# EVIDENCE SEARCH REPORT

**Research Question:** What is the evidence that runny nose or sneezing are symptoms of COVID-19?

**Unique Identifier:** EOC092401-01 ESR

**Context:** Updating screening symptoms for schools.

**Resources Used:**
- CADTH
- CDC
- CEBM
- CINAHL
- Cochrane Library
- COVID-19 Best Evidence Front Door
- DynaMed
- ECDC
- ECRI
- Embase
- Essential Evidence Plus
- Google Advanced Search
- Google Scholar
- HSE
- JBI
- LitCovid
- Medline
- medRxiv
- National Academies of Sciences, Engineering and Medicine
- NCCMT
- Newfoundland & Labrador Centre for Applied Health Research
- NICE
- Norwegian Institute of Public Health
- PHAC
- PubMed
- Sax Institute Evidence Check
- SPOR Evidence Alliance
- University of Toronto
- Usher Network for COVID-19 evidence reviews
- WHO Global Research on COVID-19

**Limits/Exclusions/Inclusions:** English

**Reference Interview Completed:** None

**Date:** September 25, 2020

**Librarian:** Catherine Young & Brianna Howell-Spooner

**Requestor:** John Froh

**Team:** EOC

**Search Alerts Created:** No

**Cite As:** Young, C; Howell-Spooner, B. What is the evidence that runny nose or sneezing are symptoms of COVID-19? 2020 Sep 25; Document no.: EOC092401-01 ESR. In: COVID-19 Rapid Evidence Reviews [Internet]. SK: SK COVID Evidence Support Team, c2020. 37 p. (CEST evidence search report)

**Librarian Notes/Comments**

Grey literature search: Most grey literature on this topic did not directly link back to the research, so was not included in the results.

Database searches: Sneezing and runny nose were classified as “mild symptoms” in cases where they occurred; additionally, were less likely to present with either symptoms than they were to present with cough, fever, shortness of breath, or body aches, or in the case of pediatric patients diarrhea.
SEARCH RESULTS

To obtain full-text articles email library@saskhealthauthority.ca.

SUMMARIES, GUIDELINES & OTHER RESOURCES


ARTICLES

Note: References are sorted by year (newest to oldest)

   ABSTRACT: Coronaviruses are large family-RNA viruses that belong to the order Nidovirales, family Coronaviridae, subfamily Coronavirinae. The novel COVID-19 infection, caused by a beta coronavirus called SARS-CoV-2, is a new outbreak that has been emerged in Wuhan, China in December 2019. The most common symptoms of COVID-19 are fever, cough, and dyspnea. As per the March 12, 2020, WHO report, more than 125,048 confirmed COVID-19 cases and over 4613 deaths have been identified in more than 117 countries. It is now regarded as a pandemic that seriously spread and attack the world. The primary means of transmission is person to person through droplets that occurred during coughing or sneezing, through personal contact (shaking hands), or by touching contaminated objects. So far, there is no effective therapy and vaccine available against this novel virus and therefore, only supportive care is used as the mainstay of management of patients with COVID-19. The mortality rate of COVID-19 is considerable. This work aimed to provide insight on the newly emerged COVID-19, in the hope to gain a better understanding on the general overview, epidemiology, transmission, clinical features, diagnosis, treatment, and clinical outcomes as well as the prevention and control of COVID-19.
   URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7341708/
   DOI: 10.1186/s12985-020-01363-5

   ABSTRACT: The recent outbreak of the respiratory ailment COVID-19 caused by novel coronavirus SARS-Cov2 is a severe and urgent global concern. In the absence of effective treatments, the main containment strategy is to reduce the contagion by the isolation of infected individuals; however, isolation of unaffected individuals is highly undesirable. To help make rapid decisions on treatment and isolation needs, it would be useful to determine which features presented by suspected infection cases are the best predictors of a positive diagnosis. This can be done by analyzing patient characteristics, case trajectory, comorbidities, symptoms, diagnosis, and outcomes. We developed a model that employed supervised machine learning algorithms to identify the presentation features predicting COVID-19 disease diagnoses with high accuracy. Features examined include details of the individuals concerned, e.g., age, gender, observation of fever, history of travel, and clinical details such as the severity of cough and incidence of lung infection. We implemented and applied several machine learning algorithms to our collected data and found that the XGBoost algorithm performed with the highest...
accuracy (>85%) to predict and select features that correctly indicate COVID-19 status for all age groups. Statistical analyses revealed that the most frequent and significant predictive symptoms are fever (41.1%), cough (30.3%), lung infection (13.1%) and runny nose (8.43%). While 54.4% of people examined did not develop any symptoms that could be used for diagnosis, our work indicates that for the remainder, our predictive model could significantly improve the prediction of COVID-19 status, including at early stages of infection.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7305929/


ABSTRACT: The purpose of this study was to evaluate the clinical features of mild-to-moderate coronavirus disease 2019 (COVID-19) in a sample of Italian patients and to investigate the occurrence of smell and taste disorders. Infected individuals with suspected (clinical diagnosis) or laboratory-confirmed COVID-19 infection were recruited. Patients completed a survey-based questionnaire with the aim of assessing their epidemiological and clinical characteristics, general otorhinolaryngological symptoms, and smell and taste disorders. A total of 294 patients with mild-to-moderate COVID-19 completed the survey (147 females). The most prevalent general symptoms included fever, myalgia, cough, and headache. A total of 70.4% and 59.2% of patients reported smell and taste disorders, respectively. A significant association between the two above-mentioned disorders was found (rs: 0.412; P < .001). Smell disorders occurred before the other symptoms in 11.6% of patients and was not significantly associated with nasal obstruction or rhinorrhea. Interestingly, our statistical analysis did not show any significant difference, either for general symptoms or otorhinolaryngological features, between the clinical diagnosis group and the laboratory-confirmed diagnosis (polymerase chain reaction) group. The structural equation model confirmed significant standardized paths (P < .05) between general symptoms, comorbidities, and general otorhinolaryngological complaints in the absence of a significant correlation between these elements and smell and taste alterations. The prevalence of smell and taste disorders in mild-to-moderate Italian COVID-19 patients is significant both in suspected and laboratory-confirmed cases and reveals a strong correlation between these clinical signs regardless of the presence of general or otorhinolaryngological symptoms, such as nasal obstruction or rhinorrhea. Copyright © 2020 Wiley Periodicals LLC


ABSTRACT: INTRODUCTION: Coronavirus disease 2019 (COVID-19) has spread rapidly throughout the world. Smell and/or taste disorders have emerged as a very frequent symptom as the disease has spread in Europe. Spain is one of the European countries with the highest number of infections.

OBJECTIVE: This study aimed to investigate the clinical progression of smell and taste disorders in Spanish patients with mild COVID-19.

METHODS: An online survey was used to conduct a cross-sectional study of patients who presented sudden smell and/or taste disorders during the 2 months of total lockdown due to COVID-19 in Spain.

RESULTS: In our sample, 91.18% of respondents with impaired smell and/or taste and who were able to undergo PCR testing were positive for SARS-CoV-2 infection. Anosmia and ageusia presented in isolation in 6.5% of participants. The remaining 93.5% presented other mild symptoms: headache (51.6%), cough (51.6%), myalgia (45.2%), asthaenia (38.7%), nasal congestion or rhinorrhoea (35.5%), fever (41.9%), low-grade fever (29.0%), odynophagia (25.8%), or diarrhoea (6.5%). The mean duration of anosmia was 8.33 days, with patients subsequently manifesting hyposmia; complete resolution occurred after a mean of 17.79 days. In 22.6% of respondents, olfactory deficits persisted. All participants recovered their sense of taste.

CONCLUSIONS: Olfactory and gustatory disorders are prevalent symptoms in mild COVID-19. Most patients do not present associated nasal congestion or rhinorrhoea and a small group of patients present these alterations in isolation.


**ABSTRACT**: OBJECTIVE: The coronavirus disease 2019 (COVID-19) pandemic poses a threat to global health. Early diagnosis is an essential key to limit the outbreak of the virus.

STUDY DESIGN: Case series, study conducted between March 25, 2020, and April 15, 2020.

SETTING: Ambulatory, nonhospitalized patients who were quarantined in a designated hotel for COVID-19 patients and were recruited by an advertisement at the hotel.

SUBJECTS AND METHODS: In total, 140 patients participated in a web-based questionnaire assessing initial symptoms of common viral diseases, olfactory and taste functions, xerostomia, and orofacial pain.

RESULTS: A total of 58 men and 70 women participated. Initial symptoms were cough (59.4%), weakness (47.7%), myalgia (46.9%), fever (42.2%), headache (40.6%), impaired sense of smell (38.3%), impaired sense of taste (32.8%), sore throat (26.6%), runny nose (26.6%), and nasal congestion (22.7%). All symptoms were more frequent among women; however, only runny nose was statistically significant (P = .018). The most common combination of symptoms was cough and weakness (37.5%). A total of 25.8% reported olfactory and taste dysfunctions in the absence of other symptoms. In a comparison between the sexes, cough and runny nose were the most common combination in women (P = .018). A total of 38.3% of patients reported olfactory dysfunction as an initial symptom. Anosmia and facial pain were more common among women (P < .001 and P = .01, respectively), and 56% of patients reported xerostomia.

CONCLUSION: A considerable number of patients presented with olfactory and oral disorders. Interestingly, women presented with a different cluster of symptoms than men, which may suggest a new clinical approach to diagnosing COVID-19 disease.

**URL**: [https://europepmc.org/article/med/32539587](https://europepmc.org/article/med/32539587)


**ABSTRACT**: Background Covid-19 is defined by an association of multiple symptoms, including frequently reported olfactory and gustatory disorders.

Objective The main purpose of this study was to analyze the prevalence of these neurosensory impairments in patients with Covid-19, and to assess short-term recovery.

Methods We performed a multicenter case series study during the Covid-19 epidemic. All patients presenting a RT-PCR-confirmed SARS-CoV-2 infection were included, whether hospitalized or treated at home. To analyze the prevalence and features of olfactory and gustatory dysfunctions, a phone interview was conducted 5 days after the positive PCR result. The questionnaire was submitted again 10 days later to patients having reported olfactory and gustatory disorders, in order to assess their recovery.

Results 115 patients were included in our study. 81 patients (70%) reported olfactory and gustatory disorders without nasal obstruction or rhinorrhea. These impairments were more frequently reported in the female population, young people, and house-bound patients with mild symptomatic forms. Short-term recovery assessed at Day 15 was complete for 64% of the patients, and incomplete in 33%. Median recovery time was 15 days (4?27 days) after olfactory or gustatory symptom onset.

Conclusion Olfactory and gustatory dysfunctions related to Covid-19 are frequently reported and prevalent in mild symptomatic forms of the disease. Recovery in most cases seems rapid and complete.

**URL**: [https://doi.org/10.1177/1945892420930954](https://doi.org/10.1177/1945892420930954)

**DOI**: 10.1177/1945892420930954

ABSTRACT: Background: In December, 2019, a pneumonia associated with the 2019 novel coronavirus (2019-nCoV) emerged in Wuhan, China. We aimed to further clarify the epidemiological and clinical characteristics of 2019-nCoV pneumonia.

Methods: In this retrospective, single-centre study, we included all confirmed cases of 2019-nCoV in Wuhan Jinyintan Hospital from Jan 1 to Jan 20, 2020. Cases were confirmed by real-time RT-PCR and were analysed for epidemiological, demographic, clinical, and radiological features and laboratory data. Outcomes were followed up until Jan 25, 2020.

Findings: Of the 99 patients with 2019-nCoV pneumonia, 49 (49%) had a history of exposure to the Huanan seafood market. The average age of the patients was 55·5 years (SD 13·1), including 67 men and 32 women. 2019-nCoV was detected in all patients by real-time RT-PCR. 50 (51%) patients had chronic diseases. Patients had clinical manifestations of fever (82 [83%] patients), cough (81 [82%] patients), shortness of breath (31 [31%] patients), muscle ache (11 [11%] patients), confusion (nine [9%] patients), headache (eight [8%] patients), sore throat (five [5%] patients), rhinorrhea (four [4%] patients), chest pain (two [2%] patients), diarrhoea (two [2%] patients), and nausea and vomiting (one [1%] patient). According to imaging examination, 74 (75%) patients showed bilateral pneumonia, 14 (14%) patients showed multiple mottling and ground-glass opacity, and one (1%) patient had pneumothorax. 17 (17%) patients developed acute respiratory distress syndrome and, among them, 11 (11%) patients worsened in a short period of time and died of multiple organ failure.

Interpretation: The 2019-nCoV infection was of clustering onset, is more likely to affect older males with comorbidities, and can result in severe and even fatal respiratory diseases such as acute respiratory distress syndrome. In general, characteristics of patients who died were in line with the MuLBSTA score, an early warning model for predicting mortality in viral pneumonia. Further investigation is needed to explore the applicability of the MuLBSTA score in predicting the risk of mortality in 2019-nCoV infection.

Funding: National Key R&D Program of China.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7135076/

DOI: 10.1016/S0140-6736(20)30211-7


ABSTRACT: Introduction The SARS-CoV-2 virus causes COVID-19, and it is responsible for the largest pandemic since the 1918 H1N1 influenza outbreak. The classic symptoms of the disease have been well defined by the World Health Organization; however, olfactory/gustatory disorders have been reported in some studies, but there are still several missing points in the understanding and in the consensus about the clinical management of these cases.

Objective To identify evidence in the scientific literature about olfactory/gustatory disorders, their clinical presentation, prevalence and possible specific treatments associated with COVID-19.

Methods A systematic review of articles published up to April 25, 2020 was performed in Medline, Cochrane Clinical Trials, ScienceDirect, Lilacs, Scopus and Google Scholar, OpenGrey.eu, DissOnline, The New York Academy of Medicine and Reasearch Gate.

Inclusion criteria: (1) Studies on patients with COVID-19; (2) Records of COVID-19 signs/symptoms, and olfactory/gustatory functions.

Exclusion criteria: (1) Studies on non-human coronavirus; (2) Review articles; (3) Experimental studies (in animals or in vitro); (4) Olfactory/gustatory disorders initiated prior to SARS-CoV-2 infection. The risk assessment of bias of the selected studies was performed using the Newcastle-Ottawa scale.

Results Six articles from the 1788 records met the inclusion criteria and were analyzed. A total of 1457 patients of different ethnicities were assessed; of them, 885 (60.7%) and 822 (56.4%) had smell and taste disorders, respectively, with women being most often affected. There were olfactory/gustatory disorders even without
nasal obstruction/rhinorrhea and beginning even before the signs/symptoms of COVID-19; the recovery of smell/taste, when it occurs, usually happened in the first two weeks after COVID-19 resolution. There is evidence that olfactory/gustatory disorders are strong predictors of infection by SARS-CoV-2, and it is possible to recommend patient isolation, as early as of the medical consultation, preventing the spread of the virus. No scientific evidence has been identified for effective treatments for any of the disorders.

