


BMJ Open Identifying common baseline clinical features of COVID-19: a scoping review

Daniela Ferreira-Santos,^{1,2} Priscila Maranhão,^{1,2} Matilde Monteiro-Soares ,^{1,2} On behalf of COVIDcids

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¹CINTESIS - Center for Health Technology and Services Research, Faculty of Medicine, University of Porto, Porto, Portugal

²MEDCIDS - Departamento de Ciências da Informação e da Decisão em Saúde, Universidade do Porto, Porto, Portugal

Correspondence to

Dr Daniela Ferreira-Santos; danielasantos@med.up.pt

ABSTRACT

Objectives Our research question was: what are the most frequent baseline clinical characteristics in adult patients with COVID-19? Our major aim was to identify common baseline clinical features that could help recognise adult patients at high risk of having COVID-19.

Design We conducted a scoping review of all the evidence available at LitCovid, until 23 March 2020.

Setting Studies conducted in any setting and any country were included.

Participants Studies had to report the prevalence of sociodemographic characteristics, symptoms and comorbidities specifically in adults with a diagnosis of infection by SARS-CoV-2.

Results In total, 1572 publications were published on LitCovid. We have included 56 articles in our analysis, with 89% conducted in China and 75% containing inpatients. Three studies were conducted in North America and one in Europe. Participants' age ranged from 28 to 70 years, with balanced gender distribution. The proportion of asymptomatic cases were from 2% to 79%. The most common reported symptoms were fever (4%–99%), cough (4%–92%), dyspnoea/shortness of breath (1%–90%), fatigue (4%–89%), myalgia (3%–65%) and pharyngalgia (2%–61%), while regarding comorbidities, we found cardiovascular disease (1%–40%), hypertension (0%–40%) and cerebrovascular disease (1%–40%). Such heterogeneity impaired the conduction of meta-analysis.

Conclusions The infection by COVID-19 seems to affect people in a very diverse manner and with different characteristics. With the available data, it is not possible to clearly identify those at higher risk of being infected with this condition. Furthermore, the evidence from countries other than China is, at the moment, too scarce.

INTRODUCTION

In December 2019, in Wuhan, Hubei Province, China, a cluster of patients with pneumonia of unknown cause was observed.¹ Later, it was found that a new coronavirus caused it. In February 2020, the WHO designated the new virus as SARS-CoV-2 and the disease as COVID-19. According to this organisation, since the onset of this disease until 27 March 2020, SARS-CoV-2 has infected more than half a million people in 136 countries, leading to the death of 23 335.²

The identification of patients that might be infected is crucial so that they can

Strength and limitations of this study

- This is the first scoping review addressing baseline clinical characteristics in adult patients with COVID-19.
- The authors followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews Checklist.
- Two researchers blindly and independently selected the studies and extracted data.
- It was not possible to conduct a meta-analysis.

be adequately screened, treated and/or isolated. Political and health measures have been taken, having in consideration what is supposed to be known about populations at risk (focusing on their baseline comorbidities) and also identifying those that present a higher chance of being infected by COVID-19 (focusing on their clinical symptoms). However, clinical manifestations are highly variable, and the quality of the evidence that underlies these strategies and decisions is frequently not known. We consider that the creation of a predictive model that could help identify those at higher risk of having COVID-19, built on their baseline clinical features (such as sociodemographic, symptoms and presence of comorbidities), could help prioritise screening and therapeutic strategies. The first step to accomplishing such endeavour is to list the most pertinent variables to be included in such a model. For all this, we have conducted a scoping review to summarise and critically assess articles describing baseline characteristics of individuals infected with COVID-19.

METHODS

Search strategy and selection criteria

To conduct this scoping review, we used the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviewer Checklist.³

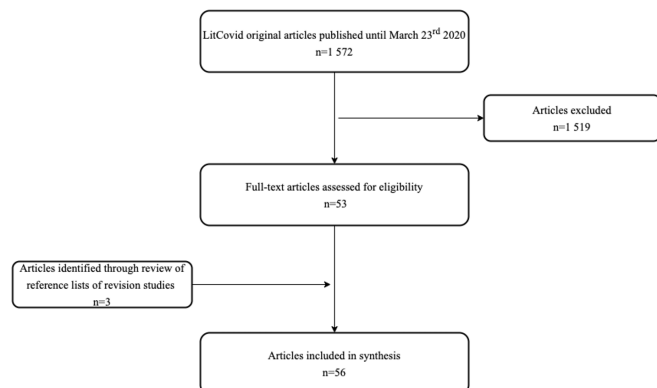


Figure 1 Articles' selection flow diagram.

