Supplementary Material 11

Evidence of effectiveness - psychosocial synthesis – Additional tables

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Table 1: Characteristics of Excluded Studies

Study (n=7)	Aim	Reason for exclusion
Brazzelli 2011 [1]	To assess the effects of behavioural and/or cognitive interventions for the management of faecal incontinence in children.	Risk of bias of this review was judged as low. However this review addressed a very similar aim to Freeman 2014, with substantial overlap between included studies. Consensus discussion was held and the decision was reached to include Freeman 2014 [2], and exclude Brazzelli 2011, for the following reasons: - inclusion criteria of Freeman 2014 [2] was more in line with our own (Brazelli 2011 included all defecation disorders, including studies with participants who had faecal incontinence but not constipation, and included quasi randomised studies) - Freeman 2014 [2] is more recent than Brazzelli 2011 (search date April 2013 vs October 2011) - Brazzelli 2011 only included 7 of the 10 studies included by Freeman 2014 [2], suggesting Freeman 2014 [2] was more comprehensive / up to date
Coulter 2001 [3]	To evaluate the efficacy of mind-body therapies for the treatment of gastrointestinal (GI) disorders.	Narrative review
Kajbafzadeh 2011 [4]	To evaluate the efficacy of animated biofeedback urotherapy in bowel and voiding dysfunction in children with dysfunctional elimination syndrome.	Excluded as study is concerned with dysfunctional elimination syndrome and does not meet our eligibility criteria
Marler 2017 [5]	To evaluate the hypothesis that constipation and rigid-compulsive behaviour are associated within ASD.	No relevant outcome measures
Santos 2016 [6]	To gather and present scientific evidence on the use of diaphragmatic breathing exercise as a therapeutic strategy in the children diseases	Narrative review

Shepard 2017 [7]	This review identified 25 intervention studies—18 for nocturnal enuresis and 7 for encopresis—over the past 15 years and classified them according to the guidelines set forth by the Task Force on the Promotion and Dissemination of Psychological Procedures	Narrative review
Turner-Bowker 2015 [8]	To demonstrate how patient and parent/legal guardian interviews reinforce a conceptual model of paediatric functional constipation signs, symptoms, and impact for inclusion in a Paediatric Functional Constipation Daily Diary (PFC-DD); and to evaluate patient and parent/legal guardian comprehension and usability of the PFC-DD administered via electronic diary.	Abstract only and concerns evaluation of a constipation diary as a way of capturing changes over time rather than looking at effectiveness of any intervention on FC

Table 2: Characteristics of Ongoing Studies

Study	Aim	Study design	Anticipated completion date
Call 2017 [9]	To evaluate MIE (multidisciplinary intervention for encopresis) compared to TAU (treatment as usual) and determine the optimal treatment length.	RCT	Oct 2021

Table 3: Summary of studies included in Freeman 2014 [2] (compared with Brazelli 2011 [1])

RCT	Number of participants	Behavioural intervention investigated	Brazelli 2011 [1]	Freeman 2014 [2]
Ritterband 2013 [10]	90	Education + scheduled sits + defecation training		MA
van Dijk 2008 [11]	114	Teaching parents behavioural procedures + behavioural play therapy	x	x
Wald 1987 [12]	48	Toilet training	x	x
Berg 1983 [13]	40	Rewards + Scheduled trips	x	x
Borowitz 2002 [14]	87	Rewards + Scheduled trips	x	MA
Cox 1996 [15]	44	Rewards + scheduled sits + Defecation training		MA
Loening-Baucke 1990 [16]	43	Education + scheduled sits	x	x
Nolan 1991 [17]	162	Education + Rewards + scheduled sits + diet modification	x	x
Nurko 2000 [18]	36	Scheduled sits		x
Ritterband 2003 [19]	24	Education + defecation training	x	MA

x=identified / included in systematic review; MA=included in meta-analysis for comparison of behavioural intervention versus control

Table 4: Reported Outcomes of Included Studies

Study	Outcomes Addressed								
	Painful Defecation	QOL	Stool Frequency	Stool Consistency	Side Effects	Faecal Incontinence	Abdominal Pain	School Attendance	Additional outcomes
Freeman 2014 [2]			x			x			Frequency of defecation in the toilet, "author-defined success"
Santucci 2017 [20]		x							"Symptoms on the Rome 4 criteria checklist", Treatment success/failure, Self efficacy
Silver 1998 [21]						x			
Taitz 1986 [22]			x		x	x			Compliance

