]	1
9. Total			
Total score	1. Add all scores for categories 1–8		
		Total [/40]	8

Crowe Critical Appraisal Tool (CCAT) Form (v1.4)

Reference: No. 2 Reviewer: MH

This form must be used in conjunction with the CCAT User Guide (v1.4); otherwise validity and reliability may be severely compromised.

Citation

	Year
Repetitive transcranial magnetic stimulation for the treatment of postpartum depression (Cox et al. 2020)	2020

Research design (add if not listed)

❑ Not research		Article | Editorial | Report | Opinion | Guideline | Pamphlet | ...
❑ Historical		...
❑ Qualitative		Narrative | Phenomenology | Ethnography | Grounded theory | Narrative case study | ...
❑ Descriptive, Exploratory, Observational		A. Cross-sectional | Longitudinal | Retrospective | Prospective | Correlational | Predictive | ...
		B. Cohort | Case-control | Survey | Developmental | Normative | Case study | ...
Experimental	❑ True experiment	Pre-test/post-test control group | Solomon four-group | Post-test only control group | Randomised two-factor | Placebo controlled trial | ...
	☒ Quasi-experiment	Post-test only | Non-equivalent control group | Counter balanced *(cross-over)* | Multiple time series | Separate sample pre-test post-test [no Control] [Control] | ...
	❑ Single system	One-shot experimental *(case study)* | Simple time series | One group pre-test/post-test | Interactive | Multiple baseline | Within subjects *(Equivalent time, repeated measures, multiple treatment)* | ...
❑ Mixed Methods		Action research | Sequential | Concurrent | Transformative | ...
❑ Synthesis		Systematic review | Critical review | Thematic synthesis | Meta-ethnography | Narrative synthesis | ...
❑ Other		...

Variables and analysis

Intervention(s), Treatment(s), Exposure(s)	Outcome(s), Output(s), Predictor(s), Measure(s)	Data analysis method(s)
Open label, left DLPFC TMS Tx, 20 sessions	Beck Depression Inventory Edinburgh Postnatal Depression Scale State-Trait Anxiety Inventory	Descriptive analysis

Sampling

		Group 1	Group 2	Group 3	Group 4	Control
Total size	6					
Population, sample, setting	Six women with PPD received 20 sessions of left DLPFC Tx (10 Hz) over a 4-week period.					

Data collection (add if not listed)

Audit/Review	a) Primary | Secondary | ... b) Authoritative | Partisan | Antagonist | ... c) Literature | Systematic | ...	Interview	a) Formal | Informal | ... b) Structured | Semi-structured | Unstructured | ... c) One-on-one | Group | Multiple | Self-administered | ...
Observation	a) Participant | Non-participant | ... b) Structured | Semi-structured | Unstructured | ... c) Covert | Candid | ...	Testing	a) Standardised | Norm-ref | Criterion-ref | Ipsative | ... b) Objective | Subjective | ... c) One-on-one | Group | Self-administered | ...

Scores

Preliminaries	4	Design	3	Data Collection	3	Results	4	Total [/40]	27
Introduction	3	Sampling	3	Ethical Matters	3	Discussion	4	Total [%]	67.5

General notes

Improvements in depression and anxiety scores were noted. Four subjects achieved remission in their depression following four weeks of TMS as measured by the EPDS, while the other two subjects were non-responders, as their EPDS dropped less than 50%. At three and six months, three out of the six subjects were in remission as measured by the EPDS.

Limitations of this study includes small sample size and lack of control arm.

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Appraise research on the merits of the research design used, not against other research designs.

Category Item	Item descriptors [☑ Present; ☒ Absent; ■ Not applicable]	Description [Important information for each item]	Score [0–5]
1. Preliminaries			
Title	1. Includes study aims ☑ and design ☑		
Abstract (assess last)	1. Key information ☑ 2. Balanced ☑ and informative ☑	Concise yet informative abstract	
Text (assess last)	1. Sufficient detail others could reproduce ☑ 2. Clear/concise writing ☑, table(s) ☐, diagram(s) ☐, figure(s) ☑		
		Preliminaries [/5]	4
2. Introduction			
Background	1. Summary of current knowledge ☑ 2. Specific problem(s) addressed ☑ and reason(s) for addressing ☑	Detailed introduction that flows	
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ☑ 2. Secondary question(s) ☒	into aims	
	Is it worth continuing?	**Introduction [/5]**	3
3. Design			
Research design	1. Research design(s) chosen ☑ and why ☒ 2. Suitability of research design(s) ☑	Study did not explicitly state why the research design was chosen	
Intervention, Treatment, Exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ☑ and why ☒ 2. Precise details of the intervention(s)/treatment(s)/exposure(s) ☑ for each group ☐ 3. Intervention(s)/treatment(s)/exposure(s) valid ☑ and reliable ☑		
Outcome, Output, Predictor, Measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ☑ and why ☒ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ☑ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ☑ and reliable ☑	No clear mention of why outcome measures were chosen	
Bias, etc	1. Potential bias ☑, confounding variables ☐, effect modifiers ☐, interactions ☐ 2. Sequence generation ☐, group allocation ☐, group balance ☐, and by whom ☐ 3. Equivalent treatment of participants/cases/groups ☐	No control group	
	Is it worth continuing?	**Design [/5]**	3
4. Sampling			
Sampling method	1. Sampling method(s) chosen ☑ and why ☒ 2. Suitability of sampling method ☑	Convenient sample	
Sample size	1. Sample size ☑, how chosen ☒, and why ☒ 2. Suitability of sample size ☒		
Sampling protocol	1. Target/actual/sample population(s): description ☑ and suitability ☒ 2. Participants/cases/groups: inclusion ☑ and exclusion ☑ criteria 3. Recruitment of participants/cases/groups ☑	Clear inclusion and exclusion criteria	
	Is it worth continuing?	**Sampling [/5]**	3
5. Data collection			
Collection method	1. Collection method(s) chosen ☑ and why ☒ 2. Suitability of collection method(s) ☑		
Collection protocol	1. Include date(s) ☒, location(s) ☑, setting(s) ☑, personnel ☑, materials ☑, processes ☑ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ☑ 3. Manage non-participation ☐, withdrawal ☐, incomplete/lost data ☐	No dates included in collection protocol	
	Is it worth continuing?	**Data collection [/5]**	3
6. Ethical matters			
Participant ethics	1. Informed consent ☑, equity ☑ 2. Privacy ☒, confidentiality/anonymity ☒	Informed consent achieved and conflict of interest stated	
Researcher ethics	1. Ethical approval ☑, funding ☑, conflict(s) of interest ☑ 2. Subjectivities ☑, relationship(s) with participants/cases ☑	No mention of confidentiality/privacy	
	Is it worth continuing?	**Ethical matters [/5]**	3
7. Results			
Analysis, Integration, Interpretation method	1. A.I.I. method(s) for primary outcome(s)/output(s)/predictor(s) chosen ☑ and why ☒ 2. Additional A.I.I. methods (e.g. subgroup analysis) chosen ☑ and why ☒ 3. Suitability of analysis/integration/interpretation method(s) ☑		
Essential analysis	1. Flow of participants/cases/groups through each stage of research ☑ 2. Demographic and other characteristics of participants/cases/groups ☑ 3. Analyse raw data ☑, response rate ☑, non-participation/withdrawal/incomplete/lost data ☑	Good use of graphs to demonstrate the changes in EPDS and BDI scores over 6 months	
Outcome, Output, Predictor analysis	1. Summary of results ☑ and precision ☑ for each outcome/output/predictor/measure 2. Consideration of benefits/harms ☑, unexpected results ☑, problems/failures ☑ 3. Description of outlying data (e.g. diverse cases, adverse effects, minor themes) ☑		
		Results [/5]	4
8. Discussion			
Interpretation	1. Interpretation of results in the context of current evidence ☑ and objectives ☑ 2. Draw inferences consistent with the strength of the data ☑ 3. Consideration of alternative explanations for observed results ☑ 4. Account for bias ☑, confounding/effect modifiers/interactions/imprecision ☐		
Generalisation	1. Consideration of overall practical usefulness of the study ☑ 2. Description of generalisability (external validity) of the study ☑		
Concluding remarks	1. Highlight study's particular strengths ☑ 2. Suggest steps that may improve future results (e.g. limitations) ☑ 3. Suggest further studies ☑	Clear outline of limitations and direction for future research	
		Discussion [/5]	4
9. Total			
Total score	1. Add all scores for categories 1–8		
		Total [/40]	27

