ORIGINAL ARTICLE

Investigation of the Frequency of Fungal and Bacterial Contamination on Surfaces and Environmental Health Status of Mosques in Gonabad City, Iran-2020

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Abstract

Background: Mosques are known as a gathering place and a center of worship for Muslims. The present study aimed to investigate the environmental health status and fungal and bacterial contamination of mosques in Gonabad, Iran.

Methods: This analytic-cross sectional study assessed the environmental health status of mosques using the relevant regulations. The sterile carpet sampling method and the sterile swap were used to take the samples of the surfaces. Standard methods were used to determine fungal and bacterial contamination. Overall, 67 samples were taken from the surfaces of doors, windows, and carpets. Data were analyzed at a significance level of 0.05.

Results: Data analysis indicated that the environmental health status of mosques was acceptable. None of the dermatophyte fungal colonies grew on the plates which contained Sabouraud agar with cycloheximide and chloramphenicol (SCC) during incubation of primary culture media. Aspergillus niger was detected in all mosques and on all surfaces. Frequency and percentage of Aspergillus niger were 18 (48.67%) and 6 (16.23) for Mucor. In the case of bacterial contamination, Coagulase-negative staphylococci with the highest percentage (38.46%) and Staphylococcus aureus, Klebsiella, and Escherichia coli, each with 3.84%, were the lowest types of detected bacteria, respectively. The most fungal and bacterial contamination was detected in the carpets.

Conclusion: According to the results, it is essential to pay attention to the environmental health of the mosques and personal hygiene that requires the implementation of new programs and rules to increase the health awareness of worshipers and mosque servants to prevent the spread of fungal and bacterial infections.

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Introduction

Mosques as the places of remembrance of divine names have been established by the command of God. It is a holy Islamic place for teaching and learning Islamic sciences as well. In addition to being the center of worship for Muslims, it is also known as the center of gatherings. In Islamic laws, mosque has special mores

and rules. The first rules and mores intended for the mosque were related to purity and cleanliness. For instance, there are serious pieces of advice from the Holy Muhammad (PBUH) about the reward of cleaning the mosque and condemning its contamination within the "mosque mores" subject. Special jurisprudential rules, as well as recommendations, have been mentioned about the worshipers, and relevant objects and situations, such as wearing the cleanest clothes and the best ornaments when attending the mosques.[1, 2]

God mentions the mosques as his house and place of refuge for His servants, and it deserves purity and cleanliness. Hence, maintaining the cleanliness of the mosques is considered as their commemoration, and any failure in this regard is an insult to the holiest places. In Iran, as a pattern of the Islamic government with a population of about 70 million Muslims, attention to mosques is of particular importance. Given the significant population using the mosques, negligence may convert the mosque as a social place to a center for transmitting pathogenic agents such as bacteria and fungi.[3-5] Furthermore, mosques are public places where people go without shoes and sometimes even without socks. A study on five mosques in South Africa found that the prevalence of foot fungal infections was higher in adult Muslim men coming to the mosques than in non-Muslims. In the study, various fungi were isolated from the floors and carpets of all the mosques under study.[6] In a study by Ilkit, it was found that the prevalence of dermatophytosis of the foot was high among those who performed Wuḍū' 3-5 times a day, did not immediately dry their feet, and used rubber shoes, or shared their shoes. It seems that foot dermatophytosis infection among adult male Muslims, who regularly attend mosques especially in the 5th and 6th decades of life, is a fundamental problem.[7]

Thus, it is essential to pay attention to mosques as a sacred place since neglecting hygiene may make it a place for the spread of pathogens and jeopardize the users' health. Furthermore, mosques, as places of worship, must have a very high level of cleanliness as they reflect the implications of the religion of Islam. In Iran, the health status of mosques as public places is under the control of the Ministry of Health and Medical Education, and it is performed by environmental health inspectors, according to the executive regulations of Article 13 (Law of Food, Beverage, Cosmetics-Hygiene, and Public Places). The present study aimed to investigate the environmental health, and fungal and bacterial contamination of mosques in Gonabad in 2020.

