



Evaluation of Knowledge and Awareness of Medical and Dental Professions About Mucormycosis Associated with Covid 19: A Questionnaire Survey

Avineet Kaur¹, Harnoor Singh Sandhu^{2*}, Sonampreet K Dhillon³, Aaron Sarwal⁴, Iqra Khilji⁵ and Shalika Bhagat⁶

¹Senior Lecturer, Department of Periodontology and Oral Implantology, Swami Devi Dyal Dental College and Hospital, Golpura, Barwala, Haryana, India

²Emergency Medical Officer, Department of Emergency, Gian Sagar Medical Hospital Banur, Rajpura, Punjab, India

³B.D.S, R.D.A, Periodontics, M.P.H T&N Wu Dental Corp, USA

⁴Department of Conservative dentistry and Endodontics Mills Dental Care, Port Moresby, NCD, Papua New Guinea

⁵Medical Officer (Dental), Hazrat Haleema Maternity and General Hospital Garewal chowk, Malerkotla, Punjab, India

⁶Department of Dermatology, Gian Sagar Medical Hospital Banur, Rajpura, Punjab, India

*Corresponding Author: Harnoor Singh Sandhu, Emergency Medical Officer, Department of Emergency, Gian Sagar Medical Hospital Banur, Rajpura, Punjab, India

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Abstract

Aim: The study was done to assess the knowledge and awareness of medical and dental professions about Mucormycosis associated with Covid 19.

Materials and Methods: A prospective questionnaire survey was done on 200 medical and dental professionals. Medical professional's knowledge and awareness about Mucormycosis associated with Covid 19 was evaluated.

Result: In medical group 61 were males and 39 females whereas in dental group 32 were males and 68 were females. The difference was statistically significant ($P < 0.008$). The age group was 34 for 25-30 years and 66 for 31-40 years in medical group and 46 and 54 respectively in dental group. The difference was not statistically significant ($p=0.11$). 57 were graduates and 43 participants were postgraduates in medical group. In dental group 69 were graduates and 31 were post graduate among 100 participants in each group. The response to knowledge about steroids responsible for fungal infections was statistically significant in both groups ($p=0.041$). The awareness response among the study population was significant for appearance of mucormycosis during first wave and prolonged headache another symptomatic factor for fungal mucormycosis was insignificant.

Conclusion: The participants had acceptable knowledge and awareness about covid 19.

Keywords: Awareness; Covid; Dental; Knowledge; Medical; Response

Introduction

Coronavirus disease 2019 (COVID-19) is a new disease condition caused by a novel coronavirus (SARS-CoV-2) first documented in Wuhan, China [1]. Mucormycosis is commonly associated with covid 19 disease in medically compromised individuals. Mucormycosis is an angioinvasive disease that is described by tissue infarction and necrosis. The mucormycosis are classified based on its anatomic location, such as rhino-orbital-cerebral (ROCM), pulmonary, gastrointestinal, cutaneous, renal and disseminated Mucormycosis. ROCM mucormycosis is the commonest form (45-74%), followed by cutaneous (10-31%), pulmonary (3-22%), renal (0.5-

9%), and gastrointestinal (2-8%) [2]. Higher risk of Mucormycosis found in patients with diabetes mellitus, under chemotherapy, haematological malignancy, human immunodeficiency virus (HIV) infection, organ transplant recipients on immunosuppressive therapy. Globally, *Rhizopus arrhizus* is the commonest cause of mucormycosis [2,3].

The mortality rate of Mucormycosis in India is ranges from 28-52% [2]. There are limited studies in India on mucormycosis. Hence the present questionnaire was done on medical professionals to evaluate their knowledge and awareness about Mucormycosis associated with Covid 19.

Materials and Methods

This prospective pre tested questionnaire based survey was conducted among 100 each of medical and dental professionals. The study was conducted after attaining the ethical clearance form institutional ethics committee and written informed consent was obtained from the participants.

