

Effectiveness of STP on Knowledge of Mucormycosis and Its Prevention in COVID-19 Patients Among Nursing Officers

Deepa Rajashekhar Degal¹, Dr. Shridhar Pujari²,
Dr. Deelip Somaninga Natekar³

¹M.Sc. Nursing Final year, Dept. of Medical Surgical Nursing, Shri B.V.V.S Sajjalashree Institute of Nursing Sciences, Navanagar, Bagalkot, Karnataka

²Associate Professor, Dept. of Medical Surgical Nursing, Shri B.V.V.S Sajjalashree Institute of Nursing Sciences, Navanagar, Bagalkot, Karnataka

³Principal, (Ph.D. in Nursing), Shri B.V.V.S Sajjalashree Institute of Nursing Sciences, Navanagar, Bagalkot, Karnataka

Corresponding Author: Deepa Rajashekhar Degal

DOI: <https://doi.org/10.52403/ijshr.20230254>

ABSTRACT

Mucormycosis is a vascular disease caused by saprophytic fungi of the order Mucorales. The true incidence of mucormycosis in India is unknown due to the lack of population based studies. The prevalence of mucormycosis in India is about 70 times higher than the global figure.

Methods: In this study, a pre-experimental study with pre-test and post-test groups was used without a control group. Fifty subjects were selected using a suitable sample. Data were collected using a questionnaire. Data were analyzed by descriptive and statistical methods (mean, frequency distribution, paired t-test and chi-square test).

Results: The overall result shows that the mean knowledge score after the test was 21.02 (SD ± 5.77), which is 70.06% of the total score. The mean pre-test knowledge score was 14.02 (SD ± 5.17), representing 46.7% of the total score. The mean overall effectiveness of STP was 7 with SD ± 0.6 , corresponding to 23.36% of the total score. Because the calculated score was much higher than the table score (1.96), the results show that the difference between the nurses' mean pretest (14.02 ± 5.17) and posttest (21.02 ± 5.77) knowledge scores was statistically significant at a significance level of 0.05 significance level [$t=3.70$, $p<0.05$].

Conclusion: A significant difference was found between pretest and posttest knowledge test scores in nurses. This study proves that the STP was effective in improving nurses' knowledge of mucormycosis and its prevention in covid-19 patients.

Keywords: Assess, Effectiveness, Structured teaching programme, Mucormycosis, Nursing Officers.

INTRODUCTION

Health is the greatest gift, contentment the greatest wealth, faithfulness the best relationship.

-Buddha

Respiratory viruses affect us throughout our lives, from childhood to old age, causing illnesses ranging from acute rhinitis to bronchopneumonia. They belong to several families of viruses, and while these different viral infections have different characteristics, some have unique features. Recently, respiratory viruses have infected the entire world, including SARS-CoV-2, which causes COVID -19 ^[1].

In December 2019, a series of acute respiratory ails passed in Wuhan, China. The complaint spread swiftly from Wuhan to other corridor of China shortly after it

spread worldwide, publicising a new coronavirus. Coronaviruses (CoV) are the largest group of contagions belonging to the order Nidovirales, which includes the families Coronaviridae, Arteriviridae, Mesoniviridae, and Roniviridae [2].

In addition, nearly all transnational countries in the world have reported that the complaint is transmitted through aerosol inhalation into the upper respiratory tract and lungs. As a result, the number of cases increased swiftly worldwide [3].

Mucormycosis is an opportunistic fungal infection of the zygomycete family that can beget various infections. In utmost cases, underpinning conditions are present that dispose the host to infection. Since fungi are responsible for the typical terrain, they are generally not pathological in immunocompetent individualities [4].

Mucormycosis is caused by mucus set up on rotting shops, fruits and vegetables, and in amphitheaters that come into contact with soil, excreta, and shops. Therefore, to be safe and avoid the symptoms of black fungus, wear applicable shoes, long pants, full-sleeved T-shirts, and theater gloves when handling soil and excreta [5].

Mucormycosis can affect cases who formerly have uncontrolled diabetes, and therefore must be covered to avoid extreme and dangerous symptoms of mucormycosis. The symptoms of mucormycosis are generally caused by the use of steroids [6].