We have used the Arksey and O'Malley methodological framework for conducting a scoping study consisting on the following stages: (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data; and (5) collating, summarising and reporting results.⁴

To answer to the research question 'What are the most frequent baseline clinical characteristics (outcome) in adult patients with COVID-19 (population)?', we have reviewed all the evidence available on LitCovid⁵ for original articles published until 23 March 2020 in English, French, Italian, Spanish or Portuguese that reported the proportion of socio-demographic characteristics, symptoms and comorbidities in adults with COVID-19. LitCovid is a curated literature hub for tracking up-to-date scientific information about the 2019 novel coronavirus indexed and accessible through PubMed. This repository is considered the most comprehensive resource on the subject. We have excluded reviews, opinion articles, case series that included five or fewer patients, studies that included only pregnant women or children and clear data duplication studies.

Data extraction

Articles were selected by two of the authors independently (DF-S and PM) having in consideration the selection criteria. Once the articles were selected, data were extracted and charted (by one of the authors and checked by another) into an Excel spreadsheet and included the following information: date of publication, country of study conduction, the method used to detect the presence of COVID-19, last date of participants' inclusion, type of population, setting, sample size, participants' age and gender, frequency of asymptomatic patients and frequency of reported symptoms and comorbidities. We have ordered the included studies by continent, country (by alphabetical order) and sample size (in decreasing order). Only symptoms and comorbidities described by five or more studies were included in our tables. Those addressed by less than five studies were only described in the narrative synthesis.

Patient and public involvement

No patient involved.

RESULTS

Characterisation of the included studies

Until the defined date, there were 1572 publications in LitCovid and 53 (3%) fulfilled the inclusion criteria. In total, 895 were opinion articles (57%), 50 (3%) had five or fewer participants included and the remaining addressed other topics such as diagnostic or genetics. We have used the reference list of 46 (3%) retrieved review articles that had information on the frequency of symptoms to identify new articles that were not included in LitCovid database. This procedure led to the inclusion of three additional references.⁶⁻⁸ In total, we have included 56 studies, as we can see in figure 1.

In table 1, we can see that, from the included studies, 50 (89%) were from China. We were able to identify only two studies from USA, one from Canada, one from Korea, one from Singapore and one multicentre study that included patients from Belgium, Finland, France, Germany, Italy, Russia, Spain and Sweden. No study from Africa or Australia was retrieved.

The reverse transcription-PCR (RT-PCR) was the method most commonly used to detect the presence of infection by COVID-19 (89%). Looking at the 51 studies that reported setting, two included patients that were seen in the emergency department, two admitted patients into intensive care unit due to COVID-19, four studies reported included outpatients, one incorporated outpatients and inpatients, while the remaining (75%) included inpatients.

In total, 50 500 participants were included. However, one of the studies from China⁹ contributed with 88% of the participants. Sample size ranged from 7 to 44 672 participants, with a median of 66 participants per study.

The median age ranged from 28¹⁰ to 70.¹¹ Both studies were conducted in North America. When looking at studies from other continents, we observe a smaller range. In Asia, median age varied from 33 years¹² to 60 years,¹³ and 42 years in the European multicentre study.¹⁴ There was a balance on gender distribution, with the male gender proportion ranging from 44%¹⁰ to 55%¹⁵ in North American studies, 26%⁸ to 77%¹⁶ in Asian studies and 55% in the European study.¹⁴ In 57% of the studies, male gender was more prevalent.

Asymptomatic cases were reported in 10 studies (18%), with no available data for North America. In the European study,¹⁴ there were 24% of asymptomatic patients and in Asia, it fluctuated from 2%^{9 17} to 79%.¹²

Symptoms

The described symptoms were generally non-specific and widely variable, ranging from asymptomatic to a rapid multiorgan dysfunction as we can see from tables 2-4.

