Preplanned Studies

# Medical Consultations Option and Influencing Factors for SARS-CoV-2 Infected Individuals — Beijing Municipality, China, December 2022

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**Summary**

**What is already known about this topic?**

In December 2022, China revised its epidemic prevention and control strategy, leading to an increase in coronavirus disease 2019 (COVID-19) cases and a peak in medical consultations. Government departments implemented relevant policies to coordinate and allocate medical resources throughout China. However, there is a scarcity of research on the status of medical consultations and the factors influencing them.

**What is added by this report?**

In the study population, over 80% of individuals with COVID-19 chose not to pursue medical care, while more than 70% of patients who sought treatment opted for primary healthcare facilities. The decision to consult medical professionals was influenced by various factors, such as age, education level, employment status, urban-rural distribution, and the presence of symptoms following COVID-19 infection.

**What are the implications for public health practice?**

The implementation of tiered diagnostic and treatment approaches, aligned with guidelines issued by governing bodies, is essential for mitigating the strain on medical resources. Primary healthcare institutions serve as "gatekeepers" for public health and should be further expanded in the future.

In December 2022, the Joint Prevention and Control Mechanism of the State Council issued the *Notice on Further Optimizing the Implementation of COVID-19 Prevention and Control Measures*. The notice emphasized that the virulence of the Omicron strain had decreased, with clinical observations indicating that most infections resulted in asymptomatic or mild symptoms (*1*). Concurrently, the government devised targeted prevention, control, and treatment strategies for specific populations (*2*). Following the adjustment of these policies, the number of infected individuals experienced fluctuations, reaching a peak shortly after the new measures were implemented. As of December 23, 2022, fever clinics across the nation recorded a cumulative total of 2.867 million consultations and treatments (*3*). Consequently, the effective allocation of medical resources and the provision of high-quality, tiered diagnosis and treatment for coronavirus disease 2019 (COVID-19) patients have emerged as significant public health concerns warranting attention from relevant departments.

Supported by the Beijing Municipal Health Commission, a cross-sectional questionnaire survey was conducted at 354 community health service centers across 16 districts in Beijing. A random sampling method was employed, which was based on the population proportion within each district. From December 26 to December 31, 2022, a total of 33,968 infected individuals participated in the study. Eligible participants met the following inclusion criteria: 1) confirmed COVID-19 diagnosis through nucleic acid or antigen tests, or reported symptoms of COVID-19; 2) aged 18 years or older; and 3) willingness to participate in the survey and provide informed consent. Those who refused participation were not included in the study.

The study obtained data on fundamental demographic characteristics, post-infection symptoms, comorbidities, treatment modalities, and healthcare pathway selection. To delineate the treatment landscape, the 33,968 patients were classified into 2 cohorts: those who underwent treatment and those who did not. Treatment types were further segregated into 3 categories: primary care facilities, hospitals, and a combination of both. R software (version 4.2.2, R Foundation for Statistical Computing, Vienna, Austria) was employed for data analysis and

visualization. Count data are expressed as composition ratios or percentages. Statistical analyses were conducted to investigate the factors influencing consultation rates and treatment preferences. Moreover, variables exhibiting statistical significance in univariate analysis were incorporated into a multivariate logistic regression model to compute odds ratios (*OR*) and 95% confidence intervals (*CI*). $P<0.05$ was considered the threshold for statistical significance.

In this study, it was found that out of 33,968 COVID-19 patients, 81.7% ($n$=27,741) did not seek medical treatment. Among the 6,227 patients who did receive treatment, 74.0% ($n$=4,609) chose primary medical institutions, 19.7% ($n$=1,228) opted for hospitals, and 6.3% ($n$=390) utilized both primary healthcare facilities and hospitals for their treatment.

The results of the statistical analysis demonstrated that the mean time required to visit primary medical institutions was the lowest at 1.67±0.04 hours, while the mean time to visit hospitals was the highest at 3.75±0.11 hours. The overall mean time to visit both hospitals and primary healthcare facilities was 3.04±0.17 hours.

Univariate analysis demonstrated that the consultation rate of elderly patients (24.2%, 2,134) exceeded that of other age groups, which suggested a preference for treatment among older patients. Additionally, patients with higher education were more inclined (83.9%, 16,867) to select home quarantine following infection. A greater outpatient rate was observed among rural patients (20.4%, 1,845) compared to their urban counterparts, while individuals with co-infections exhibited an outpatient rate of 23.2% (3,777) (Table 1).

