

Review Article

Prevention is better than cure' absolute truth for *C auris* infection

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ABSTRACT

Fungal infections are opportunistic infections either superficial or deep. Annual death toll attributed by these infections is over 1.5 million people. Depending on difficulty posed in the management of these fungal infections, the World Health Organization (WHO) in 2022 published a list of 19 priority fungal pathogens that pose the greatest threat to public health categorized into critical, high, and medium priority. *Candida auris* is a new fungal species, since its identification in 2009, the scientific community has witnessed an exponential emergence of infection episodes and outbreaks in healthcare facilities world-wide.

Despite having no evidence of the role of oral cavity or saliva in transmission yet there is definite need for the dental fraternity to know about this infection, *C. auris* is now the first fungal pathogen categorized as a public health threat by the Centre's for Disease Control and Prevention (CDC). Which necessitates to adopt precautionary practices stringently in dental practice.

Keywords: *Candida auris*, Dentistry, Implications in Dentistry

1. INTRODUCTION

Fungal infections are known to us superficial and deep fungal infections, causing the opportunistic infections. There is a gradual increase in the number of people affected with fungal infections because of various local and systemic response [1]. Annual death toll attributed by these infections is over 1.5 million people [2]. Depending on difficulty posed in the management of these fungal infections, the World Health Organization (WHO) in 2022 published a list of 19 priority fungal pathogens that pose the greatest threat to public health categorized into critical, high, and medium priority [2]. *Candida species* are the primary cause of invasive fungal infections among fungal pathogens [3]. *Candida auris* is a new fungal species, since its identification in 2009, the scientific community has witnessed an exponential emergence of infection episodes and outbreaks in healthcare facilities world-wide [2].

2. Materials & Methods

Methods

A comprehensive literature search was conducted using databases/search engines, e.g., PubMed, Scopus, Web of Science and others with keywords *candida auris* and dental implications in *Candida auris*. Relevant full length free articles published in English until 2025 were included. Articles were selected based on their relevance and data were extracted and synthesized narratively.

3. DISCUSSION

C auris and other *Candida species*:

More than 150 species of *Candida* have been described, 95% of oral candidiasis are caused by *C.albicans*. Other species, such as *Candida glabrata*, *Candida tropicalis*, *Candida parapsilosis*, *Candida krusei*, *Candida dubliniensis* or *Candida guilliermondii*, *C.kefyr*, members of the *C. haemulonii* complex, and *C.auris* can cause infections sporadically often complicating the management of these

candidiasis, thus classified as a critical priority by the WHO. This formal recognition by the WHO is intended to provide guidance for research, development, and public health action in the context of invasive fungal diseases [4]. *C.auris* is a member of the ascomycetous (hemiascomycetes) *Clavispora clade* in the Metschnikowiaceae family of the order Saccharomycetales. The term 'auris' is derived from the Latin word for 'ear', as it was first discovered in the ear canal of a 70-year-old Japanese patient who was hospitalised in 2009.^[5] While much remains unknown about the biology of *C. auris*, it has become quite evident that this new species is strikingly different from its close relatives in terms of its genetics, resilience, and pathogenic capacities, to an extent that will change the way we think about *Candida* and *Candida* infections [6].

Why should we worry?

The most worrisome aspects associated with *C.auris* infection are High rate of antifungal drug resistance, easy transmission among healthcare workers and patients in hospitals, and misidentification [7]. Thus, emerging as pathogen that results in nosocomial infections causing a serious global health problem [8]. *Candida auris* is a fungus that does not quite behave like a fungus. It has been dubbed a 'Superbug', a moniker historically reserved for describing multi-drug-resistant nosocomial bacteria. *Candida auris* has earned the title however, as this fungus sticks, persists and spreads like bacteria causing nosocomial outbreaks in healthcare facilities, and is highly resistant to antifungal drugs [9].

By the year 2020, *C.auris* has been isolated in 41 countries, Genetic analysis of isolates revealed deep divergence within the *C.auris* species and identified five major populations in which isolates cluster by geography, which led to the initial identification of four distinct geographic clades: South Asian (clade I), East Asian (clade II), South African (clade III) South American (clade IV), and Iranian indicated as fifth clade (clade V). Remarkably, genetic sequences of isolates in the different clades demonstrated that the clades differ by tens of thousands of single-nucleotide polymorphisms (SNPs), whereas

within a clade, isolates are highly related indicating that isolates within each clade are almost clonal. These unusual findings suggests that *C.auris* emerged independently and simultaneously in at these geographic locations [9]. *Candida auris* exhibits several concerning features compared to other *Candida* species (table1).[9]

Table 1: Differentiating concerns of *C.auris*

Manifestation	C auris	Other Candida species
Resistance to multiple drug classes	Very common	Unusual
Misidentification by available commercial identification systems	Very common	Unusual
Poor with mortality rates approaching 68%	Very common	Unusual
Persistent colonization of skin and nosocomial surfaces	Very common	Unusual
Ability to resist common disinfectants	Very common	Unusual
Survive for weeks on surfaces, abiotic surfaces	Very common	Unusual
Efficient person-to-person transmission	Very common	Unusual
Efficiently colonize the gastrointestinal tract	Unusual	Very common

Implications for dental practitioners

Candida auris is an emerging fungal infection of humans and is particularly problematic because it is multi-drug resistant and difficult to treat. All the three groups of antifungal drugs and many newer antifungal agents are found to be ineffective in treating this infection. Transmission appears to be nosocomial, by direct contact with colonized skin or contaminated surfaces [10]. In contrast to other candidal species *C.auris* do not commonly affect gastrointestinal tract. It has been detected on humans with no signs of disease, but causes serious disease, mostly in immune-compromised patients. The immunocompetent individuals can be carriers heralding further transmission of the infection.

Recently, *C. auris* has been identified from a on the surface of stored apples, in the ears and skin of four stray dogs in Delhi, India. In the United States, *C. auris* has been identified in wastewater surveillance after a human outbreak in Nevada, in Kansas, an isolate of *C. auris* was identified in the mouth of one dog [10, 11, 12]. Among the

infective candidal species 90% of invasive infections are caused by *C.albicans*, *C.glabrata*, *C.parapsilosis*, *C.dubliniensis*, *C. tropicalis* and *C.krusei*. Studies on the sequencing of the 28S D1/D2 and 18S ITS regions show that *C.auris* belongs to the Metschnikowiaceae family, member of the CTG lineage, such as *C. albicans*, *C.tropicalis*, *C.haemulonii* and *C.lusitaniae* species of the genus *Candida/Clavispora*, which has been resistant to multiple drugs posing increasing threat to public health [13].

Unlike other *Candida* infections, which are usually the result of autoinfection by the host flora, *C. auris* does not colonise mucosal surfaces or the gastrointestinal tract. Instead, it has a distinct affinity for the skin, where it can persist for extended periods and transmissible. Which is area of concern when comes to dental practice, which do not have the severely ill or debilitated patients but can deal with the individuals who can carry and transmit this infection.

4. Conclusion

Despite having no evidence of the role of oral cavity or saliva in transmission yet there is definite need for the dental fraternity to know about this infection, *C.auris* is now the first fungal pathogen categorized as a public health threat by the Centre's for Disease Control and Prevention (CDC) which necessitates to adopt precautionary practices stringently in dental practice.

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Conflict of Interest

None.

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Ethical Information

Authors have to clearly mention if any ethical information is involved in the research work.

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