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Otorhinolaryngological Manifestations of COVID-19: a Perceptual Study

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Abstract— Otorhinolaryngological manifestations are among the clinical manifestations of COVID-19 infection. It's crucial for the general population to have a holistic view about theses manifestations as a part of controlling pandemic. This study aimed to report the results of the perception and knowledge about COVID 19-related otorhinolaryngological symptoms in Saudi Arabia. This is a cross sectional anonymous questionnaire-based study that was carried in Saudi Arabia. The questionnaire included a variety of questions to evaluate public perception and knowledge about otorhinolaryngological manifestations due to COVID-19 infection. One thousand five hundred twenty-one responded to the questionnaire. Most of the participants have identified otorhinolaryngological clinical manifestations of due to COVID-19, dyspnea (85%), hyposmoa or anosmia (82%), dry cough (78%). Study participants were willing to call ministry of health hotline(MOH) in 74.6% when experiencing otorhinolaryngological manifestations during COVID-19. In addition,70% were convenient with self-isolation. However, most of them were cautious to visit the otorhinolaryngological clinics during the pandemic era. This study showed that Saudi people have sufficient knowledge about COVID-19 otorhinolaryngological manifestations. This reflects the success of MOH guidelines to control COVID 19 infection. Nevertheless, extra campaigns with special emphasis of otorhinolaryngological illness still needs to be implanted in a wider scale.

Keywords— COVID-19, Perception, Public awareness, Otorhinolaryngological Manifestations, MOH guidelines

1. Introduction

COVID-19 is a subtype of severe acute respiratory syndromecorona virus (SARS -CoV-2)[1]. It poses agreat challenge to the global health since it wasinitially reported by the end of 2019[2]. It is still considered as an enigma with many obscure ideas as regards its nature, mode of transmission, prevention, pathology, clinical manifestations and management[3-5]. This viral infection may initially be presented by otorhinolaryngologicalclinical manifestations. These may include nasal congestion, rhinorrhea, nasal obstruction, sore throat andhyposmia or anosmia[6-7]. Nevertheless, anosmia, dyseusia and xerstomia maybe the early clinical presentations of this infection[8]. Some reports stated that taste impairment may usually accompany the COVID-19-positive cases while sore throat often associate negative cases[9]. The Saudi Arabian ministry of health (MOH) has implemented different special guidelines for dealing with COVID-19 pandemic. These guidelines entail many components. They define the suspected cases as those who presented with either a sudden onset of fever, cough or shortness of breath. The guidelines also considered thosepatients who presented with headache, sore throat, rhinorrhea, nausea and/ or diarrhea as suspected cases till further investigations. Moreover, their contacts within the last 14 days prior to the appearance of clinical manifestations should be considered as disease-carriers to be isolated[10]. Clinical otorhinolaryngological presentations are among the usual causes that may oblige people to visitthe

primary health carefacilities. The most encounteredproblems areusually otitis media,otitis externa, hearing loss, tinnitus, vertigo, deviated nasal septum,allergic rhinitis, sore throat, and tonsillitis[11-12].Nonetheless, otorhinolaryngological emergencies may includesudden hearing loss, foreign body, throat pain, and epistaxis[13-14]. Clinically, nasal diseases usually presentedasrhinorrhea, nasal congestion, and headache. While otolagia, hearing problems, dizziness, and tinnitus are the clinical presentations of aural manifestations. Snoring, dysphagia and sore throat are clinically reflecting oropharyngeal diseases.Moreover, hoarseness, dysphonia, dyspnea, and coughmay represent laryngeal diseases[15]. COVID-19 commonly manifests itself as fever, cough and fatigue[16]. However, it can also present as sore throat, sputum production, cough, hemoptysis, headache, diarrhea,nausea or vomiting, conjunctival congestion and myalgia or arthralgia[17]. COVID-19 infection may cause varieties of otorhinolaryngological clinical manifestations. It may cause chemosensory dysfunction. Althoughits exact mechanism is still vague, recent studies showed that there is a quit good number of COVID-19 patients who experienced reduction and/ or distortion of smell and taste[18].Early detection and isolation of infected persons is the best way to limit the virus spread[7]. Therefore, it is crucial for the general population to have a holistic view about theses manifestations as a part of controlling the pandemic. This study aimed to report results of public perception and knowledge about COVID-19 - related otorhinolaryngologicalsymptoms in Saudi Arabia.