Fever was one of the most reported symptoms. Its presence ranged from 48%¹⁰ to 68%¹⁵ in North America, from 4%¹⁸ to 99%¹⁹ in Asia and 69% in the European study.¹⁴

Table 1 Characterisation of the included studies (ordered by continent, country (by alphabetical order) and sample size (in decreasing order))

Ref	Country of data collection	COVID-19 detection method	Date of end of inclusion	Population	Setting	Sample size (n)	Age, years (median)	Male (%)	Asymptomatic patients (%)
10	Canada	RT-PCR	19 February 2020	Adult	ED	135	28	44	ND
15	USA	CDC criteria	4 February 2020	Adult/children	Inpatient and outpatient	210	29	55	
11	USA	RT-PCR	5 March 2020	Adult	ICU	21	70	52	
Range									
						(21–210)	(28–70)	(44–55)	–
9	China	RT-PCR	11 February 2020	Adult/children	ND	44 672	ND	ND	2
26			31 January 2020		Inpatient	1 099	47	58	ND
38			12 February 2020	ND	Inpatient	452	58	52	
55			ND	Adult/children	Inpatient	262	48	49	
43			6 February 2020	Adult	Inpatient	249	51	51	3
44			13 February 2020		Inpatient	201	51	64	ND
45			31 January 2020		Inpatient	191	56	62	
47			13 February 2020		Inpatient	185	54	54	
27			5 February 2020		Inpatient	155	54	56	
22			10 February 2020		Inpatient	149	45	54	
36			3 February 2020		Inpatient	140	57	51	
19			28 January 2020		Inpatient	138	56	54	
34			24 January 2020		Inpatient	137	57	45	
49			8 February 2020		Inpatient	135	47	53	
56			2 February 2020		Inpatient	121	45	50	
57			3 February 2020		Inpatient	108	45*	35	
17			ND		Inpatient	101	44*	55	2
39			20 January 2020		Inpatient	99	55*	68	ND
41			11 February 2020	Adult/children	Inpatient	91	50	41	
58		NHC	29 February 2020	Adult	Inpatient	90	46	53	
59		RT-PCR	4 February 2020		Inpatient	90	50	43	7
25			23 January 2020		Inpatient	81	50	52	ND
37			14 February 2020	Adult/children	Inpatient	80	46	49	
48			15 January 2020	Adult	Inpatient	78	38	50	
60		Chest CT	3 February 2020	Adult/children	Inpatient	73	42*	56	4
50		RT-PCR	4 February 2020	Adult	Inpatient	69	42	46	ND
42			30 January 2020		ND	62	53*	63	
29			26 January 2020		Inpatient	62	41	56	

Continued



Table 1 Continued

Ref	Country of data collection	COVID-19 detection method	Date of end of inclusion	Population	Setting	Sample size (n)	Age, years (median)	Male (%)	Asymptomatic patients (%)
7		NHC	31 January 2020		Inpatient	61	41	51	
40		RT-PCR	18 February 2020		Inpatient	56	58	55	
18			29 February 2020	Adult/children	Inpatient	55	49	40	71
30			26 January 2020	Adult	ICU	52	60	67	ND
20			18 February 2020		Inpatient	51	42	49	
28			27 January 2020	Adult/children	ND	51	49	49	
61			5 February 2020	Adult	Inpatient	42	50	60	
62			2 January 2020		Inpatient	41	49	73	
24			29 January 2020		Inpatient	34	56	41	
46			20 February 2020		ED	32	46	47	
13			25 January 2020		Inpatient	27	60	45	
12			18 February 2020	Adult/children	Outpatient	24	33	33	79
8		Chest CT	6 February 2020	Adult	Inpatient	21	40*	26	ND
63		RT-PCR	27 January 2020		Inpatient	21	51*	62	10
35			5 February 2020		Inpatient	19	48	40	ND
21			ND	Adult/children	Inpatient	19	33	42	
6			10 February 2020	Adult	Inpatient	17	45	53	
16			29 January 2020	Adult/children	Inpatient	13	34	77	
23			20 January 2020		Inpatient	12	54	67	
64			6 February 2020	Adult	Outpatient	11	50	73	
65			ND	Adult/children	Outpatient	11	37	46	DNQ
32			21 January 2020		Outpatient	7	31*	57	ND
31	Korea	KCDC criteria	14 February 2020	Adult	ND	28	ND	54	11
33	Singapore	RT-PCR	3 February 2020		Inpatient	18	47	50	ND
Range						(7–44 672)	(33–60)	(26–77)	(2–79)
14	Belgium, Finland, France, Germany, Italy, Russia, Spain and Sweden	RT-PCR	21 February 2020	Adult/children	ND	38	42	55	24
Range						(38)	(42)	(55)	(24)
Range						(7–44 672)	(28–70)	(26–77)	(2–79)

*Mean.