Crowe Critical Appraisal Tool (CCAT) Form (v1.4)

Reference No. 3 Reviewer MM

This form must be used in conjunction with the CCAT User Guide (v1.4); otherwise validity and reliability may be severely compromised.

Citation

	Year
Use of transcranial magnetic stimulation for the management of bipolar disorder during the postpartum period. Cohen et al. 2008	2008

Research design (add if not listed)

❑ Not research	Article | Editorial | Report | Opinion | Guideline | Pamphlet | ...	
❑ Historical	...	
❑ Qualitative	Narrative | Phenomenology | Ethnography | Grounded theory | Narrative case study | ...	
❑ Descriptive, Exploratory, Observational	A. Cross-sectional | Longitudinal | Retrospective | Prospective | Correlational | Predictive | ...	
	B. Cohort | Case-control | Survey | Developmental | Normative | Case study | ...	
Experimental	❑ True experiment	Pre-test/post-test control group | Solomon four-group | Post-test only control group | Randomised two-factor | Placebo controlled trial | ...
	❑ Quasi-experiment	Post-test only | Non-equivalent control group | Counter balanced *(cross-over)* | Multiple time series | Separate sample pre-test post-test [no Control] [Control] | ...
	☒ Single system	One-shot experimental *(case study)* | Simple time series | One group pre-test/post-test | Interactive | Multiple baseline | Within subjects *(Equivalent time, repeated measures, multiple treatment)* | ...
❑ Mixed Methods	Action research | Sequential | Concurrent | Transformative | ...	
❑ Synthesis	Systematic review | Critical review | Thematic synthesis | Meta-ethnography | Narrative synthesis | ...	
❑ Other	...	

Variables and analysis

Intervention(s), Treatment(s), Exposure(s)	Outcome(s), Output(s), Predictor(s), Measure(s)	Data analysis method(s)
Right DLPFC Tx (1 x session) Bilateral DLPFC Tx (6 x sessions)	Hamilton Depression Rating Scale Young Mania Rating Scale	Descriptive analysis

Sampling

Total size	1	Group 1		Group 2		Group 3		Group 4		Control
Population, sample, setting	36-year-old woman with Bipolar Disorder during postpartum period; receiving right and bilateral DLPFC TMS to treat mania and depressive symptoms.									

Data collection (add if not listed)

Audit/Review	a) Primary | Secondary | ... b) Authoritative | Partisan | Antagonist | ... c) Literature | Systematic | ...	Interview	a) Formal | Informal | ... b) Structured | Semi-structured | Unstructured | ... c) One-on-one | Group | Multiple | Self-administered | ...
Observation	a) Participant | Non-participant | ... b) Structured | Semi-structured | Unstructured | ... c) Covert | Candid | ...	Testing	a) Standardised | Norm-ref | Criterion-ref | Ipsative | ... b) Objective | Subjective | ... c) One-on-one | Group | Self-administered | ...

Scores

Preliminaries	3	Design	2	Data Collection	2	Results	3	Total [/40]	20
Introduction	3	Sampling	2	Ethical Matters	2	Discussion	3	Total [%]	50

General notes

This case report shows a successful use of TMS Tx for the management of bipolar disorder during postpartum. Although bilateral DLPFC Tx was effective to manage the participant's rapid cycling episodes, this was a single case report and should be viewed with caution. The placebo effect needs to be considered.

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Appraise research on the merits of the research design used, not against other research designs.

