

## Original Article

### Telemedicine in Otorhinolaryngology – A Covid induced opportunity?

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#### Abstract

##### Introduction

The importance of telemedicine became apparent during the height of the pandemic when there was a large discrepancy between the need for patient care and health service provision. In this article we describe a single ENT care provider experience of delivering otolaryngology care using a single app (oDocTM) from November 2020 to September 2021 (11 months)

##### Methods

In this cross-sectional retrospective audit details about the consultations were collected using the prescriptions from November 2020 to September 2021. Prescriptions were collected from the 'oDoc' application database after removing patient identifiable details for privacy reasons. Data was extracted regarding demographics, clinical features and prescription details. Data was analyzed using Google Sheets and Microsoft excel.

##### Results


The total number of patients analyzed was 294. Ear related symptoms were the most common standing at 38% followed by throat related symptoms at 31%. 85% of patients surveyed presented with an acute problem. Those presenting with predominantly neck related symptoms needed biochemical related investigations 50% of the time and also needed radiological investigations 83% of the time. Those who presented with ear and throat related symptoms had the lowest requirement for follow-up standing at 36.73% and 38.46% respectively.

##### Conclusions

Consultations are more effective in ear related presentations and are least effective in neck related presentations. Overall physician need for follow-up consultations is less than 50% contributing to a decrease in load to OPD and ETU admissions. Topical ototoxic antibiotic prescription is less in telemedicine. It can be successfully used to treat acute presentations with a high degree of caution.

**Key words:** Virtual Medicine, Mobile Health, Otorhinolaryngology Telemedicine

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## Introduction

Telemedicine is the application of Information and Telecommunication technology to deliver health care. This concept is further elaborated by the World Health Organization and concept of “digital health” is brought on to mean “the use of information and communications technology in support of health and health related fields”<sup>1</sup>. The common use of this technology did not however take off widely despite advances of Information technology. COVID-19 infection causing a devastating pandemic starting late 2019 and still ravaging around the world has given a “booster dose” to Telemedicine<sup>1</sup>.

There are disciplines of medicine extremely conducive to Telemedicine for e.g. Radiology, as PACS systems can transmit high resolution images securely and quickly across high speed networks enabling remote interpretation by the expert. It is pertinent to ask whether the otolaryngology field necessitating examination into hard to access anatomic regions is suitable for Telemedicine.

In this article we describe a single ENT care provider experience of delivering otolaryngology care using a single app (oDoc™) from November 2020 to September 2021 (11 months)

## Methods

Details about the consultations were collected using the prescriptions from November 2020 to September 2021. Prescriptions were collected from the ‘oDoc’ application database after removing patient identifiable details for privacy reasons. Data was extracted regarding demographics, clinical features and prescription details. Data was analyzed using Google Sheets and Microsoft excel.

Presenting clinical features were grouped into ‘ear related’, ‘throat related’, ‘nose related’ and ‘neck related’ respectively. We also included a special category called ‘headache related’ since we wanted to specifically identify this symptom. Sinusitis related headache symptoms were removed from this category and included into the ‘nose related’ category after the patient diagnosis was considered. Data collection period was 11 months starting from November 2020 till September 2021. Statistical analysis was carried out on Google Sheets and Microsoft Excel worksheets.

## Results

The total number of patients analyzed was 294 however, only 126 were included in the analysis of symptoms as they had complete datasets for analysis. Sex distribution stood at 53% male to 47% female. The mean age of patients attending was 37 yrs.

Ear related symptoms were the most common standing at 38% followed by throat related symptoms at 31% (Refer figure 2). When we analyze symptom related sex distribution there is a ‘slight’ female predominance in ear and nose symptoms and ‘dominance’ in headache related and neck related symptoms. Interestingly males were more common in presenting with throat related symptoms (Refer figure 1). 85% of patients surveyed presented with an acute problem.

When investigations are considered those presenting with predominantly neck related symptoms needed biochemical related investigations 50% of the time and also needed radiological investigations 83% of the time (Refer Figure 4).

With regard to treatment, those patients presenting with ear related symptoms had the highest percentage of oral antibiotic prescription at 40.82% with only 8.16% requiring topical antibiotics (Refer Figure 5). It is also interesting to note that those presenting with nose related symptoms were prescribed antihistamines 73.91% of the time.

When we analyze the need for follow-up those who presented with ear and throat related symptoms had the lowest requirement for follow-up standing at 36.73% and 38.46% respectively. Patients presenting with headache symptoms and neck related symptoms had the highest need for follow-up standing at 55.56% and 80% respectively (Refer Figure 3). A Follow-up in this case meant an in-person physical visit. Overall the follow-up rate was 43%.