Conclusion Olfactory/gustatory disorders may occur at varying intensities and prior to the general symptoms of COVID-19 and should be considered as part of the clinical features of COVID-19, even in mild cases. There is still no scientific evidence of specific treatments for such disorders in COVID-19 disease.


DOI: [https://doi.org/10.1016/j.bjorl.2020.05.008](https://doi.org/10.1016/j.bjorl.2020.05.008)


**ABSTRACT:** Objective: To characterize the clinical features of patients with severe COVID-19 in the UK.

Design: Prospective observational cohort study with rapid data gathering and near real-time analysis, using a pre-approved questionnaire adopted by the WHO.

Setting: 166 UK hospitals between 6th February and 18th April 2020.

Participants: 16,749 people with COVID-19. Interventions: No interventions were performed, but with consent samples were taken for research purposes. Many participants were co-enrolled in other interventional studies and clinical trials.

Results: The median age was 72 years [IQR 57, 82; range 0, 104], the median duration of symptoms before admission was 4 days [IQR 1,8] and the median duration of hospital stay was 7 days [IQR 4,12]. The commonest comorbidities were chronic cardiac disease (29%), uncomplicated diabetes (19%), non-asthmatic chronic pulmonary disease (19%) and asthma (14%); 47% had no documented reported comorbidity. Increased age and comorbidities including obesity were associated with a higher probability of mortality. Distinct clusters of symptoms were found: 1. respiratory (cough, sputum, sore throat, runny nose, ear pain, wheeze, and chest pain); 2. systemic (myalgia, joint pain and fatigue); 3. enteric (abdominal pain, vomiting and diarrhoea). Overall, 49% of patients were discharged alive, 33% have died and 17% continued to receive care at date of reporting. 17% required admission to High Dependency or Intensive Care Units; of these, 31% were discharged alive, 45% died and 24% continued to receive care at the reporting date. Of those receiving mechanical ventilation, 20% were discharged alive, 53% died and 27% remained in hospital.

Conclusions: We present the largest detailed description of COVID-19 in Europe, demonstrating the importance of pandemic preparedness and the need to maintain readiness to launch research studies in response to outbreaks.

Trial documentation: Available at [https://isaric4c.net/protocols](https://isaric4c.net/protocols). Ethical approval in England and Wales (13/SC/0149), and Scotland (20/SS/0028). ISRCTN (pending). Competing Interest Statement

AB Docherty reports grants from Department of Health and Social Care, during the conduct of the study; grants from Wellcome Trust, outside the submitted work; CA Green reports grants from DHSC National Institute of Health Research UK, during the conduct of the study; F Dondelinger is due to start a position at F. Hoffmann - La Roche on 4th May 2020; PW Horby reports grants from Wellcome Trust / Department for International Development / Bill and Melinda Gates Foundation, grants from NIHR , during the conduct of the study; JS Nguyen-Van-Tam reports grants from Department of Health and Social Care, England, during the conduct of the study; and is seconded to the Department of Health and Social Care, England (DHSC); PJM Openshaw reports personal fees from Consultancy, grants from MRC, grants from EU Grant, grants from NIHR Biomedical Research Centre, grants from MRC/GSK, grants from Wellcome Trust, grants from NIHR (HPRU), grants from NIHR Senior Investigator, personal fees from European Respiratory Society, grants from MRC Global Challenge Research Fund, outside the submitted work; and The role of President of the British Society for Immunology was an unpaid appointment but travel and accommodation at some meetings is provided by the Society; JK Baille reports grants from Medical
Research Council UK; MG Semple reports grants from DHSC National Institute of Health Research UK, grants from Medical Research Council UK, grants from Health Protection Research Unit in Emerging & amp;amp; Zoonotic Infections, University of Liverpool, during the conduct of the study; other from Integrum Scientific LLC, Greensboro, NC, USA, outside the submitted work. EM Harrison, H Ardwick, J Dunning, R Pius, L Norman, KA Holden, JM Read, G Carson, L Merson, J Lee, D Plotkin, L Sigfred, S Halpin, C Jackson, C Gamble, have nothing to declare. Clinical TrialISRCTN pendingClinical Protocolshttps://isaric4c.net/protocolsFunding StatementThis work is supported by grants from: the National Institute for Health Research [award CO-CIN-01], the Medical Research Council [grant MC_PC_19059] and by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Emerging and Zoonotic Infections at University of Liverpool in partnership with Public Health England (PHE), in collaboration with Liverpool School of Tropical Medicine and the University of Oxford [NIHR award 200907], Wellcome Trust and Department for International Development [215091/Z/18/Z], and the Bill and Melinda Gates Foundation [OPP1209135], and Liverpool Experimental Cancer Medicine Centre for providing infrastructure support for this research (Grant Reference: C18616/A25153). JSN-V-T is seconded to the Department of Health and Social Care, England (DHSC). The views expressed are those of the authors and not necessarily those of the DHSC, DID, NIHR, MRC, Wellcome Trust or PHE.Author DeclarationsAll relevant ethical guidelines have been followed; any necessary IRB and/or ethics committee approvals have been obtained and details of the IRB/oversight body are included in the manuscript.YesAll necessary patient/participant consent has been obtained and the appropriate institutional forms have been archived.YesI understand that all clinical trials and any other prospective interventional studies must be registered with an ICMJE-approved registry, such as ClinicalTrials.gov. I confirm that any such study reported in the manuscript has been registered and the trial registration ID is provided (note: if posting a prospective study registered retrospectively, please provide a statement in the trial ID field explaining why the study was not registered in advance).Yes I have followed all appropriate research reporting guidelines and uploaded the relevant EQUATOR Network research reporting checklist(s) and other pertinent material as supplementary files, if applicable.YesThe protocol, revision history, case report form, information leaflets and consent forms and detail of the Independent Data and Material Access Committee (IDAMAC) are available at https://isaric4c.net.https://isaric4c.net/protocols

URL: http://medrxiv.org/content/early/2020/04/28/2020.04.23.20076042.abstract
DOI: 10.1101/2020.04.23.20076042


ABSTRACT: Background The pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has made widespread impact recently. We aim to investigate the clinical characteristics of COVID-19 children with different severities and allergic status. Methods Data extracted from the electronic medical records, including demographics, clinical manifestations, comorbidities, laboratory and immunological results, and radiological images of 182 hospitalized COVID-19 children, were summarized and analyzed. Results The median age was 6 years, ranging from 3 days to 15 years, and there were more boys (male-female ratio about 2:1) within the studied 182 patients. Most of the children were infected by family members. Fever (43.4%) and dry cough (44.5%) were common symptoms, and gastrointestinal manifestations accounted for 11.0%, including diarrhea, abdominal discomfort, and vomiting. 71.4% had abnormal chest computed tomography (CT) scan images, and typical signs of pneumonia were ground-glass opacity and local patchy shadowing on admission. Laboratory results were mostly within normal ranges, and only a small ratio of lymphopenia (3.9%) and eosinopenia (29.5%) were observed. The majority (97.8%) of infected children were not severe, and 24 (13.2%) of them had asymptomatic infections. Compared to children without pneumonia (manifested as asymptomatic and acute upper respiratory infection), children with pneumonia were associated with higher percentages of the comorbidity history, symptoms of fever and cough, and increased levels of serum procalcitonin, alkaline phosphatase, and serum interleukins (IL)-2, IL-4, IL-6, IL-10, and TNF-α. There were no differences in treatments, duration of hospitalization, time from first positive to first negative nucleic acid
testing, and outcomes between children with mild pneumonia and without pneumonia. All the hospitalized COVID-19 children had recovered except one death due to intussusception and sepsis. In 43 allergic children with COVID-19, allergic rhinitis (83.7%) was the major disease, followed by drug allergy, atopic dermatitis, food allergy, and asthma. Demographics and clinical features were not significantly different between allergic and nonallergic groups. Allergic patients showed less increase in acute phase reactants, procalcitonin, D-dimer, and aspartate aminotransferase levels compared with all patients. Immunological profiles including circulating T, B, and NK lymphocyte subsets, total immunoglobulin and complement levels, and serum cytokines did not show any difference in allergic and pneumonia groups. Neither eosinophil counts nor serum total immunoglobulin E (IgE) levels showed a significant correlation with other immunological measures, such as other immunoglobulins, complements, lymphocyte subset numbers, and serum cytokine levels.

Conclusion Pediatric COVID-19 patients tended to have a mild clinical course. Patients with pneumonia had higher proportion of fever and cough and increased inflammatory biomarkers than those without pneumonia. There was no difference between allergic and nonallergic COVID-19 children in disease incidence, clinical features, and laboratory and immunological findings. Allergy was not a risk factor for developing and severity of SARS-CoV-2 infection and hardly influenced the disease course of COVID-19 in children.

URL: https://doi.org/10.1111/all.14452
DOI: 10.1111/all.14452

ABSTRACT: OBJECTIVE: to detect, analyze and discuss the different ear nose throat (ENT) manifestations those were reported in COVID19 positive patients in the reviewed and published literatures.
METHODS: We performed a search in the PubMed databases, Web of Science, LILACS, MEDLINE, SciELO, and Cochrane Library using the keywords; COVID-19, Novel coronavirus, corona, 2019-nCoV, SARS-CoV-2, ENT, ear, nose, throat, otorhinolaryngology, ORL, pharynx, ORL, smell, larynx, different ENT related symptoms. We reviewed published and peer reviewed studies that reported the ENT manifestations in COVID-19 laboratory-confirmed positive patients.
RESULTS: within the included 1773 COVID-19 laboratory-confirmed positive patients, the most common ENT manifestations of COVID-19 were sore throat (11.3%) and headache (10.7%). While the other reported ENT manifestations were pharyngeal erythema (5.3%), nasal congestion (4.1%), runny nose or rhinorrhea (2.1%), upper respiratory tract infection (URTI) (1.9%), and tonsil enlargement (1.3%).
CONCLUSION: ENT manifestations for COVID-19 are not common as fever and cough. But, a universal questionnaire using well-defined COVID-19 manifestations is needed to make the COVID-19 data precisely defined, complete and homogenous.

ABSTRACT: Objective: The ongoing pandemic of coronavirus disease (2019 coronavirus disease [COVID-19]), caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus, is highly contagious with high morbidity and mortality. The role of the nasal and paranasal sinus cavities is increasingly recognized for COVID-19 symptomatology and transmission. We therefore conducted a systematic review, synthesizing existing scientific evidence about sinonasal pathophysiology in COVID-19.
Study Design: Systematic review.
Methods: Systematic searches were performed of all indexed studies in PubMed/Medline and Cochrane databases through 28 March 2020 and studies searchable on preprints.com (including ArXiv and Scilit repositories) through 30 March 2020. Data extraction focused on sinonasal pathophysiology in COVID-19.
Results: A total of 19 studies were identified. The sinonasal cavity may be a major site of infection by SARS-CoV-2, where susceptibility genes required for infection are expressed at high levels and may be modulated by
environmental and host factors. Viral shedding appears to be highest from the nose, therefore reflecting a major source for transmission. This has been highlighted by multiple reports of health care-associated infection (HAI) during rhinologic procedures, which are now consequently considered to be high risk for SARS-CoV-2 transmission to health care workers. While sinonasal symptomatology, such as rhinorrhea or congestion, appears to be a rarer symptom of COVID-19, anosmia without nasal obstruction is reported as highly specific predictor of COVID-19+ patients.

Conclusion: Sinonasal pathophysiology is increasingly important in our understanding of COVID-19. The sinonasal tract may be an important site of infection while sinonasal viral shedding may be an important transmission mechanism-including HAI. Anosmia without nasal obstruction may be a highly specific indicator of COVID-19.

Level of Evidence: 2a.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7262250/


ABSTRACT: Question Coronavirus disease 2019 (COVID-19) is affecting millions of people worldwide. It seems that it affects mostly adults older than 40 years of age, and the death rate is highest for older individuals in the population. What should I tell parents worried about their children contracting the coronavirus (SARS-CoV-2) causing COVID-19, and what symptoms should I look for to determine if there is a need to test for the virus? Answer The COVID-19 global pandemic affects all ages. Severe respiratory manifestations have been the mainstay of illness in adults, with what seems to be rapid deterioration necessitating mechanical ventilation. Only 5% of those tested and found to have COVID-19 have been younger than 19 years, possibly owing to limited testing, as the symptoms in children are usually mild. Symptoms in children include fever, dry cough, rhinorrhea, sore throat, and fatigue, and in 10% diarrhea or vomiting. Rarely dyspnea or hypoxemia were also described. Blood tests and imaging have been shown to be of little value in children and should only be ordered for those in whom you would normally order these investigations for viral-like illness. No specific therapy is available and supportive care with rest, fluids, and antipyretics for children is the recommended approach. Ibuprofen or acetaminophen for fever and pain can be given. Antiviral and immunomodulatory treatment is not recommended at this time for otherwise healthy children, and corticosteroids should also not be used. Children with immunocompromised states should be isolated and avoid contact with others.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7219801/


ABSTRACT: Otorhinolaryngological manifestations are common among patients suffering from COVID-19. This study provides a brief and precise review of the current knowledge regarding COVID-19 including disease transmission and clinical characteristics. This article aims to review the otorhinolaryngologist experience treating patients in the cities where COVID 19 impact is most, and to propose appropriate protective measures while managing ENT patients. This is a retrospective study conducted in the Department of Otorhinolaryngology, Hind Institute of Medical Sciences, Ataria, Sitapur from 10 March 2020 to 4 May 2020. The most common otorhinolaryngological symptoms of COVID-19 were cough, sore throat, and dyspnea. Rhinorrhea, nasal congestion and dizziness also seen in some of the patients. COVID-19 could also manifest as an isolated sudden hyposmia/anosmia. Upper respiratory tract (URT) symptoms were commonly observed in younger patients and usually appeared initially. They could be present even before the molecular confirmation of SARS-CoV-2. Otorhinolaryngologists are at higher risk for SARS-CoV-2 infection as they cope with URT symptoms in OPD and while performing surgery in COVID-19 positive patients. Patients with cough, sore throat, dyspnea, hyposmia/anosmia and a history of travel to the region with confirmed COVID-19 patients, should be considered as potential COVID-19 cases. An otorhinolaryngologist should wear FFP3/N95 mask, glasses, disposable and fluid resistant gloves and gown while examining such individuals. ENT surgeries should be postponed if not urgent.

ABSTRACT: Background: A recent cluster of pneumonia cases in Wuhan, China, was caused by a novel betacoronavirus, the 2019 novel coronavirus (2019-nCoV). We report the epidemiological, clinical, laboratory, and radiological characteristics and treatment and clinical outcomes of these patients.

