

**A STUDY ON KNOWLEDGE, AWARENESS & ATTITUDE ABOUT MUCORMYCOSIS AMONG MEDICAL STUDENTS IN INDIA.**

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Article Received on 09/09/2021

Article Revised on 29/09/2021

Article Accepted on 19/10/2021

**ABSTRACT**

This Cross- Sectional Study was conducted among medical Students of either gender who had taken admission in different medical colleges of Maharashtra State, India. The age of the participants were 18+ yrs. Total number of participant were 108. Among them 57.4% male & 42.6%. female. 78.7% Were form Urban area & 21-3% from rural area. 17% of the participants tested COVID-19 positive 13% of the participants done Chest CT. Among them 4%. Check iron level once in 6 months, 17%. once in a year & 79% never checked iron level. None of the participants were under Chemo & Steroid therapy. Regarding the treatment of Covid 19 8.3% aware Completely, 81.5% were completely unaware. The answer regarding the treatment used for COVID-19, the respondants answered 89.8%drugs like Ramdesivir, 75.9% Plasma therapy & 64.8% Corticosteroids. Regarding the awareness about post Covid Complications 96.3% answered mucormycosis, 66.7% Fibrosis of Lungs. Regarding the awareness. about black & while fungal diseases 99% answered Yes. 76.9% of the respondants were aware about symptoms of mucormycosis. Regarding their awareness about the precautions 88% answered about the personal hygiene, 73.1% avoid activities that involve close contact, 63% to Control diabetes 77.84% to wear gloves when handling soil\* 59.3% to wear N95 respirator. Their awareness about diagnostic methods wear 65.7% fungal Culture, 52.8% Laboratory microscopy, 49.1%tissue biopsies andendoscopy, 30.6% CT&MRI. Their awareness regarding build up immunity 86.1% agreed for personal hygiene, 88.9% exercise regularly, 85.2% get vaccinated, 90.7%. Consume Vitamin C enriched food.

**KEYWORDS:** Mucormycosis, Awareness, Treatment.

**INTRODUCTION**

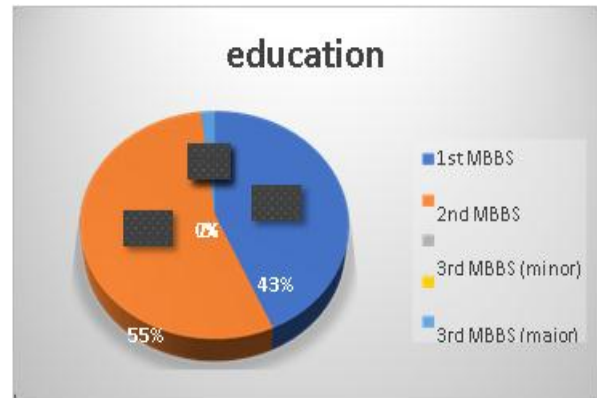
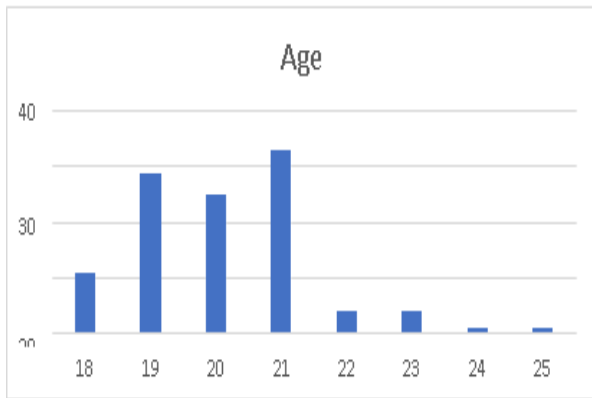
American Pathologist RD Baker Coined the term mucormycosis. It is also known as Zygomycosis<sup>1</sup>. It can be defined as an insidious fungal infection caused by members of Mucorales & zygomycotic species. This rare infection caused by molds belonging to the Subphylum Mucor mycotina the order Mucorales. Mucormycosis is manifested by a variety of different syndromes in humans, particularly in the immune compromised patients. Mucomycosis is an angioinvasive disease Characterised by tissue infraction and necrosis. Uncontrolled diabetes mellitus is the most Common underlying. disease associated with mucomycosis in India. During the past 2 decades, mucormycosis has emerged as an important-fungal infection, with high associated mortality rates. Suspected Mucormycosis requires urgent intervention, because of the often rapidly progressive & destructive nature of the infection. Delayed initiation of therapyis associated with increased mortality. Mucormycosis though rare, it has not been out of clinicaldocumentation or case reports. It is again come to the limelight to some extent because of its again come to the association with several COVID-19 infection.

