Caring for COVID-19 patients at home is a global challenge. This study aimed to review recommendations put forward on home care for patients with suspected COVID-19 presenting with mild clinical features.

This is a review of the scientific literature covering COVID-19 and home care from the medical electronic databases such as PubMed, ProQuest, Google Scholar, and CINAHL.

The electronic databases were searched from the beginning of 2019 to the end of August 2020. The search terms included home care, COVID-19, coronavirus disease 2019, caring, and nursing care. Articles were included if they reported on aspects of home care for managing patients with mild clinical features of COVID-19. Articles were excluded if they reported on management within healthcare facilities, were about therapeutic management not possible in home care, and non-study type articles. Reference lists of retrieved journals were also reviewed.

There was a total of 1,970 identified articles; 950 studies were duplicates and were removed, after which 500 titles and abstracts remained for review. Review of the title and abstracts found 60 articles which met the inclusion criteria. After analysis of the full text articles, 12 articles were included in this study. The main areas covering home care can be summarized as home-based quarantine, management of contacts, early diagnosis at home, control of clinical features (i.e. fever and cough), appropriate nutrition and adequate fluid intake, establishment of a monitoring center, psychological support, and telemedicine.

The use of home quarantine for people with mild clinical features of COVID-19 is possible with support services and will assist in reducing the demand on hospitals.

Key words: COVID-19, home care, recommendations, mild symptoms, nursing

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INTRODUCTION

The coronavirus disease 2019 (COVID-19), also called acute respiratory distress syndrome (ARDS), is known as an infection caused by a novel coronavirus (nCoV) from the family coronaviridae (1). The virus was said to have spread first from the city of Wuhan in Hubei province, China, at a seafood market in late December 2019 (2). On 16 March 2020, the World Health Organization (WHO) reported that 167,511 people had been infected with COVID-19 across the world, of which 81,077 cases had been reported in China and 86,434 cases had been observed in other countries. Moreover, 6,606 people had died due to COVID-19 complications including respiratory failure (3).

It is of note that the nCoV is one of the pathogens that initially targets the human respiratory system and includes the clinical features such as coronary heart disease (CHD), fever, fatigue, and a dry cough as the most common manifestations (4). Some patients may also experience aches and pains, nasal congestion, runny nose, sore throat, as well as diarrhea, which are typically mild and develop slowly. However, some individuals become infected but they are asymptomatic at the time of testing. The majority of people, approximately 80%, recover with no need for hospitalization or in-hospital special care services (5). Older people and those with underlying medical conditions such as high blood pressure (HBP), CHD, or diabetes are also more likely to be severely affected by the virus, and about 2% of people infected with COVID-19 lose their lives (6). Over time, more people will contract the virus and require a range of high level healthcare services (7).

METHODS

Design

This is a review of the scientific literature covering COVID-19 and home care from the medical electronic databases: PubMed, ProQuest, Google Scholar, and CINAHL.

Procedures

The electronic databases were searched from the beginning of 2019 to the end of August 2020. The search terms included home care, COVID-19, coronavirus disease 2019, caring, and nursing care. Articles were included if they reported on aspects of home care for managing patients with mild clinical features of COVID-19 and introduce a framework for home care as a guideline for healthcare providers, families, and patients themselves, thereby improving the quality of care and preventing further spread of the virus.
downloaded and reviewed independently by two of the authors to determine eligibility for inclusion; disagreement was resolved by a third author.

**Inclusion criteria**

The inclusion criteria for the selected articles on home care for COVID-19 were: (1) studies containing recommendations on home care; (2) articles with statistical population of COVID-19 patients, and (3) studies published between 2019 and 2020.

**Exclusion criteria**

The articles relating to the medical and therapeutic fields, providing no information about home care and being merely focused on the prevalence and incidence according to their titles and abstracts were excluded from this review.

