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Volume 24

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Cover Design by
Brother Jayesh Panchal

Dear Readers,

The world is slowly moving out of the Covid pandemic situation and is learning to coexist with the disease.However, the past 2 years have impacted and altered various aspects of life in a manner that are probably here to stay.

For instance, telemedicine, videoconferencing and online teaching are some of the digital transformation in medicine that surged due to the pandemic. At the same time, due to increased digital device usage, social media and screen addiction instances too multiplied. The current issue of pulse has an interesting case report on internet addiction in a student.

We observed significant psychological effects of pandemic on the public as well as healthcare workers. Although most people recovered from Covid spectrum of disease uneventfully, a few had persistent symptoms. Research suggests that 10–25% of people of all age groups develop what is known as long COVID which usually arises 3 months from the onset of Covid. The condition can be disconcerting and can impact one's ability to work. Mental health effects can be a direct result of long COVID, but can also be due to prolonged distress caused by it.

Negative mental impact was also due to high rates of infection and death, financial hardships, stress and fear of unknown and uncertainty about future.

The ability of doctors to cope with stressors is important for their patients, families, and themselves. The levels of psychological resilience vary considerably from person to person and many doctors experienced emotional exhaustion, possibly adding to medical errors, and lack of empathy at times and decreased productivity.

Several research projects in this issue by our nursing staff addresses these problems.

This e-issue also has a video on cardiopulmonary resuscitation which is part of our community outreach programme.

Happy viewing!

Shrividya

Dr Shrividya Chellam
Chief Editor, Pulse

Greetings Dear Readers !

It is indeed a pleasure to write from the HMD's Desk for this 24th issue of Pulse.

We have just entered the 76th year of Independence and celebrated completion of the 75th year as "Azadi Ka Amrit Mahotsava"

The last year saw a lot of initiatives undertaken in the country for providing better healthcare facilities. One was "Swasthya Chintan Shivir" held by Ministry of Health and Family Welfare in the state of Gujarat. As the name suggests inputs were received from various sources which were then put together to form salient points. The outcome was the shift of focus of healthcare from "Curative" to "Preventive" and promoting "Heal in India, Heal by India".

The emphasis is now "Preventive Care" which means that the public in general and individual in particular, needs to be responsible for his or her own healthcare and that of the family.

What is cure? Cure as a verb is "to make someone healthy again after an illness"; but to become healthy completely after illness depends on various patient related factors like genetics, acceptance of disease and the expectation of the patient and family.

When cure is required, the healthcare providers can help to the extent of diagnosing and providing well established protocol based available treatment. The outcome of the treatment will be based on the "preventive care" taken by the individual prior to the episode and should to be understood by the individual as well as the family.

What is the role of medical professionals in preventive care?

Physician's mandate is "to cure sometimes (in the strictest sense of the definition), to relieve often and comfort always".

Now, we need to take on a new role of a teacher – not only to medical students but to laypersons, family care givers, the general public, media and even policy makers.

We at the Medical Division have already been conducting various preventive health clinics both in the hospital and dispensaries. The need is to educate the community in general and the population at risk in particular, about preventive care.

The aim of such endeavour is to demystify medical knowledge through jargon free communication which will boost the ability of whole community to protect, preserve and promote health at individual and population levels.

Dr Snehal U Nadkarni
Head Medical Division

Medical Aspects of Biological Warfare

Dr Hemant Haldavnekar

Retd. Scientific Officer and Former Head, Occupational
Health and Overall In Charge, Dispensary Services, BARC

Biological Warfare is the intentional use of viruses, bacteria, other microorganisms, or toxins derived from living organisms to cause death or disease in humans, animals, or plants.

Dr Hemant Haldavnekar

Attributes of agents of bio-terrorism

ॐ Infectious via aerosol and easily &efficiently disseminated

ॐ High person-to-person transmission (e.g. smallpox, plague, VHF)

ॐ Economically producible in adequate quantities

ॐ Maintain infectivity during production, storage, and transportation

ॐ Potential for widespread dissemination

ॐ Some form of protection available to the user and perpetrators

ॐ Lethal or incapacitating to man, animals or plants

ॐ Susceptible civilian populations with no widespread natural or acquired immunity

ॐ Difficult to diagnose and/or treat

ॐ Psychological effect

Methods of dissemination

ॐ Aerosol

ॐ Ingestion

ॐ Cutaneous

Problems specific to a biological event

ॐ Caused by a biological entity

ॐ Has the potential to spread actively through water/ air/ touch

ॐ Infected persons movement and incubation window helps spread

ॐ Often, little is known about the biological agent in the beginning

ॐ Impacts not only the immediate environment but has social, community, trade and international relation implications
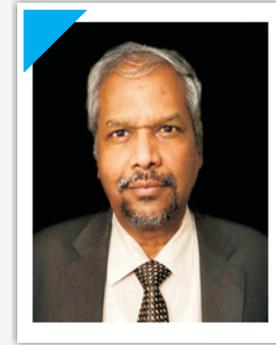
ॐ Slow onset of events & often make an increasing demand on resources over weeks / months

How to suspect a biological event?

The following clues help to suspect an event as being due to biological warfare

Clue 1: A highly unusual event with large numbers of casualties -A large outbreak, in which no plausible natural explanation for the cause of the infection exists, should arouse suspicion.

Clue 2: Higher morbidity or mortality than is expected-An agent may have been modified to make it more virulent or resistant to normally used antibiotics.

Clue 3: Uncommon disease for a certain geographical area.

Clue 4: Point source outbreak in which individuals have been exposed at a similar point in time.

Clue 5: Multiple epidemics in which simultaneous epidemics occur at the same or different locations with the same or multiple organisms.

Clue 6: Lower attack rates in protected individuals such as military personnel who wore protective gear or respiratory protection.

Clue 7: Dead animals-A local animal die-off may indicate a biological agent release that might also infect humans.

Clue 8: Reverse or simultaneous spread-Unnatural spread should be considered if human disease precedes animal disease or human and animal disease is simultaneous.

Table 1. Categories of Biological Agents

Category-A	Category-B	Category-C
Anthrax	Brucellosis	Emerging infectious diseases such as Nipah virus and Hantavirus
Botulism	Epsilon toxin of Clostridium perfringens	
Plague	Glanders	
Smallpox	Melioidosis	
Tularaemia	Psittacosis	
Viral Haemorrhagic Fevers	Q Fever	
	Ricin toxin from Ricinus communis	
	Staphylococcal enterotoxin B Typhus	
	Viral encephalitis	
	Food safety threats (Escherichia coli, Salmonella species, O157:H7, Shigella)	
	Water safety threats (Vibrio cholerae, Cryptosporidium parvum)	

Clue 9: Unusual disease manifestation.

Clue 10: Downwind plume patternwhere the reported cases are found to be clustered in a downwind pattern, an aerosol release may have occurred.

Clue 11: Direct evidence of bio-warfare ammunitions such as a letter filled with anthrax spores,a spray device, or another vehicle for agent spread.

The CDC has classified biologic agents according to lethality, ease of dissemination, and potential for weaponization.

Category A- Biologic agents that can be easily disseminated or transmitted from person to person; result in high mortality rates and have the potential for major public health impact; might cause public panic and social disruption; and require special action for public health preparedness.

Category B- Agents that are moderately easy to disseminate; result in moderate morbidity rates and low mortality rates; and require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance.

Category C- Agents include emerging pathogens that could be engineered for mass dissemination in the future because of availability, ease of production, dissemination and potential for high morbidity and mortality rates and major health impact.

Category A Biologic Agents

Anthrax (Bacillus anthracis)

Cutaneous anthrax: Starts with a painless, pruritic papule with a ring of vesicles, can progress to fatal septicaemia in 10-20%. Treatment consists of local wound care.

Intestinal anthrax: Caused by consumption of contaminated food. Death rate ranges from 25-60 percent. Complications include oropharyngeal oedema, gastrointestinal ulceration and necrosis, hematemesis, coffee-ground emesis, bloody diarrhoea and intestinal perforation.

Pulmonary anthrax: Inhalation anthrax develops in 2.5–5 percent of cases. Initially, presents as an influenza-like illness, may progress to dyspnoea, cyanosis, high fever, disorientation, septic shock, coma and death

Meningoencephalitis is reported to occur in up to 50 percent of cases of fulminant anthrax.

Treatment is Ciprofloxacin or Doxycycline + Rifampicin + Clindamycin.

Botulism (Clostridium botulinum)

Botulism is a clinical syndrome caused by botulinum toxin which is one of the most potent lethal neurotoxins known (1 gram of evenly dispersed and inhaled crystalline botulinum toxin could kill more than 1 million people).

Signs and symptoms include cranial dysfunction with subsequent descending motor paralysis sparing the sensory system. High index of suspicion is required, with a thorough history and physical exam. Stool cultures, wound culture, electromyography 20–50Hz (rapid repetitive electromyography) are confirmatory along with imaging studies (MRI, CT), lumbar puncture with CSF studies, porphyria evaluation, toxicology screen and edrophonium (Tensilon) challenge test.

Management includes intubation and mechanical ventilation, cardiovascular support and neurological assessments. Equine-derived trivalent antitoxin (A, B, E) should be administered immediately. This prevents progression of paralysis and affords less severe course averting the need for intubation and mechanical ventilation.

Plague (Yersinia pestis)

Plague causes three distinct forms of disease in humans: bubonic, pneumonic, and septicaemia plague. Transmission is from the host animal to humans by fleas.

Direct contact, animal bites, or exposures to sick animals or infected carcasses may also lead to spread of the disease in humans.

Plague is considered a potential bioterrorism weapon because of its pathogenicity, ease of dissemination, contagiousness, and high mortality rate. In the event of intentional dissemination, plague bacteria would most likely be released in an aerosol form, resulting in the highly lethal and contagious pneumonic form of the disease. A sudden influx of previously healthy patients presenting with severe pneumonia and/or gram-negative septicaemia, should raise the suspicion of a possible plague.