Methods

Sample Size

In the present cross-sectional descriptive study, Gonabad was divided into six parts; from each, a mosque was selected. Samples were taken from surfaces of doors, windows, and carpets in each mosque to detect fungal and bacterial contamination. Sampling of door and window surfaces was repeated twice at different times. In total (2*2*6), 24 samples of doors and windows were collected. Sampling of the carpets was taken according to the standard based on the area of the mosques; several simultaneous samples were taken from different parts of the mosques according to the area. Therefore, the number of samples varied according to the area and finally the average number of different samples was reported in this paper. The total number of carpet samples of the mosques was 43. Overall, 67 samples were taken from the surfaces of doors, windows, and carpets.

Environmental Health Status

The health inspection checklist of the Executive Regulations of Article 13 was utilized to examine the health status of the mosques (It consists of three parts: personal, work tools, and building hygiene). Each item on the checklist that was observed in the mosques was given 1 score and otherwise the scoreWas 0. The sum of the scores of each mosque determined the environmental health status. According to the number of checklist questions, the maximum score was 31 and the minimum 0. The scores of 20 to 31 were considered acceptable. To complete the checklist, the mosques were visited twice with an interval of two months, and the necessary data were collected through observation, inspection, and interviews.

Fungal Sampling

To detect the fungal contamination of the mosques, we first took the samples from the surfaces using the sterile carpet method. According to the areas of the mosques, random sampling was performed by three pieces of square sterile carpets (5×5 cm). Each sampling was repeated three times. Then, the samples were transferred in a cover of sterile aluminum foil to the mycology laboratory of Gonabad University of Medical Sciences. In the laboratory, the samples were cultured by shaking all three pieces of the carpet on plates containing Sabouraud Dextrose agar with cycloheximide (SC) and Sabouraud Dextrose agar containing cycloheximide and chloramphenicol (SCC). The plates containing the culture medium were incubated at 25-28 °C. The culture plates containing SC and SCC were examined daily for two and four weeks respectively in terms of the formation of fungal colonies. To detect the fungi present in the culture media, we first re-cultured the colonies, and then performed detection in terms of genus and sometimes species using macroscopic and microscopic properties of fungi as well as techniques such as Teased mount and Slide culture.[7, 8]

Bacterial Sampling

Sampling was performed for bacterial counting of the surfaces by a sterile swab in a width of 10 and length of 10 cm. For sampling, the swap was exposed to the surface in the vicinity of the flame (within a radius of 15-25 cm from the alcohol burner), and it was then cultured in plates containing blood agar medium. The cultured plates were transferred to the microbiology laboratory and incubated them at 25 °C to 35 °C for 48 hours. After the bacteria grew on the plate, the bacterial species were detected based on diagnostic tests such as gram staining, catalase test, coagulase test, Novobiocin susceptibility test, indole test, lactose fermentation test, citrate consumption, methyl red test, the Voges-Proskauer (VP) test, and urea test.[9]

Data Analysis

Finally, the data were analyzed using SPSS 22. Descriptive statistics were used, including mean and standard deviation for quantitative variables, number and percentage for qualitative variables, and Kolmogorov-Smirnov test to determine the data normality. One-way analysis of variance and statistical t-test were used to determine the relationship between the mean difference of quantitative and qualitative variables for normal data (fungal counting). The Mann-Whitney and Kruskal-Wallis tests at a significance level of 0.05 were used for abnormal data (bacterial counting).

Results

Environmental Health Status

The data analysis indicated that all mosques scored 23 to 28. There was only a mosque (16.7%) where the ceiling, floor, walls, doors, and windows did not comply with health principles according to the checklist of the executive regulations of Article 13. Two mosques (33.3%) did not have proper ventilation. Five mosques (83.3%) did not have emergency exit signs, and only a mosque (16.7%) had no first aid kit (Appendix 1).

