

Clinical Manifestations of Covid-19 Disease; Exploring the Experiences of Infected Health-Care Providers.

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Research

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Abstract

Background: Covid-19 is a novel disease with many unknown clinical and managemental dimensions. To effectively diagnose, control, and treat the disease, it is required to divulge its clinical symptoms and their qualities. On the other hand, no one can better interpret the clinical symptoms than the caregivers infected by the disease. So, the aim of this study was to exploring the experiences of infected health-care providers about clinical manifestations of Covid-19 disease.

Methods: The present qualitative research was conducted using the conventional content analysis method in Iran from March to Jun 2020. Participants in this study included infected health care providers with Covid-19, who were selected based on purposeful sampling method. The data was collected by 18 phone call interviews and analyzed according Lundman and Graneheim approach.

Results: Qualitative data analysis revealed 10 categories including respiratory disorders, fever and chills, body pain, fatigue, headache, skin disorders, gastrointestinal disorders, taste and olfactory disturbances, insomnia and also stress and anxiety.

Conclusion: Patients with Covid-19 may experience specific or non-specific disorders. It is necessary to consider people with non-specific manifestations as suspicious cases and screen them with proper diagnostic tests. This can help to identify true positive patients and provide them with more effective health cares, and prevent further spread of the disease by isolating suspected individuals.

Trial registration number: Not applicable

Background

Covid-19 is an infectious disease caused by a novel SARS-related coronavirus(1). The virus is the cause of the recent outbreak in Wuhan, China(2) and was first reported on December 31, 2019. The World Health Organization (WHO) declared a global pandemic on March 11, 2020 due to the rapid spread of the disease inflicting many countries around the world(3). Common signs include fever, cough, and dyspnea (4). Although the manifestation of the disease is mild in most cases, failure of vital organs such as the lungs, heart and kidneys have been reported in others(2). The disease is mainly transmitted through small respiratory droplets of infected people during coughing or sneezing (5). Until Jun 13, 2020, the number of people contracting the virus has reached 7,810,339 and the number of related deaths has met 430,133 worldwide. In Iran, on Jun 13, 2020, the number infected and deceased individuals have been 184,955 and 8,730, respectively (6). About 80% of patients with Covid-19 have mild symptoms, half of whom may be hospitalized. About 20% of patients may experience severe symptoms necessitating oxygen therapy or other hospital-based treatments, of these, 5% present more severe symptoms requiring respiratory support and ventilation in intensive care units(7). The mortality rate of the disease has been estimated between 1-5%, but this varies depending on the patients' age and health status, particularly, the presence or absence of underlying diseases(7).

Covid-19 is a new disease with many unknown clinical and managerial dimensions. Although some sources have reported manifestations such as rhinorrhea, cough, fatigue, headache, diarrhea, and chest tightness, less attention has been paid to interpret the quality of these signs and symptoms(4, 8). During the recent epidemic, many health care workers contracted the disease(9) and experienced its clinical symptoms. To diagnose and treat the disease, its clinical manifestations and their qualities must be known. In this regard, no one can better interpret such clinical manifestations better than the care givers, especially physicians and nurses, affected with the disease. On the other hand, in order to interpret and gain an in-depth understanding of clinical manifestations, it is necessary to conduct a qualitative study. Given that the researchers are closely engaged with caring of Covid-19 patients and are also experts in the methodology of qualitative studies, they designed this study to exploring the experiences of health-care providers about clinical manifestations of Covid-19 disease.

Methods

This qualitative study was performed using a conventional content analysis approach.

Research participants

Participants included infected health-care providers to Covid-19 disease during the pandemic.

The participants were tested positive based on RT-PCR and selected using purposeful sampling. Inclusion criteria were having academic degrees in the field of health sciences (medicine, nursing, prehospital emergency and laboratory), positive RT-PCR test, experiencing Covid-19 symptoms, access to telephone or cellphone and willingness to participate in the study. Exclusion criteria included incapability to participate in the study such as physical weakness, mental disorder or busy schedule.

