

## Supplemental Material S1. Search terms.

### Search term mapping

Embase subject headings were mapped to subject headings or topics in CINAHL, ProQuest, and Web of Science (Tables S1 and S2).

Title/abstract/keyword searches were used in place of subject heading searches in Scopus, PEDE, NHS EED, and the Cochrane Library, which do not use subject headings or topics to index records. Word variations were searched on all lines of the Cochrane Library search. PEDE, NHS EED, ANZCTR, ClinicalTrials.gov, and OpenGrey had limited search functionality and a small number of results. Searches of these databases were truncated after combining the population search terms and results exported for title/abstract review.

Table S1. Quality of life search term mapping from Embase to CINAHL, ProQuest, and Web of Science.

Embase 'subject heading'	CINAHL 'subject heading'	ProQuest 'mainsubject'	Web of Science 'topic'
Fluency disorder	Fluency Disorders	No subject heading	Fluency disorder*
Stuttering	No subject heading	Stuttering	Stuttering
Therapy	Therapeutics+	Therapy	Therapy
Clinical outcome	No subject heading	Clinical outcomes	Clinical outcome*
Outcome variable	Dependent Variable	Clinical outcomes	Outcome variable*
Outcome assessment	Outcome Assessment	Clinical outcomes	Outcome assessment*
Treatment outcome	Treatment Outcome+	Clinical outcomes	Treatment outcome*
Patient-reported outcome	Patient-Reported Outcomes+	No subject heading	Patient-reported outcome* OR Patient reported outcome*
Quality of life	Quality of Life+	Quality of life	Quality of life
Quality adjusted life year	Quality-Adjusted Life Years	No subject heading	Quality-adjusted life year* or Quality adjusted life year*

Table S2. Quality of life search term mapping from Embase to CINAHL, ProQuest, and Web of Science.

Embase 'subject heading'	CINAHL 'subject heading'	ProQuest 'mainsubject'	Web of Science 'topic'
Fluency disorder	Fluency Disorders	No subject heading	Fluency disorder*
Stuttering	No subject heading	Stuttering	Stuttering
Disease burden	No subject heading	No subject heading	Disease burden
Caregiver burden	Caregiver Burden	No subject heading	Caregiver burden
Health care cost	Health Resource Utilization OR Health Care Costs+	Health care expenditures	Health care cost* OR Healthcare cost*
Cost	No subject heading	Cost	Not used <sup>c</sup>
Cost of illness	Economic Aspects of Illness	Cost of illness	Cost of illness
Education	Outcomes of Education <sup>a</sup>	Academic achievement OR Academic underachievement OR Education attainment <sup>b</sup>	Outcomes of education OR Education outcomes OR Academic achievement OR Academic underachievement OR Educational attainment <sup>d</sup>
Occupation	Occupations and Professions+	Occupations	Occupation
Employment	Employment+	Employment	Employment
Attitude	Attitude+	Attitudes	Not used <sup>c</sup>
Personnel management	Personnel Management+	Personnel management	Not used <sup>c</sup>
Mental Health	Mental Health	Mental health	Mental health
Human relation	No subject heading	Human relations	Human relation*
Productivity	Productivity	Productivity	Productivity
Social aspect	No subject heading	No subject heading	Social aspect*

<sup>a</sup> Education+ subject heading expanded; outcomes of education selected from list of sub-headings

<sup>b</sup> Education subject heading expanded; academic achievement, academic underachievement, and education attainment selected from list of sub-headings.

<sup>c</sup> Topic returned many irrelevant results. Title/abstract used instead.

<sup>d</sup> Education topic expanded; outcomes of education, education outcomes, academic achievement, academic underachievement, and educational attainment selected as topics, consistent with CINAHL and ProQuest subject headings.

## Quality of Life search terms

Tables S3 to S8 detail the quality of life search terms used for Embase, CINAHL, ProQuest, Web of Science, Scopus, and the Cochrane Library.

Table S3. Quality of Life search terms used in Embase.

