

# **COVID-19 and You: Impact and Recovery Study**

# **Rapid Research Report**

# A literature review to inform the development of a UK specific instrument to measure COVID-19 Fear.

Dr Alison Dawson, Dr Tamara Brown, Dr Cate Pemble, Dr Elaine Douglas



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Healthy AGeing In Scotland (HAGIS) series of rapid reports present information, analysis and key policy recommendations on issues relating to health, social and economic engagement of older people living in Scotland. This and other reports are available from our website: <u>www.hagis.scot</u>. Readers are encouraged to quote or reproduce material from HAGIS for their own publications. As copyright holder, HAGIS requests due acknowledgement.

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# **EXECUTIVE SUMMARY**

- Ten studies reported on nine unique instruments that have been developed and published in English language to measure fear of COVID-19, from the beginning of the pandemic to April 2021
- Seven studies developed and validated unique new instruments for measuring COVID-19 fear, two of which used existing COVID-19 fear scales to validate the new instrument
- Instruments vary significantly in terms of length (items) and scope (factors)
- Study quality was mixed; more detailed reporting of the methods used in the development of the scale items would have improved transparency and therefore quality
- Instruments aimed to measure various psychological states potentially related to COVID-19, including anxiety, depression, stress, cognitions, phobias, personal risk of infection, and coping behaviours
- Measures of general and COVID-specific anxiety and depression are positively correlated with COVID-19 fear
- COVID-19 fear may be moderated by certain sociodemographic factors such as age and gender, and pre-existing physical and psychological health conditions
- None of the studies proposed a threshold for subclinical/clinical fear of COVID-19 in a general population sample
- The majority of identified studies developed and validated unique instruments
- The instruments included in this rapid review focus on worries and fears related to the domain of health.
- By identifying and describing key characteristics of existing COVID-19 scales we help other researchers to decide which instrument might be the most suited to their needs in future studies of the effects of COVID-19 fear

### Background

This impact and recovery study seeks to understand how the COVID-19 pandemic has affected social connectedness, health, health behaviours, spending and labour market behaviours of people aged fifty years and over who are living in Scotland. To do this a measure to capture the public response to covid-19 and the level of fear induced by the pandemic was sought. This report describes the preliminary work undertaken to review psychological scales used to assess COVID-19 fear, stress, or worry; in order to assess their applicability to the development of our survey instrument.

#### Aims

To inform the development of a UK-specific COVID-19 Fear survey instrument by undertaking a rapid review of the literature on the development and validation of instruments to assess COVID-19 fear, stress or worry.

The review aims to address the following research questions:

- 1. What instruments or scales have been developed and validated for the assessment or measurement of 'COVID-19 fear'?
- 2. What differences exist between the underlying conceptual bases for different instruments to assess or measure COVID-19 fear?
- 3. What differences exist between instruments to assess or measure COVID-19 fear in terms of when, where, how and with which sample populations the instrument was validated?
- 4. What differences exist between instruments to assess or measure COVID-19 fear in terms of key characteristics of the instrument, including number of items, sub-scales, etc.?
- 5. What differences exist between the respondent characteristics that have been found to be correlated with different instruments to assess or measure COVID-19 fear?
- 6. What respondent behaviours and external data have instruments to assess or measure COVID-19 fear been found to be able to predict?

7. Given that multiple instruments are now available for this purpose, what factors should be taken into account in deciding which is the most suitable to be used to assess or measure COVID-19 fear in future studies?

#### **Methods**

The protocol is registered on the International prospective register of systematic reviews (PROSPERO registration: CRD42021250233). We produced a narrative synthesis with tabulation, to compare and contrast the instruments across a range of different dimensions. We included sstudies published in English, that described the development or validation of instruments that assessed the presence of a psychological state characterised as 'fear,' 'worry,' 'concern,' 'anxiety' or other broadly synonymous descriptor. We also assessed the experience of, or measured the relative strength or impact of, that psychological state.

#### **Results**

A search strategy was finalised and applied, to capture papers published between 1 January 1991 and 7 April 2022, in ScienceDirect, EBSCOhost and Web of Science. The search resulted in the identification of 2927 records which reduced to ten studies eligible for inclusion. All ten studies had mixed scores across the quality domains.

## **Key Findings**

- Ten studies reported on nine unique instruments that have been developed and published in English language to measure fear of COVID-19, from the beginning of the pandemic to April 2021
- Seven studies developed and validated unique new instruments for measuring COVID-19 fear, two of which used existing COVID-19 fear scales to validate the new instrument
- Instruments vary significantly in terms of length (items) and scope (factors)
- Study quality was mixed; more detailed reporting of the methods used in the development of the scale items would have improved transparency and therefore quality
- Instruments aimed to measure various psychological states potentially related to COVID-19, including anxiety, depression, stress, cognitions, phobias, personal risk of infection, and coping behaviours
- Measures of general and COVID-specific anxiety and depression are positively correlated with COVID-19 fear
- COVID-19 fear may be moderated by certain sociodemographic factors such as age and gender, and pre-existing physical and psychological health conditions
- None of the studies proposed a threshold for subclinical/clinical fear of COVID-19 in a general population sample
- The majority of identified studies developed and validated unique instruments
- The instruments included in this rapid review focus on worries and fears related to the domain of health.
- By identifying and describing key characteristics of existing COVID-19 scales we help other researchers to decide which instrument might be the most suited to their needs in future studies of the effects of COVID-19 fear

# Background

This project seeks to understand how the COVID-19 pandemic has impacted the social connectedness, health, health behaviours, spending and labour market behaviours of people aged fifty years and over who are living in Scotland.

We aim to achieve this by constructing a robust and evidence-based survey instrument (or scale) for measuring 'COVID-19 Fear'. This instrument can then be used to measure the prevalence of COVID-19 fear in older people and their willingness to re-engage across social, health, and economic domains as society adjusts to what may be termed the 'new normal'.

'Fear' has been defined as 'a normal reaction to an evolving threat, preparing the individual, both physically and mentally, for an acute response to possible harm' (Pappas 2009). At the time of this review there was no agreed definition of 'COVID-19 fear'. This report describes the preliminary work undertaken to review existing scales to assess their applicability to the development of our survey instrument.

# Aims

The purpose of this rapid review was to inform the development of a COVID-19 Fear survey instrument through a rapid assessment of literature on the development and validation of instruments to assess COVID-19 fear, stress or worry.

The review aims to address the following research questions:

- 1. What instruments or scales have been developed and validated for the assessment or measurement of 'COVID-19 fear'?
- 2. What differences exist between the underlying conceptual bases for different instruments to assess or measure COVID-19 fear?
- 3. What differences exist between instruments to assess or measure COVID-19 fear in terms of when, where, how and with which sample populations the instrument was validated?
- 4. What differences exist between instruments to assess or measure COVID-19 fear in terms of key characteristics of the instrument, including number of items, sub-scales, etc.?
- 5. What differences exist between the respondent characteristics that have been found to be correlated with different instruments to assess or measure COVID-19 fear?
- 6. What respondent behaviours and external data have instruments to assess or measure COVID-19 fear been found to be able to predict?
- 7. Given that multiple instruments are now available for this purpose, what factors should be taken into account in deciding which is the most suitable to be used to assess or measure COVID-19 fear in future studies?

# **Methods**

#### Searching

A search strategy, inclusion and exclusion criteria, and a data extraction plan were developed by the project team. The review was registered on the International Prospective Register of Systematic Reviews (PROSPERO) (Dawson 2021). The methodology detailed on PROSPERO is briefly described here.

Following iterative development and testing of search terms, a search strategy was finalised and run on 7 April 2021 with a date limit of 1 January 1991. in the bibliographic database ScienceDirect and

bibliographic services EBSCOhost and Web of Science, which simultaneously search multiple bibliographic databases with different disciplinary foci. Details about the bibliographic database services and search terms are provided in Appendix 1. An example of the search string used is provided in Box 1.

Box 1. Search as used with 'Web of Science All Databases' bibliographic database service TS=("severe acute respiratory syndrome coronavirus 2" OR "ncov" OR "2019 ncov" OR "covid 19" OR "sars cov 2" OR "coronavirus" OR "cov" OR "coronavirus" OR "covid-19" OR "2019-ncov" OR "covid19" OR "corona virus" or "sars-cov-2") AND TS=("fear\*" OR "anxiet\*" OR "worr\*") AND TS=(Measure\* OR Scale\* OR Instrument OR Assessment\*) AND TS=(Develop\* OR Validat\*) (Limiters: Databases= WOS, BCI, CCC, DRCI, DIIDW, KJD, MEDLINE, RSCI, SCIELO, ZOOREC; Timespan=1991-2021; Search language=Auto)

"TS" searches Topic fields, including Titles, Abstracts, Keywords and Indexing fields such as Systematics, Taxonomic Terms and Descriptors.

#### Inclusion criteria

We included studies that described the development or validation of instruments that assessed the presence of a psychological state that the study characterised as 'fear,' 'worry,' 'concern,' 'anxiety' or other broadly synonymous descriptors, and assessed the experience of, or measured the relative strength or impact of, that psychological state by reference to clinical criteria or behavioural or other impacts.

Outcomes of interest included: the scales which each study used to inform the items in the COVID-19 fear instrument; number of items included in the final COVID-19 fear instrument; number and descriptions of COVID-19 fear instrument sub-scales; respondent characteristics to which COVID-19 fear is correlated; respondent behaviours or other external data predicted by the final COVID fear instrument.

A decision was made to limit inclusion to studies which described the development and/or validation of English language instruments or validation of English language versions of instruments. This decision was taken in response to concerns about the international generalisability of instruments due to cultural, linguistic, and other differences, especially as the review aim was to inform the development of an instrument specifically for Scottish and UK use. A summary of the main review inclusion criteria is reproduced in Table 1: see Appendix 2 for a full description of all inclusion and exclusion criteria.

#### Data extraction

Two reviewers independently screened every title and abstracts to identify potentially relevant papers. Full texts of those identified were then screened and a final decision made with regard to inclusion. A third reviewer was available to be consulted where necessary, until consensus was reached.

