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Research Article

Evaluation of fungal flora in the university dormitory air of Zahedan University of Medical Sciences - Iran

Adel Ebrahimzadeh[1]*, Taregh Bamedi[2], Khadijeh Saryazdi[3]
[1]PhD and associated professor, Department of Medical Parasitology and Mycology and membership inInfectious Diseases and Tropical Medicine Research Center, Zahedan University of Medical Sciences, Zahedan, Iran
[2]MSc student, Department of Medical Parasitology and Mycology, Zahedan University of Medical Sciences, Zahedan, Iran
[3]BSc in Nursing, Department of Medical Parasitology and Mycology, Zahedan University of Medical Sciences, Zahedan, Iran

***Corresponding author**
A. Ebrahimzadeh
Email: adel1336@yahoo.com

Abstract: The air is normally due to the intense light, temperature and water shortages and insufficient humidity, is not a suitable environment for growth of microorganisms. Thus, the prevalence off ungi in the environment, is dependent on the combination of small size, scattering and high concentrations of fungal spores and on the other hand, the concentration of fungal spores in the air is depends on various factors such as dry weather, meteorological factor, seasonal climate and vegetation type of the region. Organisms, including fungi, which are the air pollutants, can cause illness in humans or animals under certain conditions. This study aimed to find and evaluate of fungal flora in the university dormitory air of Zahedan University of Medical Sciences in 2013-2014.Thiscross - sectional study was done using convenience sampling method in all floors and halls of girls and boys dormitories of Zahedan University of Medical Sciences in 2012-2013.On each floor two north and two south rooms, randomly selected for plate putting, meanwhile, three sites were selected in the hall way son each floor for plate putting. In total, 126 plates were placed inthese5dormitories (72 plates in the rooms, and 54 plates in hallways). In this study by placing126platesindormitories, 1203 number of fungal colonies was achieved.492 a colony was found in girls dormitories and 711 colonies was found in boys dormitories. Overall, maximum number of the isolated fungal flora, respectively including Cladosporium sp (81/41%), Aspergillus niger (47/10%), Fusarium sp (72/9%) and Penicillium sp (65/6%).The rate off ungal flora in boy ' s dormitory was higher than Girl,s dorm and distribution of fungal flora(colonies) obtained by the plate-putting positions indicated that, dormitory ' s type and location of the plate putting has no effect on number of obtained fungal flora(colonies) and the most of the air pollution of dormitories is related to rooms. Therefore considering the importance of diseases that are caused by airborne fungi and their risk, identification of airborne fungal factors in each of these places, particularly in the rooms is important, because with recognizing, prevention, and teaching needed strategies we can prevent fungal diseases, injuries and expenses caused by them.
Keywords: Fungal flora, weather, student dormitory, Zahedan.

INTRODUCTION

The air (atmosphere) is normally due to the intense light, temperature and water shortages and insufficient humidity, is not a suitable environment for growth of microorganisms. Thus, the prevalence of fungi in the environment, is dependent on the combination of small size, scattering and high concentrations of fungal spores and on the other hand, the concentration of fungal spores in the air is depends on various factors such as dry weather, meteorological factor, , seasonal climate and vegetation type of the region [1,2,3]. Organisms, including fungi, which are the air pollutants, can cause illness in humans or animals under certain conditions. Some of them can cause superficial fungal diseases like Otomycosis and Ceratomycosisin humans and a number of species are also opportunistic and systemic infections in humans. Some of them such as Aspergillus sp, Cladosporium sp and Alternaria spwere allergens. And cause allergic reactions and hypersensitivity such as asthma, allergic rhinitis, hypersensitivity pneumonitis, allergic Broncho pulmonary in human. And Penicillium sp, Aspergillus sp, Fusarium sp groups produce dangerous toxins such as tricho the cene (2-7). A group of them were plant pathogens and are causing irreparable damages to the agricultural products, because fungi grow better in adequate humidity and proper temperature (25-30 ° C). So the villagers, farmers, silos workers, milling,

carpenters, bird breeders, librarians, and particularly dormitories residents and public places such as: barracks, lodgings, hotels and student dormitories, due to moisture, temperature and number of individuals resides in these places, they are located at risk of fungal disease [5, 8]. Considering the importance of diseases that are caused by airborne fungi, identification of airborne fungal factors in each of these places are important, because with recognizing, prevention, and teaching needed strategies we can prevent fungal diseases, injuries and expenses caused by them [8-10]. Since the natural flora has an important role inhuman life (advantages and disadvantages), on the other hand the natural flora is different in various environments and due to the student dormitories are gathering place for many individuals it can be a place for transmission of various diseases to others. So this study aims to investigate air borne fungal flora in girls and boys dormitories of Zahedan University of Medical Sciences in 2012-2013.