Data collection

Given the immediate need for data collection and restrictions in face-to-face communication, and also to avoid interfere with patients' care, we used semi-structured in-depth telephone interviews from April to Jun 2020 for data collection. To collect the data, details and contact information of the health-care providers infected with Covid-19 were first obtained by referring to the Infection Control Offices of hospitals providing services to Covid-19 patients. The participants were then selected using the purposive sampling method. After explaining the aims of the study and obtaining verbal consent, necessary arrangements were made with the participants about the time of the interview. The duration of the interview was determined according to the participant's desire, patience, and richness of experience. All the interviews were recorded by electronic devices. The main question of the study was: "please talk about your experience of contracting the covid-19 disease", "talk about the experienced clinical manifestation", "Explain symptoms and signs of disease". Then based on the participants' answers, the interview continued with more detailed questions such as "what do you mean?", and "please explain more about this".

Data analysis

Data analyzed simultaneously with the interviews according the Lundman and Graneheim approach(10). The interviews had been immediately transcribed verbatim. By reading the Tran scripted texts several times, we then extracted the initial codes and merged related codes to develop main categories and sub-categories based on similarities and differences between them.

Trustworthiness

The accuracy and reliability of the data were determined based on the Lincoln and Goba approach(11). The used criteria included credibility, dependability, transferability, and confirmed ability. After initial coding, their accuracy was verified according to the participants' opinions. In case of any contradiction with the participants' opinions, required corrections were considered. The member check done by two qualitative research experts. It was tried to obtain the maximum diversity in terms of participants' experience, knowledge, age, gender, and wards.

Ethical considerations

The Ethics Committee of Lorestan University of Medical Sciences approved the study protocol "IR.LUMS.REC.1399.018". To prevent the transmission of the disease, all data was collected

through telephone and informed consent was obtained from participants verbally for the safety of the interviewee and the interviewer. The anonymity and confidentiality of the information and audio files was totally observed. participants were free to withdraw at any time.

Results

Analysis of data showed, a total of 18 health care- providers including 7 women and 11 men with work experience of 11.2519 ± 6.14 years and average age of 35.12 ± 6.67 years were participated in the study (Table 1). Analysis of data showed that Patients with Covid-19 may have different clinical manifestations with varied patterns. Qualitative data analysis revealed 10 categories. (Table 2).

Table1: Characteristics of participants

Number of Participant	Level of Education	Work Experience	Ward	Marital Status	Position
1	Post graduate	1	ICU	Single	Nurse
2	Bachelor	20	General	Married	Nurse
3	Bachelor	7	Laboratory	Single	Laboratory technician
4	Bachelor	7	Laboratory	Single	Laboratory technician
5	Bachelor	16	General	Married	Head nurse
6	Bachelor	16	General	Married	Nurse
7	Bachelor	12	Prehospital	Married	Emergency technician
8	Anesthesia resident	25	Critical ward	Married	Physician
9	Bachelor		General	Married	Nurse
10	Surgery resident	20	Operational room	Single	Physician
11	Bachelor	10	Emergency	Married	Head nurse
12	Bachelor	7	Emergency	Divorced	Nurse
13	Bachelor	8	ICU	Married	Nurse
14	Bachelor	8	Prehospital	Married	Emergency technician
15	Bachelor	11	Prehospital	Married	Emergency technician
16	Bachelor	11	Prehospital	Married	Emergency technician
17	Bachelor	13	Emergency department	Married	Nurse
18	Post graduate	10	Emergency department	Married	Nurse

Table 2: categories of data

Categories
Respiratory disorders
Fever and chills
Body pain
Fatigue
Headache
Skin disorders
Gastrointestinal disorders
Taste and olfactory disturbances
Insomnia
Stress and anxiety

Respiratory disorders: Among the most important symptoms of Covid-19 patients are respiratory problems. The disease may start with dry coughs which gradually deteriorate over time. One participant said: "... I've had the influenza before, but I haven't had such severe coughs..." (1). Participants' experiences indicated that respiratory problems resembled the aspiration of a foreign body, or that the airway was being pressurized by a foreign body in an intermittent way. One of participant mentioned: "... in addition to the above symptoms, I felt that my throat was being squeezed with a rope or a grip, and then I was relieved, and this continued over and over..." (5). Another participant said: "... I had a strange sore throat, I had pain only when I swallowed saliva which it didn't go down while I felt something stuck in my throat" (6). Another noted: "...every time I breathed in, I felt like my lungs were such a sponge soaking in water...". They also reported severe persistent chest pain disturbing sleep. One participant said: "...but the next day, I had severe pain in my chest, and I felt my ribs penetrating into my flank ..." (2), and another noted: "... recently, I have had a feeling of a heavy mass on the left side of my chest, it was like someone putting and pressuring his foot on my chest and..."(4). The same participant mentioned the chest pain as the most annoying clinical symptom of the disease and continued: "... feeling heaviness in chest was more painful for me than other symptoms because it was nocturnal and waked me up as soon as I fall asleep, on the other hand, I was concerned that I might have had cardiac problems..."(4). The participants' experience also showed that patients had more difficulties exhaling, and that it was hard to drain the lungs while inhaling. In this regard, one of them said: "I felt like I couldn't get the air out of my lungs ..." (1). Another participant said: "... as I gradually felt pressure on my chest, I could inhale more easily, but when I exhaled, I felt my throat was contracting and I couldn't exhale..." (7). In connection with this, another participant expressed: "... I feel that the air enters the respiratory duct to a certain extent, and while breathing, I feel that the air hardly enters my lungs through a narrow straw.... "(13).