Mortality rate is approximately 40 percent when treated promptly. In untreated cases, the mortality rate approaches 100 percent.

First line antibiotic therapy for all types of plague

Streptomycin 1 g IM twice daily for 10 days (Not recommended for pregnant women)

OR

Gentamicin 5 mg/kg IM or IV once daily or 2 mg/kg loading dose followed by 1.7 mg/kg IM/IV three times per day for 10 days

OR

Doxycycline 100 mg IV twice daily or 200 mg IV once daily for 10 days if gentamicin not available or oral antibiotics must be used.

OR

Ciprofloxacin 400 mg IV twice a day for 10 days or other fluoroquinolones at appropriate dosing.

In cases of suspected plague meningitis, additional Chloramphenicol 25 mg/kg IV 4 times daily for 10 days.

Post exposure prophylaxis for adults includes Doxycycline 100 mg PO twice daily for 7 days OR

Ciprofloxacin 500 mg PO twice daily for 7 days.

Smallpox

Transmission of smallpox from person to person requires direct, prolonged face-to-face contact, or contact with contaminated bodily fluids or objects such as bedding or clothing. An infected person is most contagious from the onset of rash until the final smallpox scab falls off. Smallpox has a 30 percent mortality rate in unvaccinated individuals, and a less than 1 percent mortality rate in vaccinated individuals.

Differential diagnosis for the rash includes varicella zoster virus (VZV),disseminated herpes virus (HSV), measles, enterovirus, parvovirus B,rubella virus, and molluscum contagiosum.

Laboratory confirmation of smallpox involves PCR of variola DNA.

In case of an outbreak,after laboratory confirmation of one case, cases fitting the clinicaldescription are considered smallpox until proven otherwise.The laboratory technology is not typically available in hospital laboratories, and samples need to be forwarded by local publichealth officials to the appropriate state and national testing facilities,with biosafety level 4 capacity.

Smallpox treatmentis mainly supportive.Patients should be quarantined in hospital settings and placed in a negative pressureisolation roomfor 17 days or until the scabs dry up and fall off.

In a large outbreak, patients may bequarantined in their homes or in specific facilities.Antibiotics may be needed for secondary infection.

Vaccine immunization with live vaccinia virus vaccine is thoughtto provide three to five years of high-level immunity. Vaccinia issignificantly preventive if given within three days of exposure.Complications of the vaccine included generalized or progressive vaccinia, eczema vaccinatum, and post vaccination encephalitis. Vacciniaimmunoglobulin has some utility in serious vaccine reactions.The vaccine is contraindicated in non-emergent situations in patientswho are immunosuppressed, pregnant or breastfeeding, under the age of 1 year, affected by atopic dermatitis or eczema, or allergic to vaccine components.

Tularemia(Francisella tularensis)

Tularemia was first isolated by McCoy and Chapin in 1912 as the causative agent of a disease in ground squirrels located in Tulane County,California. This facultative, gram negative, intracellular coccobacillus causes a zoonotic disease in humans as accidental hosts. Several formulations of disease names have been proposed such as Francis' disease, Deer-fly disease, rabbit fever,trappers' ailment, and O'Hara's disease.

Two most common sub-species of tularemia are

Tularensis (Type A), which is the most virulent type causing 90 percent of all North American

tularemia infections and occurs in dry environmental conditions.

Holarctica (Type B), which is in Europe and former Soviet Union and occurs in damp environmental conditions.

Transmitted through direct contact usually through abraded skin, but may infect through intact skin or through vectors like arthropods (insects and ticks) and flies (horse and deer flies). It can even be contracted through inhalation in laboratory workers and farmers.

The clinical spectrum ranges from an asymptomatic illness to septics hock and death.It is important to notify laboratory workers when culture is ordered for Tularemiaas biosafety level-3 precautions must be observed.Serologic testingis confirmatory.

Antimicrobial therapy

Streptomycin: (97% cure rate with no relapses) - 10 mg/kg IM every 12 hours for 7–10 days in adults (30 mg/kg IM in two divided doses for 7 days in children).

OR

Gentamicin: (86% cure rate with 6% relapse rate) - 3–5 mg/kg IM or IV every 8 hours for 7–10 days in adults (6 mg/kg/day with peak serum levels one hour after IV administration of greater than 7 mg/mL in children).

OR

Tetracycline: (88% cure rate with 12% relapse rate) - 500 mg orally 4 times a day for 14 days (Not used in children).May substitute doxycycline 100 mg 2 times a day.

OR

Chloramphenicol: (77% cure rate with 21% relapse rate) - 25–60 mg/kg per day IV in 4 divided doses for 14 days.

OR

Ciprofloxac in: mixed results with high rate of relapse.

The ease of production, low infective dose, aerosolization of small particles, and difficulty with immediate diagnosis make tularemia an attractive option for terrorists. In 1970, a WHO published report estimated that an aerosolized dispersal of 50 kilograms of virulent F. tularemia over a metropolitan area of 5 million inhabitants would result in 250,000 incapacitating causalities with over 19,000 deaths. A high-resolution multiple-locus-variable-number tandem repeat analysis (MVLA) typing method for F. tularensis has been developed and is crucial in forensic determination of suspected perpetrators of abioterrorism

attack.

The live vaccine for F. tularensis was used to a large extent in the former Soviet Union with good clinical results. The Soviet-borne vaccine was used for at-risk personnel in the United States and Western Europe, but was unlicensed because live vaccine strain may retain high virulence.

Viral HaemorrhagicFevers

Haemorrhagic Fever Viruses (HFV) are a diverse group of RNA viruses that have the potential to cause severe illness and could be a major public-health threat if used as a weapon. Most are highly virulent, have potential to be disseminated by aerosol, cause high morbidity and/or mortality, and require special measures to control spread. The treatment is largely supportive; ribavirin may be useful with certain viruses like bunyaviruses and arenaviruses.

Table 2. Current HFV threats and their associated clinical illness

Pathogen	Incubation period	Onset	Signs & Symptoms	Mortality
Filoviridae				
Ebola Hemorrhagic Fever	2–21 d	Acute	Conjunctivitis Abdominal pain Nausea and vomiting Pharyngitis Diffuse maculopapular rash on day 3–5 Diffuse bleeding/DIC (GI, gingival, conjunctival) Shock, organ failure	50–90%, depending on subtype
Marburg Hemorrhagic Fever	3–14 d	Acute	Similar to Ebola, rash more prominent on trunk	21–90%

Arenaviridae				
Lassa fever	5–16 d	Gradual	Exudative pharyngitis Conjunctivitis Retro-orbital pain Facial and neck swelling Encephalitis, Pleural and pericardial effusions ARDS Hemorrhagic manifestations occur, but less common	1% overall, ~80% of those infected have mild disease, but of those hospitalized with severe form, ~20% die
New World: Bolivian Hemorrhagic Fever Argentine Hemorrhagic Fever Venezuelan Hemorrhagic Fever Brazilian Hemorrhagic	7–14 d	Gradual	Similar to Lassa • Also, facial flushing often seen • CNS dysfunction (tremors, myoclonus, seizures) • Hemorrhage more common than in Lassa	10–30%

Bunyaviridae				
Crimean-Congo hemorrhagic fever (CCHF)	1–3 d	Acute	Neck and back pain, Flushing, Mucosal and skin petechiae, Altered mentation, Mood changes, Melena, Epistaxis, Hematuria, Gingival bleeding, Hepatitis, Multiorgan failure	9–50%
Rift Valley Fever	2–6 d	Biphasic	Usually mild, Biphasic fever, hepatitis/jaundice, Encephalitis, Retinitis, Hemorrhage in severe form	1%
Hemorrhagic Fever with Renal Syndrome (HFRS)	7–14 d	Acute	Truncal pain, Visual changes, Nausea and vomiting, Flushing, Conjunctivitis	1–15% depending on virus type

Flaviridae				
Dengue fever, Dengue Hemorrhagic Fever (DHF), Dengue Shock Syndrome (DSS)	3–14 d	Acute	Eye pain Nausea and vomiting Maculopapular rash Severe abdominal pain AMS Shock and bleeding diathesis in Dengue Hemorrhagic Fever (DHF) leading to Dengue Shock Syndrome (DSS)	<1% with good supportive care; up to 10% if progression to DSS
Yellow Fever	3–6 d	Biphasic	Initially fever, back pain, malaise, n/v Remission or jaundice, hemorrhage, Bradycardia/ dysrhythmias Hematemesis AMS/seizures Coma	15–50%
Omsk Hemorrhagic Fever (OHF)	2–9 d	Acute	Flushing Splenomegaly Lymphadenopathy Papulovesicular	0.5–10%

			lesions on soft palate Pulmonary and CNS involvement	
Kyasanur Forest Disease (KFD)	2–9 d	Acute	Similar to OHF, but biphasic Recovery or second phase 1–3 weeks later Meningoencephalitis	3–10%

Category-B biologic agents

Coxiella burnetii (Q fever),Alphaviruses,Bunyaviruses (California encephalitis); in all these infections, mortality is low. Morbidity can be high.

Brucella species (brucellosis), Burkholderia mallei (glanders), Rickettsia prowazekii (Epidemic Typhus), Chlamydia burnetti (Psittacosis); in all these infections, mortality is high if untreated.

Flaviviruses (West Nile Virus, Japanese Encephalitis, St. Louis encephalitis) present with flu-like symptoms. Severe cases involve profound weakness, paralysis, stupor,and coma.

Mortality is low, except in severe cases. Vaccine is available for Japanese Encephalitis. Treatment is mainly supportive.

