Coronavirus nCOVID-19: A pandemic disease and the Saudi precautions

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Abstract

Now nCOVID-19 has a foothold in many countries, and the threat of a pandemic situation has risen. Recently a novel coronavirus (nCOVID-19) has first emerged in China, causing multiple symptoms in humans and closely related to those caused by SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome). The ncov-19 has reported in Wuhan city of China has recently infected over six million people and at least 0.4 million confirmed deaths all over the world, while 2.8 million has recovered from this deadly virus. Many instances of this respiratory syndrome coronavirus infection have already reported in more than 216 countries and territories. In contrast, the majority of cases reported in the USA, Brazil, Russia, Spain, UK, Italy, France and many more countries. In today’s context, the coronavirus is one of the significant issues faced by the world with plenty of cases. In these circumstances, rapid reviews which recommended by WHO (World Health Organization), and these recommendations are very significant, helpful and cover current data with different preventive measures developed by the Saudi CDC (Saudi Centre for Disease Prevention and Control). This review article describes the possible modes of transmission so that proper preventive actions should be taking. Importantly, this work mentioned the animal reservoir through which may infect humans, and it must be identified to break the transmission chain. In additions, this review paper briefly discussed the spread of the coronavirus in the Arabian Peninsula and what precaution measures are in place by each country to limit the spreading of this virus. Finally, since the number of infected people specifically those with close contact with nCOVID-19 patients is increasing daily and appears unstoppable, we used the preventive measures by pharmacists as part of health care professions.

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1. Introduction

nCOVID-19 is the name of a new respiratory disease, abbreviated from coronavirus disease 2019, while n stands for a new or novel and the causative agent of this disease is Severe Acute Respiratory Syndrome Coronavirus 2 (nCOVID-19). Coronaviruses are a group of family-based viruses containing strains that roots potential diseases in birds and mammals. It is the vast class of viruses that cause viral respiratory sickness extending from common cold symptoms to more severe lung diseases. In comparison to other members of coronaviruses, which cause humans respiratory infections, SARS-CoV (first reported in China, 2002) and MERS-CoV (first recorded in KSA, 2012), nCOVID-19 is likely to have originated from animals and have first introduced in Wuhan city, China, 2019 then it has spread to 216 different countries and territories all over the world, and it seems more deadly. However, nCOVID-19 is a novel strain, unidentified in humans previously (Lai and Liu, 2020). Coronaviruses have zoonotic origins from animals such as dromedary camels (Camelus dromedarius), civet cat (Paguma larvata) and bats (Coleman and Frieman, 2014). From their reservoirs, coronaviruses may transmit to other animals and humans, with the transmission to humans usually needs an intermediate host. SARS-CoV-2 considering being the 3rd pathogenic virus with high mortality rates, it has established with 2494 infected cases and almost 900 deaths were recorded (WHO, who.int/emergencies/diseases/novel-coronavirus-2019). However, the SARS-CoV virus has documented 8000 cases and 800 deaths. The SARS-CoV-2 outbreak has reached 216 countries and sickened over six million people up till 31th May 2020. Total number of fatalities nearly 0.4 million of which the USA; 100,000 and UK; 39000, while around, 33000, 29,000 and 28,000 deaths reported in Italy and France and Brazil, respectively (Fig. 1).

Fig. 1. Cumulative number of totals, active, recovered cases and death of nCOVID-19 from 3rd Jan till 30th May.
The incubation period of this virus ranges from 2 to 14 days (https://www.worldometers.info/coronavirus/coronavirus-incubation-period/) and common signs and symptoms are cough, running nose, sneezing, fatigue, fever, sore throat and breathing difficulty (Fig. 2). In a few cases, viruses can cause pneumonia and bronchitis. The complications are acute respiratory distress syndrome (ARDS), secondary infections, failure of kidney and sepsis may lead to death. nCOVID-19 puts the Public Health Emergency of International Concern (PHEIC) and worlds alarming alert, and the emergency among different countries, especially Europe, America and Asian countries draw the attention of almost every human across the globe (Fig. 2). This review paper shows aggregate and consolidates the most critical issues related to the virus outbreaks’ origin, sources of virus transmission, signs and symptoms as well as the radiographic features from affected subjects. Additionally, it illustrates some preventive measures taken by the Saudi government that can control further spread of the SARS-CoV-2.