Recently, the frequency of mucormycosis of the sinuses has changed, and more and more cases are being diagnosed. In recent months, the number of cases of invasive fungal infections of the paranasal sinuses, especially mucormycosis, has suddenly increased in our institute at a tertiary training sanatorium, and a large proportion of emergency admissions are for cases who have endured radical surgery for this condition [7].

MATERIALS AND METHODS

A pre-experimental design with a retest and a posttest in one group was used to estimate the goods of the structured teaching

programme (STP) on mucormycosis and its forestallment among nursers at HSK Hospital in Bagalkot. Data were collected using a structured questionnaire, and results were collected and analysed using descriptive and deducible statistics.

STUDY DESIGN: The exploration structure chosen for this study was pre-experimental, i.e., pre-test and post-test of one group without a control group design, since the purpose of this study was to determine the knowledge accession of subjects who entered structured instruction. therefore, only one group is observed doubly, i.e., ahead and after the addition of the independent variable. The treatment outgrowth would be equal to the post-treatment case rate minus the pre-treatment case rate.

SETTING OF THE STUDY: The setting is the physical position and conditions of data collection. This study was conducted at HSK Hospital and Research Center Bagalkot. The study point was more suitable depending on the vacuity. The nursing staff is working in HSK Hospital Navanagar, Bagalkot.

PARTICIPANTS: Actors A sample consists of the subject units that form the population of this study. In this study, the sample size (n = 50) is the nursing staff working in Bagalkot, HSK Hospital and Research Center Navanagar.

SAMPLING TECHNIQUE: Testing fashion Aimlessly named the samples for the study. 50 nursing officers were included in the sample.

DESCRIPTION OF DATA

COLLECTION TOOL:

After a careful review of literature related to the content and in view of the suggestions of experts a structured questionnaire was developed.

Part I Consists of particulars asking for information on age, gender, religion, professional qualifications, work experience, previous knowledge of mucormycosis, participation in continuing

education on mucormycosis and its forestallment.

Part II Consists of 30 particulars pertaining to knowledge regarding mucormycosis and its forestallment in covid- 19 cases.

STATISTICAL ANALYSIS

The data attained was anatomized in terms of achieving the objects of the study using descriptive and deducible statistics. Organization of data in master distance. ✓ frequency and chance distribution was used for analysis of socio- demographic characteristics. ✓ computation of Mean, Standard divagation of pre-test and post-test scores. ✓ operation of paired ' t ' test to ascertain whether there's significant difference in the mean knowledge score of pre-test and post-test values. ✓ operation of chi-square test to find the association between socio- demographic variables with post-test knowledge scores.

ETHICAL CONSIDERATION: The present study was accepted from institutional ethical commission of Shri B.V.V.S Sajjalashree Institute of Nursing Sciences, Bagalkot. Ethical concurrence instrument was submitted with synopsis of

this study to Rajiv Gandhi University of Health Sciences, Bangalore.

RESULTS

The overall mean percentage knowledge before the test was 46.7% with a mean and SD 14.02±5.17. The mean percentage knowledge after the test was 70.06% with a mean and SD 21.02±5.77. This means that the knowledge level after the STP increased by 23.36%, which shows its effectiveness. The overall effectiveness of the STP on mucormycosis and its prevention in covid-19 patients was a mean of 7 with SD±0.6, which is 23.36% of the total score. This indicates that the STP effectively improved nurses' knowledge of mucormycosis and its prevention in covid-19 patients. The calculated t value of 3.70 was much higher than the t value of 1.96 with a degree of freedom of 49 and a significance level of 5%, so the hypothesis is accepted.

Findings revealing the presence of significance difference between pre test and post test knowledge scores hence the structured teaching programme id proved to be effective.

Table no.1 Frequency and percentage distribution of socio-demographic characteristics of samples.