Figure 1 – Symptom related sex distribution

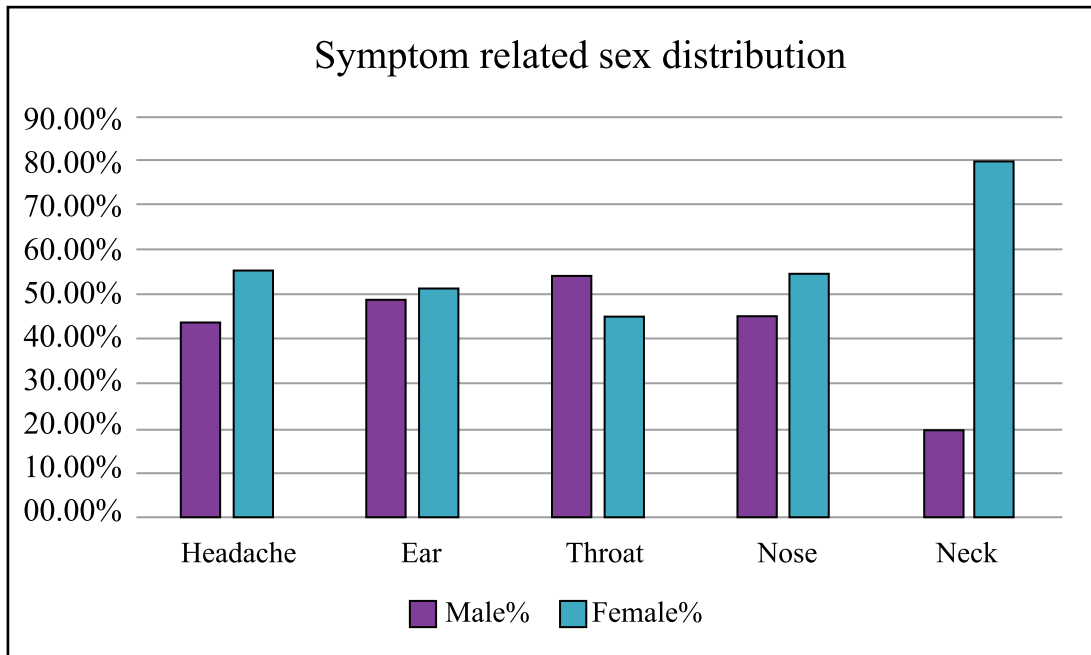


Figure 2 – Predominant presenting symptom analysis

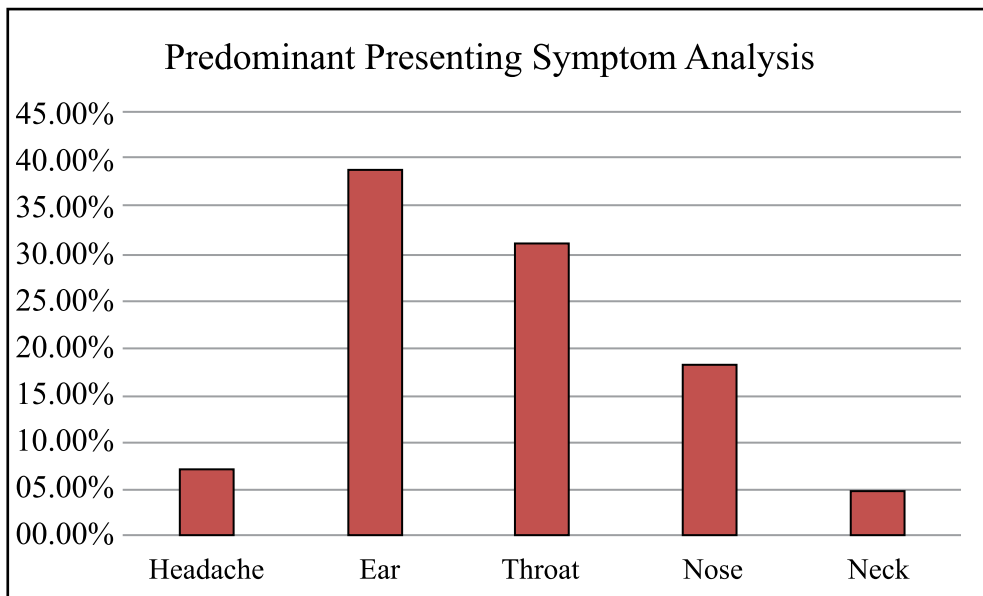


Figure 3 - Predominant symptom Vs Follow up requirements