**MATERIALS AND THE METHODS**

This Cross-sectional study was conducted among medical students of either gender who had taken admission in medical colleges of Maharashtra, India. This study was conducted who agreed to take part and of 18+ yrs old. The data were entered into the microsoft Excel and wasanalysed.

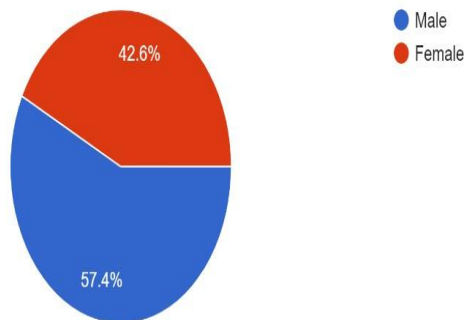
**RESULTS AND DISCUSSION**

Age	no. of participants	%
18	11	10.2%
19	29	26.9%
20	25	23.1%
21	33	30.6%
22	4	3.7%
23	4	3.7%
24	1	0.9%
25	1	0.9%
total	108	



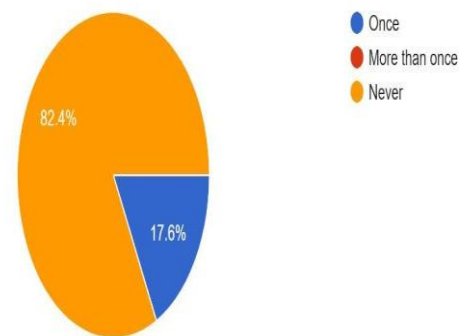
Gender		
Male	62	57.4%
Female	46	42.6%

Gender  
108 responses



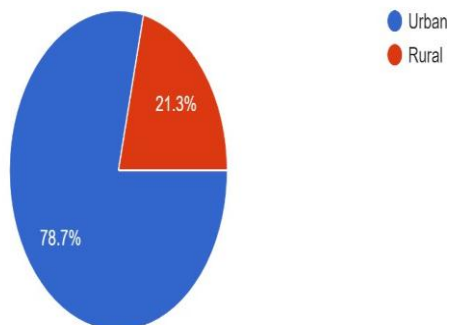
Have you ever been tested positive for covid 19?		
Once	19	17.6%
More than once	0	0%
Never	89	82.4%

Have you ever been tested positive for covid 19?  
108 responses



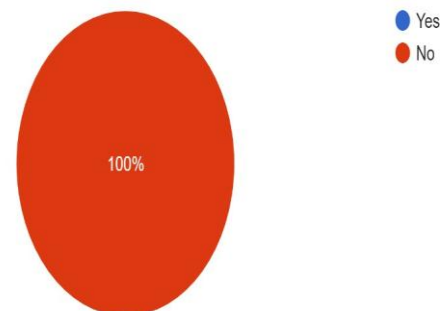
Place of residence		
Urban	85	78.7%
Rural	23	21.3%

