

# Knowledge, Attitudes, and Behaviours of People in the Qatari Community towards Myrrh in Combating COVID-19

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## ABSTRACT

**Introduction:** Myrrh used as the oldest traditional medicinal extract plant for therapeutic activities for different diseases. This article conducted as the first study that aims to address the knowledge, attitudes, and behaviors of people in the Qatari community towards Myrrh in combating COVID-19.

**Methods:** A total of 269 males and females participated as voluntary in this anonymous simple random sampling study. The data of the randomly distributed questionnaire exported into Statistical Package for the Social Sciences (SPSS), then analyzed using frequency Tables, means, percentages, and standard deviations.

**Results:** The majority of participants were females (71.0%) than males (29.0%), with an age of 41-50 (34.3%), 77.7% were married. 63.2% were Qatari nationalities, and 36.8% were non-Qataris. 48.0% had a baccalaureate degree, and 1.1% had no formal education. Most participants were government employees (39.0%), and 3.3% were others. 91.82% had heard about Myrrh, 50.9% use Myrrh when necessary, 13.0% after meals only, and 11.2% do not gargle nor use mouthwash. A mean of 3.91 believe in herbal and can use it any time. 44.5% agreed, and 29.1% strongly agreed to try to use Myrrh as an herbal to treat Covid-19.

**Conclusion:** The study concludes that most people in the Qatari community do not have adequate knowledge of Myrrh because a large percentage of the people were healthy. In line with the study findings, Myrrh is significantly used as a mouth rinse and gargle wash to help protect the mouth from infections. The people were also unsure whether Myrrh was effective in treating Covid-19; however, they could use Myrrh to decrease/lower the symptoms for Covid-19, such as sore throats, chest infections, and improve both oral and physical hygiene, which reduces the spreading of Covid-19 viral infections. The findings revealed that more than two-thirds (73.0%) of the participants reported that their family members were using Myrrh.

**Keywords:** Knowledge; Attitudes; Behaviours; Myrrh; Qatar; COVID-19

## INTRODUCTION

Myrrh is the oldest traditional medicine used in Rome, Chinese culture, Egypt, and Arabian Gulf because of its medicinal properties. It is used as a medicinal plant as herbal or clinical medicine for various systemic ailments across countries [1]. In Arabian Gulf countries, Myrrh is a useful herbal medicine for oral health problems. Its extract is believed to have anti-inflammatory and anti-plaque properties; hence, it is used as a mouthwash to treat gingivitis and plaques [2]. In Saudi Arabia, people perceive that Myrrh is more effective than the use of modern medicine, such as chlorhexidine. They recognized that the extracts contain natural compound Myrrh tincture, which is used as an alternative herbal

extract to develop mouthwash for gingivitis and other oral diseases [2]. People believed that Myrrh is a useful herbal medicine for chest and oral problems. Besides, Myrrh has been the oldest medicine to prevent bacterial and fungal infections. In the past, people believed that Myrrh extracts were the best medicine for different diseases. People used the extracts as traditional medicines to prevent bacterial infections and fungal infections, such as those from *Escherichia coli* and *Candida albicans*. People perceived the essential oils found in Myrrh have significant antibacterial and antifungal activities that can assist in preventing infections [3].

As a consequence of such beliefs, there is a possibility that Myrrh might have clinical benefits in combating COVID-19. As far as Myrrh used as herbal medicine, people in Qatar are not in a better

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situation since they have limited skills and relevant knowledge about the clinical effects of *Commiphora myrrha* in combating COVID-19. This creates the gap and poor knowledge that people in Qatar have about the use of *C. myrrha* as a remedy for COVID-19. Despite that, some people in Qatar have the traditional belief of *C. myrrha* for medicinal use, relevant studies on knowledge, attitude, and behaviors of people in Qatar towards *C. myrrha* in combating COVID-19 is very limited or lacking. Very few studies have conducted in Arabian gulf concerning *C. myrrha* in general [2,3]. However, these studies did not explore or knowledge, attitudes, and behaviors of people. There is no current research conducted in Qatar to assess the knowledge, attitudes, and behaviors of people towards *C. myrrha* and the extent of its application in the COVID-19 pandemic.

Myrrh has powerful pharmacological effects, which include synergistic analgesic, synergistic anti-inflammation, synergistic blood-activation, and synergistic antibacterial properties. Also, Myrrh used to use it as a traditional medicine for pain management. In the past centuries, Myrrh used as the most famous Chinese medicine used together with resinous frankincense to treat blood stagnation. It used as a blood moving medicine because of its antioxidant and anti-inflammatory activities [4]. Besides, in Chinese culture, Myrrh is believed to relieve pain, hence used as an analgesic for pain management and in cleaning wounds [4]. Additionally, it documented that although China is not the leading producer of Myrrh, it has the largest market globally, primarily for its use in Chinese traditional medicine [5].

In a precious documented study, it has documented that Myrrh has an impact on viruses and bacteria. It is also showed that the empirical evidence of myrrh extracts have viral effects in which the extracts from such plants have antibacterial and antiviral activity against different strains of viruses [6,7]. Based on the different studies, Myrrh has a significant effect as a mouth wash, and it may have an essential effect on gums. Studies revealed that Myrrh has antiseptic properties that help in treating sore throat. They explained how is using Myrrh with peppermint and menthol to treat sore throat. Authors shared that myrrh gum can be used as a mouthwash because of its expectorant activities that reduce inflammation in the throat and hence preventing sore throat and related infections [8].