Category Item	Item descriptors [☑ Present; ☒ Absent; ■ Not applicable]	Description [Important information for each item]	Score [0–5]
1. Preliminaries			
Title	1. Includes study aims ☑ and design ☑		
Abstract (assess last)	1. Key information ☒ 2. Balanced ☒ and informative ☒	No abstract included	
Text (assess last)	1. Sufficient detail others could reproduce ☒ 2. Clear/concise writing ☑, table(s) ☐, diagram(s) ☐, figure(s) ☑	Difficult to reproduce due to lack of specified TMS protocol	
		Preliminaries [/5]	3
2. Introduction			
Background	1. Summary of current knowledge ☑ 2. Specific problem(s) addressed ☑ and reason(s) for addressing ☑	Concise introduction	
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ☑ 2. Secondary question(s) ☒	No clear outline of objectives	
	Is it worth continuing?	**Introduction [/5]**	3
3. Design			
Research design	1. Research design(s) chosen ☑ and why ☒ 2. Suitability of research design(s) ☑	Did not mention why research design was chosen	
Intervention, Treatment, Exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ☑ and why ☒ 2. Precise details of the intervention(s)/treatment(s)/exposure(s) ☒ for each group ☐ 3. Intervention(s)/treatment(s)/exposure(s) valid ☑ and reliable ☑		
Outcome, Output, Predictor, Measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ☑ and why ☒ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ☑ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ☑ and reliable ☑	No clear mention of why outcome measures were chosen	
Bias, etc	1. Potential bias ☑, confounding variables ☑, effect modifiers ☒, interactions ☒ 2. Sequence generation ☐, group allocation ☐, group balance ☐, and by whom ☐ 3. Equivalent treatment of participants/cases/groups ☐		
	Is it worth continuing?	**Design [/5]**	2
4. Sampling			
Sampling method	1. Sampling method(s) chosen ☑ and why ☒ 2. Suitability of sampling method ☑	Small sample size	
Sample size	1. Sample size ☑, how chosen ☒, and why ☒ 2. Suitability of sample size ☑		
Sampling protocol	1. Target/actual/sample population(s): description ☑ and suitability ☑ 2. Participants/cases/groups: inclusion ☒ and exclusion ☒ criteria 3. Recruitment of participants/cases/groups ☑	No inclusion / exclusion criteria	
	Is it worth continuing?	**Sampling [/5]**	2
5. Data collection			
Collection method	1. Collection method(s) chosen ☑ and why ☒ 2. Suitability of collection method(s) ☑	No dates included in collection protocol	
Collection protocol	1. Include date(s) ☒, location(s) ☑, setting(s) ☑, personnel ☑, materials ☑, processes ☑ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ☒ 3. Manage non-participation ☐, withdrawal ☐, incomplete/lost data ☐		
	Is it worth continuing?	**Data collection [/5]**	2
6. Ethical matters			
Participant ethics	1. Informed consent ☒, equity ☑ 2. Privacy ☑, confidentiality/anonymity ☑	No mention of informed consent or conflict of interest	
Researcher ethics	1. Ethical approval ☒, funding ☒, conflict(s) of interest ☒ 2. Subjectivities ☒, relationship(s) with participants/cases ☒		
	Is it worth continuing?	**Ethical matters [/5]**	2
7. Results			
Analysis, Integration, Interpretation method	1. A.I.I. method(s) for primary outcome(s)/output(s)/predictor(s) chosen ☑ and why ☒ 2. Additional A.I.I. methods (e.g. subgroup analysis) chosen ☑ and why ☒ 3. Suitability of analysis/integration/interpretation method(s) ☑		
Essential analysis	1. Flow of participants/cases/groups through each stage of research ☑ 2. Demographic and other characteristics of participants/cases/groups ☑ 3. Analyse raw data ☑, response rate ☑, non-participation/withdrawal/incomplete/lost data ☐	Useful graph to demonstrate the changes in HDRS and YMRS scores over 20 weeks	
Outcome, Output, Predictor analysis	1. Summary of results ☑ and precision ☑ for each outcome/output/predictor/measure 2. Consideration of benefits/harms ☑, unexpected results ☑, problems/failures ☑ 3. Description of outlying data (e.g. diverse cases, adverse effects, minor themes) ☑		
		Results [/5]	3
8. Discussion			
Interpretation	1. Interpretation of results in the context of current evidence ☑ and objectives ☑ 2. Draw inferences consistent with the strength of the data ☑ 3. Consideration of alternative explanations for observed results ☑ 4. Account for bias ☑, confounding/effect modifiers/interactions/imprecision ☑		
Generalisation	1. Consideration of overall practical usefulness of the study ☑ 2. Description of generalisability (external validity) of the study ☑		
Concluding remarks	1. Highlight study's particular strengths ☑ 2. Suggest steps that may improve future results (e.g. limitations) ☑ 3. Suggest further studies ☑	Limitations and direction for future research stated	
		Discussion [/5]	3
9. Total			
Total score	1. Add all scores for categories 1–8		
		Total [/40]	20

Crowe Critical Appraisal Tool (CCAT) Form (v1.4)

Reference: No. 4 Reviewer: MH

This form must be used in conjunction with the CCAT User Guide (v1.4); otherwise validity and reliability may be severely compromised.

Citation

	Year
Repetitive transcranial magnetic stimulation treats postpartum depression Cuevda et al. 2010	2010

Research design (add if not listed)

❑ Not research		Article | Editorial | Report | Opinion | Guideline | Pamphlet | ...
❑ Historical		...
❑ Qualitative		Narrative | Phenomenology | Ethnography | Grounded theory | Narrative case study | ...
❑ Descriptive, Exploratory, Observational		A. Cross-sectional | Longitudinal | Retrospective | Prospective | Correlational | Predictive | ...
		B. Cohort | Case-control | Survey | Developmental | Normative | Case study | ...
Experimental	❑ True experiment	Pre-test/post-test control group | Solomon four-group | Post-test only control group | Randomised two-factor | Placebo controlled trial | ...
	☒ Quasi-experiment	Post-test only | Non-equivalent control group | Counter balanced *(cross-over)* | Multiple time series | Separate sample pre-test post-test [no Control] [Control] | ...
	❑ Single system	One-shot experimental *(case study)* | Simple time series | One group pre-test/post-test | Interactive | Multiple baseline | Within subjects *(Equivalent time, repeated measures, multiple treatment)* | ...
❑ Mixed Methods		Action research | Sequential | Concurrent | Transformative | ...
❑ Synthesis		Systematic review | Critical review | Thematic synthesis | Meta-ethnography | Narrative synthesis | ...
❑ Other		...