**Study selection**

After searching for the relevant articles in all the electronic databases, their references were correspondingly imported into the EndNote software and then the duplicates were deleted. Afterwards, the titles and the abstracts of the articles were skinned through and the ones that did not meet the inclusion criteria were eliminated. Ultimately, the full texts of the articles representing home care for patients infected with COVID-19 were selected.

**Table 1: The results and the recommendations given in the articles were subsequently listed in this table**

<table>
<thead>
<tr>
<th>Lead author</th>
<th>Place and year</th>
<th>Article type</th>
<th>Recommendation for home care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hui Xu</td>
<td>Wuhan, China 2020</td>
<td>Retrospective study</td>
<td>Monitoring the trends of symptoms is more important for identifying severe cases. Excessive laboratory data and physical examination are not necessary for the evaluation of patients with mild symptoms.</td>
</tr>
<tr>
<td>Lulgi Angelo Vaira</td>
<td>Italy 2020</td>
<td>Comparative study</td>
<td>Based on the results of this study on quarantined patients, the olfactory and gustatory evaluation by self-administered test can be considered a valid tool, fundamental for remotely obtaining qualitative and quantitative data on the extent of chemo sensitive disorders. These data could lead to early detection and isolation of paucisymptomatic COVID-19 cases.</td>
</tr>
<tr>
<td>Kunling Shen</td>
<td>China 2020</td>
<td>Review article</td>
<td>Based on their medical conditions, suspected patients should be isolated in a single room or self-isolated at home.</td>
</tr>
<tr>
<td>Tanu Singhal</td>
<td>India 2020</td>
<td>Review article</td>
<td>Mild illness should be managed at home with counseling about dangerous signs. The usual principles are maintaining hydration and nutrition and controlling fever and cough. A routine use of antibiotics and antivirals such as oseltamivir should be avoided in confirmed cases. Isolation of confirmed or suspected cases with mild illness at home is recommended. The ventilation at home should be good with sunlight to allow for destruction of virus. Patients should be asked to wear a simple surgical mask and practice cough hygiene. Caregivers should be asked to wear a surgical mask when in the same room as patient and perform hand hygiene every 15 – 20 min.</td>
</tr>
<tr>
<td>CJ Wang</td>
<td>Taiwan 2020</td>
<td>Viewpoint article</td>
<td>People with higher risk were quarantined at home and tracked through their mobile phone to ensure that they remained at home during the incubation period. Passengers displaying symptoms of fever and coughing were quarantined at home and assessed whether medical attention at a hospital was necessary.</td>
</tr>
<tr>
<td>Razai Mohammad</td>
<td>London (UK) 2020</td>
<td>Clinical Practice article</td>
<td>Self-isolation means staying indoors for 14 days from the date of contact with a confirmed case. Stay in a well-ventilated room, use a separate bathroom if available; if they have to share the bathroom clean it regularly, use separate towels, wear a clean mask when using a communal kitchen, use separate crockery and cutlery. Wash hands with soap and water before cooking and eating.</td>
</tr>
</tbody>
</table>
Negligible risk: Person who had a short (< 15 min) contact with a confirmed case in public settings.
Low risk: Person who had a close (within 1 m) but short (< 15 min) contact with a confirmed case, or a distant (> 1 m) but prolonged contact in public settings.
Moderate/high risk: Person who had prolonged (> 15 min) direct face-to-face contact within 1 m with a confirmed case, shared the same hospital room, lived in the same household.

A report on an innovative approach to home assessment that, in collaboration with public health, enables safe evaluation and specimen collection outside the healthcare setting, avoiding unnecessary exposures and resource utilization.

Community paramedicine or mobile-integrated health care programs allow patients to be treated in their homes, with higher-level medical support provided virtually. Houston’s Project ETHAN (Emergency Telehealth and Navigation) has used telemedical oversight by physicians to augment care offered in person by 911 responders, reducing the need for transportation to the ED. In the face of Covid-19, Avera Health is preparing to send mobile home health care units directly to patients and is coordinating home-based testing. For sicker patients at home, such programs can facilitate evaluation before hospital transfer, potentially allowing them to bypass the ED and be placed directly in a hospital bed, reducing exposure for health care workers and other patients.