Methods: All patients with suspected 2019-nCoV were admitted to a designated hospital in Wuhan. We prospectively collected and analysed data on patients with laboratory-confirmed 2019-nCoV infection by real-time RT-PCR and next-generation sequencing. Data were obtained with standardised data collection forms shared by WHO and the International Severe Acute Respiratory and Emerging Infection Consortium from electronic medical records. Researchers also directly communicated with patients or their families to ascertain epidemiological and symptom data. Outcomes were also compared between patients who had been admitted to the intensive care unit (ICU) and those who had not.

Findings By Jan 2, 2020, 41 admitted hospital patients had been identified as having laboratory-confirmed 2019-nCoV infection. Most of the infected patients were men (30 [73%] of 41); less than half had underlying diseases (13 [32%]), including diabetes (eight [20%]), hypertension (six [15%]), and cardiovascular disease (six [15%]). Median age was 49·0 years (IQR 41·0–58·0). 27 (66%) of 41 patients had been exposed to Huanan seafood market. One family cluster was found. Common symptoms at onset of illness were fever (40 [98%] of 41 patients), cough (31 [76%]), and myalgia or fatigue (18 [44%]); less common symptoms were sputum production (11 [28%] of 39), headache (three [8%] of 38), haemoptysis (two [5%] of 39), and diarrhoea (one [3%] of 38). Dyspnoea developed in 22 (55%) of 40 patients (median time from illness onset to dyspnoea 8·0 days [IQR 5·0–13·0]). 26 (63%) of 41 patients had lymphopenia. All 41 patients had pneumonia with abnormal findings on chest CT. Complications included acute respiratory distress syndrome (12 [29%]), RNAemia (six [15%]), acute cardiac injury (five [12%]) and secondary infection (four [10%]). 13 (32%) patients were admitted to an ICU and six (15%) died. Compared with non-ICU patients, ICU patients had higher plasma levels of IL2, IL7, IL10, GSCF, IP10, MCP1, MIP1A, and TNFa.

Interpretation: The 2019-nCoV infection caused clusters of severe respiratory illness similar to severe acute respiratory syndrome coronavirus and was associated with ICU admission and high mortality. Major gaps in our knowledge of the origin, epidemiology, duration of human transmission, and clinical spectrum of disease need fulfilment by future studies.

URL: https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30183-5.pdf


ABSTRACT: Anosmia constitutes a prominent symptom of COVID-19. However, anosmia is also a common symptom of acute colds of various origins. In contrast to an acute cold, it appears from several questionnaire-based studies that in the context of COVID-19 infection, anosmia is the main rhinological symptom and is usually not associated with other rhinological symptoms such as rhinorrhea or nasal obstruction. Until now, no study has directly compared smell and taste function between COVID-19 patients and patients with other causes of upper respiratory tract infection (URTI) using valid and reliable psychophysical tests. In this study, we aimed to objectively assess and compare olfactory and gustatory functions in 10 COVID-19 patients (PCR diagnosed, assessed on average 2 weeks after infection), 10 acute cold (AC) patients (assessed before the COVID-19 outbreak) and 10 healthy controls, matched for age and sex. Smell performance was assessed using the extended "Sniffin' Sticks" test battery (4), while taste function was assessed using "taste strips" (5). Receiver Operating Characteristic (ROC) curves were built to probe olfactory and gustatory scores in terms of their discrimination between COVID-19 and AC patients. Our results suggest that mechanisms of COVID-19 related olfactory dysfunction are different from those seen in an AC and may reflect, at least to some extent, a specific
involvement at the level of central nervous system in some COVID-19 patients. In the future, studies to assess the prevalence of persistent anosmia and neuroanatomical changes on MRI correlated to chemosensory function, will be useful to understand these mechanisms.


**ABSTRACT:** BACKGROUND: Olfactory dysfunction has shown to accompany COVID-19. There are varying data regarding the exact frequency in the various study population. The outcome of the olfactory impairment is also not clearly defined.

OBJECTIVE: To find the frequency of olfactory impairment and its outcome in hospitalized patients with positive swab test for COVID-19.

METHODS: This is a prospective descriptive study of 100 hospitalized COVID-19 patients, randomly sampled, from February to March 2020. Demographics, comorbidities, and laboratory findings were analyzed according to the olfactory loss or sinonasal symptoms. The olfactory impairment and sinonasal symptoms were evaluated by 9 Likert scale questions asked from the patients.

RESULTS: Ninety-two patients completed the follow-up (means 20.1 (+/- 7.42) days). Twenty-two (23.91%) patients complained of olfactory loss and in 6 (6.52%) patients olfactory loss was the first symptom of the disease. The olfactory loss was reported to be completely resolved in all but one patient. Thirty-nine (42.39%) patients had notable sinonasal symptoms while rhinorrhea was the first symptom in 3 (3.26%). Fifteen patients (16.3%) had a taste impairment. Patients with sinonasal symptoms had a lower age (p = 0.01). There was no significant relation between olfactory loss and sinonasal symptoms (p = 0.07).

CONCLUSIONS: Sudden olfactory dysfunction and sinonasal symptoms have a considerable prevalence in patients with COVID-19. No significant association was noted between the sinonasal symptoms and the olfactory loss, which may suggest that other mechanisms beyond upper respiratory tract involvement are responsible for the olfactory loss.


**ABSTRACT:** Background: By mid-July 2020, more than 108,000 COVID-19 cases had been diagnosed in Canada with more than half in the province of Quebec. To be prepared for a potential second wave of COVID-19 in the fall, it seems of utmost importance to analyze the epidemiological and socio-economic characteristics of the spring outbreak in the population.

Method: We conducted an online survey of the participants of the CARTaGENE population-based cohort, composed of middle-aged and older adults. We collected information on socio-demographic, lifestyle, health condition, COVID-related symptoms and COVID-19 testing. We studied the association between these factors and two outcomes: the status of having been tested for SARS-CoV-2 and the status of having received a positive test when having been tested. These associations were evaluated with univariate and multivariate analyzes using a hybrid tree-based regression model.

Results: Among the 8,129 respondents from the CARTaGENE cohort, 649 were tested for COVID-19 and 41 were positive. Medical workers and individuals having a contact with a COVID-19 patient had the highest probabilities of being tested (32% and 42.4%, respectively) and of being positive (17.2% and 13.0%, respectively) among those tested. 7.6% of the participants declared that they have experienced at least one of the four COVID-related symptoms chosen by the Public Health authorities (fever, cough, dyspnea, anosmia) but were not tested. Results from the tree-based model analyzes adjusted on exposure factors show that the combination of dyspnea, dry cough and fever was highly associated with being tested whereas anosmia, fever, and headache were the most discriminant factors for having a positive test among those tested. During the spring outbreak,
more than one third of the participants have experienced a decrease in access to health services. There were sex and age differences in the socio-economic and emotional impacts of the pandemic. Conclusion: We have shown some discrepancies between the symptoms associated with being tested and being positive. In particular, the anosmia is a major discriminant symptom for positivity whereas ear-nose-throat symptoms seem not to be COVID-related. The results also emphasize the need of increasing the accessibility of testing for the general population.

URL: http://medrxiv.org/content/early/2020/09/01/2020.08.26.20182675.abstract
DOI: 10.1101/2020.08.26.20182675


ABSTRACT: BACKGROUND: There is limited information on the clinical characteristics of patients with coronavirus disease 2019 (COVID-19) who are asymptomatic or have mild symptoms.

METHODS: We performed a retrospective case series of patients with COVID-19 enrolled from February 22 to March 26, 2020. Forty cases of COVID-19 were confirmed using real-time reverse-transcription polymerase chain reaction among patients who underwent screening tests and were consecutively hospitalized at Ulsan University Hospital, Ulsan, Korea. The final follow-up date was May 19, 2020. All COVID-19 cases in Ulsan were included. Demographic and epidemiological information, comorbidities, clinical signs and symptoms, laboratory and radiologic findings, medications, treatments, outcomes, and main durations of patients with COVID-19 were compared according to supplemental oxygen requirement.

RESULTS: Forty patients were included (median age, 30 years; interquartile range [IQR], 25-57 years; 58% female). Six (15%) patients required supplemental oxygen. The prevalence of asymptomatic severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection was 5% and that of presymptomatic infection was 13%. Cough, fever, myalgia, rhinorrhea or nasal congestion, and diarrhea were the screening criteria for diagnosing symptomatic and presymptomatic SARS-CoV-2 infections. Sputum production, chest discomfort, a large number of symptoms, abnormal procalcitonin and C-reactive protein levels, and abnormal chest X-ray or chest computed tomography findings were more common in patients requiring supplemental oxygen than in those not requiring supplemental oxygen. Overall mortality rate was 3% (1/40). Four patients (10%) were readmitted after testing positive by reverse-transcription polymerase chain reaction again. Incubation period was 5 days (IQR, 4-6 days), and the duration of viral shedding was 21 days (IQR, 14-28 days; maximum, 51 days).

CONCLUSION: The prevalence of asymptomatic SARS-CoV-2 infection was 5%, which is much lower than that previously reported. This finding suggests that careful interviews and follow-ups should be performed to identify SARS-CoV-2 infections. Cough, fever, myalgia, rhinorrhea or nasal congestion, and diarrhea are adequate screening criteria for covering all symptoms of SARS-CoV-2 infection. Further evaluation is required to create representative screening criteria for COVID-19.

URL: https://pubmed.ncbi.nlm.nih.gov/32959547/


ABSTRACT: Introduction. Coronavirus disease 2019 (COVID-19) is an infectious disease caused by Severe Acute Respiratory Corona Virus-2 (SARS-CoV-2). The disease was first identified in December 2019 in Wuhan, the capital of China’s Hubei province, and has since spread globally, resulting in the ongoing 2019-2020 corona virus pandemic. SARS-CoV-2 is closely related to the original SARS-CoV. It is thought to have a zoonotic origin. The virus is primarily spread between people during close contact, often via small droplets produced by coughing, sneezing or talking. People may also become infected by touching a contaminated surface and then touching their face. COVID-19 patients currently remain the primary source of infection. An epidemiological survey indicated that the general population is susceptible to SARS-CoV-2. The spectrum of this disease ranges from mild to life-threatening. Fever is the most common symptom, although older people and those with
comorbidities may experience fever later in the disease. Other common symptoms include cough, loss of appetite, fatigue, shortness of breath, sputum production, and muscle and joint pains. Symptoms such as nausea, vomiting and diarrhea have been observed in varying percentages. Some cases might progress promptly to acute respiratory distress syndrome (ARDS) and/or multiple organ function failure. Asymptomatic carriers and those in the incubation period may also be infectious.

Aim. To determine the epidemiological and clinical characteristics of patients presenting with COVID-19 at the screening clinic of a tertiary care hospital in Peshawar, Pakistan.

Methodology. In this descriptive study, we analysed data of patients presenting to a newly established Covid-19 screening clinic in Rehman Medical Institute. Anyone who reported with new onset fever and/or cough was tested for SARS-CoV-2 in the screening clinic. We documented and analysed demographic, epidemiological and clinical characteristics, which included age, sex, travel history, clinical features, comorbidities and laboratory data of patients confirmed by real-time reverse-transcription (RT)-PCR at Rehman Medical Institute, Peshawar, Pakistan from 15 March till 21 April 2020. Paired specimens of throat swabs and nasal swabs were obtained from 845 patients, ribonucleic acid (RNA) was extracted and tested for SARS-CoV-2 by the RT-PCR assay.

Results. A total of 845 specimens were taken as described above. The positive rate for SARS-CoV-2 was about 14.3%. Male and older population had a significantly higher positive rate. Of the 121 patients infected with SARS-CoV-2, the mean age was 43.19 years (sd, 17.57) and the infections were more frequent among male gender accounting for 85 (70.25 %) patients. Common symptoms included fever (88 patients, 72 %), cough (72 patients, 59.5 %) and shortness of breath (69 patients, 57 %). Twenty-two (18 %) patients had recent travel history outside Pakistan in the previous 14 days, the majority of whom had returned back from Saudi Arabia. Conclusion. In this single-centre, prospective, descriptive study, fever, cough and shortness of breath were the most common symptoms. Old age (>50 years), chronic underlying comorbidities and travel history may be risk factors. Therefore, we concluded that viral nucleic acid amplification tests (NAAT) played an important role in identifying SARS-CoV-2 infection in a screening clinic, which helped with isolation and cohorting of these patients.


ABSTRACT: OBJECTIVES: Detailed knowledge on the prevalence of asymptomatic cases of coronavirus disease 2019 (COVID-19) and the clinical characteristics of mild COVID-19 is essential for effective control of the COVID-19 pandemic. We determined the prevalence of asymptomatic cases of COVID-19 and characterized the symptoms of patients with mild COVID-19.

METHODS: Study participants were recruited from a community facility designated for the isolation of patients without moderate-to-severe symptoms of COVID-19 in South Korea. The prevalence of asymptomatic patients at admission and the detailed symptoms of mild COVID-19 were evaluated through a questionnaire-based survey. Diagnosis of COVID-19 was confirmed by real-time RT-PCR.

RESULTS: Of the 213 individuals with COVID-19, 41 (19.2%) were asymptomatic until admission. Among the remaining patients with mild COVID-19, the most common symptom was cough (40.1%; 69/172), followed by hyposmia (39.5%; 68/172) and sputum (39.5%; 68/172). Of the 68 individuals with hyposmia, 61 (90%) had accompanying symptoms such as hypogeusia, nasal congestion or rhinorrhoea. Fever (>37.5degreeC) was only observed in 20 (11.6%) individuals.

CONCLUSIONS: As much as one-fifth of individuals with COVID-19 remained asymptomatic from exposure to admission. Hyposmia was quite frequent among individuals with mild COVID-19, but fever was not. Social distancing should be strongly implemented to prevent disease transmission from asymptomatic individuals or those with mild and inconspicuous symptoms.

URL: [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7252018/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7252018/)

ABSTRACT: RATIONALE: Detailed data on the characteristics and outcomes of patients with COVID-19 in sub-Saharan Africa are limited.

OBJECTIVE: We determined the clinical characteristics and treatment outcomes of patients diagnosed with COVID-19 in Uganda.

MEASUREMENTS: As of the 16 May 2020, a total of 203 cases had been confirmed. We report on the first 56 patients; 29 received hydroxychloroquine (HCQ) and 27 did not. Endpoints included admission to intensive care, mechanical ventilation or death during hospitalisation.

MAIN RESULTS: The median age was 34.2 years; 67.9% were male; and 14.6% were <18 years. Up 57.1% of the patients were asymptomatic. The most common symptoms were fever (21.4%), cough (19.6%), rhinorrhea (16.1%), headache (12.5%), muscle ache (7.1%) and fatigue (7.1%). Rates of comorbidities were 10.7% (pre-existing hypertension), 10.7% (diabetes) and 7.1% (HIV), Body Mass Index (BMI) of >=30 36.6%. 37.0% had a blood pressure (BP) of >130/90 mm Hg, and 27.8% had BP of >140/90 mm Hg. Laboratory derangements were leucopenia (10.6%), lymphopenia (11.1%) and thrombocytopenia (26.3%). Abnormal chest X-ray was observed in 14.3%. No patients reached the primary endpoint. Time to clinical recovery was shorter among patients who received HCQ, but this difference did not reach statistical significance.