CDC, Centers for Disease Control and Prevention; DNQ, described but not quantified; ED, emergency department; ICU, intensive care unit; KCDC, Korea Centers for Disease Control and Prevention; NA, not applicable; ND, not described; NHC, National Health Commission; Ref, reference; RT-PCR, reverse transcription PCR.

Table 2 The proportion of reported general, musculoskeletal symptoms, pharyngalgia and rhinorrhoea in patients with COVID-19 at baseline by continent

Ref	General symptoms					Musculoskeletal symptoms				Pharyngalgia/ pharyngitis/ sore throat	Rhinorrhoea/ runny nose
	Fever	Fatigue	Poor appetite/ anorexia	Chills	Dizziness/ drowsy	Headache	Myalgia/ muscle ache				
America (North)	10	48	17*	ND	ND	ND	ND	ND	ND	30	ND
	15	68	ND	ND	ND	ND	ND	ND	ND	DNQ	DNQ
	11	52	ND	ND	ND	ND	ND	ND	ND	ND	ND
Range	(48-68)	(17)	-	-	-	-	-	-	-	(30)	DNQ
Asia	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	26	89	38	1	ND	14	15‡	14	14	14	ND
	38	93	46	ND	8	11	21	11	5	5	2
	55	82	26	ND	ND	ND	ND	ND	ND	ND	ND
	43	87	16	3	11§	11**			6	6	7
	44	94	32†	ND	ND	ND	32§	ND	ND	ND	ND
	45	94	23				15				
	47	ND	ND				ND				
	27	81	73	32	2	10	61‡	10	14	14	ND
	22	77	ND	ND	ND	9	3	9	17	17	ND
	36	92	75	12	9	7	ND	7	17	17	ND
	19	99	70	40	ND	10	32¶	10	18	18	ND
	34	82	32†	ND	ND	33	33¶	33	18	18	ND
	49	89	33†	4	ND	ND	ND	ND	ND	ND	ND
	56	DNQ	ND	ND	ND	ND	ND	ND	ND	ND	ND
	57	87	39				11	13	13	13	ND
	17	78	17†				17¶	ND	12	12	ND
	39	83	ND				11	8	5	5	4
	41	71	44	25			ND	ND	ND	ND	ND
	58	87	ND	ND			18	11	7	7	ND
	59	78	21	7			28	4	26	26	26
	25	73	ND	1	2	6	ND	6	ND	ND	ND
	37	79		ND	ND	16	23	16	14	14	6
	48	DNQ		ND	ND	ND	ND	ND	ND	ND	ND
	60	93	75	27							
	50	19	42	10	7	14	30	14	9	9	ND
	42	87	23	ND	ND	ND	32	ND	ND	ND	ND
	29	77	52†				52¶	34			
	7	98	57	13	20	ND	ND	ND	16	16	5††
	40	79	9	ND	ND	ND	ND	ND	ND	ND	ND

Continued



Table 2 Continued

Ref	General symptoms					Musculoskeletal symptoms			Pharyngalgia/ pharyngitis/ sore throat	Rhinorrhoea/ runny nose
	Fever	Fatigue	Poor appetite/ anorexia	Chills	Dizziness/ drowsy	Headache	Myalgia/ muscle ache			
18	4	ND						2	ND	
30	98					12		ND	6	
20	67	4				16		6	ND	
28	96	31†	18	16§		16**	31¶	6	4††	
61	86	33	ND	ND		ND	ND	ND	ND	
62	98	44†				8	44¶			
24	94	65†				6	65¶			
46	84	16†				3	16¶			
13	78	ND				ND	11			
12	DNQ	DNQ		DNQ		ND	ND			
8	86	52	43	29	ND	24	24	19		
63	67	14	ND	ND		14	14	ND		
35	79	11				11	ND	21		
21	74	89				ND		ND		
6	71	47			12	24		6	12	
16	92	ND		ND	ND	23	23	ND	8	
23	83			42		0	33		ND	
64	73			ND		ND	27	9		
65	DNQ		DNQ		DNQ	DNQ	ND	DNQ	DNQ	
32			ND		ND	ND	DNQ	ND	ND	
31	32			18		11	14	32		
33	72			ND		ND	ND	61	6	
Range	(4–99)	(4–89)	(1–43)	(1–42)	(2–16)	(0–34)	(3–65)	(2–61)	(2–26)	
Europe	69	ND	ND	ND	ND	21	3	7	7	
Range	69	–	–	–	ND	(21)	3	7	7	
Range	(4–99)	(4–89)	(1–43)	(1–42)	(2–16)	(0–34)	(3–65)	(2–61)	(2–26)	

*Or malaise.
 †Or myalgia.
 ‡Or arthralgia.
 §Or headache.
 ¶Or fatigue.
 **Or dizziness.
 ††Or nose congestion.
 DNQ, described but not quantified; ND, not described; Ref, reference.

