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RESEARCH ARTICLE

THE ROLE OF WHATSAPP IN THE MANAGEMENT OF POST COVID-19 MUCORMYCOSIS IN A REGIONAL EYE HOSPITAL ATTACHED TO A MEDICAL COLLEGE

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Abstract

Objective: Mucormycosis after Covid attack had devastating effect on the patients and family. The objective of this study is to emphasize the role of social media like WhatsApp in the management of Mucormycosis in a Regional eye hospital attached to a medical college.

Material and Methods: This study is a descriptive observational study. Data from June 2021 to February 2022 from our medical college comprising multiple health facilities, posted in a common WhatsApp group is studied and analysed using Microsoft Excel-2019 software

Results: Data of 451 patients was posted in the group during the study period. (178 patients from ENT hospital and 273 patients from General Hospital). A total of 247 surgeries were documented (144 from ENT hospital and 103 from General Hospital). 325 patients were discharged after successful treatment. 30 patients who were undergoing treatment at General hospital succumbed to Mucormycosis. 74 patients either left against medical advice/ absconded/ referred to higher centres for further management. Average response time to the message posted in the group is around 10 minutes.

Conclusion: In the hectic schedules of doctors and in the scenario of high risk of exposure to them in treating both covid-19 and post covid Mucormycosis, social media platform WhatsApp provided a feasible solution for exchanging information on diagnosis, investigations and optimization of treatment. It thereby contributed to timely and effective management of Mucormycosis.

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Introduction:-

Covid-19 disease is caused by coronavirus 2 (SARS-CoV-2)¹. COVID-19 patients, particularly who are diabetic², immunocompromised, critically ill and those who received Oxygen and prolonged steroid therapy have high risk of suffering from invasive fungal infections like Mucormycosis³. Mucor is transmitted by spores⁴ which are omnipresent. In India Mucormycosis cases started to rise after the peak of second wave of covid-19.

During Pandemic, Information transfer from various government departments to the public was done through various social media⁵ apart from regular press and television. WhatsApp is one such App widely used both by Government agencies and Public for fast transmission of information in India⁶. It also helped in downloading and verifying Covid-19 vaccination certificates.

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In our regional eye hospital, a separate WhatsApp group was created exclusively for communicating on Mucormycosis. It included all the consultants, residents and hospital administrators from various departments like ENT, Neurosurgery, Plastic surgery, Dental, General Medicine, Anaesthesia who work at different facilities attached to our medical college apart from members of our Ophthalmology department. As treatment of Mucormycosis involves multidisciplinary approach⁷, WhatsApp became very useful tool in receiving valuable inputs from all the participants in the group and for planning and executing treatment.

WhatsApp developed for smartphones, works in Android, Apple and windows operating systems. It helps users in transferring photos, videos, text and voice messages⁸. Free calls can be made among the group participants with 4G or Wi-Fi internet connections which are available in the Indian market through this App. Approximately 2 billion people use WhatsApp worldwide⁹. W.H.O also used WhatsApp as a major medium for communication¹⁰. Some advanced countries with small population like Singapore created National WhatsApp channel for rapid transformation of information¹¹.

Patient data, Lab investigations and various scans especially CEMRI & treatment strategies were easily communicated to the group members with the help of this App.

Material and Methods:-

This study is descriptive observational study. Data from June 2021 to February 2022 from different health facilities attached to our medical college, namely King George Hospital (KGH) which is a general hospital, Government ENT hospital are posted in a common WhatsApp group. Format of the data collected is shown in [Table.1]. Consultants from our Ophthalmology department were posted in turns to the above facilities for the management of Mucormycosis cases. Clinical findings, investigations and treatment data of each patient is posted in the same group. Participants in the WhatsApp group created for Mucormycosis management are depicted in [Table.2]. All the participants in the group are made admins, for ease of communication. Flow chart.1, below shows standard protocol used for communication among WhatsApp group members. Data posted in the group is studied and analysed using Microsoft Excel-2019 software.

Table 1:- Template of the Data sheet posted in WhatsApp group.