It has found that Myrrh has clinical effects on chest infection and sore throat [7-9]. Myrrh has clinical benefits in suppressing inflammation during chest ailments [10]. Myrrh has a significant clinical benefit as a mouthwash, and it may have essential effects on gums [11] in treating gums by reducing gingival inflammation [2,12]. On the other hand, Myrrh extracts help in reducing nasal congestion by providing analgesic activity, which helps in reducing inflammation and headache associated with nasal congestion [13]. It is also strengthening the immune system and acts as an expectorant to treat nasal congestion. People used Myrrh in inhalation to reduce nasal congestion. However, no studies are investigating the effects of Myrrh in inhalation and provocation. As such, further research needed to determine Myrrh's efficacy in developing inhalers and as a provocation in nasal congestion.

Clinically mouth washing and gargling are in reducing oral health problems. It helps to promote health in the oropharynx and prevent bad odor in the mouth [14]. Thus, Myrrh used as a mouth rinsing

and oral gargle to prevent the formation of plaques, gingivitis, and intraoral mucosal wounds [11]. Studies showed that there was a clinically significant benefit of rinsing with Myrrh in preventing plaque formation [2], and have extracts exert anti-plaque activities in the mouth, which prevent bleeding gums and inflammation in gingival tissues.

Chinese traditional practitioners also believe that Myrrh is safe and effective in treating painful inflammation, traumatic injuries, and specific masses. Based on the highest consumption of Myrrh resin in China, the People's Republic of China thus remains the leading consumer of nutraceuticals and medicinal development of *C. myrrha*. However, due to the bitterness and strong smell, it is assumed that Myrrh's overdose may lead to vomiting, nausea, and gastrointestinal tract injuries. As such, the Chinese practitioners advocate the use of Myrrh resin in a capsular form or as a pill [15]. In other cultures, Myrrh applies to different types of infections. In Egypt, studies asserted that people assumed Myrrh is the most effective and safe antiparasitic agent to treat trematode infections [16]. Despite that, some cultures support the medicinal use of Myrrh in traditional medicinal products; Saudi Arabia culture rejects its consumption, especially among pregnant women. It explained that the use of traditional medicine remains a crucial aspect in Saudi Arabian culture in which many patients seek alternatives to use herbal remedies to treat their health conditions. However, there are cultural beliefs in Saudi Arabia that traditional medicine exposes people to different hazards. The authors also pointed out that the use of large amounts of herbal remedies from Myrrh poses health hazards by causing infertility or recurrent miscarriages among pregnant women. It is evident that despite the cultural beliefs that traditional medicinal with a focus on herbal remedies and religious or spiritual healing to treat medical conditions, Myrrh may not be accepted as the best remedy during pregnancy. In Arabian Peninsula, Myrrh is the most commonly used herbal remedy; however, it is not recommended for pregnant women because it is believed to be a uterine irritant and can affect female reproductive organs and cause miscarriages or infertility [17].

The medicinal use of Myrrh depends on its chemical action. The compounds found in *C. myrrha* or Myrrh has confirmed a robust chemical activity that makes the extracts safe and effective for different ailments. Several compounds isolated from this myrrh resin are crucial in treating specific diseases [7].

## Review of COVID-19

The inclusion and the exclusion criteria provide the outline employed in arriving at the articles used for the study. The literature review entailed screening the articles to be used as per the inclusion, and the exclusion criteria developed. The inclusion criteria comprised of articles published from the year 2019, focusing on COVID-19. Due to the fact that Myrrh is an ancient medication, articles focusing on Myrrh that were used were from the year 2003. These were the articles that exclusively focused on COVID-19 and the uses of Myrrh. The language was also taken into account, where the articles published only in the English language were reviewed. The exclusion criteria included the articles whose subject matter was not COVID-19. Besides that, the articles published before the respective years 2019 for COVID-19 and 2003 for Myrrh were excluded from the review, alongside those published in non-english languages. Unpublished documents such as magazines, books,

proceedings of conferences, projects, and theses, press releases, and web articles were excluded from the review. The criteria outlined helped in ensuring that reliable and up to date information was retrieved for the study purposes.

### Signs and symptoms of COVID-19

The Coronavirus Disease-2019 (COVID-19) is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV2) and is highly infectious [18]. It affects the human respiratory system and has been a major global public health issue since late 2019. The symptoms of the disease start to manifest after an incubation period of an estimated period of 5.2 days [18]. According to the World Health Organization [19], the symptoms can be mild and gradually progress to become serious. The major symptoms include fever, sore throat, dry cough, and fatigue [20-22]. These are the symptoms that manifest in a majority of the patients.

Other symptoms of the disease include diarrhea, sore throat, muscle pains, persistent headache, and nausea [21]. These symptoms vary from patient to patient, and one could have very mild signs, while another could depict serious symptoms. The non-severe cases of COVID-19 exhibit symptoms similar to an infection of the respiratory system. Severe cases of COVID-19 exhibit pneumonia, which can later lead to organ failure resulting in death [23]. In these severe cases, the patient may experience difficulty breathing, severe chest pains, and impaired speech and movement. Reports suggest that the loss of smell (anosmia) and taste are the early symptoms and subclinical markers of COVID-19 [22]. There are, however, asymptomatic patients who do not show signs and symptoms after contracting the disease. The coronavirus's viral shedding has been depicted to begin approximately 2 to 3 days before the onset of the first symptoms [24]. This is the period after which the virus becomes highly contagious.