A multivariate binary logistic regression analysis was conducted to identify the factors influencing patients' inclination for treatment. Seeking medical treatment was the dependent variable, and gender, age, education level, occupation, residence, and COVID-19-related symptoms were independent variables (Supplementary Table S1, available in http://weekly.chinacdc.cn). After adjusting for other confounding factors, the results of multivariate logistic regression analysis indicated that individuals who were infected with COVID-19 tended to seek medical care at healthcare facilities if they were elderly (*OR*=1.538, 95% *CI:* 1.428–1.657), had a low level of education (*OR*=0.697, 95% *CI:* 0.605–0.805), worked in the service industry (*OR*=0.894, 95% *CI:* 0.803–0.996), or resided in rural areas (*OR*=1.159, 95% *CI:* 1.085–1.237). Fever (*OR*=0.913, 95% *CI:* 0.844–0.989), headache (*OR*=0.893, 95% *CI:* 0.835–0.954), fatigue (*OR*=0.884, 95% *CI:* 0.825-0.948), loss of taste (*OR*=0.929, 95% *CI:* 0.869–0.993), decreased appetite (*OR*=0.995, 95% *CI:* 0.929–1.065), diarrhea (*OR*=0.998, 95% *CI:* 0.922–1.081), and constipation (*OR*=0.919, 95% *CI:* 0.811–1.038) were inversely associated with seeking medical care. Coughing (*OR*=1.379, 95% *CI:* 1.267–1.502), dryness of the pharynx or sore throat (*OR*=1.218, 95% *CI:* 1.138–1.304), runny or stuffy nose (*OR*=1.012, 95% *CI:* 0.950–1.079), muscle pain (*OR*=1.006, 95% *CI:* 0.939–1.078) and joint pain (*OR*=1.033, 95% *CI:* 0.967–1.104), conjunctivitis (*OR*=1.125, 95% *CI:* 0.973–1.297), chest tightness (*OR*=1.602, 95% *CI:* 1.480–1.734), nausea or vomiting (*OR*=1.073, 95% *CI:* 0.990–1.162), difficulty breathing (*OR*=1.347, 95% *CI:* 1.190–1.522), and tachypnea (*OR*=1.384, 95% *CI:* 1.238–1.546) were positively associated with seeking medical care (Table 2).

Patients experiencing symptoms such as dyspnea, elevated respiratory rate, chest tightness, conjunctivitis, and nausea or vomiting were more likely to seek medical consultation. Moreover, individuals with conditions including stroke, cerebrovascular diseases, bronchitis, emphysema, asthma, pneumonia, hepatitis, chronic kidney disease, and cardiac diseases demonstrated a high consultation rate (Supplementary Table S2, available in http://weekly.chinacdc.cn).

Individuals with pre-existing comorbidities displayed the following number of symptoms after infection: hepatitis (7.9±3.7), gastritis/gastric ulcer (7.9±3.3), immunodeficiency diseases (7.8±3.8), bronchitis/emphysema/asthma/pneumonia (7.7±3.5), and tuberculosis (7.7±3.4) (Supplementary Table S3, available in http://weekly.chinacdc.cn). The Kolmogorov-Smirnov (K-S) normality test revealed that the number of symptoms following COVID-19 infection did not adhere to a normal distribution ($P<0.001$), with a median value of 2 symptoms (Figure 1).

For the analysis, the number of pre-existing conditions was categorized using a threshold of 2 symptoms (<2 and ≥2). The results indicated that patients with <2 underlying conditions exhibited 6.2±3.3 post-infection symptoms, whereas patients with ≥2 underlying conditions displayed 6.6±3.3 symptoms. Additionally, the number of symptoms among patients who visited primary care institutions, hospitals, or both was 6.7±3.4, 7.5±3.6, and 7.8±3.7, respectively (Figure 2). The heatmap for visiting institutions suggested that the median number of

TABLE 1. Medical counselling status, and medical care route selection of 33,968 patients with different demographic characteristics infected with COVID-19 — Beijing, China, December 2022.