A review-specific proforma was built in Microsoft Forms to extract the required data within each included study. Data extraction included:

- name of the scale
- whether the scale is developed in English language or a translated version of a scale developed in a non-English language
- number and descriptions of items in the scale
- description of the sample population including age
- country and/or geographic area in which COVID-19 fear instrument was validated
- timing of data collection
- main steps and methods used in the process of including items or subscales

- psychometric properties examined in relation to the instrument (such as internal consistency, convergent, discriminant and concurrent validity), and the associated methods (such as exploratory and confirmatory factor analyses)
- respondent characteristics to which COVID-19 fear is correlated
- respondent behaviours or other external data predicted by final/validated COVID fear instrument

	Include	Exclude
Population	Must describe the development and/or validation of instruments intended for use in adults aged 18 years and over	People under the age of 18
Instrument design	Must be designed to: i.Assess the presence of a psychological state characterised by instrument authors as 'fear', 'worry', 'concern', 'anxiety' or other broadly synonymous descriptors ii.Assess the experience of or measure the (relative) strength or impact of that psychological state Where that state has been precipitated by awareness of or perceptions related to: i.the recent coronavirus pandemic ii.'severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)' virus iii.COVID-19, the disease, and/or iv.the impact of public health measures to prevent or control the transmission of the virus Assess or measure such state: i.in general or in unspecific situations, or iii.in relation to specified contexts, e.g. health service use, employment, or specific activities, e.g. having teeth cleaned by a dental hygienist, having a meal in a restaurant Must describe the development and/or validation of English language instruments or validation of English language versions of instruments	Instruments which are not designed to assess or measure emotional states which could be characterised as 'fear', 'worry', 'concern', 'anxiety' or similar Instruments which combine the assessment or measurement of emotional states characterised by authors as 'fear', 'worry', 'concern', 'anxiety' or other broadly synonymous descriptors with the assessment or quantification of other personal characteristics, e.g. personality traits, physical or mental health conditions Instruments designed to assess or measure emotional states prompted by awareness or perceptions of any events, infectious agents or diseases other than those listed in the inclusion events, e.g. natural disasters, Zika
Publication scope	Publications must report one or more of the following in relation to the instrument: i. Conceptualisation ii. Development iii. Validation	Publications which do not discuss the conceptualisation of fear informing the instrument or the development or validation of the instrument itself

#### Table 1 Review Inclusion Criteria

#### Quality assessment

All included studies were quality assessed using a validated tool appropriate to the research design of the study, such as the tool by Moola et al. in the Joanna Briggs Manual (JBI 2020) which is used for quality assessing cross-sectional studies.

#### Data synthesis

We produced a narrative synthesis with tabulation, to compare and contrast the instruments across a range of different dimensions. We attempt to answer the seven research questions stated in the 'Aims' section (above). We highlight the potential significance of aspects of the development and validation processes for different COVID-19 fear instruments.

# **Results**

#### Results of the search

The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) **flow diagram** (Figure 1) depicts the flow of information through the distinct phases of the review. It maps out the number of records identified, included, and excluded, and the reasons for exclusions. The searches resulted in the identification of 2927 records which reduced to 1996 unique records once duplicates were removed. Initial screening of titles resulted in 1884 records being excluded. The remaining 112 records were independently assessed for relevance by two researchers, after which 79 records remained for potential full-text examination. Ten studies were finally included in the rapid review and 69 were excluded of which 51 were excluded specifically because they were not developed or validated in English language. A summary table of these 51 instruments can be found in Appendix 3.

#### Figure 1 PRISMA Flow Diagram



#### Description of the studies

Table 2 summarises the characteristics of the ten included studies. Appendix 4 provides more detail related to the scale items.

#### Study Sample

Ten studies were included, five were based in the USA, 3 in UK, one in New Zealand and one in multiple countries including the UK. All studies except one study by Mansbach (2021) used online questionnaires that used convenience sampling methods or recruited via social media. Sample populations included general population internet users, care residents, parents and carers, students, and MTurk workers. In addition, in one study focused on COVID-19 and mental health and the sample scored higher than the general population for various mental health conditions (Rosebrock 2021) and another only recruited people living with systematic sclerosis (Wu 2020). Sample sizes ranged from 131 to 12,285 participants; percentage female ranged from 34% to 93%; mean age ranged from 22 years to 76 years (only one study (Mansback 2021) had a mean age over 57 years).

Study	Scale/Instrument	Study sample	Test accuracy/validity methods
Arpaci,2020	COVID-19 Phobia Scale (C19P-SE) 20 item, 4-factor (Psychological; Somatic; Economic and Social) Aim: to validate an instrument that mental health professionals and researchers can use to assess the levels of phobia associated with COVID-19	N=227, United States, online survey, mean age 37.82 years, 67.4% female, 2/227 (0.9%)diagnosed with COVID- 19; 18.5% have a chronic disease; 22.1% lost a relative/friend due to COVID-19	Internal consistency reliability for subscale and scale already done, Concurrent validity, Convergent validity, Discriminant validity, Confirmatory factor analysis (CFA)
Jaspal,2020	COVID-19 Own Risk Appraisal Scale (CORAS) 6 item, single factor Aim: to develop a robust, reliable and valid measure of perceived own risk (of infection), as this is particularly likely to influence cognitions, emotions and action in relation to the pandemic, its prevention and its management.	N=470, UK internet users, mean age 32 years, 64.5% female, various ethnic and socio-demographic backgrounds	Internal consistency reliability, Concurrent validity, Convergent validity, Exploratory Factor Analysis (EFA), CFA
Mansbach, 2021	Mood-5 Scale (M5) 5-item, 1. Anhedonia, 2. Excessive worry, 3. Depressed mood, 4. Irritability/agitation, and 5. Somatic symptoms Aim: to rapidly identify COVID-19–associated psychological burden, as	Residents in 20 post-acute or long-term care settings in Maryland, USA, N=131: 53% females, aged 50 years and above (mean age 76.12 years), 84% white, 11% black, 3% other; 18% single, 11% married, 70% widowed, divorced or separated; 55% with <13 years' education; 51% with MCI and 41% with	Internal consistency reliability of items and/or subscales, Convergent validity, Discriminant validity

#### Table 2 Characteristics of the included studies

Study	Scale/Instrument	Study sample	Test accuracy/validity methods
	well as clinical anxiety and depression in postacute and long-term care residents	mild dementia; 51% with COVID-19 distress	
McElroy,202 0	Pandemic Anxiety Scale (PAS) 7-item, 2-factor (disease- anxiety and consequence- anxiety) Aim: to capture the specific aspects of the pandemic that are provoking anxiety in parents of/and adolescents (from a study into mental health outcomes of COVID-19)	Adult sample from UK cohort study: opportunity sample of parents and carers, online survey, N=4793, mean age 42.62 years, 93% female, mean 2.01 children per household, 94% white (British, Irish, other); 59% with undergraduate degree equivalent or above)	Internal consistency reliability of items and/or subscales, Convergent validity, EFA, CFA
Mohlman,20 21	Covid-19 Inventory ('C-19- I') 10-item, 4-factor, 'influence' (items 1,10,9,8,2), infection (items 3,4), impact (items 5,6) and severity (item 7) Aim: to measure anxiety and any gender differences in a new COVID-19 inventory	N=215, mean age 22.01 years, 77% female, undergraduate students New Jersey, USA, via online platform, completing the study for course credit	Internal consistency reliability of items and/or subscales, Convergent validity
Nikčević, 2020	COVID-19 Anxiety Syndrome Scale (C- 19ASS) 9-item, 2-factor, factor 1, COVID-19 Anxiety Syndrome Scale- Perseveration ('C-19ASS- P'), 6 items (2, 4, 6, 7, 8, 9). Factor 2, COVID-19 Anxiety Syndrome Scale- Avoidance ('C-19ASS-A'), 3 items (1, 3, 5) Aim: to identify the presence of anxiety syndrome features associated with COVID-19 Aim: to reliably identify the presence of anxiety syndrome features associated with COVID-19 and tap into additional aspects of maladaptive forms of coping (e.g. avoidance, threat monitoring and worry)	Study 1: N=292 MTurk workers, online survey, USA residents 34% female, mean age 37.2 years, 77.4% White, 9.6% Black, 8.6% Asian, 2.7% Mixed Race, and 1.7% Other; 80.1% educated at college level; 73.3% married, co-habiting or in a civil partnership; 92.4% employed). 30.5% had been tested for COVID-19; 36.6% perceived themselves to be vulnerable to the disease; 7.2% of the sample reported having experienced bereavement as a consequence of COVID-19; Study 2: N=426 MTurk workers resident in USA, 39% female, mean age 38.6 years, 79.1% White, 9.2% Black, 5.2% Hispanic, 3.3% Asian, 3.1%, Mixed Race, and 0.2% Other; 79.4% educated at college level; 74.0% married, co-habiting or in a civil partnership; 92.0% employed). 30.0% had been tested for COVID-19 and 34.0% considered themselves to be vulnerable to the disease (34.0%), with 4.7% having experienced a loss as a consequence of COVID-19	Internal consistency reliability of items and/or subscales, Concurrent validity, Incremental validity CFA

