

Appendix 1

Keywords combination

("university students" OR "undergraduate students" OR "postgraduate students" OR "higher education students" OR "college students" OR "tertiary education students")

AND

("e-learning" OR "distance learning" OR "virtual learning" OR "online education" OR "online learning" OR "electronic learning" OR "online class")

AND

(COVID-19 OR coronavirus OR "SARS-CoV-2" OR "2019-nCoV Infection" OR "COVID-19 pandemic" OR "COVID-19 outbreak")

AND

(anxiety OR anxious).

Appendix 2

1) PUBMED

Database	Search limitation according to database	Search term/strategy	Total Hits	Total	Relevant After screened
PubMed	Years 2019-2021	#1 ("University students" OR "Undergraduate students" OR "postgraduate students" OR "higher education students" OR "College students" OR "Tertiary education students")	12,320		
	Years 2019-2021	#2 ("e-learning" OR "online learning" OR "distance learning" OR "virtual learning" OR "online education" OR "online learning" OR "Electronic learning" OR "online class")	3,867		
	Years 2019-2021	#3 ("COVID-19" OR coronavirus OR SARS-CoV-2 OR "2019-nCoV Infection" OR "COVID-19 Pandemic" OR "COVID-19 outbreak")	153,560		
	Years 2019-2021	#4 (Anxiety OR anxious*)	59,999		
	Year (2019 -2021)	#5 - #1 AND #2 AND #3 AND #4	46		
	Year (2019 -2021), Language (English), Human	#6 - #1 AND #2 AND #3 AND #4	17		
	Remove unrelated/ irrelevant articles	#7	4		
	Total			4	4

2) SCIENCE DIRECT

Database	Search limitation according to database	Search term/strategy	Total Hits	Total	Relevant After Screened
Science Direct	Years 2019 -2021 Journal article	#1 ("University students" OR "Undergraduate students" OR "postgraduate students" OR "higher education students" OR "College students" OR "Tertiary education students")	21,204		
	Years 2019 -2021	#2 ("e-learning" OR "online learning" OR "distance learning" OR "virtual learning" OR "online education" OR "online learning" OR "Electronic learning" OR "online class")	7,601		
	Years 2019 -2021	#3 ("COVID-19" OR coronavirus OR SARS-CoV-2 OR "2019-nCoV Infection" OR "COVID-19 Pandemic" OR "COVID-19 outbreak")	40,167		
	Years 2019 -2021	#4 (Anxiety OR anxious*)	59,870		
	Years 2019 -2021 Research articles,	#5 - #1 AND #2 AND #3 AND #4	146		
	Year (2019 -2021), Language (English), Full-text	#6 - #5	48		
	Remove unrelated/ irrelevant articles	#7	1		
	Total				1

3) EBSCO

Database	Search limitation according to database	Search term/strategy	Total Hits	Total	Relevant After Screened
EBSCO	Years 2019 -2021	#1 ("University students" OR "Undergraduate students" OR "postgraduate students" OR "higher education students" OR "College students" OR "Tertiary education students")	32,414		
	Years 2019 -2021	#2 ("e-learning" OR "online learning" OR "distance learning" OR "virtual learning" OR "online education" OR "online learning" OR "Electronic learning" OR "online class")	9,735		
	Years 2019 -2021	#3 ("COVID-19" OR coronavirus OR SARS-CoV-2 OR "2019-nCoV Infection" OR "COVID-19 Pandemic" OR "COVID-19 outbreak")	197,637		
	Years 2019 -2021	#4 (Anxiety OR anxious*)	137,429		
	Year 2019 -2021	#5 #1 AND #2 AND #3 AND #4	388		
	Year (2019 -2021), Language (English).	#5 - #1 AND #2 AND #3 AND #4	314		
	Year (2019 -2021), Human, full text.	#6 - #1 AND #2 AND #3 AND #4	210		
	Year (2019 -2021), Language (English). Human, full text.	#7 - #5 AND # 6	69		
	Remove unrelated/ irrelevant articles	#7	1		
Total				1	1

4) WILEY

Database	Search limitation according to Database	Search term/strategy	Total Hits	Total	Relevant After Screened
WILEY	Title, Abstract, Keywords, Years 2019-2021	#1 ("University students" OR "Undergraduate students" OR "postgraduate students" OR "higher education students" OR "College students" OR "Tertiary education students")	134		
	Title, Abstract, Keywords, Years 2019-2021	#2 ("e-learning" OR "online learning" OR "distance learning" OR "virtual learning" OR "online education" OR "online learning" OR "Electronic learning" OR "online class")	70		
	Title, Abstract, Keywords, Years 2019-2021	#3 ("COVID-19" OR coronavirus OR SARS-CoV-2 OR "2019-nCoV Infection" OR "COVID-19 Pandemic" OR "COVID-19 outbreak")	8240		
	Title, Abstract, Keywords, Years 2019-2021	#4 (Anxiety OR anxious*)	1058		
	Anywhere, Years 2019- 2021	#5- #1 AND #2 AND #3 AND #4	198		
	Title, Abstract, Keywords, Years 2019-2021	#6 - #1 AND #2 AND #3 AND #4	5		
	Remove unrelated/ irrelevant articles	#7	5		
	Total			5	5