Fungal Contamination

In terms of fungal contamination in the mosques, 37 pure colonies out of 105 colonies grown in primary culture media emerged on the SC medium resulting from the re-culture. It is noteworthy that there was no dermatophyte fungal colony on the plates containing SCC medium during incubation of primary culture media. In each mosque, 1- 5 types of fungi isolates were identified. The least variety of fungal contamination was observed in Mosque 2 (n=1) and then in Mosques 3 (n=2), 3 and 4 (n=4), and 1 and 5 (n=5) respectively. Among 11 fungal genera and species detected in the study, Aspergillus niger had the highest frequency and percentage, and Mucor was in the next rank. The highest contamination belonged to mosque 1, and the least to mosque 2 (Figure 1). The comparison of the mean fungi counts in different mosques with one-way analysis of variance indicated that there was no significant difference in the number of fungi between different mosques (P=0.473).

Table s1 (see supplementary data) shows the fungal number and genera detected on sampled surfaces in the mosques. There were 37 (100%) fungal species and genera isolated from the carpets, doors, and windows of all mosques; and the frequency and percentage of Aspergillus niger were 18 (48.67%) and 6 (16.23) for Mucor. There were 2 cases (5.40%) for Rhizopus, Penicillium, Stemfillium, and Nigrospora. One case (2.70%) was found for each of Aspergillus flavus, Pseudallescheria, Cladosporium, Alternaria, and Curvularia.

Fungi isolated from the carpets of all mosques were

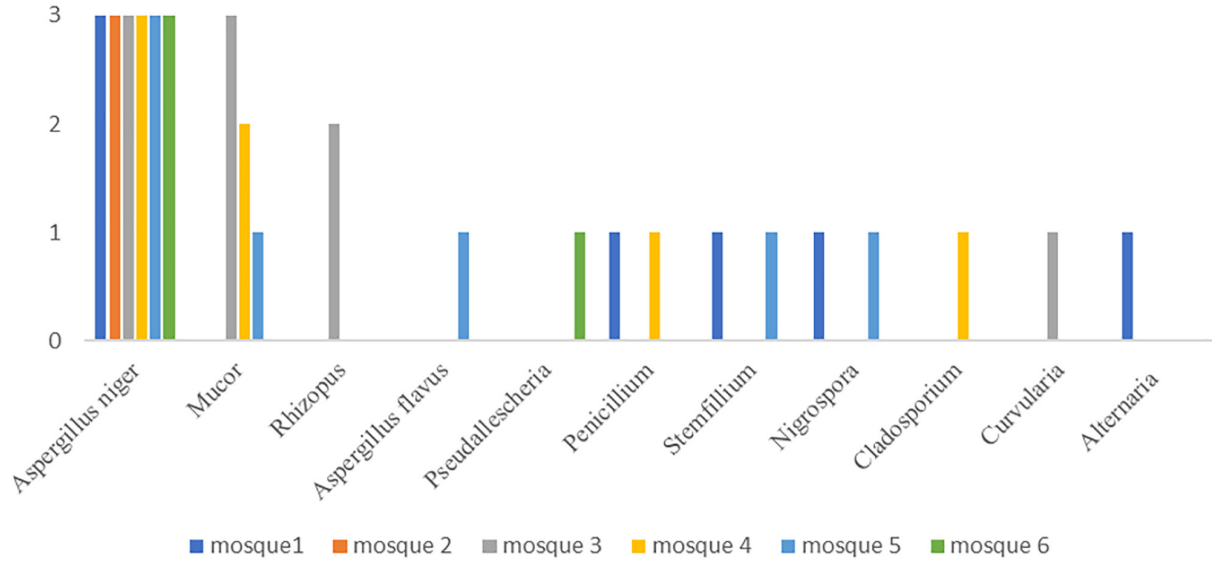

Figure 1: The frequency and names of detected fungi separately for mosques

Table 1: Comparison of the mean fungi count detected in sampling sites

Sampling site	Mean±SD	Test result
Door	1.5±0.54	P=0.417
Window	1.67±0.81	F=0.92
Carpet	2.17±1.69	
Total	1.78±0.81	