Participants' experiences indicated that patients were unable to breathe, and they avoided deep breath in order to prevent the pain. One participant mentioned: "...with deep inhales, my breath was ceased, and I had to take shallow breath..."(2). On the other hand, patients' trachea burns from top to the end, a feeling like reflux. A participant noted that "... I feel that my throat burns all over when I cough...." (1). The participants declared that although the lung hearing was normal, the patient may be clinically unstable. There were reports of severe lung involvement despite a good general condition. One of the participants says: "..... we had patients with not very bad conditions but extensive lung involvement, and they finally died despite being young and not having respiratory distress ..." (6). He continued: "... I didn't have much problems with hearing in my lungs, but this was not consistent with my clinical condition, and I felt very ill ..." (6).

Fever and chills: Data analysis showed that one of the symptoms of patients with Covid-19 is fever and chills. The participants noted that they experienced a fever more severe than expected, and that the fever may be cyclical. The fever is so severe that only the use of diclofenac as a suppository can relieve it. Participants also reported that patients suffered from severe cold sweats, as if the person had been soaked by an external source, and this condition even worsened during the night. One of the participants mentioned: "... I was feeling like a water balloon being emptied on my head..."(2). Another participant said of his fever experience: "... I have never had a viral illness that has a long period of fever I had 41 fever episodes over a 5-day period ... "(6). The same participant continues: "... to the extent that the fever did not subside with two naproxen tablets and one 500-mg acetaminophen, and I also used a 100 mg diclofenac suppository to reduce my fever to some extent"(6). Another participant says that because of severe fever and sweating, I had to change my clothes and sheets several times a night, and I was getting wet again with sweat after each bath.... "(15). Another participant complained of severe chills, saying: "... although the room temperature was good, I used a few blankets which exacerbated the fever again, and I had to put the blankets aside, and this was going on until morning ..." (3).

Severe body pain: Data analysis showed that one of the most important symptoms of the disease is severe body pain. Most participants reported that their symptoms began with body aches that exaggerated over time. Participants' experiences suggested that the pain may spread to patients' joints, especially the lower extremities, so that they could not stand on their feet, and the pain persists until the end of the illness. One participant mentions: "...the body and joint pain, especially the lower limbs, lasted for about 16 days. My body ache, especially in the shoulders, was like someone had beaten me. The major pain was in my joints and the lower trunk. Every single joint in my fingers was in pain. I had never had such a severe pain that my whole body was in so much pain ... "(6). Addressing the onset of symptoms, another participant said: "... the disease started with fever, chills, and severe body aches in a way that I could not drive and brought myself to hospital emergency department..."(3). The same participant compared his joint pain to that of brucellosis fever and stated: "... all my body parts, from the head to toe, ached like a patient with brucellosis infectious disease, the whole body and even my bones and joints ached..." (3).

Severe fatigue: Data analysis showed that another common symptom of Covid-19 disease was severe lethargy. The participants' experiences showed that this disease may be so severe that patients may be reluctant to talk to others, unable to do simple daily tasks or even to meet his or her nutritional needs. Some participants attributed the weakness and lethargy to malnutrition. One participant said: "... anorexia and lack of appetite had made my body much weaker, so I couldn't stand on my feet ..." (3). Another participant said: "... I couldn't chew food, and I couldn't stand up at all ..." (2). Another mentioned: "... I felt so weak and lethargic that I couldn't stand on my own feet ..." (5). Someone else stated: "... It was like I had to hardly pull along my legs, and I couldn't walk..." (6).