2. Origin

The first coronavirus case reported in China, Wuhan city among people who had visited a seafood and meat market, and it was highly suspected to be transmitted from animal to human and then transmitted from human to human or to pets or vice versa. Based on different studies, the virus might be originated in bats (Zhou et al., 2020; Wu et al., 2020). However, no bats were found for sale purpose at the market, which confirmed that another unknown animal might help in the transmission of the virus to humans. Many of these coronaviruses primarily infect the individual workers in direct contact with animals, as reported previously. One study recommended pangolin or snake as maybe the transitional animal as there were sold in the seafood and meat market (https://www.who.int/csr/sars/en; Ji et al., 2020; https://www.businessinsider.com/wuhan-coronavirus-chinese-wet-market-photos-2020-1). Many studies explore the potential virus reservoir by comparing the sequence analysis of Relative Synonymous Codon Usage (RSCU) among different animal species based on the SARS-CoV-2 genome sequence. Results suggested that SARS-CoV-2 is a recombinant virus between the bat coronavirus and unknown origin coronavirus that located within the viral glycoprotein spikes presented on cell surface (Ji et al., 2020). One more research team applied algorithm for analysis of nCOVID-19 nucleotide sequencing to recognize other viruses’ origins, and the results appeared that both bats and minks could be the latent host for nCOVID-19. Additionally, a study revealed that nCOVID-19 has most homogeneous genetic information with bat coronavirus and resembling snake codon usage bias (Guo et al., 2019).

3. Epidemic: SARS, MERS, EBOLA, influenza and nCOVID-19

SARS first recognized in Guangdong, China, November 2002, and then spread to more than thirty countries which began with 8000 cases and 774 deaths. It was the first new epidemic disease
in the 21st century. The host of this epidemic disease was considered a civet cat; however, during seven months since the occurrence, it was under controlled (Cherry and Krogstad, 2004). The SARS global outbreak period began in 2003 up till 2004. After the emergence of SARS, the second coronavirus MERS was resulting in a significant global public health crisis. It first emerged in June 2012 in Saudi Arabia when a sixty years old man admitted with severe pneumonia and acute kidney injury at Jeddah, Saudi Arabia. Many researches confirmed that MERS transmit to humans from the infected Arabian camel. Maximum MERS cases were observed in the Middle East, North Africa regions, Europe, East Asia and the USA (Table 1) (Bauerfeind et al., 2016; McIntosh et al., 2017). Spanish influenza was also an epidemic which its outbreak from 1918 to 1919, and it was the most devastating epidemic on record, which killed between 50 and 100 million people around the world. Several measures applied during that era, such as fresh air, sunlight, standards hygiene and face masks in order to reduce mortality rates. Ebola virus was also an epidemic disease which first outbreaks in Ebola River, Zaire 1976. The 2013–2016 outbreaks were in Guinea then rapidly extend to West Africa with more than 10,000 deaths (Table 1).

3.1. Spreaders

All over the world scientists are working to find out the different spreading routes of these viruses. In general, the common way is through respiratory droplets which may transfer from the patient through coughing and sneezing. Further tests have also confirmed the presence of these viruses in patients’ stool, suggesting that it can be spread through the excretory product. Currently, it is entirely unclear whether people can be infected by touching contaminated surfaces or objects.

3.2. High-risk people

Older people and people with long term medical issues are more susceptible to be infected with this virus. These critical chronic health problems such as lungs diseases, sickle cell disease, liver disease, heart problems, kidney disease, cancer, high blood pressure, HIV and diabetes are more likely to get the risk of serious sickness. Pregnant women (current or recent) and the person with weak immunity are also at a higher risk of severe illness due to this virus. Additionally, smokers are at great risk of disease because smoking reduces the natural protection against this type of viruses.

