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(RESEARCH ARTICLE)



ENT health services burdens during COVID-19 pandemic and current critical situations in Sudan

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Abstract

Background: Sudan, a Low and Middle-Income Country, has suffered from human resource shortages and severe medical supply following economic troubles in the last few years. The current pandemic coronavirus (COVID-19) has worsened the already existing burdens. The COVID-19 pandemic has hurt the provision of healthcare services and constitutes a tremendous burden in all branches of medicine globally. Ear, nose, and throat (ENT) surgery was not exempted. This article is designed to explore the perception of Sudanese Otolaryngologists in different burdens impacting the delivery, approach, and practice of Ear, Nose, and Throat (ENT) healthcare services and to explore the situations during the COVID-19 pandemic in Sudan.

Methods: A cross-sectional online survey was conducted through Google Forms; participants were asked to fill up a multiple-choice questionnaire. Responses collected were analyzed and interpretations were made on basis of the most favored options.

Results: Most of the otolaryngologists were working in the governmental urban area and agreed with the shortage and maldistribution of Otolaryngologists in Sudan, besides agreeing with the rarity of training opportunities and migration of qualified Otolaryngologists out of Sudan. During the COVID-19 pandemic, most Otolaryngologists observed the lack of Personal-protection equipment (PPE), training, academic activities, and clinical meeting, besides the lack of a triage system and guidelines to covid 19 infection. Almost all the otolaryngologists observed a shortage of ENT materials and quarantines and agreed with the economic instabilities as burdens impede the provision of ENT health services.

Conclusion: There were absolute deficiencies in infrastructure, human resources, and equipment in ENT hospitals in Sudan.

Keywords: Personal protection equipment (PPE); Coronavirus; Rural hospital; Triage; Sudan; ENT

1 Introduction

ENT diseases continue to be a matter of indifference despite being a major cause of morbidity and mortality worldwide. [1] Previous studies had consistently reported under-resourced, understaffed, and outdated ENT therapy services in most underdeveloped countries. [2-4] Sudan, like many underdeveloped countries, currently lacks ENT human resources, infrastructure, and equipment.

The coronavirus pandemic (COVID-19) has negatively influenced the provision of healthcare internationally, [5] presenting tremendous burdens to ENT healthcare across the globe, and Sudan is not exempted. As of December 20, 2021, the total number of COVID-19 cases in Sudan reached 45,112 with 3,252 confirmed deaths. [6] Providing the

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already weak health system that was collapsing by years of ignorance and the poor economy, the COVID-19 pandemic keeps deteriorating providing essential ENT health services.

The provision of ENT health services is crucial for the prevention and treatment of ENT diseases. However, due to the COVID-19 pandemic, ENT health providers around the world have been subjected to multiple burdens in providing ENT care to their clients. Their particular job conditions involving close contact with patients, and routine exposure to patients' airways, put them at more risk of acquiring COVID-19 infection. [7] Therefore, the provision of ENT care was significantly paralyzed due to fear of getting the disease and the closure of ENT clinics.

Tremendous articles have investigated the status of ENT health care during the COVID-19 pandemic in different regions around the globe, [8-10] however, up to date the situation in Sudan remains with ambiguity in both before and during the pandemic. In this survey article, I aimed to explore various burdens implicated in the provision, access, and utilization of ENT healthcare services in Sudan and share our experience with the globe before and during the COVID-19 pandemic. It's crucial to explore current burdens, and learned lessons, and inform relevant interventions by policymakers and stakeholders to improve on policy and practices to ensure adequate provision of ENT healthcare in Sudan.

2 Methods

2.1 Study design and settings

A cross-sectional study was done from October to November 2022 by conducting an online survey amongst Otolaryngologists (ENT specialists and ENT consultants) practicing across Sudan. The study duration was 60 days from the advertisement of the form. An online Google form questionnaire was created to extract information regarding the demographic profile, opinion of Otolaryngologists towards the COVID-19 outbreak, and some critical situations in Sudan in the last few years. Convenient sampling was done for the recruitment of participants. Those willing to participate in the study and who gave consent were included in the study. Otolaryngologists with incomplete forms were excluded from the study.

2.1.1 Study tool

Survey development and sharing

The Google form link was advertised on social media platforms like WhatsApp and Facebook. The participants were asked to disseminate the form link further to their ENT colleagues in Sudan, after filling form themselves.

2.1.2 Data privacy

After the description and informed consent part all the participants were informed that their data will be anonymous and will be used solely for research.