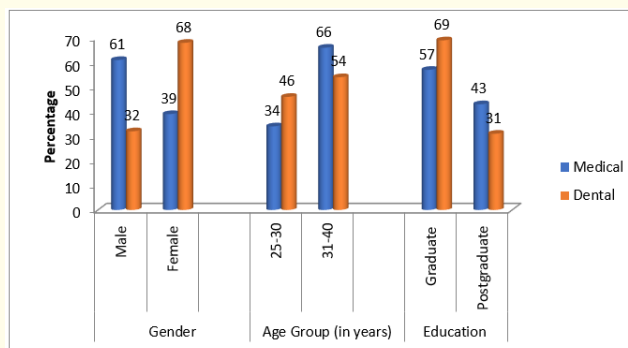
Demographic data along with education qualification was noted. The study was conducted from Sept 2021 to December 2021. Twenty pre test closed ended self administered questionnaire (10 for knowledge and 10 for awareness) (Table 1) with yes or no option was circulated to medical and dental professionals by e-mail with google form. The questions were structured to evaluate the knowledge and awareness about Mucormycosis following covid 19 among medical and dental professions. The obtained data was statistically evaluated using SPSS statistical software version 21.0 using ANOVA test. P value lesser than 0.5 was considered significant.

Results

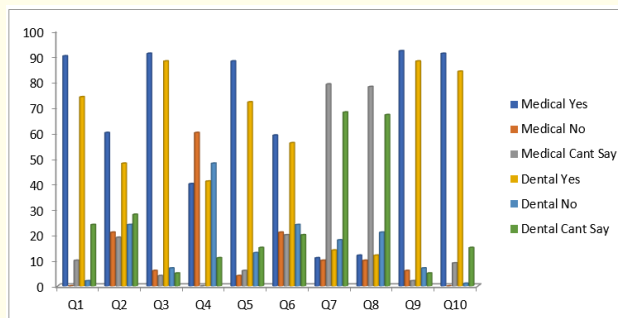
Tables 2 and graphs 1 indicate demographic characteristics of the study population. In medical group 61 were males and 39 females whereas in dental group 32 were males and 68 were females. The difference was statistically significant ($P < 0.008$). The age group was 34 for 25-30 years and 66 for 31-40 years in medical group and 46 and 54 respectively in dental group. The difference was not statistically significant ($p=0.11$). 57 were graduates and 43 participants were postgraduates in medical group. In dental group 69 were graduates and 31 were post graduate among 100 participants in each group.

Table 3 and graph 2 indicates comparison of response to knowledge questions among the study population. The knowledge to question no 1 (steroids responsible for fungal infections) was statistically significant in both groups ($p=0.041$). The response was insignificant for questions Q2 to Q10.

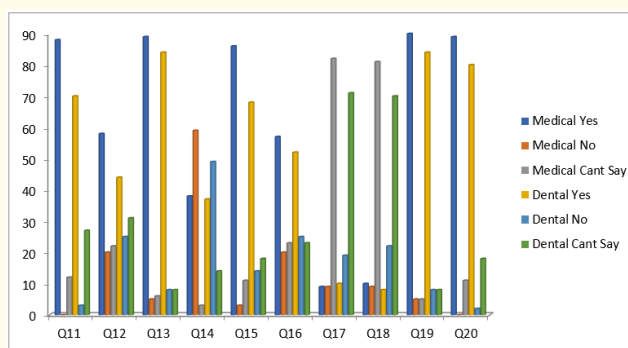
Table 4 and Graph 3 indicate comparison of response to awareness questions among the study population. The awareness response among the study population was significant for appearance of mucormycosis during first wave and prolonged headache another symptomatic factor for fungal mucormycosis (question no 11 and 15). For other questions the response was insignificant.



Graph 1: Demographic characteristics of the study population.



Graph 2: Comparison of response to knowledge questions among the study population.



Graph 3: Comparison of response to awareness questions among the study population.