3.3. Social distancing

Social distancing or self-quarantine is one of the best tools to mitigate the spread of the nCOVID-19. In 1918, two different states of America detected a few cases of influenza among civilians of Philadelphia and Saint Louis. Both of the cities were planning for a massive military parade, which was the city’s largest parade ever. The head of Philadelphia city decided to continue the events which were the big reason for quickly spreading the virus and made it a worldwide pandemic. After three days, every bed in Philadelphia’s hospitals were filled with sick and dying patients, infected by this deadly virus. While the head of the St. Louis city decided to cancel its parade, closed all schools, playgrounds, libraries, courtrooms and churches around the entire city; the public gathering was also banned. After a month, more than ten thousand people in Philadelphia passed-away due to flu while deaths toll at Saint-Louis was not exceed 700 cases. These precautions demonstrate the advantage of cancelling events, mass-gatherings and distancing social dissociation routines.

3.4. Case fatality rate CFR

The fatality cases rates are intended by dividing total deaths from a disease by the number of cases. It is expressed as a percentage (%) and used as a measure of disease severity.

\[ \text{CFR} = \frac{\text{Number of deaths from nCOVID-19}}{\text{Number of diagnosed cases}} \times 100 \]

According to the WHO (December 2019 to May 2020) 6,200,000 laboratories confirmed cases of nCOVID-19 were reported, of which 1,800,000 cases were in the USA with deaths 100,000 resulting 5.55% of CFR. The incidence of nCOVID-19 continues to rise, with 275,000 cases reported till 31th May 2020 alone from UK with 39,000 total deaths resulting CFR of 14.2%, while 232,664 cases in Italy with 33,340 deaths having CFR of 14.3%. The case of the fatal-rate of the Spain and France are 9.5 and 15.2%, respectively. Currently, after the closed view of the data, it can be confirmed that Italy, France and the UK have the highest CFR among all affected countries. There are 85,000 cases reported from Saudi Arabia with 503 deaths, which indicated that Saudi Arabia is the most affected.

### Table 1
Comparison of different epidemic diseases through 1918–2020.

| Epidemic      | SARS          | MERS                   | nCOVID-19       | Ebola       | Influenza   |
|---------------|---------------|------------------------|-----------------|-------------|-------------|
| Origin        | Guangdong, China | Saudi Arabia, Eastern Region | Wuhan, China   | DR Congo   | New York, United States |
| Identified year | 2002  | 2012                  | 2019            | Firstly in 1976 and then 2013 | 1918 |
| Total cases   | 8098          | 2494                   | 1,593,515       | About 2800  | 500 million |
| Deaths        | 714           | 858                    | 95,047          | 11,300      | Younger than 5, 20–40, 65 years and older |
| High mortality age | 60′       | 45′                    | 60′             | 60′         | USA, many countries in Europe and Asia |
| Affected # of countries | 26  | 27                    | 209             | Mainly 3     | Between 1% and 3% |
| CFR           | 9.5%          | 34.4%                  | 6.12%           | 40%         | Wild waterfowl |
| Incubation period | 2–7 days | 2–14 days              | 2–14 days       | 2–21 days   | Wild animals (such as fruit bats, porcupines or non-human primates |
| Natural reservoir | Cat or cat | Dromedary camel        | Bat, sea food animals | 3–6 feet | 2–7 days |
| Human to human transmission Distance from infected person | Yes, Patient droplet spread up to 3 feet | Yes, Patient droplet spread up to 3 feet | Yes, Patient droplet spread 6 feet | Yes, Contact with body fluids 3–6 feet | Yes |
| Symptoms      | Fever, dry cough, breathing problem | Fever, cough, breathing problem | Fever, dry cough, breathing problem | Fever, muscle pain, sore throat, severe diarrhoea, bleeding, abdominal pain | Fever, runny nose, sore throat, muscle pain, cough, |
| Treatment     | No medication has been proven yet | No medication has been proven yet | No medication has been proven yet | rVSV-ZEBOV vaccine | A nasal spray, vaccine (LAIV, Q/LAIV) |
country among the Arabian Peninsula, having 5.9% of CFR. Globally, total CFR of nCOVID-19 is 6.0% which is much lower than SARS and MERS. According to WHO, the total number of laboratory-confirmed cases of MERS was 2494 up till November 2019 with 858 deaths, and it resulted in 34.4% CFR. Among these 2102 cases reported from Saudi Arabia, it had 780 deaths with 37.1% CFR. Based on the WHO, during November 2002 up till July 2003, total 8,098 people became sick due to SARS globally, and 774 were died. Therefore, the total CFR due to SARS is 9.55% which is higher than the current nCOVID-19 and MERS. Most nCOVID-19 cases occurred in health care facilities; however, the routes of direct or indirect transmission of these remain unclear. Up till now, not any specific treatment or any vaccine is available. However, serious attempts to develop preventive therapy and different researches in many laboratories are ongoing with the hope of some great findings (https://www.worldometers.info/coronavirus/).