Variables	Frequency	Percentage (%)
Age		
Below & 25 years	10	20%
26-35 years	20	40%
36-45 years	15	30%
46 years & above	5	10%
Gender		
Male	27	54%
Female	23	46%
Religion		
Hindu	25	50%
Muslim	10	20%
Christian	10	20%
Other	5	10%
Professional Qualification		
GNM	15	30%
B.Sc. N	10	20%
PB. BSc. N	20	40%
Msc Nursing	5	10%
Working Experiences		
Below & 5 years	10	20%
6-10 years	15	30%
11 Years & above	25	50%
Previous knowledge regarding mucormycosis		
Yes	10	20%
No	40	40%
Have you attended any in-service education related to mucormycosis and its prevention		
Yes	5	10%
No	45	90%

Table No.2: Level of pre-test knowledge of the nursing officers regarding mucormycosis and its prevention in covid-19 patients. N=50

Level of knowledge	Range of scores	Number of respondents	Percentage (%)
Poor	0-10	11	22%
Average	11-20	24	48%
Good	21-30	15	30%
Total		50	100%

Table No 2 shows that the percentage distribution of nurses in the pretest shows that of the 50 nurses, the majority (48%) had average knowledge, 22% had poor knowledge, and 30% had good knowledge regarding mucormycosis and its prevention.

Table No.3: Percentagewise distribution of Nursing Officers according to the level of knowledge in post-test. N=50

Level of knowledge	Range of scores	Number of respondents	Percentage (%)
Poor	0-10	3	6%
Average	11-20	29	58%
Good	21-30	18	36%
Total		50	100%

Table No 3 shows that Percentagewise distribution of Nursing officers in post-test reveals that out of 50 Nursing officers, majority 58% of the nursing officers had average knowledge, 6% of the nursing officers had poor knowledge, 36% of the nursing officers had good knowledge regarding mucormycosis and its prevention.

The distribution of nurses' knowledge in the pretest shows that of the 50 nurses, the majority (48%) had average knowledge, 22% of nurses had poor knowledge, and 30% of nurses had good knowledge of mucormycosis and its prevention. However, after the structured teaching programme (STP), 58% of nurses had average knowledge, 6% of nurses had poor knowledge, and 36% of nurses had good knowledge about mucormycosis and its prevention.

SECTION A: Assessment of knowledge level of Nursing Officers in pre-test and post-test

Table No.4: Area wise mean, standard deviation and mean percentage of the knowledge scores in pre-test and post-test. N=50

Knowledge area	Max. Score	Pre-test (O1)		Post-test (O2)		Effectiveness (O2-O1)	
		Mean ± SD	Mean %	Mean ± SD	Mean %	Mean ± SD	Mean %
Information related to covid-19 and mucormycosis and its prevention.	30	14.02 ± 5.17	46.7%	21.02 ± 5.77	70.06%	7 ± 0.6	23.36%
Total	30	14.02 ± 5.17	46.7%	21.02 ± 5.77	70.06%	7 ± 0.6	23.36%

Table No 4 shows that Comparison of mean and standard deviation of the knowledge scores found that, there was an increase in the mean knowledge score of the nursing officers after STP. In the knowledge on "Information related to Covid-19 and mucormycosis and its prevention", mean percentage of knowledge score was 46.7% with mean and SD 14.02±5.17, Whereas mean percentage of post test knowledge score was 70.06% with mean and SD

21.02±5.77. Hence there was an increase of 23.36% of knowledge score after the STP showing its effectiveness.

The overall effectiveness of STP on mucormycosis and its prevention in covid-19 patients, mean score was 7 with SD±0.6, which is 23.36% of total score Hence it indicates that the STP was effective in enhancing the knowledge of the nursing officers regarding mucormycosis and its prevention in covid-19 patients.

Table No.5: Significance of the difference between the pre-test and post-test knowledge scores of the nursing officers. N=50

Knowledge area	Test	Mean	SD	Mean Diff.	Paired Value	t-Value	Table Value
Information related to Covid-19 and mucormycosis and its prevention	Pre test	14.02	5.17	7	3.70		1.96
	Post test	21.02	5.77				
TOTAL	Pre & Post test	35.04	10.94	7	3.07		1.96

Table No 6: Association between post-test knowledge scores of the nursing officers regarding mucormycosis and its prevention in Covid-19 patients and selected socio-demographic variables. N=50

SI. NO	Socio-demographic variables	Df	Chi-square value	Table value	P- value	Association
1	Age	1	0.8672	1.96	0.05	Not significant
2	Gender	1	0.0274	1.96	0.05	Not significant
3	Religion	1	0.0661	1.96	0.05	Not significant
4	Professional Qualification	1	1.3889	1.96	0.05	Not significant
5	Working Experiences	1	0.3472	1.96	0.05	Not significant

*=<0.05(Significant)

Table No 6, Findings reveal that there is no significant association was found between post-test knowledge scores of nursing officers, Where as there is no association was found between post-test knowledge scores of mucormycosis and its prevention in covid-19 patients among nursing officers and their socio demographic variable like age, gender, religion, professional qualification, working experiences of mucormycosis and its prevention in covid-19 patients. Thus it is rejected for all the variables.