<b>Databases:</b> Embase (1974 to 2021 January 15), Ovid MEDLINE ® ALL (1946 to January 15, 2021) & APA PsycInfo 1806 to January Week 2 2021		
<b>Search date:</b> 20-Jan-21		
#	Search terms	Results
1	fluency disorder/ or stuttering/	13,680
2	(stuttering or stammering or disfluency).kw. or (stuttering or stammering or disfluency).tw.	14,504
3	1 or 2	17,350
4	intervention.kw. or intervention.tw.	1,844,627
5	treat*.kw. or treat*.tw.	14,205,344
6	therapy/	1,328,181
7	4 or 5 or 6	16,037,827
8	clinical outcome/ or outcome variable/ or outcome assessment/ or treatment outcome/ or patient-reported outcome/	2,602,676
9	quality of life/	737,668
10	quality adjusted life year/	40,878
11	health related outcome*.tw. or health related outcome*.kw.	5,267
12	8 or 9 or 10 or 11	3,235,601
13	3 and 7 and 12	751
14	remove duplicates from 13	516

Explanatory notes: / = subject heading; \* = unlimited truncation (i.e., unlimited suffix variations); (...) = limiter; kw = keyword heading; tw = text word (includes title, abstract, and drug trade name).

Table S4. Quality of Life search terms used in CINAHL.

<b>Databases:</b> CINAHL Complete		
<b>Search date:</b> 22-Feb-21		
#	Search terms	Results

1	(MH "Fluency Disorders")	3,166
2	TI stuttering or fluency disorder or stammering or dysfluency	1,486
3	AB stuttering or fluency disorder or stammering or dysfluency	1,487
4	1 or 2 or 3	3,424
5	TI intervention or AB intervention	424,759
6	TI treat* or AB treat*	1,080,074
7	(MH "Therapeutics+")	1,585,326
8	5 or 6 or 7	2,541,569
9	TI clinical outcome or AB clinical outcome	75,289
10	(MH "Dependent Variable")	2,957
11	(MH "Outcome Assessment") or (MH "Treatment Outcomes+") or (MH "Patient-Reported Outcomes+")	428,083
12	(MH "Quality of Life+")	125,305
13	(MH "Quality-Adjusted Life Years")	5,025
14	TI health related outcome* or AB health related outcome*	5,087
15	9 or 10 or 11 or 12 or 13 or 14	587,035
16	4 and 8 and 15	314

Explanatory notes: \* = truncation wildcard (i.e., unlimited suffix variations); + = explode subject heading; (...) = limiter; "..." = exact phrase; AB = abstract; MH = exact subject heading; TI = title.

Table S5. Quality of Life search terms used in ProQuest.

Databases: ProQuest		
Search date: 26-Feb-21		
#	Search terms	Results
1	MAINSUBJECT.EXACT("stuttering")	6,150
2	AB(stuttering or stammering or disfluency) or TI(stuttering or stammering or disfluency)	13,878
3	1 or 2	15,128
4	AB(intervention) or TI(intervention)	2,054,834
5	AB(treat*) or ti(treat*)	12,202,146
6	MAINSUBJECT.EXACT("therapy")	77,618
7	4 or 5 or 6	13,696,514
8	MAINSUBJECT.EXACT("Clinical outcomes")	47,463
9	AB(patient reported outcome) or TI(patient reported outcome)	240,347

10	MAINSUBJECT.EXACT("Quality of life")	354,124
11	AB(quality adjusted life year) or TI(quality adjusted life year)	28,738
12	AB(health related outcome) or TI(health related outcome)	152,245
13	8 or 9 or 10 or 11 or 12	744,537
14	3 and 7 and 13	123

Explanatory notes: \* = truncation (up to 500 word variations); (...) = limiter; "..." = exact phrase; AB = abstract; MAINSUBJECT.EXACT = exact subject heading; TI = title.

Table S6. Quality of Life search terms used in Web of Science.