The findings suggest that during COVID-19 confinement, the physical and mental health and well-being was optimal for the majority of our vulnerable population. However, those living alone reported greater negative psychological effects and sleeping problems. Measures adopted to address the negative experiences of confinement included keeping informed about the situation, accessing health and social services, having a support network that prevents risk of exposure to COVID-19 and guarantees food and medical supplies, a daily routine with maintained sleeping habits and leisure activities, staying physically and mentally active with cognitive stimulation exercises, and ensuring social connectedness using technology.

To address mental health crisis during this epidemic, it is high time to implement multi-faceted approach (i.e. forming multidisciplinary mental health team, providing psychiatric treatments and other mental health services, utilizing online counseling platforms, rehabilitation program, ensuring certain care for vulnerable groups, etc.)

In the absence of a cure, improving the health of an individual, especially pulmonary health, is important. Hydration, balanced nutrition, and regular sleep may help along with appropriate exercise. Once an individual is infected, fresh air and cleaning the environment are recommended. This is important for protecting those who interact with a patient in home or healthcare settings.

Data extraction

To collect the required information, the duplicate studies with similar home care recommendations were excluded and the final articles were tabulated. According to the recommendations illustrated in the table, home care recommendations for patients infected with COVID-19 were summarized in Table 1.

RESULTS

There was a total of 1,970 articles identified in the search; 950 studies were duplicates and therefore
removed, after which 500 titles and abstracts remained for review. Following review of the title and abstracts, 60 articles were deemed to meet the inclusion criteria and the full text was downloaded for further analysis. After analysis of the full text articles, 12 articles were included in this study (Figure 1).

The main areas covering home care can be summarized as home-based quarantine, management of contacts, early diagnosis at home, control of clinical features (i.e. fever and cough), appropriate nutrition and adequate daily fluid intake, establishment of a monitoring center, psychological support, and telemedicine. A summary of the recommendations for patients with mild COVID-19 who undertook home care are outlined in Table 1.

**Figure 1: Prisma flow diagram of selected home care articles**

**Home-based quarantine**

Home quarantine should be taken seriously in outbreaks of infectious diseases such as Covid-19 due to the high number of contacts as well as infected people who have no clinical symptoms. Still, individuals with suspected COVID-19 presenting with mild clinical features are supposed to stay in quarantine for at least 14 days at home and not leave home during this time. The patients also need to be kept in a separate room with enough ventilation and should be cared for by one person. If there are no separate rooms, one-meter distancing should be considered. During communication, the patients and caregivers also need to wear surgical style masks. Hand washing must done with soap and water following any contact with the infectious patient or objects in their immediate and surrounding area. Furthermore, washing and disinfecting clothes as well as surfaces touched by patients in places visited by them should be performed regularly. The minimum equipment required for home quarantine includes a mask, disposable gloves, disinfectant and thermometer.
Management of contacts

All people within the household, including the caregivers, who have had close contact with the person suspected of having COVID-19 are recommended to monitor their own health condition for at least 14 days from the last day of contact with the infected person. If any clinical features occur, they need to use surgical style face masks and adhere to the one-meter distancing rule. Furthermore, if the infected person in home care needs hospitalization then the ambulance service should be notified so the attending crew could be prepared to manage an infected patient in the confines of the ambulance. The hospital also needs to be notified so they are prepared to receive the infected person.

Early diagnosis at home

If a person at home is presenting with COVID-19-like clinical features, then a medical team or ambulance can be summoned to assess the person, thereby negating the need to visit a hospital and hence overload their emergency department. Monitoring the disease progress in patients suspected of COVID-19 presenting with mild clinical features requires appropriate home quarantine and the ability to identify a worsening condition which will need to be transferred to a hospital equipped to manage deteriorating patients. Performing rapid laboratory tests at home helps obtaining early diagnosis and prevents overcrowding in hospitals.