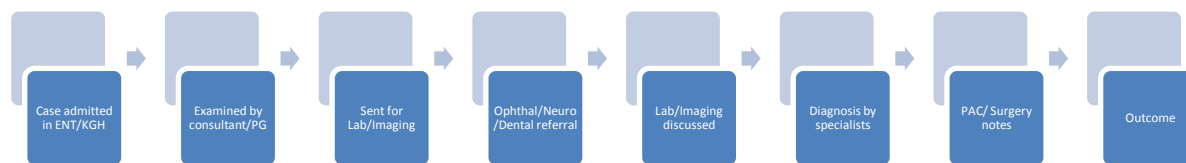
1	Cases in Last 24 hrs
2	Total Cases Reported till date
3	No.Of Patients Under Treatment
4	No. of Patients on Inj L-Amphotericin B
5	No. of Patients on Inj Posaconazole
6	No.of Patients on Tab Posaconazole
7	No.of Cases-Surgeries Done
8	No.Of Patients Discharged last 24hrs
9	No.of Patients Discharged Till Date
10	Deaths in Last 24 hrs
11	Total Deaths Reported Till date
12	Left Against Medical

Table 2:- Participants in the WhatsApp group created for Mucormycosis management.

Department	Professors	Associate Professors	Assistant Professors	Senior Residents	Postgraduates	Others
Ophthalmology	4	3	12	4	20	-
ENT	3	3	10	3	15	-
Neurosurgery	2	1	3	-	2	-
Plastic surgery	1	1	2	-	2	-
Dental	1	1	2	-	-	-
General Medicine	7	7	20	5	24	-
Anaesthesia	3	3	9	5	22	-
Pathology	1	1	3	-	-	-

Administrators	-	-	-	-	-	6
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Flow Chart 1:- Shows the standard protocol sequence of WhatsApp messaging for a case admitted.



Results:-

A total of 451 cases of Mucormycosis cases were reported in the study period. 273 patients from KGH and 178 patients from ENT hospital were studied [Fig.1]. Surgeries performed in the study period and posted in WhatsApp group from our health facilities is shown in the [Fig.2]. As Mucormycosis primarily involves nose and paranasal sinuses majority of surgeries were done by ENT specialists. In Initial stages of Mucor Pandemic surgeries were done at KGH alone in a multidisciplinary approach.

325 patients were discharged after successful treatment (148 from ENT hospital and 177 from General Hospital). 30 patients who were undergoing treatment at General hospital succumbed to Mucormycosis. 74 patients (29 from ENT hospital and 45 from General Hospital) were either left against medical advice/ absconded/ referred to higher centres for further management. [Fig.3]. Presumed risk factors found in the Mucormycosis patients were steroid usage [80%], receiving oxygen [75%], Diabetes [70%] and Unvaccinated [60%] as shown in [Fig.4]. Clinically patients presented with Proptosis [95%], Periorbital oedema [90%], Extraocular muscle involvement [90%], Diminution of vision [80%] and Optic nerve involvement [75%] [Fig.5]. Most of the patients had multisystem involvement, ENT [100%], CNS [75%] and Dental [30%]. [Fig.6]. All the patients underwent diagnostic investigations like Diagnostic nasal Endoscopy and CEMRI. Histopathological examination was done for 40% of cases to determine mucor. Pattern of Covid-19 second wave in India is depicted. [Fig.7.]. 80% of the study population is from North coastal Andhra Pradesh, 10% were from other parts of Andhra Pradesh and 10% were from other states. [Fig.8.]. Qualitative data posted in the group from each hospital is shown in number of messages per day in [Table.3]. Average response time for a message in each hospital is shown in [Table.4]