Table 3 The proportion of reported respiratory symptoms in patients with COVID-19 at baseline by continent

	Reference	Respiratory symptoms				
		Cough	Cough productive/ expectoration/sputum	Dyspnoea/ shortness of breath	Chest tightness	Chest pain
America (North)	10	82*	ND	82†	ND	ND
	15	90*		90†		
	11	48		76		
Range		(48–90)	–	(76–90)	–	–
Asia	9	ND	ND	ND	ND	ND
	26	68	34	19		
	38	33	41	51		
	55	46	ND	7		
	43	37		8		
	44	81		40		
	45	79	23	ND		
	47	ND	ND			
	27	63		32		4
	22	58	32	1	11	3
	36	75	ND	37	37	ND
	19	59	27	31	ND	
	34	48	4	19		
	49	77	9	13	9*	
	56	DNQ	DNQ	ND	ND	
	57	60	ND			
	17	62		1		
	39	82		31		2
	41	60	33	ND		ND
	58	78	18	11		6
	59	63	12	ND		ND
	25	59	19	42	22	
	37	64	ND	38	ND	4
	48	DNQ		ND		ND
	60	82	53			
	50	55	29	29	20	9
	42	45		24	ND	ND
	29	81	56	ND		
	7	64	44	12		2
	40	38		7‡	7*	ND
	18	4	ND	ND	ND	
	30	77		64		2
	20	45	25	8		ND
	28	47	ND	14§		14*
	61	64		19		ND
	62	76	28	55		
	24	50	24	15		
	46	66	16	ND	9	

Continued



Table 3 Continued

Reference	Respiratory symptoms				
	Cough	Cough productive/ expectoration/sputum	Dyspnoea/ shortness of breath	Chest tightness	Chest pain
13	59	ND	41	ND	
12	DNQ		ND		
8	57	29			10
63	43	ND			ND
35	47			5	
21	68			ND	
6	77	18			
16	46	15			
23	92	ND			
64	64	27	9		
65	DNQ	ND	DNQ	DNQ	
32			ND	ND	
31	18				
33	83	ND	11		
Range	(4–92)	(4–56)	(1–64)	(5–37)	(2–14)
Europe	14	48	ND	7	ND
Range	(48)	–	(7)	–	–
Range	(4–92)	(4–56)	(1–90)	(5–37)	(2–14)

*Or dyspnoea.

†Or cough.

‡Or chest tightness.

§Or chest pain.

DNQ, described but not quantified; ND, not described; Ref, reference.

Fatigue was observed in 17% of the participants from the USA study¹⁵ and ranged from 4%²⁰ to 89%²¹ in studies from China. Myalgia was reported in 3% of the patients included in the European study.¹⁴ In Chinese studies, it ranged from 3%²² to 33%²³ and reached 65%²⁴ when combined with fatigue. Anorexia, chills and dizziness were registered only in Asian studies, and their prevalence ranged from 1%²⁵ to 43%,⁸ from 1%²⁶ to 42%²³ and from 2%^{25 27} to 16%,²⁸ respectively. Complaints of headache were described in the European study in 21%¹⁴ of the patients and from 0%²³ to 34%^{7 29} in two Chinese studies.

Malaise was present in 17% of the participants in one study from the USA¹⁰ and 35% in another study from Asia.³⁰ Weakness was reported in 28% of patients in the European study¹⁴ and ranged from 9%²⁵ to 11%³¹ in two studies from China. Malnutrition was present in 2% of the participants in one study.³⁰ Skin tingling was described but not quantified in one study.³² Arthralgia was described in three studies, all conducted in China.^{26 27 30} This symptom was reported in 2% of the sample in one study,³⁰ and 15%²⁶ and 61%²⁷ in two studies that combined the presence of arthralgia or myalgia as one symptom.

The presence of pharyngalgia was reported in one study from the USA,¹⁵ in 30% of the participants. In studies

from China, the prevalence of this symptom varied from 2%³⁰ to 61%.³³ In the European study,¹⁴ both pharyngalgia and rhinorrhoea were reported by 7% of the participants. The later symptom ranged from 2%³⁰ to 26%²⁵ in Chinese patients. The frequency of nasal congestion and throat congestion was reported only in studies from China. In one study,²⁶ 2% of the participants described feeling throat congestion, and nasal congestion varied from 5%²⁶ to 62%¹⁶ in two studies.