Study	Scale/Instrument	Study sample	Test accuracy/validity methods
Perz,2020	Fear of COVID-19 Scale FCV-19S 7-item, single-factor Aim: to examine the psychometric qualities of the FCV19S in a sample of English-speaking US college students	N=237 undergraduate and graduate students, small public university, USA, 73% female, mean age 30.3 years, 36% married/partnered; 89% undergraduate; 30% Hispanic, 30% Caucasian, 17% African-American, 9% Asian, 15% other/mixed; 73% financially impacted by pandemic; 29% knew someone with Covid-19 symptoms	Internal consistency reliability of items and/or subscales, Convergent validity EFA, CFA
Rosebrock, 2021	The Oxford psychological investigation of coronavirus questionnaire [TOPIC-Q] 26-item, 7-factor 'Cognitions about Safety and Vulnerability', 'Cognitions about Negative Long-Term Impact', 'Cognitions about Having the Virus', 'Cognitions about Negative Self', 'Cognitions about Social Judgment', 'Cognitions about Spreading the Virus', and 'Cognitions about Being Targeted' Aim: to (1) develop a measure of potentially modifiable cognitions related to the coronavirus pandemic and lockdown and (2) determine whether specific cognitions are particularly associated with specific mental health outcomes	N=12,285 adults, UK, online survey,72.2% Female, mean age 54.6 years, 89.6% White British, 6.7% White Other, 65.1% Cohabiting/Married or civil partnership. 43.6% Employed Part/Full-time, 10.2% Self-employed, 31.8% retired, 2.5% unemployed. 27.8% scored above clinical cut-off for depression, 32.5% for social anxiety, 67.7% for agoraphobia, 13% for PTSD, and 9.8% for panic symptoms with 6.6% reporting moderately severe paranoia	Internal consistency reliability of items and/or subscales, Convergent validity, Concurrent validity EFA CFA
Winter,2020	Fear of COVID-19 Scale FCV-19S 7-item, single factor Aim: to conduct the first psychometric assessment and validation of the English version of the FCV-19S	Sample 1: N=1624 adults, online survey New Zealand, 39.7% female/other; mean age 47.5 years, 84.6% New Zealand European, 5.7% Maori or Pasifika, 1.8% Asian, 7.9% other) Sample 2: N= 1111 adults, online survey New Zealand, 69.7% female; mean age 42.0 years, 75.4% New Zealand European, 7.6% Maori or Pasifika, 3.4% Asian, 13.6% other)	Internal consistency reliability of items and/or subscales, Concurrent validity, Relationship to political beliefs

Study	Scale/Instrument	Study sample	Test accuracy/validity methods
Wu,2020	COVID-19 Fears Questionnaire for Chronic Medical Conditions (COVID-19 FQCMC) 10- item, single-factor with additional Scleroderma- specific item Aim: to develop and validate the COVID-19 Fears Questionnaire for Chronic Medical Conditions	Adults living with systemic sclerosis (Scleroderma), online survey, fluent in English, French or Spanish; recruited to SPIN COVID-19 Cohort. Two sample populations: Wave 1, N=800 participants, mean age 55.6 years, 90.2% female, mean education 15.8 years, 68.8% married or living as married; 82.9% white, 6.8% black, 10.3% other; resident in multiple countries, including Canada (24.7%), United States (31.6%), France (25.7%), United Kingdom (8.7%), Australia (5.5%), Other (3.8%); mean 11.6 years since diagnosis, Wave 2, N=563 participants, online survey, mean age 56.7 years, 89.5% female, mean education 15.8 years, 67.7% married or living as married; 84.6% white, 5.8% black, 9.6% other; resident in multiple countries, including Canada (27.1%), United States (29.8%), France (25.9%), United Kingdom (9.1%), Australia (5.0%), Other (3.1%); mean 11.7 years since diagnosis	Internal consistency reliability of items and/or subscales, Concurrent validity, Convergent validity, EFA, CFA

#### Methodological Quality Assessment

Eight out of the ten included studies were cross-sectional design and we quality assessed these using a tool by Moola et al. in the Joanna Briggs Manual (JBI 2020). One included study employed a mixed methods design and was assessed using the Mixed Methods Appraisal Tool (Hong 2018). Finally, one included study was evaluated as a quasi-experimental study using a tool by Tufanaru et al. in the Joanna Briggs Manual (JBI 2020). Table 3, Table 4, Table 5 show the results of the quality assessment of the ten included studies.

## Methodological quality assessment of the 10 included studies

Author, year	Were the criteria for inclusion in the sample clearly defined?	Were the study subjects and the setting described in detail?	Was the exposure measured in a valid and reliable way?	Were objective, standard criteria used for measurement of the condition?	Were confounding factors identified?	Were strategies to deal with confounding factors stated?	Were the outcomes measured in a valid and reliable way?	Was appropriate statistical analysis used?
Mansbach, 2021	Yes	Unclear	Unclear	Yes	No	No	Yes	Yes
McElroy,2020	Yes	No	Yes	Yes	No	No	Yes	Yes
Mohlman,2021	Yes	Yes	Unclear	Yes	Yes	No	Unclear	Yes
Nikčević, 2020	Yes	Unclear	Unclear	Unclear	Yes	Unclear	Yes	Yes
Perz,2020	Yes	Unclear	Yes	No	Yes	No	Yes	Yes
Rosebrock,2021	Unclear	Yes	Not applicable	Yes	Yes	No	Yes	Yes
Winter,2020	Unclear	No	Yes	No	Yes	No	Yes	Yes
Wu,2020	Yes	Unclear	Yes	No	Yes	No	Yes	Yes

#### Table 3 Quality assessment of cross-sectional studies

Moola S, Munn Z, Tufanaru C, Aromataris E, Sears K, Sfetcu R, Currie M, Qureshi R, Mattis P, Lisy K, Mu P-F. Chapter 7: Systematic reviews of etiology and risk . In: Aromataris E, Munn Z (Editors). JBI Manual for Evidence Synthesis. JBI, 2020. Available from <a href="https://synthesismanual.jbi.global">https://synthesismanual.jbi.global</a>.

#### Table 4 Quality assessment of quasi-experimental studies

Author year	Is it clear in the study what is the 'cause' and what is the 'effect'?	Were the participants included in any comparisons similar?	Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	Was there a control group?	Were there multiple measurements of the outcome both pre and post the intervention/exposure?	Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?	Were the outcomes of participants included in any comparisons measured in the same way?	Were outcomes measured in a reliable way?	Was appropriate statistical analysis used?
Arpaci, 2020	Not applicable	Not applicable	No	No	Not applicable	Not applicable	Yes	Yes	Yes

Tufanaru C, Munn Z, Aromataris E, Campbell J, Hopp L. Chapter 3: Systematic reviews of effectiveness. In: Aromataris E, Munn Z (Editors). JBI Manual for Evidence Synthesis. JBI, 2020. Available from <a href="https://synthesismanual.jbi.global">https://synthesismanual.jbi.global</a>

Author, year	Are there clear research questions Do the collected data allow the research questions to be addressed?	For Qualitative element: Is the qualitative approach appropriate to answer the research question? Are the qualitative data collection methods adequate to address the research question? Are the findings adequately derived from the data? Is the interpretation of results sufficiently substantiated by data? Is there coherence between qualitative data sources, collection, analysis and interpretation?	For an RCT Quantitative element: Is randomization appropriately performed? Are the groups comparable at baseline? Are there complete outcome data? Are outcome assessors blinded? Did the participants adhere to the assigned intervention?	For a Non- randomised quantitative element: Are the participants representative of the target population? Are measurements appropriate regarding both the outcome and intervention? Are there complete outcome data? Are the confounders accounted for in the design and analysis? During the study period, is the intervention administered (or exposure occurred) as intended?	For a Descriptive quantitative element: Is the sampling strategy relevant to address the research question? Is the sample representative of the target population? Are the measurements appropriate? Is the risk of nonresponse bias low? Is the statistical analysis appropriate to answer the research question?	Relating to Mixed Methods: Is there an adequate rationale for using a mixed methods design to address the research question? Are the different components of the study effectively integrated to answer the research question? Are the outputs of the integration of qualitative and quantitative components adequately interpreted? Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?
Jaspal, 2020	Not applicable	Unclear	Not applicable	Unclear	Not applicable	Unclear

#### Table 5 Quality assessment of Mixed-methods studies

Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, Gagnon M-P, Griffiths F, Nicolau B, O'Cathain A, Rousseau M-C, Vedel I. Mixed Methods Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada. It would not be appropriate to compare assessment across the different tools; however, scores across the domains were mixed. Eight studies are limited by cross-sectional design meaning that changes cannot be tracked over time and associational relationships cannot be explored. Self-reported measures also allow for measurement bias. Other common methodological weaknesses across the studies include those relating to recruitment and participation processes, particularly regarding self-selection, leading to non-representative samples and lack of generalisability from the study findings. Some studies also reported limited validity testing.

#### Results of the included studies

#### Scale/instrument and test accuracy/validity methods

The ten studies reported on nine different instruments (scales). Two studies validated the existing Fear of COVID-19 Scale (FCV-19S) (Perz 2020, Winter 2020) and one study (Arpaci 2020) validated the COVID-19 Phobia Scale (C19P-SE) developed by the same first author. The remaining seven studies developed and validated unique new instruments.

Scales aimed to measure various issues broadly classified as anxiety potentially related to COVID-19, including cognitions, phobias, personal risk of infection, and coping behaviours. Various validated reference tests (for example, the State Anxiety Inventory, Brief Anxiety and Depression Scale, Depression Anxiety Stress Scale, Contamination Cognitions Scale, Generalized Anxiety Disorder-7), were used by the studies. Two studies used existing COVID-19 fear scales to validate the study scale: one study (Jaspal 2020) referred to the Fear of COVID-19 Scale (FCV-19S) and the COVID-19 Preventive Behaviours Index. One other study (Nikčević, 2020) validated using the Coronavirus Anxiety Scale (CAS).

Number of items ranged from five to 26-items. Factors ranged from single factor to 7 factors. All studies reported performing internal consistency tests; eight studies reported convergent validity testing, six studies reported concurrent validity testing, and two studies reported discriminant validity testing. Confirmatory factor analysis was carried out in seven studies, some studies reduced initial factors and items in EFA and all seven studies reported satisfactory final factor structure and fit.

It is difficult to draw any comparisons across the studies due to heterogeneity across the study samples and scales. In general, measures of general and Covid-specific anxiety and depression are positively correlated with COVID-19 fear. Cognitions about negative long-term impact had the greatest explanatory power across disorders in one UK study (Rosebrock 2021). Another study reported a moderately strong relationship between FCV-19S scores and the perceived infectability and germ aversion subscales of the perceived vulnerability to disease scale (PVDS). FCV-19S scores were negatively correlated with the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) scores. Higher FCV-19S scores were associated with greater adherence to lockdown rules in New Zealand (Winter, 2020).

Anxiety/fear/worry related to COVID-19 may be moderated by sociodemographic factors such as age and gender ethnicity, marital status and income; pre-existing physical and psychological health conditions; personality characteristics; and political beliefs. All these factors need to be considered when developing strategies to mitigate against negative health consequences of the COVID-19 pandemic and highlight the importance of the context in which these instruments are developed.