CONCLUSION: Most of the patients with COVID-19 presented with mild disease and exhibited a clinical trajectory not similar to other countries. Outcomes did not differ by HCQ treatment status in line with other concluded studies on the benefit of using HCQ in the treatment of COVID-19.

URL: https://bmjopenrespres.bmj.com/content/7/1/e000646


ABSTRACT: In a retrospective study in the Nord Franche-Comte hospital conducted between March 1st and March 17th 2020, and compared to the review of Li et al., diarrhea was a main symptom in patients with COVID-19. Out of the 114 patients, 55 (48%) had diarrhea; it was the fifth most common symptom. In the group of patients with diarrhea, the median age was 56 years (+/- 18) and 32 (58%) were female. Only 2 patients (3.6%) had a past history of inflammatory bowel disease. Fifty-six percent of patients (n = 30/54) were hospitalised. Diarrhea appeared 4.5 days (+/- 1.8) after the onset of the first other symptoms in COVID-19. Of the 55 patients with diarrhea, 29 (52.7%) had at least one simultaneous gastrointestinal (GI) symptom other than diarrhea. Twenty-five patients (45.5%) had nausea, 19 patients (34.5%) had abdominal pain and 9 (16.3%) had vomiting. Myalgia, sore throat, sneezing and the other GI symptoms were statistically more frequent in the group with diarrhea than in the group without diarrhea (P < 0.05). Copyright © 2020 Elsevier Masson SAS

URL: https://www.sciencedirect.com/science/article/abs/pii/S2210740120301054


ABSTRACT: PURPOSE: Otorhinolaryngological manifestations are common symptoms of COVID-19. This study provides a brief and precise review of the current knowledge regarding COVID-19, including disease transmission, clinical characteristics, diagnosis, and potential treatment. The article focused on COVID-19-related information useful in otolaryngologist practice.

METHODS: The Medline and Web of Science databases were searched without a time limit using terms "COVID-19", "SARS-CoV-2" in conjunction with "otorhinolaryngological manifestation", "ENT", and "olfaction".

RESULTS: The most common otorhinolaryngological dysfunctions of COVID-19 were cough, sore throat, and dyspnea. Rhinorrhea, nasal congestion and dizziness were also present. COVID-19 could manifest as an isolated sudden hyposmia/anosmia. Upper respiratory tract (URT) symptoms were commonly observed in younger patients and usually appeared initially. They could be present even before the molecular confirmation of SARS-CoV-2.
Otolaryngologists are of great risk of becoming infected with SARS-CoV-2 as they cope with URT. ENT surgeons could be easily infected by SARS-CoV-2 during performing surgery in COVID-19 patients.

CONCLUSION: Ear, nose and throat (ENT) symptoms may precede the development of severe COVID-19. During COVID-19 pandemic, patients with cough, sore throat, dyspnea, hyposmia/anosmia and a history of travel to the region with confirmed COVID-19 patients, should be considered as potential COVID-19 cases. An otolaryngologist should wear FFP3/N95 mask, glasses, disposable and fluid resistant gloves and gown while examining such individuals. Not urgent ENT surgeries should be postponed. Additional studies analyzing why some patients develop ENT symptoms during COVID-19 and others do not are needed. Further research is needed to determine the mechanism leading to anosmia.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7166003/


ABSTRACT: BACKGROUND: COVID-19 is a new disease which has become a global pandemic, and is caused by a novel coronavirus, SARS-CoV-2. The disease is still not very well characterized, and factors associated with severe clinical course are not well known.

METHODS: The main objectives were to determine the demographic, clinical and laboratory manifestations of COVID-19 and to identify the factors associated with severe clinical course. We searched the PubMed for studies published between Jan 1, 2020 and Mar 17, 2020, and included them if they were in English language, published in full, were retrospective or prospective observational or case control study with data on clinical, laboratory and imaging features of adult patients with COVID-19 disease from single or multiple centers. Studies that included exclusively pediatric patients were excluded. The demographic, clinical and laboratory data was displayed as n (%) or mean (SD). The meta-analysis on factors associated with severe clinical course was performed using the random effects model, and odds ratios (ORs) with 95% confidence intervals (CIs) were calculated as the effect sizes.

FINDINGS: We included 58 studies (6892 patients) for the systematic review on clinical manifestations and 21 studies (3496 patients) for meta-analysis on factors associated with severe clinical course. The mean age of patients with COVID-19 is 49.7+/−16.3 years with a male to female ratio of 1.2:1. Common symptoms and their frequency are: fever (83.4%), cough (60.5%), fatigue (33.8%), sputum (28.9%), dyspnea (22.1%), myalgia (20.6%), chest tightness / pain (16.3%), sore throat (13.5%), headache (11.2%), diarrhea (7.5%), nasal congestion / rhinorrhea (6.7%), nausea / vomiting (5.6%), pain abdomen (4.6%), and hemoptysis (1.7%). The comorbidities associated with COVID-19 are: hypertension (18.4%), diabetes mellitus (9.8%), cardiovascular diseases (8.8%), endocrine diseases (5.8%), gastrointestinal diseases (5%), CLD (3%), and COPD (2.8%). Among the laboratory parameters WBC was low in 27%, high in 9%, platelets were low in 22.9%, creatinine was high in 6.5%, AST was high in 25.3%, ALT was high in 22.7%, bilirubin was high in 8.8%, albumin was low 60.1%, CT chest was abnormal in 89%, CRP was high in 67.5%, LDH was high in 52%, D-dimer was high in 34.8%, CK was high in 14.4%, and procalcitonin was high in 15.4%. Factors significantly associated severe clinical course (with their ORs) are as follows: High CRP (5.78), high procalcitonin (5.45), age >60 (4.82), dyspnea (4.66), high LDH (4.59), COPD (4.37), low albumin (4.34), high D-dimer (4.03), cardiac disease (3.88), low lymphocyte count (3.22), any associated comorbidity (3.16), diabetes mellitus (3.11), high WBC count (2.67), high bilirubin level (2.55), high creatinine (2.34), high AST (2.31), hypertension (2.30), low platelets (1.78), High ALT (1.69), high CK (1.66), fever spikes >=39degreeC (1.59), diarrhea (1.55), male gender (1.47), and sputum (1.35).

INTERPRETATION: Identification of these factors associated with severe COVID-19 will help the physicians working at all levels of healthcare (primary, secondary, tertiary and ICU) in determining which patients need home care, hospital care, HDU care, and ICU admission; and thus, prioritize the scarce healthcare resource use more judiciously. Many of these identified factors can also help the public at large in the current COVID-19 epidemic setting, to judge when they should seek immediate medical care. Funding Statement: None.

Declaration of Interests: The authors declare no competing interests.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7366815/
ABSTRACT: Background: Coronavirus 2019 disease (COVID-19) is caused by the virus SARS-CoV-2, transmissible both person-to-person and from contaminated surfaces. Early COVID-19 detection among healthcare workers (HCWs) is crucial for protecting patients and the healthcare workforce. Because of limited testing capacity, symptom-based screening may prioritize testing and increase diagnostic accuracy.

Methods and findings: We performed a retrospective study of HCWs undergoing both COVID-19 telephonic symptom screening and nasopharyngeal SARS-CoV-2 assays during the period, March 9—April 15, 2020. HCWs with negative assays but progressive symptoms were re-tested for SARS-CoV-2. Among 592 HCWs tested, 83 (14%) had an initial positive SARS-CoV-2 assay. Fifty-nine of 61 HCWs (97%) who were asymptomatic or reported only sore throat/nasal congestion had negative SARS-CoV-2 assays (P = 0.006). HCWs reporting three or more symptoms had an increased multivariate-adjusted odds of having positive assays, 1.95 (95% CI: 1.10–3.64), which increased to 2.61 (95% CI: 1.50–4.45) for six or more symptoms. The multivariate-adjusted odds of a positive assay were also increased for HCWs reporting fever and a measured temperature ≥ 37.5°C (3.49 (95% CI: 1.95–6.21)), and those with myalgias (1.83 (95% CI: 1.04–3.23)). Anosmia/ageusia (i.e. loss of smell/loss of taste) was reported less frequently (16%) than other symptoms by HCWs with positive assays, but was associated with more than a seven-fold multivariate-adjusted odds of a positive test: OR = 7.21 (95% CI: 2.95–17.67). Of 509 HCWs with initial negative SARS-CoV-2 assays, nine had symptom progression and positive re-tests, yielding an estimated negative predictive value of 98.2% (95% CI: 96.8–99.0%) for the exclusion of clinically relevant COVID-19.

Conclusions: Symptom and temperature reports are useful screening tools for predicting SARS-CoV-2 assay results in HCWs. Anosmia/ageusia, fever, and myalgia were the strongest independent predictors of positive assays. The absence of symptoms or symptoms limited to nasal congestion/sore throat were associated with negative assays.

URL: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0235460


ABSTRACT: OBJECTIVE: To investigate the occurrence of olfactory and gustatory dysfunctions in patients with laboratory-confirmed COVID-19 infection.

METHODS: Patients with laboratory-confirmed COVID-19 infection were recruited from 12 European hospitals. The following epidemiological and clinical outcomes have been studied: age, sex, ethnicity, comorbidities, and general and otolaryngological symptoms. Patients completed olfactory and gustatory questionnaires based on the smell and taste component of the National Health and Nutrition Examination Survey, and the short version of the Questionnaire of Olfactory Disorders (sQOD-NS).

RESULTS: A total of 417 mild-to-moderate COVID-19 patients completed the study (263 females). The most prevalent general symptoms consisted of cough, myalgia, and loss of appetite. Face pain and nasal obstruction were the most disease-related otolaryngological symptoms. 85.6% and 88.0% of patients reported olfactory and gustatory dysfunctions, respectively. There was a significant association between both disorders (p < 0.001). Olfactory dysfunction (OD) appeared before the other symptoms in 11.8% of cases. The sQO-NS scores were significantly lower in patients with anosmia compared with normosmic or hyposmic individuals (p = 0.001). Among the 18.2% of patients without nasal obstruction or rhinorrhea, 79.7% were hyposmic or anosmic. The early olfactory recovery rate was 44.0%. Females were significantly more affected by olfactory and gustatory dysfunctions than males (p = 0.001).

CONCLUSION: Olfactory and gustatory disorders are prevalent symptoms in European COVID-19 patients, who may not have nasal symptoms. The sudden anosmia or ageusia need to be recognized by the international scientific community as important symptoms of the COVID-19 infection.

ABSTRACT: BACKGROUND: The clinical presentation of European patients with mild-to-moderate COVID-19 infection is still unknown.

OBJECTIVE: To study the clinical presentation of COVID-19 in Europe.

METHODS: Patients with positive diagnosis of COVID-19 were recruited from 18 European hospitals. Epidemiological and clinical data were obtained through a standardized questionnaire. Bayesian analysis was used for analysing the relationship between outcomes.

RESULTS: A total of 1,420 patients completed the study (962 females, 30.7% of healthcare workers). The mean age of patients was 39.17 +/- 12.09 years. The most common symptoms were headache (70.3%), loss of smell (70.2%), nasal obstruction (67.8%), cough (63.2%), asthenia (63.3%), myalgia (62.5%), rhinorrhea (60.1%), gustatory dysfunction (54.2%) and sore throat (54.2%). Fever was reported by 45.4%. The mean duration of COVID-19 symptoms of mild-to-moderate cured patients was 11.5 +/- 5.7 days. The prevalence of symptoms significantly varied according to age and sex. Young patients more frequently had ear, nose and throat complaints, whereas elderly individuals often presented fever, fatigue and loss of appetite. Loss of smell, headache, nasal obstruction and fatigue were more prevalent in female patients. The loss of smell was a key symptom of mild-to-moderate COVID-19 patients and was not associated with nasal obstruction and rhinorrhea. Loss of smell persisted at least 7 days after the disease in 37.5% of cured patients.

CONCLUSION: The clinical presentation of mild-to-moderate COVID-19 substantially varies according to the age and the sex characteristics of patients. Olfactory dysfunction seems to be an important underestimated symptom of mild-to-moderate COVID-19 that needs to be recognized as such by the WHO.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7267446/


ABSTRACT: Much of the published literature regarding the novel coronavirus disease 2019 (COVID-19) constitutes lower respiratory system symptomatology, while there exists a paucity of data describing the complicated sequelae of the upper respiratory system, including chemosensory and/or sinonasal dysfunction. This study utilized the National Library of Medicine's PubMed/MEDLINE database to query for articles describing COVID-19, SARS-CoV-2, SARS-CoV-1, MERS-CoV, and other coronaviruses, with any mention of smell, taste, or other chemosensory or sinonasal dysfunction. Aggregate analysis demonstrated an incidence of 49.6% (n = 497 of 1002; 95% CI, 46.5%-52.7%), 47.9% (n = 480 of 1002; 95% CI, 44.8%-51.0%), and 17.9% (n = 880 of 4909; 95% CI, 16.9%-19.0%) for smell loss, taste loss, and smell or taste loss, respectively, in patients infected with SARS-CoV-2. Additionally, there were significantly higher incidences of runny nose/rhinorrhea/rhinitis and nasal congestion/obstruction/blockage in other coronaviruses as compared with SARS-CoV-2 (P < .001).

Understanding these less well-characterized symptoms may help develop measures for estimating early markers of disease prevalence and/or resolution. Level of evidence: 4.

URL: https://pubmed.ncbi.nlm.nih.gov/32423285/


ABSTRACT: BACKGROUND: The outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes coronavirus disease (COVID-19), has been declared a global pandemic. Identifying individuals whose infection can potentially become severe is critical to control the case fatality rate of COVID-19. However, knowledge of symptoms that are prognostic of COVID-19 severity is lacking.

OBJECTIVE: The objective of our study was to identify symptoms prognostic of COVID-19 infection severity.
METHODS: We analyzed documented symptoms, including fever, cough, fatigue, expectoration, sore throat, chest distress, headache, diarrhea, rhinorrhea, stuffed nose, nausea, vomiting, muscle or joint ache, shortness of breath, and their associations with disease severity using a case series, including 655 confirmed cases from January 23 to February 5, 2020 in Henan Province, China. We also analyzed the influence of individual characteristics, including age, gender, and comorbidities, on symptoms with prognostic value.