Table 2: Counting bacteria separately for mosques and sampling surfaces (CFU/m^2)

Mosque	Carpet	Window	Door
1	386×10^2	2×10^2	0
2	378×10^2	2×10^2	38×10^2
3	380×10^2	7×10^2	15×10^2
4	411×10^2	221×10^2	215×10^2
5	249×10^2	4×10^2	45×10^2
6	280×10^2	6×10^2	24×10^2

Table 3: The frequency of contamination of the sampled surfaces of mosques based on the type of bacteria

Bacterium	Number (%)
Coagulase-negative staphylococci	10 (38.46)
Micrococcus	7 (26.92)
Bacillus	6 (23.07)
Klebsiella	1 (3.84)
E. coli	1 (3.84)
Staphylococcus aureus	1 (3.84)
Total	26 (100)

Table 4: The genera of bacteria separately detected for sampling surfaces

Mosques	Carpet	Windows	Door
1	Coagulase-negative staphylococci Bacillus	Micrococcus	-
5	Staphylococcus aureus	Bacillus	Coagulase-negative staphylococci
4	Bacillus Micrococcus	Coagulase-negative staphylococci	Bacillus Micrococcus
2	Coagulase-negative staphylococci Micrococcus Klebsiella	Coagulase-negative staphylococci	Coagulase-negative staphylococci Bacillus
3	Micrococcus E. coli	Micrococcus	Coagulase-negative staphylococci
6	Coagulase-negative staphylococci Bacillus	Coagulase-negative staphylococci	Coagulase-negative staphylococci Micrococcus

Table 5: The comparison of mean bacterial count in the sampling sites

Sampling site	Mean rank	Test result
Door	7.67	P=0.003
Window	5.33	df=2
Carpet	15.50	
Total	-	

16 cases (100%), including Aspergillus niger (6 cases, 37.5%), Mucor (3 cases, 18.75%), Stemphylium (2 cases, 12.5%), and Aspergillus flavus, Cladosporium Rhizopus and Nigrospora, each with one case (6.25%). Fungi isolated from the doors of all the mosques were 10 cases (100%), including Aspergillus niger (6 cases, 60%), Mucor, Penicillium, Pseudallescheria, and Rhizopus, each with one case (10%). Furthermore, fungi isolated from the windows of all mosques were 11 cases (100%), including Aspergillus niger (6 cases, 54.55%), Mucor (2 cases, 18.18%), and Nigrospora, Alternaria and Curvularia, each with one case (9.09%). It should be noted that Aspergillus niger was detected in all mosques and on all surfaces. However, the one-way analysis of variance did not show any significant relationship between the number of fungi and sampling places (Table 1).

Bacterial Contamination

Table 2 presents the results of counting bacteria in CFU/m^2 on high-contact surfaces of the mosques. According to this Table, the most bacterial

contamination was seen in Mosque 4 and in the carpet. The lowest bacterial contamination was observed in mosque 1 and in the windows. Comparison of the mean bacterial count in different mosques using the Kruskal-Wallis test indicated that the number of bacteria did not differ significantly between different mosques (P=0.95).

Coagulase-negative staphylococci with the highest percentage (38.46%) and Staphylococcus aureus, Klebsiella, and Escherichia coli, each with 3.84%, were the lowest types of detected bacteria, respectively (Table 3). Table 4 presents the genera of bacteria detected for each sampling surface. Based on the Table, Coagulase-negative staphylococci, Bacillus, and Micrococcus were identified on all three sampling surfaces. Klebsiella, Escherichia coli, and Staphylococcus aureus were found only on the carpet surface. Kruskal-Wallis test results indicated that there was a significant difference in the mean bacterial count in terms of different sites of sampling in the mosques (P=0.003) (Table 5).