From respiratory symptoms, the cough was the most frequently assessed; one study from the USA and European study reported to be present in 48% of the sample.^{11 14} Cough or dyspnoea was reported by 82% of the patients in one study from Canada¹⁰ and 90% in the USA.¹⁵ Specifically, productive cough, chest tightness and chest pain were registered only on studies from China and varied from 4%³⁴ to 56%,²⁹ from 5%³⁵ to 37%³⁶ and 2%³⁰ to 14%,²⁸ respectively. In one study,²⁸ 14% of patients reported feeling chest pain or dyspnoea.

The presence of dyspnoea alone was also described in the majority of the studies. One study from the USA reported its presence in 76% of the patients,¹¹ while in the European study,¹⁴ it was only observed in 7% of the patients. As for the studies conducted in China, dyspnoea prevalence oscillated from 1%²² to 64%.³⁰



Table 4 Continued

Reference	Gastrointestinal symptoms			
	Diarrhoea	Nausea	Vomiting/emesis	Abdominal distress
8				
63		5		
35	5	ND		
21	16			
6	12			
16	8			
23	17	17		
64	9	ND	ND	
65	DNQ			
32	ND			
31				
33	17			
Range	(1–27)	(1–17)	(1–18)	(1–15)
Europe	14	3	3	ND
Range	(3)	(3)	–	–
Range	(1–27)	(1–17)	(1–18)	(1–15)

*Or dyspnoea.

†Or cough.

‡Or chest tightness.

§Or chest pain.

DNQ, described but not quantified; ND, not described; Ref, reference.

General gastrointestinal symptoms were described by 10%¹⁰ of the patients in one study from Canada and 40%³⁶ in another from China. From the gastrointestinal system, only diarrhoea and nausea were recorded in the European study.¹⁴ Both presented a 3% prevalence. From the studies conducted in China, diarrhoea prevalence ranged from 1%³⁷ to 27%,³⁸ nausea from 1%^{22 37 39} to 17%,²³ vomit from 1%³⁰ to 18%⁴⁰ and abdominal distress from 1%⁴¹ to 6%.³⁶ When combining abdominal pain or diarrhoea, the prevalence raised to 15%.⁴² Belching or gastritis was recorded in only one study from China³⁶ and was reported by 5% of the patients. Irritability or confusion was documented in 3%²² and 9%³⁹ of the patients included in two studies from China, and the presence of rash and enlargement of lymph nodes was assessed in only one study and was not found in any patient.²⁶

Comorbidities

As we can see in table 5, the presence of comorbidities was not reported in the European study, and only one of the studies from the USA had relevant information.¹¹ In this study, 86% of the patients had at least one comorbidity. The most frequent were chronic kidney disease (48%), congestive heart failure (43%), diabetes (33%), chronic obstructive pulmonary disease (33%) and obstructive sleep apnoea (29%). Less than 10% of the patients presented end-stage kidney disease, asthma, cirrhosis and rheumatological disease.

The remaining data were from Asian studies, in which several concomitant infections were described. The presence of hepatitis B was observed in 1%,⁴³ 2%^{18 26} and 5%³⁵ of the participants in the four studies that described its frequency. Prevalence of HIV was reported to be of 0%^{19 27 37} and 6%.²⁴ Only one study described bacterial coinfection in 17% of the patients.²³

Numerous studies described that some patients presented malignant diseases. This comorbidity prevalence ranged from 0%⁴³ up to 9%.²⁴ Only one study described the presence of thyroid disease³⁶ and other of hyperlipidaemia in 4% and 5%³⁶ of the participants, respectively. Two studies reported the presence of hypothyroidism in 2%¹⁸ and 6%²⁴ of the patients. Various studies reported the prevalence of diabetes, with values ranging from 2%⁴⁴ up to 33%.⁴⁵ The presence of kidney disease ranged from 1%^{9 26 45} up to 6%²⁰; chronic kidney disease was observed in 1%³⁶ up to 17%²⁵ of the patients. Only one study reported the proportion of patients with renal insufficiency²³ and urolithiasis³⁶ to be of 17% and 2%, respectively. Chronic liver disease was observed in 0%²³ to 11%²⁹ of the participants. Hepatic insufficiency was reported by two studies to have a prevalence of 9%²⁵ and 17%.²³ Fatty liver and abnormal liver function were observed in 6% of the patients in one study.³⁶ Digestive system diseases were described in four studies in 4%,⁴³ 6%¹⁷ and 11%³⁹ of the participants.