Food or water-borne agents

Salmonella, Shigella dysenteriae, Escheichia coli,Cryptosporidium parvum manifestations include fever nausea, often diarrhoea.

Giardia lamblia presents usually with insidious onset of watery, foul smelling diarrhoea and abdominal cramps.

Vibrio cholerae presents with copious watery diarrhea. Mortality is low with treatment and high without treatment. Treatment is with fluids, ciprofloxacin, ordoxycycline. Vaccine is available however with low effectiveness.

Entamoeba histolytica presents most commonly with the gradu alonset of bloody diarrhea, abdominal pain. If amoebic liver abscess develops, presentation may be fever and right upper quadrant pain.Mortality rate is high withn ecrotizing colitis or amoebic liver abscess.

Ricin toxin (castor beans),whose toxic effects can be produced by inhalation, ingestion or injection, presents with fever, dyspnoea, vomiting, diarrhoea and shock. Mortality is high. Serologic diagnosis requires specialized laboratory. Treatment is mainly supportive.

Epsilon toxin (Clostridium perfringens)and Staphylococcus enterotoxin Bpresents with gastrointestinal symptoms but have very low mortality.

Category-C biologic agents

Nipah virus presents with encephalitis. Transmission is with aerosol or contact. Mortality is high. Serologic identification is with blood or CSF (level-4 lab). Treatment is supportive although ribavirin may help.

Hantavirus presents with fever, myalgias, dyspnea. Mortality is high. Identification is by serology or PCR. Traetment is mainly supportive.

Chikungunya fever (Flavivirus) presents with chills, fever, nausea, vomiting, headache, severe joint pain, and sometimes rash. Mortality is low. Serologic or RT-PCR identification. Treatment is supportive. No vaccine available.

Multidrug resistant TB presents with fever, cough. Transmission is respiratory. Both treated and untreated mortality not unusual. Diagnosis is by sputum Acid-Fast Bacillus (AFB). Treatment is with combination drug therapy. Vaccine is available but has low effectiveness.

Table 3. Comparison of various parameters of Bio-agents

Bacterial					
Disease agent	Infectivity	Incubation period	Lethality	Vaccine	Antimicrobial therapy
(Inhalation) Anthrax	Mod.	1-6 YRS	High	+	Tetracycline, Erythromycin
Brucellosis	High	Days to Months	Low	+	Doxycycline, Rifampicin
Cholera	Low	1-5 days	Moderate to high	+	Tetracycline, Doxycycline
Melioidosis	High	Days to years	Variable	-	Tetracycline, Chloramphenicol
(Pneumonic) Plague	High	2-3 days	Very high	+	Tetracycline, Chloramphenicol
Tularemia	High	2-10 days	Moderate if untreated	+	Streptomycin
Typhoid fever	Mod.	7-21 days	Moderate if untreated	+	Ciprofloxacin, Chloramphenicol

Viral						
Disease Agent	Infectivity	Inc. period	Lethality	Vaccine	Antiviral	Antisera
Chikungunya	High	2-6 days	V. Low	Exp.	No	No
CCH fever	High	3-12 days	High	Exp.	Ribavirin	Yes
Dengue	High	3-5 days	Low	Exp.	No	No
Eastern Equine Encephalitis	High	5-15 days	High	Yes	No	No
Ebola Fever	High	7-9 days	High	No	No	No
Korean Haemorrhagic Fever	High	4-42 days	Mod.	Exp.	Ribavirin	No

Lassa Fever	High	10-14 days	Unknown	No	Ribavirin	Exp.
Omsk Haemorrhagic Fever	High	3-7 days	Low	Exp.	No	No
Rift Valley Fever	High	2-5 days	Low	Yes	Ribavirin	No
Russian Spring-Summer Encephalitis	High	8-14 days	Mod.	Yes	No	Yes
Smallpox	High	10-17 days	High	Yes	No	Yes
Western Equine	High	1-20 days	Low	Yes	No	No
Venezuelan Encephalitis	High	1-5 days	Low	Yes	No	No
Yellow fever	High	3-6 days	High	Yes	No	No

Rickettsial						
Disease Agent	Infectivity	Incubation period	Lethality	Vaccine	Antimicrobial therapy	Antisera
Epidemic Typhus	High	6-16 days	High	No	Chloramphenicol, Tetracycline	No
Q-fever	High	10-20 days	Very low	Yes	Chloramphenicol, Tetracycline	No
Rocky Mountain Spotted Fever	High	3-10 days	High	No	Chloramphenicol, Tetracycline	No
Scrub Typhus	High	Upto 16 days	Low	No	Chloramphenicol, Tetracycline	No

Toxins						
Disease agent	Infectivity	Incubation period	Lethality	Vaccine	Antimicrobial therapy	Antisera
Botulinum toxin	NA	Variable (hours to days)	High	Yes	Not Effective	Yes

Clostridium Perfringens toxins	NA	8-12 hours	Low	No	Not effective	No
Trichothecene Mycotoxins	NA	Hours	High	No	Not effective	No
Palytoxin	NA	Minutes	High	No	Not effective	No
Ricin	NA	Hours	High	Under Devp	Not effective	No
Saxitoxin	NA	Minutes to hours	High	No	Not effective	No
Staphylococcal enterotoxin B	NA	1-6 hours	Low	Under Devp	Not effective	No
Tetrodotoxin	NA	Minutes to days	High	No	Not effective	No

Safety precautions common to all biological scenario:

Controlling spread is vital.

Notify hospital infection control and local public-health authorities immediately.

Notify lab personnel or others who may come in contact with patient's body fluids.

Minimize contact with staff/visitors, only essential personnel allowed.

Strict hand hygiene, before and after patient contact (also wash before and after removing goggles/face shields to minimize mucous membrane exposure).

Place patient in negative pressure/respiratory isolation (in mass casualty situation, group patients together in separate wings with separate air handling systems).

Establish designated area for applying and removing protective gear.

Keep patient care equipment (stethoscopes, etc.) as well as protective equipment (Double glove, Face shield, goggles/eye protection, Impermeable gown; leg and shoe covers, N-95 Mask) in room.

Immunise/provide chemoprophylaxis to health care staff.

References

1. Medical Aspects of Biological Warfare, Office of the Surgeon General, United States Army, Falls Church, Virginia and Borden Institute, Walter Reed Army Medical Centre, Washington, DC, 2007.

2. Oxford American Handbook of Disaster Medicine, Oxford University Press, 2012.

Cutaneous Herpes Infection: A Sneak Peek

**Dr Prachi Gaddam, Dr Susan Cherian,
Dr Raji Naidu, Dr Uma Chaturvedi**
Department of Pathology, BARC Hospital

Pictorial essay

Case History

A55-years old male with history of uncontrolled diabetes (HbA1c 10.4%) presented with vesicular lesions with intense pain over right gluteal region. Biopsy of the lesion was performed and sent for histopathology.

Histopathology showed classic findings of herpetic infection of enlarged keratinocytes, multinucleated cells, nuclear molding and eosinophilic intranuclear (Cowdry A) inclusions.

Herpes simplex virus and varicella zoster virus are double stranded DNA viruses of the herpesviridae family that commonly infect humans and present with characteristic cutaneous manifestations. Diagnosis is generally made on the basis of clinical findings. When the clinical presentation is atypical, biopsy can aid in making an accurate diagnosis. Other diagnostic modalities are Tzank smear, viral culture,
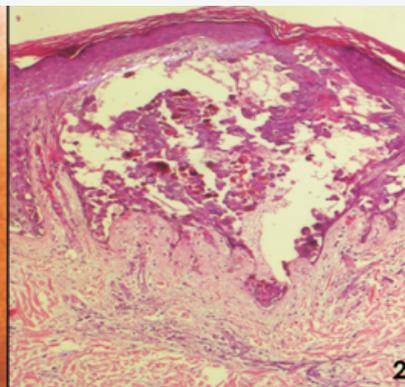
Dr Prachi Gaddam

immunohistochemistry, immunofluorescence, in situ hybridization and polymerase chainreaction (PCR).[1]
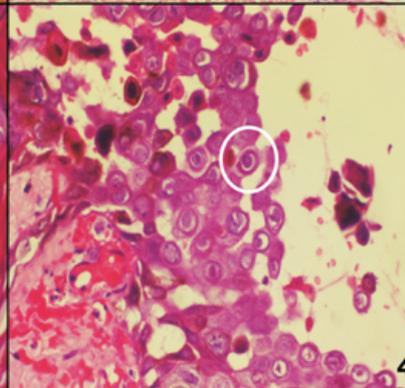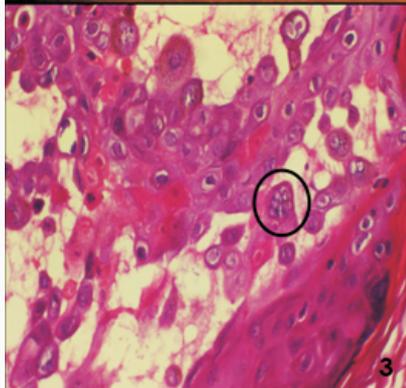
References

1. Hoyt B, Bhawan J. Histological spectrum of cutaneous herpes infections. Am J Dermatopathol. 2014 Aug;36(8):609-19.

1. Vesicular lesions on skin.

2. Intraepidermal blisters with solitary keratinocytes in blister cavity.

3. Keratinocytes showing nuclear enlargement and multinucleation (black circle).

4. Intra nuclear eosinophilic inclusion- Cowdry Type A(white circle).

Fig. 1: Histopathology of skin lesions

Microbiological Diagnosis of Gas Gangrene-An Aid to Clinical Judgement

Dr Sunayana Jangla (Clinical Microbiologist),

Department of Pathology, BARC Hospital

Dr Sunayana Jangla

Abstract:

Microscopy of Gram-stained smears is used for the rapid diagnosis of microorganisms in the wound. The tissue of a patient with clinically suspected gas gangrene of lower extremity was microscopically found to have Gram-positive spore-forming bacteria that were morphologically similar to that of *Clostridium species* and were identified as genus *Clostridium* on culture. Microbiological confirmation when used in combination with clinical and radiological findings proved advantageous and life-salvaging. Management of gas gangrene based on clinical diagnosis is not unusual but a positive report of the condition on microscopy and confirmation on culture emboldens the same.

