King's College London

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PG Cert/PG Dip/MSc Examination

7PADRERC Research Skills: From Reviewing and Critical Analysis to Research Ethics
Coursework 1 Paper

Final word count: 1453
[Word limit: 1500 words +10%]

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Student ID Number 19071714 Date 04 October 2021

Student ID Number: 19071714

Coursework Assignment 1: Systematic reviews and meta-analysis

From Reviewing and Critical Analysis to Research Ethics
7PADRERC

Consider this study:

van den Berg, E., Houtzager, L., de Vos, J., Daemen, I., Katsaragaki, G., Karyotaki, E., Cuijpers, P., & Dekker, J. (2019). Meta-analysis on the efficacy of psychological treatments for anorexia nervosa. *European eating disorders review: The journal of the Eating Disorders Association*, *27*(4), 331–351. https://doi.org/10.1002/erv.2683

We want you to carry out various exercises related to the material in Week 2 on systematic reviews and meta-analysis, using this study.

The questions are given below and arranged in three parts: A, B and C. **You need to complete all three parts and all the questions.**

We have provided instructions on where to include your answers. For some questions we ask you to place your answers in a table. Please ensure you can do this. Contact us if you are experiencing any difficulties with formatting.

This assignment is worth 50% of your mark for the module. The word limit is 1500 words +10% i.e. 1650 words. We have given the marking breakdown and approximate suggested word counts below.

Note that we do *not* expect a reference list for this assignment, but if you do include any citations to support your work you may include a Reference section.

Student ID Number: 19071714

Part A: search strategy exercise *(40 marks; 400-500 words)*

Part A assesses your understanding of certain key concepts in systematic review strategies and your understanding of search terms.

1. What is the PICO - S for this study? (*5 marks*)

Population: Patients with anorexia nervosa
Intervention/Exposure: Psychological treatments
Comparison: Control conditions
Outcome: Weight gain, eating disorder pathology, and quality of life
Study design/setting: Randomised controlled trials (RCTs)

2. List the Inclusion and Exclusion criteria for this study (*5 marks*)

Criteria	Inclusion	Exclusion
Population	Patients of 12 years of age and above.	Non diagnosed with anorexia nervosa and patients under 12 years old.
Intervention	Psychological treatments with at least some face-to-face verbal contacts. It can include "psychodynamic or psychoanalytic therapy, cognitive (behavioural therapy), interpersonal therapy, family therapy, social skills training, motivational interviews" or a combination of these treatments. Individual, group-based, inpatient and outpatient treatments are included.	Non psychological treatments, and treatments without face-to-face verbal contact.
Comparison	A control condition is required. It can be treatment as usual, dietary advice, psychoeducational interventions and	If there is no control condition or there is a comparison between two treatments, the study will be excluded.

	placebo as well as Specialist Supportive Clinical Management.	
Outcome	Weight gain, eating disorder pathology, and quality of life are included.	Not looking at the relevant outcomes.
Study design	RCTs written in English and Dutch.	Non RCT studies are excluded as well as RCT written in other languages than English and Dutch.

3. Here is part of the PUBMED search strategy for this study (adapted from Appendix B of the paper). Replace the terms related to Eating Disorders so that the search is for Obsessive Compulsive Disorder trials and studies instead. The format should be suitable for PUBMED; include any additional suitable MeSH terms (indicated by [MH]) and any other free text terms you think are appropriate. *Note that you will only need to change the terms for the disorder; other concepts/terms will remain the same*. (*10 marks*)

(Eating Disorders [MH] OR "Eating Disorder"[All Fields] OR "Anorexia Nervosa"[MH] OR "Anorexia"[All Fields] OR "Bulimia Nervosa"[MH] OR "bulimia"[All Fields] OR "binge eating disorder"[All Fields] OR "BED"[All Fields] OR "eating disturbance"[All Fields] OR "disturbed eating"[All Fields] OR "disturbed eating behaviour"[All Fields] OR "binge eating"[All Fields] OR "binge-purge"[All Fields] OR "purging"[All Fields])
AND
((randomized controlled trial [pt] OR controlled clinical trial [pt] OR randomized controlled trials [mh] OR random allocation [mh] OR double-blind method [mh] OR single-blind method [mh] OR clinical trial [pt] OR clinical trials [mh] OR "clinical trial" [tw] OR ((singl* [tw] OR doubl* [tw] OR trebl* [tw] OR tripl* [tw]) AND (mask* [tw] OR blind* [tw])) OR "latin square" [tw] OR placebos [mh] OR placebo* [tw] OR random* [tw] OR research design [mh:noexp] OR comparative study [pt] OR evaluation studies [pt] OR follow-up studies [mh] OR prospective studies [mh] OR cross-over studies [mh] OR control[tw] OR controll*[tw] OR prospectiv* [tw] OR volunteer* [tw]) NOT animal [mh] NOT human [mh])

3a) ***Write your answer here.***

We should be able to paste your search into PUBMED and run it successfully. We are interested in whether you have chosen appropriate terms for Obsessive Compulsive Disorder.