Residence  
108 responses



Do you suffer from diabetes mellitus		
No of participants		%
yes	0	0
No	108	100

Do you suffer from diabetes mellitus?  
108 responses

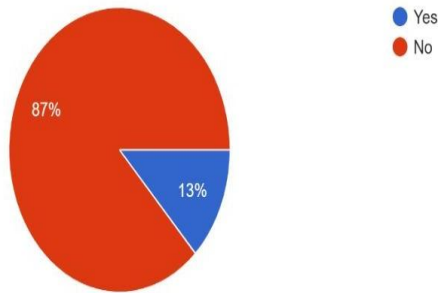


Education		
1st MBBS	47	43.5%
2nd MBBS	59	54.6%
Intern	2	1.8%

Have you ever done chest CT?		
yes	14	13%
no	94	87%

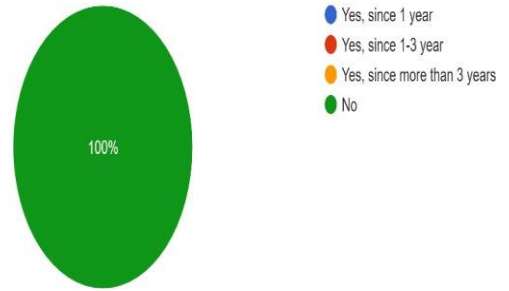
Have you ever done chest CT?

108 responses



Are you under treatment of steroid therapy?

108 responses

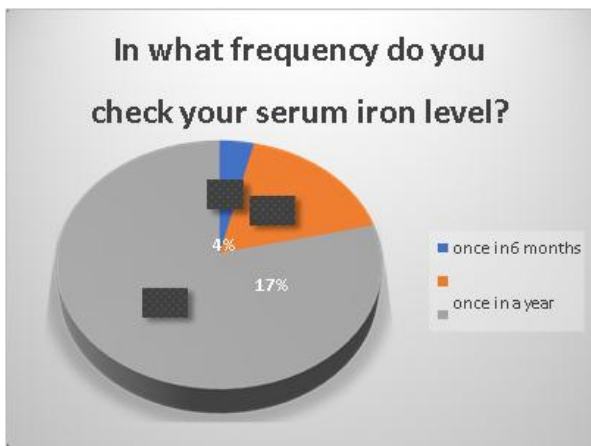


**In what frequency do you check your serum iron level?**

Once in 6 months	4	3.7%
Once in a year	19	17.6%
Never	85	78.7%

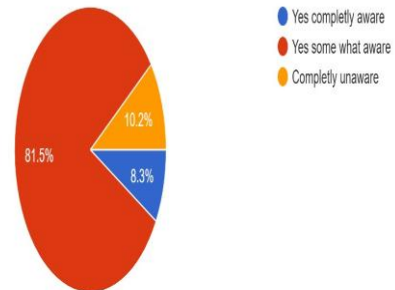
**Are you aware about treatment (drugs used along with the dosage, frequency of its usage and other methods of treatment) of covid 19?**

yes, completely aware	9	8.3%
yes, somewhat aware	88	81.5%
completely unaware	11	10.2%



Are you aware about treatment (drugs used along with the dosage, frequency of its usage and other methods of treatment) of covid 19?

108 responses



**Are you under treatment of chemotherapy?**

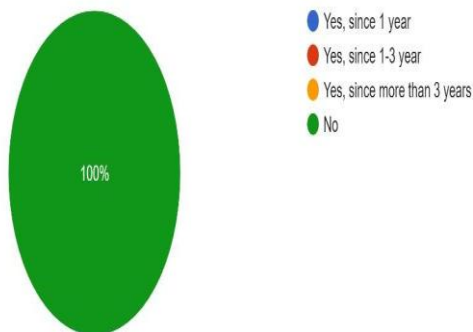
yes	0	0%
no	108	100%

**Which of the following are the treatments used for covid 19?**

Plasma therapy	82	75.9%
Drugs like Ramdesivir	97	89.8%
Corticosteroids like dexamethasone	70	64.8%
None of the above	4	3.7%
Others		

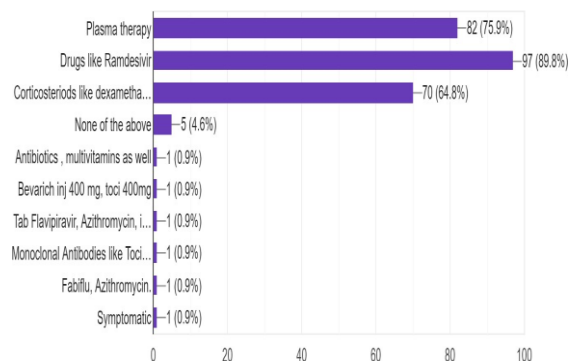
Are you under treatment of chemotherapy?