2. Methods

The current study took place after attaining the ethical approval ofour Institutional Research Board (IRB). It is a cross sectional anonymousArabic language questionnaire-based study. Ittargeted the Saudi Arabian population. This questionnaire was web electronically distributed. Variety of questions were included within this questionnaire that was divided into seven sections. The first sectioninvestigated the sociodemographicparticulars. While the second section covered the clinical presentations of nasal diseases. The third section'questionsconcerned with aural manifestations. Oropharyngeal, laryngeal and tracheal clinical presentations were covered within the questions of sections 4,5,6, respectively. The general public attitude toward COVID-19 pandemic with special emphasis onotorhinolaryngologicalmanifestations were covered in section seven – questions. Obtained data were collected and statistically analyzed using Statistical Package for Software Sciences (SPSS) for Windows version 26.0 software program, Armonk, New York, IBM corporation.They were expressed as tables and figures.

3. Results

One thousandfive hundred and twentyone persons participated in the study. Their sociodemographic variables are shown in Table 1. Nasal diseases were reported in four hundred and six persons (26.7%). While aural diseases were encountered in two hundred and seventeen participants (14.3%). One hundred and eighty nine persons showed oropharyngeal diseases (12.4%). The distribution of otorhinolaryngologicaldiseases with their clinical manifestations is shown in Tables (2-6). The majority of the studied sample (91.9%) havereported sufficient information about COVID-19 (Figure 1). The reported knowledge about theotorhinolaryngologicalmanifestations due to COVID-19 were as follow: dyspnea (85%), hyposmoa or anosmia (82%), dry cough (78%), sore throat (46.8%), dizziness (31%), rhinorrhea (24.5%), and nasal congestion (20.8%) (Figure 2). The studied sample were fully acquainted about the MOH hotline to report any otorhinolaryngological manifestations (74.6 %). Nonetheless, seventy percent were fully aware with the self-isolation process (Figure 3). Besides calling the MOH hotline, some participants reported their intention to visit otorhinolaryngologicalclinics as well as performing self-isolation (Figure 4). However, most of them were cautious to visit the otorhinolaryngologicalclinics during the pandemic era (Figure 5).

4. Discussion

COVID-19 – related items and pathologies are crucial to be properly perceived by the general population. This is considered to be of a paramount importance to control the newly emerging disease that has a very high global morbidity and mortality rate. The current study reported how did the Saudi population generally perceive the COVID-19 infection, highlighting their knowledge

about itsotorhinolaryngologicalclinical manifestations. The respondents' previous practice ofotorhinolaryngologicaldiseases were as follow: 26.7% had nasal diseases, 14.3% had aural disease, 12.4% had oropharyngeal disease. These data conquering to a previously published reportthat showed an otorhinolaryngologicalprevalence of twenty four percent[19]. However, another localstudy reported a score of 17.96 (SD = 2.24)[20]. These data coincide with the current data that expressed a high information level (91.9%) about COVID-19 infection. The recorded perceived otorhinolaryngological manifestations of COVID-19 infection among our participants, were dyspnea (85%), hyposomia or anosmia (82%), dry cough (78%), sore throat (46.8%), dizziness (31%), rhinorrhea (24.5%), and nasal congestion (20.8%). These data is correlated to others who stated that the most frequent otorhinolaryngologicalsymptoms experienced by SARS-COV-2, RT-PCR test positive patients are nasal obstruction (53.5%), loss of sense of smell (51.2%), sore throat (50.2%), loss of sense of taste (47.1%), and rhinorrhea (38.5%)[21].Consequently, another local studystated that the most prevalent COVID-19 symptoms are Fever (85.6%), cough (89.4%), sore throat (81.6%), runny nose (72%), and headache (27.3%)[22].A quite good number of our participants (74.6%), were convinced to follow the MOHguidelines about self-isolation and reporting of positive cases. These reported data simulated another study that reported similar percentages (79.8%) among their study participants[23]. Our data reflected the success rate and effectiveness of theMOHguidelines and governmental public program in controlling COVID-19 pandemic. The current questionnairerespondents hadseldomvisited the health facilities during the pandemic because of fear to contract the disease. Similar publication has reported a high rate (90%) of reluctancy to visit otorhinolaryngologicalcenters during the pandemic[24].

