Pharmaceutical Sciences & Analytical Research Journal
ISSN: 2640-6659

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Research Article *Volume 6 Issue 4*

Cross-sectional study: Community practice during COVID-19 Outbreak in Sanaa city Yemen

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Received Date: November 21, 2024; **Published Date:** December 27, 2024

Abstract

This cross-sectional study examines community practices during the COVID-19 outbreak in Sana'a city, Yemen, highlighting the challenges faced by a fragile healthcare system amidst ongoing war, a seven-year blockade, and a recovery from previous epidemics of cholera and diphtheria. Limited testing capacity has compounded the difficulties in managing the pandemic. The study assessed the symptoms, protective measures, awareness, and perceptions of COVID-19 among residents of Sana'a. The most frequently reported symptoms among participants included fever (62.8%), fatigue (74.3%), severe headache (72.7%), loss of smell and taste (57.2%), dry cough (55.8%), and throat pain (66.8%), with severity ranging from mild to severe. Traditional herbs were widely used as part of community practices, emphasizing their perceived role in enhancing immunity. These findings underline the need for improved diagnostic capabilities and community-focused interventions to address the pandemic in Yemen's unique and challenging context.

Keywords: COVID-19; Traditional Medicine; Yemen

Abbreviations

SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2; PPE: Personal Protective Equipment.

Introduction

At the end of 2019, a novel coronavirus, later named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), emerged in Wuhan, China, causing the global COVID-19 pandemic [1,2]. Yemen, already weakened by prolonged conflict and structural vulnerabilities, faces significant challenges in combating the outbreak. With its fragile healthcare system, limited testing capacity, and reliance on international aid, Yemen's pandemic response is constrained [3-5]. The first laboratory-confirmed case of COVID-19 in Yemen was reported on April 10, 2020. While the government established a high intersectoral committee to address the

outbreak, community engagement and public awareness remain inadequate. Central public health laboratories in major cities, including Sana'a, are equipped for RT-PCR testing, but resource limitations restrict their capacity to test and monitor the spread effectively [6].

This study focuses on assessing the spread of COVID-19 in Sana'a, Yemen's largest city, with a population of approximately 4 million, highlighting key symptoms, protective measures, and community practices.

Materials and Methods

Study design

A cross-sectional descriptive study has been used to determine the different symptoms and treatments used in the community in Sannaa City.

Tool used

The questionnaire was designed to cover various aspects related to health status, risks, and knowledge of infectious diseases.

It consists of five sections:

General Data: Age, gender, social status, job, education level, financial condition, family members, area of residence, and employment status.

General Health Conditions: Symptoms and signs, as well as the use of herbs relative to COVID-19 and flu-like symptoms.

Working Conditions and Personal Protective Equipment (PPE): Measures adopted after the outbreak of the infection.

Knowledge and Self-Perceived Risk: Awareness and personal assessment of the risk of infection.

Herbs and Practices Used: Remedies or practices adopted to relieve symptoms.

Sample Size and Population

The questionnaire was distributed randomly to 357 individuals who had been affected by and suffered from COVID-19 infections. Participants were required to confirm that they had read the privacy policy and voluntarily consented to data collection and processing. If a participant answered "no," the questionnaire automatically closed, and no data were collected.

Data Collection Method: In this article, closed answered questionnaire by Google models questionnaire. https://forms.gle/pQHdAk1z2tc8XNnb6.

Statistical analysis: The data were analyzed methods (Table and percentage by using excel 2010) statically. The data were taken from the database. Only data sets from people who lived in Sana'a and had completed the entire symptom questionnaire were used. Data from untested participants were not included in this analysis.

Ethical Considerations

Ethical clearance and approval for the study protocols were obtained from the Ethical Research Committee of Al Nasser University, Faculty of Health Science, on 25/10/2020 (Reference No. NAS-202502). The study adhered to ethical principles in the formulation, quality control, and biological evaluation involving human volunteers, in accordance with European community guidelines. For clinical trials, all volunteers were fully informed about the research and the drug being used, and they were required to sign a written informed consent form prior to participation in the study.