Table 5: Risk of bias judgements for included systematic reviews, using ROBIS tool

Study	Concerns regarding specification of study eligibility criteria	Concerns regarding methods used to identify and/or select studies	Concerns regarding methods used to collect data and appraise studies	Concerns regarding the synthesis and findings	Overall risk of bias in the review
Freeman 2014 [2]	LOW risk	LOW risk	LOW risk	LOW risk	LOW risk

Table 6: Risk of bias judgements for included RCTs, using Cochrane ROB1 tool

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Selective reporting (reporting bias)
Santucci 2017 [20]	UNCLEAR risk	HIGH risk	HIGH risk	HIGH risk	UNCLEAR risk

Table 7: Risk of bias judgements for cohort studies, using CASP tool for cohort studies

STUDY	1. Did the study address a clearly focused issue?	2. Was the cohort recruited in an acceptable way?	3. Was the exposure accurately measured to minimise bias?	4. Was the outcome accurately measured to minimise bias?	5. (a) Have the authors identified all important confounding factors?	5. (b) Have they taken account of the confounding factors in the design and/or analysis?	6. (a) Was the follow up of subjects complete enough?	6. (b) Was the follow up of subjects long enough?	9. Do you believe the results?	10. Can the results be applied to the population of interest?	OVERALL ASSESSMENT
Silver 1998 [21]	Yes	Yes	Yes	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes	No or very minor concerns

Table 8: Risk of bias judgements of studies with other designs, using ROB JBI Cross Sectional tool

Study	1. Were the criteria for inclusion in the sample clearly defined?	2. Were the study subjects and the setting described in detail?	3. Was the exposure measured in a valid and reliable way?	4. Were objective, standard criteria used for measurement of the condition?	5. Were confounding factors identified?	6. Were strategies to deal with confounding factors stated?	7. Were the outcomes measured in a valid and reliable way?	8. Was appropriate statistical analysis used?
Taitz 1986 [22]	Yes	Yes	Unclear	No	No	No	No	Yes

Table 9: Studies addressing questions relating to psychosocial interventions

Question	What is the effect of behavioural therapy techniques delivered by specialist practitioners?	What is the effect of externalizing treatment, compared to other behavioural interventions?	What is the effect of psychotherapy, given in addition to other behavioural therapy?
Systematic review	Freeman 2014 [2]		
RCT	Santucci 2017 [20] (guided mastery)		
Primary study		Silver 1998 [21] (externalisation)	Taitz 1986 [22] (psychotherapy)

Red = high ROB, Amber = Moderate ROB, Green = Low ROB, RCT=Randomized controlled trial.

Table 10: Judgement of certainty in evidence and summary of findings relating to each research question

Question	Studies	Limitations	Inconsistency	Indirectness	Imprecision	Publication bias	Judgement of certainty in evidence	Summary of findings
What is the effect of behavioural therapy techniques delivered by specialist practitioners?	Freeman 2014 [2] Santucci 2017 [20]	Downgrade once – concerns about risk of bias in all included studies	No downgrade	No downgrade	Downgrade once – evidence of statistical heterogeneity in some analyses	Downgrade once – data not available from several completed studies	Very low	Behavioural therapy techniques delivered by specialist practitioners may be beneficial.
What is the effect of externalizing treatment, compared to other behavioural interventions?	Silver 1998 [21]	Downgrade twice – study design	No downgrade	No downgrade	Downgrade once – one small study	Downgrade once	Insufficient evidence	There is insufficient evidence to support conclusions about the benefits of externalising treatment, compared to other behavioural interventions.
What is the effect of psychotherapy, given in addition to other	Taitz 1986 [22]	Downgrade twice – study design & concerns around risk	No downgrade	No downgrade	Downgrade once – one small study	Downgrade once	Insufficient evidence	There is insufficient evidence to support conclusions about the

behavioural therapy?		of bias						benefits of providing psychotherapy in addition to other behavioural therapy.

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