Mood-5 Scale (M5) was the only study that reported a clinical predictive value of an instrument, and reported a cut-off score of 3 (ie, scores  $\geq$ 3) maximized the sensitivity and specificity for detecting COVID-19 psychological distress for a relatively small sample of residents in 20 post-acute or long-term care settings in Maryland, USA (Mansbach 2021). Table 6 summarises the scale validation carried out by the ten included studies.

## Table 6 Results of scale validation

Study	Scale/Instrume nt	Test accuracy/validity	Participant characteristics
Arpaci,202 0	COVID-19 Phobia Scale (C19P-SE) 20 item, 4- factor (Psychological factors; Somatic factors; Economic factors; Social)	internal consistency: Cronbach alpha: $\alpha$ =.93, subscales $\alpha$ =.715 to < .798); Concurrent validity results indicate a significant positive correlation between coronaphobia and state anxiety using The State Anxiety Inventory (SAI-TX) (r = .67, p < .001); factorial, discriminant, and convergent validity all adequate; CFA supported the four-factor structure of the C19P-SE (Psychological R <sup>2</sup> =.68, Psycho-somatic R <sup>2</sup> =.78, social R <sup>2</sup> =.52, economic R <sup>2</sup> =.39;	statistically significant multivariate difference between men and women, $\lambda$ = .956, F(4,223) = 2.582, p = .038, partial n <sup>2</sup> = .044. Post hoc analyses showed that women scored higher than men on the psychological C19P-SE factor but not psycho- somatic, social or economic factors
Jaspal,202 0	COVID-19 Own Risk Appraisal Scale (CORAS) 6 item, single factor	correlations between the CORAS items were all significant (p < 0.001), ranging from low to high (Spearman's rho = 0.23–0.77); all items loading highly ( $\ge$ 0.53) onto a single factor (total variance explained = 50%), internally consistent ( $\alpha$ = 0.87, with 95% CI = 0.84–0.89); convergent validity: Spearman's rho = 0.54, p < 0.001 correlation between CORAS and the Fear of COVID-19 Scale; criterion validity: Spearman's rho = 0.21, p < 0.001 between CORAS and the COVID-19 Preventive Behaviours Index; EFA/CFA: a unidimensional, six-item model fits the data well, with satisfactory fit indices, internal consistency and high item loadings onto the factor	no statistically significant differences by age, gender or ethnicity
Mansbach, 2021	Mood-5 Scale (M5) 5-item, 1. Anhedonia, 2. Excessive worry, 3. Depressed mood, 4. Irritability/agitat ion, and 5. Somatic symptoms	internal consistency: Cronbach alpha; $\alpha = .77, 95\%$ CI 0.71-0.83; Convergent and discriminant validity: Correlation analysis (Pearson r and two-tailed P values) among the study measures; M5 score has positive and moderate associations with anxiety (r=0.56, P<.001) and depressive (r=0.49, P<.001) symptoms on the Brief Anxiety and Depression Scale, negligible relationship with cognitive functions on the Brief Cognitive Assessment Tool r=0.17, P=0.15); M5 scores were not confounded by demographic variables or telehealth administration (P>.08) - appropriate for in-person or virtual assessment; M5 cutoff score of 3 (ie, scores ≥3) maximized the product of sensitivity (0.92) and specificity (0.75) for detecting COVID-19 psychological distress (positive predictive value=0.79, negative predictive value=0.91)	residents with generalized anxiety disorder or anxiety disorder due to a known physiological condition reported significantly higher M5 scores (41/131, 31.3%) than the remaining residents without anxiety diagnoses (diff=1.94; 95% CI ~0.92 to 2.95; t129=3.78; P<.001). The effect size for this difference was medium (Cohen d=0.71; 95% CI 0.33-1.09). residents with moderate or severe recurrent major depressive disorder (without psychotic symptoms) reported significantly higher M5 scores (22/131, 16.8%) than the remaining residents without these depression diagnoses (diff=3.65; 95% CI 2.49-4.82; t129=6.21; P<.001). The effect size for this difference was large (Cohen d=1.45; 95% CI 0.96-1.95).
McElroy,20 20	Pandemic Anxiety Scale (PAS) 7-item, 2-factor (disease-	internal consistency: Cronbach's alpha; $\alpha = 0.70$ , disease-anxiety (e.g., catching, transmitting the virus) subscale $\alpha = 0.76$ . consequence-anxiety subscale (e.g., impact on economic prospects) $\alpha = 0.66$ ; convergent validity: correlation with Depression Anxiety	females scored higher than males on both domains of PAS; age not associated with either domain; lower household income positively

Study	Scale/Instrume nt	Test accuracy/validity	Participant characteristics
	anxiety and consequence- anxiety)	Stress Scales subscale; disease-anxiety 0.33, consequence-anxiety 0.39; 2-factor structure was cross-validated using CFA, with excellent fit and strong factor loadings	associated with both domains; chronic health problems (self or other household members) positively associated with disease-anxiety
Mohlman,2 021	Covid-19 Inventory ('C- 19-I') 10-item, 4- factor, 'influence' (items 1,10,9,8,2), infection (items 3,4), impact (items 5,6) and severity (item 7)	internal consistency: split half reliability, r=.629, p<.001; item total correlations were uniformly positive and ranged from r=0.422–0.709, with an average of 0.496; convergent validity: bivariate correlations, significant positive relations between the C-19-I and the Contamination Cognitions Scale - Total, (0.436, p<.01), Altarum Consumer Education Survey (0.229, p.01), and Health Anxiety Inventory (0.232, p<.01), but not the Disgust Scale – Revised (0.046).	females scored significantly higher than males on 3 items but gender failed to emerge as a significant predictor when a linear regression model of total C-19-I scores was run with gender, Contamination Cognitions Scale - Total, Disgust Scale – Revised, Altarum Consumer Education Survey, and Health Anxiety Inventory entered as predictors.
Nikčević, 2020	COVID-19 Anxiety Syndrome Scale (C- 19ASS) 9-item, 2- factor, factor 1, COVID-19 Anxiety Syndrome Scale- Perseveration ('C-19ASS-P'), 6 items (2, 4, 6, 7, 8, 9). Factor 2, COVID-19 Anxiety Syndrome Scale- Avoidance ('C- 19ASS-A'), 3 items (1, 3, 5)	Confirmatory Factor Analysis: C-19ASS was confirmed as having two correlated factors, perseveration (C- 19ASS-P; 6 items, Cronbach's $\alpha$ = 0.86) and avoidance (C-19ASS-A; 3 items, Cronbach's $\alpha$ = 0.77). concurrent validity: using Pearson Product-Moment correlation analyses, revealed that: (1) the C-19ASS-P was positively correlated with the COVID-19 perceived threat (0.48, p<.01) and COVID-19 anxiety (0.37, p<.01); and (2) the C-19ASS-A was positively correlated with the COVID-19 perceived threat (0.47, p<.01) but not with the COVID-19 anxiety (-0.01), broadly supporting concurrent validity; incremental validity: using hierarchical linear regression analyses, C-19ASS-P was a significant predictor of Coronavirus Anxiety Scale, contributing 9.3% of variance, and a significant predictor of Work and Social Adjustment Scale, contributing an additional 2.2% of variance to that explained by other variables	C-19ASS-P was negatively correlated with the extraversion (-0.26, p<0.01) and conscientiousness (- 0.19, p<0.01), and positively correlated with the neuroticism (0.13, p<0.01). The C-19ASS-A was found to be negatively correlated with conscientiousness (- 0.17, p<0.01), and positively correlated with agreeableness (0.13, p<0.05) and openness (0.18, p<0.01). These findings indicate that the Big 5 personality traits play a role in the COVID-19 anxiety syndrome. With respect to C-19ASS-P, it would appear that high extraversion and conscientiousness are protective factors, and high neuroticism a vulnerability factor. With respect to C- 19ASS-A, high conscientiousness is a protective factor with high agreeableness and openness vulnerability factors.
Perz,2020	Fear of COVID-19 Scale (FCV- 19S) 7-item, single- factor	Internal consistency reliability Cronbach's alpha, $\alpha = 0.91$ ; EFA revealed single-factor solution, eigenvalue 4.63 that explained 66% of the variance in FCV-19S scores; convergent validity: participants who scored higher on the Generalized Anxiety Disorder-7 had significantly higher Fear of COVID-19 total scores (B = 0.75, SEB = 0.06, $\beta = 0.64$ , p < 0.001), with a significant and moderate correlation between the two scale scores (r = 0.68, p<0.001)	scores on the FCV-19S were positively correlated with anxiety for students who were married or of Asian descent.
Rosebrock ,2021	The Oxford psychological	cronbach $\alpha$ for TOPIC-Q factors in validation sample: Cognitions about Safety and Vulnerability, $\alpha = 0.82$ ;	all TOPIC-Q factors were negatively associated with