Results

The questionnaire was distributed to 357 people living in Sana'a city, Yemen, to study the herbs and drugs used for treating the symptoms of COVID-19. The results are summarized as follows:

General Data

In this study, the majority of participants were aged 21–30 years, accounting for 56.2% of the total. The lowest participation rate (1.4%) was among individuals aged over 60 years. Female participation was slightly higher at 56%, compared to male participation at 44%.

Among marital status categories, married individuals represented the highest participation rate at 51.7%, followed by unmarried participants at 44%. The widow category had the lowest participation rate at 2%.

Regarding education levels, most participants (79.4%) had a university education, while the lowest participation rate (1.7%) was among those with a basic education level. Employment data showed that the majority of participants (53.3%) were unemployed, 26.1% worked in the health sector, and 21.7% were employed in occupations unrelated to health care.

Financially, most participants (80.7%) belonged to the middle class, with 12.6% reporting excellent financial status and 6.7% indicating poor financial status.

In terms of family size, 50.5% of participants had 4–7 family members, 29.1% had more than 7 family members, and 18.4% had 1–3 family members.

Perception of Risk Related to COVID-19

All participants were required to confirm that they had read the privacy policy and voluntarily approved data collection and processing. If a participant selected "No," the questionnaire was automatically closed, and no data were collected.

Table 1 shows the participants' perceptions of the risk of being infected by COVID-19.

Items as n (%)
Was infected with the spreading disease at the present time?
Yes None Perhaps
(30%) (33.7%) (36.3%)
What you believed about the disease? If it is weather change or corona virus or common cold.
Weather Change Corona Virus Common Cold
124(36.8%) 123 (36.5%) 90 (26.7%)
How many family members were affected by the disease?
All family Quarter Family Members Half
47(29.6%) 69 (43.4%) 23(14.5%)
Which age group were the most affected?
>15 years 15-30 years 31-50 <50 years
2.8% 39.8% 46.3% 11.1%
Can be treated the spreading disease?
Yes No Perhaps
(69.2%) (33.7%) (28.2%)
If yes, which of the following is used as a treatment?
Medicines and Herbs Herbs to treat the symptoms and immune booster Antibiotics
39.2% 30.0% 5.1%
Drugs Not sure
12.7% 13.1%
Is flu this year similar to the symptoms of flu in past years?
Yes No Perhaps
(24.4%) (49.9%) (25.8%)
Is the disease transmitted by coughing and sneezing?
Yes No Perhaps
(70.7%) (25.3%) (4.0%)
Is the disease transmitted by shaking hands, hugs and kissing?
Yes No Perhaps
(59.5%) (9.5%) (30.9%)
How long was the period from the beginning of symptoms to recovery?
5 - 3 days 6-10 days 2 weeks < 2 weeks
27.1% 27.1 20.7% 25.2%
Have you visited a health care centre for the purpose of treatment?
Yes No
(11.6%) (88.4%)
Was admission in the hospital?
Yes No
(2.0%) (98.0%)

Have you examined coronavirus?
Yes No
(6.1%) (93.9%)
Have you been diagnosed with a suspected coronavirus?
Yes No
(21.5%) (78.5%)
Have you had general blood tests?
Yes No
(19.9%) (80.1%)
Have you had a chest x-ray?
Yes No
(9.0%) (91.0%)

Table 1: Perception of risk related to COVID-19.

Signs and symptoms of the disease

Have you ever felt the following symptoms?

Dry cough, fever, fatigue, loss of smell and taste, throat pain, and extreme headache were found to be present in 55.8%, 62.8 percent, 74.3 percent, 57.2 percent, 66.8%, and 72.7 % of those who participated in the survey. Also, fatigue, severe headache, and throat pain were the most common symptoms, and these were considered the major symptoms of Corona virus disease, as shown in Table 2.