### Laboratory findings

Laboratory diagnosis of COVID-19 is achieved by carrying out tests using the Reverse Transcription-Polymerase Chain Reaction (RT-PCR). For patients with COVID-19 pneumonia, high viral loads are demonstrated in their lower and upper respiratory tracts just after 5 to 6 days of the onset of symptoms. For patients with severe COVID-19 Pneumonia, they depict very high viral loads in their respiratory tracts [25]. Laboratory examinations depict that the early stage of the disease manifests a decreased white blood cell count [20]. The findings also show a reduction in the level of lymphocytes and an increased activated thromboplastin time. The C-Reactive Protein (CRP) levels have been depicted to increase in most patients, while the concentrations of Procalcitonin (PCT) remained normal for them [26].

Laboratory tests also include a thin-sliced chest Computed Tomography (CT) scan, which helps detect pneumonia cases. Despite the fact that the RT-PCR is the main basis for diagnosis, imaging helps in recognition of COVID-19 pneumonia since the CT scans depict lung abnormalities. For those patients with COVID-19 complications, and admitted in the Intensive Care Unit (ICU), the imaging has been shown to have sub segmental consolidation, alongside bilateral multiple lobular. At the same time, those not in critical conditions depict sub segmental consolidation with bilateral ground-glass opacity [26]. Other CT

features depicted by COVID-19 patients upon laboratory imaging include micro vascular dilation sign and fibrotic streaks, along with pleural changes, which include thickening, effusion, and retraction sign of the pleural [27]. Bronchial changes, including the distortion of both the air bronchogram and the bronchus, also manifest in COVID-19 pneumonia. These symptoms highly manifest in patients with advanced-phase of the disease while they are significantly lower in patients at the early stage of the disease.

### Transmission

The coronavirus is transmitted from human to human, with the symptomatic people being the frequent source of COVID-19 spread [20]. The transmission occurs through respiratory droplets through coughing and sneezing, alongside the contact with infected persons through handshakes [22]. The sneezing and coughing of an infected person cause the expulsion of the virus's droplets into the air. Hence, the people in the environment can contract the disease through breathing in the air containing the droplets.

The coronavirus can also survive on different surfaces for different amounts of time. It can stay for a period of 2-3 days on both the plastic and stainless surfaces, one day on cardboard surfaces, and up to 4 hours for copper [20]. Other surfaces such as doorknobs and handrails and other surfaces around the infected person can harbor the virus. When uninfected persons touch these surfaces and then go ahead to touch their eyes, nose, and mouth, they end up contracting the COVID-19 disease.

Transmissions in healthcare facilities are highly possible because health caregivers often come into contact with these patients. A study by Jiang et al. [21] showed that transmission cases in China comprised 41% infection cases in hospital settings, with 29% being the medical staff. This is major because the medical health workers at least, are exposed to the virus, through coming into contact with the patients or the surfaces touched by the patients, despite the use of protective equipment, and hence contracting the virus. Person to person contact is the major form of transmission, and there has been no official documentation of whether or not the asymptomatic patients can transmit the virus [27].

### Current treatments

Currently, there exists no antiviral treatment for COVID-19 and no vaccine at the same time. The available treatments are symptomatic and supportive, through anti-inflammatory and antiviral treatments [21]. This form of treatment is meant to support the infected individual's immune system so that it can fight off the virus. For patients with intense complications, the supportive treatment comprises of Continuous Renal Replacement Therapy (CRRT), invasive mechanical ventilation, and Extracorporeal Membrane Oxygenation (ECMO) [21]. Some antivirals are administered to patients, and they include a combination of lopinavir and ritonavir. Lopinavir is a protease inhibitor, while the ritonavir increases the concentration of plasma [28]. The combination has been found to have favorable outcomes in the treatment of patients with Severe Acute Respiratory Syndrome (SARS) infections, and hence has been used in clinical trials for the treatment of COVID-19. However, the clinical trials' findings are limited and do not depict the role of these drugs in the treatment of COVID-19.

Remdesivir is another antiviral drug, which was initially developed

to treat Ebola but proved ineffective. The drug is still under trial for COVID-19 treatment and has already been administered to patients in Rome, Italy, and the US [28]. Chloroquine and Hydrochloroquine have also been used in the treatment of COVID-19. Since ancient times, the drugs have been used in the treatment of chronic inflammatory diseases [29]. They block the entry of viruses into the cells by inhibiting the glycosylation of host receptors and endosomal acidification. In China, patients subjected to the treatment showed improved outcomes through viral clearance and a reduction in disease progression. Clinical trials are still ongoing to establish the efficacy of the drug in COVID-19 treatment. Several other drugs still under clinical development include favipiravir, oseltamivir, ribavirin, tocilizumab, darunavir, and sofosbuvir [28,29].