Study	Scale/Instrume	Test accuracy/validity	Participant characteristics
	investigation of coronavirus questionnaire [TOPIC-Q] 26-item, 7- factor 'Cognitions about Safety and Vulnerability', 'Cognitions about Negative Long-Term Impact', 'Cognitions about Having the Virus', 'Cognitions about Negative Self', 'Cognitions about Social Judgment', 'Cognitions about Social Judgment', 'Cognitions about Spreading the Virus', and 'Cognitions about Being Targeted'	Cognitions about Negative Long-Term Impact, $\alpha = 0.84$ ; Cognitions about Having the Virus, $\alpha = 0.89$ , Cognitions about Negative Self, $\alpha = 0.73$ ; Cognitions about Spreading the Virus, $\alpha = 0.74$ ); Cognitions about Being Targeted, $\alpha = 0.73$ ; convergent validity: Coronavirus cognitions explained 45.8% of the variance in depression scores ( $\chi 2 = 3739.27$ , df = 297, p < 0.001, comparative fit index (CFI) = 0.951, Tucker-Lewis Index (TLI) = 0.942, root mean square error of approximation (RMSEA) = 0.033, standardized root mean square residual (SRMR) = 0.037), 37.3% of the variance in social anxiety scores ( $\chi 2 = 3782.75$ , df = 297, p < 0.001, CFI = 0.951, TLI = 0.943, RMSEA = 0.032, SRMR = 0.036), 23.2% of the variance in agoraphobia scores ( $\chi 2 = 3943.69$ , df = 297, p < 0.001, CFI = 0.950, TLI = 0.941, RMSEA = 0.033, SRMR = 0.036), 27.3% of the variance in paranoia scores ( $\chi 2 =$ 3598.71, df = 297, p < 0.001, CFI = 0.951, TLI = 0.942, RMSEA = 0.032, SRMR = 0.036), 57.1% of the variance in PTSD symptom scores ( $\chi 2 = 3600.55$ , df = 297, p < 0.001, CFI = 0.953, TLI = 0.944, RMSEA = 0.032, SRMR = 0.036), and 31.4% of the variance in panic symptoms ( $\chi 2 = 3662.75$ , df = 297, p < 0.001, CFI = 0.951, TLI = 0.943, RMSEA = 0.032, SRMR = 0.036); concurrent (criterion) validity: Nearly all of the TOPIC-Q factors were more strongly endorsed if the participant had a close friend or family member die from COVID-19, had physical health problems that put them at high risk for a severe COVID-19 illness, or had a mental health diagnosis. The only exception was that participants who were at higher physical health risk rated Cognitions about Spreading the Virus as lower, which might be understood as this group adhering to social distancing/shielding guidelines to a greater extent. Furthermore, there were no differences in Cognitions about Negative Self between those who were high risk and those who were not	age except for Cognitions about Safety and Vulnerability (r = 0.03, p < 0.001), which may show awareness of age increasing physical health risk
Winter,202 0	Fear of COVID-19 Scale FCV- 19S 7-item, single factor	internal consistency: using Cronbach's alpha, inter- and item-total correlations (Sample 1 $\alpha$ = .89; Sample 2 ( $\alpha$ = .88); confirmatory factor analysis: FCV-19S explained 64.2% and 67.2% of the variance in Sample 1 and Sample 2, with eigenvalues of 12.57 and 14.32); concurrent validity: using Pearson's correlations to assess the relationship between the FCV-19S and the Perceived Vulnerability to Disease Scale (Samples 1 and 2) (perceived infectability Sample 1: r = 0.35, p < 0.001; Sample 2: r = 0.40, p < 0.001) and germ aversion (Sample 1: r = 0.39, p < 0.001; Sample 2: r = 0.45, p < 0.001), the Warwick-Edinburgh Mental Wellbeing Scale (Sample 2, r = -0.31, p < 0.001), and adherence to lockdown rules (Samples 1 and 2) (FCV-19S significantly associated with adherence to all five rules during Alert Level 4 (Sample 1), three of the five rules during Alert Level 3 (Sample 2)).	relationship to political beliefs: using Spearman rank order correlations (Sample 1: $M = 3.74$ , SD = 1.49, rho =20, p < .001; Sample 2: $M = 2.57$ , SD = 1.15, rho =07, p = .014, i.e. those self-rating as more toward conservative end of political spectrum tended to report lower FCV-19S scores); an exploratory question found that participants who rated themselves as more conservative tended to report lower FCV-19S scores

Study	Scale/Instrume nt	Test accuracy/validity	Participant characteristics
Wu,2020	COVID-19 Fears Questionnaire for Chronic Medical Conditions (COVID-19 FQCMC) 10- item, single- factor with additional Scleroderma- specific item	internal consistency using cronbach's alpha acceptable ( $\alpha$ = 0.91); 12 participants (1.5%) had the lowest possible score (10.0) on the scale and 4 (0.5%) highest possible score (50.0), suggesting no substantive floor or ceiling effects. Correlations between the COVID-19 Fears Questionnaire and measures of anxiety (r = 0.53), depressive symptoms (r = 0.44), and perceived stress (r = 0.50) supported construct validity. CFA performed on remaining 10 items to confirm the single-factor structure of fear questionnaire using Wave 2 data (model fit ( $\chi$ 2(35) = 311.2, p < 0.001, Tucker- Lewis Index = 0.97, Comparative Fit Index = 0.96, Root Mean Square Error of Approximation = 0.12); convergent and concurrent validity: using Pearson's correlations (correlations between the COVID-19 Fears Questionnaire and PROMIS Anxiety 4a v1.0, r = 0.53; PHQ-8, r = 0.44; PSS, r = 0.50. All p< 0.01).	NR

# Research questions Research Question (RQ) 1

What instruments or scales have been developed and validated for the assessment or measurement of 'COVID-19 fear'?

Ten studies reported on nine different instruments (scales). Two studies validated the existing Fear of COVID-19 Scale (FCV-19S) (Perz 2020, Winter 2020) and one study (Arpaci 2020) validated the COVID-19 Phobia Scale (C19P-SE) developed by the same first author. The remaining seven studies developed and validated unique new instruments.

All studies scored mixed results across the quality domains. Eight studies are limited by crosssectional design meaning that changes cannot be tracked over time and associational relationships cannot be explored further. Self-reported measures used across all the instruments, allow for measurement bias. Other common methodological weaknesses across the studies include those relating to recruitment and participation processes, particularly regarding self-selection, leading to non-representative samples and lack of generalisability from the study findings.

#### **RQ 2**

# What differences exist between the underlying conceptual bases for different instruments to assess or measure COVID-19 fear?

Instruments aimed to measure various issues broadly classified as anxiety potentially related to COVID-19, including cognitions, phobias, personal risk of infection, and coping behaviours.

#### **RQ 3**

# What differences exist between instruments to assess or measure COVID-19 fear in terms of when, where, how and with which sample populations the instrument was validated?

Ten studies were included, five were based in the USA, 3 in UK, one in New Zealand and one in multiple countries including the UK. All studies except one (Mansbach, 2021) used online questionnaires that used convenience sampling methods or recruited via social media. Sample populations included general population internet users, care residents, parents and carers, students,

and MTurk workers. In addition, in one study focused on COVID-19 and mental health and the sample scored higher than the general population for various mental health conditions (Rosebrock 2021) and another only recruited people living with systematic sclerosis (Wu 2020). Sample sizes ranged from 131 to 12,285 participants; percentage female ranged from 34% to 93%; mean age ranged from 22 years to 76 years (only one study [Mansback 2021) had a mean age over 57 years).

#### RQ4

What differences exist between instruments to assess or measure COVID-19 fear in terms of key characteristics of the instrument, including number of items, sub-scales, etc.?

The number of items ranged from five to 26-items. Factors ranged from single factor to 7 factors.

#### RQ5

# What differences exist between the respondent characteristics that have been found to be correlated with different instruments to assess or measure COVID-19 fear?

It is difficult to draw any comparisons across the studies due to heterogeneity across the study samples and scales. COVID-19 fear may be moderated by sociodemographic factors such as age and gender, ethnicity, marital status and income; pre-existing physical and psychological health conditions; personality characteristics; and political beliefs.

#### RQ6

#### What respondent behaviours and external data have instruments to assess or measure COVID-19 fear been found to be able to predict?

It is difficult to draw any comparisons across the studies due to heterogeneity across the study samples and scales. In general, measures of general and COVID-specific anxiety and depression are positively correlated with COVID-19 fear. Cognitions about negative long-term impact had the greatest explanatory power across disorders in one UK study (Rosebrock 2021). Another study reported a moderately strong relationship between FCV-19S scores and the perceived infectability and germ aversion subscales of the perceived vulnerability to disease scale (PVDS). FCV-19S scores were negatively correlated with the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) scores. Higher FCV-19S scores were associated with greater adherence to lockdown rules in New Zealand (Winter, 2020).

Various validated reference tests mainly for general anxiety and depression have been used by the studies. Two studies used existing COVID-19 fear scales to validate the new instrument: one study (Jaspal 2020) validated using both the Fear of COVID-19 Scale (FCV-19S) and the COVID-19 Preventive Behaviours Index. One other study (Nikčević, 2020) validated using the Coronavirus Anxiety Scale (CAS).

Mood-5 Scale (M5) was the only study that reported a clinical predictive value of an instrument, and reported a cut-off score of 3 (ie, scores  $\geq$ 3) maximized the sensitivity and specificity for detecting COVID-19 psychological distress for a relatively small sample of residents in 20 post-acute or long-term care settings in Maryland, USA (Mansbach 2021).

### RQ7

# Given that multiple instruments are now available for this purpose, what factors should be taken into account in deciding which is the most suitable to be used to assess or measure COVID-19 fear in future studies?

This rapid review highlights many factors which need to be considered when choosing an instrument to measure COVID-19 fear and when developing strategies to mitigate against negative health consequences of the COVID-19 pandemic. This review findings highlight the important of context in which these instruments are developed. Factors to consider are: the conceptual basis of the instrument; the generalisability of the sample; validation against existing validated fear instruments; and finally, the screening, predictability or diagnostic ability of the instrument.

# Conclusion

We included ten studies that reported on nine different instruments. Seven studies developed and validated unique new instruments for measuring COVID-19 fear, two of which used existing COVID-19 fear scales to validate the new instrument. All studies scored mixed results across the domains. Instruments aimed to measure various psychological states potentially related to COVID-19, including anxiety, depression, stress, cognitions, phobias, personal risk of infection, and coping behaviours. It is difficult to draw any comparisons across the studies due to heterogeneity across the study samples and scales. The majority of the instruments conducted exploratory and confirmatory factor analyses. In general, measures of general and COVID-specific anxiety and depression are positively correlated with COVID-19 fear. COVID-19 fear may be moderated by certain sociodemographic factors and pre-existing physical and psychological health conditions. None of the studies proposed a threshold for subclinical/clinical fear of COVID-19 in a general population sample. The instruments included in this rapid review focus on worries and fears related to the domain of health. We did not identify any instruments published in English language, that assessed the presence of a psychological state characterised by instrument authors as 'fear', 'worry', 'concern', 'anxiety' in relation to COVID-19 that captured other more general responses to the pandemic.

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# Appendix 1 Search strategies

#### Bibliographic database services

Bibliographic database services	Comments
EBSCOhost	This service was used to simultaneously search a range of individual bibliographic databases, including: CINAHL Complete; EconLit; Education Research Complete; Health Source: MEDLINE; Nursing / Academic Edition; PsycINFO; SocINDEX with Full Text.
ScienceDirect	This service provides access to 1000+ journals published by Elsevier across various subject areas, including economics, management, psychology and sociology.
Web of Science Core Collection	This service was used to simultaneously search an extended range of bibliographic databases, including: MEDLINE, Science Citation Index Expanded (SCI-EXPANDED); Social Sciences Citation Index (SSCI); Arts & Humanities Citation Index (A&HCI); Emerging Sources Citation Index (ESCI).