Case report:

67 years male presented with disorientation and drowsiness since two days. He had history of fall at home, blunt trauma and pain to left foot four days back. He is a known case of diabetes mellitus on medication and is a chronic alcoholic. On examination, there was blackening and swelling of left foot involving lateral 4 toes extending up-to ankle. Crepitations were present. Central nervous system examination was normal. Based on vital parameters and clinical presentation, his condition was diagnosed as gas gangrene along with septic shock. Tissue from affected area was sent for Gram stain. It was foud smelling. It showed few pus cells, plenty Gram-positive cocci in pairs and stout Gram-positive bacilli with sub-terminal spores [Fig.1]. Below knee amputation of left lower limb was donealong with antibiotic coverage and later patient's condition improved. Aerobic culture showed growth of *E.coli*. Anaerobic culture was done from the sample, which showed small beta-haemolytic colonies with thick swarming [Fig.2]. Gram stain from the growth showedstout Gram-positive bacilli with occasional spore bearing. It was identified as *Clostridium* group on Vitek2/Compact automated system.

Discussion:

Gas gangrene is a severe necrotising and rapidly progressive soft-tissue infection. The main causative agent involved is Genus *Clostridium*. It consists of Gram-positive, anaerobic, spore-forming bacilli and are present in the soil. Common pathogenic species causing gas gangrene are *C.perfringens, C.novyi,C.septicum* and *C.histolyticum*. The position of spores varies with species e.g, *perfringensh* as central or sub-terminal spores while *septicum* and *novyi* have sub-terminal spores. This also give a coarse idea about the species on microscopy [1].The direct Gram staining examination of materials in clinically suspected gas gangrene cases quickly provide valuable information for the clinician in establishing the diagnosis where a rapid decision about therapy is required to be made [2,3].In this case too, material was obtained in the laboratory before surgery. Gram-stained smears were quickly examined and the clinician was informed at once that the microscopic appearances were well-proposed to *Clostridium* and supported the diagnosis of gas gangrene. It also aided in differentiating gas gangrene from anaerobic streptococcal myosit is which may be indistinguishable from it in the early stages. In the latter, large number of *Streptococci* and pus cells are seen but no bacilli as opposed to the picture in gas gangrene where there are scanty pus cells and diverse bacterial flora along with Gram-positive bacilli with or without spores. [1]Anaerobic Streptococcal myosit is mimics gas gangrene clinically. Organism identification
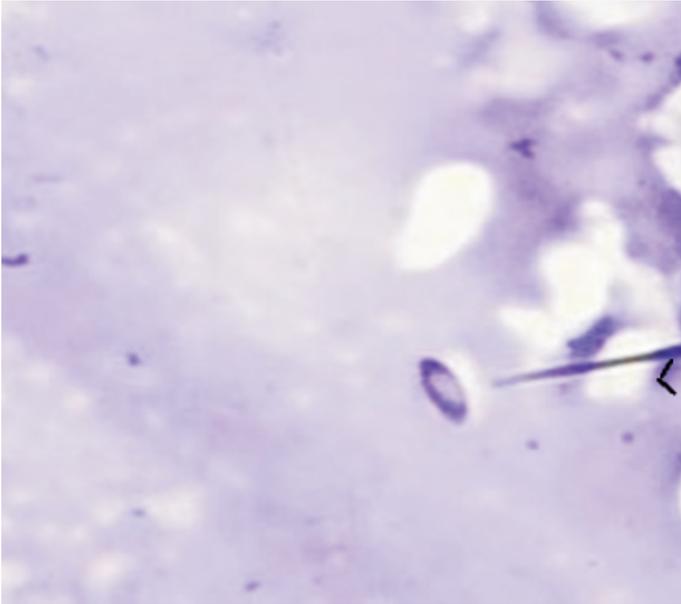
Fig.1: Gram stain showing Gram-positive stout bacilli with sub-terminal spore

Fig.2: Swarming of Clostridium on Anaerobic blood agar

may help in deciding the course of further management as it may prevent the need of amputation.[4] Hence, provisional diagnosis provided by Gram stain helps in deciding further patient management like in our case. This was later confirmed by culture. Hence importance of microbiological diagnosis of gas gangrene should not be under-estimated as it is a way of confirmation of this disease [5].Growth from anaerobic culture was identified as *Clostridium group*. Differentiation could not be done between two species probably because of genetic similarity between them. Also, the bacteriology of gas gangrene is varied. Generally, more than one species of *Clostridia* are found in association with other organisms like *E.coli* and anaerobic *Streptococci* similar to our case. [1]

Conclusion

It is emphasized that in a severe infection such as gas gangrene a simple Gram staining provides a useful information for the clinician to choose a treatment and help in rescuing life. Positive culture upholds the clinical diagnosis by confirming it and also aids in differentiating gas gangrene from other conditions which may be indistinguishable from it in the early stages.

References

1. Ananthnarayan R, Paniker Jayram CK. Ananthnarayan and Paniker's Textbook of Microbiology.9th ed.Hyderabad 500 029(A.P),India: Universities Press (India)Private Limited ;2013:251-257

2. Men'shikova Ed, TitovaGp, Kartavenko Vi, SokolovVa, ShabanovAk,. Microbiological diagnosis of gas gangrene caused by Clostridium septicum (a clinical case).Klinicheskaialaboratornaiadiagnostika, 2010;53.

3. Gencer S, Kuzu I, Ersoz G, Ozer S. The Importance of Microbiological diagnosis of Gas gangrene DOAJ 1997 ;2(4):252-256

4. A Sonavne, M Mathur, VP Bhandarkar. Gas Gangrene at Tertiary Care Centre. BombayHospital Journal2008.50(1);10-13

5. Leiblein M, Wagner N, Adam EH, Frank J, Marzi I, Nau C. Clostridial Gas Gangrene - A Rare but Deadly Infection: Case series and Comparison to Other Necrotizing Soft Tissue Infections. Orthop Surg. 2020 Dec;12(6):1733-1747. doi: 10.1111/os.12804. Epub 2020 Oct 4. PMID: 33015993; PMCID: PMC7767692.

HFNO – A Novel Oxygenation Device

Dr Pritee Bhirud
Department of Anaesthesia, BARC Hospital

High Flow Nasal Oxygen (HFNO) is a novel device used to administer high flow of heated humidified oxygen (O_2) to patients with hypoxemic respiratory failure in ICU. O_2 is the first line of management for respiratory failure, increased O_2 demands and apnoeic oxygenation during anaesthesia. Various devices have been used for O_2 delivery ranging from nasal cannula, face mask with or without rebreathing bags and the venturi O_2 mask. All these devices can deliver O_2 upto a fractional concentration of oxygen (FiO_2) of 60%.

Spontaneously breathing patients have an inspiratory flow rate (IFR) of 20–40 litres per minute (L/min). Once the IFR of the patient exceeds the flow of O_2 coming from oxygen device, room air will be entrained which dilutes the FiO_2. They also pose the challenge of delivering dry gases to the patient despite being passed through a humidifier. The dryness of airway passages causes discomfort. Except the nasal cannula all tend to interfere with speech and feeding of the patient.

Dr Pritee Bhirud

High Flow Nasal Oxygen via the High Flow Nasal Cannula (HFNC) is a device which delivers heated humidified Oxygen at 60 L/min at 37^0 C with absolute humidity of $44mgH_2O$ and FiO_2 of 60-100%. The flow rates of HFNO ranging from 20-100 L/min, provide adequate flows for the patients increased IFR. HFNO is increasingly being used in Operation theatres.
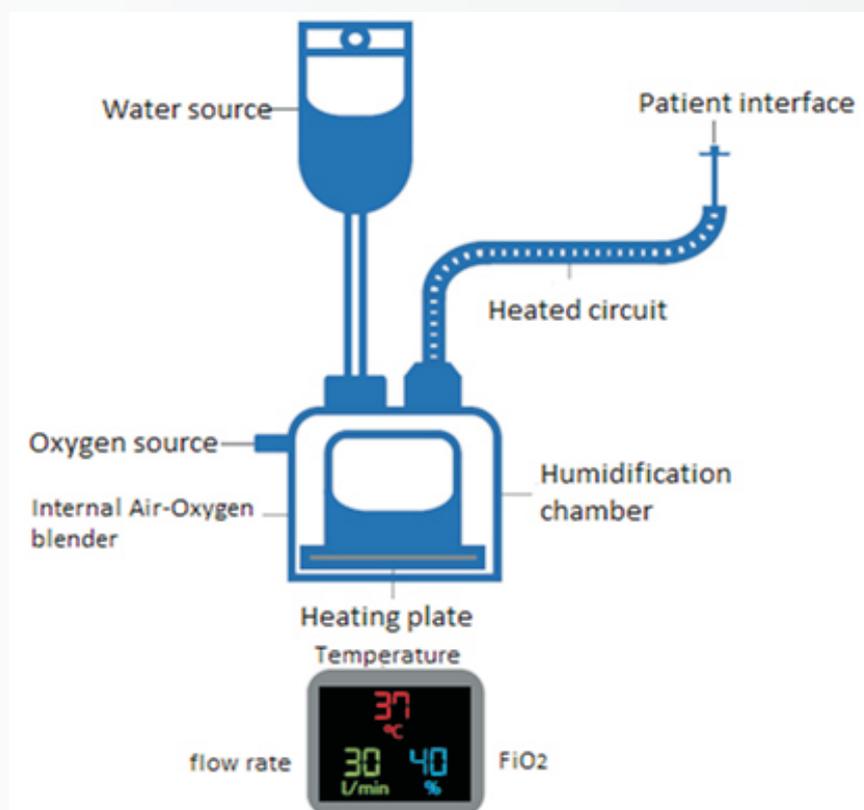

Fig. 1:High flow nasal oxygen (HFNO) equipment

Components

1. An electrically powered high-pressure oxygen/air supply (ideally with a blender).

2. A flow meter capable of flows of up to 100 L/min

3. A humidifier capable of fully humidifying the inspired oxygen/air mixture.

4. Wide bore tubing to deliver gas from the gas supply to the nasal cannula.

5. Specialized wide bore nasal cannula, which conveys the oxygen/air blend from the gas tubing to the patient's nose.

Indications

a) HFNO is used to treat hypoxemia in spontaneously breathing critically ill patients.