("obsessive compulsive disorder"[MeSH Terms] OR "OCD"[All Fields] OR "obsessive compulsive disorder"[All Fields] OR "obsessional compulsive disorder"[All Fields] OR "obsessi*"[All Fields] OR "compulsi*"[All Fields]) AND (((("randomized controlled trial"[Publication Type] OR "controlled clinical trial"[Publication Type] OR "randomized controlled trials as topic"[MeSH Terms] OR "random allocation"[MeSH Terms] OR "double blind method"[MeSH Terms] OR "single blind method"[MeSH Terms] OR "clinical trial"[Publication Type] OR "clinical trials as topic"[MeSH Terms] OR "clinical trial"[Text Word] OR (("singl*"[Text Word] OR "doubl*"[Text Word] OR "trebl*"[Text Word] OR "tripl*"[Text Word]) AND ("mask*"[Text Word] OR "blind*"[Text Word])) OR "latin square"[Text Word] OR "placebos"[MeSH Terms] OR "placebo*"[Text Word] OR "random*"[Text Word] OR "research design"[MeSH Terms:noexp] OR "comparative study"[Publication Type] OR "evaluation studies"[Publication Type] OR "follow up studies"[MeSH Terms] OR "prospective studies"[MeSH Terms] OR "cross over studies"[MeSH Terms] OR "control"[Text Word] OR "controll*"[Text Word] OR "prospectiv*"[Text Word] OR "volunteer*"[Text Word]) NOT "animals"[MeSH Terms]) NOT "humans"[MeSH Terms])

***Also answer the following**:*
3b) report the number of articles found

1490

3c) which two components of a PICOS are addressed by your search?

The above search addresses the population and study design components.

3d) Why do you think the authors included "NOT animal [mh] NOT human [mh]"? (10 marks)

The string "**NOT (animals [mh] NOT humans [mh])**" is used to exclude animal studies; it does so by employing the form of a double negation. As the purpose of this meta-analysis is to study the efficacy of psychological treatments for anorexia nervosa, it does not make sense to include animal studies.

4. Consider the MeSH terms related to eating disorders. What happens when you try to use these terms in PsycINFO and MEDLINE and can you explain why?
   (*10 marks)*

Write your answer here.

We can copy and paste those terms on PsychINFO or MEDLINE in the "Basic Search category and there will be results. But those results are not specific, especially when we want to look into MeSH terms. When trying these exact terms in the "Advanced Search" category, there will be an error message. This is because each journal has its own keywords and MeSH terms directory as well as specific ways for searching. This is why we need to conduct different search strategies for each search engines.

So for example, we will need to use the function "Map Term to Subject Heading". For the paper, if we consider only the three MeSH terms used in PubMed, the searches term would be "exp "feeding and eating disorders"/ or exp anorexia nervosa/ or exp binge-eating disorder/ or exp bulimia nervosa/" using Ovid for PsychINFO and MEDLINE.

We could also use the "Multi-Field Search" and include the MeSH terms which will result in the following string: " (eating disorder or anorexia nervosa or bulimia nervosa).mh.

Part B: screening studies exercise (*40 marks; 500-600 words*)

Part B assesses your understanding of study selection. You will need to use the studies in the Document Folder (Articles) to complete Part B.

When reading this review you will see that the authors narrowed down potential articles for inclusion from over three thousand to twelve. Around two thousand articles were excluded at the initial stages following a Title and Abstract screening; those not excluded at this stage went on to an assessment of the full text.