MATERIALS AND METHODS

This cross - sectional study was done using convenience sampling method in all floors and halls of girls and boys dormitories of Zahedan University of Medical Sciences in 2012-2013. The total student dormitories(5 dormitories) which includes three girls dorm (Noor dormitory in three floors, Kosar dormitory in two floors and Reyhane in two phases comprises Yasdormitory in four floors and Maryam dormitory in three floors) and two boys dormitory (Fajr dormitory in two floors and Pardis dormitory in four phases and each phase is comprised of four floors).It should be noted the ground floor and first floor of the dorm were studied, on each floor two north and two south rooms, which are randomly selected for plate putting. Meanwhile, three places in hallways of each floor (beginning, middle and end of each aisle) were selected for the plates putting. In total, 126 plates were placed in these5dormitories (72 plates in the rooms, and 54 plates in hallways).During this survey, the plate-putting method and Sobor, dextrose agar medium were used. Plates were placed in the hallway sand rooms in 1 – 1.5metersin height from ground level at 12 noon for 20 minutes. After plates-putting, all plates were transferred to laboratory and were placed in incubator for 24 to72 hours. After this period the colonies in terms of diagnosis (microscopic and macroscopic) were evaluated. And finally slide culture and differentiation assays were used to determine the type and species of fungi. To ensure plates were kept in laboratory temperature for 15days. The differential test slide culture was used for determination of mildew phase and corn meal agar (CMA) test was used for yeast phase. Finally, the obtained data were analyzed using descriptive statistical methods (statistical tables, determination of central index and tendency index and chart) using SPSS version17.

RESULTS

In this study by placing126 plates in 5 dorm of Zahedan University of Medical Sciences. The number of1203, fungal colonies were obtained.492colonieswere obtained from girl's dormitories and711colonies were found in boy ' s dormitories. Of 126plates3plateshad no colonyand123 plates had fungal colonies. The number of obtained fungal flora in girl ' s dorm including Noor: 128, Kosar: 109, Yas: 143 and Maryam: 112. Also in boy ' s dormitory include of Pardis I: 134, Pardis II: 147, Pardis III: 158 and Pardis IV: 145 colonies were obtained. In total among the isolated fungal flura the maximum rate of obtained colonies were composed of Claspodium sp (81.41%), Aspergillusniger (47.10%), Fusarium sp (72.9%) and Penicillium sp (65.6%). In this study greatest number of colony (fungal flura)was obtained from room air, so thatof492 obtained from girls dorm, 389 and 103 colonies were observed in rooms and hall ways, respectively. In contrast in the boy's dormitories among the 711 obtained colonies 435 and 276 colonies were found in the rooms and hallways respectively. The rate of fungal flora in boy ' s dormitory was higher than girl ' sdorm (graph 1) and distribution of fungal flora (colonies) obtained by the plate-putting positions in graph 2 indicated that, dormitory ' s type and location of the plate putting has no effect on number of obtained fungal flora (colonies) and the most of the air pollution of dormitories is related to rooms.