Headache: Data analysis showed that patients may experience severe headaches during the disease course. The participants' experience showed that the headache was similar to that of hypotension and felt like the middle of head was empty at the time. One of them stated: "...I had a severe headache that I had never experienced before, and I felt empty inside and in the middle of my head ..." (2). Another participant compared his headache to that caused by hypotension and mentioned "...I experienced headaches similar to that of hypotension, I felt like someone who developed hypotension, it looked like my head was suddenly emptied leading to black eyes..." (4). Another participant addressing its sight mentioned: "...I wanted to calm myself with studying, but my sight was compromised because of the lethargy caused by the disease..." (5).

Skin disorders: Data analysis showed that patients may experience skin problems during the illness. The participants' experiences suggest that the patients may experience itching and hives in the hands and chest a few days after the infection onset. One participant noted: "...interesting thing is that exactly 21 days after I got infected, my daughter and I developed hives on our hands and chests, after counseling with an infectious diseases specialist, he confirmed that they may be Covid-19 complications..." (6). Another participant described the onset of the disease with >1-cm-diameter skin lesions with irregular margins and said: "...it was accompanied by itching and scaling of my skin starting on the back of the scapula and arms spreading towards the abdomen and legs, then they became pale and light after 2 weeks and pale and dull after 3 weeks (18).

Gastrointestinal disorders: Data analysis showed that patients may experience various digestive problems such as diarrhea, anorexia, nausea, and vomiting during the course of the disease. The participants' experiences showed that the patients may experience diarrhea, bloating, and colic. They noted that the diarrhea may continuously recur throughout the disease period, and that the patient may experience cyclical abdominal pains and cramping and feel gas-free bloating, similar to a state of bowel volvulus. In this regard, one participant said: "...I had diarrhea for five days and was injected with potassium chloride at the hospital..." (8). Another participant mentioned: "...my abdominal pain was like muscle contraction cycling over one-hour apart periods ..." (4). The same participant resembled his digestive problems to intestinal volvulus and continued: "...My abdominal cramps were like there were volvulus in my intestine, like gas-free bloating, I had nausea, and my symptoms aggravated at night. I could bear my symptoms during the day ... (4) ".

Taste and olfactory disturbances: Data analysis showed that patients had taste and olfactory problems during the disease course. The participants' experiences revealed that taste and olfactory impairments may appear at the onset and then slowly and gradually improve during the course of the disease. In this regard, one participant mentioned: "... at the days 12th to 13th, I felt better and could breathe easier, my taste, which had reduced since the onset of the disease, improved and I could feel tastes again..."(7).

Insomnia: Data analysis showed that the patients had nighttime sleep disorder secondary to various problems and symptoms experienced during the illness. According to the participants' experiences, most manifestation such as systemic signs, respiratory and gastrointestinal complications, headache, and anxiety exacerbated at night interfering with sleep. The patients may stay awake all night while with the improvement of symptoms at day, patients may have been able to sleep. One participant said: "... I was very restless at night, and I had a feeling of heaviness in my chest so I couldn't sleep ..." (7). Another participant said: "...I had pain, fever, and chills at night, my nighttime sleep was disturbed, and I slept during the day..." (3). Another participant stated: "... but dyspnea was much worse at night, respiratory distress had been exacerbated during the night causing sleep disturbances" (4).

Stress and anxiety: Data analysis indicated that one of the patients' clinical symptoms was anxiety and restlessness. The patients experience a lot of anxiety at the onset and during progression of the disease, especially at night. One of the participants mentioned: "... I had a better mental condition at day, but I was restless at night so that I couldn't sit still, I don't know if it was because of the physical or psychological effects of the disease..." (5). Another participant explained: "... I was anxious that day; the beginning of the disease, it started with fever and body aches, and because of my stressful personality, I was never so nervous and anxious until that day..."(6). The same participant said: "...I am too attached to my little girl, and the thought of how she would feel after my death made me feel bad and very worried. During this time, I had so much anxiety and stress..... "(6). This participant further explained: "... I was thinking to myself, what should I do to my family if this situation worsens? Sometimes, I was considering writing a testament, but I feared that this might further worry my wife ... "(6).