3.5. nCOVID-19 or flu

nCOVID-19 has similarities and differences with flu in terms of effects and symptoms. But it is a contagious viruses which can spread rapidly and usually caused high fever and shortness breath (Table 2).

4. Epidemiology

nCOVID-19 is an enveloped, positive-sense RNA virus, which are known to cause different respiratory tract diseases in many animals and humans. Human coronavirus circulates the globe, of which some are promoters of the common cold and flu. In 2019, as discussed above, many cases in China of severe infections were notified, which caused by a novel virus. Then the number of infected people rises day by day in Wuhan city of China. Due to the danger/hazards of infections, foreigner people, and many residents tried to walk/fly away from the infected places, which became a big reason for this epidemic disease transmission. Although the epidemic is still ongoing, initial lessons from its spread can help, inform public health officials and medical practitioners in efforts to combat its progression. One of the best precautions for putting an end to these viruses is not to leave the place where you present and not to enter the place where these epidemics are raised. Few famous and well-known hadith of our Last Prophet Muhammad (P.B.U.H.) about the epidemic situation mentioned in the book of Hadith:

Allah’s Messenger (ﷺ) said: “If you hear of an outbreak of plague in a land, do not enter it; but if the plague breaks out in a place while you are in it, do not leave that place.” (Sahih al-Bukhari 5728)

Allah’s Messenger (ﷺ) said: ‘(There is) no ‘Adwa (no contagious disease is conveyed without Allah’s permission), nor is there any bad omen (from birds); nor is there any Hamah, nor is there any bad omen in the month of Safar, and one should run away from the leper as one runs away from a lion.” (Sahih al-Bukhari 5707)

However, it is one of the fundamental facts for preventing these viruses from spreading further. This assessment proved the scientific evidence that supports the restriction on travelling during the expansion of epidemic diseases mentioned in the Hadith. Carriers of this virus travelled to anywhere without any clinical check-up or incubation stay during the last three months from China, Iran and Italy to the globe, which made an alarming situation of spread, severity and inaction for the world. Shortly after that, more than one hundred twenty thousand cases were reported; among these eighty thousand found only in China.

5. nCOVID-19 outbreaks in Arabian Peninsula

The Arabian Peninsula is the largest peninsula on earth and located in western of Asia continent. It occupies an area of about 1,250,000 square miles. The peninsula consists of nine countries: Kuwait, the United Arab Emirates, Saudi Arabia, Jordan, Bahrain, Qatar, Oman, Yemen, and Iraq. The Arabian Peninsula is bordered by the Persian Gulf, the Red Sea, the Indian Ocean and the Levant. The peninsula occupies a critical geopolitical role in the Arab world due to its vast reserves of natural gas and oil as well it shows significant religious importance.

The novel coronavirus, has sounded global alarms, with USA, the epicentre of an outbreak, reporting over 370,870 deaths worldwide and health experts grappling to find a cure. All Arabian Peninsula countries have been subject to coronavirus outbreaks (Table 3 & Fig. 3). The nCOVID-19 disease outbreak in Arabian Peninsula, since 29th January when the first 4 cases were published in UAE and affected males and females with different ages. A total of more than 227,173 confirmed cases have been reported in all Arabian Peninsula countries, Saudi Arabian nationals accounted for a majority of total active cases, death and recovered cases.

As most of these countries constantly experience a uniquely dynamic population influx in the form of expatriate workers, tourists, or pilgrims, which are facilitate coronavirus outbreaks. Most of these countries have a well-established public health program of surveillance of virus outbreaks, and an effective system of preventing introduction of coronaviruses infections. The veterinary services and ministries of health within the Arabian Peninsula and bordering countries can work together to sharing expertise in this field where many infections are zoonotic and mutual advantage to prevent the coronavirus spread (Sahih al-Bukhari 5707; Scrimgeour, 2003; https://wwwa.devex.com/news/coronavirus-impacts-grow-aid-blocked-in-yemen-and-u-k-aid-reshuffle-this-wk-in-development-96611).