DISCUSSION AND CONCLUSION

Fungi are organisms that are often isolated from the environment, and exposure to them can have detrimental effects such as allergies, infections and sometimes toxic effects on human health [2, 3 5]. Fungal spores are almost always found in the air, but the number and type of them are variable based on hours of daylight, weather, geographical location and local spore source. Of course side effects of fungi are different due to their species and type. Besides reaction of different individuals are different [7, 8]. Therefore fungus isolation is the basic principles of understanding and determining these factors in the environment and also evaluation of the possible role of fungi in various complications in humans. These complications may be caused by indoor air pollution with fungi or caused by prolonged exposure to fungi [9]. Considering the mentioned topics, in this study was tried to collects amples from student air dormitories Zahedan University of Medical Sciences and evaluates the fungal flora of these places. In this research, a total of 1203 fungal colonies were found that the most abundant fungi were Cladosporium sp, Aspergillus sp, Fusarium sp and Penicillium sp which are saprophytic fungi. The rate of fungal flora in boy ' s dormitory was higher than girl ' sdorm and distribution of fungal flora(colonies) obtained by the plate-putting positions indicated that, dormitory ' s type and location of the plate putting has no effect on number of obtained fungal flora(colonies) and the most of the air pollution of dormitories is

related to rooms. Therefore considering the importance of diseases that are caused by airborne fungi and their risk, identification of airborne fungal factors in each of these places, particularly in the rooms is important, because with recognizing, prevention, and teaching needed strategies we can prevent fungal diseases, injuries and expenses caused by them.

Table-1: (Fungal flura) isolated Fungi in terms of number of colonies separately in girls and boys dormitories of Zahedan Medical University

Series	Type of fungus	Boy ' s dorm colony		Girl ' s dorm colony		Total	
		number	%	number	%	number	%
1	Aspergillusniger	78	10.97	48	9.75	126	10.47
2	Aspergillus flavus	35	4.92	18	3.65	53	4.40
3	Aspergillus fumigatus	18	2.53	7	1.42	25	2.07
4	Alternaria sp	24	3.37	11	2.23	35	2.90
5	Penicillium sp	53	7.45	27	5.48	80	6.65
6	Cladosporium sp	274	38.53	229	46.54	503	42.81
7	Ulocladium sp	2	0.28	4	0.81	6	0.49
8	Acremonium sp	1	0.14	0	0.00	1	0.07
9	Fusarium sp	66	9.28	51	10.36	117	9.72
10	Chrysosporium sp	18	2.53	15	3.04	33	3.74
11	Helminthosporium sp	0	0.00	2	0.40	2	0.16
12	Mucor sp	10	1.40	8	1.62	18	1.49
13	Rhizopus sp	25	3.51	19	3.83	44	3.65
14	Rhodotorula sp	21	2.95	10	2.03	3	2.57
15	Yeast	33	4.64	18	3.65	51	4.23
16	Phoma	2	0.28	3	0.60	5	0.41
17	Strilemicillium	38	5.34	17	3.45	55	4.57
18	Unknown	13	1.82	5	1.01	18	1.49
19	Total	711	59.10	492	40.90	1203	100