#### Search terms

Area of relevance	Search terms used
Relating to the pandemic, the SARS-CoV-2 virus, or COVID- 19	"severe acute respiratory syndrome coronavirus 2" OR "ncov" OR "2019 ncov" OR "covid 19" OR "sars cov 2" OR "coronavirus" OR "cov" OR "covid-19" OR "2019-ncov" OR "covid19" OR "corona virus" or "sars-cov-2"
Relating to emotional state prompted	"fear*" OR "anxiet*" OR "worr*"
Relating to instrument	Measure* OR Scale* or Instrument or Assessment*
Relating to purpose of reported study	Develop* or Validat*

	Include	Exclude
Studies	• Language: Studies where the full	• Language: Studies without a full
	text is provided in English	text in English
	• Publication date: No limit	• Publication date: None
	• Study types: reports of any type of	• Study types: Study protocols
	research other than literature reviews	without reports of associated research,
	where the publication meets all other	reviews of published articles reporting
	criteria set out in this table	primary research, meta-analyses, articles
		which do not report research, conference
	(NB: reviews to be retained for	abstracts or conference proceedings
	examination of included items)	where no fulltext is available for
		evaluation
Population	• Human adult sample populations,	<ul> <li>Animals of any kind</li> </ul>
	including studies limited to adult	Human tissues, cells, etc.
	subpopulations, e.g. recent mothers, older	Child sample populations or
	adults	young people where the sample
		population includes people under the age
		of 18
Instrument	<ul> <li>Must be designed for use with</li> </ul>	<ul> <li>Instruments designed for use</li> </ul>
design	adults	with children or populations which
	<ul> <li>Must be designed to:</li> </ul>	include persons under 16 years of age
	Assess the presence of a psychological	<ul> <li>Instruments which are not</li> </ul>
	state characterised by instrument authors	designed to assess or measure emotional
	as 'fear', 'worry', 'concern', 'anxiety' or	states which could be characterised as
	other broadly synonymous descriptors	'fear', 'worry', 'concern', 'anxiety' or
	Assess the experience of or measure the	similar
	(relative) strength or impact of that	Instruments which combine the
	psychological state	assessment or measurement of
	<ul> <li>Must be designed to assess or</li> </ul>	emotional states characterised by
	measure a psychological state so	authors as 'fear', 'worry', 'concern',
	characterised which has been precipitated	'anxiety' or other broadly synonymous
	by a person's awareness of or perceptions	descriptors with the assessment or
	related to:	quantification of other personal
	the recent coronavirus pandemic	characteristics, e.g. personality traits,
	'severe acute respiratory syndrome	physical or mental health conditions
	coronavirus 2 (SARS-CoV-2)' virus	<ul> <li>Instruments designed to assess</li> </ul>
	COVID-19, the disease, and/or	or measure emotional states prompted
	the impact of public health measures to	by awareness or perceptions of any
	prevent or control the transmission of the	events, infectious agents or diseases
	virus	other than those listed in the inclusion
	<ul> <li>May be designed to assess or</li> </ul>	events, e.g. natural disasters, Zika virus,
	measure such state:	Ebola Virus Disease.
	in general or in unspecific situations, or	
	in relation to specified contexts, e.g. health	
	service use, employment, or specific	
	activities, e.g. having teeth cleaned by a	
	dental hygienist, having a meal in a	
	restaurant	

# Appendix 2 Review eligibility criteria

Publication	•	Publications must report one or	Publications reporting studies in
scope	more	of the following in relation to the	which instruments meeting the criteria
	instru	iment:	for inclusion in this review have been
	•	Conceptualisation	used in different populations to assess or
	•	Development	measure incidence, prevalence or
	•	Validation	strength of COVID-19 fear, including to
			examine potential behavioural,
			psychological or physical outcomes of
			COVID-19 Fear, but which do not discuss
			the conceptualisation of fear informing
			the instrument or the development or
			validation of the instrument itself.

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd) years	% male	
Ahmed et al 2020	Adaptation of the Bangla Version of the COVID-19 Anxiety Scale	Coronavirus Anxiety Scale (CAS) Bangla version	Banglades h	Bangla	general population Bangladesh i adults	online	737	26.6 (7.2)	60.6	
Ahorsu et al 2020	The Fear of COVID-19 Scale: Development and Initial Validation.	Fear of COVID-19 Scale (FCV- 19S)	Iran	Persian or Farsi	General adult Iranian population able to understand spoken Persian or Farsi.	online	717	31.25 (12.68)	58	NB: Survey mode appears to be online as recruitme nt and consent both electroni c but is not specificial ly stated.
Andrade et al 2021	Validation of the Brazilian Portuguese version of the Obsession with COVID- 19 Scale (BP- OCS)	Brazilian Portuguese version of the Obsession with COVID- 19 Scale (BP- OCS)	Brazil	Brazilian Portuguese	university students	online	1454	27.0 (5.6)	28.4	

Appendix 3 Instruments or instrument versions in languages other than English

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd) years	% male	
	using a large University Sample in Brazil									
Arpaci et al 2020	The development and initial tests for the psychometric properties of the COVID-19 Phobia Scale (C19P-S)	COVID-19 Phobia Scale (C19P-S)	Turkey	Turkish	General adult Turkish population	online	1250 (for Explorator y Factor Analysis)	37.53 (6.94)	38.8	NB: Country and language not stated in this publicati on, but confirme d in a subseque nt publicati on by the same authors; two sample populatio ns used.

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd)	% male	
Barrios et al 2021	Psychometric properties of the Spanish version of the Fear of COVID-19 scale in Paraguayan population	Spanish version of the Fear of COVID-19 Scale (FCV- 19S)	Paraguay	Spanish	general population Paraguayan adults	online	1077	years 31.0 (10.1)	30.7	
Basit et al 2021	Psychometric Analysis for fear of COVID-19 Scale (FCV- 19S) and its association with depression in patients with diabetes: A cross sectional study from a Tertiary Care Centre in Karachi, Pakistan	Fear of COVID-19 Scale (FCV- 19S)	Pakistan	Urdu	patients with type 2 diabetes, tertiary care centre, Karachi, Pakistan	telephonic audio interview	380	51.9 (12.0)	53.9	
Bernardo et al 2020	Coronavirus Pandemic Anxiety Scale (CPAS-11): development	Coronavirus Pandemic Anxiety Scale (CPAS-11)	Philippine s	Filipino	general population Filipino adult citizens	online	925	35.26 (12.55)	28.86	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd) years	% male	
	and initial validation									
Cavalheiro et al 2020	Adaptation and Validation of the Brazilian Version of the Fear of COVID-19 Scale	Brazilian Version of the Fear of COVID-19 Scale (FCV- 19S)	Brazil	Portuguese	general Brazilian population	online? Snowball sampling	354	35.0 (7.4)	46	
Caycho- Rodriguez et al 2020	Spanish translation and validation of a brief measure of anxiety by the COVID-19 in students of health sciences	Coronavirus Anxiety Scale (CAS)	Peru	Spanish	university students of health sciences	Unclear 'administer ed' (article in spanish with abstract in english)	704	23.4 (3.5)	42.5	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd)	% male
								years	
Caycho- Rodriguez et al 2021	Assessment of Fear of COVID-19 in Older Adults: Validation of the Fear of COVID-19 Scale	Spanish version of the Fear of COVID-19 Scale (FCV- 19S)	Peru	Spanish	older adults >60y from Lima	telephone recruitmen t then online (snowball sampling)	400	68.1 (6.4)	31.7
Caycho- Rodriguez et al 2021	Design and validation of a scale to measure worry for contagion of the COVID-19 (PRE-COVID- 19)	Scale of Worry for Contagion of COVID-19 (PRE-COVID- 19)	Peru	Spanish	young people and adults who resided in the cities of Lima and Callao	online (non probability sample)	816	28.4 (7.1)	24.5
Caycho- Rodriguez et al 2021	Obsession with Covid-19 in Peruvian police and armed forces: Validation of the obsession with Covid-19 Scale in Spanish using SEM and IRT models	Spanish version of the Obsession with COVID- 19 Scale (OCS)	Peru	Spanish	active police and members of the armed forces who monitored public roads during pandemic in Lima and Tacna	online (convenien ce snowball- type sampling)	214	29.3 (11.3)	90.2

Author, vear*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age	% male	
,								(sd)		
		_						years		
Chang et al 2020	Psychometric Testing of Three COVID- 19-Related Scales Among People with Mental Illness	Fear of COVID-19 Scale (FCV- 19S)	Taiwan	Chinese/Mand arin (inferred)	People with mental illness living in Taiwan	Not reported	400	46.91 (10.92)	55.5	NB: Translate d FCV- 19S 'was modified after several experts (including a psychiatri st, a public health expert, and an orthoped ist) reviewed it with comment s'. Language of translatio n not stated.