RESULTS: Fatigue (95% CI 0.141 to 0.334, P<.001), expectoration (95% CI 0.107 to 0.305, P<.001) and stuffed nose (95% CI -0.499 to -0.082, P=.006) were identified as the prognostic symptoms of COVID-19 patients from the multivariate analysis. Fever occurred in 603/655 (92.1%) of the patients but was not associated with disease severity. Fatigue accounted for 184/655 (28.1%) of the patients and was linearly associated with infection severity with statistical significance. Expectoration occurred in 169/655 (25.8%) patients in the cohort and was the sole prognostic factor for patients with cardiovascular complications, including hypertension. Shortness of breath, chest distress, muscle or joint ache, and dry cough, which occurred in 33 (5%), 83 (12.7%), 78 (11.9%), and 276 (42.1%) of the 655 patients, respectively, were significantly enriched among patients classified as severe. Stuffed nose and nausea were associated with favorable disease severity, especially among male patients. More female than male patients were documented as having muscle or joint ache. Headache was most enriched in patients aged 15 to 39 years, followed by those aged 40 to 64 years, with statistical significance.

CONCLUSIONS: Fatigue and expectoration are signs of severe COVID-19 infection. Shortness of breath, chest distress, muscle or joint ache, and dry cough are prevalent in severe patients. Expectoration is commonly present in older individuals and patients with cardiovascular disorders, including hypertension. Shortness of breath is prognostic of severe infection in male patients. Stuffed nose and nausea are favorable prognostic factors of severe infection, especially among male patients.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7332230/


ABSTRACT: Anosmia has been recognized as a prevalent and early symptom by many COVID-19 patients. However, most researchers have recorded smell dysfunction solely as present or absent and based on subjective evaluation by patients. We described the results of 57 consecutive COVID-19 patients seen at FIOCRUZ, Rio de Janeiro, Brazil, from April to May 2020. Data about the presence of smell loss, the onset of smell loss and other COVID-19 symptoms such as ageusia and nasal congestion or rhinorrhea were recorded. All patients at the initial consultation and 34 healthy controls underwent the Q-SIT, which is a quick disposable three-item smell identification test, by a trained physician. We compared three groups: healthy controls, COVID+ patients with reported smell loss (COVID w/ SL) and COVID+ patients without smell loss (COVID+ w/o SL). The mean age of patients was 41.4 years (SD ± 10.4), and 54.4% were women. Smell loss was reported by 40.4% of COVID-19 patients. We observed a gradual effect with higher Q-SIT scores in healthy controls, followed by COVID+ w/o SL and COVID+ w/ SL (medians = 3, 2 and 0; respectively, p < 0.001). Anosmia or severe microsmia (Q-SIT≤1) was present in 11.1% (CI: 3.1%?26.1%) of controls, 32.4% (CI: 17.4%?50.5%) of COVID-19 w/o SL and 87% (CI: 66.4%?97.2%) of COVID+ w/ SL (p < 0.001). This study provides evidence that olfactory dysfunction in COVID-19 is common and more prevalent than what is perceived by patients. Q-SIT is a quick and reliable screening test for the detection of smell dysfunction during the pandemics.

URL: https://doi.org/10.1016/j.jns.2020.117107

DOI: 10.1016/j.jns.2020.117107


ABSTRACT: Pharyngodynia, nasal congestion, rhinorrhea, smell, and taste dysfunctions could be the presenting symptoms of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2. The aim was to perform a systematic review of current evidences on clinical presentation of COVID-19, focusing on upper airway symptoms in order to help otolaryngologists identifying suspected cases.
METHODS: We searched PubMed and Web of Science electronic databases. RESULTS: We included 5 retrospective clinical studies for a total of 1556 hospitalized patients with COVID-19, 57.5% were male and mean age was 49.1 years. Pooled data revealed that pharyngodynia was present in 12.4% of patients, nasal congestion in 3.7%, and rhinorrhea was rare. No reports on COVID-19 and olfactory/gustatory disorders matched inclusion criteria but preliminary evidences suggested they could be present. Common symptoms were fever (85.6%), cough (68.7%), and fatigue (39.4%). Frequent comorbidities were hypertension (17.4%), diabetes (3.8%), and coronary heart disease (3.8%); 83% of patients had alterations on chest computed tomography that were bilateral in 89.5% of cases. Ground-glass opacity was the most common finding (50%). Lymphopenia (77.2%) and leucopenia (30.1%) were common. Critical cases with complications were 9%, intensive care unit admission was required in 7.3%, invasive ventilation in 3.4%, and mortality was 2.4%. CONCLUSION: Otolaryngologists should know that pharyngodynia, nasal congestion, olfactory, and gustatory disorders could be the presenting symptoms of COVID-19. Clinical presentation together with radiological and laboratory findings could help to identify suspected cases.

URL: https://journals.sagepub.com/doi/full/10.1177/0145561320920762

ABSTRACT: Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has spread rapidly worldwide. Given scarce resources, nonlaboratory diagnostics are crucial. In this cross-sectional study, two-thirds of European patients with confirmed COVID-19 reported olfactory and gustatory dysfunction, indicating the significance of these symptoms in early diagnostics.

URL: https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa525/5827752

ABSTRACT: Case identification is an ongoing issue for the COVID-19 epidemic, in particular for outpatient care where physicians must decide which patients to prioritise for further testing. This paper reports tools to classify patients based on symptom profiles based on 236 SARS-CoV-2 positive cases and 564 controls, accounting for the time course of illness at point of assessment. Clinical differentiators of cases and controls were used to derive model-based risk scores. Significant symptoms included abdominal pain, cough, diarrhea, fever, headache, muscle ache, runny nose, sore throat, temperature between 37.5°C and 37.9°C, and temperature above 38°C, but their importance varied by day of illness at assessment. With a high percentile threshold for specificity at 0.95, the baseline model had reasonable sensitivity at 0.67. To further evaluate accuracy of model predictions, we firstly used leave-one-out cross-validation, which confirmed high classification accuracy with an area under the receiver operating characteristic curve of 0.92. For the baseline model, sensitivity decreased to 0.56. Secondly, in a separate ongoing prospective study of 237 COVID-19 and 346 primary care patients presenting with symptoms of acute respiratory infection, the baseline model had a sensitivity of 0.57 and specificity of 0.89, and in retrospective notes review of 100 COVID-19 cases diagnosed in primary care, sensitivity was 0.56. A web-app based tool has been developed for easy implementation as an adjunct to laboratory testing to differentiate COVID-19 positive cases among patients presenting in outpatient settings.

Competing Interest Statement: The authors have declared no competing interest.
Funding Statement: This research is supported by the Singapore Ministry of Health National Medical Research Council under the Centre Grant Programme - Singapore Population Health Improvement Centre (NMRC/CG/C026/2017 _NUHS) and grant COVID19RF-004. Author Declarations: I confirm all relevant ethical guidelines have been followed, and any necessary IRB and/or ethics committee approvals have been obtained. Yes, the details of the IRB/oversight body that provided approval or exemption for the research described are given below: Data collected using structured questionnaires with waiver of consent granted by the Ministry of Health, Singapore under the Infectious Diseases Act. All necessary patient/participant consent has been obtained and the appropriate institutional forms have been archived. Yes, I understand that all clinical trials and any other prospective interventional studies...
must be registered with an ICMJE-approved registry, such as ClinicalTrials.gov. I confirm that any such study reported in the manuscript has been registered and the trial registration ID is provided (note: if posting a prospective study registered retrospectively, please provide a statement in the trial ID field explaining why the study was not registered in advance). Yes I have followed all appropriate research reporting guidelines and uploaded the relevant EQUATOR Network research reporting checklist(s) and other pertinent material as supplementary files, if applicable. Yes All data and codes referred to in the manuscript can be shared upon request. https://shsphdemos.shinyapps.io/covid-19_calculator_v5/

URL: http://medrxiv.org/content/early/2020/09/01/2020.08.26.20182204.abstract
DOI: 10.1101/2020.08.26.20182204


**ABSTRACT**: BACKGROUND: Humans are generally susceptible to SARS-CoV-2, which has caused a global pandemic of COVID-19. The screening of infected people in the population still mainly depends on clinical symptoms. However, there is limited research on the characteristics of clinical symptoms in different populations, especially in imported cases.

METHODS: To retrospectively analyze the clinical data of 494 confirmed COVID-19 patients admitted to a designated hospital in Shanghai from January 20, 2020, to March 31, 2020, we compared the clinical manifestations in different populations and their influencing factors in COVID-19 patients.

RESULTS: (1) Of the 494 patients, 453 (91.7%) had different symptoms at admission, and 39 (7.89%) patients were asymptomatic. (2) We compared the symptoms of patients according to different stratifications and found the following results: (a) The proportion of dyspnea was significantly higher in male patients than in female patients (P < .05). (b) The proportions of a stuffy nose, sore throat, and olfactory and gustatory dysfunction were significantly higher in children than in adult patients (P < .05). (c) The proportions of fever, chest tightness, shortness of breath, and fatigue were significantly higher in local cases than in imported cases. In comparison, the proportions of nasal congestion, stuffy nose, sore throat, headache, and olfactory and gustatory dysfunction were significantly lower in imported cases than in imported cases (P < .05). (d) The proportions of chest tightness, shortness of breath, and dyspnea were significantly higher in severely ill patients than in those with mild symptoms (P < .05). (3) Thirty-one asymptomatic patients were significantly younger than symptomatic patients, and they had a higher proportion of imported cases, white blood cell and lymphocyte count levels, and fewer abnormal CT cases than the group of symptomatic patients (P < .05). (4) The number of days since the onset of the disease needed for the symptoms to disappear was associated with the epidemiological history (imported cases), the number of days until the pharyngeal swab nucleic acid test turned negative, the days of hospitalization, the days of onset, and the white blood cell and lymphocyte count levels (P < .05).

CONCLUSIONS: The majority of COVID-19 patients (91.7%) had early symptoms, whereas 7.89% of COVID-19 patients were asymptomatic. Younger patients had fewer symptoms, mainly the upper respiratory symptoms, and the illness condition was milder, which was more common in imported cases. Elderly male patients had severe symptoms when admitted. The number of days needed for the patient's symptoms to disappear was closely related to the number of days necessary for the pharyngeal swab nucleic acid test to turn negative.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7336908/


**ABSTRACT**: Objective : Data regarding the clinical characteristics of COVID-19 infection is rapidly accumulating. However, most studies thus far are based on hospitalized patients and lack longitudinal follow up. As the majority of COVID-19 cases are not hospitalized, prospective studies of symptoms in the population presenting to primary care are needed. Here, we assess the longitudinal dynamic of clinical symptoms in non-hospitalized individuals prior to and throughout the diagnosis of SARS-CoV-2 infection. Design Data on symptoms were extracted from electronic health records (EHR) consisting of both results of PCR tests and symptoms recorded by
primary care physicians, and linked longitudinal self reported symptoms. Setting The second largest Health Maintenance Organization in Israel, Maccabi Health Services Participants From 1/3/2020 to 07/06/2020, information on symptoms from either surveys or primary care visits was available for 206,377 individuals, including 2,471 who tested positive for COVID-19. Main Outcomes Longitudinal prevalence of clinical symptoms in COVID-19 infection diagnosed by PCR testing for SARS-CoV-2 from nasopharyngeal swabs. Results: In adults, the most prevalent symptoms recorded in EHR were cough (11.6%), fever (10.3%), and myalgia (7.7%) and the most prevalent self-reported symptoms were cough (21%), fatigue (19%) and rhinorrhea and/or nasal congestion (17%). In children, the most prevalent symptoms recorded in the EHR were fever (7%), cough (5.5%) and abdominal pain (2.4%). Emotional disturbances were documented in 15.9% of the positive adults and 4.2% of the children. Loss of taste and smell, either self-reported or documented by a physician, 3 weeks prior to testing, were the most discriminative symptoms in adults (OR =11.18 and OR=5.47 respectively). Additional symptoms included self-reported headache (OR = 2.03) and fatigue (OR = 1.73) and a documentation of syncope, rhinorrhea (OR = 2.09 for both) and fever (OR= 1.62) by a physician. Mean time to recovery was 23.5 ± 9.9 days. Children had a significantly shorter disease duration (21.7 ± 8.8 days, p-value=0.01). Several symptoms, including fatigue, myalgia, runny nose and shortness of breath were reported weeks after recovery. Conclusions As the COVID-19 pandemic progresses rapidly worldwide, obtaining accurate information on symptoms and their progression is of essence. Our study shed light on the full clinical spectrum of symptoms experienced by infected individuals in primary care, and may alert physicians for the possibility of COVID-19 infection.

Competing Interest Statement The authors have declared no competing interest. Funding Statement No funding was received for this article. Author Declarations I confirm all relevant ethical guidelines have been followed, and any necessary IRB and/or ethics committee approvals have been obtained. Yes The details of the IRB/oversight body that provided approval or exemption for the research described are given below: The study protocol was approved by Maccabi Health Services institutional review board (0024-20-MHS). All necessary patient/participant consent has been obtained and the appropriate institutional forms have been archived. Yes I understand that all clinical trials and any other prospective interventional studies must be registered with an ICMJE-approved registry, such as ClinicalTrials.gov. I confirm that any such study reported in the manuscript has been registered and the trial registration ID is provided (note: if posting a prospective study registered retrospectively, please provide a statement in the trial ID field explaining why the study was not registered in advance). Yes I have followed all appropriate research reporting guidelines and uploaded the relevant EQUATOR Network research reporting checklist(s) and other pertinent material as supplementary files, if applicable. Yes The data that support the findings of this study originate from Maccabi Health Services. Restrictions apply to the availability of these data and they are therefore not publicly available. Due to restrictions, these data can be accessed only by request to the authors and/or Maccabi Health Services.

URL: http://medrxiv.org/content/early/2020/08/01/2020.07.13.20151795.abstract
DOI: 10.1101/2020.07.13.20151795


ABSTRACT: PURPOSE OF REVIEW: Olfactory dysfunction in upper airway viral infections (common cold, acute rhinosinusitis) is common (> 60%). During the COVID-19 outbreak, frequency of sensory disorders (smell and/or taste) in affected patients has shown a high variability from 5 to 98%, depending on the methodology, country, and study.

RECENT FINDINGS: A sudden, severe, isolated loss of smell and/or taste, in the absence of other upper airway inflammatory diseases (allergic rhinitis, chronic rhinosinusitis, nasal polyposis), should alert individuals and physicians on being potentially affected by COVID-19. The evaluation of smell/taste disorder with a visual analogue scale or an individual olfactory or gustatory test, at the hospital or by telemedicine, to prevent contamination might facilitate an early detection of infected patients and reduce the transmission of SARS-CoV-2. During the COVID-19 outbreak, patients with sudden loss of smell should initiate social distancing and home
isolation measures and be tested for SARS-CoV-2 diagnostic test when available. Olfactory training is recommended when smell does not come back after 1 month but can be started earlier.