### Description of the current treatments of COVID-19

There is no current effective treatment for COVID-19 due to the complex pathogenesis of the disease, which makes the details of the host-pathogen interaction unknown [27]. The Remdesivir (RDV) drug has been adopted for the treatment of COVID-19. The drug exhibits a broad spectrum of antiviral activity against RNA viruses and the Middle East Respiratory Syndrome Coronavirus Disease-2019 (MERS-COVID-19) [30]. The drug has viral polymerases discerning ability, and hence, it has a low propensity to cause toxicity to the human body. It also exhibits a high level of resistance in coronaviruses and an extended intracellular half-life, which allows for the daily dosing.

A study regarding the clinical trial of the efficacy of remdesivir in treating hospitalized COVID-19 patients was carried involved in the intravenous administration of the drug of 200 mg on the first day and a follow up of 100 mg daily for an additional nine days. The test was a randomized trial against a placebo treatment [31]. The trial results depicted that the patients who had been subjected to remdesivir exhibited a shortened recovery time with a mean of 9 days, while those who received placebo-treatment had a recovery period of 15 days. The results showed that the remdesivir drug proved to be more effective in the treatment of COVID-19 as compared to the placebo treatment [30,32].

Chloroquine is another drug that has been used in the treatment of COVID-19. Chloroquine has often been used in the treatment of malaria and autoimmune disease. The drug can interfere with the cellular receptor's glycosylation and elevates the pH needed for the infusion between the virus and cells [27]. Thus, it reduces virus infection. There have been clinical trials to determine the efficacy of the drug in the treatment of COVID-19. A systematic review of the drug's clinical trials has exhibited a possibility of the effectiveness of the drug in COVID-19 treatment [33]. Chloroquine has been depicted to be highly effective in the reduction of viral replication and blocking of virus infection by interfering with the glycosylation of the SARS-CoV cellular receptor.

A review of the pharmacological treatments showed some promising levels of the drug's effectiveness in the treatment of COVID-19 [29]. A non-randomized French clinical trial involving the oral administration of chloroquine every eight hours were compared with those on supportive care. The outcome showed that the group subjected to chloroquine treatment showed superior viral clearance compared to the ones on supportive care. In China, the drug was reported to have successfully been used in the successful treatment

of more than 100 patients, which resulted in enhanced clearance of the virus in their bodies. Other antiviral drugs include lopinavir and ritonavir [27]. The recommended dosing for the two drugs is 400 mg and 100 mg twice a day for a period of 14 days [29]. However, these drugs do not show any direct effects on the recovery rate of patients since the trials did not depict any difference with the supportive care or the placebo treatment. This, therefore, suggests a limited role played by the drugs in the treatment of COVID-19.

### Limitations of treatments

The dosing recommendations for chloroquine are not clearly known, with various researchers recommending different dosages [29]. Some have given 500 mg orally recommendations at least once or twice a day, while others have given recommendations of 400 mg orally daily and others 600 mg once a day. Therefore, it implies that more studies are needed to give a clear outline of the efficient dosage. Despite the fact that chloroquine's tolerability is high, it can have adverse effects on the patient. These effects include neuropsychiatric effects, retinopathy, and hypoglycemia. There is also a risk of QTc prolongation for critically ill patients with multiple underlying health conditions. There are adverse effects resulting from the use of lopinavir and ritonavir, and they include gastrointestinal distress, resulting in nausea and diarrhea among patients, and hepatotoxicity [29]. In adverse cases, the drugs may result in liver injury.

Findings indicate that the use of remdesivir for the treatment of hospitalized patients with critical COVID-19 cases requires supplementary oxygen therapy [31]. Despite the use of the drug, high mortality rates are still reported, indicating that the drug, on its own, is not sufficient for the treatment of the disease. The major side effects of remdesivir include renal impairments, rash, diarrhea, and hypotension. The side effects that are usually adverse for patients with invasive ventilation include septic shock, acute kidney failure, and multiple-organ-dysfunction syndrome. Therefore, the drug can have several side effects, which can be fatal for patients with underlying medical conditions, and hence may not be highly effective in the treatment of COVID-19. Despite the administration of the above drugs, none has been proven to be effective in curing COVID-19.

### Prevalence and fatality rate of COVID-19

The outbreak of a series of respiratory illnesses with pneumonia resemblance in Wuhan, China, led to intensive research to find treatments and vaccines. The WHO named the new virus as the novel coronavirus (2019-nCoV), which triggers the disease coronavirus (COVID-19) [34]. COVID-19 was established to be a zoonotic coronavirus disease from the family of the coronaviruses. It is a severe acute respiratory illness that affects the respiratory system, causing damages ranging from mild to severe organ damage within a short period of infection.

The first case of COVID-19 was reported in China in December 2019. Since then, the virus has been widely spreading across the countries of the world. The virus was then declared a global pandemic by the World Health Organization (WHO) on March 11, 2020 [35]. The prevalence, attack rate, and mortality rates of different countries affected by COVID-19 differ. There also exist differences in the reporting of countries, and hence data

may not fully present the actual situation. Some studies have put forward explanations about the differences in the prevalence and transmission rates in countries. Sun et al. [35] outlined that the climatic conditions explain the heightened transmissions of COVID-19 and the community outbreaks in countries with temperature levels of 5-11 degrees Celsius.