DISCUSSION

The present study was conducted to estimate the effectiveness of Structured Teaching Programme on mucormycosis and its forestallment in Covid- 19 cases. In order to achieve the objects of the study, Pre-experimental one group pre-test post-test design with quantitative evaluative approach was espoused. The sample was named by non-probability accessible slice fashion. The sample comprised of 50 nursing officers and the data were collected from them ahead and after the administration of STP.

A analogous study was conducted with a aggregate of 70 nurses. This study was conducted at the General Farasan Hospital. Two main tools were used to collect data a structured tone- administered questionnaire and nurses' practices compared to COVID-19. The exploration results showed that 55.7 of the nurses had a low position of knowledge before the training. still, after the training, 88.6 of them had good knowledge. also, before the training, only 7.1 of the nurses surveyed had valid exercises for Covid 19, but after the training, the chance of valid exercises was 94.3. The study concluded that the perpetration of the training intervention was effective and

significantly bettered the nurses' knowledge of Covid 19 and its practices [8].

In this study, Covid-19-associated mucormycosis was delved in cases with Covid- 19 in a tertiary care sanatorium. The results of the study showed that there were eight manly and eight womanish cases ranging in age from 3 to 72 times. eight of the 11 cases were diabetic(72.72). Three cases (27.27) were taking long- term systemic steroids and were rehabilitated for a long period of time. One child (9.09) was entering chemotherapy for acute leukemia. The study concluded that early opinion and prompt treatment of CAM is essential. Destructive endoscopic surgical excision for original control and applicable systemic antifungal remedy ameliorates the prognostic and survival of cases [9].

A study was conducted to assess the knowledge of nurses about mucormycosis in named hospitals in Kanyakumari quarter. The results of the study showed that 53 of the nurses had moderate knowledge, 24 of the actors had acceptable knowledge and 23 had shy knowledge about mucormycosis. Acceptable knowledge of nurses about mucormycosis helps ameliorate the quality of care and help farther spread of the complaint. The study concluded that nurses' knowledge of mucormycosis was moderate. A significant association was set up between knowledge and age, education position, and work area, directly indicating the significance of perfecting knowledge through a training program [10].

HI: There's a significance difference between pre-test and post-test knowledge scores among Nursing Officers working at HSK Hospital and Research centre Navanagar, Bagalkot is accepted. Chancing revealed that, the presence of significance difference between pre-test and posttest

knowledge score, hence the STP proved to be effective.

A analogous check was conducted using a five- item, 38- question questionnaire among cases who attended an eye clinic between July 5 and 25, 2021. A aggregate of 4573 actors took part in the study. The results of the study showed that 83 of the actors overall knew commodity about mucormycosis. further than 80 of them reported that media similar as TV and radio were their main sources of information. About 34.8 of repliers knew that mucormycosis may do after treatment for coronavirus infection in 2019(COVID-19) and were apprehensive that systemic steroids are an important threat factor. Only half (54.3) of actors with diabetes (n = 1235), those with a history of COVID-19 (n = 456), or those with a history of mucormycosis in a friend (n = 312) had advanced situations of knowledge. The study concluded that health professionals (n = 103) had significantly better knowledge, stations, and practices (KAP) scores ^[11].

A check was conducted to assess the knowledge of mucormycosis in the secondary seminaries of Al Simah and Sohag in the megacity of Sohag, Egypt. According to the check results, of the 260 scholars who responded to the questionnaire, (57.3) were womanish and(42.7) were manly. The age of the actors ranged from 15 times for her to 18 times for him. Of them (40), she was 16 to 17 times old. Regarding the place of hearthstone, nearly three diggings (74.00) of the scholars were from civic areas and 26 were from pastoral areas. The study concluded that secondary scholars' knowledge, stations, and practices ameliorate when they're exposed to a structured class. furnishing a structured class is veritably effective in perfecting secondary scholars' knowledge, stations, and practices related to COVID-19 ^[12].