Variables and analysis

Intervention(s), Treatment(s), Exposure(s)	Outcome(s), Output(s), Predictor(s), Measure(s)	Data analysis method(s)
Open label, left DLPFC TMS Tx, 20 sessions	Hamilton Rating Scale for Depression Edinburgh Postnatal Depression Scale Inventory of Depressive Symptomatology Clinical Global Impressions - Severity	Descriptive analysis

Sampling

		Group 1	Group 2	Group 3	Group 4	Control
Total size	9					
Population, sample, setting	Nine women with PPD received 20 sessions of left DLPFC TMS					

Data collection (add if not listed)

Audit/Review	a) Primary | Secondary | ... b) Authoritative | Partisan | Antagonist | ... c) Literature | Systematic | ...	Interview	a) Formal | Informal | ... b) Structured | Semi-structured | Unstructured | ... c) One-on-one | Group | Multiple | Self-administered | ...
Observation	a) Participant | Non-participant | ... b) Structured | Semi-structured | Unstructured | ... c) Covert | Candid | ...	Testing	a) Standardised | Norm-ref | Criterion-ref | Ipsative | ... b) Objective | Subjective | ... c) One-on-one | Group | Self-administered | ...

Scores

Preliminaries	3	Design	3	Data Collection	3	Results	4	Total [/40]	26
Introduction	3	Sampling	3	Ethical Matters	4	Discussion	3	Total [%]	65

General notes

Outcomes of study suggest TMS Tx could be used as a treatment bridge that would allow mothers with PPD to remain medication free whilst breast feeding.

Small pilot, results should be viewed highly preliminary. Small sample size and lack of control arm.

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Appraise research on the merits of the research design used, not against other research designs.

Category Item	Item descriptors [☑ Present; ☒ Absent; ■ Not applicable]	Description [Important information for each item]	Score [0–5]
1. Preliminaries			
Title	1. Includes study aims ☑ and design ☒	Title is very affirmative of TMS (lack of research to support)	
Abstract (assess last)	1. Key information ☑ 2. Balanced ☑ and informative ☑	Informative abstract	
Text (assess last)	1. Sufficient detail others could reproduce ☑ 2. Clear/concise writing ☑, table(s) ☑, diagram(s) ☐, figure(s) ☑		
		Preliminaries [/5]	3
2. Introduction			
Background	1. Summary of current knowledge ☑ 2. Specific problem(s) addressed ☑ and reason(s) for addressing ☑	Concise introduction	
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ☒ 2. Secondary question(s) ☒	Objective/aim not explicit	
	Is it worth continuing?	**Introduction [/5]**	3
3. Design			
Research design	1. Research design(s) chosen ☑ and why ☒ 2. Suitability of research design(s) ☑	No mention of why the research design was chosen	
Intervention, Treatment, Exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ☑ and why ☒ 2. Precise details of the intervention(s)/treatment(s)/exposure(s) ☑ for each group ☐ 3. Intervention(s)/treatment(s)/exposure(s) valid ☑ and reliable ☑		
Outcome, Output, Predictor, Measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ☑ and why ☒ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ☑ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ☑ and reliable ☑		
Bias, etc	1. Potential bias ☑, confounding variables ☑, effect modifiers ☐, interactions ☑ 2. Sequence generation ☐, group allocation ☐, group balance ☐, and by whom ☐ 3. Equivalent treatment of participants/cases/groups ☑	No control group	
	Is it worth continuing?	**Design [/5]**	3
4. Sampling			
Sampling method	1. Sampling method(s) chosen ☑ and why ☒ 2. Suitability of sampling method ☑	Convenient sample	
Sample size	1. Sample size ☑, how chosen ☒, and why ☒ 2. Suitability of sample size ☑		
Sampling protocol	1. Target/actual/sample population(s): description ☑ and suitability ☑ 2. Participants/cases/groups: inclusion ☑ and exclusion ☑ criteria 3. Recruitment of participants/cases/groups ☑	Clear inclusion and exclusion criteria	
	Is it worth continuing?	**Sampling [/5]**	3
5. Data collection			
Collection method	1. Collection method(s) chosen ☑ and why ☒ 2. Suitability of collection method(s) ☑	No dates included in collection protocol	
Collection protocol	1. Include date(s) ☒, location(s) ☑, setting(s) ☑, personnel ☑, materials ☑, processes ☑ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ☑ 3. Manage non-participation ☑, withdrawal ☑, incomplete/lost data ☑		
	Is it worth continuing?	**Data collection [/5]**	3
6. Ethical matters			
Participant ethics	1. Informed consent ☑, equity ☑ 2. Privacy ☑, confidentiality/anonymity ☒	Informed consent achieved and conflict of interest stated No mention of confidentiality/privacy	
Researcher ethics	1. Ethical approval ☑, funding ☑, conflict(s) of interest ☑ 2. Subjectivities ☑, relationship(s) with participants/cases ☑		
	Is it worth continuing?	**Ethical matters [/5]**	4
7. Results			
Analysis, Integration, Interpretation method	1. A.I.I. method(s) for primary outcome(s)/output(s)/predictor(s) chosen ☑ and why ☒ 2. Additional A.I.I. methods (e.g. subgroup analysis) chosen ☑ and why ☒ 3. Suitability of analysis/integration/interpretation method(s) ☑		
Essential analysis	1. Flow of participants/cases/groups through each stage of research ☑ 2. Demographic and other characteristics of participants/cases/groups ☑ 3. Analyse raw data ☑, response rate ☑, non-participation/withdrawal/incomplete/lost data ☑	Good use of graphs to demonstrate the changes in outcome measures over 6 months	
Outcome, Output, Predictor analysis	1. Summary of results ☑ and precision ☑ for each outcome/output/predictor/measure 2. Consideration of benefits/harms ☑, unexpected results ☑, problems/failures ☑ 3. Description of outlying data (e.g. diverse cases, adverse effects, minor themes) ☑		
		Results [/5]	4
8. Discussion			
Interpretation	1. Interpretation of results in the context of current evidence ☑ and objectives ☒ 2. Draw inferences consistent with the strength of the data ☑ 3. Consideration of alternative explanations for observed results ☑ 4. Account for bias ☑, confounding/effect modifiers/interactions/imprecision ☑	Lack of objective reference	
Generalisation	1. Consideration of overall practical usefulness of the study ☑ 2. Description of generalisability (external validity) of the study ☑		
Concluding remarks	1. Highlight study's particular strengths ☑ 2. Suggest steps that may improve future results (e.g. limitations) ☑ 3. Suggest further studies ☑	Clear outline of limitations and direction for future research	
		Discussion [/5]	3
9. Total			
Total score	1. Add all scores for categories 1–8		
		Total [/40]	26

Crowe Critical Appraisal Tool (CCAT) Form (v1.4)

Reference No. 5 Reviewer MH

This form must be used in conjunction with the CCAT User Guide (v1.4); otherwise validity and reliability may be severely compromised.