Relationship between Environmental Health Status and Fungal, Bacterial Contamination

The independent t-test was used to analyze the relationship between the mean fungi genera in various mosques from different locations with the cases studied in the mosques Environmental Health checklist of Article 13. It was indicated that there was no significant relationship between the number of fungi detected in any sampling location (carpets, windows, and doors) and the checklist cases. Also, the Mann-Whitney test was used to analyze the relationship between the mean bacterial count in various mosques of the different sampling sites with cases studied in the mosques Environmental Health checklist of Article 13. No significant relationship was found between the number of bacteria detected in any sampling location (carpets, windows, and doors) and the checklist cases. It should be noted that only items from the checklist without the same answers in the mosques could be examined for the tests.

Discussion

Despite several studies on evaluating the environmental health in mosques, there is less attention to bacterial contamination of such surfaces as handles, doors, windows, and prayer mats in the mosques. In addition to evaluating the environmental health in the mosques, the present study also examined their fungal and bacterial contamination. Samples were taken from high-contact surfaces, detected fungal genera and bacterial species, and their relationship with the environmental health of the mosques was determined.

According to the results of completing the checklist of the executive regulations of Article 13, 83.3% of the mosques were in a good health status. Moreover,16.7% had no acceptable status in a few cases in the checklist; however, they were problem-free in most items of the inspection checklists and in good status. The environmental health status of the mosques was at a good level in the present study, which is inconsistent with the study of Yousefi and Ala[10] who examined the environmental health of the mosques in Sari City, Iran. They reported lower general status of the environmental health of the mosques in Sari on surfaces than the expected. According to the results of Barjasteh et al.'s study[11] on the environmental health of the mosques in Tabas, Iran, the mosques were at a moderate level in terms of environmental health. However, the environmental health status of the mosques was above average in the present study.

Fungal spores are the most important biological contaminants in the living environment, workplaces, and places with nutrients needed for growth. In addition to being pathogenic in humans, fungi can cause significant infections in individuals with their opportunistic properties. Furthermore, they cause increased hypersensitivity and poisoning in hosts.[12, 13] The findings of the present study indicated the presence of Aspergillus and Mucorales on the surfaces of the mosques in addition to black fungi, including Alternaria, Cladosporium, Curvularia, Nigrospora, and Stemfillium. Aspergillus and Mucorales are important opportunistic fungi that can be among the most important pathogens in susceptible individuals and favorable conditions. In this work, the degree of fungal contamination of the mosque carpets was higher than the doors and windows. Cesuroglu and Colakoglu[14] studied the fungal contamination of carpets, walls, and Quran in two mosques in Istanbul. They found that the growth of fungi in the carpets of mosques had a higher risk, and then the walls and Quran books had a higher potential of the fungi growth. In a study by Alsaif et al.[15] on fungal contamination of carpets in Riyadh mosques, 65% of the samples were positive for fungal growth. Most of the isolated species were Rhodotorula (74%), Cladosporium (47%), Bipolaris (46.6%), Alternaria (40%), dematiaceous molds (34%), Curvularia (32.4%), and Candida (31%) and other yeasts (43.7%). However, Aspergillus niger was the most common species in the carpets in this study.