As of 11<sup>th</sup> July 2020, the global figures of the COVID-19 pandemic were as follows; 12,630,872 confirmed cases, 562,888 deaths, and 7,366,488 recoveries. The highly affected countries, with the highest number of cases, included USA (3,291,786) Brazil (1,804,338), India (822,603), and Russia with, 713, 936 confirmed cases. The prevalence rates for these countries were at 0.994%, 0.848%, 0.059%, and 0.489% respectively. The number of deaths in these countries was as follows; USA (136,671), Brazil (70,524), India (22,144), and Russia (11,017), respectively. The fatality rates were estimated to be 0.041%, 0.039%, 0.027%, and 0.015% respectively. In Qatar, the total number of confirmed cases stood at 102,630, with 146 deaths. The country's prevalence rate was 0.0365%, and the fatality rate was at 0.14% [34]. However, it is difficult to estimate the prevalence and fatality rates accurately, given that the statistics keep changing as new cases and deaths are recorded every other day.

Fatalities are highly prevalent among elderly people and those with pre-existing medical conditions [35]. This is because of the weakened immune systems which may fail to fight off the coronavirus. The presence of medical conditions such as hypertension and diabetes stresses the body's functioning and weakens the immune system. Furthermore, the long-term presence of diabetes and hypertension in the body damages the vascular system. Therefore, it is highly likely to result in critical diseases in the case of viral infection [36]. Previous respiratory diseases such as pulmonary diseases alongside chronic heart diseases weaken the lungs and the heart, respectively, impairing their functions. When such patients get infected with the coronavirus, they develop complications and are highly at risk of fatalities.

The aged population is highly susceptible to COVID-19 disease. There have also been reports that of the COVID-19 cases, the males constitute a higher number compared to the females. Women are less susceptible to the disease because of the possession of the X chromosome and sex hormones, which plays a vital role in innate and adaptive immunity. Men are also associated with poor lifestyle habits, which include smoking that result in lung infections [36]. As a result, the majority of critical cases turn out to be males. Additionally, the males who are smokers and are above the age of 65, are highly susceptible to fatal cases of COVID-19.

## Summary

As no effective treatment yet for the COVID-19, the medical plant can be used to reduce and avoid the coronavirus. Myrrh or *C. myrrha* is one of the medicinal plants believed to have therapeutic effects on various diseases. It believed that Myrrh has medicinal properties, such as immunomodulatory, anti-inflammatory, cytotoxic, antioxidant, antimicrobial, antioxidant, hepatoprotective, anti-tumor, anti-ulcer, and analgesic activities. As a consequence, Myrrh can be used to treat different types of diseases because of their therapeutic activities. Besides, Myrrh antiviral activities that help in preventing various kinds of infections. As such, there is a possibility

that Myrrh or *C. myrrha* could be effective in treating the current cases of COVID-19. Since no studies are investigating the antiviral effects of Myrrh on Coronavirus, the researchers in the clinical field should conduct extensive research on whether the extracts from Myrrh may help in preventing and treating COVID-19. Future research is needed to determine whether Myrrh, in the form of mouthwash and gargle, may help in reducing the spread of COVID-19 from an infected person to uninfected people.

## MATERIALS AND METHODS

### Methodology

The study employed the use of survey questionnaires to collect data for the study (APPENDIX 1). A total of 269 Qatari and non-Qatari males and females were randomly sampled from the target population. The survey was meant to test people's knowledge, attitudes, and behaviors towards Myrrh in combating COVID-19. The questionnaires comprised close-ended questions with a continuous rating scale that was meant to help in the measurement and assessment of attitudes and emotions of the participants towards Myrrh. All people in the Qatar community were requested to participate in the study either they were healthy or being infected with COVID-19, and only below eighteen years old were excluded. Upon the completion of data collection, the data were analyzed using the SPSS software version 22. The type of tests carried out was the descriptive statistics comprising of the tests for frequencies, percentages, means, and standard deviations.

### Data analysis and results

This section outlines the results of the analysis pertaining to the knowledge and behaviors of the Qatari community towards the use of Myrrh in the treatment of COVID-19. This study was conducted in light of the pandemic conditions of COVID-19 that invaded the world. The study was analyzed through descriptive statistics. The section begins with the demographic characteristics of the participants. The next section includes the knowledge, attitude, and behavior of the Qatari community toward using Myrrh to combat the COVID-19 epidemic.

### Demographic characteristics

From Table 1, the demographic characteristics are depicted. Females (71.0%) were more than males (29.0%). The majority of the participants were in the age category of 41-50 (34.2%), 50 and more (32.3%), while few were in the category of 20-30 (4.8%). More than three-quarters (77.7%) were married while few were widowed (1.1%). Most were Qatari nationalities (63.2%) compared to non-Qatari (36.8%). The majority of the residents had a baccalaureate degree (48.0%), a high school diploma (21.6%), and few had no formal education (1.1%). Most participants were government employees (39.0%), significant were not working (17.8%), and few were others (3.3%).

### Knowledge of myrrh

This was meant to test the knowledge of the participants regarding the use of Myrrh to treat COVID-19. A majority of the participants (91.82%) did not have COVID-19, while a few (8.18%) did not know whether they had the infection. A high proportion of the

Table 1: Demographic characteristics.