**URL:** [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7397453/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7397453/)


**ABSTRACT:** Since December 2019, coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has resulted in devastating consequences worldwide and infected more than 350,000 individuals and killed more than 16,000 people. SARS-CoV-2 is the seventh member of the coronavirus family to affect humans. Symptoms of COVID-19 include fever (88%), cough (68%), vomiting (5%) and diarrhoea (3.7%), and transmission of SARS-CoV-2 is thought to occur from human to human via respiratory secretions released by the infected individuals when coughing and sneezing. COVID-19 can be detected through computed tomography scans and confirmed through molecular diagnostics tools such as polymerase chain reaction. Currently, there are no effective treatments against SARS-CoV-2, hence antiviral drugs have been used to reduce the development of respiratory complications by reducing viral load. The purpose of this review is to provide a comprehensive update on the pathogenesis, clinical aspects, diagnosis, challenges and treatment of SARS-CoV-2 infections.

**URL:** [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7238102/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7238102/)

**DOI:** 10.3390/pathogens9040297


**ABSTRACT:** <b>Background:</b> Ten months after its appearance in December 2019, SARS-CoV-2 has infected more than 25 million patients worldwide. Because children were first identified as potential spreaders of the virus, schools were closed in several countries. However, it rapidly became evident that the number of hospitalized children infected by SARS-CoV-2 was dramatically lower than that of adults. To date, only hypotheses have been raised to explain this difference, so it is of great importance to describe the presentation of this disease among children. Here, we describe a wide spectrum of COVID-19 manifestation in children in a dedicated pediatric unit in France.

**URL:** [https://www.mdpi.com/2077-0383/9/9/2950](https://www.mdpi.com/2077-0383/9/9/2950)


**ABSTRACT:** The coronavirus family has significant human and animal pathogens. At the end of December 2019, a novel coronavirus was recognized as the reason for a group of pneumonia cases of unidentified etiology in Wuhan, a city in the Hubei Province of China. The novel coronavirus has rapidly become widespread, resulting in an epidemic throughout China, followed by a pandemic, an increasing number of cases in various countries throughout the world. Coronavirus disease 2019 (COVID-19) is spread through large droplets produced during coughing and sneezing by symptomatic patients, as well as asymptomatic individuals before starting of their symptoms. The incubation period of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is assumed to be 14 days succeeding exposure, mostly around four to five days. Individuals of all ages may acquire SARS-CoV-2 infection, although middle age and older individuals are the majority. The usual clinical characteristics involve fever, dry cough, fatigue, sore throat, rhinorrhea, conjunctivitis headache, myalgia, dyspnea, nausea, vomiting and diarrhea. Hence, there are no unique clinical features that yet dependably differentiate COVID-19 disease from other upper/lower airway viral infections. In a subgroup of cases, by the end of the first week, COVID-19 disease may develop to pneumonia, pulmonary failure and death. The aim is here to discuss the COVID-19 disease beginning from virology, epidemiology and continuing with clinical manifestations, diagnosis, its complications and to finish with available therapeutic options and conclusion. Copyright © 2020 by Erciyes University Faculty of Medicine.
ABSTRACT: OBJECTIVES: There is limited data regarding the demographics and clinical features of SARS-CoV-2 infection in children. This information is especially important as pneumonia is the single leading cause of death in children worldwide. This Systematic Review aims to elucidate a better understanding of the global impact of COVID-19 on the pediatric population.
METHODS: A systematic review of the literature was performed in accordance with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to gain insight into pediatric COVID-19 epidemiology. Specifically, Pubmed and Google Scholar databases were searched to identify any relevant article with a focus on Pediatric Covid 19, Pediatric Covid-19, Pediatric SARS-COV-2, and Pediatric Coronavirus 19. References within the included articles were reviewed. All articles that met criteria where analyzed for demographics, clinical, laboratory, radiographic, treatment and outcomes data.
RESULTS: Ten studies including two case series and 8 retrospective chart reviews, altogether describing a total of 2914 pediatric patients with COVID-19 were included in this systematic review. Of the patients whose data was available, 56% were male, the age range was 1day to 17years, 79% were reported to have no comorbidities, and of the 21% with comorbidities, the most common were asthma, immunosupression, and cardiovascular disease. Of pediatric patients that were tested and positive for an infection with SARS-CoV-2, patients were asymptomatic, 14.9% of the time. Patients presented with cough (48%), fever (47%) and sore throat/pharyngitis (28.6%), more commonly than with upper respiratory symptoms/rhinorrhea/sneezing/nasal congestion (13.7%), vomiting/nausea (7.8%) and diarrhea (10.1%). Median lab values including those for WBC, lymphocyte count and CRP, were within the reference ranges with the exception of procalcitonin levels, which were slightly elevated in children with COVID-19 (median procalcitonin levels ranged from 0.07 to 0.5ng/mL. Computed tomography (CT) results suggest that unilateral CT imaging findings are present 36% of cases while 64% of pediatric patients with COVID-19 had bilateral findings. Of the studies with age specific hospitalization data available, 27.0% of patients hospitalized were infants under 1year of age. Various treatment regimens including interferon, antivirals, and hydroxychloroquine therapies have been trialed on the pediatric population but there are currently no studies showing efficacy of one regimen over the other. The mortality rate of children that were hospitalized with COVID-19 was 0.18%.
CONCLUSION: In contrast to adults, most infected children appear to have a milder course and have better outcomes overall. Additional care may be needed for children with comorbidities and younger children. This review also suggests that unilateral CT chest imaging findings were seen in 36.4% pediatric COVID-19 patients. This is particularly concerning as the work-up of pediatric patients with cough may warrant a bronchoscopy to evaluate for airway foreign bodies. Extra precautions need to be taken with personal protective equipment for these cases, as aerosolizing procedures may be a method of viral transmission.
LEVEL OF EVIDENCE: 4 (Systematic Review).
URL: https://pubmed.ncbi.nlm.nih.gov/32531620/

ABSTRACT: Reverse transcriptase polymerase chain reaction (RT-PCR) detection of SARS-CoV-2 mRNA on nasopharyngeal swab is the standard for diagnosing active COVID-19 disease in asymptomatic cases and in symptomatic patients without the typical radiologic findings. For the present COVID-19 outbreak in Italy, we describe 4 symptomatic patients with negative RT-PCR results at the first nasopharyngeal swab, which became positive when collected a few hours later by an otolaryngologist. All the patients showed nasal obstruction. The present report suggests that inadequate nasopharyngeal sampling performed by untrained operators in the presence of nasal obstruction can be a relevant case of false-negative findings at RT-PCR, with a clear negative impact on the efforts to contain the current outbreak.

ABSTRACT: BACKGROUND: Human coronaviruses (HCoVs) cause respiratory tract infections during childhood manifesting as common colds, bronchiolitis, croup and pneumonia. In temperate geographies, HCoV activity peaks between December and March. The epidemiology and manifestations of HCoV infections have not been previously reported from Ecuador.

METHODS: Children <5 years who presented with >=2 symptoms consistent with an acute respiratory tract infection were eligible for enrollment. After obtaining informed consent, demographic data and details regarding the acute illness were recorded. Secretions collected with a nasopharyngeal swab underwent diagnostic testing using multiplex polymerase chain reaction.

RESULTS: A total of 850 subjects were enrolled. A total of 677 (80%) tested positive for at least 1 pathogen, including 49 (7.2%) who tested positive for >=1 HCoV type. HCoV-NL63 was the most frequent type detected (39%), followed by HCoV-OC43 (27%), 229E (22%) and HKU1 (12%). Nearly all subjects who tested positive for HCoV had nasal congestion or secretions (47/49; 96%). The most frequent syndromic diagnosis was common cold (41%), followed by bronchiolitis (27%). We found no association between the infecting HCoV type and subject’s syndromic diagnosis (P > 0.05) or anatomic location of infection (upper vs. lower respiratory tract; P > 0.05). The 2018-2019 peak HCoV activity occurred from October to November; the 2019-2020 peak occurred from January to February.

CONCLUSIONS: HCoVs were detected in ~7% of outpatient Ecuadorean children <5 years of age with symptoms of acute respiratory tract infection. The most frequently detected HCoV types, and the period of peak HCoV activity differed for the 2018-2019 and 2019-2020 seasons.

URL: https://pubmed.ncbi.nlm.nih.gov/32773657/


ABSTRACT: OBJECTIVE: To study the clinical, laboratory, and radiological characteristics of the pediatric patients infected with the new emerging 2019 coronavirus virus (SARS-CoV-2) in Hamadan and Sanandaj, west of Iran.

METHODS: A descriptive study was conducted in Hamadan and Kurdistan province between March 1 to April 15, 2020. Medical records of the children diagnosed as probable or confirmed cases of COVID-19 disease were extracted and analyzed in this study. We followed the WHO Guideline for the case definition of the patients.

RESULTS: Thirty patients admitted to the wards specified for COVID-19 diseases. Nineteen (63%) patients categorized as confirmed by Real-Time Reverse-Transcriptase Polymerase Chain Reaction (RT-PCR) and 11 (37%) patients as probable according to Computed Tomography (CT) findings of the chest. Sixteen (53.3%) cases were female, the youngest patient was one day old, and the oldest patient was 15 years old. 11 (36.7%) cases had a definite history of close contact. The most common symptoms were fever, cough, and dyspnea, and the most common sign was tachypnea. None of our patients presented with a runny nose. Lymphopenia and marked elevation of the C-reactive Protein observed in four (13.3%) and 12 (40%) cases, respectively. There were 10 (33.3%) cases with normal chest X-rays. Ground-Glass Opacities (GGOs) were the most common CT findings (19, 73.1%). All but one of the patients discharged without sequela. An 11-yrs-old girl expired with a fulminant pneumonia.

CONCLUSION: COVID-19 is not uncommon in children and could have different presentations. Concomitant use of RT-PCR and chest CT scans in symptomatic cases recommended as a modality of choice to diagnose the disease. Routine laboratory tests, like many other viral infections, may not show significant or specific changes. The superimposed bacterial infection seems not the determinant of clinical outcomes as most patients had a negative evaluation by specific laboratory tests for bacterial infections; got improved dramatically with a short or no antibiotic therapy.
ABSTRACT: OBJECTIVE: Olfactory dysfunction (OD)-hyposmia or anosmia-is a symptom of coronavirus disease 2019 (COVID-19), caused by the novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). We sought to better determine prevalence, severity, and timing of OD in COVID-19 relative to other sinonasal and pulmonary symptoms.
STUDY DESIGN: Prospective, cross-sectional.
SETTING: Regional/cantonal hospital.
SUBJECTS: In total, 103 patients diagnosed with COVID-19 with reverse transcription polymerase chain reaction (RT-PCR)-based testing.
METHODS: All patients testing positive for COVID-19 at Kantonsspital Aarau over a 6-week period were approached. Timing and severity (at its worst, on scale of 0 [none], 1 [mild], 2 [moderate], and 3 [severe]) of OD, loss of taste, nasal obstruction, rhinorrhea/mucus production, fever, cough and shortness of breath (SOB) were assessed for each patient.
RESULTS: Prevalence of OD was 61.2%, and severity of OD was strongly correlated with severity of loss of taste experienced (rho = 0.87, P < .001). OD was experienced on the first day of COVID-19 by 8.7% and overall occurred at median infection day 3 (mean, 3.4; range, 0-12). Most experiencing OD reported anosmia, and mean severity of all with OD was moderate to severe (mean [SD], 2.7 [0.6]). Nasal obstruction (49.5%) and rhinorrhea (35.0%) were frequently reported but not correlated with OD. SOB was more severe in patients with OD. OD was associated negatively with older age (OR, 0.96; 95% CI, 0.93-0.99; P = .007) and positively with female sex (OR, 2.46; 95% CI, 0.98-6.19; P = .056).
CONCLUSIONS: OD is highly prevalent during COVID-19, occurring early and severely, often in conjunction with loss of taste. OD is associated negatively with older age and positively with female sex. Patients with OD may also experience more severe SOB.

ABSTRACT: Introduction: The 2019 novel coronavirus (COVID-19) has been declared a public health emergency worldwide. The objective of this systematic review was to characterize the clinical, diagnostic, and treatment characteristics of hospitalized patients presenting with COVID-19.

ABSTRACT: Background: In December 2019, the infection caused by 2019 novel coronavirus (COVID-19) led to an outbreak in Wuhan, situated in the Hubei Province of China. Following this, there has been a rapid increase in the number of cases. On 12th March 2020, there were over 100,000 confirmed cases and almost 4,300 deaths worldwide. The clinical profile of children with COVID-19 is unknown due to the few number of cases reported. Currently, available data suggest they may have a milder form of illness.
Methods: A review of the literature published from June 2019 to March 2020 was undertaken to evaluate the clinical presentation, management and outcomes of COVID-19 in children. Data sources included EMBASE, MEDLINE, Cochrane library, ISI Web of Knowledge and references within identified articles.
Results: We identified 303 potential studies, and 295 were excluded for reasons including duplicates, experimental studies and case reports. Eight studies were eligible for inclusion, including a total of 820
paediatric cases of COVID-19. Asymptomatic cases represented 14.3% (n = 117) of the total number of cases identified, and thus the remaining 85.7% (n = 703) experienced symptoms. Fever was the commonest symptom in 53.9% (n = 48) of cases, followed by cough in 39.3% (n = 35) of cases, and rhinorrhea or pharyngeal congestion in 13.5% (n = 12) of cases. Diarrhoea and sore throats were less common symptoms, 7.9% (n = 7) and 9.0% (n = 8) respectively. Other symptoms, including fatigue, headache and dizziness were rare.

Conclusion: Children are disproportionately affected by COVID-19 and are more likely to run a milder cause of illness following this infection compared to adults. This outbreak only started 3 months ago, therefore, further population wide studies are needed to validate these findings.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7327402/


ABSTRACT: COVID-19 has had a substantial impact on clinical care and lifestyles globally. The State of Michigan reports over 80,000 positive COVID-19 tests between March 1, 2020 and July 29, 2020. We surveyed 8,047 Michigan Medicine biorepository participants in late June 2020. We found that 58% of COVID-19 cases reported no known exposure to family members or to someone outside the house diagnosed with COVID-19. A significantly higher rate of COVID-19 cases were employed as essential workers (45% vs 19%, p=3x10-11). COVID-19 cases reporting a fever were more likely to require hospitalization (categorized as severe; OR = 4.6 [95% CI: 1.7-13.0, p=0.004]) whereas respondents reporting rhinorrhea was less likely to require hospitalization (categorized as mild-to-moderate; OR = 0.16 [95% CI: 0.04-0.70, p=0.016]). African-Americans reported higher rates of being diagnosed with COVID-19 (OR = 4.0 [95% CI: 2.2-7.2, p=1x10-4]), as well as higher rates of exposure to family or someone outside the household diagnosed with COVID-19, an annual household income &lt; $40,000, living in rental housing, and chronic diseases. During the Executive Order in Michigan, African Americans, women, and the lowest income group reported worsening health behaviors and higher overall concern for the potential detrimental effects of the pandemic. The higher risk of contracting COVID-19 observed among African Americans may be due to the increased rates of working as essential employees, lower socioeconomic status, and exposure to known positive cases. Continued efforts should focus on COVID-19 prevention and mitigation strategies, as well as address the inequality gaps that result in higher risks for both short-term and long-term health outcomes.