5) SCOPUS

Database	Search limitation according to Database	Search term/strategy	Total Hits	Total	Relevant After Screened
SCOPUS	Years 2019-2021	#1 ("University students" OR "Undergraduate students" OR "postgraduate students" OR "higher education students" OR "College students" OR "Tertiary education students")	182,081		
	Years 2019 -2021	#2 ("e-learning" OR "online learning" OR "distance learning" OR "virtual learning" OR "online education" OR "Electronic learning" OR "online class")	125,140		
	Years 2019 -2021	#3 ("COVID-19" OR coronavirus OR SARS-CoV-2 OR "2019-nCoV Infection" OR "COVID-19 Pandemic" OR "COVID-19 outbreak")	265,808		
	Years 2019 -2021	#4 (Anxiety OR anxious*)	449,692		
	Year (2019 -2021)	#5 - #1 AND #2 AND #3 AND #4	1,253		
	Year (2019 -2021), Language (English), Journal	#6 - #1 AND #2 AND #3 AND #4	1,047		
	Remove unrelated/ irrelevant articles	#7	35		
		Total			35

Appendix 3

Joanna Briggs Institute Critical Appraisal Tool for Analytical Cross-sectional Study Design

No	ARTICLE	TYPE OF STUDY	REVIEWER	Checklist from Joanna Briggs Institute (JBI) Critical Appraisal tools								Total Score	Result of Quality
				Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8		
1	Alqudah <i>et al.</i> , 2021	Cross-Sectional (Observational)	AZ	Y	Y	Y	Y	N	N	Y	Y	6/8	Average score =5/8 (medium)
			AL	y	y	N	Y	N	N	Y	Y	6/8	
			HJ	Y	Y	N	Y	N	N	Y	Y	5/8	
			TA	Y	Y	N	Y	N	N	Y	Y	5/8	
			TH	Y	Y	N	Y	N	NA	Y	Y	5/8	
			JO	Y	Y	N	Y	N	N	Y	Y	5/8	
2	Fruehwirth <i>et al.</i> , 2021	Longitudinal (Repeated cross-sectional)	AZ	Y	Y	Y	Y	N	N	Y	Y	6/8	Average score =6/8 (medium)
			AL	Y	Y	Y	Y	N	N	Y	Y	6/8	
			HJ	Y	Y	Y	Y	N	N	Y	Y	6/8	
			TA	Y	Y	Y	Y	N	N	Y	Y	6/8	
			TH	Y	Y	Y	Y	Y	Y	Y	Y	8/8	
			JO	Y	Y	Y	Y	N	N	Y	Y	6/8	
3	Moy <i>et al.</i> , 2021	Cross-Sectional (Observational)	AZ	Y	Y	Y	Y	N	N	Y	Y	6/8	Average score =7/8 (high)
			AL	Y	Y	Y	Y	N	N	Y	Y	7/8	
			HJ	Y	Y	Y	Y	N	N	Y	Y	6/8	
			TA	Y	Y	Y	Y	N	N	Y	Y	6/8	
			TH	Y	Y	Y	Y	Y	Y	Y	Y	8/8	
			JO	Y	Y	Y	Y	Y	N	Y	Y	7/8	
4	Saddik <i>et al.</i> , 2020	Cross-Sectional (Observational)	AZ	Y	Y	Y	Y	N	N	Y	Y	6/8	Average score =7/8 (high)
			AL	Y	Y	Y	Y	N	N	Y	Y	6/8	
			HJ	Y	Y	Y	Y	N	N	Y	Y	6/8	
			TA	Y	Y	Y	Y	N	N	Y	Y	6/8	
			TH	Y	Y	Y	Y	Y	Y	Y	Y	8/8	
			JO	Y	Y	Y	Y	Y	N	Y	Y	7/8	
5	Sundaresan <i>et al.</i> , 2020	Cross Sectional (Observational)	AZ	Y	Y	Y	Y	N	N	Y	Y	6/8	Average score =5/8 (medium)
			AL	Y	Y	Y	Y	N	N	Y	Y	6/8	
			HJ	U	U	U	U		N	Y	Y	2/8	
			TA	Y	Y	Y	Y	N	N	Y	Y	6/8	
			TH	Y	Y	Y	Y	N	Y	Y	Y	7/8	
			JO	U	Y	N	U	U	N	Y	Y	3/8	
6	Wang <i>et al.</i> , 2020	Longitudinal (Repeated cross-sectional)	AZ	Y	Y	Y	Y	N	N	Y	Y	6/8	Average score =5/8 (medium)
			AL	Y	Y	Y	Y	N	N	Y	Y	5/8	
			HJ	Y	Y	Y	Y	N	N	U	Y	5/8	
			TA	Y	Y	Y	Y	N	N	U	Y	5/8	
			TH	Y	Y	Y	Y	U	U	U	Y	5/8	
			JO	Y	Y	Y	Y	N	N	U	Y	5/8	
7	Yaghi <i>et al.</i> , 2021	Longitudinal (Repeated cross-sectional)	AZ	Y	Y	Y	Y	N	N	Y	Y	6/8	Average score =6/8 (medium)
			AL	Y	Y	Y	Y	N	N	Y	Y	6/8	
			HJ	Y	Y	Y	Y	N	N	U	Y	5/8	
			TA	Y	Y	Y	Y	N	N	Y	Y	6/8	
			TH	Y	Y	Y	Y	N	Y	U	Y	6/8	
			JO	Y	Y	Y	Y	N	N	Y	Y	6/8	