1. In Table 1 below are 10 articles. For each article carry out a Title and Abstract screening and indicate whether it should be *included or excluded* from a full text assessment based on this screening. Give a brief reason for your decision. An example has been provided to give you an idea of the type of information we are looking for and how you can present your answer. *Write your answers in the table*. *(20 marks*)

Article	**Include or exclude from full text assessment based on Title and Abstract screen?**	**Reason for inclusion / exclusion**
Example (based on a different review): Wheaton et al. (2015) Augmenting Serotonin Reuptake Inhibitors in Obsessive-Compulsive Disorder: What Moderates Improvement?	Exclude	The abstract states that the study was conducted with adult participants only. Inclusion criteria for the review clearly state that only studies with data for children and adolescents are included – the review is focused on paediatric OCD.
Mathisen et al. (2017) The PED-t trial protocol: The effect of physical exercise -and dietary therapy compared with cognitive behaviour therapy in treatment of bulimia nervosa and binge eating disorder	Exclude	This study aims to explore the effect of physical exercise and dietary therapy which can't be classified as psychological treatments following the study selection criteria.
Rain Carei et al. (2010) Randomized Controlled Clinical Trial of Yoga in the Treatment of Eating Disorder	Exclude	This study is using yoga as a treatment. However, it is not a psychological treatment that is included in the intervention criteria for this meta-analysis.
Maximilian Fichter et al. (2017) Long-term outcome of anorexia nervosa: Results from a large clinical longitudinal study	Exclude	This is a longitudinal study that aims to assess the long term outcome for anorexia nervosa inpatients. This study does not meet the inclusion criteria for the study design as there is no randomised controlled trial.
Halvorsen et al. (2017) Naturalistic Outcome of Family-Based Inpatient Treatment for Adolescents with Anorexia Nervosa	Exclude	There is no randomised controlled trial used in this study while the meta analysis requires studies with RCTs.
Gowers et al. (2010) A randomised controlled multicentre trial of treatments for adolescent anorexia nervosa including assessment of cost-effectiveness and patient acceptability - the TOuCAN trial	Include	From the title and the abstract, we know that this study involves young people from 12 years old to 18 years old with anorexia nervosa. This is a RCT using treatment as usual as controls. The treatments were either inpatient psychiatric treatment in units with experience or specialised outpatient treatment. The outcome included are also relevant to the outcomes the meta-analysis are

		looking for. As the inclusion criteria regarding the PICO of the meta-analysis are met, this study can be included.
Danielsen et al. (2016) Effectiveness of enhanced cognitive behavioral therapy (CBT-E) in the treatment of anorexia nervosa: a prospective multidisciplinary study .	Exclude	This longitudinal study aims to assess the efficacy of a cognitive behavioural therapy for a population of patients above 16 years old. There is a mention of a control group but the recruitment of this control group involved a population without eating disorder. Thus, this study would be excluded.
Aardoom et al. (2016) Web-Based Fully Automated Self-Help With Different Levels of Therapist Support for Individuals With Eating Disorder Symptoms: A Randomized Controlled Trial	Exclude	The meta-analysis criteria mention that the RCT can be included if there is at least some face-to-face verbal contacts. In the case of a web-based fully automated self-help, this criteria is not met.
Giombini et al. (2017) Evaluation of individual cognitive remediation therapy (CRT) for the treatment of young people with anorexia nervosa	Exclude	The abstract mentions participants from 11 years old. This does not meet the criteria of the meta-analysis that requires patients of 12 years old and above.
Levinson et al. (2015) D-Cycloserine facilitation of exposure therapy improves weight regain in patients with anorexia nervosa: a pilot randomized controlled trial	Exclude	This RCT examined the effect of an exposure therapy combined with a medication. While the exposure could be classify as a psychological treatment according to the meta-analysis criteria, there is a use of a medication. That's why, the intervention cannot be considered as a psychological treatment *stricto sensu* and this study would be excluded.
Carter et al. (2011) The long-term efficacy of three psychotherapies for anorexia nervosa: a randomized, controlled trial	Include	This study aims to evaluate the long-term efficacy of psychotherapies in women anorexia patients. It was a RCT with a control condition using specialist Supportive Clinical Management (SSCM). From the title and the abstract only, this study seem to meet the criteria of the meta-analysis. It would be included for further screening based on a full text

		(for example regarding the age of the participants.)