Control of the COVID-19 clinical features

Patients who are isolated at home with mild clinical features of COVID-19 should check their body temperature and respiratory quality daily, and in case of high fever and shortness of breath, they should inform the monitoring centers so that the necessary arrangements can be made to transfer them to a hospital equipped to manage deteriorating patients.

Appropriate nutrition and adequate daily fluid intake

Patients isolated at home with mild clinical features of COVID-19, where possible, should maintain a regular and adequate nutritional intake to support their immune system. In addition, sufficient fluid intake to assist in maintaining hydration is necessary, facilitating thus detoxification.

Establishment of a monitoring center

Means of communication need to be established between healthcare providers and caregivers for COVID-19 patients at home, so the healthcare providers can monitor the patient’s condition by telehealth. Accordingly, monitoring centers can be a communication channel between the patients and hospitals, so if necessary, the required arrangements for hospitalization can be made. Moreover, these centers can inform patients and their families about self-care, personal hygiene, and general home-based quarantine requirements.

Psychological support

Due to COVID-19 high mortality rate and ongoing morbidity issues, it affects people’s mental health in a variety of ways and to differing degrees. There is a need for professional help for all patients and families, especially those in home care who are away from mainstream healthcare facilities.

Telemedicine

With different software applications available for computers, tablets and phones, communication with patients in home care is now easier than ever before. Telemedicine allows healthcare providers to be in regular contact, by voice and/or video, with patients in home care thereby decreasing the pressure on hospitals and other healthcare facilities. The video consultation allows the healthcare provider to see the patient in their home for monitoring purposes, thereby avoiding an unnecessary contact with the infected person.

DISCUSSION

This study aimed to identify and summarize recommendations from the scientific literature on the management of people with mild clinical features of COVID-19 in their home environment. The recommendations from the literature identified the main areas related to home care: home-based quarantine, management of contacts, early diagnosis at home,
control of signs and symptoms (namely, fever and cough), appropriate nutrition and adequate daily fluid intake, establishment of a monitoring center, psychological support, and telemedicine.

For a person with mild clinical features of COVID-19, home-based quarantine is recommended, thereby decreasing the demand on scarce hospital-based resources. Home care requires the patient be isolated for 14 days from the time suspected infection occurs. A patient should be in in a separate room and reduce contacts with other people in the household. The WHO also recommends people with suspected COVID-19 stay in quarantine at home for at least 14 days after the first clinical features present (13). These findings were highlighted in the study by Jiang et al. (14). Thus, the emphasis is then placed on healthcare providers using telehealth to monitor people in home quarantine, with input from home care nurses, to determine if the person needs a higher level of care in a hospital.

Due to the relative ease in which COVID-19 is transmitted, another important issue is restricting contact with the infected person both within the household and from visitors. Other members of the household also need to restrict their contact with other people in public areas such as shops. Accordingly, educating individuals and families about reducing contact with the infected person as well as the household members to suspend or reduce their time outside the house is needed. The WHO also recommends that people, including healthcare providers and caregivers at home, who might have been in contact with a person suspected of having COVID-19, need to monitor their health condition and be prepared for isolation for at least 14 days from the time of the last contact with that person (8).

Early diagnosis is paramount in stopping the spread of COVID-19 and it can be made in testing centers or in the infected environment. According to Bryson-Cahn et al. (15), medical teams could perform examinations and evaluations at home and even undertake remote patient monitoring using telemedicine. This decreases the contact of a person with suspected COVID-19, thereby slowing the spread of the disease. A study by Xu et al. (16) identified that no advanced tests were needed for patients with suspected COVID-19 presenting with mild clinical features, but isolation and constant monitoring of the person’s condition would be sufficient early stage management.