1. Acute hypoxemic respiratory failure

2. Post extubation respiratory failure

3. Acute cardiogenic pulmonary oedema

4. Post-surgical hypoxemia

5. DNI (Do not intubate) and palliative care.

b) Procedure in anaesthesia and critical care-

1. Pre oxygenation and airway management in the OT awakefibre optic intubation (FOI), anticipated difficult airway etc.

2. Pre oxygenation and during Rapid sequence intubation (RSI).

3. Oxygen administration during invasive procedures.

Contraindications

Absolute

1. Laser or diathermy in the presence of alcohol-based skin preparation solutions in combination with HFNO, may increase risk of fire.

2. Known or suspected skull base fractures, CSF leaks.

3. Significant pneumothorax which has not been treated with an intercostal drain ICD.

4. Complete nasal obstruction.

5. Active epistaxis or recent functional endoscopic sinus surgery (FESS).

Relative

1. Partial nasal obstruction.

2. Disrupted airway, e.g. laryngeal fracture, mucosal tear or tracheal rupture.

3. Contagious pulmonary infections, such as tuberculosis.

4. Contraindications to high concentrations of oxygen (e.g., prior bleomycin chemotherapy)

5. Inability to tolerate hypercarbia if HFNO is used with prolonged apnoea (e.g., patients

with sickle cell anaemia, pulmonary hypertension, intracranial hypertension, and some

forms of congenital heart disease)

6. Children under the age of 16. (Reports of pneumothorax in paediatric age group at high flows.)

Mechanism of action

HFNO aids oxygenation by the following physiological effects

1. Washout of the pharyngeal dead space - The high flow generates a reservoir of oxygen that, reduces dead space, minimizes CO_2 re-breathing and increases the alveolar ventilation over the minute ventilation ratio.

2. Reduction in the work of breathing - By providing warm, humidified high gas flows, HFNO reduces the resistance of the upper airway and decreases the resistive breathing effort.

3. PEEP effect - HFNO is associated with the generation of different values of positive airway pressure (ranging between 2.7 and 7.4 cm H2O).The PEEP generated depends on several factors: flow rate, geometry of the upper airway, breathing through the nose or mouth, and size of the cannula in relation to the nostrils. The generated positive airway pressure also depends on the presence and extent of leaks around the nostrils and through the mouth.

4. Supply of a constant FiO2 - The high gas flow reduces room-air entrainment, even when the respiratory pattern varies. The delivered FIO_2 corresponds closely to the set FIO_2.

5. Improved mucociliary clearance and patient comfort - Warm and humidified air O2 mix reduces the viscosity of the tracheobronchial secretions, enhances the mucociliary clearance,

reduces dryness of the upper airways and generally improves comfort.

Inability of HFNO to improve oxygenation should be detected as early as possible. Inappropriate use of HFNO may delay intubation and further recovery in the patients.

Early indicators of HFNO failure could be,

1. Lack of improvement in oxygenation and persistence of tachypnoea, as defined by a respiratory rate

2. Higher than 30 breaths per min and thoraco-abdominal asynchrony 30 min after HFNO initiation.

3. Shock requiring administration of vasopressors,

4. Sepsis-related Organ Failure Assessment(SOFA) score of 4 or more, an Acute Physiology and Chronic Health Evaluation II (APACHE II) on admission

5. Partial pressure of oxygen in arterial blood (PaO_2) /FIO_2 ratio <100mmHg after 6 h of treatment.

In the anaesthesia context, HFNO has been referred to as THRIVE- Transnasal Humidified Rapid-Insufflation Ventilatory Exchange. THRIVE administered by HFNO associated with jaw thrust provides a significantly long and safe apnoeic window, along with almost no reported events of de saturation below 90%. Thus THRIVE gives the advantage of time during difficult intubations from a hurried to a smooth event.

COVID Pandemic

HFNO played a valuable role to mitigate the effects of hypoxemia associated with COVID pneumonitis in mild to moderate cases. The high flow of O_2 required was the only drawback of the device.

Practical recommendation for HFNO use·

- Prongs - Should be appropriately sized and should not totally occlude nostrils.
- Flow rate - Start at 30-40 litres per min and increase to meet the patient's demand
- Temperature - Set at 37⁰C
- FIO2 - Increase the FIO_2 until satisfactory SaO_2 is achieved.
- Flow - Increase the delivered flow until a reduction

in respiratory rate and stable SaO_2 is achieved

- Water reservoir - Place as high as possible above the humidifier
- Monitoring - Continuous monitoring of heart rate, respiratory rate, SaO_2
- Positive response and weaning - Gas flow rate and FIO_2adjusted according to the clinical response (expected within 1 h). Reduce FIO_2 by 5-10% and reassess after 1-2 hr. Reduce the flow rate by 5 litres per min and reassess after 1-2 h. Consider weaning from HFNO with flow rates 25 litres per min and FIO_2<0.40.
- Ineffective response - If there is no improvement after 60-120 min, treatment escalation must be considered.

Conclusion

HFNO is a well-tolerated therapy with strong evidence supporting its use in the ICU setting as well as in the OT. The beneficial physiological effects along with generation of CPAP extends its role in many clinical scenarios. A step wise approach for use of HFNO should be instituted when standard O_2 devices fail. Consider NIV prior to invasive ventilation in case HFNO fails. Considering its role during difficult intubations and the margin of safety it affords during such procedures HFNO has gained popularity in OTs too.

References

1. T. Renda, A. Corrado, G. Iskandar, G. Pelaia, K. AbdallaandP. Navalesi; High-flow nasal oxygen therapy in intensive care and anaesthesia. British Journal of Anaesthesia, 120(1): 18e27 (2018)

2. Jeremy Cooper, MB, ChB, FANZCA; Benjamin Griffiths MBBCh, FRCA; Jan Ehrenwerth, MD Safe Use of High-Flow Nasal Oxygen (HFNO) With Special Reference to Difficult Airway Management and Fire Risk. Circulation 2018; 33(2) :51-53.

3. D'Cruz RF, Hart N, Kaltsakas G. High-flow therapy: physiological effects and clinical applications. Breathe 2020; 16: 200224.

4. Patel A, Nouraei SAR. Transnasal Humidified Rapid-Insufflation Ventilatory Exchange (THRIVE): a physiological method of increasing apnoea time in patients with difficult airways. Anaesthesia 2015;70:323-9.

Internet Addiction Disorder- A Case Report

Smt. Divya Ramadas

Department of Psychiatry, BARC Hospital

Smt. Divya Ramadas

Introduction

Advent of internet has brought a paradigm shift in the way we view and deal with our environment. Smart phones have made internet easily accessible. The obsessive use of this medium surfaced due to its accessible format, affordability and guaranteed anonymity.[1] Consequently, a large population of our children and young adults are developing internet Addiction Disorder (IAD). During the COVID-19 pandemic, the learning shifted from physical classrooms to online classrooms and work shifted from offices to homes. As a result of this integration of education and occupation with internet, its use increased drastically. The boundaries of use between productive purpose and recreational purpose slowly diluted. Psychologically, internet usage has been characterized by a lack of awareness of its addictive quality and denial of the problems caused by overindulgence. It is also a means of escapism from existential problems and a tool for coping with stressors. [2] We present here a case of a young adult with IAD.

Case

A 20-year-old, a third-year computer science student hailing from Mumbai was referred to us with internet overuse of two year duration. He got a smart phone three years ago after class 12. During the COVID-19 lock-down, he was confined to his house and mobile usage duration gradually increased to approximately four to five hours.

Over the last 6 months he was observed to be spending around 14-15 hours on the smartphone. He spent most of his time in watching videos, web series and pornography. Some time was also spent in online investment and shopping. The tendency to masturbate and spend time accessing porn whenever alone increased. He stopped pursuing his hobbies such as cycling or reading general knowledge books which he enjoyed prior to his increased internet use. He reported being constantly preoccupied with thoughts of using his mobile and was unable to decrease the time spent on the same. His pattern of use extended late into the night and he started missing college lectures in the morning session. He also reported low mood, lack of motivation, guilt over internet use, poor sleep and academic decline.

In view of the severity of the problem, we advised a brief hospitalization. On psychometric testing using Rorschach Inkblot Test, the protocol was indicative of unstable mood and inadequate personality structure. He was diagnosed to be suffering from Internet Addiction Disorder. Based on the pattern of use, his 2 domains of concern in IAD were net compulsion and cyber-sexual.

During stay in the ward, we advised a complete abstinence from all forms of internet use with supportive psychotherapy. He was started on medications for stabilizing his mood and to ensure adequate sleep. Hospital stay ensured change in environment and more opportunities to have face-to-face interactions with people around him. The level of supervision was also higher than at home. After 5 days of hospital stay, he seemed to have improved mood and was able to make friendly conversations with other fellow patients. His sleep improved and gradually was able to concentrate on reading some books. His tendencies to masturbate frequently also reduced. He also reported better control over thoughts related to internet use. He still reported craving for his mobile phone but its intensity was markedly reduced. He was discharged on T. Quetiapine (for sleep and mood) and T. Naltrexone (for impulse control).