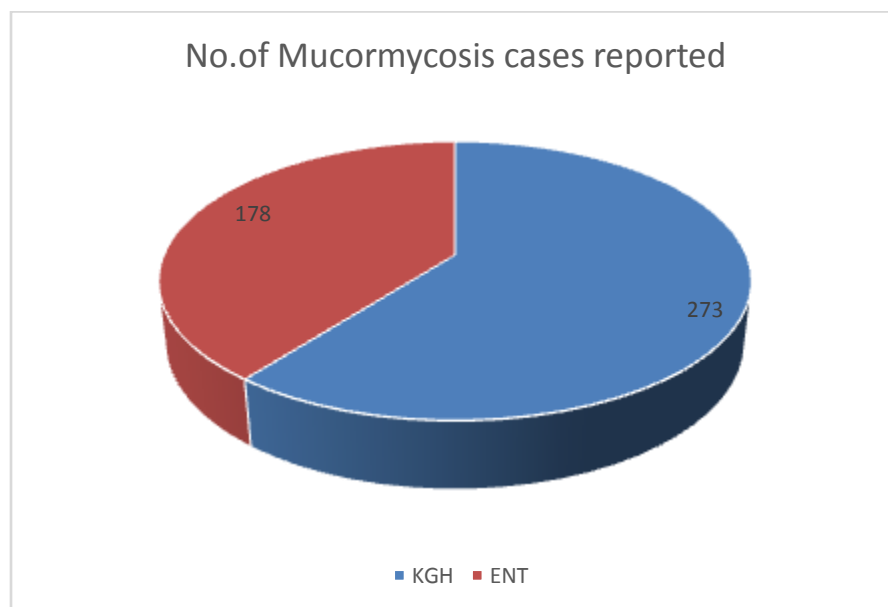


Fig.1:- No of Mucormycosis cases reported after Covid-19.

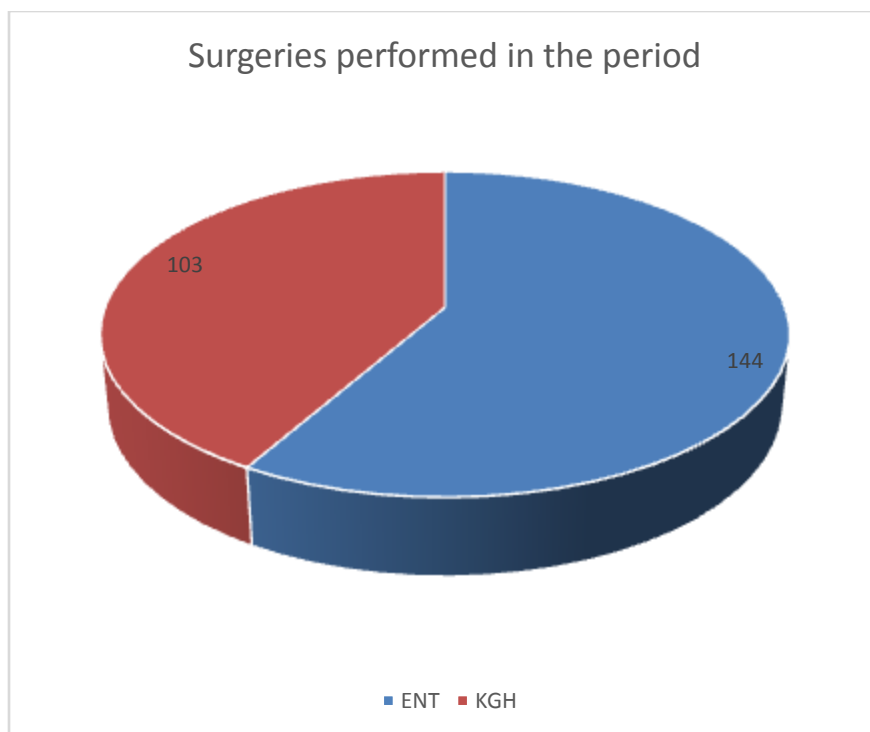


Fig.2:- Surgeries performed for mucor cases which were posted in WhatsApp.