2.2 Data measurement and questionnaire

Before the study, a series of interviews were conducted with 10 experienced Otolaryngologists from Sudan, a well-designed questionnaire was performed depending on these interviews, and the final questionnaire was sent to those professionals previously recruited. After 1 month of proofreading the questionnaire, organizing the questions by sections, and editing some of the questions that arose from the pilotage, a 23-item questionnaire, written in English, was created entirely for this project. An Arabic-language translation version of the questionnaire was available as an Additional file.

The research questionnaire had four sections:

- Section 1 explored demographic variables such as sex, age, and qualification.
- Section 2 measured the Otolaryngologist's perception of issues related to burdens associated with manpower.
- Section 3 measured the Otolaryngologist's perception of issues associated with hospitals and the Ministry of health facilities.
- Section 4 measured the Otolaryngologist's perception of issues associated with other burdens.

At the end of the 2 months, 164 fully completed responses were received.

2.3 Study size

The sample size was calculated based on the estimation of the number of Otolaryngologists working in Sudan (400). Sample size calculation was carried out using a 99% confidence level with a margin of error of 5% and a response distribution set at 50%.

2.4 Statistical analysis

Descriptive and inferential analysis was conducted using the software IBM SPSS Statistics for Windows Version 24.0. Frequencies and percentage analysis were used to define the percentage of the reported responses. Statistical significance was accepted at $p < 0.05$. Confidence intervals at 95%.

2.5 Ethical consideration

The study protocol was reviewed and approved by the Sudan Ministry of Health Ethical Committee.

3 Results

Responses were obtained in the 2 months' time after sharing the invite link for the questionnaire and 164 complete entries were get following which the responses were halted for the link.

67% of males and 33 % of females participated, with male predominance, male to female ratio; (2,03: 1), (37.8%) of Otolaryngologists in the age group (41-50) years old, (62.8%) are working at a governmental hospital, while the rest (37.2%) are working in a private hospital, (78%) are practicing in urban areas, while the rest (22%) are practicing in rural areas (%). Table 1.

Table 1 Demographic details of Otolaryngologists enrolled in the survey of ENT health services burdens during the COVID-19 pandemic and current critical situations in Sudan (n=164)

Patterns	Frequency/Percentage
(21to 30)	13(7.9)
(31 to 40)	42(25.6)
(41 to 50)	62(37.8)
(51 to 60)	32(19.5)
>60	15(36.6)
Male	110(67)
Female	54(33)
Governmental	103(62.8)
private	61(37.2)
Urban	128(78)
Rural	36(22)

When asked about the Shortage of Otolaryngologists in Sudan, (82.3%) of them told that they noticed the fact of Otolaryngologists shortage in Sudan, most of them (95.2%) observed a rarity of chances for ENT specialty training, majority of them (83.5%) said that there is a maldistribution of Otolaryngologists between urban and rural areas. Migration of qualified ENT doctors out of Sudan was noticed by (92%) of the participants, and most of the Otolaryngologists (94%) agreed with the lack of educational activities and clinical meetings during Covid 19 pandemic. Considerable numbers (55.5%) and (42.7%) observed the lack of a triage system and clear guidelines, respectively at the time of Covid 19 outbreak. Most of the Otolaryngologists (77.4%) and (90.8%) said that there was a lack of Personal protection equipment and ENT materials respectively. Lack of price fixing of ENT materials and equipment was told by almost half (51.2%) of the Otolaryngologists. Availability of disinfection tools in ENT hospitals during Covid 19 outbreak was observed by (48.7%) of the Otolaryngologists. (75%) stated that there is no lack of anesthetics drugs,

while (97%) stated there were shortages of quarantines and isolation centers during the COVID-19 outbreak. Table 2.

(87.2%) of Otolaryngologists told that COVID-19 restrictions and lockdown of Seaport and Airports affect ENT health services negatively, (87.8%) of the Otolaryngologists think that Economic instability affect ENT health services negatively, (72%) of participants think that civil demonstrations were affecting ENT health services negatively, (61%) of the Otolaryngologists think that unserved roads throughout Sudan and floods disasters affecting ENT health services, (98.1%) of the Otolaryngologists think that the shortage of power and electricity supply affecting ENT health services negatively. Table 2.

Table 2 Perception of Otolaryngologists enrolled in the survey of ENT health services burdens during the COVID-19 pandemic and current critical situations in Sudan.