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd) vears	% male	
Chi et al 2021	Psychometric Evaluation of the Fear of COVID-19 Scale Among Chinese Population	Chinese version of the Fear of COVID-19 Scale	China	Mandarin	general population >9 years of age; also one primary school and one senior high school	online annd electronic questionair res (stratified and snowball sampling)	1700; sample 1 N = 793; sample 2 N = 907	Sample 1: 18.8 (8.8); sample 2: 18.0 (7.3)	Sampl e 1: 40.9; sampl e 2: 40.0	
Choi et al 2020	Validation of the Korean version of the obsession with COVID- 19 scale and the Coronavirus anxiety scale	Korean version of the obsession with COVID- 19 scale (OCS-Korean) and the Coronavirus anxiety scale (CAS-Korean)	South Korea	Korean	general population Koran adults	online	329	40.6 (10.9)	55.3	

Author,	Title	Scale	Country	Language	Population	Survey	N	Mean	%	
year*						mode		age	male	
								(sd)		
								years		
Cottin et al	"What If We	Fear of Illness	Chile	Spanish	general	random	163	32.2	48.9	
2021	Get Sick?":	and Virus			population	sample		(9.3)		
	Spanish	Evaluation			Chilean	from a				
	Adaptation	(FIVE)			adults	large				
	and					cross-				
	Validation of					sectional				
	the Fear of					survey				
	Illness and					panel				
	Virus					(mobile				
	Evaluation					phone				
	Scale in a					app) study				
	Non-clinical					duration				
	Sample					35 days				
	Exposed to					(instrumen				
	the COVID-19					ts resent				
	Pandemic					every 5 or				
						7 days)				
			1							

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd)	% male
de Medeiros et al 2021	Psychometric properties of the Brazilian version of the fear of COVID-19 scale (FCV- 19S)	Brazilian version of the fear of COVID-19 scale (FCV- 19S)	Brazil	Brazilean Portuguese	general population Brazilian adults	online (snowballi ng)	Study 1 (explorato ry factor analysis): N = 230; Study 2 (confirmat ory factor analysis): N = 302	years Study 1: 35.3 (11.3); Study 2: 31.1 (9.3)	Study 1: 23.9; Study 2: 24.2
Di Crosta et al 2020	Individual Differences, Economic Stability, and Fear of Contagion as Risk Factors for PTSD Symptoms in the COVID-19 Emergency	Fear for COVID-19 (ad hoc Questionnair e)	Italy	Italian	Italian adults who are either unemploye d or working full-time	online	1253	39.48 (11.94)	35.5
Elemo et al 2020	The Fear of COVID-19 Scale: Psychometric Properties of the Ethiopian Amharic Version	Amharic (Ethiopian) version of the Fear of COVID-19 Scale (FCV- 19S)	Ethiopia	Amharic	Amharic- speaking participant s	online (convenien ce sampling)	307	30.9 (8.0)	81.1

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age	% male	
								years		
Evren et al 2020	Measuring anxiety related to COVID-19: A Turkish validation study of the Coronavirus Anxiety Scale	Turkish version of the Coronavirus Anxiety Scale (CAS)	Turkey	Turkish	Turkish native speakers	online	1023	43.4 (13.7)	37.8	
Evren et al 2021	Measuring dysfunctional grief due to a COVID-19 loss: A Turkish validation study of the Pandemic Grief Scale	Turkish version of the Pandemic Grief Scale (PGS)	Turkey	Turkish	Turkish native speakers	online	758	31.1 (19.6)	33.4	
Faisal et al 2020	Replication analysis of the COVID-19 Worry Scale	COVID-19 Worry Scale (Bangladeshi)	Banglades h	Bangla	general population Bangladesh i adults	online	729	26.6 (7.2)	60.6	
Fernanda Mercado- Lara et al 2021	Validity and Reliability of the Spanish Version of Fear of COVID-19 Scale in	Spanish Version of Fear of COVID-19 Scale	Colombia	Spanish	General Practitioner s in Colombia	online (convenien ce)	531	30.0 (9.4)	40.5	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd)	% male	
	Colombian Physicians							years		
Giordani et al 2020	Psychometric evaluation of the Portuguese version of the FCV-19 scale and assessment of fear of COVID-19 in a Southern Brazilian population	Portuguese version of the FCV-19 scale (FCV-19S)	Brazil	Portuguese	Resident adults of State of Parana, Southern Brazil	online	4,638	41.5 (13.4)	24.6	
Giordani et al 2020	Fear of COVID-19 scale: Assessing fear of the coronavirus pandemic in Brazil	Fear of COVID-19 Scale (FCV- 19S)	Brazil	Portuguese	general population Brazilian adults	online (snowball sampling)	7430	66.3% aged 30-59	25.6	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd)	% male	
Giordani et al 2021	Validation of the FCV-19 Scale and Assessment of Fear of COVID-19 in the Population of Mozambique, East Africa	Portuguese version of the Fear of COVID-19 Scale (FCV- 19S)	Mozambi que	Portuguese	Portuguese -speaking population of Mozambiq ue	online	387	34.5 (9.5)	48.3	
Gomez- Salgado et al 2021	Design of Fear and Anxiety of COVID-19 Assessment Tool in Spanish Adult Population	Fear of coronavirus disease 2019 (COVID-19) scale	Spain	Spanish	Spanish adults residing in Spain	online	445	39.7	46.2	
Kanovsky and Halamová, 2020	Perceived Threat of the Coronavirus and the Role of Trust in Safeguards: A Case Study in Slovakia	Perceived risk of coronavirus scale (PRCS); Confidence in Safeguards Scale (CSS)	Slovakia	Slovak	general population adult Slovak citizens	online	565	35.42 (13.11)	21.1	

Author,	Title	Scale	Country	Language	Population	Survey	Ν	Mean	%	
year*						mode		age (sd) vears	male	
Kira et al 2021	Measuring COVID-19 as Traumatic Stress: Initial Psychometric s and Validation	'COVID-19 as complex traumatic stress' measure, Arabic version	Egypt, Kuwait, Saudi Arabia, Jordan, Algeria, Iraq, and Palestine	Arabic	general adult population able to understand written Arabic, recruited via personal contact	online	1374	31.68 (12.92)	18	
Kubb et al 2020	Measuring COVID-19 Related Anxiety in Parents: Psychometric Comparison of Four Different Inventories	1) Fear of COVID-19 Scale, 2) Coronavirus Anxiety Scale, 3) Pandemic Anxiety Scale, and 4) one subscale of the COVID Stress Scales	Germany, Austria, and Switzerlan d	German	German- speaking parents with at least one child aged 0-6	online (recruited via Facebook parenting groups and also via childcare centres)	515	35.0 (5.4)	9.7	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd) years	% male	
Kumar et al 2020	Construction and preliminary validation of the COVID-19 Pandemic Anxiety Scale	COVID-19 pandemic anxiety scale (COVID- 19 PAS)	India	English	Adult Indian population	online	318 (107 first phase explorator y factor analysis, 211 second phase confirmat ory factor analysis)	first phase: 29.8 (10.1); second phase: 24.6 (6.6)	first phase: 32.7; secon d phase: 38.9	
Martinez- Lorca et al 2020	The fear of COVID-19 scale: Validation in spanish university students	Fear of COVID-19 Scale (FCV- 19S)	Spain	Spanish	Spanish undergradu ate university students in different degrees and years of study at the University of Castilla- La Mancha at its campuses in Albacete	online	606	26.6 (3.0)	18	

Author,	Title	Scale	Country	Language	Population	Survey	N	Mean	%	
year*						mode		age	male	
								(sd)		
								years		
					and					
					Talavera de					
					la Rein					
Mercado-	Validity and									
Lara et al	Reliability of									
2021	the Spanish									
	Version of									
	Fear of									
	COVID-19									
	Scale in									
	Colombian									
	Physicians									
	THIS IS A									
	DUPLICATE									

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd)	% male	
								years		
Mohammad pour et al 2020	Psychometric Properties of the Iranian Version of the Coronavirus Anxiety Scale	Iranian Version of the Coronavirus Anxiety Scale (CAS)	Iran	Not reported	adult population of Kermansha h city	online	399	31.6 (9.7)	Not report ed	
Nikolova et al 2021	COVID-19 Rumination Scale (C- 19RS): Initial psychometric evidence in a sample of Dutch employees	COVID-19 Rumination Scale (C- 19RS)	The Netherlan ds	Dutch	Adult working population of the Netherland s	online	523	45.29 (11.31)	56.4	
Nikopoulou et al 2020	Mental Health Screening for COVID-19: a Proposed Cutoff Score for the Greek Version of the Fear of COVID-19 Scale (FCV- 19S)	Greek Version of the Fear of COVID-19 Scale (FCV- 19S)	Greece	Greek	general population Greek adults, Greek as native language	online	538	male: 43.4 (11.8); female: 42.7 (11.3)	22.1	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd) vears	% male	
Özden and Aktura, 2020	Validity and Reliability Study of the Fear of COVID-19 Scale in Nursing Students	Fear of COVID-19 Scale (FCV- 19S0, Turkish translation	Turkey	Turkish	Nursing students in Turkey	electronic, via email	1281	Not reporte d (report ed 81.8% of sample aged 18-23 years)	35.1	
Pang et al 2020	Malay Version of the Fear of COVID-19 Scale: Validity and Reliability	Malay Version of the Fear of COVID-19 Scale	Malaysia	Malay	university population in Borneo, Malaysia	online (convenien ce sampling using snowball methods)	228	26	28.9	
Petzold et al 2020	Development of the COVID- 19-Anxiety Questionnair e and first psychometric testing	COVID-19- Anxiety Questionnair e	Germany	German	General adult population of Germany.	online (via SoSci Surve)	6262	36.43 (11.59)	28.7	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age	% male
								(sd) vears	
Reznik et al 2020	COVID-19 Fear in Eastern Europe: Validation of the Fear of COVID-19 Scale	Fear of COVID-19 Scale (FCV- 19S)	Russia and Belarus	Russian	Moscow State University of Psychology and Education, Penza State University (Russia), and Belarusian State Medical University faculty members, students, colleagues, and friends	online (snowball survey)	850	34.8 (13.0)	26.8
Rossi et al 2021	Trauma- spectrum symptoms among the Italian general population in the time of the COVID-19 outbreak	Global Psychotraum a Screen (GPS) modified to relate to Covid-19	Italy	Italian	general adult population of Italy	online	18,147	Not reporte d (report ed median age 38 years (%IQR = 23 years))	20.38

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd) vears	% male	
Sakib et al 2020	Psychometric Validation of the Bangla Fear of COVID-19 Scale: Confirmatory Factor Analysis and Rasch Analysis	Bangla Fear of COVID-19 Scale (FCV- 19S)	Banglades h	Bangla	Bangladesh i participant s aged 10 years and older and being able to understand spoken Bangla	online	8550	26.5 (9.1)	56	
Sayeed et al, 2020	Development of the Indian scale of the fear of COVID-19	Indian scale of fear related to COVID-19 (ISF-C19)	India	Hindi	Indian adults able to understand spoken Hindi	Face to face interviewe r- administer ed survey	118	Not reporte d	36.4	
Schaal et al 2021	The German version of the pandemic- related pregnancy stress scale: A validation study	German version - Pandemic- Related Pregnancy Scale (PREPS)	Germany and Switzerlan d	German	German- speaking pregnant women from Germany and Switzerland	online	1364	31.8 (4.3)	0	