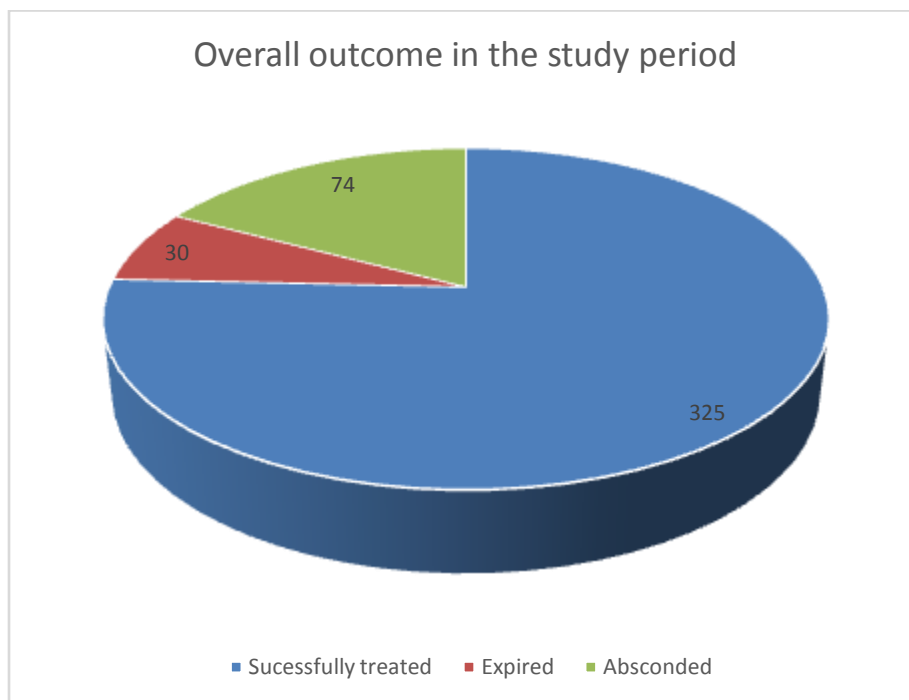


Fig.3:- Overall outcome in the study period.

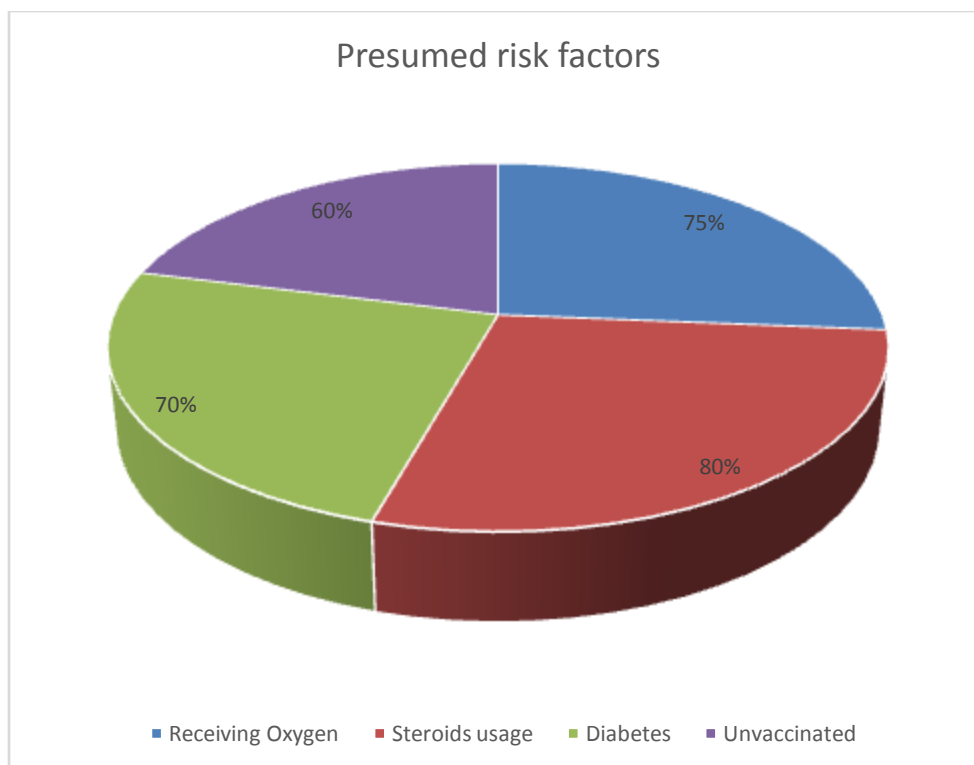


Fig.4:- Risk factors associated with Mucormycosis.

