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Characterization of Fungi at Daycare Centers: A Systematic Review

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Abstract. Exposure to indoor airborne fungi may cause the occupant to get allergy reactions and asthma symptoms. Children may be more susceptible to the adverse effects of airborne fungi than adults due to their age and vulnerability. This study systematically reviews the characterization of fungi and the parameter affecting the characteristic of fungi at daycare centers. This systematic literature review used PRISMA (Preferred Reporting Items for Systematics Review and Meta-Analyses). All the articles related to the characterization of fungi at daycare centers published from 2011 to 2021 were analyzed and reviewed from an electronic database such as Google Scholar, Science Direct, Scopus, Taylor & Francis and SpringerLink. In this systematic review, fifteen studies that complied with the inclusion and exclusion criteria were chosen for the review. The median value of indoor fungi concentration from included studies was 317.25 CFU/m³ and ranged from 3.4 CFU/m³ (in Khorramabad, Iran, in July) to 47 581 CFU/m³ (in Taiwan). The findings indicate that *Penicillium*, *Cladosporium*, and *Aspergillus* are typically observed in daycare facilities. This review aims to present a thorough overview of the current understanding of the characterization of fungi at daycare centers and help researchers determine their focus areas when conducting studies in this field.

INTRODUCTION

Indoor air quality (IAQ) is a term that refers to the air quality inside and around buildings and structures, with a particular emphasis on how it affects occupant health and comfort. Humans spend more than 80% of their time indoors; thus, it has been gaining increasing attention from the public.[1]. Three common airborne pollutants exist: particulate matter, biological agents, and hazardous substances. In this study, the research focuses on fungal bioaerosol pollutants. Fungal exposures are receiving more attention as an occupational and public health hazard due to the significant prevalence of fungal contamination in buildings.[2].

Indoor sampling of fungal aerosols is usually carried out when there is suspected or known fungal growth in the indoor environment to identify the exposure level. While assessing fungal exposure, building factors such as water damage or moldy odor are consistently reported [3] Another study has proven similar findings that dampness can affect the occupants' fungal exposure or allergic reactions. In addition, factors like outdoor fungi and air exchange rates that can affect fungal exposure should be considered. The prevalence of moisture, where mold can easily develop on indoor surfaces in the tropics, is a well-known source of indoor fungi [4].