Received: 12 May 2021 | Revised: 6 December 2021 | Accepted: 3 January 2022

DOI: 10.1002/hpm.3420

SHORT COMMUNICATION

WILEY

Health services for non-communicable diseases have been severely disrupted by COVID-19 based on an analysis of MicroBlog rescue data in Wuhan, China

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Funding information
Natural Science Foundation of China, Grant/Award Number: 71704048

Abstract

Diagnostic and treatment services for non-communicable diseases (NCDs) face significant challenges in the context of the COVID-19 pandemic. We used the Python programing language to extract and classify messages for help posted on the social networking platform microblog by NCD patients in the early stage of the COVID-19 epidemic in Wuhan, China. We found of all NCD patients, the most frequently recorded conditions were basic chronic diseases (42.50%), acute critical diseases (35.53%), malignant tumours (15.10%), and patients requiring haemodialysis (6.79%). Regarding COVID-19, 54.70% of patients reported suspected symptoms of infection, 32.01% were diagnosed with comorbidities, and 13.29% were non-COVID-19 patients. According to the analysis of the needs of the patients, 82.46% of the patients reported "No beds were available in the hospital", 25.31% of patients needed nucleic acid tests. Our results confirmed it is difficult to meet the regular needs in the diagnosis and treatment of patients with NCDs. Effective prevention and management of NCDs in public health emergencies has become an urgent issue to be addressed. During the COVID-19 epidemic, it is necessary to pay particular attention to the prevention and control of NCD patients, especially those with chronic disease. Governments and medical and health institutions at all levels should improve

treatment mechanisms during major epidemics and ensure the uninterrupted treatment of patients with NCDs.

KEYWORDS
chronic disease, COVID-19, diagnosis and treatment needs, patients with non-communicable diseases

1 | BACKGROUND

The coronavirus disease (COVID-19) pandemic has had a profound impact on all aspects of society, particularly on health services.[1,2] In response to the COVID-19 pandemic, emergency health facilities in many countries are overwhelmed, and routine medical services have been impacted.[3] Medical resources cannot cover COVID-19-related diseases and all other routine medical care. World Health Organization surveys show that since the start of the COVID-19 pandemic, prevention and treatment services for non-communicable diseases (NCDs) have been severely disrupted, with hypertension treatment services, treatment of diabetes and diabetes-related complications, cancer treatment, and cardiovascular treatment partially or completely interrupted in many countries.[4,5] In early 2020, due to the overload of patients and cross-infection, most treatment hospitals in Wuhan closed all departments and outpatients (including haemodialysis units). As a result, patients with non-communicable diseases were not admitted to hospital, surgeries were postponed, and radiotherapy, chemotherapy, and haemodialysis could not be carried out. Many patients with NCDs were either forced to be discharged or did not receive treatment.[6] As patients with non-communicable diseases face medical difficulties, they posted requests for help on social networking platforms. This situation is of serious concern because people with NCDs have a higher risk of developing severe illness and death associated with COVID-19.[7-10] According to the fatality rate data of COVID-19 released by the Chinese Center for Disease Control and Prevention, the mortality rate of patients with chronic basic diseases is particularly high, at 2.3%. Therefore, ensuring basic health services for people with NCDs is essential.

Most current studies have focussed on the analysis of the clinical treatment of COVID-19 patients in the outbreak phase. However, studies on the medical needs of NCD patients during the pandemic are still rare. This study, based on help-seeking posts on MicroBlog (a social networking platform), aimed to investigate and analyse the characteristics and medical needs of NCD patients. NCD patients are more likely to suffer severe symptoms or die from COVID-19. It is important to pay attention to the needs of NCD patients and to develop contingency plans for the prevention and treatment of NCDs.

2 | METHODS

The subjects of the study were patients in Wuhan with NCDs who could not get medical resources and were assisted on the microblog social networking platform. NCDs include COVID-19 comorbidities or non-COVID-19 patients with critical severe disease, malignant tumour, basic chronic disease, or on haemodialysis.

MicroBlog is a broadcast social media that allows users to share real-time information openly. It is the most influential social media platform in China and is the main platform used by patients with specific needs to request help during the COVID-19 pandemic. In this study, App_key, App_secret and Redirect_uri were obtained after obtaining the Open Authorisation (OAuth2.0) of microblog to ensure that the complete content data of microblog could be obtained. Using automated Python editing scripts to extract user report information from posts on MicroBlog, the script was set to continuously collect COVID-19-related data from 20 January to 13 February 2020 using keyword filtering. The keywords included “coronavirus”, “novel pneumonia”, “Wuhan pneumonia”, help topics and disease types.

The information inclusion criteria were: (1) the geographical source of help-seeking information was Wuhan City; (2) the help content contained any keywords in the three groups of epidemic background, help topic, and disease type; and (3) specific disease, help demand, and COVID-19infection status. The exclusion criteria were: (1) a lack of clear correlation between the request for help and the COVID-19 situation; (2) COVID-19 was the only cause for seeking help; and (3) the information about the help request was incomplete.

With the help of Python language, the Application Programing Interface (API) of MicroBlog open platform was used to obtain the data by combining the release time, user region and keyword data. The microblog content and associated information were imported into an Excel database (Microsoft, Redmond, WA, USA) to further screen the MicroBlog content to ensure that it met the inclusion criteria to obtain the target results. Finally, age, COVID-19, fever, comorbidities, and the request for help were extracted from the text in a structured manner.