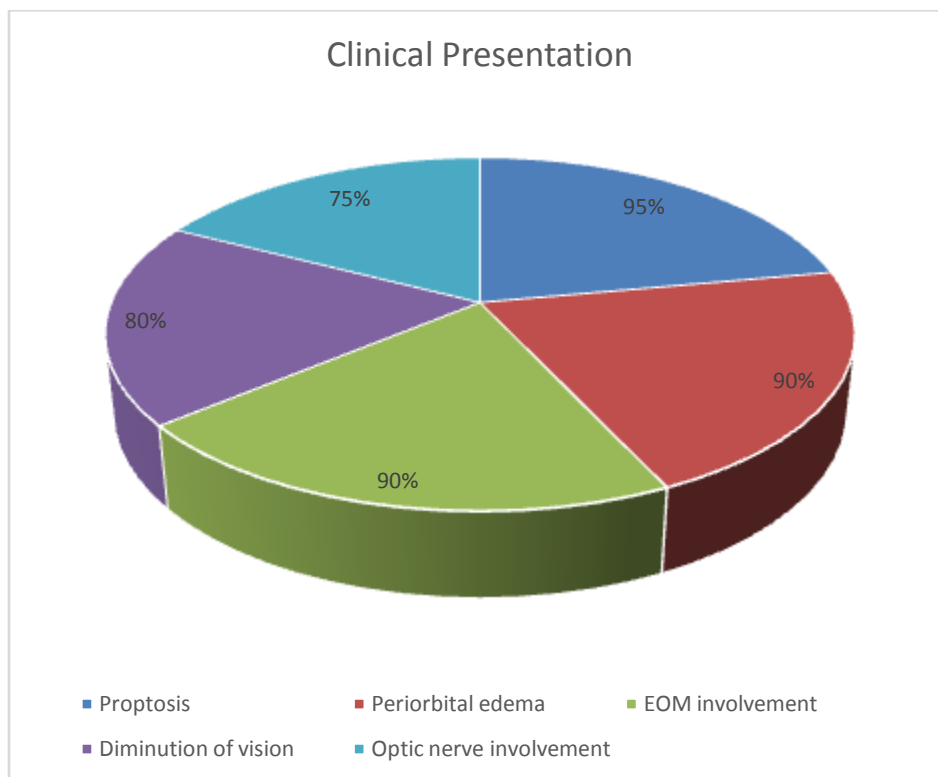


Fig.5:- Ophthalmic findings noted in Mucor cases.