Table 5 The proportion of comorbidities in patients with COVID-19 at baseline by continent

	Endocrine system			Renal system		Neurological system		Cardiovascular system		Respiratory system		COPD
	Ref	Malignancy	Diabetes	Kidney disease	CKD	Cerebrovascular disease	Cardiovascular disease	Hypertension	Respiratory disease	Pulmonary disease		
America (North)	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15											
	11		33		48							33
Range	-	-	33	-	48	-	-	-	-	-	-	33
Asia	9	ND	7	ND	ND	ND	11	6	6	ND	ND	ND
	26		7	1		1	3	15		ND		1
	38	3	16	2		2	6	30				3
	55	ND	ND	ND		ND	ND	ND				ND
	43	0	10			22*	22†			2		
	44	ND	5			ND	3	14		ND		
	45	1	19	1			8	30			3	
	47	ND	ND	ND		DNQ	DNQ	0			ND	
	27	5	10	4		5	10	24				3
	22	ND	ND	ND		ND	ND	ND				ND
	36		12				5	30				1
	19	7	10	3	1	5	15	31				3
	34	2	10	ND		ND	7	10				2
	49	3	9				5	10			1	0
	56	ND	ND				ND	ND			ND	ND
	57											
	17					16*	16†			5		
	39	1				40*	40†			1		
	41	ND	9			3*	3†			ND		
	58		8			ND	1	17				6
	59	2	6				3	6				1
	25	5	12			7	10	19				11
	37	1	ND	1	4	31	31	15				0
	48	ND	25	ND	ND	ND	ND	ND		1		10
	60		ND				ND	40		ND		ND
	50		10				12	ND				6
	42		7	2			ND	13			10	ND
	29		2	2		2		7			ND	2
	7		8	ND		ND	2	8				8
	40		7	3			11	20				ND

Continued



Table 5 Continued

Ref	Endocrine system		Renal system		Neurological system		Cardiovascular system		Respiratory system		COPD	
	Malignancy	Diabetes	Kidney disease	CKD	Cerebrovascular disease	Cardiovascular disease	Hypertension	Respiratory disease	Pulmonary disease			
18		ND	ND									
30	4	17			14					8		
20	ND	8	6		ND					5		
28		6	ND							ND	2	
61		DNQ								DNQ	ND	
62	2	20								15	2	
24	9	12								24	3	
46	6	13		3	13					22	6	
13	ND	22		ND	4					19	41	
12		DNQ			ND					DNQ	ND	
8		ND								ND		
63										11		
35										ND		
21										6		
6										ND		
16										25		
23		17								33		
64		ND								ND		
65										DNQ	DNQ	
32										ND	ND	
31												
33												
Range	(0-9)	(2-25)	(1-6)	(1-17)	(1-40)	(1-40)	(1-40)	(1-40)	(0-40)	(1-41)	(1-10)	(0-11)
Europe	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Range	(0-9)	(2-33)	(1-6)	(0-48)	(1-40)	(1-40)	(0-40)	(1-41)	(1-10)	(1-10)	(0-33)	

*Or cardiovascular disease.
†Or cerebrovascular disease.
CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; DNQ, described but not quantified; ND, not described; Ref, reference.

The presence of cerebrovascular disease was reported in several studies and ranged from 1%²⁶ to 31%³⁷ of the participants, reaching 40%³⁹ when combined with cardiovascular disease. Dementia was described in one study, with a value of 2%.³⁰ Nervous system diseases were ascertained in three studies, with a frequency of 1%^{37 39} and 3%.⁴⁶ The same number of studies registered history of stroke and observed its presence in 2%^{36 42} and 8%²³ of the participants.

Cardiovascular disease prevalence ranged from 1%^{7 28} to 33%²³ of the patients in the various studies reporting it. Hypertension frequency varied from 0%⁴⁷ to 40%.⁴⁸ The presence of tachycardia was registered in four studies and reported to be of 2%,⁷ 4%⁴⁹ and 7%.^{34 50} We only found one study that described the prevalence of arrhythmia (with a value of 4%³⁶), persistent atrial fibrillation (6%⁴⁰), cardiac failure (8%²³) or aorta sclerosis (1%³⁶).