A check was conducted to gain an overview of the conditions endured by medical scholars in medical seminaries in Libya during the epidemic COVID-19. According to the check results, 4 500 paper

questionnaires and dispatches were distributed with an estimated response rate of 74. Actors were generally womanish. The sample included 2,390 women (71.4) and 958 men(28.6). The check set up that the maturity of actors (66.8) reported tone-educating and using colorful educational institutions, and56.8 reported counting on courses offered by private institutions ^[13].

A analogous check was conducted among nurses working in governmental and nongovernmental hospitals in southern Arabia to help health authorities prioritize training programs during the epidemic COVID-19. The position of knowledge among nurses about COVID19, 96.85 had excellent knowledge about the contagion. Thirty- eight(7.6) were less well defended. further than half of the nurses(69.2) had a veritably high position of mindfulness of COVID-19 among nurses. The study concluded that nurses had advanced mindfulness, positive stations, optimal forestallment, and positive comprehensions during their COVID-19 outbreak in Saudi Arabia ^[14].

A study was conducted to determine the fear of mucormycosis among healthcare workers. An aggregate of 422 healthcare workers shared in this study. The results showed that repliers with wakefulness had advanced mucormycosis anxiety scores than repliers without wakefulness. recommended to help easily manage with the current healthcare extremity ^[15].

This cross-sectional study was conducted to assess the knowledge of Covid 19 mucormycosis among dentists in Tamil Nadu, India. The results of the survey showed that a total of 406 (94.86%) respondents agreed that patients should receive oral examination after COVID -19. 306 out of 428 (71.49%) respondents answered that headache-related dental pain is a warning sign for diabetic patients after COVID -19. This study showed that dentists play an important role in diagnosing and treating mucormycosis infections in patients with post-Covid 19 disease COVID -19. Dentists showed good knowledge of

mucormycosis after COVID -19. This will serve as a source of information for future pandemic crises ^[16].

A similar study was conducted to assess the knowledge of Bangladeshi students about mucormycosis. The results showed that more than half of the students were women (53.5%), most were between 18 and 25 years old (31.5%), and had completed upper secondary education (77.8%). The study concluded that knowledge of black fungus among Bangladeshi students varies widely by residence, age, gender, lifestyle, and media exposure. Policy makers should raise public awareness and focus on the findings of this study to strengthen compelling attitudes and protective practices to minimize the risk of infection ^[17].

A similar study was conducted to assess knowledge, awareness, practice, diagnosis, and treatment of invasive fungal infections among physicians in seven tertiary hospitals in five geopolitical zones in Nigeria. The results of the survey showed that 834 (79.7%) of the 1046 participants had some knowledge of invasive fungal infections, 338 (32.3%) from undergraduate medical training and 191 (18.3%) from postgraduate training (It was something I took from residency). The number of years in clinical practice correlated positively with knowledge of IFI management. As knowledge increased with rank/seniority, there was a statistically significant difference in their knowledge of IFI between physicians of different ranks ($p < 0.001$). This study concluded that there are knowledge gaps that could hinder optimal management of IFIs in Nigeria. Revision of curricula for targeted continuing medical education (CME) programs and postgraduate medical education is recommended ^[18].

A study was conducted to assess the knowledge of mucormycosis among nursing students at AIIMS, New Delhi. All nursing students (N = 230) had adequate and consistent knowledge of mucormycosis with a mean knowledge score of 7.99 (minimum

3 and maximum 10). The study concluded that 90% of the students showed greater appreciation and willingness to participate in seminars/webinars on mucormycosis. In the current study, most study participants had good knowledge of their COVID -19 prevention. These findings are influential and should be addressed through standardized education programs and dissemination of official sources about mucormycosis ^[19].