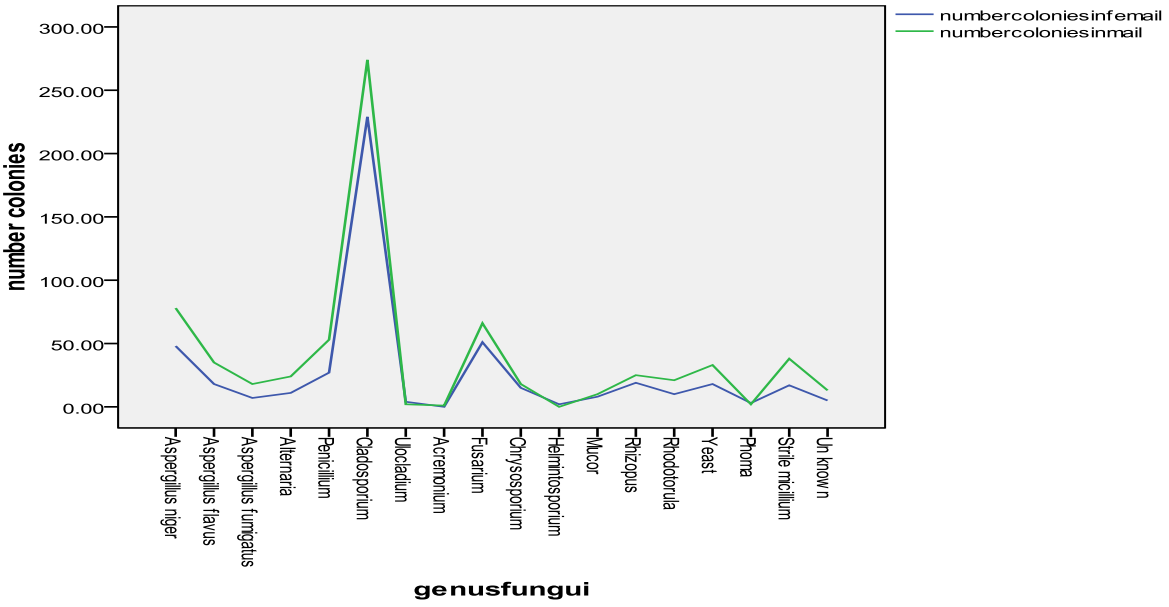

Fig-1: number of colonies (flora) obtained fungi in terms of gender in girls and boys dormitories of Zahedan Medical University

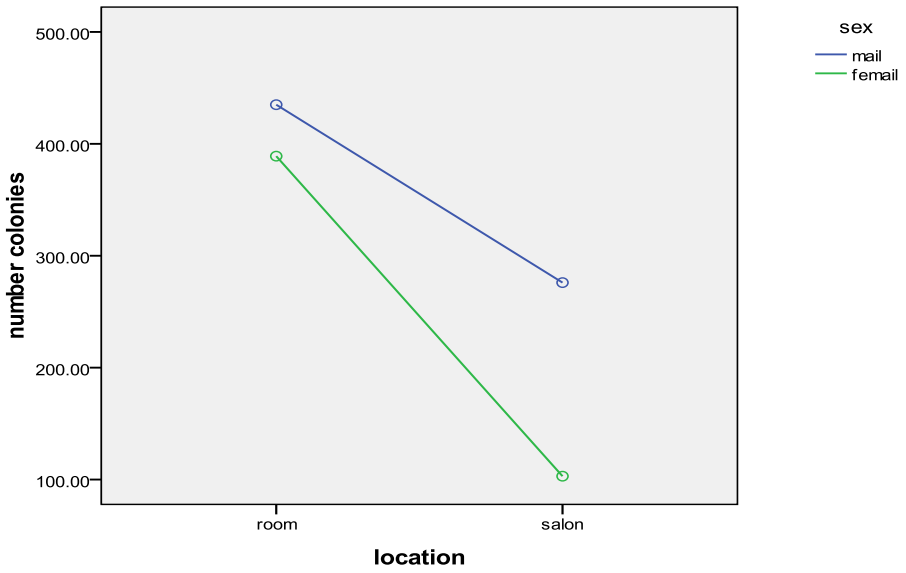

Fig-2: Isolated fungal flora based on plate-putting positions in girls and boys dormitories of Zahedan Medical University

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REFERENCES

1. Elliot HE; Indoor air pollution. Immunol Allergy Clin North Am 1994; 14(3): 551-66.
2. A-Suwaini AS, Bahkali AH, Hasnain SM; Airborne viable fungi in Riyadh and allergenic response of their extracts. Mycoses; 2001; 44(9-10): 401-6.
3. Abramson D, Clear RM, Gaba D, Smith DM, Patrick SK., Saydak D; Tricho thecene and moniliform in production by fusarium species from western Canadian wheat. J Food Prot; 2001; 64(8): 1220-1225.
4. Stachy botrysTerr Al; Relevance to human disease. Ann Allergy Asthma Immunol 2001; 87(6 suppl 3): 57-63.
5. Abdel Hafez SI; Survey of airborne fungus spores at Faif, Saudi Arabia. Mycopathologia; 1984; 88(1): 38-44.
6. Al-Doory Y; The indoor fungi. N EnglReg Allergy Proc 1985; 6(2): 140-9.
7. Atluri JB, Appanna N; A survey of airborne allergenic fungal spore at Vijayawada (India).J. Environ Biol 1990; 11(3): 321-30.
8. Hurtado I, Riegler-Goihman, M; Air sampling studies in a tropical area; Four year results. Experiential Suppl; 1987; 51: 49-53.
9. Shadzi SH, Zahraee MH, Chadeganipour M; Incidence of airborne fungi in Isfahan, Iran. Mycoses 1993; 36(1-2): 69-73.