S.no	Questions	Answers
Q1	Are steroids responsible for fungal infections to become active?	Yes/No/Can't say
Q2	Does treating mucormycosis require teamwork?	Yes/No/Can't say
Q3	Are sinonasal, orbital and rhinocerebral the most common types of mucormycosis on the rise post Covid-19?	Yes/No/Can't say
Q4	Are both the young and elderly suffering?	Yes/No/Can't say
Q5	Would awareness among patients lead to their condition being cured earlier?	Yes/No/Can't say
Q6	Are early referral and intervention both precautionary methods to prevent mucormycosis?	Yes/No/Can't say
Q7	Can control of sugar intake to a certain extent be beneficial for prevention of mucormycosis?	Yes/No/Can't say
Q8	Are low immunity, hospitalization and diabetes responsible for a fungal infection to attack?	Yes/No/Can't say
Q9	Are sinuses present in facial bones impacted by mucormycosis?	Yes/No/Can't say
Q10	Is blackish nasal discharge a symptomatic factor for mucormycosis?	Yes/No/Can't say
Q11	Was it observed in the first wave of COVID-19?	Yes/ No/ Can't say
Q12	Do patients tell their dentist first about their toothache rather than other medical professionals?	Yes/No/Can't say
Q13	Are diabetic patients more prone to fungal infection?	Yes/No/Can't say
Q14	Is rhinocerebralmucormycosis considered to be the worst type of mucormycosis?	Yes/No/Can't say
Q15	According to neurologists, is prolonged headache another symptomatic factor for fungal mucormycosis?	Yes/No/Can't say
Q16	According to a diabetologist, do you agree that it is advisable to take iron depression and anti fungal medication during COVID-19 treatment?	Yes/No/Can't say
Q17	Is clinical evaluation based on ENT surgeon?	Yes/No/Can't say
Q18	Mucormycosis can be treated by a team of doctors i.e. ENT surgeon, Ophthalmologist, Neurologist, Endocrinologist, Microbiologist, Dental surgeon, General Physician and Emergency Medical Officers. Do you agree with the statement?	Yes/No/Can't say
Q19	Should infective tissue be surgically removed?	Yes/No/Can't say
Q20	Patients who are diabetic, immunosuppressed or that have COVID-19 that have the following symptoms: facial pain, swelling or numbness, blackish discoloration over the bridge of nose, toothache, tooth loosening, jaw involvement, blurred or double vision with pain, skin lesions, necrosis, chest pain, and/or pleural effusion should be examined for the possibility of having mucormycosis. Do you agree?	Yes/No/Can't say

Table 1: Questionnaire for knowledge and awareness about mucormycosis.

Variables	Medical		Dental		p value
	N	%	N	%	
Gender					
Male	61	61	32	32	0.008*
Female	39	39	68	68	
Age Group (in years)					
25-30	34	34	46	46	0.11
31-40	66	66	54	54	
Education					
Graduate	57	57	69	69	0.07
Postgraduate	43	43	31	31	
Total	100	100	100	100	

Table 2: Demographic characteristics of the study population.

*: Statistically significant.

Questions	Medical			Dental			p value
	Yes	No	Cant Say	Yes	No	Cant Say	
Q1	90	0	10	74	2	24	0.041*
Q2	60	21	19	48	24	28	0.052
Q3	91	6	4	88	7	5	0.67
Q4	40	60	0	41	48	11	0.18
Q5	88	4	6	72	13	15	0.06
Q6	59	21	20	56	24	20	0.73
Q7	11	10	79	14	18	68	0.42
Q8	12	10	78	12	21	67	0.11
Q9	92	6	2	88	7	5	0.28
Q10	91	0	9	84	1	15	0.31

Table 3: Comparison of response to knowledge questions among the study population.

*: Statistically Significant.

Questions	Medical			Dental			p value
	Yes	No	Cant Say	Yes	No	Cant Say	
Q11	88	0	12	70	3	27	0.03*
Q12	58	20	22	44	25	31	0.16
Q13	89	5	6	84	8	8	0.76
Q14	38	59	3	37	49	14	0.17
Q15	86	3	11	68	14	18	0.022*
Q16	57	20	23	52	25	23	0.53
Q17	9	9	82	10	19	71	0.26
Q18	10	9	81	8	22	70	0.10
Q19	90	5	5	84	8	8	0.46
Q20	89	0	11	80	2	18	0.34

Table 4: Comparison of response to awareness questions among the study population.

*: Statistically Significant.

Discussion

Fungal co-infection is a documented complication of respiratory virus infections, with raising mortality and morbidity, but can be readily treated with early diagnoses [4]. Mucormycosis is an opportunistic infection caused by Mucorales [5]. Mucor fungi responsible for mucormycosis are nonpathogenic but may present as an opportunistic infection in patients with medically compromised conditions [6]. Pulmonary Mucormycosis caused by Mucorales is a highly lethal invasive fungal infection usually found in immunocompromised patients [5].