| Variable | Attendances, *n* (%) | Non-attendences, *n* (%) | $\chi^2$ | *P* | Hospitals, *n* (%) | Primary care facilities, *n* (%) | Hospitals and primary care facilities, *n* (%) | $\chi^2$ | *P* |
|---|---|---|---|---|---|---|---|---|---|
| Gender | | | | | | | | | |
| Male | 2,018 (18.4) | 8,976 (81.6) | 0.004 | 0.95 | 408 (20.2) | 1,475 (73.1) | 135 (6.7) | 1.59 | 0.45 |
| Female | 4,209 (18.3) | 18,765 (81.7) | | | 820 (19.5) | 3,134 (74.5) | 255 (6.1) | | |
| Age (years) | | | | | | | | | |
| 18–59 | 4,093 (16.3) | 21,058 (83.7) | 273.60 | <0.001 | 794 (19.4) | 3,062 (74.8) | 237 (5.8) | 5.90 | 0.05 |
| >60 | 2,134 (24.2) | 6,683 (75.8) | | | 434 (20.3) | 1,547 (72.5) | 153 (7.2) | | |
| Education level | | | | | | | | | |
| Elementary school/below | 377 (26.7) | 1,035 (73.3) | | | 65 (17.2) | 285 (75.6) | 27 (7.2) | | |
| Junior high school/ high school/junior | 2,621 (21.0) | 9,839 (79.0) | 195.67 | <0.001 | 439 (16.8) | 2,036 (77.7) | 146 (5.6) | 37.66 | <0.001 |
| College/technical school Undergraduate/ postgraduate or above | 3,229 (16.1) | 16,867 (83.9) | | | 724 (22.4) | 2,288 (70.9) | 217 (6.7) | | |
| Employment status | | | | | | | | | |
| Service trade staff | 503 (18.4) | 2,231 (81.6) | | | 109 (21.7) | 369 (73.4) | 25 (5.0) | | |
| Medical industry staff | 1,720 (17.8) | 7,962 (82.2) | 2.96 | 0.23 | 314 (18.3) | 1,314 (76.4) | 92 (5.4) | 10.57 | 0.03 |
| Others | 4,004 (18.6) | 17,548 (81.4) | | | 805 (20.1) | 2,926 (73.1) | 273 (6.8) | | |
| Area type | | | | | | | | | |
| Urban | 4,382 (17.6) | 20,521 (82.4) | 33.55 | <0.001 | 983 (22.4) | 3,087 (70.5) | 312 (7.1) | 97.96 | <0.001 |
| Rural | 1,845 (20.4) | 7,220 (79.7) | | | 245 (13.3) | 1,522 (82.5) | 78 (4.2) | | |
| History of physical illness | | | | | | | | | |
| Chronic disease | 2,450 (13.8) | 15,254 (86.2) | 498.00 | <0.001 | 730 (19.3) | 2,784 (73.7) | 263 (7.0) | 8.39 | 0.02 |
| Healthy | 3,777 (23.2) | 12,487 (76.8) | | | 498 (20.3) | 1,825 (74.5) | 127 (5.2) | | |

symptoms was 8, 9, and 10 for primary medical institutions, hospitals, and both, respectively (Figure 3).

## DISCUSSION

In December 2022, China updated its epidemic prevention and control policy in response to the rising number of COVID-19 infections and medical visits. Government departments collaborated to allocate medical resources and establish a hierarchical diagnosis and treatment strategy. Considering this context, a cross-sectional questionnaire survey was conducted among 354 community health centers in 16 districts of Beijing between December 26 and December 31, 2022. The findings revealed that more than 80% of patients did not seek medical attention, while over 70% of patients opted for primary healthcare facilities for treatment. Higher consultation rates were observed among elderly individuals, those with lower education levels, residents of rural areas, and individuals with comorbidities. Additionally, patients with varying pre-existing comorbidities or COVID-19 symptoms demonstrated different consultation rates and preferences.

The implementation of graded diagnosis and treatment strategies, in conjunction with pre-issued guidelines from government departments (*4*), provides rehabilitation guidance for individuals with COVID-19 in home isolation and directs those with mild cases to primary medical institutions. This approach aids in maintaining a stable and orderly system for diagnosis and treatment, while minimizing the waste of medical resources. The effectiveness of this policy was confirmed in the study, with over 80% of patients opting for self-medication and home-based treatment. This preference can be attributed to the mild clinical manifestations of COVID-19 (*1*) and patient conditions favorable for home-based recovery.