108 responses



Which of the following are the treatments used for covid-19?

108 responses



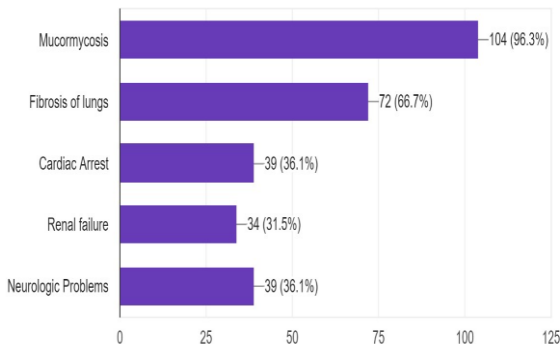
**Are you under treatment of steroid therapy?**

yes	0	0%
no	108	100%

<b>Which of the following post covid complications are you aware of?</b>		
Mucormycosis	104	96.3%
Fibrosis of lungs	72	66.7%
Cardiac arrest	40	37.0%
Renal failure	35	32.4%
Neurological problems	39	36.1%

Which of the following post covid complications are you aware of ?

108 responses



**Which of the following are the causative factors for post covid complication?**

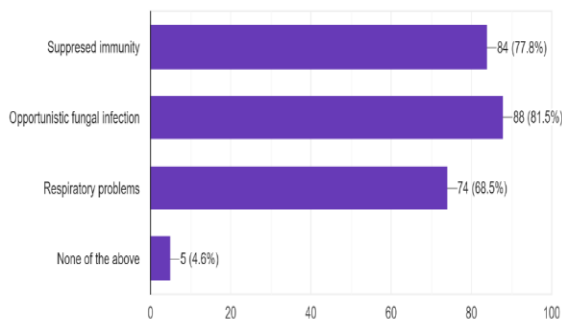
Suppressed immunity	84	77.8%
Opportunistic fungal infection	88	81.5%
Respiratory problems	74	68.5%
None of the above	3	2.7%

Which of the following are the causative factors for post covid complication?

Suppressed immunity	84	77.8%
Opportunistic fungal infection	88	81.5%
Respiratory problems	74	68.5%
None of the above	3	4.6%

Which of the following are the causative factors for post covid complication?

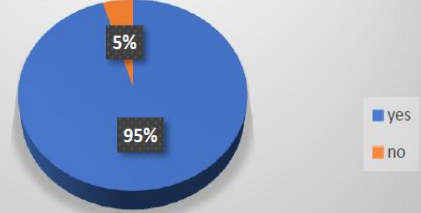
108 responses



**Did you know fungus may carry some factors like spores that can cause illness and even death?**

yes	103	95%
no	5	5%

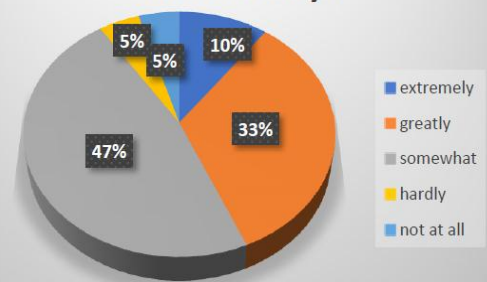
Did you know fungus may carry some factors like spores that can cause illness and even death?