Variable	Category	N	%
Gender	Male	78	29
	Female	191	71
Age	Less than 20	22	8.2
	20-30	13	4.9
	31-40	54	20.1
	41-50	92	34.3
	50 and more	87	32.5
Marital status	Single	44	16.4
	Married	209	77.7
	Divorced	13	4.8
	Widowed	3	1.1
Nationality	Qatari	170	63.2
	Non-Qatari	99	36.8
Education level	No formal education	3	1.1
	Elementary school	23	8.6
	High school diploma	58	21.6
	Baccalaureate degree	129	48
	Graduate degree	56	20.8
Employer	Government employee	105	39
	Medical employee	45	16.7
	Private employee	24	8.9
	Businessman	15	5.6
	Student	23	8.6
	Not working	48	17.8
	Other	9	3.3

participants (91.82%) knew about Myrrh while only a smaller proportion (8.18%) did not know about it. When asked about their thoughts about myrrh, almost an equal proportion perceived it as a tree and medicine with 37.6% and 37.2%, respectively. On the other hand, only 2.3% thought Myrrh was food.

Regarding the primary reason for the use of Myrrh, 31.7% of them did not know, 30.2% outlined that it was meant to heal the sores on the skin, and 17.5% outlined that it was meant to suppress swelling. The participants were also asked to describe the methods they thought would not help reduce COVID-19 infection. A high number (48.9%) cited that taking antibiotics would not help mitigate COVID-19 infection, followed by mouthwash (20.9%) and, lastly, taking vitamin C (3.7%). A high percentage (29.3%) believed that Myrrh would effectively treat sore throats and chest infection by 70%, while only a small proportion (7.6%) believed that Myrrh would treat and cure throat and chest infection by 100%. However, most of the participants (87.92%) did not know about the chemical action of Myrrh. These results are represented in (Figures 1-3 and Tables 2-6).

### Behaviors towards Myrrh

This section was meant to assess people's behaviors towards Myrrh. More than half of the participants (50.9%) used Myrrh only when necessary, while 13.0% used Myrrh after meals while only a few (11.2%) did not gargle or use mouthwash. Regarding this use during COVID-19 period, a high percentage (55.4%) had not used Myrrh during the period, a significant proportion (29.0%) had

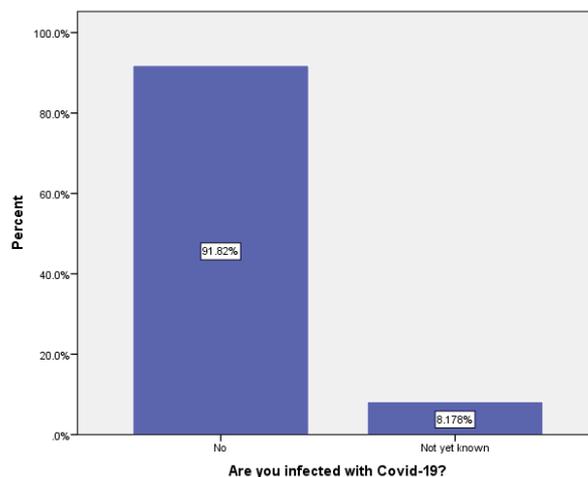


Figure 1: Number of persons infected with COVID-19.

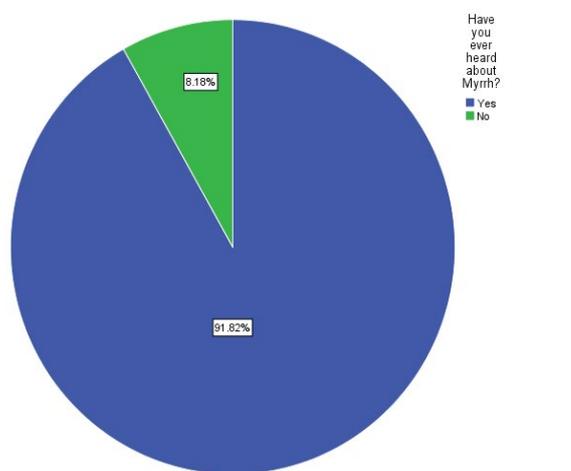


Figure 2: Heard about Myrrh.

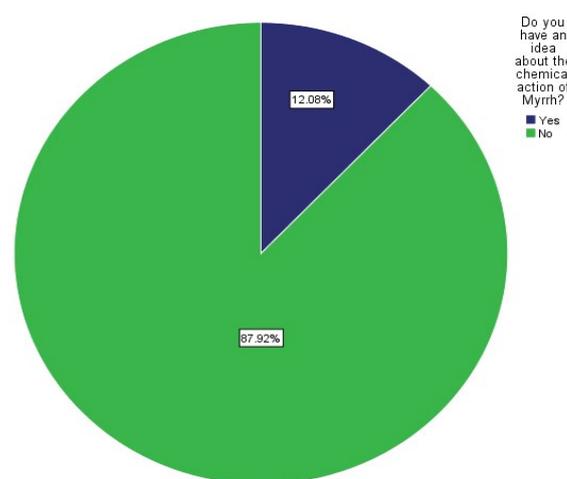


Figure 3: Knowledge about the chemical action of Myrrh.

Table 2: What do you think Myrrh is?

