

Supplementary material 3. Characteristics of excluded studies

No.	Author	Year	Country	Study design	Case	Control	Age (yr)	Sample size	Result	Reasons
1	Lakshminarayanan ¹⁾	2008	UK	Cross-sectional study	Children with constipation (Modify Rome criteria)	-	8 months - 18 years old	500	A significant correlation between palpable faeces and US total score was recorded (Pearson's correlation was 0.89 (P <0.001).	Wrong study design (no control group)
2	Diamanti ²⁾	2010	Italy	Retrospective study	Children with FC (Rome III)	-	<15 years	202	The incidence of FC among children visiting the Emergency Department was 0.4%.	Wrong outcome
3	Burgers ³⁾	2011	Netherland	Cross-sectional study	Children with urology disorders and FC	-	4-17 years old	301	Among the children diagnosed with dysfunctional voiding, 41% and 3.2% fulfilled the	Wrong study design (no control group)

									criteria for FC and FNRFI respectively	
4	Mehra ⁴⁾	2015	India	Cross-sectional study	Children with FC	-	3 to 13 years old	105	The mean value of the contractility index for the patients (15.77±24.68) was significantly lower than the mean value for the controls (43.66±11.58) (p=0.001).	Wrong study design (no control group)
5	Modin L ⁵⁾	2015	Denmark	Cross-sectional study	Children with FC (ROME III)	-	2 to 16 years old	235	Rectal examination identified faecal impaction in 149 children (66.2%), and ultrasound showed a mean rectal diameter of 3.4 +/- 0.6 cm, compared to 2.2 +/- 0.6 cm in	Wrong study design (no control group)

									children without impaction ($p < 0.001$).	
6	Pop ⁶⁾	2016	Romania	Retrospective study	Children with FC (Rome III)	-	0-16 years old	45	In children aged 0-4 years, the mean transverse rectal diameter was 21 mm for normal defecation and 33 mm for constipation. In children aged 4-16 years, it was 27 mm for normal defecation and 45 mm for constipation.	Duplicated data (conference report)

7	Pop ⁷⁾	2017	Romania	Retrospective study	Children with FC (Rome III)	–	NR	75	The mean of the transverse rectal diameter was 41.44±14.02 mm in children with FC and 24.32±6.14 mm in children without FC.	Duplicated data (conference report)
8	Holley ⁸⁾	2017	Australia	Cross-sectional study	Children with normal rectum	Children with megarectum	NR	NR	Ultrasound has been proven to show significant variation in rectal diameters between normal and megarectums and between initial and post treatment patients.	Abstract only
9	Pop ⁹⁾	2021	Romania	Retrospective study	Children with Fc	Children with normal defecation	4 months - 14 years old	78 (51)	Rectal diameter in children with and without FC was 34.6±9.3 and 26±6 mm, respectively.	Duplicated data

10	Tsvetkova ¹⁰⁾	2021	Russia	Cohort-study	Children with FC	No control group	1 month - 17 years old	470	In children aged 1-3 years, 66.9% of cases had an anal origin. Mixed mechanisms predominated in children aged 4-10 years, while in children over 10 years old, the colon was the primary source in 77.7% of cases	Wrong study design (no control group)
11	Imanzadeh ¹¹⁾	2022	Iran	Cross-sectional study	Children with FC (Rome IV)	–	<14 years old	94	The sensitivity and specificity of ultrasonographic DoRA were 82.80% and 73.33%, respectively with positive predictive value and negative predictive value of 86.88% and 66.6%	Duplicated data (conference report)

12	Imanzadeh ¹²⁾	2022	Iran	Cross-sectional study	Children with FC (according to Rome IV)	No control	<14 years old	94	The average pre-treatment DRA and post-treatment was 38.79 ± 10.17 mm, and 29.08 ± 9.43 mm, respectively.	Wrong study design (No control group)
13	Shapouri ¹³⁾	2022	Iran	Cross-sectional study	Children with FC (Rome IV)	No control group	2 - 16 years old	100	The mean rectal diameter was 33.9 ± 17.3 cm in children with functional constipation and fecal impaction was present in 70% of case.	Wrong study design (no control group)
14	Dogan G ¹⁴⁾	2022	Turkey	Case-control study	Children with FC (ROME IV)	Children who passed stool everyday or one in 2 days and underwent ultrasound	6 months to 18 years	304	Constipated children had larger rectal diameter than control group. Rectum anterior wall thickness measurement was found to be higher in	Wrong outcome

						examination for another reason.			constipated patients with fecal mass	
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