The present questionnaire study was done the evaluated the knowledge and awareness about Mucormycosis among medical and dental professionals. We found acceptable knowledge and awareness about Mucormycosis following second wave.

Oladele., *et al.* assessed the knowledge and awareness of invasive fungal infections amongst resident doctors in Nigeria, across 7 tertiary hospitals in 5 geopolitical zones. They concluded that the knowledge and awareness was acceptable and there is need of training for resident doctors [7].

Garg, *et al.* stated from the systematic review that concurrent glucocorticoid therapy probably heightens the risk of Mucormycosis [8]. Pakdel, *et al.* reported the clinical features, contributing factors and outcome of patients with coronavirus disease 2019 (COVID-19) - associated mucormycosis (CAM). They stated from cross sectional study that poor control of diabetes mellitus is an important pre-disposing factor for CAM [9].

Srinivasan, *et al.* evaluated the Awareness on Covid-19 and Covid Associated Mucormycosis by questionnaire survey on general public and they concluded that participants had awareness about mucormycosis following Covid 19 second wave [10].

The treatment of mucormycosis entails the early initiation of therapy, debridement of infected tissue by surgical means, antifungal treatment, and underlying disease management. Amphotericin B (AmB) is the first-line drug of choice; subsequently, posaconazole and isavuconazole are prescribed [2].

Further studies are needed to evaluate the associated factors with Covid 19 and its management. Early recognition of these high morbidity conditions is main aspect to allow for optimal treatment with better outcomes. There is an urgent need to address this public health concern by having nationwide surveillance, diagnostic and management system of the disease, along with public awareness and education [11].

Conclusion

The medical and dental professionals had acceptable knowledge and awareness about Mucormycosis. Further studies are needed to validate the results.

Conflict of Interest

Nil.

Bibliography

1. Werthman-Ehrenreich A. "Mucormycosis with orbital compartment syndrome in a patient with COVID-19". *American Journal of Emergency Medicine* 42 (2021): 264.e5-264.e8.
2. Prakash H and Chakrabarti A. "Epidemiology of Mucormycosis in India". *Microorganisms* 9.523 (2021): 1-22.
3. Buil JB, *et al.* "Case series of four secondary mucormycosis infections in COVID-19 patients, the Netherlands, December 2020 to May 2021". *Euro Surveillance* 26.23 (2021): 1-6.
4. Lewis White P, *et al.* "A national strategy to diagnose COVID-19 associated invasive fungal disease in the ICU". *Clinical Infectious Diseases* 29 (2020): ciaa1298.
5. He J, *et al.* "Isolated pulmonary Mucormycosis in an immunocompetent patient: a case report and systematic review of the literature". *BMC Pulmonary Medicine* 21.138 (2021): 1-8.
6. Rai S, *et al.* "Palatal mucormycosis masquerading as bacterial and fungal osteomyelitis: A rare case report". *Contemporary Clinical Dentistry* 9 (2018): 309-313.
7. Oladele R, *et al.* "Evaluation of knowledge and awareness of invasive fungal infections amongst resident doctors in Nigeria". *Pan African Medical Journal* 36 (2020): 297.
8. Garg D, *et al.* "Coronavirus Disease (Covid-19) Associated Mucormycosis (CAM): Case Report and Systematic Review of Literature". *Mycopathologia* 5 (2021): 1-10.
9. Pakdel F, *et al.* "Mucormycosis in patients with COVID-19: A cross-sectional descriptive multicentre study from Iran". *Mycoses* 64 (2021): 1238-1252.
10. Srinivasan B, *et al.* "Awareness on Covid-19 and Covid Associated Mucormycosis During Second Wave in India". *Journal of Evolution of Medical and Dental Sciences* 10.39 (2021): 3480-3486.
11. Rocha ICN, *et al.* "COVID-19 and mucormycosis syndemic: double health threat to a collapsing healthcare system in India". *Tropical Medicine and International Health* 26.9 (2021): 1016-1018.

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