Database: Web of Science (All years, 1864-2021)		
Search date: 27-Feb-21		
#	Search terms	Results
1	TS=("fluency disorder*") or TS=(stuttering)	9,146
2	TI=(stuttering or stammering or disfluency) or AB=(stuttering or stammering or disfluency)	9,293
3	1 or 2	10,434
4	TI=(intervention) or AB=(intervention)	1,441,805
5	TI=(treat*) or AB=(treat*)	9,534,163
6	TS=(therapy)	11,596,190
7	4 or 5 or 6	17,618,885
8	TS=("clinical outcome*" or "outcome variable*" or "outcome* assessment*" or "treatment outcome*" or "patient-reported outcome*" or "patient reported outcome*")	1,382,075
9	TS=("quality of life")	604,326
10	TS=("quality adjusted life year*" or "quality-adjusted life year*")	21,227
11	TI=("health related outcome*") or AB=("health related outcome*")	2,350
12	8 or 9 or 10 or 11	1,895,176
13	3 and 7 and 12	496

Explanatory notes: \* = wildcard for right hand truncation (any group of suffix characters, including no character); (...) = limiter to override operator precedence; "..." = exact phrase; AB = abstract; TI = title; TS = topic.

Table S7. Quality of Life search terms used in Scopus.

Database: Scopus (All years)	
Search date: 02-Mar-21	

#	Search terms	Results
1	TITLE-ABS-KEY ("fluency disorder*" or stuttering)	8,230
2	TITLE-ABS (stuttering OR stammering or disfluency)	7,421
3	1 or 2	9,469
4	TITLE-ABS (intervention)	1,360,735
5	TITLE-ABS (treat*)	8,598,971
6	TITLE-ABS-KEY (therapy)	4,659,707
7	4 or 5 or 6	11,885,688
8	TITLE-ABS-KEY ("clinical outcome*" or "outcome variable*" or "outcome* assessment*" or "treatment outcome*" or "patient-reported outcome*" or "patient reported outcome*")	2,015,330
9	TITLE-ABS-KEY ("quality of life")	539,489
10	TITLE-ABS-KEY ("quality adjusted life year" or "quality-adjusted life year")	25,642
11	TITLE-ABS ("health related outcome*")	2,207
12	8 or 9 or 10 or 11	2,245,159
13	3 and 7 and 12	616

Explanatory notes: \* = wildcard; (...) = limiter; “...” = loose phrase (exact words, ignores punctuation); TITLE-ABS = article title or abstract; TITLE-ABS-KEY = article title or abstract or keywords.

Table S8. Quality of Life search terms used in the Cochrane Library.

<b>Database:</b> Cochrane Library (including Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials)		
<b>Search date:</b> 20-May-21		
#	Search terms	Results
1	("fluency disorder" or stuttering):ti,ab,kw	276
2	(stuttering or stammering or disfluency):ti or (stuttering or stammering or disfluency):ab	271
3	1 or 2	291
4	intervention:ti,ab	422,259
5	treat*:ti,ab	806,531
6	therapy:ti,ab,kw	710,888
7	4 or 5 or 6	1,212,754

8	("clinical outcome*" or "outcome variable*" or "outcome* assessment*" or "treatment outcome*" or "patient-reported outcome*" or "patient reported outcome*"):ti,ab,kw	267,756
9	"quality of life":ti,ab,kw	115,018
10	("quality adjusted life year" or "quality-adjusted life year"):ti,ab,kw	0
11	("health related outcome*"):ti,ab	429
12	8 or 9 or 10 or 11	0
13	8 or 9 or 11	348,994
14	3 and 7 and 12	0
15	3 and 7 and 13	69

Explanatory notes: \* = wildcard to search zero or more characters; (...) = nesting to change search precedence; "..." = phrase search; ab = abstract; kw = keyword; ti = title.

## Cost of illness search terms

Tables S9 to S14 detail the cost search terms used for Embase, CINAHL, ProQuest, Web of Science, Scopus, and the Cochrane Library.

Table S9. Cost search terms used in Embase.