6. Role of radiology

Radiological modalities are one of the critical resources that help in reaching the diagnosis of nCOVID-19 and excluding other infections or other pulmonary pathologies. Recently, many researchers and doctors, including radiologists, are working finding out pertinent features by the help of all modalities, particularly High-Resolution Computed Tomography (HRCT) which is a type of computed tomography (CT) with specific techniques to enhance image resolution.

Multiple studies are showing a normal chest X-ray in nCOVID-19 patients or pneumonic consolidation. The final results of chest CT, depending on the severity and days of illness (Pan et al.,

| Disease          | Dry cough | Cough | Sneezing | Runny nose | Light fever | High fever | Body aches | Weakness | Breath problem |
|------------------|-----------|-------|----------|------------|-------------|------------|------------|----------|----------------|
| Air pollution    | ✔️        | ✔️    | ✔️       | ✔️         | ✔️          | ✔️         | ✔️         | ✔️       | ✔️             |
| Common cold      | ✔️        | ✔️    | ✔️       | ✔️         | ✔️          | ✔️         | ✔️         | ✔️       | ✔️             |
| Flu              | ✔️        | ✔️    | ✔️       | ✔️         | ✔️          | ☑️         | ✔️         | ☑️       | ✔️             |
| nCOVID-19        | ✔️        | ✔️    | ✔️       | ✔️         | ✔️          | ✔️         | ✔️         | ✔️       | ✔️             |
In another study of the temporal progression of the CT appearances in nCOVID-19, performed on 18 of 21 patients (86%) with noncomplicated nCOVID-19, performed on 18 of 21 patients (86%) with noncomplicated nCOVID-19 pneumonia showed that the severity of lung abnormalities peaked at 10 days post symptom onset, with a gradual tail-off after this time (Pan et al., 2019). In another study of thirty-six patients, HRCT showed rapid changes over time with fibrous stripes appearing upon improvement in the disease course (Wang et al., 2020). Another study represented different stages of disease processes on chest CT scan from days of symptom onset. Accordingly, the disease divided into three categories, includes; early stage (0–2 days) demonstrating the normal chest CT scan 56 out of 123 with zero linear opacities at the early stage. Intermediate time course (3–5 days) demonstrates bilateral lung involvements including, peripheral distribution and consolidation. Finally, late stage (6–12 days) showed the findings of intermediate stage with a slight increase in same findings with predominant finding of linear opacities amongst rest of the stages like 20 out of 29 findings of linear opacities occurred in the late stage (Pan et al., 2020; Bernheim et al., 2020).

7. Preparing for nCOVID-19 by different Saudi sectors

According to China and Italy experiences in the worldwide pandemic nCOVID-19 crises, several sectors in Saudi Arabia developed strict regulations to prevent the virus from spreading in the King-
These sectors including MOH (Ministry of Health), MOE (Ministry of Education), MOI (Ministry of Interior) and MIA (Ministry of Islamic Affairs) are collaborating very well according to the guidelines listed by the Saudi CDC of MOH. One of the initiatives is the Tawakkalna (Covid-19 KSA) official app. Approved by the Saudi Ministry of Health and the Ministry of Interior to prevent the spread of coronavirus, and was developed by the National Information Centre. The app. give an idea about the number and the most abundant area infected with the coronavirus in the Kingdom, and helps to detect the possible infections once users suspect with coronavirus symptoms. One more important thing it allows citizens and residents to request movement permission in cases of necessity during curfew; follow-up on their permission request status during curfew; and notify them when they are close to infectious or isolated areas.

7.1. Saudi CDC

The Saudi Centre for Disease Prevention and Control plays an essential role in preventing the spread of nCOVID-19 by continuous monitoring the number of cases by assisting the risks, develop awareness programs and plans to eradicate nCOVID-19. The centre develops certain measures for communities, and the public to prevent the disease from spreading in schools, colleges, workplace and mosques (Table 4). The centre took the responsibility of reducing the death and disability rates by spreading awareness and positive impact on the health behaviours of individuals and societies. Also, to enable all society segments to control their health, prevent all causes of nCOVID-19 through the guidance they developed on nCOVID-19 surveillance in healthcare and community settings (https://www.moh.gov.sa/CCC/healthp/regulations/Documents/Coronavirus%20Disease%202019%20Guidelines%20v1.1..pdf).