5. Conclusion

It could be concluded that the studied sample that represents the Saudi population may have adequate and sufficient knowledge about COVID-19otorhinolaryngologicalmanifestations. Their attitude towards this infection is quite satisfactory to control the pandemic. This reflects the success of MOH guidelines to control COVID-19 infection. The limitation of this study stays in the limited sample size. Therefore, extra campaigns with special emphasis of otorhinolaryngological illness still needs to be implanted in a wider scale. Further studies with higher sample size maybe needed for further verifications of our results.

6. Declaration

Ethical consideration

Permission was taken from institutional researchers' board (IRB) College of Medicine, King Faisal University to start the study.

Informed consent was taken from each study participant.

Privacy and confidentiality were ensured.

Competing interest

The authors declare no conflict of interest related to this work.

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This is a self-fund study.

Authors contribution

All authors contributed in this study.

Acknowledgment

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8. Appendix

Table and Figures legends
Table 1: Frequency of demographic data among public of Saudi Arabia.
Table 2: Frequency of nasal diseases and symptoms among the public of Saudi Arabia.
Table 3: Frequency of aural diseases and symptoms among the public of Saudi Arabia.
Table 4: Frequency of oropharyngeal diseases and symptoms among the public of Saudi Arabia.
Table 5: Frequency of laryngeal diseases and symptoms among the public of Saudi Arabia.
Table 6: Frequency of tracheal diseases and symptoms among the public of Saudi Arabia.
Figure 1: Percentage of people heard of COVID-19
Figure 2: Public awareness of ENT-related symptoms of COVID-19.
Figure 3: Public behavior toward ENT-related symptoms of COVID-19.
Figure 4: Public behavior toward ENT illness.
Figure 5: Public action toward ENT clinics.

Table1

Variable	Frequency	Percentage
Gender		
Female	1120	73.7
Male	401	26.4
Age		
Less than 18	113	7.4
18-30	808	53.1
31-40	211	13.9
41-50	214	14.1
51-60	142	9.3
More than 60	33	2.2
Social status		
Divorced	24	1.6
Married	669	44
Single	814	53.5

Widower/widow	14	0.9
Nationality		
Saudi	1491	98
Non Saudi	30	2
Place of residence		
Central province	551	36.2
Eastern province	356	23.4
Northern province	483	31.8
Southern province	27	1.8
Western province	104	6.8
Education level		
Uneducated	5	0.3
Elementary school	12	0.8
Middle school	39	2.6
High school	313	20.6
Diploma/ bachelor	1057	69.5
Postgraduate	95	6.2
Profession		
Unemployed	300	19.8
Education sector	237	15.6
Engineering sector	62	4.1
Health sector	145	9.5
Business sector	13	0.8
Private sector	14	0.9
Office and administrative sector	157	10.3
Student	557	36.6
Retired	31	2.1
Pilot	1	0.1
Military sector	4	0.3
Monthly income		
Less than 5000	752	49.4
5000 - 10000	271	17.8
10000-15000	220	14.5
More than 15000	278	18.3
Home type		
Apartment	332	21.8
Shared rooms	12	0.8
Villa/ house	1177	77.4
No. of people living in the house		
1-5	508	33.4
6-10	923	60.6
11-15	81	5.4
More than 15	9	0.6

Table 2:

Have you had nasalDisease?	***Frequency***	***Percentage***
Yes	406	26.7
No	1115	73.3
Nasal Diseases		
Allergic rhinitis	266	65.5

Sinusitis	232	57
Choanal atresia	23	5.7
Deviated septum	93	23
Epistaxis	54	13..3
Nasal polyps	8	2
Nasal carcinoma	1	0.25
Dryness	1	0.25
Turbinate hypertrophy	1	0.25
Nasal Symptoms		
Nasal congestion	227	56
Sneezing	215	53
Headache	217	53.4
Rhinorrhea	176	43.3
Itchy nose	171	42
Itchy throat	109	26.8
Itchy eyes	115	28.3
Dyspnea	154	38
Snoring	106	26
Nosebleed	65	16
Fever	28	6.9
Facial pain	77	19
Hyposmia or anosmia	70	17.2
Cyanosis	2	0.5