Elderly individuals with COVID-19, due to their underlying health conditions and weakened immune systems, are more likely to seek medical consultation

TABLE 2. Binomial logistic regression analysis of medical counseling status influenced by demographics and symptoms among coronavirus disease 2019 (COVID-19) patients — Beijing, China, December 2022.

| Variable | *cOR* | *P* | 95% *CI* | *aOR* | *P* | 95% *CI* | *AOR* | *P* | 95% *CI* |
|---|---|---|---|---|---|---|---|---|---|
| Gender: (ref. Male) | | | | | | | | | |
| Female | 0.998 | 0.938 | 0.941−1.058 | 1.028 | 0.373 | 0.968−1.091 | 0.973 | 0.389 | 0.915−1.035 |
| Age: (ref. 18–59 years) | | | | | | | | | |
| ≥60 years | 1.643 | <0.001 | 1.549−1.743 | 1.584 | <0.001 | 1.473−1.704 | 1.538 | <0.001 | 1.428−1.657 |
| Education level: (ref. primary or below) | | | | | | | | | |
| Junior high school/high school/junior college/technical school | 0.731 | <0.001 | 0.646−0.830 | 0.857 | 0.019 | 0.754−0.976 | 0.897 | 0.103 | 0.788−1.023 |
| Undergraduate/postgraduate or above | 0.526 | <0.001 | 0.465−0.595 | 0.693 | <0.001 | 0.603−0.798 | 0.697 | <0.001 | 0.605−0.805 |
| Employment status: (ref. service trade staff) | | | | | | | | | |
| Medical industry staff | 0.958 | 0.446 | 0.859−1.070 | 1.124 | 0.050 | 1.001−1.264 | 1.065 | 0.300 | 0.946−1.199 |
| Others | 1.012 | 0.819 | 0.914−1.122 | 0.880 | 0.019 | 0.792−0.980 | 0.894 | 0.040 | 0.803−0.996 |
| Residence area: (ref. urban) | | | | | | | | | |
| Rural | 1.197 | <0.001 | 1.126−1.272 | 1.128 | <0.001 | 1.057−1.203 | 1.159 | <0.001 | 1.085−1.237 |
| Fever: (ref. no) | | | | | | | | | |
| Yes | 0.904 | 0.007 | 0.839−0.973 | 0.842 | <0.001 | 0.779−0.910 | 0.913 | 0.025 | 0.844−0.989 |
| Cough: (ref. no) | | | | | | | | | |
| Yes | 1.477 | <0.001 | 1.365−1.598 | 1.400 | <0.001 | 1.287−1.525 | 1.379 | <0.001 | 1.267−1.502 |
| Dry throat/sore throat: (ref. no) | | | | | | | | | |
| Yes | 1.305 | <0.001 | 1.227−1.388 | 1.214 | <0.001 | 1.135−1.300 | 1.218 | <0.001 | 1.138−1.304 |
| Stuffy/runny nose: (ref. no) | | | | | | | | | |
| Yes | 1.097 | 0.001 | 1.038−1.160 | 0.967 | 0.293 | 0.908−1.030 | 1.012 | 0.706 | 0.950−1.079 |
| Painful muscles: (ref. no) | | | | | | | | | |
| Yes | 1.048 | 0.117 | 0.988−1.111 | 0.991 | 0.801 | 0.925−1.062 | 1.006 | 0.867 | 0.939−1.078 |
| Arthralgia: (ref. no) | | | | | | | | | |
| Yes | 1.114 | <0.001 | 1.054−1.178 | 1.048 | 0.163 | 0.981−1.119 | 1.033 | 0.332 | 0.967−1.104 |
| Headaches: (ref. no) | | | | | | | | | |
| Yes | 0.968 | 0.244 | 0.916−1.023 | 0.841 | <0.001 | 0.788−0.898 | 0.893 | <0.001 | 0.835−0.954 |
| Conjunctivitis: (ref. no) | | | | | | | | | |
| Yes | 1.400 | <0.001 | 1.223−1.602 | 1.105 | 0.168 | 0.957−1.273 | 1.125 | 0.107 | 0.973−1.297 |
| Physical weakness: (ref. no) | | | | | | | | | |
| Yes | 0.998 | 0.954 | 0.943−1.057 | 0.870 | <0.001 | 0.812−0.933 | 0.884 | <0.001 | 0.825−0.948 |
| Chest tightness: (ref. no) | | | | | | | | | |
| Yes | 1.734 | <0.001 | 1.624−1.851 | 1.599 | <0.001 | 1.478−1.730 | 1.602 | <0.001 | 1.480−1.734 |
| Decreased or absent sense of taste and smell: (ref. no) | | | | | | | | | |
| Yes | 1.008 | 0.780 | 0.952−1.067 | 0.891 | <0.001 | 0.834−0.951 | 0.929 | 0.031 | 0.869−0.993 |
| Nausea/vomiting: (ref. no) | | | | | | | | | |
| Yes | 1.209 | <0.001 | 1.129−1.296 | 1.067 | 0.110 | 0.985−1.155 | 1.073 | 0.085 | 0.990−1.162 |
| Poor appetite: (ref. no) | | | | | | | | | |
| Yes | 1.097 | 0.001 | 1.036−1.160 | 1.014 | 0.679 | 0.948−1.085 | 0.995 | 0.875 | 0.929−1.065 |
| Diarrhea: (ref. no) | | | | | | | | | |
| Yes | 1.094 | 0.014 | 1.019−1.175 | 0.954 | 0.242 | 0.881−1.032 | 0.998 | 0.968 | 0.922−1.081 |
| Constipation: (ref. no) | | | | | | | | | |
| Yes | 1.089 | 0.151 | 0.969−1.224 | 0.904 | 0.108 | 0.799−1.021 | 0.919 | 0.179 | 0.811−1.038 |
| Breathing difficulties: (ref. no) | | | | | | | | | |
| Yes | 1.989 | <0.001 | 1.787–2.214 | 1.397 | <0.001 | 1.236−1.577 | 1.347 | <0.001 | 1.190−1.522 |
| Increased respiratory rate: (ref. no) | | | | | | | | | |
| Yes | 1.798 | <0.001 | 1.632−1.980 | 1.369 | <0.001 | 1.226−1.528 | 1.384 | <0.001 | 1.238−1.546 |