<b>Databases:</b> Embase (1974 to 2021 January 15), Ovid MEDLINE ® ALL (1946 to January 15, 2021) & APA PsycInfo 1806 to January Week 2 2021		
<b>Search date:</b> 19-Jan-21		
#	Search terms	Results
1	fluency disorder/ or stuttering/	13,680
2	(stuttering or stammering or disfluency).kw. or (stuttering or stammering or disfluency).tw.	14,504
3	1 or 2	17,350
4	economic.kw. or economic.tw.	614,353
5	health resource*.kw. or health resource*.tw.	18,082
6	disease burden/ or caregiver burden/	36,056
7	economic burden.kw. or economic burden.tw.	32,765
8	emotional burden.kw. or emotional burden.tw.	2,482
9	"health care cost"/	245,531
10	"cost"/	108,319
11	cost.kw. or cost.tw.	1,126,791

12	"cost of illness"/	47,767
13	education/	480,763
14	occupation/ or employment/	187,403
15	attitude/ or personnel management/	199,338
16	mental health/	256,431
17	human relation/	89,318
18	productivity/	57,123
19	social aspect/	78,028
20	4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19	3,045,646
21	3 and 20	662
22	Remove duplicates from 21	518

Explanatory notes: / = subject heading; \* = unlimited truncation (i.e., unlimited suffix variations); (...) = limiter; "..." = literal string (i.e., an exact phrase); kw = keyword heading; tw = text word (includes title, abstract, and drug trade name).

Table S10. Cost search terms used in CINAHL.

Database: CINAHL		
Search date: 22-Feb-21		
#	Search terms	Results
1	(MH "Fluency Disorders")	3,166
2	TI stuttering or fluency disorder or stammering or dysfluency	1,486
3	AB stuttering or fluency disorder or stammering or dysfluency	1,487
4	1 or 2 or 3	3,424
5	TI economic or AB economic	70,268
6	(MH "Health Resource Utilization")	19,592
7	TI health resource* or AB health resource*	18,217
8	TI disease burden or AB disease burden	14,159
9	(MH "Caregiver Burden")	10,172
10	TI caregiver burden or AB caregiver burden	4,247
11	TI economic burden or AB economic burden	4,958
12	TI emotional burden or AB emotional burden	987
13	(MH "Health Care Costs+")	61,717
14	TI cost or AB cost	163,546
15	(MH "Economic Aspects of Illness")	10,072

16	(MH "Education+")	948,231
17	(MH "Outcomes of Education")	14,151
18	(MH "Occupations and Professions+") or (MH "Employment+")	143,243
19	(MH "Attitude+") or (MH "Personnel Management+")	715,705
20	(MH "Mental Health")	41,151
21	TI human relation or AB human relation	969
22	(MH "Productivity")	11,248
23	TI social aspect OR AB social aspect	4,499
24	5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 18 or 19 or 20 or 21 or 22 or 23	1,741,435
25	4 and 24	1,392
26	5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 17 or 18 or 19 or 20 or 21 or 22 or 23	1,103,452
27	4 and 26	534

Explanatory notes: \* = truncation wildcard (i.e., unlimited suffix variations); + = explode subject heading; (...) = limiter; "..." = exact phrase; AB = abstract; MH = exact subject heading; TI = title.

Table S11. Cost search terms used in ProQuest.

Database: ProQuest		
Search date: 26-Feb-21		
#	Search terms	Results
1	MAINSUBJECT.EXACT("stuttering")	6,150
2	AB(stuttering or stammering or disfluency) or TI(stuttering or stammering or disfluency)	13,878
3	1 or 2	15,128
4	AB(economics) or TI(economics)	368,891
5	AB(health resource) or TI(health resource)	307,910
6	AB(disease burden) or TI(disease burden) or AB(caregiver burden) or TI(caregiver burden)	185,051
7	AB(economic burden) or TI(economic burden)	56,629
8	AB(emotional burden) or TI(emotional burden)	9,914
9	MAINSUBJECT.EXACT("health care expenditures")	23,951
10	MAINSUBJECT.EXACT("cost")	17,285
11	AB(cost) or TI(cost)	4,449,850
12	MAINSUBJECT.EXACT("cost of illness")	30,643