The psychotherapeutic management started with establishing a rapport with the patient. As his motivation to seek help for his problem was high and he had good insight,

he was amenable to change.Cognitive Behavior Therapy (CBT) is the recommended intervention for IAD. Accordingly, the focus of psychotherapy was on identifying and monitoring "thoughts" that lead to his addictive behaviors, challenging these thoughts and changing them. He was taught to identify and deal with triggers and stressors. Learning problem solving skills and better coping strategies were made the focus of psychotherapy. Further, to reduce the time spent on internet, strategies like organizing the day and keeping oneself busy in various activities (not involving internet use) were employed. Tracking progress through journal keeping and getting involved in support group was advised. He was encouraged to take up some hobbies or restart doing the activities that he enjoyed prior to his issues.

During the follow-up visits, he has been doing better with his daily routine activity. He did report an increase in his mobile use since discharge but it is still under control. He also reports better control over his urges to indulge in viewing pornography and is now able to focus in class. He is continuing to make efforts to reduce his problem behaviors by spending more quality time with family and interacting more with friends.

Discussion

Internet addiction is a common disorder and has become a global problem. Studies have shown prevalence of internet addiction to be 1.3% in the general population.[3] Some studies have shown rates from 8 to 11.8% in college populations.[4,5] Males are more affected than females.[6] There are five major domains of internet use namely cybersexual (cybersex and pornography), cyber relational (social networking and chats), net compulsions (online gaming etc.), information overload (web surfing) and computer addiction (preprogrammed gaming viz. solitaire). Apart from the clear impact on psychological health it also causes academic and work problems, affects physical health, relationships & behavioral problems. Rare cases include deaths due to excess sedentary lifestyle and vulnerability of children to violent and sexual forms of "online challenges".

Interventions in IAD begins with acknowledging and admitting that the problem exists. The diagnostic criteria for IAD is given in Table 1.

Table 1: Internet Addiction Diagnostic Criteria by Young K.[7]

Respondents who answered "yes" to five or more of the criteria were classified as addicted (dependents)
1. Do you feel preoccupied with the internet (think about previous online activity or anticipate next online session?
2. Do you feel the need to use the internet with increasing amounts of time in order to achieve satisfaction? 3. Have you repeatedly made unsuccessful efforts to control, cut back, or stop internet use?
4. Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop internet use?
5. Do you stay online longer than originally intended?
6. Have you jeopardized or risked the loss of significant relationships, job, educational or career opportunity because of the Internet?
7. Have you lied to family members, therapist, or others to conceal the extent of involvement with the Internet?
8. Do you use the Internet as a way to escaping from problems or of relieving a dysphoric mood (e.g. feelings of helplessness, guilt, anxiety, depression)?

Conclusion

Untreated IAD can have disastrous impact on psychological and physical well being. IAD has been known to be a recalcitrant disorder and has been associated with varying severity of depression, anxiety and substance use problems. In young age, it can lead to poorer academic achievements. In addition, IAD has bidirectional impact on mental health and therefore an early identification and treatment can help improve long term outcomes.

References

1. Kuss, D.J., Griffiths, M.D., & Binder, J. F. (2013) Internet addiction in students: Prevalence and risk factors. Computers in Human Behavior, 29 (3), 959-966

2. Salicetia, Francesca (2012) Internet Addiction Disorder (IAD), Procedia – Social and Behavioral Sciences, 191:1372-1376

3. Sharma MK, Rao Gn, Benegal V., Thennarasu K, Thoma D (2017) Technology addiction survey: An emerging concern for raising awareness and promotion of healthy use of technology. Indian J Psychol Med 39:495-499.

4. Yadav P, Banwari G., Parmar C., Maniar R (2013) Internet addiction and its correlates among high school students: A preliminary study from Ahmedabad, India. Asian J Psychiatr 6: 500-505.

5. Krishnamurthy S, Chetlapalli SK (2015) Internet addiction: Prevalence and risk factors: A cross-sectional study among college students in Bengaluru, the Silicon Valley of India. Indian J Public Health 5:115-121

6. Wenliang Su, Xiaoli Han, Chang Jin, Yan Yan, Marc N. Potenze (2019) Are male more likely to be addicted to the internet than females? A meta-analysis involving 34 global jurisdictions. Computers in Human Behaviour, Volume 99, 86-100

7. Young K. S. Internet addiction: The emergence of a new clinical disorder. Cyber spychol Behav 1998; 1(3):237-44.

Psychological Impact of Covid Pandemic in Health Care Workers

Smt. Kranti Dongare
Nurse, BARC Hospital
Smt. Juhi Saliya, Psychologist*
(*Visiting Faculty at S. N. D. T. Women's University and St. Xavier's College)

Introduction

The Covid pandemic increased anxiety regarding death among healthcare workers.[1] Presence of underlying organic illness, female gender, family concerns, lack of personal protective equipment (PPE) and close contact with Covid patients, were some other risk factors for anxiety. A systemic treatment regime has been recommended for the same.[2] Mass quarantine caused mass hysteria, fear, and anxiety among Healthcare Workers (HCWs) [3] Suicide ideation, both at the subthreshold and clinical levels, was found to be associated with longer service periods among Malaysian HCWs.[4]

Research has shown that infectious disease outbreaks have long lasting psychological consequences and can cause post-traumatic stress disorder, depression and stress in HCWs.[5] Covid caused serious and sometimes fatal infections of the respiratory tract, and compared to other viruses, the spread was rapid.[6] This outbreak caused mood and sleep disturbances in HCWs, making it imperative to mitigate such risks and adapt interventions to fit pandemic conditions.[7]

HCWs in high risk areas with inadequate protective gear were affected mentally and physically[8]. Other stress inducing factors included the decisions to be made about allocation of resources often meagre, equally to the patients, balancing their own physical and mental healthcare needs with those of patients, aligning their desire and duty to patients with expectations of family and friends, and providing care for severely unwell patients with limited or inadequate resources.

Social support has a positive correlation with resilience in healthcare workers. Researchers also specified that resilience mediated the relationship between social support and mental health in health care workers.[9] Research has also found that social support was moderating the

Smt. Kranti Dongare

relationship between death anxiety and psychological distress in nurses.[10]

The objective of this was to examine the correlation between psychological well-being, resilience, social support and death anxiety in healthcare workers.

Methodology

Hypotheses

Hypothesis 1: There will be significant correlation between psychological well-being and resilience in healthcare workers.

Hypothesis 2: There will be significant correlation between psychological well-being and social support in healthcare workers.

Hypothesis 3: There will be significant correlation between psychological well-being and death anxiety in healthcare workers.

Hypothesis 4: There will be significant correlation between resilience and social support in healthcare workers.

Hypothesis 5: There will be significant correlation between resilience and death anxiety in healthcare workers.

Hypothesis 6: There will be significant correlation between social support and death anxiety in healthcare workers.

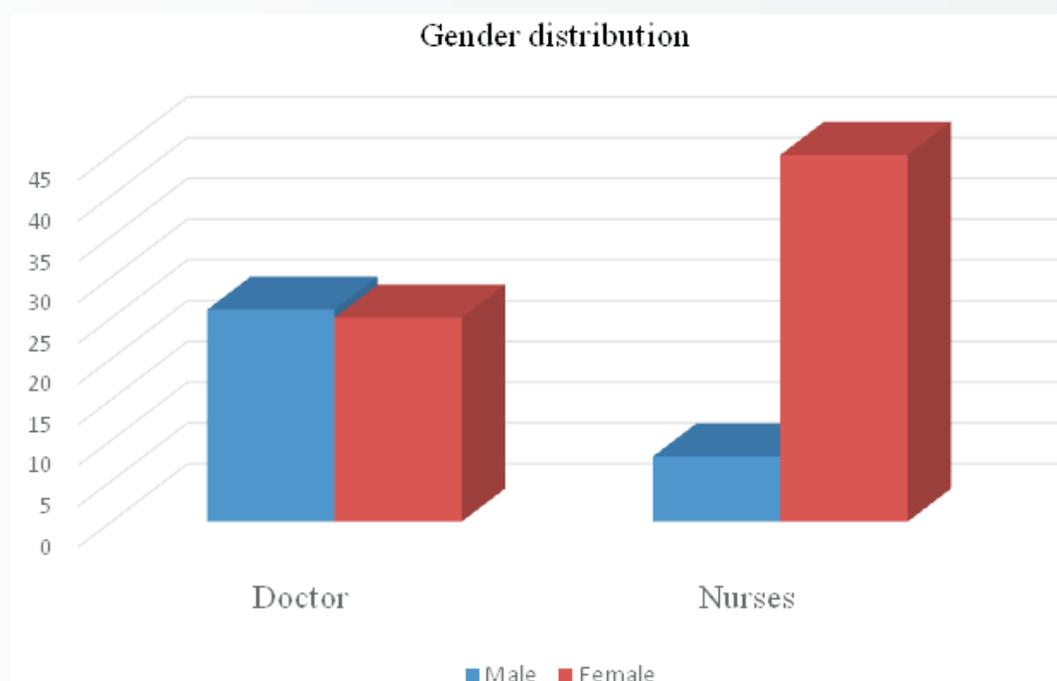| Participant Description	Gender	
	Male	Female
Doctors	26	25
Nurses	8	45

Fig. 1: Demographic data

Fig. 2: Gender distribution of study participants.