Note: *cOR*, crude odds ratio, which was a single factor logistic regression coefficient; *aOR*, odds ratio, which was a logistic regression coefficient after adjusting for demographic confounding factors and symptom confounding factors, respectively; *AOR* was the odds ratio adjusted for sex, age, residence, occupation, education and confounding factors such as fever, cough or sputum.
Abbreviation: *CI*=confidence interval.

compared to younger patients. The outpatient rate of infected individuals in rural areas was higher than that of COVID-19 patients in urban areas. Given the weak medical infrastructure in rural areas of China, the capacity for primary medical care and health services was severely tested during the epidemic. In response, the government issued an emergency plan aimed at strengthening the graded and stratified treatment and referral of patients with COVID-19 by strictly implementing the first diagnosis responsibility system and emergency treatment system (*5*).

The implementation of stratified treatment has been vital in combating the COVID-19 pandemic. Primary healthcare institutions categorize health risks into three distinct levels, taking into consideration factors such as age, pre-existing comorbidities, and vaccination status. These institutions offer tiered medical services for individuals infected with COVID-19, ranging from community screening to diagnosis and treatment at community health centers (*6*). The findings of this study indicate that over 70% of infected patients sought care at primary medical institutions due to their expedited waiting time and convenient access to medical services. As a result, these institutions serve essential roles as both "*sentinels*" and "*network bottoms*" in controlling the epidemic (*7*).

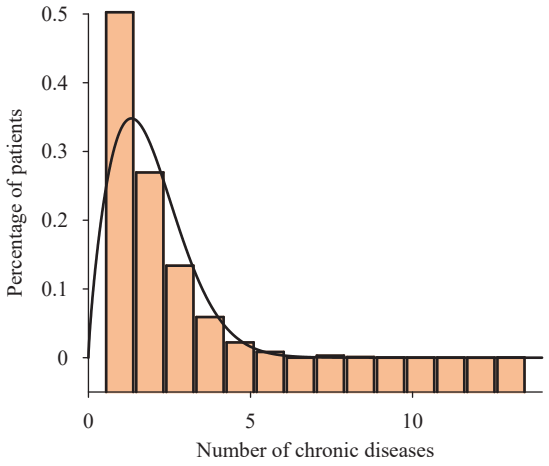


FIGURE 1. The number of chronic diseases in patients with coronavirus disease 2019 (COVID-19) — Beijing, China, December 2022.

This study revealed that patients exhibiting various symptoms opted for different routes when seeking treatment. Those presenting severe symptoms, such as dyspnea, tachypnea, nausea/vomiting, chest tightness, and diarrhea, were more inclined to seek treatment at specialized hospitals. The quantity of symptoms reported post-infection diverged among patients with distinct comorbidities. In accordance with prior research, the mean number of COVID-19 symptoms escalated in correlation to the number of comorbidities. This is consistent with previous studies indicating that pre-existing comorbidities' presence can heighten the risk of complications (*8*) and severe adverse outcomes (*9*). These findings carry significant implications for risk stratification and future strategizing.