The study examined the association between invasive fungal sinusitis (mucormycosis) and COVID -19. The study found that of 23 patients with mucormycosis, all were associated with coronavirus disease, with an increase in 43.49% of cases. Intracranial dilatation was observed in only 8.69%. All patients had taken steroids during coronavirus treatment, and 21 to 23 had diabetes, 12 of them uncontrolled. This study seriously investigated the association between coronavirus and sinus mucormycosis and concluded that steroid use or two important factors exacerbating the disease were required ^[20].

CONCLUSION

The present study is concluded that after obtaining all the results of the present study, the researcher concluded that, COVID-19 associated mucormycosis with high mortality and morbidity rate. Mucormycosis is a serious infection and needs to be treated with prescription antifungal medicine. Further studies are required to know the covid-19 associated mucormycosis and its prevention among nursing officers.

CONTRIBUTION OF AUTHORS

Researcher Concept: Deepa Rajashekhar Degal, Dr. Shridhar Pujari

Research Design: Deepa Rajashekhar Degal, Dr. Shridhar Pujari

Supervision: Deepa Rajashekhar Degal, Dr. Deelip Somaninga Natekar

Data collection: Deepa Rajashekhar Degal

Data Analysis and Interpretation: Deepa Rajashekhar Degal

Literature Search: Deepa Rajashekhar Degal

Writing Article: Deepa Rajashekhar Degal

Critical Review: Dr. Shridhar Pujari, Dr. Deelip Somaninga Natekar

Article Editing: Deepa Rajashekhar Degal, Dr. Shridhar Pujari, Dr. Deelip Somaninga Natekar

Final Approval: Dr. Shridhar Pujari, Dr. Deelip Somaninga Natekar

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Subbarao K, Mahanty S. Respiratory Virus Infections: Understanding COVID-19. Immunity. 2020 Jun 16;52(6):905-909. doi: 10.1016/j.immuni.2020.05.004.
2. Fehr AR, Perlman S. Coronaviruses: an overview of their replication and pathogenesis. Methods Mol Biol. 2015; 1282:1-23. doi:10.1007/978-1-4939-2438-7_1
3. Cihan FG, Gökgöz Durmaz F. Evaluation of COVID-19 phobia and the feeling of loneliness in the geriatric age group. International Journal of Clinical Practice. 2021 Jun;75(6):e14089. DOI: 10.1111/ijcp.14089.
4. Hernández JL, Buckley CJ. Mucormycosis [Internet]. 2021 [cited 26 July 2021]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK544364/?report=reader>.
5. hospital p. Best Hospital in India | Super Specialty Hospital in India - Paras Hospitals [Internet]. Parashospitals.com. 2021 [cited 26 July 2021]. Available from: <https://www.parashospitals.com/blogs/black-fungus-prevention-and-treatment/>.
6. hospital p. Best Hospital in India | Super Specialty Hospital in India - Paras Hospitals [Internet]. Parashospitals.com. 2021 [cited 26 July 2021]. Available from: <https://www.parashospitals.com/blogs/black-fungus-prevention-and-treatment/>.
7. Sharma S, Grover M, Bhargava S, Samdani S, Kataria T. Post coronavirus disease mucormycosis: a deadly addition to the pandemic spectrum. 2021.
8. Reema Mathew, G. Hemavati, Sreemini Pillai, Abhilekha Biswal. A Study to Assess the Effectiveness of Structured Teaching Programme Regarding Arterial Blood Gas Analysis and Interpretation in Terms of Knowledge among Nurses Working in ICU in Selected Hospitals of Indore (M.P.). Int. J. Nur. Edu. and Research 2(4): Oct.- Dec. 2014; Page 286-289
9. TY - JOUR AU - Memon, Aamir PY - 2016/12/01 SP - 1643 EP - 1647 T1 - ResearchGate is no longer reliable: Leniency towards ghost journals may decrease its impact on the scientific community VL - 66 JO - Journal of the Pakistan Medical Association ER.
10. Mrs. Starina Flower. V. M, 2Dr. A. Reena Evency; Knowledge regarding mucormycosis among staff nurses; April 2022 IJSDR | Volume 7 Issue 4.
11. Jayagayathri, Rajagopalan,; Mohanty, Preeti1; Yadalla, Dayakar; Bakthavatchalam, Jayashree2; Rangarajan, Viji3; Maneksha, Velu4; Tanwar, Meghana5; Venkatesh, Rengaraj6; et all. Knowledge, attitude, and practice toward mucormycosis among patients presenting to six tertiary eye care hospitals in South India – A multicentric online questionnaire-based survey. Indian Journal of Ophthalmology: June 2022 - Volume 70 - Issue 6 - p 2158-2162; doi: 10.4103/ijo.IJO_103_22.
12. Manal Mohamed Ahmed Ayed, Thorea Mohamed Mahmoud, Fatma El Zahra Kamal et al. Impact of Teaching Program Regarding COVID-19 on Knowledge, Attitudes, Practices among Student, 19 August 2020, PREPRINT (Version 1) available at Research Square [<https://doi.org/10.21203/rs.3.rs-60327/v1>].
13. Ahmed Alsoufi, Ali Alsuyihili, Ahmed Msherghi, Ahmed Elhadi, Hana Atiyah, Aimen Ashini, et al; Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. <https://journals.plos.org/plosone/article/authors?id=10.1371/journal.pone.0242905>.
14. Fernandez R, Lord H, Halcomb E, Moxham L, Middleton R, Alananzeh I, Ellwood L. Implications for COVID-19: A systematic review of nurses' experiences of working in acute care hospital settings during a