Competing Interest Statement The spouse of Dr. Willer works for Regeneron Pharmaceuticals Inc. Dr. Brummett is a consultant for Heron Therapeutics and Alosa Health -- not related to the present study. Funding Statement Dr. Willer is supported by National Institutes of Health grants R35-HL135824, R01-HL142023, R01-DK075787, and R01-HL109946. Dr. Douville is supported by the Foundation for Anesthesia Education and Research (FAER) - Mentored Research Training Grant. Author Declarations I confirm all relevant ethical guidelines have been followed, and any necessary IRB and/or ethics committee approvals have been obtained. Yes The details of the IRB/oversight body that provided approval or exemption for the research described are given below: University of Michigan MED-IRB (HUM00180827) All necessary patient/participant consent has been obtained and the appropriate institutional forms have been archived. Yes I understand that all clinical trials and any other prospective interventional studies must be registered with an ICMJE-approved registry, such as ClinicalTrials.gov. I confirm that any such study reported in the manuscript has been registered and the trial registration ID is provided (note: if posting a prospective study registered retrospectively, please provide a statement in the trial ID field explaining why the study was not registered in advance). Yes I have followed all appropriate research reporting guidelines and uploaded the relevant EQUATOR Network research reporting checklist(s) and other pertinent material as supplementary files, if applicable. Yes Data is available from the Data Office at the University of Michigan for IRB approved investigators.

URL: http://medrxiv.org/content/early/2020/08/31/2020.08.25.20181800.abstract

DOI: 10.1101/2020.08.25.20181800

ABSTRACT: Over the past three months, the world has faced an unprecedented health hazard. The World Health Organization has announced a pandemic infection with an unknown species of coronavirus called SARS-CoV-2. Spreading mainly through the droplet route, the virus causes mild symptoms in the majority of cases, the most common being: fever (80%), dry cough (56%), fatigue (22%) and muscle pain (7%); less common symptoms include a sore throat, a runny nose, diarrhea, hemoptyisis and chills. A life-threatening complication of SARS-CoV-2 infection is an acute respiratory distress syndrome (ARDS), which occurs more often in older adults, those with immune disorders and co-morbidities. Severe forms of the infection, being an indication for treatment in the intensive care unit, comprise acute lung inflammation, ARDS, sepsis and septic shock. The article presents basic information about etiology, pathogenesis and diagnostics (with particular emphasis on the importance of tomocomputer imaging), clinical picture, treatment and prevention of the infection. It goes on to emphasize the specific risks of providing anesthesiology and intensive care services. Due to the fact that effective causal treatment is not yet available and the number of infections and deaths increases day by day, infection prevention and strict adherence to recommendations of infection control organizations remain the basis for fighting the virus.

URL: https://pubmed.ncbi.nlm.nih.gov/32191830/


ABSTRACT: Background: The COVID-19 outbreak, which was first reported in Wuhan, China, in December 2019, began to spread throughout the world, and now involves over 200 countries.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7365885/


DOI: 10.1016/S2213-2600(20)30079-5

ABSTRACT: BACKGROUND: An ongoing outbreak of pneumonia associated with the severe acute respiratory coronavirus 2 (SARS-CoV-2) started in December, 2019, in Wuhan, China. Information about critically ill patients with SARS-CoV-2 infection is scarce. We aimed to describe the clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia.

METHODS: In this single-centered, retrospective, observational study, we enrolled 52 critically ill adult patients with SARS-CoV-2 pneumonia who were admitted to the intensive care unit (ICU) of Wuhan Jin Yin-tan hospital (Wuhan, China) between late December, 2019, and Jan 26, 2020. Demographic data, symptoms, laboratory values, comorbidities, treatments, and clinical outcomes were all collected. Data were compared between survivors and non-survivors. The primary outcome was 28-day mortality, as of Feb 9, 2020. Secondary outcomes included incidence of SARS-CoV-2-related acute respiratory distress syndrome (ARDS) and the proportion of patients requiring mechanical ventilation.

FINDINGS: Of 710 patients with SARS-CoV-2 pneumonia, 52 critically ill adult patients were included. The mean age of the 52 patients was 59.7 (SD 13.3) years, 35 (67%) were men, 21 (40%) had chronic illness, 51 (98%) had fever. 32 (61.5%) patients had died at 28 days, and the median duration from admission to the intensive care unit (ICU) to death was 7 (IQR 3-11) days for non-survivors. Compared with survivors, non-survivors were older (64-6 years [11-2] vs 51-9 years [12-9]), more likely to develop ARDS (26 [81%] patients vs 9 [45%] patients), and more likely to receive mechanical ventilation (30 [94%] patients vs 7 [35%] patients), either invasively or non-invasively. Most patients had organ function damage, including 35 (67%) with ARDS, 15 (29%) with acute kidney injury, 12 (23%) with cardiac injury, 15 (29%) with liver dysfunction, and one (2%) with pneumothorax. 37 (71%) patients required mechanical ventilation. Hospital-acquired infection occurred in seven (13.5%) patients.

INTERPRETATION: The mortality of critically ill patients with SARS-CoV-2 pneumonia is considerable. The survival time of the non-survivors is likely to be within 1-2 weeks after ICU admission. Older patients (>65 years) with comorbidities and ARDS are at increased risk of death. The severity of SARS-CoV-2 pneumonia poses great strain...
on critical care resources in hospitals, especially if they are not adequately staffed or resourced. FUNDING: None.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7102538/
DOI: 10.1016/S2213-2600(20)30079-5


ABSTRACT: Abstract Background Limited pediatric cases with coronavirus disease 2019 (COVID-19) have been reported and the clinical profiles regarding COVID-19 in children remain obscure. Our aim was to investigate the clinical characteristics of COVID-19 in children. Methods PUBMED and EMBASE were searched through 20 June 2020, for case reports and case series reporting pediatric COVID-19 cases. Epidemiological, clinical, laboratory, and radiological data were collected and analyzed to compare by age. Results Our search identified 46 eligible case reports and case series. A total of 114 pediatric cases with COVID-19 were included. The main clinical features were mild symptoms including fever (64%), cough (35%), and rhinorrhea (16%), or no symptoms (15%). Ground-loke opacities were common radiological findings (54%). The main laboratory findings were lymphopenia (33%) and elevated D-dimer (52%) and C-reactive protein (40%) levels. We identified 17 patients (15%) with multisystem inflammatory syndrome in children (MIS-C) manifesting with symptoms overlapping with, but distinct from, Kawasaki disease, including gastrointestinal symptoms, left ventricular systolic dysfunction, shock, and marked elevated inflammatory biomarkers. Twelve percent of the patients including 65% of the MIS-C cases required intensive care because of hypotension. No deaths were reported. Conclusion This systematic review found that children with COVID-19 are generally less severe or asymptomatic. However, infants might be seriously ill and older children might develop MIS-C with severe illness. Early detection of children with mild symptoms or an asymptomatic state and early diagnosis of MIS-C are mandatory for the management of COVID-19 and the prevention of transmission and a severe inflammatory state.

URL: https://doi.org/10.1002/ppul.24991
DOI: 10.1002/ppul.24991


ABSTRACT: Background: The diagnosis of COVID-19 based on clinical evaluation is difficult because symptoms often overlap with other respiratory diseases. A clinical score predictive of COVID-19 based on readily assessed variables may be useful in settings with restricted or no access to molecular diagnostic tests. Methods: A score based on demographics and symptoms was developed in a cross-sectional study including patients attended in a dedicated COVID-19 screening unit. A backward stepwise logistic regression model was constructed and values for each variable were assigned according to their β coefficient values in the final model. Receiver operating characteristic (ROC) curve was constructed and its area under the curve (AUC) was calculated. Results: A total of 464 patients were included: 98 (21.1%) COVID-19 and 366 (78.9%) non-COVID-19 patients. The score included variables independently associated with COVID-19 in the final model: age equal or above 60 years (2 points), fever (2), dyspnea (1), fatigue (1 point) and coryza (-1). Score values were significantly higher in COVID-19 than non-COVID-19 patients: median (Interquartile Range), 3 (2-4), and 1 (0-2), respectively; P<0.001. The score had an AUC of 0.80 (95% Confidence Interval [CI], 0.76-0.86). The specificity of scores equal or greater than 4 and 5 points were 90.4 (95%CI, 87.0-93.3) and 96.2 (95%CI, 93.7-97.9), respectively. Conclusions: This preliminary score based on patients symptoms is a feasible tool that may be useful in setting with restricted or no access to molecular tests in a pandemic period, owing to the high specificity. Further studies are required to validate the score in other populations.

Compelling Interest Statement A. P. Z. received research grant not related to this study from Pfizer. D.R.F. has received payment for research grants, lectures and/or travel reimbursements not related to this study from
Pfizer, United Medical, and Gilead Sciences. Other authors declare no conflict of interest. Funding Statement: We did not have any funding support for this study. Author Declarations: All relevant ethical guidelines have been followed; any necessary IRB and/or ethics committee approvals have been obtained and details of the IRB/oversight body are included in the manuscript. Yes, all necessary patient/participant consent has been obtained and the appropriate institutional forms have been archived. Yes, I understand that all clinical trials and any other prospective interventional studies must be registered with an ICMJE-approved registry, such as ClinicalTrials.gov. I confirm that any such study reported in the manuscript has been registered and the trial registration ID is provided (note: if posting a prospective study registered retrospectively, please provide a statement in the trial ID field explaining why the study was not registered in advance). Yes, I have followed all appropriate research reporting guidelines and uploaded the relevant EQUATOR Network research reporting checklist(s) and other pertinent material as supplementary files, if applicable. Yes, we hereby choose to not share our dataset.

URL: http://medrxiv.org/content/early/2020/05/19/2020.05.14.20101931.abstract
DOI: 10.1101/2020.05.14.20101931


ABSTRACT: This study aimed to understand the differences in clinical, epidemiological, and laboratory features between the new coronavirus disease 2019 (COVID-2019) and influenza A in children. Data of 23 hospitalized children with COVID-19 (9 boys, 5.7 +/- 3.8 years old) were compared with age- and sex-matched 69 hospitalized and 69 outpatient children with influenza A from a hospital in China. The participants' epidemiological history, family cluster, clinical manifestations, and blood test results were assessed. Compared with either inpatients or outpatients with influenza A, children with COVID-19 showed significantly more frequent family infections and higher ratio of low fever (< 37.3 degreesC), but shorter cough and fever duration, lower body temperature, and lower rates of cough, fever, high fever (> 39 degreesC), nasal congestion, rhinorrhea, sore throat, vomiting, myalgia or arthralgia, and febrile seizures. They also showed higher counts of lymphocytes, T lymphocyte CD8, and platelets and levels of cholinesterase, aspartate aminotransferase, lactate dehydrogenase, and lactic acid, but lower serum amyloid, C-reactive protein, and fibrinogen levels and erythrocyte sedimentation rate, and shorter prothrombin time. The level of alanine aminotransferase in children with COVID-19 is lower than that in inpatients but higher than that in outpatients with influenza A. Pediatric COVID-19 is associated with more frequent family infection, milder symptoms, and milder immune responses relative to pediatric influenza A.


ABSTRACT: Recently, COVID-19 has spread in more than 100 countries and regions around the world, raising grave global concerns. COVID-19 transmits mainly through respiratory droplets and close contacts, causing cluster infections. The symptoms are dominantly fever, fatigue, and dry cough, and can be complicated with tiredness, sore throat, and headache. A few patients have symptoms such as stuffy nose, runny nose, and diarrhea. The severe disease can progress rapidly into the acute respiratory distress syndrome (ARDS). Reverse transcription polymerase chain reaction (RT-PCR) and Next-generation sequencing (NGS) are the gold standard for diagnosing COVID-19. Chest imaging is used for cross validation. Chest CT is highly recommended as the preferred imaging diagnosis method for COVID-19 due to its high density and high spatial resolution. The common CT manifestation of COVID-19 includes multiple segmental ground glass opacities (GGOs) distributed dominantly in extrapulmonary/subpleural zones and along bronchovascular bundles with crazy paving sign and interlobular septal thickening and consolidation. Pleural effusion or mediastinal lymphadenopathy is rarely seen. In CT imaging, COVID-19 manifests differently in its various stages including the early stage, the progression (consolidation) stage, and the absorption stage. In its early stage, it manifests as scattered flaky GGOs in various
sizes, dominated by peripheral pulmonary zone/subpleural distributions. In the progression state, GGOs increase in number and/or size, and lung consolidations may become visible. The main manifestation in the absorption stage is interstitial change of both lungs, such as fibrous cords and reticular opacities. Differentiation between COVID-19 pneumonia and other viral pneumonias are also analyzed. Thus, CT examination can help reduce false negatives of nucleic acid tests.


ABSTRACT: BACKGROUND: In December 2019, an ongoing outbreak of coronavirus disease 2019 (COVID-19) was first identified in Wuhan, China. The characteristics of COVID-19 patients treated in local hospitals in Wuhan are not fully representative of patients outside Wuhan. Therefore, it is highly essential to analyze the epidemiological and clinical characteristics of COVID-19 in areas outside Wuhan or Hubei Province. To date, a limited number of studies have concentrated on the epidemiological and clinical characteristics of COVID-19 patients with different genders, clinical classification, and with or without basic diseases.

AIM: To study the epidemiological and clinical characteristics of COVID-19 patients in Hengyang (China) and provide a reliable reference for the prevention and control of COVID-19.

METHODS: From January 16 to March 2, 2020, a total of 48 confirmed cases of COVID-19 were reported in Hengyang, and those cases were included in this study. The diagnostic criteria, clinical classification, and discharge standard related to COVID-19 were in line with the Diagnosis and Treatment Protocol for Novel Coronavirus Pneumonia (Trial Version 7) released by National Health Commission and National Administration of Traditional Chinese Medicine. The presence of SARS-CoV-2 in pharyngeal swab specimens was detected by quantitative reverse transcription polymerase chain reaction. All the data were imported into the excel worksheet and statistically analyzed by using SPSS 25.0 software.