Knowledge about Myrrh	N	%
It is a tree	100	37.6
It is food	6	2.3
It is medicine	99	37.2
Other	27	10.2
I don't know	34	12.8

**Table 3:** Primary reason for using Myrrh.

Knowledge about Myrrh	N	%
To promote oral health	55	20.5
To heal sores on the skin	81	30.2
To suppress and swelling	47	17.5
I don't know	85	31.7

**Table 4:** Methods that do not help reduce COVID-19.

Reduce Covid-19	N	%
Using hand sanitizer	18	6.7
Using mouth wash	56	20.9
Take vitamin C	10	3.7
Take Myrrh	20	7.5
Hand washing	12	4.5
Not touching face, nose or eyes	21	7.8
Taking antibiotics	131	48.9

**Table 5:** Percentage of Myrrh used to treat sore throat and chest infection.

Treat sore throat and chest infection	N	%
Very low	63	24
40%	42	16
50%	61	23.2
70%	77	29.3
100%	20	7.6

**Table 6:** Rate your overall health.

Rate your health	N	%
Don't know	7	2.6
Unhealthy	4	1.5
Somewhat healthy	116	43.1
Very healthy	141	52.4

**Table 7:** Responses regarding usage of Myrrh.

Usage of Myrrh	Response	N	%
Ever use Myrrh	Yes	190	70.9
	No	78	29.1
Family using Myrrh	Yes	195	73
	No	72	27

**Table 8:** Frequency of using Myrrh for mouth rinse and gargle.

Use for mouth rinse and gargle	N	%
Once a day	34	12.7
After meals only	35	13.1
Before going to sleep	32	12
When necessary	136	50.9
Not gargle nor using mouthwash	30	11.2

used it, while very few (1.9%) used it before the period. Regarding the possibility of Myrrh treating COVID-19, most were somewhat sure (42.0%), a significant number (32.7%) were not sure while few (8.9%) were very sure about Myrrh treating COVID-19. High percentages of the participants would try (47.6%) or absolutely try (45.4%) using Myrrh to avoid COVID-19. These findings are represented in (Tables 7-11).

## Attitudes towards using Myrrh as treatment

This section was designed to evaluate the Qatari community's attitudes towards the use of Myrrh as a COVID-19 treatment. The attitudes were measured on a Likert scale. The majority agreed (44.5%) and strongly agreed (29.1%) that they can try using Myrrh as an herbal method of treating COVID-19. Additionally, a majority of them agreed (46.2%) and strongly agreed (16.2%) that Myrrh is useful in treating sore throat, while more than half agreed (33.6%) and strongly agreed (12.5%) that Myrrh is useful in treating chest infections. Consequently, more than three quarters (83.4%) of the participants were willing to try out using Myrrh in treating COVID-19, while only a small proportion (0.37%) were unsure about it. The findings are represented in Figure 4 and Table 12.

**Table 9:** Frequency of using Myrrh during COVID-19.

Use of Myrrh during Covid-19	N	%
Everyday	17	6.3
Some days	78	29
Only if infection start	18	6.7
Before infection start to prevent it happens	5	1.9
Not used	149	55.4

**Table 10:** Effectiveness of Myrrh towards curbing COVID-19.

Effectiveness of Myrrh	N	%
Yes, 100%	24	8.9
Maybe	113	42
I am not sure	88	32.7
I do not know	44	16.4

**Table 11:** Reactions toward using Myrrh to avoid COVID-19.

Reactions towards Myrrh	N	%
I refuse to do so	19	7.1
I may try	128	47.6
Absolutely will try	122	45.4
I refuse to do so	19	7.1

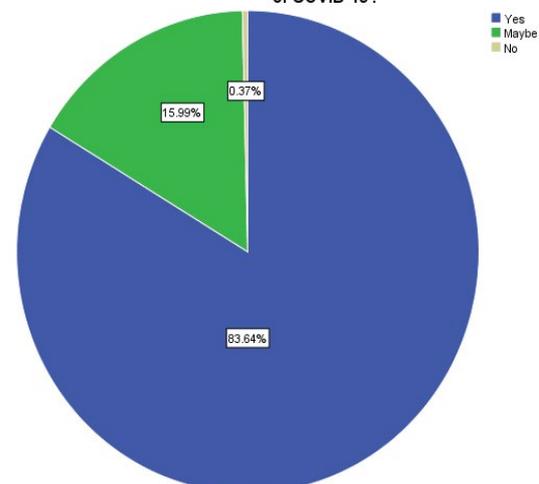
**Figure 4:** Would you accept the use of Myrrh if you knew it would protect you or cure you it of COVID-19?**Figure 4:** Use Myrrh if asked to.

Table 12: Attitudes towards using Myrrh as treatment.

Variables	Mean	Strongly disagree		Disagree		No opinion		Agree		Strongly agree		Rank
		N	%	N	%	N	%	N	%	N	%	
I like it when I have a sore throat	3.62	9	3.5	25	9.6	64	24.6	120	46.2	42	16.2	2
I like it when I have a chest infection	3.39	10	3.9	30	11.7	98	38.3	86	33.6	32	12.5	3
I like it when I have nasal congestion	3.32	12	4.7	34	13.3	102	39.8	76	29.7	32	12.5	4
I feel embarrassed to use such herbal, and we have medication	2.38	57	22.3	97	37.9	63	24.6	26	10.2	13	5.1	6
I believe in herbal so I can use it any time if I like	3.91	4	1.6	21	8.3	42	16.5	113	44.5	74	29.1	1
I believe only in medicine	2.64	27	10.9	101	40.9	62	25.1	47	19	10	4	5
I laughed when any medical professional talked about it	2.23	61	23.9	106	41.6	62	24.3	20	7.8	6	2.4	7

## RESULTS AND DISCUSSION

The study findings revealed that COVID-19 infection was not a problem in Qatar when the survey was undertaken since most of the participants were not infected with the disease. The study's major objective was to assess the attitudes, knowledge, and behaviors of the Qatari people towards the use of Myrrh for COVID-19 treatment. Most of the participants knew that Myrrh was a tree and used as traditional herbal medicine [10,36]. Despite the knowledge, a majority of them did not know the primary use of Myrrh. Scholars have posited many uses of Myrrh, some of which include pain management, cleaning wounds, and blood-moving medicine because of its antioxidant and anti-inflammatory activities [4,5]. Myrrh is also used for therapeutic activities in cancer treatment, traumatic injuries, male and female reproductive organs, and the prevention of miscarriages [17,37,38].