13	MAINSUBJECT(education)	3,101,730
14	MAINSUBJECT.EXACT("Academic achievement") or MAINSUBJECT.EXACT("Academic underachievement") or MAINSUBJECT.EXACT("Educational attainment")	156,203
15	MAINSUBJECT(Occupations) or MAINSUBJECT(Employment)	617,811
16	MAINSUBJECT.EXACT("attitudes") or MAINSUBJECT.EXACT("personnel management")	163,449
17	MAINSUBJECT.EXACT("mental health")	246,652
18	MAINSUBJECT.EXACT("human relations")	15,322
19	MAINSUBJECT.EXACT("productivity")	234,137
20	AB(social aspect) or TI(social aspect)	72,028
21	4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 15 or 16 or 17 or 18 or 19 or 20	10,258,536
22	3 and 21	818
23	4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 16 or 17 or 18 or 19 or 20	7,603,501
24	3 and 23	449

Explanatory notes: \* = truncation (up to 500 word variations); (...) = limiter; "..." = exact phrase; AB = abstract; MAINSUBJECT.EXACT = exact subject heading; TI = title.

Table S12. Cost search terms used in Web of Science.

Database: Web of Science (All years, 1864-2021)		
Search date: 27-Feb-21		
#	Search terms	Results
1	TS=("fluency disorder*") or TS=(stuttering)	9,146
2	TI=(stuttering or stammering or disfluency) or AB=(stuttering or stammering or disfluency)	9,293
3	1 or 2	10,434
4	TI=(economic) or AB=(economic)	1,314,049
5	TI=("health resource*") or AB=("health resource*")	8,302
6	TS=("disease burden" or "caregiver burden")	29,506
7	TI=("economic burden") or AB=("economic burden")	16,123
8	TI=("emotional burden") or AB=("emotional burden")	1,046
9	TS=("health care cost*" or "healthcare cost*")	80,388
10	TI=("cost") or AB=("cost")	1,921,726
11	TS=("cost of illness")	30,415

12	TS=("outcomes of education" or "education outcomes" or "academic achievement" or "academic underachievement" or "educational attainment")	48,068
13	TS=(occupation or employment)	460,611
14	TI=(attitude or "personnel management") or AB=(attitude or "personnel management")	493,853
15	TS=(mental health)	580,975
16	TS=("human relation*")	9,504
17	TS=(productivity)	548,342
18	TS=("social aspect*")	60,479
19	4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18	5,046,284
20	3 and 19	807

Explanatory notes: \* = wildcard for right hand truncation (any group of suffix characters, including no character); (...) = limiter to override operator precedence; "..." = exact phrase; AB = abstract; TI = title; TS = topic.

Table S13. Cost search terms used in Scopus.

Database: Scopus (All years)		
Search date: 02-Mar-21		
#	Search terms	Results
1	TITLE-ABS-KEY ("fluency disorder*" or stuttering)	8,230
2	TITLE-ABS (stuttering OR stammering or disfluency)	7,421
3	1 or 2	9,469
4	TITLE-ABS (economic)	1,335,483
5	TITLE-ABS ("health resource*")	7,926
6	TITLE-ABS-KEY ("disease burden" or "caregiver burden")	43,876
7	TITLE-ABS ("economic burden")	14,870
8	TITLE-ABS ("emotional burden")	1,168
9	TITLE-ABS-KEY ("health care cost*" or "healthcare cost*")	209,210
10	TITLE-ABS ("cost")	2,482,855
11	TITLE-ABS-KEY ("cost of illness")	34,851
12	TITLE-ABS-KEY ("outcomes of education" or "education outcomes" or "academic achievement" or "academic underachievement" or "educational attainment")	73,056

13	TITLE-ABS-KEY (occupation or employment)	443,479
14	TITLE-ABS (attitude or "personnel management")	460,999
15	TITLE-ABS-KEY (mental and health)	484,748
16	TITLE-ABS ("human relation**")	7,505
17	TITLE-ABS-KEY (productivity)	412,547
18	TITLE-ABS-KEY ("social aspect**")	115,313
19	4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18	5,364,509
20	3 and 19	761

Explanatory notes: \* = wildcard; (...) = limiter; "... = loose phrase (exact words, ignores punctuation); TITLE-ABS = abstract title or abstract; TITLE-ABS-KEY = article title or abstract or keywords.

Table S14. Cost search terms used in the Cochrane Library.