Another participant noted about death anxiety: "... I think death from Covid-19 is strange, and it is actually a death in exile..." (5), and continued: "... I was anxious as I did not know what would happen ... "(5). Another participant described his anxious as: "... with every shortness of breath, I was feeling myself in the grave, the image I had on burial ceremonies of these patients, and that they were buried with a shovel, the lime poured on them, it was a bad imagination that made me very worried.... (3). Another participant mentioned: "...in the evenings, I felt more frustrated...I felt like I was in the grave ... "(2). Another participant said: "... I'm afraid of getting sick again and not being immune to the disease, and even though I've started working again, I'm constantly worried about getting infected again" ... "(17). Another participant revealed: "... because I was newly married, I was worried about what would happen to my wife after my death ..." (13).

Discussion

According to our findings, the patients experienced a variety of clinical symptoms including respiratory disorders, fever and chills, severe body aches, severe lethargy, headaches, skin problems, digestive problems, impaired sense of smell and taste, and nighttime sleep disorders during the disease. In line with our findings, patients have been reported to present with non-specific symptoms such as fever, fatigue, cough (with or without sputum), anorexia, weakness, muscle aches, sore throat, dyspnea, nasal congestion, or headache. In some cases, these symptoms may be accompanied by diarrhea, nausea, and vomiting(12). In most cases, the disease may present with fever (94.4%), and cough (55.6%) (13), and in others, presentation may be with atypical symptoms such as palpitation, diarrhea, or headache followed by more specific symptoms such as respiratory complications(14).

The current study's findings showed that the patients experienced a variety of respiratory problems during the course of the disease. In line with the findings of this study, another study also showed that dry coughing along with respiratory disorders are common among Covid-19 patients (15). These patients may present with either no or severe pneumonia, and in some cases, patients may have no clinical symptoms in favor of pneumonia at the onset of the disease(12, 14). Due to chest pain and lethargy, these patients may not have effective coughs to clear the airways. In these cases, chest physiotherapy can help to maintain pulmonary function and stimulate the patient to effectively cough(16). In one study, it has been suggested that 41% of all Covid-19 patients admitted to hospitals and 70% of the patients with severe complications need oxygen therapy(17). For these patients, oxygen therapy should be performed to maintain $SpO_2 > 94$ and is better to be performed through a nasal cannula or oxygen mask(18, 19). One study; however, noted that oxygen therapy through the nasal route may further spread airborne contaminated droplets(20). The prevalence of acute respiratory syndrome has been reported as high as 17% among the patients (21). Lying in a prone position may be helpful to improve the respiratory status of patients with acute respiratory syndrome and reduce the rate of mortality^{20(22, 23)}. According to a systematic review, lying in prone position for 12 hours a day could greatly reduce the mortality rate(24). The patient should be placed in this position from the earliest hours of respiratory distress initiation(25).

In this study, we found that fever was one of the most important symptoms of the disease. In line with the findings of this study, the results of another study showed that fever may present in the patients 3-7 days after contracting the virus(15). There is no evidence proving the benefits of antipyretic drugs, and studies have reported contradictory results in this regard. Nonetheless, health care providers still consider the fever as a deleterious factor in these patients(26). However, using non-pharmacological methods such as footbath, keeping hospital beds cool, reducing clothes and covers, and keeping the patient hydrated can help to control the fever to some extent.

In this study, fatigue and muscle pain were among the most common symptoms mentioned by the participants. Myalgia may occur secondary to the generalized inflammation and cytokine response in patients(27). In line with our finding, another study reported that myalgia was the first sign in 36% of patients(28). In a systematic review, only 18.3% of patients with Covid-19 reported myalgia, and the severity of this symptom was not associated with severity of the disease. In other words, patients with severe disease did not necessarily present severe myalgia; therefore, this clinical symptom cannot predict

the severity of the disease(29). Moreover, patients with a variety of other clinical symptoms may not have myalgia(15).

Headache was also one of the symptoms reported by our participants which is in line with other studies noting this as an early symptom of Covid-19 disease (30). To manage this symptom, it is applicable to use drugs based on validated guidelines as well as non-pharmacological methods such as those mitigating fear and anxiety(31, 32).