RESULTS: A total of 48 cases of COVID-19 were collected, of which 1 was mild, 38 were moderate, and 9 were severe. It was unveiled that there were 31 (64.6%) male patients and 17 (35.4%) female patients, with a female-to-male ratio of 1.82:1. The range of age of patients with COVID-19 was dominantly 30-49 years old [25 (52.1%) of 48], followed by those aged over 60 years old [11 (22.9%)]. Besides, 29.2% (14 of 48) of patients had basic diseases, and 57.2% (8 of 14) of patients with basic diseases were aged over 60 years old. The occupations of 48 COVID-19 patients were mainly farmers working in agricultural production [15 (31.5%) of 48], rural migrant workers from Hengyang to Wuhan [15 (31.5%)], and service workers operating in the service sector [8 (16.7%)]. The mean latent period was 6.86 +/- 3.57 d, and the median was 7 [interquartile range (IQR): 4-9] d. The mean time from onset of symptoms to the first physician visit was 3.38 +/- 2.98 (95%CI: 2.58-9.18) d, with a median of 2 (IQR: 1-5) d, and the mean time from hospital admission to confirmed diagnosis was 2.29 +/- 2.11 (95%CI: 1.18-6.42) d, with a median of 2 (IQR: 1-3) d. The main symptoms were fever [43 (89.6%) of 48], cough and expectoration [41 (85.4%)], fatigue [22 (45.8%)], and chills [22 (45.8%)]. Other symptoms included poor appetite [13 (27.1%)], sore throat [9 (18.8%)], dyspnea [9 (18.8%)], diarrhea [7 (14.6%)], dizziness [5 (10.4%)], headache [5 (10.4%)], muscle pain [5 (10.4%)], nausea and vomiting [4 (8.3%)], hemoptysis [4 (8.3%)], and runny nose [1 (2.1%)]. The numbers of peripheral blood leukocytes, lymphocytes, and eosinophils were significantly reduced in the majority of the patients. The levels of C-reactive protein, fibrinogen, blood glucose, lactate dehydrogenase, D-dimer, alanine aminotransferase (ALT), aspartate aminotransferase (AST), gamma-glutamyl transferase (gamma-GT), myoglobin (MB), and creatine kinase (CK) were increased in 64.6%, 44.7%, 43.2%, 37.0%, 29.5%, 22.9%, 20.8%, 21.6%, 13.6%, and 12.8% of patients, respectively. The incidence of ALT elevation in male patients was remarkably higher than that in females (P < 0.01), while the incidences of AST, CK, and blood glucose elevations in severe patients were remarkably higher than those in moderate patients (P < 0.05, respectively). Except for the mild patients, chest computed tomography showed characteristic pulmonary lesions. All the patients received antiviral drugs, 38 (79.2%) accepted traditional Chinese medicine, and 2 (4.2%) received
treatment of human umbilical-cord mesenchymal stem cells. On March 2, 2020, 48 patients with COVID-19 were all cured and discharged. 

CONCLUSION: Based on our results, patients with COVID-19 often have multiple organ dysfunction or damage. The incidences of ALT elevation in males, and AST, CK, and blood glucose elevations in severe patients are remarkably higher. 

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7322431/

ABSTRACT: OBJECTIVE: To determine the predictive computed tomography (CT) and clinical features for diagnosis of COVID-19 pneumonia. 
METHODS: The CT and clinical data including were analyzed using univariate analysis and multinomial logistic regression, followed by receiver operating characteristic curve analysis. 
RESULTS: The factors including size of ground grass opacity (GGO), GGO with reticular and/or interlobular septal thickening, vascular enlargement, "tree-in-bud" opacity, centrilobular nodules, and stuffy or runny nose were associated with the 2 groups of viral pneumonia, as determined by univariate analysis (P < 0.05). Only GGO with reticular and/or interlobular septal thickening, centrilobular nodules, and stuffy or runny nose remained independent risk factors in multinomial logistic regression analysis. Receiver operating characteristic curve analysis showed that the area under curve of the obtained logistic regression model was 0.893. 
CONCLUSION: Computed tomography and clinical features including GGO with reticular and/or interlobular septal thickening, absence of centrilobular nodules, and absence of stuffy or runny nose are potential patients with COVID-19 pneumonia. 
URL: https://pubmed.ncbi.nlm.nih.gov/32889972/

ABSTRACT: OBJECTIVE: Our study aims to present a summary of the clinicopathological characteristics of patients affected by the coronavirus disease 2019 (COVID-19) that can be used as a reference for further research and clinical decisions. 
DESIGN: Studies were included in the meta-analysis if they had cohort, case-control or case series designs and provided sufficient details on clinical symptoms, laboratory outcomes and asymptomatic patients. 
SETTING: PubMed, Embase, Chinese Biomedical Literature Database, Wanfang, China Science and Technology Journal Database and China National Knowledge Infrastructure databases were electronically searched to identify related studies published between 1 January 2020 and 16 March 2020. Three reviewers independently examined the literature, extracted relevant data and assessed the risk of publication bias before including the studies in the meta-analysis. 
PARTICIPANTS: The confirmed cases of COVID-19. 
RESULTS: A total of 55 unique retrospective studies involving 8697 patients with COVID-19 were identified. Meta-analysis showed that a higher proportion of infected patients were male (53.3%), and the two major symptoms observed were fever (78.4%) and cough (58.3%). Other common symptoms included fatigue (34%), myalgia (21.9%), expectoration (23.7%), anorexia (22.9%), chest tightness (22.9%) and dyspnoea (20.6%). Minor symptoms included nausea and vomiting (6.6%), diarrhoea (8.2%), headache (11.3%), pharyngalgia (11.6%), shivering (15.2%) and rhinorrhea (7.3%). About 5.4% of the patients were asymptomatic. Most patients showed normal leucocyte counts (64.7%) and elevated C reactive protein levels (65.9%). Lymphopaenia was observed in about 47.6% of the infected patients, along with abnormal levels of myocardial enzymes (49.4%) and liver function (26.4%). Other findings included leucopenia (23.5%), elevated D-dimer (20.4%), elevated erythrocyte sedimentation rate (20.4%), leucocytosis (9.9%), elevated procalcitonin (16.7%) and abnormal renal function (10.9%).
CONCLUSIONS: The most commonly experienced symptoms of patients with COVID-19 were fever and cough. Myalgia, anorexia, chest tightness and dyspnoea were found in some patients. A relatively small percentage of patients were asymptomatic and could act as carriers of the disease. Most patients showed normal leucocyte counts, elevated levels of C reactive protein and lymphopaenia, confirming the viral origin of the disease.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7229787/


ABSTRACT: The novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has spread rapidly across the globe. In contrast to initial reports, recent studies suggest that children are just as likely as adults to become infected with the virus but have fewer symptoms and less severe disease. In this review, we summarize the epidemiologic and clinical features of children infected with SARS-CoV-2 reported in pediatric case series to date. We also summarize the perinatal outcomes of neonates born to women infected with SARS-CoV-2 in pregnancy. We found 11 case series including a total of 333 infants and children. Overall, 83% of the children had a positive contact history, mostly with family members. The incubation period varied between 2 and 25 days with a mean of 7 days. The virus could be isolated from nasopharyngeal secretions for up to 22 days and from stool for more than 30 days. Co-infections were reported in up to 79% of children (mainly mycoplasma and influenza). Up to 35% of children were asymptomatic. The most common symptoms were cough (48%; range 19%-100%), fever (42%; 11%-100%) and pharyngitis (30%; 11%-100%). Further symptoms were nasal congestion, rhinorrhea, tachypnoea, wheezing, diarrhea, vomiting, headache and fatigue. Laboratory test parameters were only minimally altered. Radiologic findings were unspecific and included unilateral or bilateral infiltrates with, in some cases, ground-glass opacities or consolidation with a surrounding halo sign. Children rarely needed admission to intensive care units (3%), and to date, only a small number of deaths have been reported in children globally. Nine case series and 2 case reports described outcomes of maternal SARS-CoV-2 infection during pregnancy in 65 women and 67 neonates. Two mothers (3%) were admitted to intensive care unit. Fetal distress was reported in 30% of pregnancies. Thirty-seven percent of women delivered preterm. Neonatal complications included respiratory distress or pneumonia (18%), disseminated intravascular coagulation (3%), asphyxia (2%) and 2 perinatal deaths. Four neonates (3 with pneumonia) have been reported to be SARS-CoV-2 positive despite strict infection control and prevention procedures during delivery and separation of mother and neonates, meaning vertical transmission could not be excluded.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7363381/


ABSTRACT: Objective: To evaluate the association of olfactory dysfunction (OD) with hospitalization for COVID-19. Study Design: Multi-center cohort study. Setting: Emergency departments of thirteen COVID-19-designed hospitals in Kurdistan province, Iran. Subjects and Methods: Patients presenting with flu-like symptoms who tested positive by RT-PCR for COVID-19 between May 1st and 31st, 2020. At the time of presentation and enrollment, patients were asked about the presence of OD, fever, cough, shortness of breath, headache, rhinorrhea and sore throat. The severity of OD was assessed on an 11-point scale from 0 (none) to 10 (anosmia). Patients were either hospitalized or sent home for outpatient care based on standardized criteria. Results: Of 203 patients, who presented at a mean of 6 days into the COVID-19 disease course, 25 patients (12.3%) had new OD and 138 patients (68.0%) were admitted for their COVID-19. Patients admitted for COVID-19 had a higher prevalence of all symptoms assessed, including OD (p<0.05 in all cases), and OD identified admitted patients with 84.0% sensitivity and 34.3% specificity. On univariate logistic regression, hospitalization was associated with OD (odds ratio [OR] = 2.47, 95%CI: 1.085-6.911, p=0.049). However, hospitalization for COVID-19 was not associated with OD (OR=3.22, 95% CI: 0.57-18.31, p=0.188) after controlling for confounding demographics and comorbidities. Conclusion: OD may be associated with hospitalization for (and therefore
more severe) COVID-19. However, this association between OD and COVID-19 severity is more likely driven by patient characteristics linked to OD, such as greater numbers of COVID-19 symptoms experienced or high-risk comorbidities.

Competing Interest Statement
The authors have declared no competing interest.

Funding Statement
No funding.

Author Declarations
Yes

I confirm all relevant ethical guidelines have been followed, and any necessary IRB and/or ethics committee approvals have been obtained. Yes

The details of the IRB/oversight body that provided approval or exemption for the research described are given below: Ethics Committee of Kurdistan University of Medical Sciences (ref. no. IR.MUK.REC.1399.006). All necessary patient/participant consent has been obtained and the appropriate institutional forms have been archived. Yes

I understand that all clinical trials and any other prospective interventional studies must be registered with an ICMJE-approved registry, such as ClinicalTrials.gov. I confirm that any such study reported in the manuscript has been registered and the trial registration ID is provided (note: if posting a prospective study registered retrospectively, please provide a statement in the trial ID field explaining why the study was not registered in advance). Yes

I have followed all appropriate research reporting guidelines and uploaded the relevant EQUATOR Network research reporting checklist(s) and other pertinent material as supplementary files, if applicable. Yes

All data are available upon request.

URL: http://medrxiv.org/content/early/2020/07/28/2020.07.26.20158550.abstract

DOI: 10.1101/2020.07.26.20158550


ABSTRACT: Background. Human coronaviruses (CoVs) are a major cause of respiratory infection and institutional outbreaks, yet the epidemiology and clinical outcomes of these viruses is poorly described among the elderly residing in long-term care facilities (LTCFs). Methods. We performed a retrospective cohort study of LTCF residents with positive nasopharyngeal or mid-turbinate swabs for CoVs (OC43, 229E, NL63 and HKU1) between January 2013 and December 2018. Demographic and clinical data were obtained from resident charts including clinical presentation, treatment, outcome, and transmission to other residents. Variables were compared using univariate analysis. Results. 3268 residents met inclusion criteria (median age 93 years, 90% male) comprising 7.5% (246/3268) of all positive respiratory virus specimens detected during the study period. 97(39%) of cases were associated with a respiratory outbreak while 149(61%) were sporadic cases that did not result in transmission. OC43 (52%) was the most commonly identified CoV and was more commonly associated with outbreak cases (76% vs. 37%; P < 0.001). In total, 87% of all cases had two or more of runny nose/congestion, cough, sore throat/hoarse voice or fever. The most common symptoms among residents were cough (85%), runny nose/congestion (79%), and sore throat/ hoarse voice (59%) and only 17% of residents had a measured temperature of >= 37.8C. Only 6% of residents received antibiotic treatment for suspected secondary bacterial pneumonia. The 30-day mortality rate was 3.7% with 67% of deaths attributable to the CoV infection. There was no statistically significant difference in symptoms, treatment or outcomes associated with outbreaks or seasonality. Conclusion. CoVs make up an important proportion of respiratory viral infections among LTCF residents and may result in frequent outbreaks. Most residents remain afebrile and have self-limited illness while only a small minority develop secondary bacterial pneumonia and death. Given these findings the benefits of control measures should be weighed against the impact on resident quality of life.

URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6810513/

SEARCH STRATEGIES

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<td>19</td>
<td>limit 18 to (english language and yr=&quot;2019 -Current&quot;)</td>
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Chinese* or Huanan*).ti,ab,kw.
9 "severe acute respiratory syndrome*".ti,ab,kw.
10 or/1-9
11 sneezing/ or rhinitis/
12 (coryza or rhinorrhea or rhinitis or runn* nose or sternutation or sneez* or sinonasal).ti.
13 (coryza or rhinorrhea or rhinitis or runn* nose or sternutation or sneez* or sinonasal).ab./freq=2
14 11 or 12 or 13
15 exp mass screening/ or symptom assessment/ or exp "signs and symptoms"/
16 (screen* or symptom* or predictive or clinical characteristic?).ti.
17 (screen* or symptom* or predictive or clinical characteristic?).ab./freq=2
18 "predictive value".af.
19 15 or 16 or 17 or 18
20 10 and 14 and 19
21 limit 20 to (english language and yr="2019 -Current")
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<tr>
<td>5</td>
<td>#1 AND #2 AND #3 [Limit to 2019]</td>
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Cochrane – September 24, 2020, 12:55pm

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<td>1</td>
<td>MeSH descriptor: [Coronavirus] explode all trees</td>
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<td>2</td>
<td>MeSH descriptor: [Coronavirus Infections] explode all trees</td>
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<tr>
<td>3</td>
<td>(coronavirus-2 or N-CoV-2 or COVID-19)</td>
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<td>4</td>
<td>#1 OR #2 OR #3</td>
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<td>6</td>
<td>MeSH descriptor: [Rhinitis] explode all trees</td>
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<td>7</td>
<td>coryza or rhinorrhea or rhinitis or runn* nose or sternutation or sneez* or sinonasal or nasal obstruction* or blocked sinus* or stuff* nose* or congestion</td>
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<tr>
<td>#8</td>
<td>#9 OR #6 OR #7</td>
<td>14,558</td>
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<tr>
<td>#9</td>
<td>MeSH descriptor: [Mass Screening] explode all trees</td>
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<td>MeSH descriptor: [Symptom Assessment] explode all trees</td>
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</table>

WHO Database – September 24, 2020, 1:40pm

sneezing or runny nose or rhinitis or rhinorrhea or sternutation

Google Advanced Search & Google Scholar

(coronavirus | covid-19) and (coryza | rhinorrhea | rhinitis | “runny nose” | sternutation | sneezing) and (screening | “predictive value” | symptoms | “clinical characteristics”)

Search terms for other resources used in various combinations:

(coryza or rhinorrhea or rhinitis or “runny nose” or sternutation or sneezing) and (screening or “predictive value” or symptoms or “clinical characteristics”)