7.2. Standard precautions for nCOVID-19

In order to control further spread of the nCOVID-19 virus, people who are infected or suspected to carry the disease should be isolated from others and follow up on their treatment course under restricted infection-controlled precautions.

The Saudi CDC listed guidelines for standard measures established by the WHO for nCOVID-19, which mainly concern on hand, respiratory and food hygiene practice:

1. Frequently hand hygiene using alcohol-based hand rub or detergents and water.
2. Covering mouth and nose are essential when coughing and sneezing. Take on consideration to dispose of any used tissue, immediately.
3. If you have respiratory problems, wear a medical mask and clean your hands after disposing of the face mask.
Saudi CDC recommended preventive measures for the public and communities.

**Table 4**

| Type of Pharmacy          | Target personnel in setting                           | Type of activity                                      |
|---------------------------|--------------------------------------------------------|-------------------------------------------------------|
| In house                  | For suspected or confirmed cases of (nCOVID-19) but not require hospitalization | • Isolation                                           |
|                           | For family members in the event of a suspected or confirmed cases of (nCOVID-19) but not require hospitalization | • PPE required (medical mask and gloves)             |
| In workplaces             | Cleanliness of workplaces                               | • Wash hands with soap and water 20 s                |
|                           | For employee Rising respiratory issues                 | • Avoid sharing personal household items             |
| In communities            | In gathering placing                                   | • Monitor symptoms constantly                        |
|                           | In Taxies and transportations                           | • Isolation                                           |
|                           | The driver                                             | • Wash hands with soap and water 20 s                |
|                           | The rider                                              | • Medical mask                                        |
|                           |                                                        | • Avoid sharing personal household items             |
| In restaurants            | Food servers                                           | • Isolation                                           |
|                           |                                                        | • Sterilized desktops, phones and keyboards         |
| In Mosques                | Imam and prayers                                       | • Regular hand washing                                |
|                           |                                                        | • The availability of hand sanitizers.               |

7.3. Preventive measures for pharmacy workers

The Saudi CDC guidelines, mainly concern on health workers who are in close contact with nCOVID-19 patients. According to the WHO findings on this virus. It transmitted between people through close contact and droplets; not the airborne transmission. Therefore, additional precautions for those workers should be taken includes gloves, medical masks, goggles/face shield, gowns, as well as respirators (e.g. N95 or FFP2) and the way how to put on, how to remove and how to dispose of it properly. Pharmacists play a great role in the health society with their different responsibilities. In this review, we explain much more details of measures that should be taken with the pharmacists in Saudi Arabia. The following are types of pharmacies which have high risk exposure to the virus and certain precautions to be implemented to protect themselves and prevent health care transmission;

7.4. Community pharmacy

Community pharmacists are the health professionals most dealing with the public. They supply medicines for those with health-related problems, checking the pharmaceutical stocks (medicines, sterilizers and masks...etc). They also provide the patients at the time of dispensing their prescriptions with counselling. They inform the public, health professions and patients. Those pharmacists could consider as a link between the general public and health professionals in primary health care. Noticeably, the possibility of exposure of community pharmacist to nCOVID-19 exists, since they could interact with suspected patients; therefore, the first-line pharmacist should follow the precautions listed in (Table 3) to protect them as well.

7.5. Hospital pharmacy

Hospital pharmacists are responsible for managing the stocks of medication supply used in the hospital and are accountable for manufacturing, purchasing and quality testing for these medications. They collaborate as well with other health professionals in improving patients care and support through counselling and informing the optimal use of pharmaceutical medications. In the clinical services, dealing with nCOVID-19 cases, pharmacists working as a part of the multidisciplinary team of doctors, nurses and other health care professions to advise on the selection of appropriate medicine, dose and route of administrations and its possible
Rational use of personal protective equipment for coronavirus disease (nCOVID-19), Discarding the PPE kit is necessary after each use.