Various studies described the prevalence of baseline respiratory system conditions. Respiratory disease, in general, was found in 1%^{37 39} to 41%¹³ of the patients, pulmonary disease to range between 1%⁴⁹ and 10%⁵⁰ and chronic obstructive pulmonary disease between 0%^{24 50} and 33%⁵⁰ of the patients. We only found two studies that described the prevalence of asthma (with a value of 2%¹⁸ up to 9%¹¹), and one study describing a 6% of rhinitis.⁶

DISCUSSION

This is the first scoping review focusing on baseline characteristics of patients with COVID-19. Although we aimed to try to better identify those at higher risk of having the condition, only descriptive studies were found. We have identified 56 articles; two were conducted in the USA, one in Canada and one was a multicentre European study. No studies from Africa, South America or Australia were retrieved. At the date of the end of our review, according to WHO,⁵¹ there were 25 375 cases of COVID-19 in the region of the Americas, 171 424 in European region and 990 in African region.

As we can observe above, most of the studies were conducted in China, the first country in which COVID-19 was detected. Furthermore, one of these studies⁹ contributed to 88% of the participants. This study consists of the Chinese Centre for Disease Control and Prevention Report. Therefore, we cannot be sure about how many of the other Chinese studies described results that are included in this report, representing duplicate participants.

We observed a very high heterogeneity on sample size, patients' age and described symptoms and comorbidities. Accounting for this heterogeneity, we have considered that it was not adequate to conduct a meta-analysis and performed only a narrative synthesis of the available evidence. We also acknowledge the exclusion of articles written only in Chinese due to the fear of further data duplication⁵² and the exponential growth of published evidence about COVID-19 since our review.

In the included studies, the median age ranged from 28 to 70 years, being 50 years or less in 36 (72%) of the studies. Only one-fifth of the studies described the proportion of asymptomatic patients. In the European study, it was around 25%, and in the Asian studies, it ranged from 2% up to 75% of the patients. It highlights the importance of wide screening and people isolation strategies due to the risk of being in contact with infected but asymptomatic people.

The prevalence of more than 30 symptoms and 35 comorbidities were collected; however, several were reported by five or fewer studies. The most reported symptoms were fever, cough, dyspnoea, fatigue, myalgia and pharyngalgia. Cardiovascular disease, hypertension and cerebrovascular disease were the most reported comorbidities. However, this is also due to the commonly high prevalence of these diseases in the general population and the focus given to more severe cases by several studies.

There is a previous systematic review with meta-analysis of the prevalence of symptoms and comorbidities in people with COVID-19 that included eight studies published until 5 February 2020.⁵³ The authors concluded that the most prevalent clinical symptoms were fever (with a pooled prevalence of 91%), cough (67%), fatigue (51%) and dyspnoea (30%). The most prevalent comorbidities were hypertension (17%), diabetes (8%), cardiovascular diseases (5%) and respiratory system diseases (2%). However, the authors reported high levels of heterogeneity when pooling such prevalence (I^2 ranged from 85% to 96%).

A more recent systematic review with meta-analysis to identify clinical, laboratory and imaging features of COVID-19, included studies until 21 February 2020.⁵⁴ When pooling the 18 included studies, once again, fever (pooled prevalence of 88%), cough (58%) and dyspnoea were the most common symptoms, and hypertension (19%), cardiovascular disease (14%) and diabetes (12%) were the most frequent comorbidities. Once again, severe heterogeneity was observed by the authors.

Our study observed that the presence of fever ranged from four to 99%, cough from 4% to 92%, fatigue from 4% to 89% and dyspnoea from 1% to 90%; as for comorbidities, the prevalence of hypertension varied from 0% to 40%, diabetes from 2p% to 33% and cardiovascular disease from 1% to 40%. We highlight that these values cannot be directly compared between studies without having in consideration that they reflect the existence of different populations, healthcare settings, selection criteria and different times of the disease history. Such massive variation on the range of observed prevalence for all symptoms and comorbidities impairs the selection of any of them as pertinent to be included in a predictive model to identify people at high risk of being infected with COVID-19.

We consider that future research conducted specifically with that aim and assessing the ability of several symptoms and/or comorbidities combined to stratify people by

their risk of being infected is crucial. Also, there is a great need for further studies conducted outside China so that comparisons can be made about baseline characteristics as well as clinical outcomes.

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ORCID iD

Matilde Monteiro-Soares <http://orcid.org/0000-0002-4586-2910>

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