Table 3

Have you had AuralDisease?	***Frequency***	***Percentage***
Yes	217	14.3
No	1304	85.7
AuralDiseases		
Otitis media	133	61.3
Otitis externa	40	18.4
Labyrinthitis	41	18.9
Cerumen impaction	3	1.4
Cholesteatoma	3	1.4
Meniere's disease	3	1.4
Vestibular neuritis	6	2.8
Otosclerosis	1	0.5
Sensoneural hearing loss	2	0.9
Benign paroxysmal positional vertigo	1	0.5
Age-related hearing loss	1	0.5
Facial palsy	1	0.5
Hearing loss	2	0.9
Perforated tympanic	4	1.8

membrane occluded tympanic membrane	1	0.5
Aural Symptoms		
Balance problems	49	22.6
Dizziness	48	22
Nausea or vomiting	24	11
Headache	65	30
Ear congestion	70	32.3
Itchy ear	64	29.5
Ear discharge	65	30
Ear redness	9	4
Ear pressure	64	29.5
Fever	19	8.8
Otalgia	147	67.7
Hearing loss	55	25.3
Tinnitus	107	49.3
Nystagmus	11	5

Table 4:

Have you had oropharyngeal Disease?	***Frequency***	***Percentage***
Yes	189	12.4
No	1332	87.6
Oropharyngeal Diseases		
Adenoid hypertrophy	30	15.9
Tonsillitis	141	74.6
Pharyngitis	47	24.9
Epiglottitis	4	2
obstructive sleep apnea	8	4
Nasopharyngeal Tumor	1	0.5
Oropharyngeal Symptoms		
Oropharyngeal pain	78	41.3
Halitosis	68	36
Snoring	48	25.4
Dyspnea	38	20
Dysphagia	83	44
Nasal breathing	56	29.6
Cough	54	28.6
Hearing loss	21	11
Stopped breathing during sleep	15	8

Fever	64	33.9
Abrupt awakenings accompanied by gasping or choking	20	10.6
Rhinorrhea	38	20
Pain radiating to the ear on swallowing	59	31.2
Recurrent ear infection	35	18.5
stridor	10	5.3
Nasal congestion	4	2
Burning sensation in the throat	53	28.1

Table 5

Have you had Laryngeal Disease?	***Frequency***	***Percentage***
Yes	110	7.2
No	1411	92.8
Laryngeal Diseases		
Laryngeal stenosis	11	10
Laryngitis	100	91
Vocal fold nodule	3	2.7
vocal fold polyps	1	0.9
vocal fold paralysis	1	0.9
Laryngeal tumor	3	2.7
hoarseness	1	0.9
Laryngeal Symptoms		
Aphonia	27	24.5
Throat pain	62	56.4
Cough	69	62.7
Dyspnea	20	18.2
Dysphagia	47	42.7
choking or coughing during eating or drinking	12	11
Hemoptysis	1	0.9
Hoarseness	75	68.2
Stridor	4	3.6
Fever	26	23.6
Recurrent chest infection	3	2.7

Table 6

Have you had TrachealDisease?	***Frequency***	***Percentage***

Yes	46	3
No	1475	97
TrachealDiseases		
Tracheitis	27	60
Tracheal stenosis	17	37.8
Tracheal tumor	4	8.9
Incomplete trachea development	1	2.2
TrachealSymptoms		
Chest pain	21	46.7
Cyanosis	3	6.7
Cough	25	55.6
Dyspnea	26	57.8
Hemoptysis	1	2.2
Hoarseness	15	33.3
Stridor	10	22.2
Fever	12	26.7
Sputum	13	28.9