Besides the appropriate PPE use, standard precautions including frequent hand sterilizing and other standard precautions listed previously (under standard precautions I).

Recommended preventive measures in the context of nCOVID-19 for pharmacists in different pharmacy workplace.*

| Type of Pharmacy      | Type of activity          | Type of PPE                  |
|-----------------------|---------------------------|------------------------------|
| Hospital pharmacy     |                           |                              |
| Clinical pharmacist   | Sharing the care of the   | Medical mask                 |
|                       | nCOVID-19 patient(s)      | Gown                         |
|                       |                           | Eye protection (goggles or   |
|                       |                           | face shield)                 |
| Outpatient pharmacist | Preliminary screening not | The spatial distance of       |
|                       | involving direct contact  | at least 1                   |
|                       |                           | Meter                        |
|                       |                           | Medical mask                 |
| Inpatient pharmacist  | Any, not involving contact| No PPE required               |
|                       | with the nCOVID-19 patient(s) |                              |
| Patient counselling   | Aerosol generating        | Respirator N95 or FFP2       |
|                       | procedures (AGP) on the   | Gown                         |
|                       | nCOVID-19 patient(s)      | Gloves                       |
|                       |                           | Eye protection                |
| Drug Information      | Any, not involving contact| Apron                        |
|                       | with the nCOVID-19 patient(s) | No PPE required              |
| Community Pharmacy    | Preliminary screening not | The spatial distance of       |
|                       | involving direct contact  | at least 1                   |
|                       |                           | Meter                        |
|                       |                           | Medical mask                 |

* Besides the appropriate PPE use, standard precautions including frequent hand and respiratory hygiene. Before and after PPE use, hand hygiene is mandatory. Discarding the PPE kit is necessary after each use. Rational use of personal protective equipment for coronavirus disease (nCOVID-19). WHO, 2020.

Side effects. Due to the direct interaction of those pharmacists with infected patients, clinical pharmacists should follow special measures for their protection and safety purposes (Table 5).

7.6. Preventive role of the Pharmacist

Pharmacist and the pharmacy workforce can play an essential role in reducing the transmission of novel nCOVID-19 virus. These precautions could take place by the following:

1-The pharmacist staff should hygienize their area, by cleaning and sterilize their working environment, equipment and instruments according to the guidelines listed in (Chinese Pharmaceutical Association, 12th February 2020).

2-Keep themselves updated about the recent findings in the disease current, how it is transmitted, and how to prevent it from further spreading.

3-Knowing how to access the MOH information sources regarding the nCOVID-19 virus strategies (including the closet healthcare centre for the SARS-CoV-2).

4-Full staff training is mandatory to deal with an emergency plan and workflow, including the accurate way of wearing the Personal protective equipment (PPE).

5-Educating the community, including individuals and families with suspected cases of nCOVID-19 or respiratory illness to seek treatment from healthcare facilities or by contacting the MOH hotline: 937 to get the appropriate advice.

6-Raising awareness regarding this disease by frequent and proper hand sterilization and other standard precautions listed previously (under standard precautions I).

7-Information materials (leaflets, posters, electronic materials) should be provided for the community, including MOH guidelines and any other relevant information for the appropriate way to protect people from nCOVID-19 infection. MOH developed a website and social media accounts where these materials and other resources can be accessed.

7.7. KSA government supports towards nCOVID-19

KSA ministries and higher official authorities took immediate and prompt action from the beginning of this pandemic for fighting against the deadly virus through a variety of actions. In the beginning, more than hundred billion riyals SR was provided by the KSA government to mitigate nCOVID-19 and to fight with this virus. Recently, the Saudi health ministry MoH received 7 billion SR funds, and 8 billion SR was provided earlier from the government (Alshammari et al., 2020). On 15th April, King Salman has ordered 47 billion SR for the MOH as additional fund to help against nCOVID-19. He further ordered to fund 50 billion SR for private sector companies to reimburse them (Alshammari et al., 2020). On April 26th, King Salman ordered the King Salman Humanitarian Aid and Relief Center (KSRelief) to sign contract with USA, China, South Korea and Switzerland to combat the nCOVID-19 (Alshammari et al., 2020).