The floors of the mosques are covered with rugs or carpets, and they are usually washed by a method the same as the house carpets. As specific rules are applied for the prevention of transmitting fungal diseases in some public places such as pools, hotels, gyms, the hairdressers, it is essential to take measures to reduce the risk of transmitting the diseases in mosques, prayer rooms, and other pilgrimage places to avoid harm to the worshipers' health and increase the attractiveness of the holy

places. Washing mosque carpets with glutaraldehyde-containing shampoos and using a vacuum cleaner to clean them have been suggested in some studies.[16] Yenişehirli et al.[17] investigated the presence of dermatophytes in the mosques of Tokat in Turkey in 2012. In this study, 72% of the samples were positive, among which Epidermophyton floccosum had the highest percentage. In a study on mosques and pray rooms of Qom-Tehran freeway in terms of the possibility of dermatophytosis contamination, 20 genera of saprophytic fungi were isolated and detected. Aspergillus isolates had the highest number, and Penicillium, Cladosporium and Alternaria genera were ranked next. The results of the study on the isolation of saprophytic fungi were almost consistent with the findings of the present study. However, 44% out of the total number of samples provided by the carpet sampling method contained dermatophytosis fungi.[18] The results of these studies were inconsistent with those of the present study in which no dermatophyte fungi was isolated.

Given the bacterial contamination of the surfaces and according to the results, most of the bacteria isolated from the mosques were Coagulase-negative staphylococci. Furthermore, highly pathogenic bacteria such as Staphylococcus aureus, Klebsiella, and Escherichia coli were isolated which are very important in causing diseases in humans. Since many people travel in mosques, it is necessary to control and eliminate such bacteria. In a study, antibiotic-resistant and potentially pathogenic bacteria were isolated from the carpets of mosques in Tripoli of Libya. Moreover, Escherichia coli, Salmonella, Aeromonas, and Staphylococcus genera were also detected.[19] In the present work, Coagulase-negative staphylococcus was the mostly detected organism. AlSaif et al.[20] conducted a study on bacterial contamination of the carpets of mosques in Riyadh, Saudi Arabia; 94% of the samples were positive. The most isolated organisms were Coagulase-negative staphylococci (59.4%), Bacillus (56.9%), and micrococcus (42.7%). Other potentially pathogenic bacteria such as Shigella (0.3%), methicillin-resistant S. aureus (MRSA) (0.3%), and Yersinia enterocolitica (0.3%) were isolated from the eastern, southern, and western regions of Riyadh, respectively. E. coli (0.7%) and Klebsiella (1.0%) were isolated from the central region of Riyadh. Despite the detection of less pathogenic bacteria such as coagulase-negative staphylococci and micrococci in the study, it should be noted that these bacteria are opportunistic pathogens and can cause life-threatening infections in people with immunodeficiency or with artificial heart valves or artificial joints.

Conclusion

While the present study simultaneously investigated the environmental health, and fungal and bacterial surfaces contamination of the mosques in Gonabad, similar studies have only examined the environmental health of the mosques alone or only fungal surfaces contamination in the mosques. During the study, the Covid-19 pandemic occurred and caused problems in sampling, so that one step of repetition sampling of the doors and windows was reduced. The results of the present work indicated that not only the observance of the environmental health of mosques, but also the observance of personal hygiene was significantly important. This necessitates implementing new strategies and laws to increase health awareness among worshipers and servants of the mosques to prevent the spread of fungal and bacterial infections. It is proposed to conduct periodic studies, observe and improve the health status, use proper disinfectants, control humidity, and provide air conditioning to control and eliminate these factors. Given the carpet contamination, further studies are suggested to find more effective methods.

Compliance with Ethical Standards

The study was not performed on humans or animals.

Ethical Approval

Ethics committee of Gonabad University of Medical Sciences, Iran approved the study- with the code of IR.GMU.REC.1398.137

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Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request**.**

Authors' Contribution

Mohammad Hassan Minooeianhaghighi analyzed and interpreted the sample for detection of fungal contamination, Roya Peirovi- Minaee designed the study, supervised closely the research and was a major contributor in writing the manuscript. Alireza Mohammadzadeh analyzed and interpreted the sample for detection of bacterial contamination. Fateme Khani collected and cultured all the samples for fungal and bacterial contamination. Milad Mokhtarzade transferred the samples and data. Mosques were coordinated for sampling by Javad Bagheri. All authors read and approved the final manuscript.

Conflicts of interest*:* None declared.