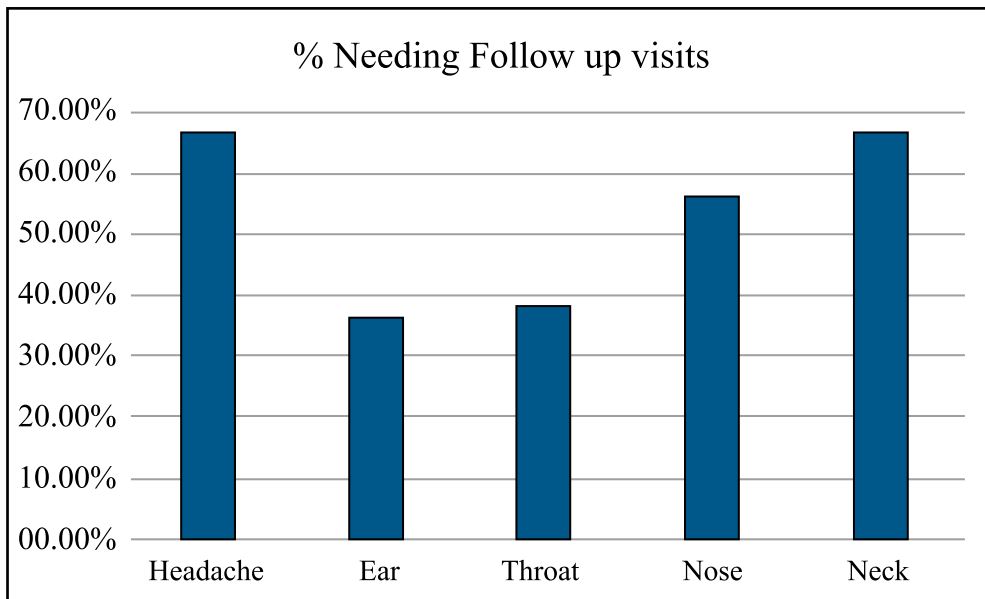


Figure 4 – Predominant symptom Vs Radiological investigations

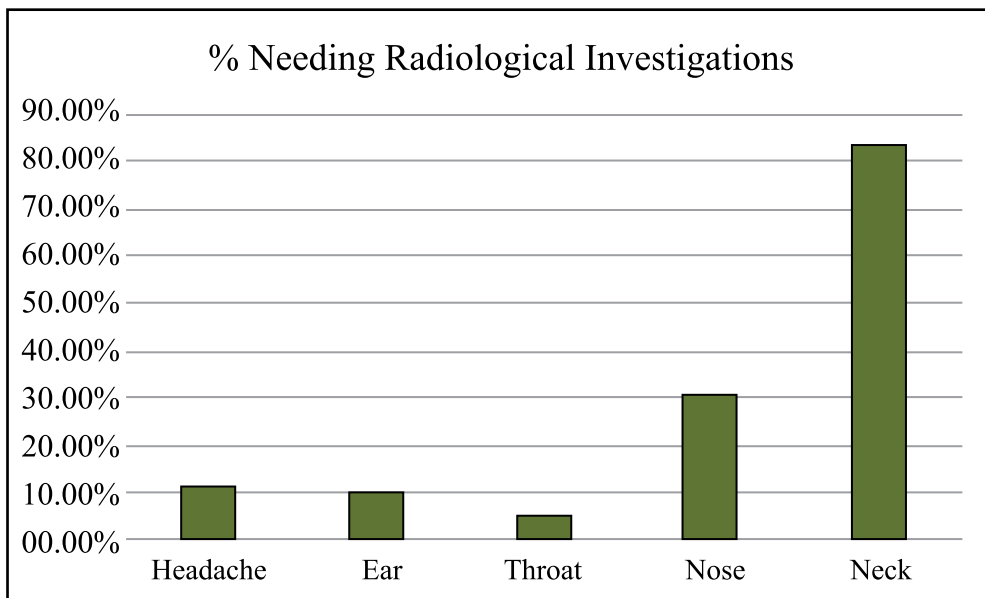
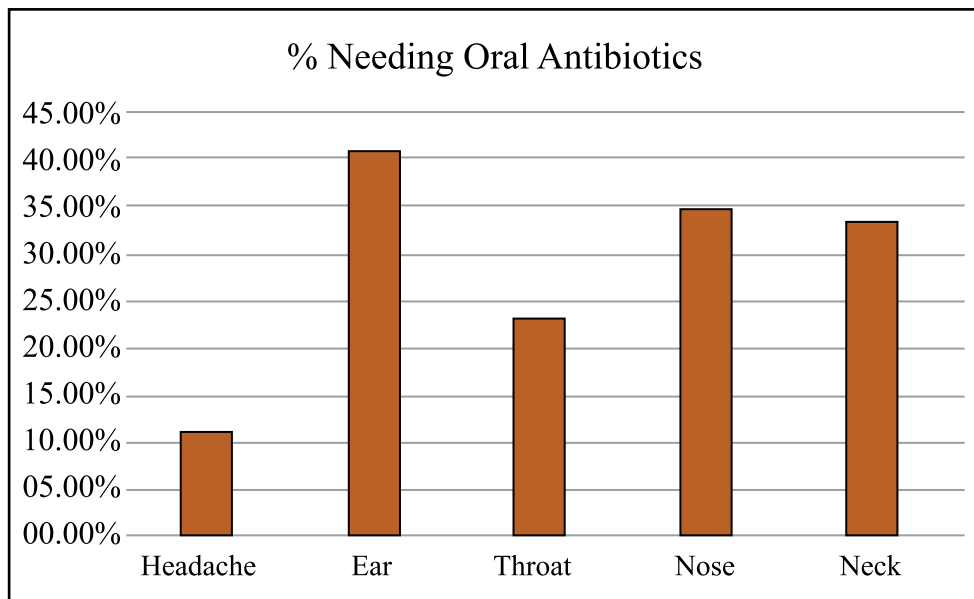