- respiratory pandemic. *Int J Nurs Stud.* 2020 Nov;111:103637. doi: 10.1016/j.ijnurstu.2020.103637.
15. Md. Kamrul Hasan, Humayun Kabir, Mamunur Rahman, et al. Association between insomnia and mucormycosis fear among the Bangladeshi healthcare workers: a cross-sectional study, *Journal of Affective Disorders Reports*, Volume 6, 2021, 100262, <https://doi.org/10.1016/j.jadr.2021.100262>.
16. Vivekanandan S, Karthikeyan GR, Balasubramaniyan B, Ayyathurai M, Velu D, Devar MN. Exploring the Knowledge, Awareness and Practice Regarding Post COVID-19 CHAPTER-10 Mucormycosis among Dental Professionals in Tamil Nadu, India: A Cross-sectional Survey *J Clin of Diagn Res.* 2022; 16(7):ZC06- ZC11. <https://www.doi.org/10.7860/JCDR/2022/52715/16576>.
17. Islam, M.A.; Nahar, M.T.; Khan, M.N.A.; Butt, Z.A.; Monjur-Al-Hossain, A.S.M.; Barna, S.D.; Rahman, M.M.; Halder, H.R.; Hossain, M.Z.; Hossain, M.T. Knowledge, Attitudes, and Practices concerning Black Fungus during COVID-19 Pandemic among Students of Bangladesh: An Online-Based Cross-Sectional Survey. *Int. J. Environ. Res. Public Health* 2022, 19, 9146. <https://doi.org/10.3390/ijerph19159146>.
18. Oladele R, Otu AA, Olubamwo O, Makanjuola OB, Ochang EA, Ejembi J Denning D. et al. Evaluation of knowledge and awareness of invasive fungal infections amongst resident doctors in Nigeria. *Pan Afr Med J.* 2020 Aug 18;36:297. doi: 10.11604/pamj.2020.36.297.23279. PMID: 33117491; PMCID: PMC7572690.
19. Nemkholam Chongloi, Aditi Prashant, & Hansaram Suthar. (2022). Knowledge of Mucormycosis among Undergraduate Nursing Students of AIIMS New Delhi. *International Journal of Nursing Education*, 14(2), 171–176. <https://doi.org/10.37506/ijone.v14i2.18010>.
20. Sharma, S., Grover, M., Bhargava, S., Samdani, S., & Kataria, T. (2021). Post coronavirus disease mucormycosis: A deadly addition to the pandemic spectrum. *The Journal of Laryngology & Otology*, 135(5), 442-447. doi:10.1017/S0022215121000992].
- How to cite this article: Deepa Rajashekhar Degal, Shridhar Pujari, Deelip Somaninga Natekar. Effectiveness of STP on knowledge of Mucormycosis and its prevention in COVID-19 patients among nursing officers. *International Journal of Science & Healthcare Research.* 2023; 8(2): 430-438. DOI: <https://doi.org/10.52403/ijshr.20230254>