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Appendix 1: The environmental health status of the mosques based on the Article-13 checklist

No.	Checklist questions	Number of mosques		Percentage of mosques	
		Yes	No	Yes	No
1	Is there any shoe rack for worshipers?	6	-	100	-
2	Are rugs and carpets sweeping up daily?	6	-	100	-
3	Are the roofs, floors, and walls of the praying room according to health principles?	5	1	83.3	16.7
4	Are the windows and doors of the praying room according to health principles?	5	1	83.3	16.7
5	Is drinking water based on health standards?	6	-	100	-
6	Are there disposable glasses of water?	6	-	100	-
7	Do the wastewater paths have the appropriate coverage?	6	-	100	-
8	Is the wastewater disposal method according to the health principles?	6	-	100	-
9	Is there proper ventilation for prayer rooms and mosques?	4	2	66.7	3.3
10	Is the light degree appropriate?	6	-	100	-
11	Are there hot and cold water, liquid soap, and dryer in the Wuḍū room?	6	-	100	-
12	Is the Wuḍū room disinfection performing every month?	6	-	100	-
13	Is the hygiene status of the bathrooms suitable?	6	-	100	-
14	Is the number of bathrooms according to the number of people?	6	-	100	-
15	Does the pantry staff have a valid certificate of passing the special public health course?	6	-	100	-
16	Does the pantry staff have a medical examination card?	6	-	100	-
17	Has the health file been completed for the pantry staff?	6	-	100	-
18	Is the pantry staff clothing suitable?	6	-	100	-
19	Is the food distribution on a healthy basis?	6	-	100	-
20	Is the utensil storage appropriate in the kitchen?	6	-	100	-
21	Are the floor, walls, and ceiling of the pantry according to health principles?	6	-	100	-
22	Is the waste disposal according to health principles?	6	-	100	-
23	Is the pantry being cleaning daily?	6	-	100	-
24	Is dishwashing according to health principles?	6	-	100	-
25	Is there a first aid kit with enough supplies?	5	1	83.3	16.7
26	Is there any first aid class for people?	5	1	83.3	16.7
27	Is there any “no smoking” sign in prayer rooms and mosques?	5	1	83.3	16.7
28	Is there any emergency exit sign in different places?	1	5	16.7	83.3
29	Are there any facilities to prevent the entry of insects and rodents?	6	-	100	-
30	Are the extra, used, and unusable items being taken out of the place?	6	-	100	-
31	Have the necessary safety measures been taken in the prayer rooms and mosques?	6	-	100	-

Table s1: The frequency and names of detected fungi separately for mosques and sampling surfaces

Mosques	1			2			3			4			5			6			Total Number (%)
Sampling surfaces / Fungus name	Carpet Number (%)	Door Number (%)	Window Number (%)	Carpet Number (%)	Door Number (%)	Window Number (%)	Carpet Number (%)	Door Number (%)	Window Number (%)	Carpet Number (%)	Door Number (%)	Window Number (%)	Carpet Number (%)	Door Number (%)	Window Number (%)	Carpet Number (%)	Door Number (%)	Window Number (%)	
Aspergillus niger	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18 (48.67)
Mucor	-	-	-	-	-	-	1	1	1	1	-	1	1	-	-	-	-	-	6 (16.22)
Rhizopus	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	2 (5.40)
Aspergillus flavus	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1 (2.70)
Pseudallescheria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1 (2.70)
Penicillium	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2 (5.40)
Stemfillium	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2 (5.40)
Nigrospora	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2 (5.40)
Cladosporium	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1 (2.70)
Curvularia	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1 (2.70)
Alternaria	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 (2.70)
Total(%)	3 (100)	1 (100)	3 (100)	1 (100)	1 (100)	1 (100)	3 (100)	3 (100)	3 (100)	3 (100)	2 (100)	2 (100)	5 (100)	1 (100)	1 (100)	1 (100)	2 (100)	1 (100)	