The current findings indicate that a majority of the participants outlined that antibiotics were ineffective in the treatment of COVID-19. These findings are consistent with those of [39,40] outlining that antibiotics cannot treat COVID-19 because a virus and not bacteria cause it. Furthermore, the WHO discouraged the use of antibiotics and traditional medicines in treating COVID-19 [40] despite the fact that there is no effective treatment at the moment [21].

The study findings further outlined that the participants lacked knowledge about the chemical action of Myrrh. Studies have outlined several chemical actions of Myrrh, including anti-inflammatory, anticancer, and analgesic chemical actions [41-47].

Myrrh can be used in the treatment of COVID-19 because it possesses anti-inflammatory chemical actions, which help in combating lung inflammation [48]. Regarding the participants' use of Myrrh, most of them used it as a mouth rinse and gargled only when necessary or after meals. Using Myrrh for oral hygiene is essential mouth rinsing oral gargling is clinically essential in reducing oral health problems and could be used to rinse mouth and for oral gargling to prevent intra-oral mucosal wounds, gingivitis inflammation, and plaque formation [2,11]. Most of the respondents had not used Myrrh during the COVID-19 period, and the majority was also unsure of whether or not Myrrh was effective in COVID-19 treatment. Myrrh has been proven to have an effect on viral infections as it contains essential oils that may inhibit the virus from entering the host cells [6,7]. COVID-19, being a viral infection, could be prevented by

the use of Myrrh, especially because the virus can get into the body through the mouth.

Participants' attitudes about the use of Myrrh in treating chest infections, and sore throats, showed that most of them believe and use Myrrh to treat the infections. The efficacy of Myrrh in treating chest infections has also been proven [7,10]. The oils that Myrrh contains are vital in the suppression of inflammations during chest ailments [10]. It also has antiseptic components which help in relieving sore throats. Chest pains and sore throats are some of the symptoms of COVID-19 disease; Hence, Myrrh could be useful as a supportive treatment to treat these symptoms [20].

## LIMITATIONS OF THE STUDY

The study employed the sole use of descriptive research design, and hence there were no empirical findings of the research. This, therefore, limits the use of the findings to make generalizations about the entire population. Large sample size was, however, used to enhance the reliability of the findings. Future research will complement the findings of the research study.

## CONCLUSION

COVID-19 disease continues to spread across the countries of the world. Its major symptoms have been identified to include fever, fatigue, dry cough, and sore throat. The laboratory test to diagnose the disease is reverse transcription-PCR. To appropriately assess the extent of the infection, CT scans and imaging are usually carried out, especially in the case of COVID-19 pneumonia. The disease is transmitted through human-to-human contact and is passed through droplets from coughing or sneezing of an infected person. The first case of the disease was reported in December 2019, and there has been no vaccine or treatment until the date. The available treatment measures include the supportive treatment that treats the symptoms and supports the body's immunity to fight off the disease.

There are drugs that have been used to treat the disease, and they include lopinavir and ritonavir, chloroquine and hydroxychloroquine, and remdesivir. These drugs have shown some level of efficiency in reducing the days of recovery of patients, but have not been proven to cure the disease entirely. Cases of fatalities, despite the administration of the drugs, have also been reported. The study examined the attitudes, knowledge, and perceptions of

people towards Myrrh usage in the treatment of COVID-19. The findings indicated that people were willing to try using Myrrh to combat COVID-19. Researchers outlined that Myrrh contains anti-inflammatory chemical actions and could be useful in treating the inflammation caused by COVID-19.

Moreover, it was found that Myrrh further contains essential oils that inhibit viral entry into the body cells. Therefore, this implies that it could play a role in the treatment of COVID-19, which is a viral infection. Further studies and experimental research should be carried out to clearly define the efficacy of Myrrh in the treatment of COVID-19.

## RECOMMENDATIONS FOR FURTHER STUDIES

This study focused on the knowledge, behaviors, and attitudes of the people of the Qatari community about Myrrh in treating COVID-19. The descriptive analysis used to conduct the study has limitations linked to unreliability and lack of scientific or empirical evidence. Further research is recommended to conduct quantitative research to examine Myrrh's effects in treating COVID-19. In addition, findings showed that most of the respondents did not know Myrrh and its uses in treating COVID-19 to address these limitations. In addition to our knowledge, there is no study conducted to examine the impact of Myrrh on COVID-19. This forms a basis for conducting further investigation to conduct an educational intervention experimental study about Myrrh and examining the effectiveness of education in treating COVID-19. Further, a large sample size is recommended to increase the generalizability of findings to the entire affected population.

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## CONFLICT OF INTEREST

The author declares that she has no conflict of interest.

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