Sample

Sample consisted of 104 participants out of which there were 34 male and 70 female healthcare workers. [Fig. 1] Doctors were 51 and nurses were 54 between the age group of 21-51 years. The sample was selected using a purposive sampling method. [Fig. 1,2]

The following research tools were used.

Psychological Well being Scale (18 items)

Psychological Wellbeing Scale measures six aspects of wellbeing and happiness: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptanceadapted from Ryff.[11,12,13] Respondents rate how strongly they agree or disagree with 18 statements using a 7-point scale (1 = strongly agree; 7 = strongly disagree). It requires a reading level of 6th-8th grade. Higher scores mean higher levels of psychological well-being. The test-retest reliability coefficient of RPWBS was 0.82. The subscales of Self-acceptance, Positive Relation with Others, Autonomy, Environmental Mastery, Purpose in Life, and Personal Growth were found to be 0.71, 0.77, 0.78, 0.77, 0.70, and 0.78 respectively. The correlation coefficient of RPWBS with Satisfaction with Life, Happiness, and Self-esteem were also found to be: 0.47, 0.58, and 0.46 respectively

The 14-item Resilience scale (RS-14)

The Resilience Scale-14 is a self-rating scale that measures individual resilience in any setting. It was developed by Wagnild et al.[13]It is a Likert scale consisting of 14 items.
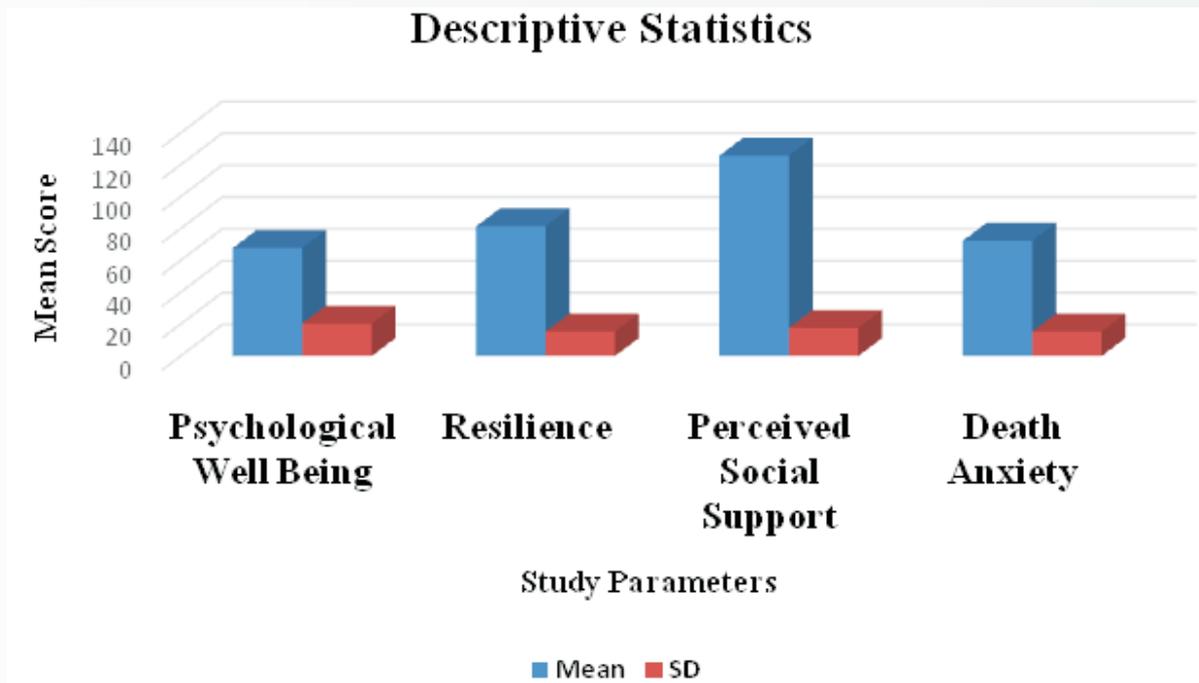
Fig. 3: Mean score of the study parameters

The participants rate the items on a scale from 1 (strongly disagree) to 7 (strongly agree). Cronbach salpha of the test was reported to be 0.76 to 0.91. Reliability coefficients exceeded 0.90 for clinical and undergraduate student samples. The RS–14 correlated significantly and as expected with measures of positive concepts such as perceived meaning in life and satisfaction with life and indexes of psychological distress such as depression, anxiety, stress, and post-traumatic stress.

Multidimensional Scale of Perceived Social Support

Multidimensional Scale of Perceived Social Support has good internal and test-retest reliability as well as moderate construct validity.[14] The scale has 12 items to respond on a Likert scale ranging from Very Strongly Disagree to Very Strongly. The items tended to divide into factor groups relating to the source of the social support, namely family (Fam), friends (Fri) or significant other (SO). The internal consistencies of the entire scale were good, with a Cronbach's alpha of 0.91 in the student group overall, and with sub-scales of 0.91, 0.83 and 0.86 for FR, FA and SO respectively. In the clinical group, the Cronbach salpha was 0.87 overall, with subscale scores of 0.84, 0.85 and 0.74 for FR, FA and SO respectively.

Collett-Lester Fear of Death Scale

The CLFDS was developed by Collett and Lester in the USA to measure fear of death and dying of self and others.[15] A respondent can respond to each question using a Likert scale ranging from strong agreement to strong disagreement. It consisted of 36 items. Test- retest reliability of it with a gap of 7 week was 0.55, with a gap of 2 days it was found to be ranging from 0.79 to 0.86. Cronbach's alpha for four subscales was ranging from 0.72 to 0.91.

Data collection procedure

Various hospitals and clinics were approached for data collection. Participants were asked for convenient time for data collection. Informed consent was taken from the participants before giving them questionnaires. They were explained about the questionnaire. Doubts, if any, were clarified. After data collection was complete, data were excluded if they did not meet the inclusion or exclusion criteria. Data analysis was carried out by using appropriate statistical tools.

Results

Descriptive statistics of psychological well being, resilience, social support and death anxiety in healthcare workers

For doctors and nurses, mean and SD for Psychological Well being was 69.98 and 20.87; for Resilience 87.04 and 10.61; for Social Support 125.2 and 18.68; and for Death Anxiety 74.65 and 12.55; respectively. [Fig.3]

Description	Resilience	Perceived Social Support	Death Anxiety
Psychological Well Being	0.20*	-0.23*	0.18
Resilience		0.69**	0.12
Perceived Social Support			0.05

Fig. 4: Pearson correlation of psychological wellbeing, resilience, social support and death anxiety in healthcare workers

* Correlation is significant, $p < 0.05$ (2-tailed)

** Correlation is significant, $p < 0.01$ (2-tailed) Results showed that the correlation between psychological wellbeing and resilience was found to be significant and positive ($r = 0.20$, $p < 0.05$). Significant and positive correlation was obtained between resilience and perceived social support as well in the healthcare workers ($r = 0.69$, $p < 0.01$). In contrast, the correlation between psychological wellbeing and perceived social support was found to be negative ($r = -0.23$). The correlation between death anxiety and resilience ($r = 0.12$, $p > 0.05$), perceived social support ($r = 0.05$, $p > 0.05$) and psychological wellbeing ($r = 0.18$, $p > 0.05$) was found to be insignificant.

Discussion

Our study findings are similar to many past researches. Zou et al found that there is significant correlation between resilience and psychological distress.[16] Phillip and Cherian found that psychological wellbeing in frontline workers was affected during covid pandemic because of poor social support, stigma, social isolation and lack of resilience. Our findings of high correlation between psychological wellbeing and resilience correlate well with above. Researchers also specified that resilience mediated the relationship between social support and mental health in health care workers. [11]

Death anxiety is a multidimensional construct with emotional, cognitive, and experiential attributes.[17] Socio-demographic variables may also have played a role in influencing the variables. According to Khoshi et al., death anxiety was greater among female than male students. When compared to unmarried students, married students had a higher level of death anxiety. They also showed that

there was no relationship between disease and death anxiety among the students. The degree of psychological health is determined by the age, education, and title of a doctor, according to Sun et al. [18].

Limitation of the study

Our study was a survey which recorded responses from limited number of participants working in few institutes in Mumbai. Hence, the findings recorded in the survey cannot be applied to other working setups or general community. Also, doctors and nurses could have been studied separately with respect to above psychological variables.

Conclusion

Ourstudy findings show a significant and positive correlation between psychological wellbeing and resilience. This adds to the existing evidence base and can be used to spread awareness among healthcare workers as well as healthcare organisations about mental health of nurses and doctors. Workshops, talks and counselling sessions for healthcare workers may help to promote their mental health.

References

1. Shaukat, N., Ali, D.M. &Razzak, J. Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. Int J Emerg Med 13, 40 (2020). https://doi.org/10.1186/s12245-020-00299-5

2. De Kock JH, Latham HA, Leslie SJ, Grindle M, Munoz SA, Ellis L, Polson R, O'Malley CM. A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being. BMC Public Health. 2021 Jan 9;21(1):104. doi: 10.1186/s12889-020-10070-3

3. Aly A, Ronnebaum S, Patel D, Doleh Y, Benavente F. Epidemiologic, humanistic and economic burden of hepatocellular carcinoma in the USA: a systematic literature review. HepatOncol. 2020 Jul 21;7(3):HEP27. doi: 10.2217/hep-2020-0024. PMID: 32774837; PMCID: PMC7399607.

4. Sahimi HMS, MohdDaud TI, Chan LF, Shah SA, Rahman FHA and NikJaafar NR (2021) Depression and Suicidal Ideation in a Sample of Malaysian Healthcare Workers: A Preliminary Study During the COVID-19 Pandemic. Front. Psychiatry 12:658174. doi: 10.3389/fpsyt.2021.658174

5. Alnazly E, Khraisat OM, Al-Bashaireh AM, Bryant CL. Anxiety, depression, stress, fear and social support during COVID-19 pandemic among Jordanian healthcare workers. PLoS One. 2021 Mar 12;16(3):e0247679. doi: 10.1371/journal.pone.0247679. PMID: 33711026; PMCID: PMC7954309.