These contracts have several different purposes, Chinese government planned to send 500 experts in different field to help with the testing and utilize them as consultants. In addition, approximately 14.5 million nCOVID-19 tests will be performed, covering about 40% of the people living in KSA making it the largest test capacity for nCOVID-19 worldwide. Also, establishing six regional laboratory all over the KSA to conduct 50,000 tests per day and mobile laboratory to conduct 10,000 tests per day (Alshammari et al., 2020).

8. Dose summer affects nCOVID-19 spreading's?

Because of the similarity in the symptoms between nCOVID-19, flu and common cold viruses, which includes fevers, coughing and sometimes severe lung infections, and because that common colds and flu are seasonal, which drop down in summer and spring. Many people expressed their hope that the new virus could decrease it spread during spring and summer, and accordingly, the number of infected cases will decrease. However, there is no scientific evidence yet since the virus is still new and early to approve that.

9. Effects on international travelling

If the traveller suffers from symptoms indicating an acute respiratory illness before or after travel, the travellers must seek medical attention and inform the travel history of their health care provider. WHO standards recommended methods to prevent many diseases by cleaning hands with alcohol or rubbing hands with soap and water, as well as healthy nutritional practices. Also, when sneezing or coughing, the nose and mouth should be covered with elbow or tissue and then throw the tissue away immediately, and hands should wash very well. Avoid close contact with anyone who suffers from a fever and cough, and any person who suffers from fever, cough and difficulty breathing should seek medical care early and report his previous travel record of those who provide him with medical care.

Advice to conduct an exit check at international airports and ports in the affected areas, with the aim of early detection of travellers with symptoms for further evaluation and treatment, thus preventing the export of the disease. Exit screening includes an examination of signs and symptoms (fever above 38 degrees, coughing), passengers with symptoms of respira-
tory infection advise to leave the affected areas and directing travellers with symptoms for further medical examination, followed by a test for nCoV-19, keeping confirmed cases under isolation and treatment. Encourage examination at local airports, railway stations and long-distance bus stations as necessary. Travellers with contact with confirmed cases or direct exposure to a possible source of infection should be placed under medical supervision throughout the incubation period up to 14 days.

Public health authorities should reinforce collaboration with airlines operators for case management onboard aircraft and report any traveller who suffers from respiratory disease symptoms. Furthermore, The International Air Transport Association (IATA) guidance for cabin crew helping to manage suspected communicable disease on board an aircraft.

More than 12 million Muslims around the world perform Hajj and Umrah each year to the city of Mecca. The Kingdom of Saudi Arabia, as a precaution, has suspended international travel to the country and Mecca. The government called for temporary suspension; however, The ban also appears to include the Prophet’s (P.B.U.H) Mosque in Medina.

This decision has disrupted many Muslims traveller who has already in the Kingdom, and many others who decide to perform Hajj end of July this year.

The Ministry of Foreign Affairs said that the Saudi government “temporarily suspends entry to the Kingdom for Umrah and visits to the Prophet’s (P.B.U.H) Mosque”.

The new precautions are based on the recommendations of the competent health authorities to implement the highest precautionary standards and take the necessary precautions to prevent the emergence and spread of the nCOVID-19 in the Kingdom (https://www.who.int/news-room/articles-detail/updated-who-advice-for-international-traffic-in-relation-to-the-outbreak-of-the-novel-coronavirus-2019-ncov-24-jan; http://english.alarabiya.net/en/News/middle-east/2020/02/27/Saudi-Arabia-suspends-entry-for-Umrah-pilgrimage-due-to-coronavirus.html).

10. Concluding remarks

This manuscript has discussed various elements regarding the nCOVID-19 infection and its correlation with other coronaviruses diseases, control, and the role of the different approaches in containing and preventing the spread of this disease. The Saudi governments imposed aggressive actions to control disease spreading. Additionally, forcing people to stay at home and by developing certain regulations on nCOVID-19 surveillance in healthcare and community settings through the Saudi CDC. Pharmacists as members in the health organizations and following the Saudi CDC preventive measures is mandatory to protect themselves and others. On the contrary, it should turn into a movement, having supporting organizations worldwide, for better control of emerging diseases, including nCOVID-19 as numbers of nearly contact patients increases day by day.

Conflict of interest

The authors declare they have no conflicts of interest.

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