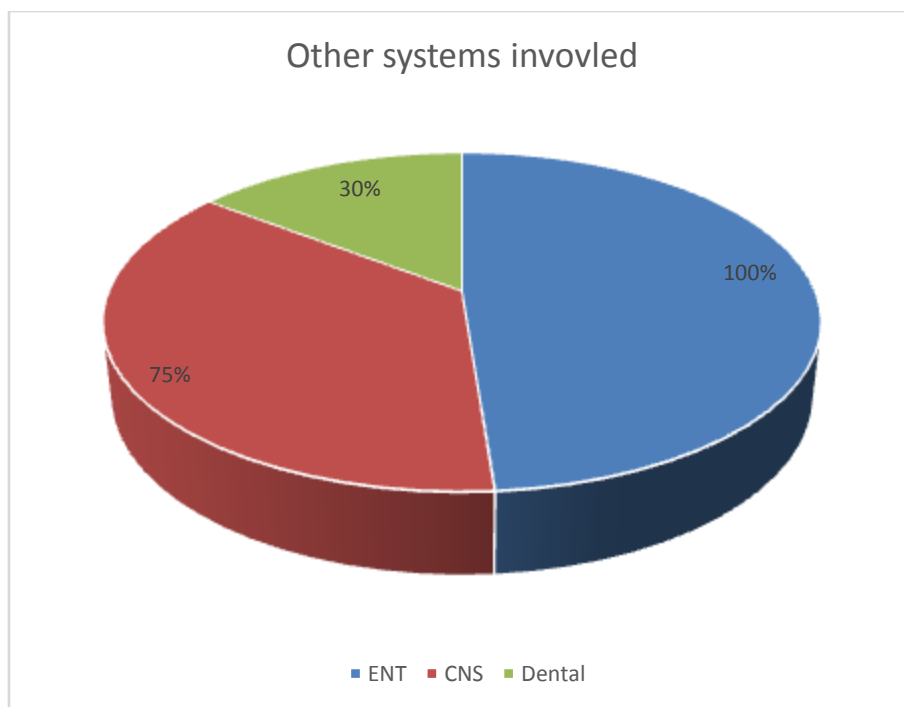
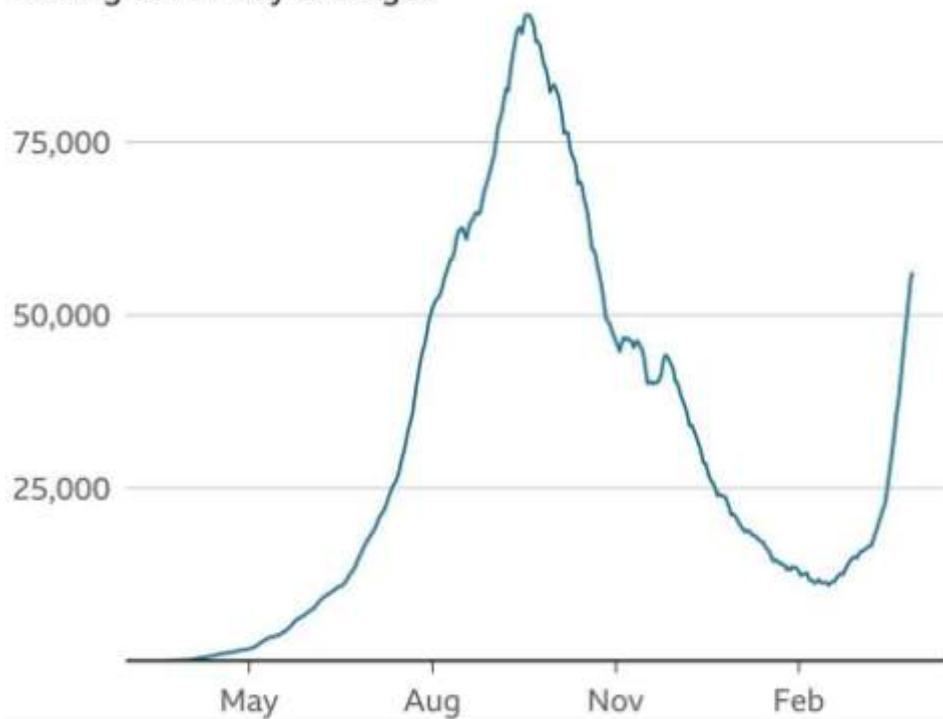


Fig.6:- Other systems involved in Mucormycosis.

India has been reporting a record rise in daily cases

Rolling seven-day averages



Source: Indian Ministry of Health and Family Welfare, data to 30 Mar

Fig.7:- Covid-19 second wave pattern in India.

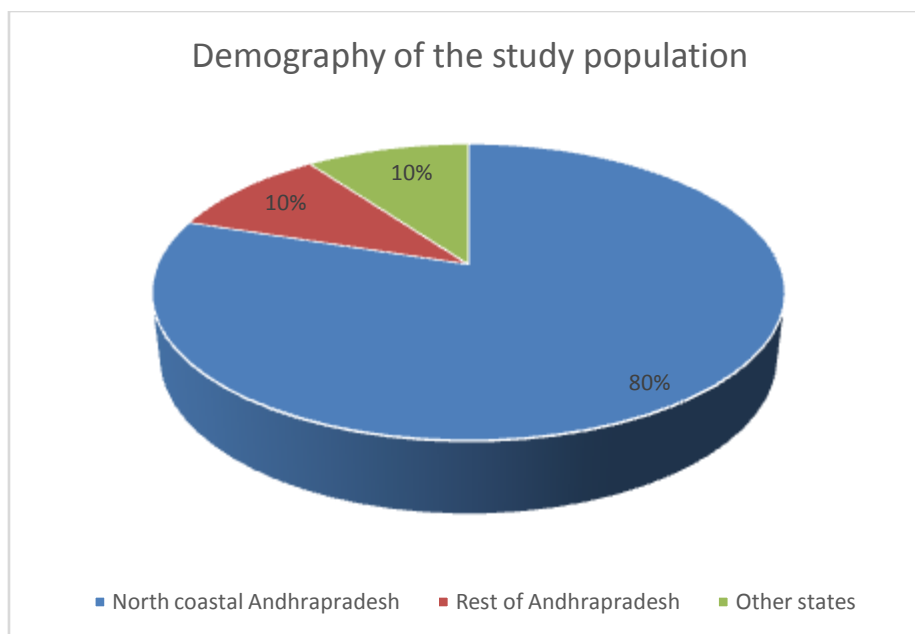


Fig.8:- Demography of the study population.