**How concerned are you about presence of fungus in your community?**

Extremely	11	10%
Greatly	36	33%
Somewhat	51	47%
Hardly	5	5%
Not at all	5	5%

**How concerned are you about presence of fungus in your community?**

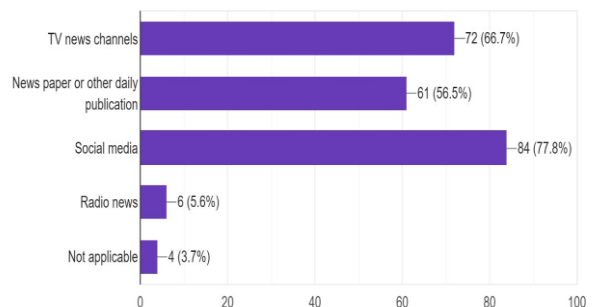


**If yes, how did you know about it?**

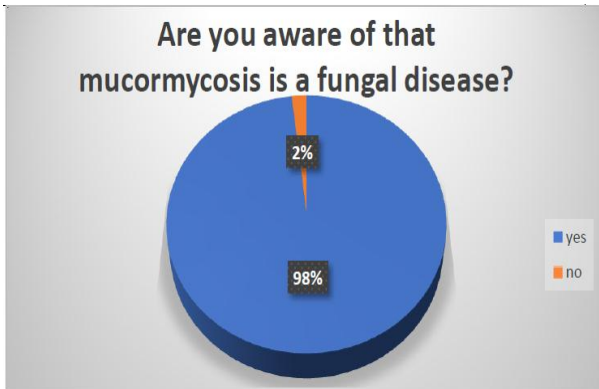
tv news channel	72	66.7%
news paper or other daily publication	61	56.5%
social media	84	77.8%
radio news	6	5.6%
not applicable	1	3.7%

If yes, how did you know about it?

108 responses



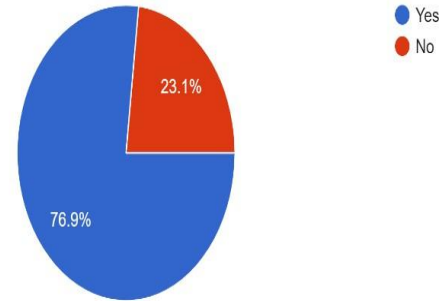
Are you aware of that mucormycosis is a fungal disease?		
yes	106	98%
no	2	2%



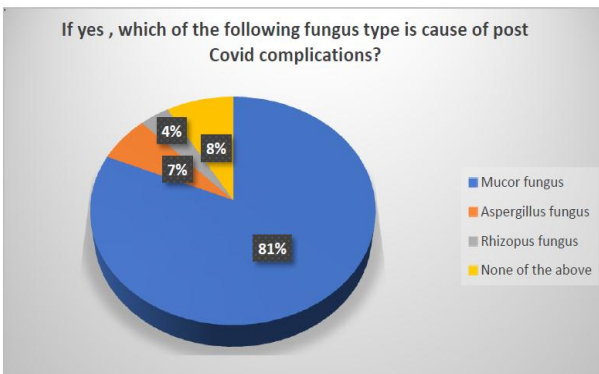
Are you aware of symptoms of mucormycosis?		
Yes	91	76.9%
No	17	23.1%

Are you aware of symptoms of mucormycosis?

108 responses



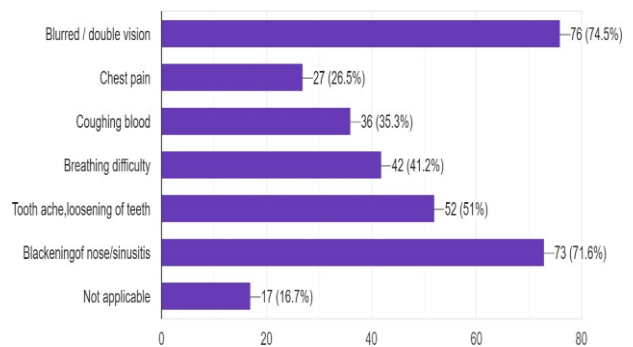
If yes, which of the following fungus type is cause of post Covid complications?		
Mucor fungus	88	82%
Aspergillus fungus	7	6%
Rhizopus fungus	4	4%
None of the above	9	8%



If yes, which of the following are you aware of?		
Blurred / double vision	76	74.5%
Chest pain	27	26.5%
Coughing blood	36	35.3%
Breathing difficulty	42	41.2%
Tooth ache, loosening of teeth	52	51%
Blackening of nose/ sinusitis	73	71.6%
Not applicable	17	16.7%

If yes, which of the following do you aware of?