Author,	Title	Scale	Country	Language	Population	Survey	Ν	Mean	%	
year*						mode		age (sd)	male	
								years		
Schimmenti et al 2020	Multidimensi onal Assessment of COVID-19- Related Fears (MAC-RF): A Theory-Based Instrument for the Assessment of Clinically Relevant Fears During Pandemics	Multidimensi onal Assessment of COVID-19- Related Fears (MAC-RF)	Italy	Italian	general adult population of Italy	online	623	35.67 (12.93)	28.1	Note: this and some other studies only provide % female: % male is calculate d based on assumpti on of binary category
Silva et al 2020	COVID-19 anxiety scale (CAS): Development and psychometric properties	Brazilian Portuguese version of COVID-19 anxiety scale (CAS)	Brazil	Brazilian Portuguese	General adult population of Brazil	online	352 (for Explorator y Factor Analysis)	29.56 (9.97)	29	Note: Study reported separate sample populatio ns for four different purposes
Soares et al 2021	The fear of the COVID-19 Scale: validation in the Portuguese	European Portuguese version of the Fear of COVID-19	Portugal	European Portuguese	general population Portuguese adults	online (convenien ce sample)	1203	41.7 (17.5)	32	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age (sd) years	% male	
	general population	Scale (FCV- 19S)								
Soraci et al 2020	Validation and Psychometric Evaluation of the Italian Version of the Fear of COVID-19 Scale	Italian Version of the Fear of COVID-19 Scale (FCV- 19S)	Italy	Italian	Adult Italian speaking citizens	online	249	34.5 (12.2)	8	
Stanculescu et al 2021	Fear of COVID-19 in Romania: Validation of the Romanian Version of the Fear of COVID-19 Scale Using Graded Response Model Analysis	Romanian Version of the Fear of COVID-19 Scale (FCV- 19S)	Romania	Romanian	General population Romanian adults	online	809	32.6 (11.3)	34.6	

Author, year*	Title	Scale	Country	Language	Population	Survey mode	N	Mean age	% male	
								(sd)		
Tsipropoulou et al 2021	Psychometric Properties of the Greek Version of FCV-19S	Greek Version of Fear of COVID-19 Scale (FCV- 19S)	Greece	Greek	general population Greek- speaking adults	online	3029	52% aged 18-30	24.5	
Vanaken et al 2020	Validation of the Impact of Event Scale With Modifications for COVID-19 (IES- COVID19)	Impact of Event Scale With Modifications for COVID-19 (IES- COVID19)	Belgium	Dutch	Belgian undergradu ate students	online	380 (at Time point 1)	19.44 (1.40)	11.84	Note: Study reported two time points, sample populatio n at T2 smaller

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### Appendix 4 Scale items of the included studies

Study*	Scale/Instrument
Arpaci,20	1. The fear of coming down with coronavirus makes me very anxious.
20	2. I experience stomach-aches out of the fear of coronavirus.
	3. After the coronavirus pandemic, I feel extremely anxious when I see people coughing.
	4. The possibility of food supply shortage due to the coronavirus pandemic causes me anxiety.
	5. I am extremely afraid that someone in my family might become infected by the coronavirus.
	6. I experience chest pain out of the fear of coronavirus.
	7. After the coronavirus pandemic, I actively avoid people I see sneezing.
	8. The possibility of shortages in cleaning supplies due to the coronavirus pandemic causes me anxiety.
	9. News about coronavirus-related deaths causes me great anxiety.
	10. I experience tremors due to the fear of coronavirus.
	11. Following the coronavirus pandemic, I have noticed that I spend extensive periods of time washing my hands.
	12. I stock food with the fear of coronavirus.
	13. Uncertainties surrounding coronavirus cause me enormous anxiety.
	14. I experience sleep problems out of the fear of coronavirus.
	15. The fear of coming down with coronavirus seriously impedes my social relationships.
	16. After the coronavirus pandemic, I do not feel relaxed unless I constantly check on my supplies at home.
	17. The pace that coronavirus has spread causes me great panic.
	18. Coronavirus makes me so tense that I find myself unable to do the thing I previously had no problem doing.
	19. I am unable to curb my anxiety of catching coronavirus from others.
	20. I argue passionately (or want to argue) with people I consider to be behaving irresponsibly in the face of coronavirus.
Jaspal,202	1. Gut feeling of own likelihood of infection
0	2. Can picture self catching it
	3. Sure I will not be infected
	4. Unlikely to get infected
	5. Feel vulnerable
	6. Self-rated chance of infection
Mansbach	"Think about how you have been feeling during the past month as you answer the following five questions. Please
, 2021	answer: 'no'=0, 'somewhat'=1, or 'yes'=2." The M5 items were written as follows:
	1. Have you lost interest in activities that you had found pleasurable?
	2. Do you worry about things more than usual?
	3. For at least two consecutive days, have you felt depressed, hopeless, or down?
	4. Are you feeling nervous, anxious, or "wound up" much of the time?

	5. Are you experiencing fatigue, headaches, stomach upset, or memory problems?
McElroy,2	1. I'm worried that I will catch COVID-19
020	2. I'm worried that family and friends will catch COVID-19
	3. I'm afraid to leave the house right now
	4. I'm worried I might transmit the infection to someone else
	5. I'm worried about missing school/work
	6. I'm worried about the amount of money we have coming in
	7. I'm worried about the long-term impact this will have on my job prospects and the economy
Mohlman,	1. To what extent are you concerned about coronavirus?
2021	2. To what extent do you believe that coronavirus could become a "pandemic" in the US?
	3. How likely is it that you could become infected with coronavirus?
	4. How likely is it that someone you know could become infected with coronavirus?
	5. How quickly do you believe contamination from coronavirus is spreading in the US?
	6. How much exposure have you had to information about coronavirus?
	7. If you did become infected, to what extent are you concerned that you will be severely ill?
	8. To what extent has the threat of the virus influenced your decisions to be around people?
	9. To what extent has the threat of coronavirus influenced your travel plans?
	10. To what extent has the threat of virus influenced your use of safety behaviors?
Nikčevića,	1. I have avoided using public transport because of the fear of contracting coronavirus (COVID-19)
2020	2. I have checked myself for symptoms of coronavirus (COVID-19).
	3. I have avoided going out to public places (shops, parks) because of the fear of contracting coronavirus (COVID-19).
	4. I have been concerned about not having adhered strictly to social distancing guidelines for coronavirus (COVID-19).
	5. I have avoided touching things in public spaces because of the fear of contracting coronavirus (COVID-19).
	6. I have read about news relating to coronavirus (COVID-19) at the cost of engaging in work (such as writing emails, working on word
	documents or spreadsheets).
	7. I have checked my family members and loved one for the signs of coronavirus (COVID-19).
	8. I have been paying close attention to others displaying possible symptoms of coronavirus (COVID-19).
	9. I have imagined what could happen to my family members if they contracted coronavirus (COVID-19).
Perz,2020	1. I am very afraid of coronavirus-19.
	2. It makes me uncomfortable to think about coronavirus-19.
	3. My hands become clammy when I think about coronavirus-19.
	4. I am afraid of dying because of coronavirus-19.
	5. When watching news and stories about coronavirus-19 on social media, I become nervous or anxious.
	6. I cannot sleep because I'm worrying about getting coronavirus-19.
	7. My heart races or palpitates when I think about getting coronavirus-19.

Rosebrock	How strongly do you currently believe each of these statements?
,2021	1. The only way to survive is not to leave the house.
	2. I am going to die from this virus.
	3. I will never be safe from the virus.
	4. If I get coronavirus, no treatment will save me.
	5. The virus is on almost every surface.
	6. My world has been shattered by coronavirus.
	7. Having to isolate has permanently changed me for the worse.
	8. The pandemic has made everything hopeless.
	9. There is no point planning ahead.
	10. Whenever my breath is short I think I've got the virus.
	11. If I feel hot, I think I'm dying.
	12. If I cough, I'm certain I have the virus.
	13. If others tell me I look tired, I fear I have the virus.
	14. My response to the lockdown shows that I am a bad person.
	15. I deserve to get coronavirus.
	16. I have failed in my response to coronavirus.
	17. People will think I'm infected with coronavirus if I cough or sneeze in public.
	18. People will judge me badly because of my response to coronavirus.
	19. People will think I'm disgusting if I cough or sneeze in public.
	20. People will think I'm horrible if I get too close to them.
	21. I have spread the virus to hundreds of people.
	22. I have spread the virus and caused other people to die.
	23. I have spread the virus without realizing I had it.
	24. People are deliberately trying to give me the virus.
	25. The virus is particularly going after me.
	26. When outside, people get close to me in order to give me the virus.
	(Answer categories: 0=Not at all, 1=A little, 2=Moderately. 3=A lot, 4=Totally)
Winter,20	1. I am most afraid of coronavirus-19
20	2. It makes me uncomfortable to think about coronavirus-19
	3. My hands become clammy when I think about coronavirus-19
	4. I am afraid of losing my life because of coronavirus-19
	5. When watching news and stories about coronavirus-19 on social media, I become nervous or anxious
	6. I cannot sleep because I am worrying about getting coronavirus-19
	7. My heart races or palpitates when I think about getting coronavirus-19.

Wu,2020	(Instructions: Select the response that reflects how much each statement describes your experience on a typical day in the last week.
	Five-point scale: Not at all, Slightly, Moderately, Very, Extremely)
	1. I will become infected when I have to leave the house to get supplies or when supplies are brought to me
	2. I will not be able to access health care that I need for my condition
	3. I will need to be isolated for longer than others because of my condition
	4. I will be infected and experience more severe complications because of my condition
	5. I will be infected and will not receive the medical treatment I need
	6. I will be infected and healthcare professionals will not be familiar with the needs of a person with my condition
	7. People close to me (e.g., family, close friends) will be infected and become ill
	8. I will not be able to access medications I need for my condition due to shortages
	9. I will not be able to obtain basic supplies (e.g., food, other household necessities)
	10. I will be infected with the virus

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#### **Contact us** Healthy Ageing in Scotland (HAGIS) University of Stirling FK9 4LA Stirling, Scotland Email: HAGIS@stir.ac.uk Website: <u>www.HAGIS.scot</u>