Code	Questionnaire	Response		
Burdens associated with manpower				
A1	Shortage of Otolaryngologists in Sudan?	Yes	No	I don't know
		135(82.3%)	27(16.5%)	2(1.2%)
A2	Lack of chances for ENT training program?	Yes	No	I don't know
		156(95.2%)	6(3.6%)	2(1.2%)
A3	Maldistribution of the Otolaryngologists between urban and rural areas?	Yes	No	I don't know
		137(83.5%)	10(6.1%)	17(10.4%)
A4	Migration of qualified personnel out of Sudan?	Yes	No	I don't know
		151(92%)	5(3%)	8(5%)
A5	Lack of educational activities and clinical meetings during COVID-19?	Yes	No	I don't know
		154(94%)	5(3%)	5(3%)
Burdens associated with hospitals and Ministry of health facilities				
B1	Did ENT hospitals close during covid 19?	Yes	No	I don't know
		3(1.8%)	120(73.1%)	4(2.3%)
B3	Did ENT hospitals suffer from the lack of a triage system during Covid 19 outbreak?	Yes	No	I don't know
		91(55.5%)	70(42.7%)	3(1.8%)
B4	Existence of local protocols and clear guidelines to Covid 19 infection at time of outbreak.	Yes	No	I don't know
		2(1.2%)	153(93.3%)	9(5.5%)
B5	Availability of Personal-protection equipment during COVID-19.	Yes	No	I don't know
		7(4.3%)	127(77.4%)	20(12.1%)
B6	Are you satisfying with infection control practices in ENT hospitals	Yes	No	I don't know
		117(71.3%)	40(24.4%)	7(4.3%)
B7	Materials and supply shortages in ENT hospitals?	Yes	No	I don't know
		149(90.8%)	8(4.9%)	7(4.3%)
B8	Lack of price fixing of ENT materials and equipment.	Yes	No	I don't know
		135(82.3%)	15(9.1%)	14(8.5%)
B10	Lack of anaesthetics drugs.	Yes	No	I don't know
		39(23.8%)	123(75%)	2(1.2%)

B11	Shortage of quarantines and isolation centres in Sudan during COVID-19 outbreak.	Yes	No	I don't know
		159(97%)	1(0.6%)	4(2.4%)
Other burdens.				
C1	Do you think COVID-19 restrictions and lock down of Seaport and Airports affect ENT health services negatively?	Yes	No	I don't know
		134(87.2%)	3(1.8%)	27(16%)
C2	Do you think Economic instability affect ENT health services negatively?	Yes	No	I don't know
		144(87.8%)	5(3%)	15(9%)
C3	Do you think civil demonstrations are affecting ENT health services negatively?	Yes	No	I don't know
		118(72%)	26(15.9%)	20(12.1%)
C4	Do Unserved roads throughout Sudan and floods disasters affecting ENT health services?	Yes	No	I don't know
		100(61%)	32(19.5%)	32(19.5%)
C5	Do Shortages of power and electricity supply affecting ENT health services negatively?	Yes	No	I don't know
		161(98.1%)	2(1.2%)	1(0.6%)

4 Discussion

This survey enrolled 164 otolaryngologists working in Sudan in critical situations of the COVID-19 pandemic besides other devastating situations of economic instabilities.

In this study, the peak age of otolaryngologists ranged from 31-60 years old, and most otolaryngologists were males. The total number of otolaryngologists working in Sudan is estimated to be 400 serving 40 million individuals. This translated to a ratio of 1 otolaryngologist per 100,000 population. This ratio is keeping decreasing because the population growth over the past two decades has not been paralleled with an equivalent increase in Otolaryngologists. This may be partly because the country has limited medical training programs for Otolaryngology, which have been observed by most participants in this study. Compared to other developing countries, Sudan suffers more from Otolaryngologist's lack. Fagan JJ. and Jacobs M have conducted an e-mail-based survey in 2009 to assess the availability of ENT therapy services and training facilities in 18 sub-Saharan African countries, They calculated the ratio of Otolaryngologists per 100 000 population for each country, they stated that nine of the 18 countries assessed had 10 or fewer Otolaryngologists [11] In this study there is maldistribution of the Otolaryngologists between urban and rural areas of Sudan. Khartoum state (The capital of Sudan) has the most ENT hospitals and most Otolaryngologists, this may be due to the fast population growth and more development in this state, therefore, fewer Otolaryngologists are working in rural places. Migration of qualified Otolaryngologists and recent graduates outside Sudan was also observed in this study, most likely they are looking for a better lifestyle, abroad training, and a good salary. This is not unique to Sudan only since Health systems in sub-Saharan African countries were reported to have been severely compromised by the migration of Otolaryngologists for the same mentioned reasons. [12]