Controlling and monitoring a person’s COVID-19 clinical features such as fever and shortness of breath in the home setting is achievable and preferable so hospital demand is not pushed past breaking point. This is supported in guidelines proposed by Glauser (17) in which it was recommended that patients presenting with mild COVID-19 clinical features could be treated at home, their vital signs monitored remotely and, if their condition deteriorates, transferred to hospital which is prepared to receive them, by ambulance, in a coordinated manner. In addition, appropriate nutritional support and adequate hydration of the person could be provided during home-based quarantine, contributing to the body’s resistance against the disease complications (18). This could be better organized in the home environment where person’s desires could be better met than in a busy hospital ward.

Establishment of a monitoring center to check the health conditions of infected people and their families can also lead to better control of the disease. The WHO has further recommended the establishment of a communication center to monitor the conditions of infected persons and their families (8). A study in China identified the use of the Internet to support quarantined people and their families as being an effective method of remote monitoring (19). The use of various forms of telemedicine could link doctors and nurses and assist them to remotely review and direct the treatment provided in home care (20). The study by Stoecklin et al. (21) also supported the remote monitoring of individuals suspected of having COVID-19. Moreover, psychological support for the infected person and their families is one of the significant recommendations presented in a study by Duan et al (22). Therefore, having a monitoring center where doctors, nurses, psychologists, and other healthcare providers are present is warranted. These healthcare providers can then easily communicate with a variety of people via telemedicine, and consequently discuss their problems, which will be beneficial to the overall management of mildly infected people.

This study is potentially limited by the lack of evidence for managing patients with COVID-19 at home due to the difficulties of conducting research over this period and the variations in managing the disease internationally. Therefore, the results should be interpreted with caution as they may not be relevant to home care situations in all countries.
CONCLUSION

The use of home quarantine for people with mild clinical features of COVID-19 is possible with the support services and will assist in reducing the demand on hospitals. This study has identified that patients with suspected COVID-19 disease who have mild clinical features should quarantine themselves at home, limit their contact with others, observe personal hygiene, and receive adequate nutrition and fluids.

The healthcare providers could use telemedicine to follow up the caring needs of the home-isolated people on a regular basis, monitor their health statues and progress and support them.

References


Pregled preporuka za kućno lečenje pacijenata sa sumnjom na KOVID-19 koji se manifestuje blagim simptomima

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SAŽETAK

Nega pacijenata kod kuće sa kovidom-19 predstavlja globalni izazov. Cilj ove studije bio je pregled preporuka o kućnoj nezi pacijenata sa sumnjom na kovid-19 koji se manifestuje blagim simptomima.

Ovo je pregled naučne literature o kovidu-19 i kućnoj nezi pretraživanjem sledećih medicinskih elektronskih baza podataka: PubMed, ProQuest, Google Scholar i CINAHL.


Ukupno je identifikovano 1970 radova. Devetsto pedeset studija su bile duplikati, zbog čega su uklonjene, nakon čega je za pregled ostalo 500 naslova i abstrakata. Pregledom naslova i apstrakata pronađeno je 60 radova koji su ispunjavali kriterijume studije. Nakon analize celih radova, 12 radova je uključeno u studiju. Glavni termini koji su pokrivali kućnu negu se mogu sumirati kao: kućni karantin, lečenje kontakata obolelih, rana dijagnoza kod kuće, kontrola kliničkih simptoma (na primer, temperatura i kašalj), adekvatna ishrana i unos tečnosti, uspostavljanje centara za praćenje bolesti, psihološka podrška i telemedicina.

Primena kućnog karantina za osobe sa blagom kliničkom slikom kovida-19 moguća je uz dodatnu podršku, što će smanjiti opterećenje bolnica.

Ključne reči: kovid-19, kućna nega, preporuke, blagi simptomi, bolnička nega