Figure 1

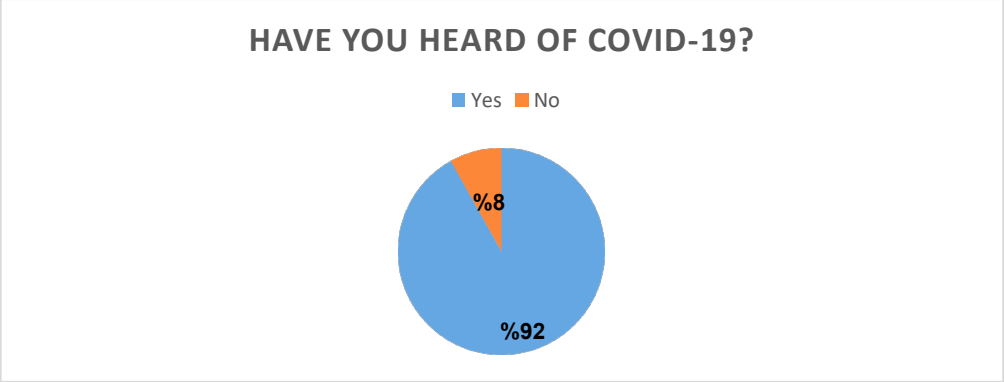

Figure 2

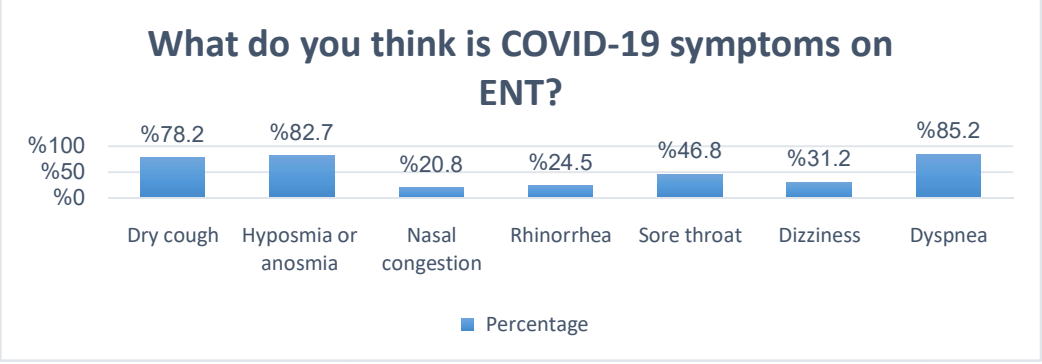

Figure 3

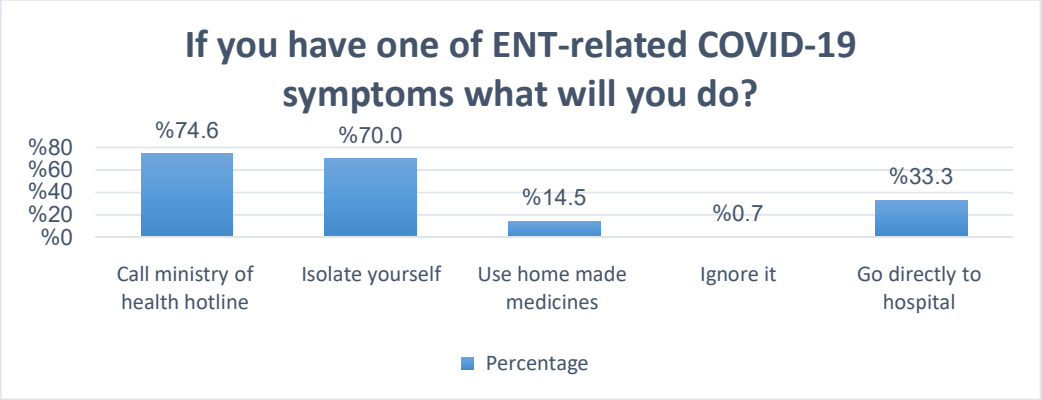

Figure 4

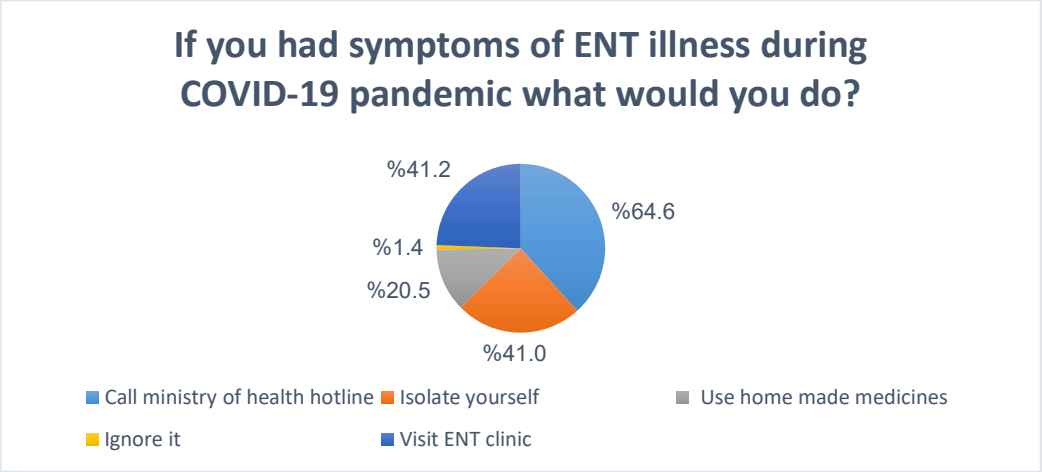

Figure 5