In this study, skin rashes were reported by the participants during the recovery period. The specifications and shapes of skin rashes reported in other studies were very similar to those of the present study. The rashes were red and painful and appeared 12 days after the onset of symptoms. They developed in young patients with moderate to severe disease. Nevertheless, neither the presence nor the type of the skin lesions was associated with the disease severity(33, 34). In another study, the most important skin manifestations were maculopapular exanthema, and with relatively lower extent, papular vesicular rash, urticarial, petechial, painful acral red purple papules, and livedo reticularis lesions. In some cases, the skin manifestations appeared before the respiratory symptoms, and all of them spontaneously healed ten days after the onset of symptoms (35). However, in some cases, skin disorders may be related to drug allergies, or sensitivity to disinfectants and other detergents.

Gastrointestinal symptoms such as nausea, vomiting, and anorexia were reported by our participants. Consistent with this, another study described nausea, vomiting, and diarrhea as common symptoms of Covid-19 disease(36). In some cases, gastrointestinal symptoms may appear without respiratory presentations (37). In addition, the Covid-19 causative virus may be seen in the feces of some infected people(38). Actually, despite negative test results for pharyngeal and sputum samples, the coronavirus may be observed in the feces of these patients(39). Also, in some cases with positive results for both pharyngeal and fecal samples, the virus may be still detected in feces despite a negative pharyngeal test even after recovery(40) which can contribute to the spread of the virus. In the present study, bloating was reported as one of the gastrointestinal symptoms which was in line with the findings of Pan et al. who reported the most common gastrointestinal symptoms as anorexia, diarrhea, vomiting, and abdominal pain, respectively (41). Also, patients with concomitant gastrointestinal findings along with other symptoms may experience a more severe form of the disease increasing the risk of mortality(37, 41). Therefore, clinical specialists should be vigilant about gastrointestinal symptoms such as diarrhea and anorexia, even in the absence of respiratory manifestations, as important symptoms of Covid-19 disease. Furthermore, monitoring the liver function should be considered in critically ill patients³⁸. Liver dysfunction and abnormal levels of liver enzymes may be due to either the viral invasion of hepatocytes, drug toxicities, or systemic inflammation (due to cytokine storm or pneumonia-associated hypoxia)(42). However, no virus was detected in the liver after the autopsy of patient died of Covid-19(43).

One of the symptoms reported in this study was abdominal pain. In line with this clinical finding, evidences of intestinal involvement such as pneumatosis intestinalis and portal venous gas were observed in abdominal imaging of patients with Covid-19. The most common indications for abdominal

imaging were abdominal pain and sepsis(44). From other clinical signs of the disease were olfactory and taste abnormalities. In a systematic review, nasal congestion was noted in 3.7% of the patients(45). In another study by Chen et al., only 4% of the patients had rhinorrhea(21). A few studies have investigated taste and olfactory impairments(45), and more studies are needed to address these abnormalities in Covid-19 patients.

About the limitation of the study was that all participants were interviewed by telephone, because of the urgency status of crisis and prevention the risk of infection for both the interviewee and interviewer. while the qualitative study should be performed by presence interview in the longer time for more trustworthiness of data. However, the rigor of the data was provided using alternative methods.

Conclusion

In this study showed that body aches, fatigue, and lethargy were the most common symptoms experienced by Covid-19 patients. The patients may also experience other symptoms such as palpitations, muscle aches, headache, fever, gastrointestinal symptoms, along with respiratory manifestations including sore throat, and nasal congestion, with or without dyspnea. Therefore, non-specific symptoms should also be considered as warning signs, and proper screening tests should be performed to recognize true positive cases from healthy people. This can help to confine the spread of the disease by isolating suspected people. Furthermore, true positive patients can be provided by more effective cares.

Abbreviations

COVID-19: Coronavirus disease- 2019; MERS-COV: Middle East Respiratory Syndrome coronavirus; SARS-COV: Severe acute respiratory syndrome coronavirus; WHO: World Health Organization

Declarations

Ethics approval and consent to participate

The Ethics Committee of Lorestan University of Medical Sciences approved the study protocol "IR.LUMS.REC.1399.018". To prevent the transmission of the disease, all data was collected

through telephone and informed consent was obtained from participants verbally for the safety of the interviewee and the interviewer. The anonymity and confidentiality of the information and audio files was totally observed. participants were free to withdraw at any time.

Consent for Publication

Not Applicable

Availability of data and material

The datasets generated during and/or analyzed during the current study are available from the corresponding author on request.