N	Symptoms	Light	Medium	None	Intense
1	Dry Cough	27.30%	18.00%	44.20%	10.40%
2	Pain in the throat	27.60%	26.50%	35.20%	10.70%
3	Chest pain	20.70%	16.40%	51.30%	11.60%
4	Runny nose	27.80%	20.20%	47.40%	4.50%
5	Nasal congestion	25.60%	22.00%	41.40%	11.00%
6	Fatigue or extreme fatigue	19.70%	25.90%	25.70%	28.70%
7	Headache	23.90%	29.60%	27.30%	19.20%
8	Fever	22.50%	23.40%	34.40%	19.70%
9	Sweating	25.00%	23.00%	37.20%	14.80%
10	Severe chills	19.30%	19.30%	48.60%	12.80%
11	Neck, shoulder, muscle and joint pain	18.00%	24.50%	32.70%	24.80%
12	Dehydration	18.30%	20.30%	50.40%	11.00%
13	Breathing difficulty	18.60%	14.70%	56.60%	10.10%
14	Dizziness	23.40%	15.20%	51.80%	9.60%
15	Eye pain	19.20%	14.40%	56.50%	9.90%
16	Nausea and vomiting	17.50%	15.20%	63.90%	3.40%
17	Diarrhea	22.60%	10.10%	61.40%	5.90%
18	Loss of sense of smell or taste	14.60%	11.90%	42.80%	30.70%
19	Kidney pain	18.10%	10.10%	65.90%	5.90%
20	Poor eyesight	15.80%	9.90%	70.40%	3.90%

21	Nerve pain	18.00%	11.00%	62.30%	8.70%
22	High cholesterol	13.00%	4.50%	80.20%	2.30%
23	Secondary lung problems	12.10%	7.90%	77.70%	2.30%
24	Heart problems	13.50%	5.40%	79.20%	2.00%

Table 2: The signs and symptoms experienced by the participants

Herbs used

The result of the different herbs used for COVID-19 are summarized in the following Table 3 that focused about the herbs that prevent the symptoms of corona virus. There are no reliable reports to suggest medicinal herbs should be used to eliminate the Corona virus, although they can help treat the symptoms of the virus.

Did you use inhalation water vapour with herbs?
Yes No
(40.3%) (59.7%)
Did you have hot drinks?
Yes No
(90.7%) (9.3%)

Table 3: Relation between Herbs and coronavirus.

The Indication of the Herb

The percentage of using herbs in the treatment and prevention of disease are showing in Table 4. Black Seed (41.7%), onions and garlic (59.7%), anise (20.6%), and clove (43.1%) are also used in the treatment symptoms of coronavirus [6].

N	Name of herb	Yes	no	Rarely
1	Lemon or orange	89.30%	3.90%	6.80%
2	Ginger	58.60%	27.30%	14.10%
3	Honey	58.30%	26.20%	15.50%
4	onions and garlic	59.70%	24.20%	16.10%
5	black seed	41.70%	41.10%	17.20%
6	Chamomile	10.40%	73.80%	15.80%
7	Anise	20.60%	62.50%	16.90%
8	Garden cress	5.90%	81.10%	13.00%
9	Curcuma	27.20%	55.20%	17.60%
10	Olive leaves	5.10%	78.60%	16.30%
11	Costus	7.90%	77.20%	14.90%
12	pomegranate peels	6.50%	78.60%	14.90%
13	Cloves	43.10%	41.70%	15.20%
14	Tamarind	19.40%	65.10%	15.50%

Table 4: The percentage of using herbs in the treatment and prevention of disease.

Medicines Used

In this study, most of the participants used vitamin C (66.0%) that contributes to strengthening the immune system [7]. In contrast, participants did not use vitamins (E, D, B), magnesium, zinc [8], hydroxychloroquine [9], oxygen, antiviral drugs, aspirin, and ibuprofen, as shown in Table 5.