Table 1: Title & Abstract Screening

2. In Table 2 below are 5 articles. Based on a full text assessment some of these articles were excluded from the review and others were included. Read each article and give a brief explanation of the likely main reason(s) for exclusion or inclusion. An example has been provided to give you an idea of the type of information we are looking for and how you can present your answer. *Write your answers in the table.* (*20 marks*)

Article	**Reason for inclusion/exclusion based on full text assessment**
Example (based on a different review): Storch et al. (2011) Preliminary investigation of web camera delivered cognitive behavioral therapy for youth with obsessive compulsive disorder.	Included because eligibility criteria were met. Specifically: Participants were males aged from 7-16 years with DSM-IV diagnosis of OCD. Most participants had another DSM-IV diagnosis and all participants were male but the review included participants irrespective of sex/comorbidity. Study design met the inclusion criteria as well – participants randomised to intervention or control. The intervention was CBT according to POTS definition (POTS 2004) and any CBT was permitted that the triallists defined as CBT. The control group received treatment as usual, which met the inclusion criteria for no intervention.
Schmidt et al. (2012) Out-patient psychological therapies for adults with anorexia nervosa: Randomised controlled trial.	Included because the study meets the inclusion criteria as follows: - Patients with anorexia nervosa are in the age range (18 years old and older) - Patients received in person individual therapy by experienced supervisors.

	- It was a RCT with participants randomly allocated to either Maudsley Model of Anorexia Nervosa Treatment for Adult as a psychological therapy either to SSCM as a control condition. - The outcomes measured included (body mass index, weight, eating disorder examination) are relevant to the meta-analysis.
Lock et al. (2010) Randomized clinical trial comparing family-based treatment with adolescent-focused individual therapy for adolescents with anorexia nervosa	Excluded because it was not a RCT that included a control group: the study aimed to compare between two psychological treatments rather than comparing with a control condition.
Pillay & Crisp (1981) The impact of social skills training within an established in-patient treatment programme for anorexia nervosa.	Included because all the inclusion criteria were identified: - It was a RCT with "patients randomly allocated to either to treatment sessions" or "to a placebo contact situation". - The treatment involved a group role-play format with a specialist and verbal communication. - The measures meet the outcome criteria of the meta-analysis (questionnaires and body weight). - In terms of age, the study excluded a patient with anorexia nervosa who "was only 13 years old" which implies that the other participants should be older than 13 years old.
Touyz et al. (2013) Treating severe and enduring anorexia nervosa: A randomized controlled trial.	Included because: - The study mentions that all participants were 18 years old and over with anorexia nervosa. - The treatments consisted in two days in person workshops using cognitive behavioural therapy. - It was a RCT with SSCM as a control condition. - The outcomes that were analysed (quality of life and MBI) are relevant.
Stice et al. (2015) Randomized Controlled Pilot Trial of a Novel	Excluded because this study looked at a new preventing program which can't be considered as

Dissonance-Based Group Treatment for Eating Disorders	a psychological treatment as defined by the PICO criteria of the meta-analysis.

Table 2: Full text assessment

Part C: Meta-analysis statistics (*20 marks; 400-500 words*)

Part C assesses your understanding of the use of forest plots and other statistics used in meta analyses.

Look at the forest plot in Figure 2: Standardised mean difference of psychological treatments for anorexia nervosa compared with control conditions on weight gain

Based on this forest plot, answer the following questions:

1. List the individual studies that report significant mean differences for psychological treatments compared to control conditions. (*3 marks*)

Write your answer here

The individual studies that report significant mean differences for psychological treatments compared to control conditions are:

- Dare, 2001
- Schmidt, 2015
- Zipfel, 2014.

2. What is the pooled effect for all 23 comparisons, as shown in the forest plot? Briefly summarise what this estimate tells you in the context of this review. (7 *marks*)

Write your answer here

The pool effect estimate for all 23 comparisons is 0.16 with 95% confidence intervals between -0.13 to 0.44. We can observe that the pool effect estimate has its 95% confidence intervals that cross the null value; this means that it is not statistically

significant: there is no significant effect in favour of psychotherapy treatments versus controls on weight gain in anorexia nervosa.

3. Comment on the heterogeneity between conditions and consider how the authors addressed this. (10 *marks*)

Write your answer here

The heterogeneity for this meta-analysis was very high.
Regarding the 23 comparisons on weight gain, the I^2 equals 85.
The authors observed that removing three outliers lowered the statistical measure of heterogeneity from 85 to 30. Furthermore, they also ran analyses by separating by subgroups (age, onset age, duration of illness, type therapy, format therapy, N sessions, control conditions, risk of bias, manual reported, training reported) (cf. Table 1). As a result, this split into subgroups showed some relevant elements and for example, that studies with participants of 18 years old and older reported "significantly higher effect size".

END OF ASSIGNMENT