Competing Interests

We don't have any financial and non-financial competing interests

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Author's contributions

HH: Investigator; participated in study design, data collection, data analysis, accrual of study participants, manuscript writing and review. TT: Participated in data analysis, accrual of study participants, review of manuscript and critical revisions for important intellectual content. AV: Gathering of data, Participated in data analysis, accrual of study participants, review of manuscript. AA: Participated in data analysis, accrual of study participants and critical revisions for important intellectual content. All authors read and approved the final version of the manuscript.

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References

1. Gorbalenya AE. Severe acute respiratory syndrome-related coronavirus– The species and its viruses, a statement of the Coronavirus Study Group. BioRxiv. 2020.
2. Hui DS, I Azhar E, Madani TA, Ntoumi F, Kock R, Dar O, et al. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health—The latest 2019 novel coronavirus outbreak in Wuhan, China. International Journal of Infectious Diseases. 2020;91:264-6.
3. <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>. Accessed: 3 March 2020. WaC-oapCAf.
4. Organization WH. There is a current outbreak of coronavirus (COVID-19) disease. 2020.
5. CDC. Available from: https://www.cdc.gov/coronavirus/2019-ncov/prepare/transmission.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fabout%2Ftransmission.html. Accessed 13 June 2020.
6. Available From: <https://web.archive.org/web/20200130202038/https://www.cdc.gov/coronavirus/2019->

- [ncov/about/symptoms.html](https://www.cdc.gov/coronavirus/2019-ncov/about/symptoms.html). Accessed 13 June 2020. [Internet].
7. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *Jama*. 2020.
 8. CDC. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>. Accessed 13 June 2020.
 9. CDC. Available From: <https://www.nytimes.com/2020/04/14/health/coronavirus-health-care-workers.html>. Accessed 13 June 2020.
 10. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse education today*. 2004;24(2):105-12.
 11. Ys L, Guba EG. *Naturalistic inquiry*. Beverly Hills Sag. 1985.
 12. Organization WH. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: interim guidance, 13 March 2020. World Health Organization; 2020.
 13. Wang L, Gao Y-H, Lou L-L, Zhang G-J. The clinical dynamics of 18 cases of COVID-19 outside of Wuhan, China. *European Respiratory Journal*. 2020;55(4).
 14. Park SE. Epidemiology, virology, and clinical features of severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2; Coronavirus Disease-19). *Clinical and Experimental Pediatrics*. 2020;63(4):119.
 15. Wang Y, Wang Y, Chen Y, Qin Q. Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures. *Journal of medical virology*. 2020;92(6):568-76.
 16. Thomas P, Baldwin C, Bissett B, Boden I, Gosselink R, Granger CL, et al. Physiotherapy management for COVID-19 in the acute. *JAMA*. 2020;323(11):1039-40.
 17. Guan W, Ni Z, Hu Y, Liang W, Ou C, He J, et al. China medical treatment expert group for covid-19. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med*. 2020;382(18):1708-20.
 18. Organization WH. *Oxygen therapy for children: a manual for health workers*. 2016.
 19. Price S, Singh S, Ledot S, Bianchi P, Hind M, Tavazzi G, et al. Respiratory management in severe acute respiratory syndrome coronavirus 2 infection. *European Heart Journal: Acute Cardiovascular Care*. 2020:2048872620924613.
 20. Lazzeri M, Lanza A, Bellini R, Bellofiore A, Cecchetto S, Colombo A, et al. Respiratory physiotherapy in patients with COVID-19 infection in acute setting: a Position Paper of the Italian Association of Respiratory Physiotherapists (ARIR). *Monaldi Archives for Chest Disease*. 2020;90(1).
 21. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The Lancet*. 2020;395(10223):507-13.
 22. PIEHL MA, BROWN RS. Use of extreme position changes in acute respiratory failure. *Critical care medicine*. 1976;4(1):13-4.