Historically, large-scale infectious disease epidemics have led to significant strain on medical resources (*10*). Consequently, effective management of medical resources has emerged as an essential public health concern during such epidemics. The findings of this study suggest that, in the context of large-scale epidemics characterized by high infectivity but low morbidity and mortality, governmental agencies should adopt proactive measures to guide residents in seeking treatment in a graded and stratified manner. This

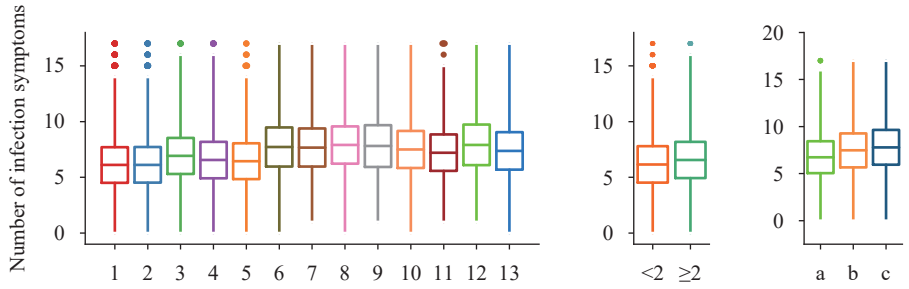


FIGURE 2. Phase diagram illustrating the relationship between the number of coronavirus disease 2019 (COVID-19) symptoms, presence of pre-existing comorbidities, and various medical counseling pathways.
Note: 1=Hypertension; 2=Diabetes; 3=Dyslipidemia; 4=Cardiac disease; 5=Stroke/cerebrovascular disease; 6=Bronchitis/emphysema, asthma/pneumonia; 7=Tuberculosis; 8=Gastritis/gastric ulcer; 9=Immunodeficiency; 10=Arthritis/rheumatism/rheumatoid disease; 11=Chronic kidney disease; 12=Hepatitis; and 13=Cancer. <2 indicates that the number of comorbidities was less than 2; ≥2 indicates that the number of comorbidities was more than 2; a=Primary care facilities; b=Hospitals; c=Hospitals and primary care facilities.

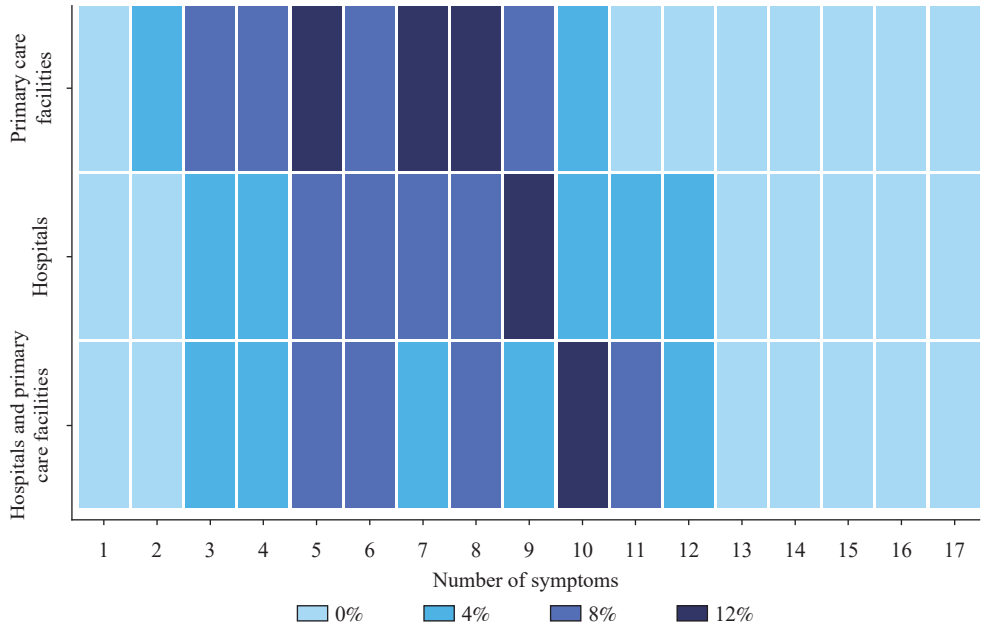


FIGURE 3. Heatmap depicting the prevalence of coronavirus disease 2019 (COVID-19) symptoms according to various medical consultation pathways.

approach would accommodate patient needs while simultaneously reducing the burden on medical resources. Furthermore, enhancing the diagnostic and treatment capabilities of primary healthcare institutions can decrease the influx of patients with minor illnesses at specialized referral hospitals. Consequently, this strategy can alleviate the workload on referral hospitals and establish early warning and referral systems for elderly patients and those with underlying comorbidities.