Figure 5 - Predominant symptom Vs Oral antibiotic prescription



## Discussion

Telemedicine technology gained rapid worldwide acceptance during the pandemic which led to legislative and procedural changes in the way health care was delivered to patients<sup>1</sup>. However, in a study published in 2018 it was found that 62% of ENT consultations were suitable for telemedicine, giving the concept credence even before the pandemic<sup>2</sup>.

In Srilanka, the government health service infrastructure does not provide island wide access to a standardized telemedicine facility and the facilities that are available have been setup independently with little coordination between systems. From an ENT perspective it is always disconcerting for the treating physician not to be able to physically see inside the nose throat and ear and to not be able to palpate lesions of which the patient complains of and diagnosis is predominantly made on detailed history and visual input presented through the patient's own phone. Remotely setup endoscopic facilities to a great extent have circumvented ENT visual examination deficiencies<sup>1</sup> however, this is an expensive alternative and not suitable for a Sri Lankan setting in its entirety.

We noticed a high follow-up percentage for patients presenting with neck and headache related complains in our study. This also correlates with the high percentage of radiological investigations ordered for neck related presentations in our study too. This may indicate a need to motivate patients presenting with neck and headache related complaints to opt for a physical consultation in the first instance.

Ethnicity was not analyzed in our study but contrary to other similar studies<sup>3</sup> there was a male predominance noted with male and female participation at 53% and 47% respectively. There may be a cultural implication here which needs further evaluation. The average age of the patients presenting was 37 yrs. and this in line with the population evaluated in other studies as well<sup>3</sup>.

Given the decreased need for follow-up in Ear and Throat related presentations it can be postulated that a high degree of success was achieved with these presentations using this platform. There are many variables to

consider here such as patient ‘doctor shopping’ and not being satisfied with the treatment and discontinuing treatment, further study in to this aspect is planned. However, similar symptomatic analysis carried out in the US shows similar finding with patients with inner and middle ear problems opting to stick with the platform<sup>2</sup>.

Antibiotic prescription was highest for ear and nose related complaints, but interestingly topical antibiotic prescription was sparingly used in ear presentations. When the type of topical antibiotic was further analyzed no ototoxic varieties were ever used. This may reflect the lack of detailed endoscopic visualization of the tympanic membrane and external auditory canal which would intern motivate the treating physician to opt for a safer option.

Given that a high percentage of patients presented during an acute presentation (85%) could indicate telemedicine could be effectively used as an adjunct to an ETU service in our setting in the form of a virtual triage tool. In-fact, it has been used to greatly decrease ETU admissions successfully during the pandemic.<sup>4</sup> However, a systematic review published in 2022 had reservations regarding its use siting patient safety and recommended further quality evidence to support its use in emergency departments<sup>5</sup>.

Patient and physician satisfaction was not evaluated in this study but a systematic review published in 2021 analyzing 32 studies show high patient and physician satisfaction regarding the encounters <sup>6,7</sup> however in a study published in 2022 it was found that the physician satisfaction was higher in physical encounters but the patient satisfaction remained the same<sup>8</sup>.

It is the authors opinion that telemedicine can be effectively used with a family physician attending the patient at a remote clinic in consultation with a specialist at a tertiary care hospital both having access to patient investigations and notes in a shared HIPPA compliant health information system. This setup has been used by a co-author to provide satellite clinics around the country for the past year.

## Conclusions

1. Telemedicine is a viable option to deliver healthcare in otolaryngology with high patient and physician satisfaction.
2. Telemedicine consultations are more effective in ear related presentations and are least effective in neck related presentations.
3. Overall physician need for follow-up consultations is less than 50% contributing to a decrease in load to OPD and ETU admissions.
4. Topical ototoxic antibiotic prescription is less in telemedicine.
5. Telemedicine can be successfully used to treat acute presentations with a high degree of caution.
6. An increase in younger male participation was noted for this service in Sri Lanka.

Conflicts of interest

None declared

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2. oDoc™ Pvt Limited

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