Table.3:- Shows messages posted from each hospital.

Qualitative data/ Messages/Day	ENT hospital Messages/Day	KGH General hospital Messages/Day
Ophthalmic findings/Photos	8	10
Other clinical findings/Photos	5	7
Lab data	2	12
Radiological images	6	15
Case management discussion	6	8
Referral information	7	10
Outcome data	3	8
Daily census	1	1
Print media/Miscellaneous	6	10

Table 4:- Shows average response time in each hospital.

Hospital	No. of messages/day	Average response time for message in minutes
ENT	44	10
KGH	81	12

Discussion:-

Covid-19 2nd wave had more severe morbidity and mortality when compared with 1st wave. [Fig.7]. Mucormycosis an opportunistic fungal infection had devastating effect on Covid-19 patients. Most of the patients had accepted risk factors like receiving oxygen treatment, steroid usage, Diabetes etc.

In this study WhatsAppbased communication proved to be very effective in Mucormycosis management. It helped in taking quick decisions through inputs received from various specialists in a very short period. Various methods of communication transfers have been used from time to time like letters, telephone calls, video calls, smart phones etc in the health care sector for transferring patients' data¹². In India WhatsApp played a key role as a fast messenger during this crisis period. Latest literature and procedural videos were shared with ease among the group members.

Various social media platforms were used throughout the world for communication during the Pandemic. Globally twitter was used extensively. In India and Singapore¹³ WhatsApp was the major medium for communication. WeChat was used in China¹⁴. The advantage of such platforms are consultants can interact with one another through

long distance thereby saving significant travel time and also avoiding exposure to Covid-19. WhatsApp also helped in quick triage of Mucor cases thereby reducing pressure on emergency and causality department¹⁵. It also helped in taking opinion from consultants who were not attached to the institute. Reduced risk of Covid-19 spread among consultants and health care workers is an added benefit due to online communication. Response time to clinician advice for Mucor management reduced significantly to almost one-tenth as compared with advice after physical examination. Small sized remote conferences among participant consultants in the group were conducted by using video calling facility.

Our regional eye hospital is attached to Andhra Medical college, Visakhapatnam. King George Hospital [KGH] which is a general hospital attached to our Andhra Medical college has Neurosurgery, Plastic surgery and dental departments. A separate ENT hospital is attached to our college. FESS and orbital debridement were primarily performed at ENT hospital. Exenteration, Craniotomies and Dental surgeries were done at KGH. Information on all the clinical features, investigations, treatment plans were communicated very effectively through WhatsApp group. As Mucormycosis requires multidisciplinary approach WhatsApp usage significantly reduced interaction time between various specialists. Studies done by other departments like Orthopaedics, Dental, Emergency & Causality have shown significant benefits with WhatsApp usage¹⁶.

Problems¹⁷ faced with this type of communication through WhatsApp were: -

1. Delay in communication because of internet issues
2. Poor image quality of scans especially CEMRI
3. Low internet skills of group members¹⁸
4. Lack of in person discussions when there was difference in opinion among the consultants.

Conclusions:-

The standard method for cross referrals in our hospital is physical examination by consultant and documenting the findings and treatment plans in case sheets. By creating a separate WhatsApp group for Mucormycosis management, significant time was saved in effectively treating patients. Indirectly it also helped consultants and health care workers who were working in different hospitals like KGH, ENT and Eye hospital from being exposed to Covid-19 by avoiding direct contact with the patient.

Communication through this method effectively reduced patient stay in the hospital. This helped in attending to a greater number of patients in a given period of time. Mucormycosis management in this part of India is almost completely taken up by our Institute with time-to-time guidance from both Government of Andhra Pradesh and Government of India. In future this mode of communication for exchange of plans on patient care should be further studied more analytically.

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