This study presents several limitations. Despite utilizing a multi-center survey encompassing 33,968 COVID-19 patients from 16 districts in Beijing, potential selection bias must be acknowledged, and extrapolation of the findings should be approached cautiously. Moreover, the study did not specifically examine medications employed by patients during home-based treatment. Consequently, the confounding effects of medication were not accounted for in the multivariate logistic regression model, which could potentially impact the results.

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# SUPPLEMENTARY MATERIAL

SUPPLEMENTARY TABLE S1. Variable assignment table.

| Variable | | Variable assignment |
|---|---|---|
| Consultations | YI | No=0; Yes=1 |
| Gender | X1 | Male=1; Female=2 |
| Age | X2 | 18–59 years=1; ≥60 years=2 |
| Education level | X3 | Primary school or below=1; Junior high school/high school/junior college/technical school=2; Undergraduate/postgraduate or above=3 |
| Employment status | X4 | Service trade staff=1; Medical industry staff=2; Others=3 |
| Residence area | X5 | Rural=1; Urban=2 |
| Fever | X6 | No=0; Yes=1 |
| Cough | X7 | No=0; Yes=1 |
| Dry throat/sore throat | X8 | No=0; Yes=1 |
| Stuffy/runny nose | X9 | No=0; Yes=1 |
| Painful muscles | X10 | No=0; Yes=1 |
| Arthralgia | X11 | No=0; Yes=1 |
| Headaches | X12 | No=0; Yes=1 |
| Conjunctivitis | X13 | No=0; Yes=1 |
| Physical weakness | X14 | No=0; Yes=1 |
| Chest tightness | X15 | No=0; Yes=1 |
| Decreased or absent sense of taste and smell | X16 | No=0; Yes=1 |
| Nausea/vomiting | X17 | No=0; Yes=1 |
| Poor appetite | X18 | No=0; Yes=1 |
| Diarrhoea | X19 | No=0; Yes=1 |
| Constipation | X20 | No=0; Yes=1 |
| Breathing difficulties | X21 | No=0; Yes=1 |
| Increased respiratory rate | X22 | No=0; Yes=1 |

SUPPLEMENTARY TABLE S2. Status of medical counseling and selection of healthcare pathways among COVID-19 patients with varying symptoms and underlying chronic conditions — Beijing, China, December 2022.