Before the Covid-19 pandemic, ENT hospitals in Sudan were overwhelmed with patients as are many higher-level hospitals in developing countries. The large patient load inevitably leads to fast consumption of the available materials and supplies. As a result, patient morbidity and mortality increase due to suboptimal handling of medical and surgical emergencies and a lack of critical care beds, and surgical error arising from otolaryngologist fatigue. The lack of ENT materials and supply resources is not unique to Sudan only, many studies in African countries reported this critical situation. [11, 13] In Sudan, ENT infrastructure exists at only seven hospitals nationwide, All of them in the urban areas. The other hospital in the rural area lacked modern and adequate ENT equipment, Intensive Care Units, audiology, and speech services. Moreover, this leaves the urban hospitals overwhelmed with referrals from across the country.

At the time of the COVID-19 pandemic, several healthcare facilities were forced to close due to the lack of healthcare providers to run the services for the public. while ENT hospitals remain open performing urgent ENT surgeries, [14] and treating COVID-19 patients presented with ENT symptoms, this fact ultimately leads ENT hospitals in Sudan to be lacking more in materials and supplies. ENT patients' evaluation usually includes deep instrumentation, which usually triggers cough of sputum and the jet of droplets, and aerosols expelled can contaminate the examining physician, therefore otolaryngologists are at a high risk of acquiring the COVID-19 virus. [15] Moreover, most head and neck

procedures like tracheal intubation, airway suctioning, and bronchoscopy, generate a significant number of aerosols which is very dangerous in view of the virus spread, for these reasons Otolaryngologists need personal protection equipment (PPE) which were limited in availability in this study in Sudan during covid 19 pandemic.

During the COVID-19 pandemic, educational activities and training of Otolaryngology residents have suffered worldwide. [16] In this study, Otolaryngologists said that academic activities, training, and clinical meeting during COVID-19 were almost absent, this is due to a lack of other options for training methods like video conferencing mode because of the poor internet in Sudan, and lack of digital recording tools. Adaptations in the ENT outpatient departments and early provision of a triage system would be the most challenging work globally [17], till the pandemic is around. Earlier in the covid 19 infection, ENT Hospitals in Sudan suffered from the lack of a triage system to separate those infected with COVID-19 from those that had other similar symptoms and illnesses. Guidelines for the treatment of COVID-19 infection are crucial for better disease prognosis, this study reported that most Otolaryngologists noticed a lack of clear protocols and guidelines in ENT hospitals at the beginning of the COVID-19 outbreak.

Sudan is exclusively dependent on imported ENT instruments, materials, and other supplies from outside Sudan, lack of these supplies occurred following a long period of economic instabilities and a high inflation rate in the country, consequently, this led to a fast increase in prices, furthermore, during COVID-19 outbreak Sudan Federal Ministry of Health had strengthened the measures at entry points at airports and the seaports, and on April 2020, the government announced a complete lockdown, this was led to more shortages in ENT materials and medical supply, this was observed by the Otolaryngologist in this study. Quarantines and isolation wards for COVID-19-infected patients, were limited and poorly equipped, besides some patients refused or scaped the quarantines, this failure, in turn, increase the number of infected patients visiting the ENT hospitals leading to consuming more hospital materials and supplies.

Sudan had witnessed more critical situations, as of June 2020 during the coronavirus lockdown, more than one million Sudanese protestors gathered in cities without distancing or protective measures. Countries that have witnessed protests have reported more cases of COVID-19 infections. [18] As a result of the massive protests there was an increase in the number of COVID-19 cases in Sudan, again the situation caused more lack and shortages of equipped ENT facilities. Other crises that hindered the ENT health provision are including unserved roads, floods, frequent power, and electricity supply shortages.

5 Conclusion

Sudan's ENT health services in rural areas were poor at all levels of hospital care. There were absolute deficiencies in infrastructure, human resources, and equipment in hospitals, critically needing intervention. The COVID-19 pandemic was fueling the worsening situation and increasing the struggles. Concerted efforts by both the Sudanese government and health authorities are required to meaningfully improve the services. This data advice is being used to direct national policy on the improvement of ENT service provision in Sudan.