Citation

	Year
Effects of transcranial magnetic stimulation on clinical, social, and cognitive performance in postpartum depression Mysakowski et al. 2012	2012

Research design (add if not listed)

❑ Not research	Article | Editorial | Report | Opinion | Guideline | Pamphlet | ...	
❑ Historical	...	
❑ Qualitative	Narrative | Phenomenology | Ethnography | Grounded theory | Narrative case study | ...	
❑ Descriptive, Exploratory, Observational	A. Cross-sectional | Longitudinal | Retrospective | Prospective | Correlational | Predictive | ...	
	B. Cohort | Case-control | Survey | Developmental | Normative | Case study | ...	
Experimental	☒ True experiment	Pre-test/post-test control group | Solomon four-group | Post-test only control group | Randomised two-factor | Placebo controlled trial | ...
	❑ Quasi-experiment	Post-test only | Non-equivalent control group | Counter balanced *(cross-over)* | Multiple time series | Separate sample pre-test post-test [no Control] [Control] | ...
	❑ Single system	One-shot experimental *(case study)* | Simple time series | One group pre-test/post-test | Interactive | Multiple baseline | Within subjects *(Equivalent time, repeated measures, multiple treatment)* | ...
❑ Mixed Methods	Action research | Sequential | Concurrent | Transformative | ...	
❑ Synthesis	Systematic review | Critical review | Thematic synthesis | Meta-ethnography | Narrative synthesis | ...	
❑ Other	...	

Variables and analysis

Intervention(s), Treatment(s), Exposure(s)	Outcome(s), Output(s), Predictor(s), Measure(s)	Data analysis method(s)
Sham vs active TMS Tx over the left DLPFC, 20 session (RCT)	Hamilton Rating Scale for Depression Global Assessment Scale Clinical Global Impression Social Adjustment Scale - Self Report - Work - at - Home	Descriptive analysis

Sampling

Total size	14	Group 1 Active TMS	8	Group 2 Sham TMS	6	Group 3		Group 4		Control
Population, sample, setting	14 women were randomised to receive 20 sessions of sham TMS or active TMS (5 Hz) over DLPFC									

Data collection (add if not listed)

Audit/Review	a) Primary | Secondary | ... b) Authoritative | Partisan | Antagonist | ... c) Literature | Systematic | ...	Interview	a) Formal | Informal | ... b) Structured | Semi-structured | Unstructured | ... c) One-on-one | Group | Multiple | Self-administered | ...
Observation	a) Participant | Non-participant | ... b) Structured | Semi-structured | Unstructured | ... c) Covert | Candid | ...	Testing	a) Standardised | Norm-ref | Criterion-ref | Ipsative | ... b) Objective | Subjective | ... c) One-on-one | Group | Self-administered | ...

Scores

Preliminaries	4	Design	4	Data Collection	4	Results	4	Total [/40]	29
Introduction	3	Sampling	3	Ethical Matters	3	Discussion	4	Total [%]	72.5

General notes

Observed marginal cumulative effects of TMS Tx on affective, social and cognitive dimensions from week 4-6. Limitations of this study include small sample size, and marital status of mothers was not standardised.

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Appraise research on the merits of the research design used, not against other research designs.

Category Item	Item descriptors [☑ Present; ☒ Absent; ■ Not applicable]	Description [Important information for each item]	Score [0–5]
1. Preliminaries			
Title	1. Includes study aims ☑ and design ☐		
Abstract (assess last)	1. Key information ☑ 2. Balanced ☑ and informative ☐	Concise and informative abstract	
Text (assess last)	1. Sufficient detail others could reproduce ☑ 2. Clear/concise writing ☑, table(s) ☑, diagram(s) ☐, figure(s) ☑		
		Preliminaries [/5]	4
2. Introduction			
Background	1. Summary of current knowledge ☑ 2. Specific problem(s) addressed ☑ and reason(s) for addressing ☑	Descriptive introduction	
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ☑ 2. Secondary question(s) ☒		
	Is it worth continuing?	**Introduction [/5]**	3
3. Design			
Research design	1. Research design(s) chosen ☑ and why ☒ 2. Suitability of research design(s) ☑		
Intervention, Treatment, Exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ☑ and why ☒ 2. Precise details of the intervention(s)/treatment(s)/exposure(s) ☑ for each group ☑ 3. Intervention(s)/treatment(s)/exposure(s) valid ☑ and reliable ☑	Marital status not standardised ↳ different number in groups	
Outcome, Output, Predictor, Measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ☑ and why ☒ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ☑ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ☑ and reliable ☑		
Bias, etc	1. Potential bias ☐, confounding variables ☑, effect modifiers ☐, interactions ☐ 2. Sequence generation ☐, group allocation ☑, group balance ☑, and by whom ☑ 3. Equivalent treatment of participants/cases/groups ☑	Control group included	
	Is it worth continuing?	**Design [/5]**	4
4. Sampling			
Sampling method	1. Sampling method(s) chosen ☑ and why ☒ 2. Suitability of sampling method ☑	Small sample size	
Sample size	1. Sample size ☑, how chosen ☑, and why ☑ 2. Suitability of sample size ☑		
Sampling protocol	1. Target/actual/sample population(s): description ☑ and suitability ☑ 2. Participants/cases/groups: inclusion ☑ and exclusion ☑ criteria 3. Recruitment of participants/cases/groups ☑	Clear exclusion criteria	
	Is it worth continuing?	**Sampling [/5]**	3
5. Data collection			
Collection method	1. Collection method(s) chosen ☑ and why ☒ 2. Suitability of collection method(s) ☑	Clear outline of how data	
Collection protocol	1. Include date(s) ☒, location(s) ☑, setting(s) ☒, personnel ☑, materials ☑, processes ☐ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ☑ 3. Manage non-participation ☐, withdrawal ☑, incomplete/lost data ☑	was collected	
	Is it worth continuing?	**Data collection [/5]**	4
6. Ethical matters			
Participant ethics	1. Informed consent ☑, equity ☑ 2. Privacy ☑, confidentiality/anonymity ☒	Informed consent achieved	
Researcher ethics	1. Ethical approval ☑, funding ☑, conflict(s) of interest ☑ 2. Subjectivities ☑, relationship(s) with participants/cases ☑	Ethics approval stated	
	Is it worth continuing?	**Ethical matters [/5]**	3
7. Results			
Analysis, Integration, Interpretation method	1. A.I.I. method(s) for primary outcome(s)/output(s)/predictor(s) chosen ☑ and why ☒ 2. Additional A.I.I. methods (e.g. subgroup analysis) chosen ☒ and why ☒ 3. Suitability of analysis/integration/interpretation method(s) ☑	Detailed outline of assessments used within study	
Essential analysis	1. Flow of participants/cases/groups through each stage of research ☑ 2. Demographic and other characteristics of participants/cases/groups ☑ 3. Analyse raw data ☑, response rate ☐, non-participation/withdrawal/incomplete/lost data ☑		
Outcome, Output, Predictor analysis	1. Summary of results ☐ and precision ☐ for each outcome/output/predictor/measure 2. Consideration of benefits/harms ☐, unexpected results ☑, problems/failures ☑ 3. Description of outlying data (e.g. diverse cases, adverse effects, minor themes) ☑	Great use of tables and graphs in results	
		Results [/5]	4
8. Discussion			
Interpretation	1. Interpretation of results in the context of current evidence ☑ and objectives ☑ 2. Draw inferences consistent with the strength of the data ☑ 3. Consideration of alternative explanations for observed results ☑ 4. Account for bias ☑, confounding/effect modifiers/interactions/imprecision ☑		
Generalisation	1. Consideration of overall practical usefulness of the study ☐ 2. Description of generalisability (external validity) of the study ☑		
Concluding remarks	1. Highlight study's particular strengths ☑ 2. Suggest steps that may improve future results (e.g. limitations) ☑ 3. Suggest further studies ☐	Limitations and direction for future research stated	
		Discussion [/5]	4
9. Total			
Total score	1. Add all scores for categories 1–8		
		Total [/40]	29