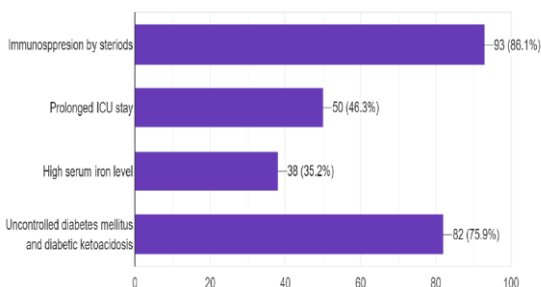
102 responses



Which of the following do you think are the risk factors of mucormycosis?		
Immunosuppression by steroids	93	86.1%
Prolonged ICU stay	50	46.3%
High serum iron level	38	35.2%
Uncontrolled diabetes mellitus and diabetic ketoacidosis	82	75.9%

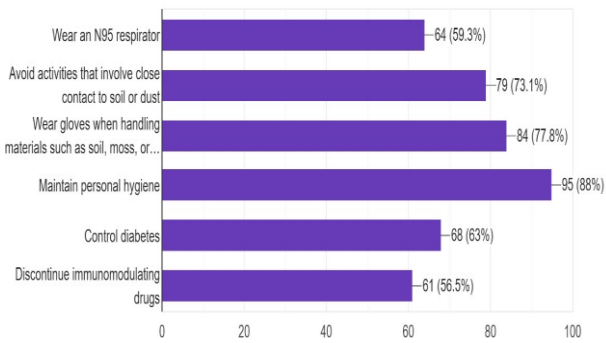
Which of the following do you think are the risk factors of mucormycosis?

108 responses



According to you which of the following precautions are to be taken to prevent mucormycosis?		
Wear an N95 respirator	64	59.3%
Avoid activities that involve close contact to soil or dust	79	73.2%
Wear gloves when handling materials such as soil, moss, or manure	84	77.8%
Maintain personal hygiene	95	88%
Control diabetes	68	63%
Discontinue immunomodulating drugs	61	56.5%

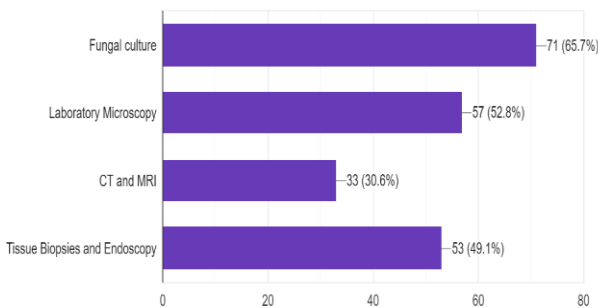
According to you which of the following precautions are to be taken to prevent mucormycosis?  
108 responses



**Which of the following are the diagnostic methods of fungal infection according to you is thebest?**

Fungal culture	71	65.7%
Laboratory microscopy	57	52.8%
CT and MRI	33	30.6%
Tissue Biopsies	53	49.1%

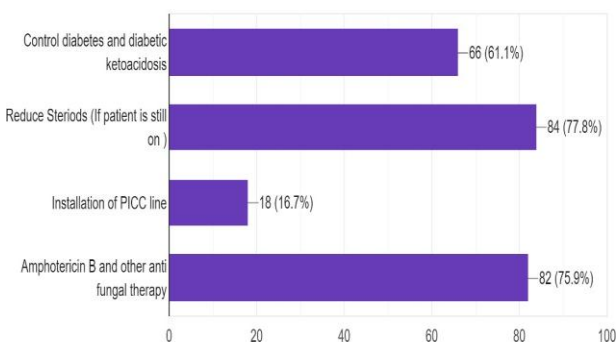
Which of the following are the diagnostic methods of fungal infection according to you is the best?  
108 responses



**Which of the following are the treatments of mucormycosis do you know?**

Control diabetes and diabetic ketoacidosis	66	61.1%
Reduce Steroids (If patient is still on )	84	77.8%
Installation of PICC line	18	16.7%
Amphotericin B and other anti fungal therapy	82	75.9%

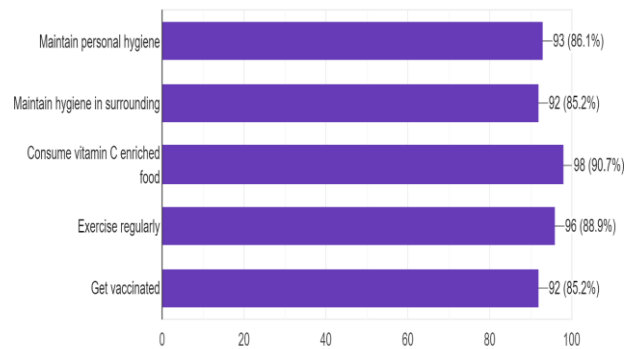
Which of the following are the treatments of mucormycosis do you know?  
108 responses