Limitation

The sample size is below the minimum required quota for significance.

Recommendations

To adequately address the shortage of Otolaryngologists, The Sudanese health authorities should engage with the more developed countries and establish collaborative programs aimed at continuously training Otolaryngologists and acquisition of equipment, furthermore, they should invest more in preparing governmental hospitals and maintain an adequate supply of important materials and instruments, especially at rural areas.

Compliance with ethical standards

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Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] Belcher RH, Molter DW, and Goudy SL. An evidence-based practice approach to pediatric otolaryngology in the developing world. *Otolaryngologic Clinics of North America*, 2018;51(3):607-617.
- [2] Fagan JJ. Developing World ENT: a global responsibility. *The Journal of Laryngology & Otology*, 2012;126(6):544-547.
- [3] Mulwafu W, Nyirenda TE, Fagan JJ, Bem C, Mlumbe K, and Chitule J. Initiating and developing clinical services, training and research in a low resource setting: the Malawi ENT experience. *Tropical Doctor*, 2014;44(3):135-139
- [4] Peer S, Vial I, Numanoglu A, and Fagan JJ. What is the availability of services for pediatric ENT surgery and pediatric surgery in Africa? *European annals of otorhinolaryngology, head and neck diseases*, 2018;135(5):579-583.
- [5] Ness MM, Saylor J, Ann L, and Evans K. Healthcare providers' challenges during the coronavirus disease (COVID-19) pandemic: A qualitative approach. *Nursing & health sciences*, 2021;23(2):389-397.
- [6] Abdullah AI, Mohammed SA, Ibrahim AK, Hashim M, Elzain MA, Mohameed OA, et al. The Distribution and Determinants of COVID-19 in Sudan, 2020/2021: Analysis of Surveillance Data. 2022;37(5):26-27.
- [7] Spinato G, Gaudio P, Rizzo PB, Fabbris C, Menegaldo A, Mularoni F, et al. Risk management during COVID-19: safety procedures for otolaryngologists. *Acta Bio Medica: Atenei Parmensis*, 2021;92(1):35-39
- [8] Samarrai R, Riccardi AC, Tessema B, Setzen M, and Brown SM. Continuation of telemedicine in otolaryngology post-COVID-19: Applications by subspecialty. *American Journal of Otolaryngology*, 2021;42(3):1029-1028.
- [9] Werner MT, Cary RM, Albergotti WG, Lukens JN, and Brody RM. Impact of the COVID-19 pandemic on the management of head and neck malignancies. *Otolaryngology–Head and Neck Surgery*, 2020;162(6):816-817
- [10] Bann DV, Patel VA, Saadi R, Gniady JP, Goyal N, Johnathan D, et al., Impact of coronavirus (COVID-19) on otolaryngologic surgery: a brief commentary. *Head & Neck*, 2020;42(6):1227-1234.
- [11] Fagan JJ. and Jacobs M. Survey of ENT services in Africa: need for a comprehensive intervention. *Global Health Action*, 2009;2(1):1932.
- [12] Mullan F. The metrics of the physician brain drain. *New England journal of medicine*, 2005;353(17):1810-1818.
- [13] Ta NH. ENT in the context of global health. *The Annals of The Royal College of Surgeons of England*, 2019;101(2):93-96.
- [14] Stansfield J, Dobbs S, Harrison R, Lee K, Sharma S, Okour K, et al. Management of ENT emergencies during the coronavirus disease 2019 pandemic. *The Journal of Laryngology & Otology*, 2021;135(2):117-124.
- [15] Mick P, and Murphy R. Aerosol-generating otolaryngology procedures and the need for enhanced PPE during the COVID-19 pandemic: a literature review. *Journal of Otolaryngology-Head & Neck Surgery*, 2020;49(1):1-10.
- [16] Bandi F, Karligiotis A, Mellia J, Gallo S, Zandoni M, Battaglia P, et al. Strategies to overcome limitations in otolaryngology residency training during the COVID-19 pandemic. *European archives of oto-rhino-laryngology*, 2020;277(12): 3503-3506.
- [17] Chong C, Yao QI, Zhang DI, Zhao Yu, Zhang KU, Nisenbaum ER, et al. Approaching otolaryngology patients during the COVID-19 pandemic. *Otolaryngology–Head and Neck Surgery*, 2020;16(3):121-131.
- [18] Bloem JR, and Salemi C. COVID-19 and conflict. *World Development*, 2021;7(140):105-109