| Variable | Attendances, *n* (%) | Non-attenders, *n* (%) | Hospitals, *n* (%) | Primary care facilities, *n* (%) | Hospitals and primary care facilities, *n* (%) |
|---|---|---|---|---|---|
| Fever | 5,179 (18.1) | 23,452 (81.9) | 1,094 (21.1) | 3,751 (72.4) | 334 (6.5) |
| Cough | 5,390 (19.3) | 22,565 (80.7) | 1,070 (19.9) | 3,976 (73.8) | 344 (6.4) |
| Dry throat/sore throat | 4,584 (19.5) | 18,902 (80.5) | 862 (18.8) | 3,421 (74.5) | 310 (6.8) |
| Stuffy/runny nose | 3,668 (18.9) | 15,713 (81.1) | 729 (19.9) | 2,702 (73.7) | 237 (6.5) |
| Painful muscles | 4,155 (18.6) | 18,221 (81.4) | 789 (19.0) | 3,097 (74.5) | 269 (6.5) |
| Arthralgia | 2,670 (19.3) | 11,167 (80.7) | 522 (19.6) | 1,958 (73.3) | 190 (7.1) |
| Headaches | 3,193(18.1) | 14,451 (81.9) | 654 (20.5) | 2,329 (72.9) | 210 (6.6) |
| Conjunctivitis | 288 (23.7) | 929 (76.3) | 58 (20.1) | 199 (69.1) | 31 (10.8) |
| Physical weakness | 4,003 (18.3) | 17,844 (81.7) | 856 (21.4) | 2,864 (71.6) | 283 (7.1) |
| Chest tightness | 1,568 (25.8) | 4,509 (74.2) | 422 (26.9) | 1,006 (64.2) | 140 (8.9) |
| Decreased or absent sense of taste and smell | 2,262 (18.4) | 10,025 (81.6) | 490 (21.7) | 1,609 (71.1) | 163 (7.2) |
| Nausea/vomiting | 1,273 (20.8) | 4,861 (79.3) | 343 (26.9) | 815 (64.0) | 115 (9.0) |
| Poor appetite | 2,398 (19.2) | 10,084 (80.8) | 573 (23.9) | 1,647 (68.7) | 178 (7.4) |
| Diarrhea | 1,137 (19.5) | 4,703 (80.5) | 280 (24.6) | 763 (67.1) | 94 (8.3) |
| Constipation | 373 (19.6) | 1,533 (80.4) | 88 (23.6) | 253 (67.8) | 32 (8.6) |
| Breathing difficulties | 515 (30.0) | 1,203 (70.0) | 167 (32.4) | 299 (58.1) | 49 (9.5) |
| Increased respiratory rate | 625 (27.8) | 1,621 (72.2) | 179 (28.6) | 377 (60.3) | 69 (11.0) |
| Hypertension | 2,564 (24.1) | 8,078 (75.9) | 1,924 (75.0) | 474 (18.5) | 166 (6.5) |
| Diabetes | 1,412 (27.0) | 3,824 (73.0) | 1,045 (74.0) | 263 (18.6) | 104 (7.4) |
| Dyslipidemia | 1,279 (23.9) | 4,084 (76.2) | 927 (72.5) | 254 (19.9) | 98 (7.7) |
| Cardiac disease | 798 (27.0) | 2,155 (73.0) | 551 (69.1) | 177 (22.2) | 70 (8.8) |
| Stroke/cerebrovascular disease | 242 (30.3) | 558 (69.8) | 160 (66.1) | 62 (25.6) | 20 (8.3) |
| Bronchitis/emphysema, asthma/pneumonia | 449 (30.0) | 1,050 (70.1) | 259 (57.7) | 142 (31.6) | 48 (10.7) |
| Tuberculosis | 21 (24.4) | 65 (75.6) | 14 (66.7) | 4 (19.1) | 3 (14.3) |
| Gastritis, gastric ulcer | 432 (24.4) | 1,336 (75.6) | 289 (66.9) | 102 (23.6) | 41 (9.5) |
| Immunodeficiency diseases | 27 (26.0) | 77 (74.0) | 14 (51.9) | 5 (18.5) | 8 (29.6) |
| Arthritis/rheumatism/rheumatoid | 280 (23.1) | 932 (76.9) | 206 (73.6) | 50 (17.9) | 24 (8.6) |
| Chronic kidney disease | 76 (27.5) | 200 (72.5) | 35 (46.1) | 29 (38.2) | 12 (15.8) |
| Hepatitis | 30 (29.4) | 72 (70.6) | 21 (70.0) | 8 (26.7) | 1 (3.3) |
| Cancer | 94 (20.2) | 371 (79.8) | 55 (58.5) | 28 (29.8) | 11 (11.7) |

SUPPLEMENTARY TABLE S3. The mean and standard deviation of post-infection symptom number among patients with various chronic diseases and different medical care route selections — Beijing, China, December 2022.

| Variable | *n* | COVID-19 symptom number |
|---|---|---|
| Chronic disease | | |
| Hepatitis | 102 | 7.9±3.6 |
| Gastritis/gastric ulcer | 1,768 | 7.9±3.3 |
| Immunodeficiency diseases | 104 | 7.8±3.8 |
| Bronchitis/emphysema/asthma/pneumonia | 1,499 | 7.7±3.5 |
| Tuberculosis | 86 | 7.7±3.4 |
| Arthritis/rheumatism/rheumatoid | 1,212 | 7.5±3.3 |
| Cancer | 465 | 7.4±3.4 |
| Chronic kidney disease | 276 | 7.2±3.3 |
| Dyslipidemia | 5,363 | 6.9±3.2 |
| Cardiac disease | 2,953 | 6.6±3.3 |
| Stroke/cerebrovascular disease | 800 | 6.4±3.2 |
| Diabetes | 5,236 | 6.1±3.2 |
| Hypertension | 10,642 | 6.1±3.2 |
| Number of chronic diseases | | |
| <2 | 8,175 | 6.2±3.3 |
| ≥2 | 8,089 | 6.6±3.3 |
| Medical institution | | |
| Hospitals | 1,228 | 7.5±3.6 |
| Primary care facilities | 4,609 | 6.7±3.4 |
| Hospitals and primary care facilities | 390 | 7.8±3.7 |

Abbreviation: COVID-19=coronavirus disease 2019.