**What kind of activities should be performed to build up your immunity?**

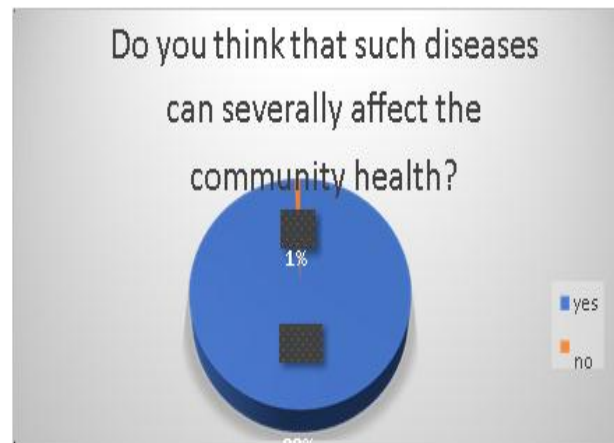
Maintain personal hygiene	93	86.1%
Maintain hygiene in surrounding	92	85.2%
Consume vitamin C enriched food	98	90.7%
Exercise regularly	96	88.9%
Get vaccinated	92	85.2%

What kind of activities should be performed to build up your immunity?  
108 responses



**Do you think that such diseases can severally affect the community health?**

yes	107	99.1%
no	1	0.9%



There were 108 respondents. Among them 57.4% male and 42.6% female.78.7% of the respondents were from Urban area , 21.3% rural. 43.5% were from First MBBS, 54.6% Second MBBS, Intern 1.8%. 17.6% were tested & COVID-19 positive. None of them (0%) were suffering from Diabetes mellitus, & Under Steroid therapy was 0%. 13% of the respondent done Chest CT. Serum iron level checked by 3.7% of respondents once in 6 months, 17.6% . once in a year.& never 78.7%.

R. Agrawal etal revealed in their studies that knowledge of the risk factors & imaging appearances is necessary for the radiologist to suggest the correct diagnosis. As per the study of DTram & others mucormycosis is an aggressive fungal infection that arises particularly in patients with hyperglycemia, acidosis and iron overload. About the treatment of COVID-19 8.37% were

completely aware, 10.2%. Completely unaware, 81.5%. Some what aware. Regarding the treatment 75.9% answered Plasma therapy, Ramdesivir drugs 89.8%. Corticosteroids 64.8%. As per Skianden et al Successful management of mucormycosis Should be discontinuation ay underlying predisposing factors, early administration of active antifungal agents at the optimal dose , complete removal of all infected tissues. Tanveen H & others revealed that a Corona patient- Sometimes uses steroids. About the responses of post COVID Complications 96.3% of the respondents answered about Mucomycosis ,66.71. fibrosis of lungs,36.1% neurological problems. S. Pabil & others • reported that -COVID- 19 patients with trauma, diabet mellitus are more likely to develop mucormycosis. RMali & othear me re ported that early detection of past covid-19 pulmonary fibrosis may give a chance to prevent of at least modify such disabling Complication.

As per Ling mao & other patients with covid 19 Commonly have neurologic manifestations. About 99.1% of respondants known about post-COVID complications .AK Agnihotri & others reported that mucormycosis, a deadly fungal infection formerly known as Zygomycosis, caused by many fungi that belong to the formily Mucorales.

## CONCLUSION

The Cases of mucormycosis are not new however a spike in such cases has been reported during Covid era. The size in cases of mucormycosis is due to COVID-19 remain associated with impaired immune system of infected patient. It is a life-threatening infection. Despite aggressive multimodal treatment carries a significant- of mortality. cases most commonly involves the Rhino-orbito cerebral cavities of the brain. Underlying disease is Diabetes mellitus patients with COVID 19 with ongoing or history of Steroid therapy.

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