3 | RESULTS

A total of 1106 patients with NCDs were included. The average age of patients with NCDs was 56.65 ± 11.79 years, and males accounted for 47.20%. The most frequently recorded conditions were basic chronic diseases (42.50%), acute critical diseases (35.53%), malignant tumours (15.10%), and patients requiring haemodialysis (6.79%). Regarding COVID-19, 54.70% of patients reported suspected symptoms of infection, 32.01% were diagnosed with comorbidities, and 13.29% were non-COVID-19 patients. According to the analysis of the needs of the patients, 82.46% of the patients reported "No beds were available in the hospital" including details such as the inability to accept patients in special periods, the inability to perform surgery, and the lack of beds. The need for nucleic acid tests was reported in 25.31% of patients (Table 1).

The diagnosis rate of basic chronic diseases among the respondents (34.47%) was much higher than that of patients with other NCDs. Malignant tumour patients had the lowest diagnosis rate (23.95%). Patients with basic chronic disease, acute critical disease, malignant tumour, and those on haemodialysis reported that the proportion of patients seeking help for suspected symptoms was 63.83%, 54.45%, 29.94%, and 46.05%, respectively (Figure 1).

TABLE 1 Characteristics of help-seeking patients

Patient characteristics	Number (*n*)	Proportion (%)
Sex		
Male	522	47.20
Female	584	52.80
Disease types		
Basic chronic disease	470	42.50
Critical illness	393	35.53
Malignant tumour	167	15.10
Haemodialysis	76	6.87
COVID-19 infection		
Suspected symptoms	605	54.70
Confirmed	354	32.01
Uninfected	147	13.29
Demand for help		
No beds were available in the hospital	912	82.46
Nucleic acid tests were required	280	25.31

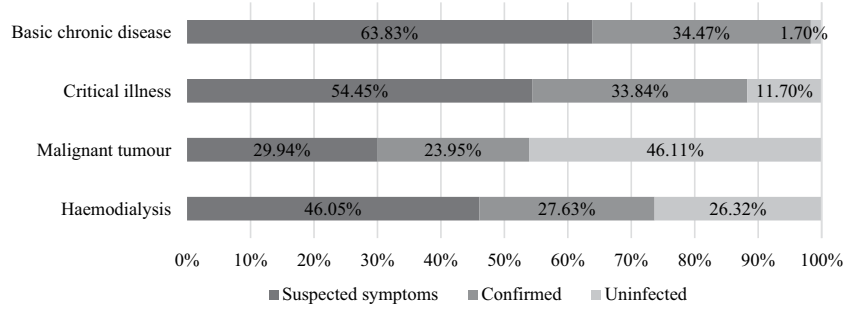

FIGURE 1 COVID-19 infection in patients with non-communicable diseases

4 | DISCUSSION

This study explored the difficulty in receiving medical treatment for patients with NCDs caused by the COVID-19 pandemic in Wuhan, China, and analysed the features and needs of patients with NCDs. Among them, 82.46% needed hospital beds, reflecting to some extent the shortage of basic medical resources during the epidemic. In the early stage of the COVID-19 epidemic, local medical resources were mainly focussed on COVID-19 emergency care and were diverted from NCD medical resources, ignoring the daily diagnosis and treatment needs for these patients. Some studies regard the number of COVID-19 patients as an indirect indicator of the increase in medical services, whereby the increase in the number of COVID-19 patients may lead to a shortage of medical resources, thus affecting the daily diagnosis and treatment of patients in the region. Moreover, research data show that COVID-19 seriously interferes with the prevention and treatment of chronic diseases, and the routine medical needs of patients with chronic diseases are not fully met. Chronic patients cannot go to the hospital for normal follow-up visits and medication collection, leading to more severe drug dependence.[11,12] Therefore, in order to ensure normal medical treatment of non-COVID-19 patients during the epidemic, Wuhan sorted out medical resources and published a list of hospitals for medical treatment of non-COVID-19 patients on 18 February 2020 and listed corresponding hospitals for critically ill patients, patients in need of haemodialysis, patients with malignant tumours, and patients with chronic diseases. At the same time, to guarantee the medical demand of NCDs, resorted to telemedicine to avoid problems such as cross-infection during the pandemic.

5 | CONCLUSION

Taken together, these findings suggest that health systems focussed on treating COVID-19 patients in the early stages of COVID-19 outbreaks, thereby reducing the priority given to patients with NCDs, whose needs for care and control can be challenging. Governments and medical and health institutions at various levels should develop contingency plans and emergency responses according to different patients' needs in the build-up to a crisis before the secondary risk anticipation, recognition, and intervention; ensure the timeliness and security of emergency resource allocation; actively refer patients to telemedicine when possible; and increase the efficiency of major secondary risk prevention and control of emergent public health issues.

ACKNOWLEDGEMENTS

We thank our colleagues at the center for their helpful suggestions. Natural Science Foundation of China, Grant/Award (Number: 71704048).

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

ETHICS STATEMENT

Ethics approval was not required for this study. All information collected from this study was from the public domain, and the study did not involve any interaction with users. Indefinable user information was removed from the study results.

AUTHOR CONTRIBUTIONS

Xiaoyan Zhang contributed to the conception of the study and helped perform the data analyses with constructive discussions. Fenghua Sun and Qianyan Wang contributed significantly to the analysis and manuscript preparation, while performing the data analyses and writing the manuscript.

DATA AVAILABILITY STATEMENT

Research data are not shared.

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How to cite this article: Zhang X, Sun F, Wang Q. Health services for non-communicable diseases have been severely disrupted by COVID-19 based on an analysis of MicroBlog rescue data in Wuhan, China. *Int J Health Plann Mgmt*. 2022;37(3):1832-1837. https://doi.org/10.1002/hpm.3420