23. Guérin C, Reignier J, Richard J-C, Beuret P, Gacouin A, Boulain T, et al. Prone positioning in severe acute respiratory distress syndrome. *New England Journal of Medicine*. 2013;368(23):2159-68.
24. Munshi L, Del Sorbo L, Adhikari NKJ, Hodgson CL, Wunsch H, Meade MO, et al. Prone Position for Acute Respiratory Distress Syndrome. A Systematic Review and Meta-Analysis. *Ann Am Thorac Soc*. 2017;14(Supplement_4):S280-s8.
25. Mora-Arteaga JA, Bernal-Ramírez OJ, Rodríguez SJ. The effects of prone position ventilation in patients with acute respiratory distress syndrome. A systematic review and metaanalysis. *Med Intensiva*. 2015;39(6):359-72.
26. Ludwig J, McWhinnie H. Antipyretic drugs in patients with fever and infection: literature review. *Br J Nurs*. 2019;28(10):610-8.
27. Jiang X, Coffee M, Bari A, Wang J, Jiang X, Shi J, et al. Towards an artificial intelligence framework for data-driven prediction of coronavirus clinical severity. *Computers, Materials & Continua*. 2020;63(1):537-51.
28. Li Lq, Huang T, Wang Yq, Wang Zp, Liang Y, Huang Tb, et al. COVID-19 patients' clinical characteristics, discharge rate, and fatality rate of meta-analysis. *Journal of medical virology*. 2020;92(6):577-83.
29. Lippi G, Wong J, Henry BM. Myalgia may not be associated with severity of coronavirus disease 2019 (COVID-19). *World Journal of Emergency Medicine*. 2020;11(3):193.
30. Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease (COVID-19) [online]. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>. Accessed March 20, 2020. .
31. MaassenVanDenBrink A, De Vries T, Danser AJ. Headache medication and the COVID-19 pandemic. *The Journal of Headache and Pain*. 2020;21(1):1-4.
32. Szperka CL, Ailani J, Barmherzig R, Klein BC, Minen MT, Halker Singh RB, et al. Migraine care in the era of COVID-19: Clinical pearls and plea to insurers. *Headache: The Journal of Head and Face Pain*. 2020;60(5):833-42.
33. Several types of skin rashes seen in COVID-19 patients. Available from; <https://www.minnpost.com/second-opinion/2020/05/several-types-of-skin-rashes-seen-in-covid-19-patients/>. Accessed 3 June 2020.
34. Recalcati S. Cutaneous manifestations in COVID-19: a first perspective. *Journal of the European Academy of Dermatology and Venereology*. 2020.
35. Sachdeva M, Gianotti R, Shah M, Lucia B, Tosi D, Veraldi S, et al. Cutaneous manifestations of COVID-19: Report of three cases and a review of literature. *Journal of dermatological science*. 2020:S0923-1811(20)30149-3.
36. Guan W-j, Ni Z-y, Hu Y, Liang W-h, Ou C-q, He J-x, et al. Clinical characteristics of coronavirus disease 2019 in China. *New England journal of medicine*. 2020;382(18):1708-20.
37. Lee IC, Huo TI, Huang YH. Gastrointestinal and Liver Manifestations in Patients with COVID-19. *J Chin Med Assoc*. 2020.

38. Holshue ML, DeBolt C, Lindquist S, Lofy KH, Wiesman J, Bruce H, et al. First case of 2019 novel coronavirus in the United States. *New England Journal of Medicine*. 2020.
39. Chen L, Lou J, Bai Y, Wang M. COVID-19 Disease With Positive Fecal and Negative Pharyngeal and Sputum Viral Tests. *Am J Gastroenterol*. 2020;115(5):790.
40. Xiao F, Tang M, Zheng X, Liu Y, Li X, Shan H. Evidence for Gastrointestinal Infection of SARS-CoV-2. *Gastroenterology*. 2020;158(6):1831-3.e3.
41. Pan L, Mu M, Yang P, Sun Y, Wang R, Yan J, et al. Clinical Characteristics of COVID-19 Patients With Digestive Symptoms in Hubei, China: A Descriptive, Cross-Sectional, Multicenter Study. *Am J Gastroenterol*. 2020;115(5):766-73.
42. Zhang C, Shi L, Wang FS. Liver injury in COVID-19: management and challenges. *Lancet Gastroenterol Hepatol*. 2020;5(5):428-30.
43. Xu Z, Shi L, Wang Y, Zhang J, Huang L, Zhang C, et al. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. *Lancet Respir Med*. 2020;8(4):420-2.
44. Bhayana R, Som A, Li MD, Carey DE, Anderson MA, Blake MA, et al. Abdominal imaging findings in COVID-19: preliminary observations. *Radiology*. 2020:201908.
45. Lovato A, de Filippis C. Clinical presentation of COVID-19: a systematic review focusing on upper airway symptoms. *Ear, Nose & Throat Journal*. 2020:0145561320920762.