Crowe Critical Appraisal Tool (CCAT) Form (v1.4)

Reference No. 6 Reviewer MM

This form must be used in conjunction with the CCAT User Guide (v1.4); otherwise validity and reliability may be severely compromised.

Citation

	Year
Repetitive transcranial magnetic stimulation (rTMS) in Major Depressive Episode with Postpartum onset - a case study Ogden et al. 1999	1999

Research design (add if not listed)

❑ Not research		Article | Editorial | Report | Opinion | Guideline | Pamphlet | ...
❑ Historical		...
❑ Qualitative		Narrative | Phenomenology | Ethnography | Grounded theory | Narrative case study | ...
❑ Descriptive, Exploratory, Observational		A. Cross-sectional | Longitudinal | Retrospective | Prospective | Correlational | Predictive | ...
		B. Cohort | Case-control | Survey | Developmental | Normative | Case study | ...
Experimental	❑ True experiment	Pre-test/post-test control group | Solomon four-group | Post-test only control group | Randomised two-factor | Placebo controlled trial | ...
	❑ Quasi-experiment	Post-test only | Non-equivalent control group | Counter balanced *(cross-over)* | Multiple time series | Separate sample pre-test post-test [no Control] [Control] | ...
	☒ Single system	One-shot experimental *(case study)* | Simple time series | One group pre-test/post-test | Interactive | Multiple baseline | Within subjects *(Equivalent time, repeated measures, multiple treatment)* | ...
❑ Mixed Methods		Action research | Sequential | Concurrent | Transformative | ...
❑ Synthesis		Systematic review | Critical review | Thematic synthesis | Meta-ethnography | Narrative synthesis | ...
❑ Other		...

Variables and analysis

Intervention(s), Treatment(s), Exposure(s)	Outcome(s), Output(s), Predictor(s), Measure(s)	Data analysis method(s)
Left DLPFC TMS Tx, 15 sessions	Hamilton Depression Rating Scale Beck Depression Inventory Visual Analogue Scale	Descriptive analysis

Sampling

Total size	1	Group 1		Group 2		Group 3		Group 4		Control
Population, sample, setting	40-year-old woman with Major Depressive Episode with psychotic features and postpartum onset, treated with 15 sessions of TMS over left DLPFC									

Data collection (add if not listed)

Audit/Review	a) Primary | Secondary | ... b) Authoritative | Partisan | Antagonist | ... c) Literature | Systematic | ...	Interview	a) Formal | Informal | ... b) Structured | Semi-structured | Unstructured | ... c) One-on-one | Group | Multiple | Self-administered | ...
Observation	a) Participant | Non-participant | ... b) Structured | Semi-structured | Unstructured | ... c) Covert | Candid | ...	Testing	a) Standardised | Norm-ref | Criterion-ref | Ipsative | ... b) Objective | Subjective | ... c) One-on-one | Group | Self-administered | ...

Scores

Preliminaries	2	Design	2	Data Collection	2	Results	2	Total [/40]	16
Introduction	2	Sampling	2	Ethical Matters	2	Discussion	2	Total [%]	40

General notes

Improvement in all outcome measures after receiving treatment.

This paper is a case study, hence the data should be interpreted with caution, highly preliminary.

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Appraise research on the merits of the research design used, not against other research designs.