<b>Database:</b> Cochrane Library (including Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials)		
<b>Search date:</b> 12-Mar-21		
#	Search terms	Results
1	("fluency disorder" or stuttering):ti,ab,kw	272
2	(stuttering or stammering or disfluency):ti or (stuttering or stammering or disfluency):ab	268
3	1 or 2	287
4	(economic):ti or (economic):ab	18,767
5	("health resource"):ti or ("health resource"):ab	762
6	("disease burden" or "caregiver burden"):ti,ab,kw	3,110
7	("economic burden"):ti or ("economic burden"):ab	1,050
8	("emotional burden"):ti or ("emotional burden"):ab	100
9	("health care cost" or "healthcare cost"):ti,ab,kw	9,037
10	("cost"):ti,ab	69,665
11	("cost of illness"):ti,ab,kw	1,115
12	("outcomes of education" or "education outcomes" or "academic achievement" or "academic underachievement" or "educational attainment"):ti,ab,kw	2,231
13	(occupation or employment):ti,ab,kw	34,867
14	(attitude or "personnel management"):ti,ab	12,689
15	("mental health"):ti,ab,kw	20,867

16	("human relation"):ti,ab	30
17	(productivity):ti,ab,kw	82,265
18	("social aspect"):ti,ab,kw	762
19	4 or 5 or 6 or 7 or 8 or 9 or 10 11 or 12 or 13 or 14 or 15 or 16 or 17 18	212,907
20	3 and 19	77

Explanatory notes: (...) = nesting to change search precedence; "..." = phrase search; ab = abstract; kw = keyword; ti = title.

### Search terms using population only

Tables S15 to S19 detail the truncated search terms used for the Paediatric Economic Database Evaluation (PEDE), the National Health Service Economic Evaluation Database (NHS EED), the Australian New Zealand clinical trials registry (ANZCTR), United States National Institutes of Health trial register, and Open Grey.

Table S15. Search terms used in the Paediatric Economic Database Evaluation (PEDE) database.

Database: PEDE (All years, 1980 - 2019)		
Search date: 02-Mar-21		
#	Search terms	Results
1	TITLE_ABSTRACT_KEYWORDS (stuttering)	1
2	TITLE_ABSTRACT_KEYWORDS (stammering)	0
3	TITLE_ABSTRACT_KEYWORDS (disfluency)	0
4	TITLE_ABSTRACT_KEYWORDS ("fluency disorder")	0
5	1 or 2 or 3 or 4	1

Explanatory notes: (...) = limiter; "..." = phrase search.

Table S16. Search terms used in the National Health Service Economic Evaluation Database (NHS EED).

Database: NHS EED (All years, 1994 - 2015)		
Search date: 02-Mar-21		

#	Search terms	Results
1	Any field (stuttering or stammering or disfluency)	13
2	Any field ("fluency disorder")	0
3	1 or 2	13

Explanatory notes: (...) = limiter; "... " = phrase search.

Table S17. Search terms used in the Australian New Zealand clinical trials registry (ANZCTR).

Database: ANZCTR		
Search date: 20-May-21		
#	Search terms	Results
1	Health condition(s) or problem(s) studied: (stuttering)	10
2	Health condition(s) or problem(s) studied: (stammering)	0
3	Health condition(s) or problem(s) studied: (disfluency)	1
4	Health condition(s) or problem(s) studied: ("fluency disorder")	0
5	1 or 2 or 3 or 4	10

Explanatory notes: (...) = limiter; "... " = phrase search.

Table S18. Search terms used in the United States National Institutes of Health trial register (ClinicalTrials.gov).

Database: United States National Institutes of Health trial register (ClinicalTrials.gov)		
Search date: 20-May-21		
#	Search terms	Results
1	Condition or disease: (stuttering or stutters or stammering)	34
2	Condition or disease: (disfluency)	3
3	Condition or disease: ("fluency disorder")	14
4	1 or 2 or 3	45

Explanatory notes: (...) = limiter; "... " = phrase search.

Table S19. Search terms used in OpenGrey.

Database: OpenGrey		
Search date: 20-May-21		

#	Search terms	Results
1	stuttering	6
2	stammering	6
3	disfluency	12
4	fluency disorder	5
5	1 or 2 or 3 or 4	28