Have you used vitamin C tablets?
Yes No
(66.0%) (34.0%)
Have you used vitamin E tablets?
Yes No
(17.8%) (82.2%)
Have you used vitamin D tablets?
Yes No
(28.9%) (71.1%)
Have you used vitamin B tablets?
Yes No
(19.0%) (81.0%)
Have you used magnesium?
Yes No
(8.8%) (91.2%)
Have you used zinc?
Yes No
(25.1%) (74.9%)
Have you used paracetamol to reduce body temperature?
Yes No
(58.7%) (41.3%)
Have you used hydroxychloroquine?
Yes No
(7.9%) (92.1%)
Have you used any antiviral drugs?
Yes No
(14.0%) (86.0%)
Did you use anti-inflammatory drugs?
Yes No
(30.6%) (69.4%)
Have you used an antibiotic?
Yes No
(50.4%) (49.6%)
Have you been exposed to the sun daily?
Yes No Rarely
(42.1%) (13.0%) (44.9%)
Did you use oxygen?
Yes No
(6.2%) (93.8%)
Have you used the intravenous solution?
Yes No

(16.7%) (83.3%)
Have you used aspirin?
Yes No
(31.4%) (68.6%)
Have you used ibuprofen to reduce fever and prevent inflammation?
Yes No
(15.6%) (84.4%)

Table 5: Precautionary measures against COVID-19 stratified by medicines.

Discussion

The present survey was conducted during the peak of the COVID-19 outbreak in Sana'a, Yemen. The response rate was reasonable, but the sample size of respondents was relatively small. People of all ages are susceptible to the infection, which is primarily transmitted through large droplets generated by coughing and sneezing from symptomatic individuals. However, asymptomatic people and those in the pre-symptomatic phase can also spread the virus.

There are no specific clinical features that can reliably distinguish COVID-19 from other viral respiratory infections. Based on the questionnaire titled "The Extent of Use of Herbs and Drugs in Treating the Epidemic Spreading Disease among the Population of Sana'a," answered by 357 participants, the findings revealed the following:

Demographics

56.2% of participants were aged between 21–30 years, 51.7% were married, 79.4% had a university education, and 80.7% reported modest financial status. Most families had 4–7 members.

Understanding of Symptoms

The participants' responses were divided into three groups: "Yes" (30%), "No" (33%), and "Perhaps" (36%), indicating a lack of comprehensive understanding of the symptoms. Those who answered "Yes" were more likely to have experienced symptoms of the disease themselves.

Family Infection Rates

43.4% of respondents reported that about one-quarter of their family members had been infected, aligning with WHO reports that one in five infected individuals develops symptoms.

Herbs and Drugs Used for Treatment

The study highlighted the medicinal herbs and drugs participants used to manage COVID-19 symptoms:
Lemon and Orange (89.3%): Frequently used as immune system stimulants. Studies support their benefits in alleviating some symptoms of COVID-19.

Ginger (58.6%)

Known for its anti-inflammatory, antiviral, and immune-boosting properties, ginger aids in treating respiratory and circulatory symptoms and acts as an anticoagulant, which is beneficial against thrombosis caused by the virus.

Honey (58.3%)

Recognized for its antimicrobial, anti-inflammatory, antioxidant, and immunity-enhancing effects, honey is commonly used for symptoms such as cough, bronchial asthma, nausea, and vomiting.

Clove

Used for its cardiovascular benefits, analgesic and narcotic effects, and anticoagulant properties, which help prevent thrombosis associated with COVID-19.

Black Seed

Valued for its immune-boosting and analgesic properties, as well as its ability to alleviate respiratory symptoms.
Vitamin C (66.0%): Widely used to strengthen the immune system.

Paracetamol (58.7%)

Employed to reduce fever, alleviate muscle and joint pain, and relieve cold and headache symptoms, consistent with its known medicinal applications.

Vitamin D (28.9%) and Zinc (25.1%)

Despite their importance in promoting immunity, their usage was relatively low.

Hydroxychloroquine (7.9%)

Although some studies suggest its potential to inhibit the virus, only a small proportion of participants reported using it.

This analysis highlights the reliance on traditional and medicinal remedies in managing COVID-19 symptoms in Sana'a, Yemen, during the pandemic.

Conclusion

In conclusion, this survey provides valuable insight into the professional and community practices in one of the regions in Yemen most affected by COVID-19-related deaths. The most common symptoms reported by participants included dry cough, fever, fatigue, loss of smell and taste, throat pain, and severe headache, ranging in severity from mild to severe. The most frequently used herbs for the treatment and prevention of the disease were lemon or orange, ginger, honey, onions, garlic, turmeric, clove, and black seed.

Declaration of Interest

The authors declare no conflicts of interest.

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