Category Item	Item descriptors [☑ Present; ☒ Absent; ■ Not applicable]	Description [Important information for each item]	Score [0–5]
1. Preliminaries			
Title	1. Includes study aims ☑ and design ☑		
Abstract (assess last)	1. Key information ☑ 2. Balanced ☒ and informative ☒	Very brief abstract	
Text (assess last)	1. Sufficient detail others could reproduce ☒ 2. Clear/concise writing ☑, table(s) ☐, diagram(s) ☐, figure(s) ☑		
		Preliminaries [/5]	2
2. Introduction			
Background	1. Summary of current knowledge ☑ 2. Specific problem(s) addressed ☑ and reason(s) for addressing ☑	Introduction lacks sufficient background information	
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ☒ 2. Secondary question(s) ☒		
	Is it worth continuing?	**Introduction [/5]**	2
3. Design			
Research design	1. Research design(s) chosen ☑ and why ☒ 2. Suitability of research design(s) ☒		
Intervention, Treatment, Exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ☑ and why ☒ 2. Precise details of the intervention(s)/treatment(s)/exposure(s) ☑ for each group ☐ 3. Intervention(s)/treatment(s)/exposure(s) valid ☑ and reliable ☑	Medication and TMS protocol outlined	
Outcome, Output, Predictor, Measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ☑ and why ☒ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ☑ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ☑ and reliable ☑		
Bias, etc	1. Potential bias ☒, confounding variables ☒, effect modifiers ☒, interactions ☒ 2. Sequence generation ☐, group allocation ☐, group balance ☐, and by whom ☐ 3. Equivalent treatment of participants/cases/groups ☒	Lack of information on potential bias	
	Is it worth continuing?	**Design [/5]**	2
4. Sampling			
Sampling method	1. Sampling method(s) chosen ☑ and why ☒ 2. Suitability of sampling method ☑	Small sample size	
Sample size	1. Sample size ☑, how chosen ☒, and why ☒ 2. Suitability of sample size ☒		
Sampling protocol	1. Target/actual/sample population(s): description ☑ and suitability ☒ 2. Participants/cases/groups: inclusion ☒ and exclusion ☒ criteria 3. Recruitment of participants/cases/groups ☑	No inclusion / exclusion criteria	
	Is it worth continuing?	**Sampling [/5]**	2
5. Data collection			
Collection method	1. Collection method(s) chosen ☑ and why ☒ 2. Suitability of collection method(s) ☒	Lack of details about data collection	
Collection protocol	1. Include date(s) ☒, location(s) ☑, setting(s) ☐, personnel ☐, materials ☐, processes ☑ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ☒ 3. Manage non-participation ☒, withdrawal ☒, incomplete/lost data ☒		
	Is it worth continuing?	**Data collection [/5]**	2
6. Ethical matters			
Participant ethics	1. Informed consent ☒, equity ☒ 2. Privacy ☑, confidentiality/anonymity ☒	No mention of informed consent or ethics approval	
Researcher ethics	1. Ethical approval ☒, funding ☒, conflict(s) of interest ☒ 2. Subjectivities ☒, relationship(s) with participants/cases ☒		
	Is it worth continuing?	**Ethical matters [/5]**	2
7. Results			
Analysis, Integration, Interpretation method	1. A.I.I. method(s) for primary outcome(s)/output(s)/predictor(s) chosen ☑ and why ☒ 2. Additional A.I.I. methods (e.g. subgroup analysis) chosen ☑ and why ☒ 3. Suitability of analysis/integration/interpretation method(s) ☑	Outcome measures listed	
Essential analysis	1. Flow of participants/cases/groups through each stage of research ☑ 2. Demographic and other characteristics of participants/cases/groups ☑ 3. Analyse raw data ☑, response rate ☑, non-participation/withdrawal/incomplete/lost data ☒		
Outcome, Output, Predictor analysis	1. Summary of results ☑ and precision ☑ for each outcome/output/predictor/measure 2. Consideration of benefits/harms ☑, unexpected results ☑, problems/failures ☑ 3. Description of outlying data (e.g. diverse cases, adverse effects, minor themes) ☑	Useful graph to show improvement in outcome measures	
		Results [/5]	2
8. Discussion			
Interpretation	1. Interpretation of results in the context of current evidence ☑ and objectives ☑ 2. Draw inferences consistent with the strength of the data ☑ 3. Consideration of alternative explanations for observed results ☒ 4. Account for bias ☒, confounding/effect modifiers/interactions/imprecision ☒	Lack of information about limitations	
Generalisation	1. Consideration of overall practical usefulness of the study ☑ 2. Description of generalisability (external validity) of the study ☑		
Concluding remarks	1. Highlight study's particular strengths ☑ 2. Suggest steps that may improve future results (e.g. limitations) ☒ 3. Suggest further studies ☒	Brief recommendation for future research	
		Discussion [/5]	2
9. Total			
Total score	1. Add all scores for categories 1–8		
		Total [/40]	16

Crowe Critical Appraisal Tool (CCAT) Form (v1.4)

Reference: No. 7 Reviewer: MH

This form must be used in conjunction with the CCAT User Guide (v1.4); otherwise validity and reliability may be severely compromised.

Citation

	Year
Repetitive transcranial magnetic stimulation for the treatment of depression during pregnancy and postpartum period. Ozmut et al. 2015	2015

Research design (add if not listed)

❑ Not research		Article | Editorial | Report | Opinion | Guideline | Pamphlet | ...
❑ Historical		...
❑ Qualitative		Narrative | Phenomenology | Ethnography | Grounded theory | Narrative case study | ...
❑ Descriptive, Exploratory, Observational		A. Cross-sectional | Longitudinal | Retrospective | Prospective | Correlational | Predictive | ...
		B. Cohort | Case-control | Survey | Developmental | Normative | Case study | ...
Experimental	❑ True experiment	Pre-test/post-test control group | Solomon four-group | Post-test only control group | Randomised two-factor | Placebo controlled trial | ...
	☒ Quasi-experiment	Post-test only | Non-equivalent control group | Counter balanced *(cross-over)* | Multiple time series | Separate sample pre-test post-test [no Control] [Control] | ...
	❑ Single system	One-shot experimental *(case study)* | Simple time series | One group pre-test/post-test | Interactive | Multiple baseline | Within subjects *(Equivalent time, repeated measures, multiple treatment)* | ...
❑ Mixed Methods		Action research | Sequential | Concurrent | Transformative | ...
❑ Synthesis		Systematic review | Critical review | Thematic synthesis | Meta-ethnography | Narrative synthesis | ...
☒ Other		... Conference paper

Variables and analysis

Intervention(s), Treatment(s), Exposure(s)	Outcome(s), Output(s), Predictor(s), Measure(s)	Data analysis method(s)
TMS Tx, 15 sessions	Hamilton Depression Rating Scale Hamilton Anxiety Rating Scale Edinburgh Depression Scale	Descriptive analysis

Sampling

Total size	40	Group 1		Group 2		Group 3		Group 4		Control
Population, sample, setting	40 participants initially, but 25 did not complete TMS sessions. 15 women (7 with MDD during pregnancy; 8 with MDD during postpartum) received 15 treatments of TMS									

Data collection (add if not listed)

Audit/Review	a) Primary | Secondary | ... b) Authoritative | Partisan | Antagonist | ... c) Literature | Systematic | ...	Interview	a) Formal | Informal | ... b) Structured | Semi-structured | Unstructured | ... c) One-on-one | Group | Multiple | Self-administered | ...
Observation	a) Participant | Non-participant | ... b) Structured | Semi-structured | Unstructured | ... c) Covert | Candid | ...	Testing	a) Standardised | Norm-ref | Criterion-ref | Ipsative | ... b) Objective | Subjective | ... c) One-on-one | Group | Self-administered | ...

Scores

Preliminaries	2	Design	1	Data Collection	1	Results	1	Total [/40]	7
Introduction	0	Sampling	1	Ethical Matters	0	Discussion	1	Total [%]	17.5

General notes

Four out of fifteen participants showed a 50% decrease in HDRS-15 scores, six out of fifteen showed a 50% decrease in HARS-14 scores after Tx. Eight out of fifteen responded to TMS according to the EPDS scores.

Limitations involve small sample size and large drop-out of participants. Also this is a conference paper, hence lacks a lot of detail regarding the study.

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Appraise research on the merits of the research design used, not against other research designs.

Category Item	Item descriptors [☑ Present; ☒ Absent; ■ Not applicable]	Description [Important information for each item]	Score [0–5]
1. Preliminaries			
Title	1. Includes study aims ☑ and design ☑		
Abstract (assess last)	1. Key information ☑ 2. Balanced ☒ and informative ☒	Brief abstract, lacks important	
Text (assess last)	1. Sufficient detail others could reproduce ☒ 2. Clear/concise writing ☒, table(s) ☐, diagram(s) ☐, figure(s) ☐	details of study	
		Preliminaries [/5]	2
2. Introduction			
Background	1. Summary of current knowledge ☒ 2. Specific problem(s) addressed ☒ and reason(s) for addressing ☒	No introduction or background	
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ☑ 2. Secondary question(s) ☒	information	
	Is it worth continuing?	**Introduction [/5]**	0
3. Design			
Research design	1. Research design(s) chosen ☑ and why ☒ 2. Suitability of research design(s) ☒	Limited information on	
Intervention, Treatment, Exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ☑ and why ☒ 2. Precise details of the intervention(s)/treatment(s)/exposure(s) ☒ for each group ☐ 3. Intervention(s)/treatment(s)/exposure(s) valid ☒ and reliable ☒	TMS protocol used	
Outcome, Output, Predictor, Measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ☑ and why ☒ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ☒ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ☒ and reliable ☒		
Bias, etc	1. Potential bias ☒, confounding variables ☒, effect modifiers ☒, interactions ☒ 2. Sequence generation ☐, group allocation ☐, group balance ☐, and by whom ☐ 3. Equivalent treatment of participants/cases/groups ☑	Outcome measures stated	
	Is it worth continuing?	**Design [/5]**	1
4. Sampling			
Sampling method	1. Sampling method(s) chosen ☑ and why ☒ 2. Suitability of sampling method ☒	Large drop out rate of	
Sample size	1. Sample size ☑, how chosen ☒, and why ☒ 2. Suitability of sample size ☒	participants	
Sampling protocol	1. Target/actual/sample population(s): description ☒ and suitability ☒ 2. Participants/cases/groups: inclusion ☒ and exclusion ☒ criteria 3. Recruitment of participants/cases/groups ☒	Limited participant demographic information	
	Is it worth continuing?	**Sampling [/5]**	1
5. Data collection			
Collection method	1. Collection method(s) chosen ☑ and why ☒ 2. Suitability of collection method(s) ☒	Limited information on	
Collection protocol	1. Include date(s) ☒, location(s) ☒, setting(s) ☑, personnel ☑, materials ☑, processes ☑ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ☒ 3. Manage non-participation ☑, withdrawal ☑, incomplete/lost data ☒	how data was collected	
	Is it worth continuing?	**Data collection [/5]**	1
6. Ethical matters			
Participant ethics	1. Informed consent ☒, equity ☒ 2. Privacy ☒, confidentiality/anonymity ☒	No ethical protocol	
Researcher ethics	1. Ethical approval ☒, funding ☒, conflict(s) of interest ☒ 2. Subjectivities ☒, relationship(s) with participants/cases ☒	mentioned	
	Is it worth continuing?	**Ethical matters [/5]**	0
7. Results			
Analysis, Integration, Interpretation method	1. A.I.I. method(s) for primary outcome(s)/output(s)/predictor(s) chosen ☑ and why ☒ 2. Additional A.I.I. methods (e.g. subgroup analysis) chosen ☒ and why ☒ 3. Suitability of analysis/integration/interpretation method(s) ☒	Brief outline of scores,	
Essential analysis	1. Flow of participants/cases/groups through each stage of research ☒ 2. Demographic and other characteristics of participants/cases/groups ☒ 3. Analyse raw data ☑, response rate ☑, non-participation/withdrawal/incomplete/lost data ☒	information sometimes unclear	
Outcome, Output, Predictor analysis	1. Summary of results ☑ and precision ☒ for each outcome/output/predictor/measure 2. Consideration of benefits/harms ☒, unexpected results ☒, problems/failures ☒ 3. Description of outlying data (e.g. diverse cases, adverse effects, minor themes) ☒		
		Results [/5]	1
8. Discussion			
Interpretation	1. Interpretation of results in the context of current evidence ☒ and objectives ☒ 2. Draw inferences consistent with the strength of the data ☒ 3. Consideration of alternative explanations for observed results ☒ 4. Account for bias ☒, confounding/effect modifiers/interactions/imprecision ☒	No information on limitations	
Generalisation	1. Consideration of overall practical usefulness of the study ☒ 2. Description of generalisability (external validity) of the study ☒		
Concluding remarks	1. Highlight study's particular strengths ☒ 2. Suggest steps that may improve future results (e.g. limitations) ☒ 3. Suggest further studies ☑	Short sentence about future research	
		Discussion [/5]	1
9. Total			
Total score	1. Add all scores for categories 1–8		
		Total [/40]	7