6. Hu B, Guo H, Zhou, P. et al. Characteristics of SARS-CoV-2 and COVID-19. Nat Rev Microbiol 19, 141–154 (2021). https://doi.org/10.1038/s41579-020-00459-7

7. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. Brain Behav Immun. 2020 Aug;88:901-907. doi: 10.1016/j.bbi.2020.05.026. Epub 2020 May 8. Erratum in: Brain Behav Immun. 2021 Feb;92:247. PMID: 32437915; PMCID: PMC7206431.

8. Philip J, Cherian V. The Psychology of Human BehaviorDuring a Pandemic. Indian Journal of Psychological Medicine. 2020;42(4):402-403. doi:10.1177/0253717620935574

9. Hou YJ, Okuda K, Edwards CE, Martinez DR, Asakura T, Dinnon KH 3rd, Kato T, Lee RE, Yount BL, Mascenik TM, Chen G, Olivier KN, Ghio A, Tse LV, Leist SR, Gralinski LE, Schäfer A, Dang H, Gilmore R, Nakano S, Sun L, Fulcher ML, Livraghi-Butrico A, Nicely NI, Cameron M, Cameron C, Kelvin DJ, de Silva A, Margolis DM, Markmann A, Bartelt L, Zumwalt R, Martinez FJ, Salvatore SP, Borczuk A, Tata PR, Sontake V, Kimple A, Jaspers I, O'Neal WK, Randell SH, Boucher RC, Baric RS. SARS-CoV-2 Reverse Genetics Reveals a Variable Infection Gradient in the Respiratory Tract. Cell. 2020 Jul 23;182(2):429-446.e14. doi: 10.1016/j.cell.2020.05.042. Epub 2020 May 27. PMID: 32526206; PMCID: PMC7250779.

10. Kagan M. Social Support Moderates the Relationship Between Death Anxiety and Psychological Distress Among Israeli Nurses. Psychol Rep. 2021 Aug;124(4):1502-1514. doi: 10.1177/0033294120945593. Epub 2020 Jul 30. PMID: 32731799.

11. Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. Journal of Personality and Social Psychology, 69(4), 719–727. https://doi.org/10.1037/0022-3514.69.4.719

12. Wagnild G. A review of the Resilience Scale. J Nurs Meas. 2009;17(2):105-13. doi: 10.1891/1061-3749.17.2.105. PMID: 19711709.

13. Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. Journal of Personality Assessment, 52(1), 30–41. https://doi.org/10.1207/s15327752jpa5201_2

14. Collett LJ, Lester D. The fear of death and the fear of dying. J Psychol. 1969 Jul;72(2):179-81. doi: 10.1080/00223980.1969.10543496. PMID: 5811840.

15. Zou G, Shen X, Tian X, Liu C, Li G, Kong L, Li P. Correlates of psychological distress, burnout, and resilience among Chinese female nurses. Ind Health. 2016 Oct 8;54(5):389-395. doi: 10.2486/indhealth.2015-0103. Epub 2016 Mar 25. PMID: 27021058; PMCID: PMC5054279.

16. Meyer K, Geurtsen W, Günay H. An early oral health care program starting during pregnancy: results of a prospective clinical long-term study. Clin Oral Investig. 2010 Jun;14(3):257-64. doi: 10.1007/s00784-009-0297-x. Epub 2009 Jun 17. PMID: 19543927.

17. Sahebnasagh, A., Saghafi, F., Avan, R., Khoshi, A., Khataminia, M., Safdari, M., Habtemariam, S., Ghaleno, H. R., &Nabavi, S. M. (2020). The prophylaxis and treatment potential of supplements for COVID-19. European journal of pharmacology, 887, 173530. https://doi.org/10.1016/j.ejphar.2020.173530

18. Sun N, Wei L, Shi S, Jiao D, Song R, Ma L, Wang H, Wang C, Wang Z, You Y, Liu S, Wang H. A qualitative study on the psychological experience of caregivers of COVID-19 patients. Am J Infect Control. 2020 Jun;48(6):592-598. doi: 10.1016/j.ajic.2020.03.018. Epub 2020 Apr 8. PMID: 32334904; PMCID: PMC714146.

Job Demand, Work-Family Conflict, Family-Work Conflict and Anxiety in Nurses

Smt. Prachi Raut

Nurse, BARC Hospital

Smt. Juhi Saliya, Psychologist*

(*Visiting Faculty at S. N. D. T. Women's University and St. Xavier's College)

Introduction

The primary role of a nurse is to care for individuals and support them through illness. Nurses are responsible for ensuring that patients are able to understand their illnesses, medications, and treatment,so that when patients are discharged from hospital they can take control of their own treatments.

Li R et al. in 2020 concluded that the frontline nurses working in designated Covid hospitals in Wuhan had serious anxiety.[1] Maqbali et al. in 2021through meta-analysis found that approximately one third of all the nurses, working during COVID pandemic, were suffering from psychological symptoms which highlighted the importance of providing comprehensive support strategies to reduce the psychological impact.[2] Gelsema et al. in 2005found that job characteristic, such as demands and control, mediated the relationship between work conditions and outcomes.[3] Workload, and organizational demands were positively associated with emotional exhaustion, depersonalization, and negatively with vigour. However, dedication was found to be negatively correlated with emotional and organizational demands.[4]

Montgomery et al.found that job demands include irregular work hours, time pressure, patient load and demanding interactions with patients, which are not necessarily negative, but may add to work stress.[5]

Work-family conflictsare the forms of 'inter-role conflicts' that occur when the energy, time, or behavioural demands at work, conflict with family or personal life roles. It has key consequences likework outcomes (e.g., job satisfaction, organizational commitment, and turnover), family outcomes (e.g., marital satisfaction and family satisfaction), and personal outcomes related to physical health (e.g., physical symptoms, eating and exercise behaviours) and psychological health (e.g., stress and depressive symptoms,

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life satisfaction). [6]

The objective of the study was to assess the correlation between Job Demand, Work Family Conflict, Family Work Conflict and Anxiety in Nurses.

Methodology

Hypotheses

Hypothesis 1: There will be a significant correlation between Job Demand and Work Family Conflict in Nurses.

Hypothesis 2: There will be a significant correlation between Job Demand and Family Work Conflict in Nurses.

Hypothesis 3: There will be a significant correlation between Job Demand and Anxiety in Nurses.

Hypothesis 4: There will be a significant correlation between Work Family Conflict and Family Work Conflict in Nurses.

Hypothesis 5: There will be a significant correlation between Work Family Conflict and Anxiety in Nurses.

Hypothesis 6: There will be a significant correlation between Family Work Conflict and Anxiety in Nurses.

Sample

The sample consisted of 101 nurses from different departments between the age group of 28-59 years. The sample was be selected by using purposive sampling

method.There were 9 males and 92 females. 55 nurses had completed general nursing midwifery and 46 had completed BSc nursing.

Tools

For the current research, following tools were used:

Job Demands In Nursing (JDIN) Scale

JDIN scale was developed by Penz et al. in 2019to measure the demand in nursing profession at workplace.[7]It measures 6 dimensions of job demand namely, work-related travel, preparedness/scope of practice, equipment and supplies, safety, comfort with working conditions and isolation. The scale was scored on a five-point Likert scale from: 1 (strongly disagree); 2 (disagree); 3 (neutral); 4 (agree); to 5 (strongly agree). Cronbach's alpha, a reliability coefficient that measures internal consistency of tests, for the scale was found to be 0.84.

The Work-Family Conflict Scale

The Work-Family Conflict Scale by Netemeyer et al. in 1996 is a 10-item scale containing five items measuring family-to-work conflict and five items measuring work-to-family conflict.[8] It is a self-report scale. The items were responded to along 7-point strongly disagree-strongly agree response scales. Cronbachalpha were obtained to be 0.82 and 0.9.

Family Satisfaction by Adjectives Scale

Family Satisfaction by Adjectives Scale by Barraca et al., in 1997is a 27 it emunifactorial Likert-type scale designed to measure the satisfaction felt by a subject with his/her family.[9] The sentence stem starts as 'When I am at home, with my family, I mostly feel . . .', followed by various adjectives on which participants have to respond on rating scale ranging from 'totally agree ' to 'agree to some extent'. Cronbach's alpha for the scale sample was 0.976.

Generalised Anxiety Disorder-7

Spitzer et al.in 2006developed the Generalized Anxiety Disorder Scale-7 (GAD-7) as a 7-item, self-rated scale as a screening tool and severity indicator for GAD.[10]Items are rated on a 4-point Likert-type scale (0 = not at all to 3 = nearly every day). GAD-7 items describe some of the most salient diagnostic features of GAD (i.e., feeling nervous, anxious, or on edge and worrying too much about different things). Scores range from 0 to 21 with higher scores indicating more severe GAD symptoms. Research has suggested that the GAD-7 is a valid screening tool for GAD in a primary care setting and for assessing its severity in clinical practice and research Spitzer et al., 2006[10]. The cut off score for clinically significant anxiety is 10. GAD-7 was found tocorrelate with Beck Anxiety Inventory (0.72) and the anxiety subscale of the Symptom Checklist-90 (0.74). Cronbach's alpha was found to be 0.92 and the test-retest reliability was 0.83.

Method

Valid informed consent was taken from the participants, who were working as nursing staff in BARC Hospital.Research questionnaire was circulated and responses were collected. Data was analysed and presented in tabulated form.

Table 1. Descriptive statistics of job demand, work family conflict, family work conflict and anxiety in nurses

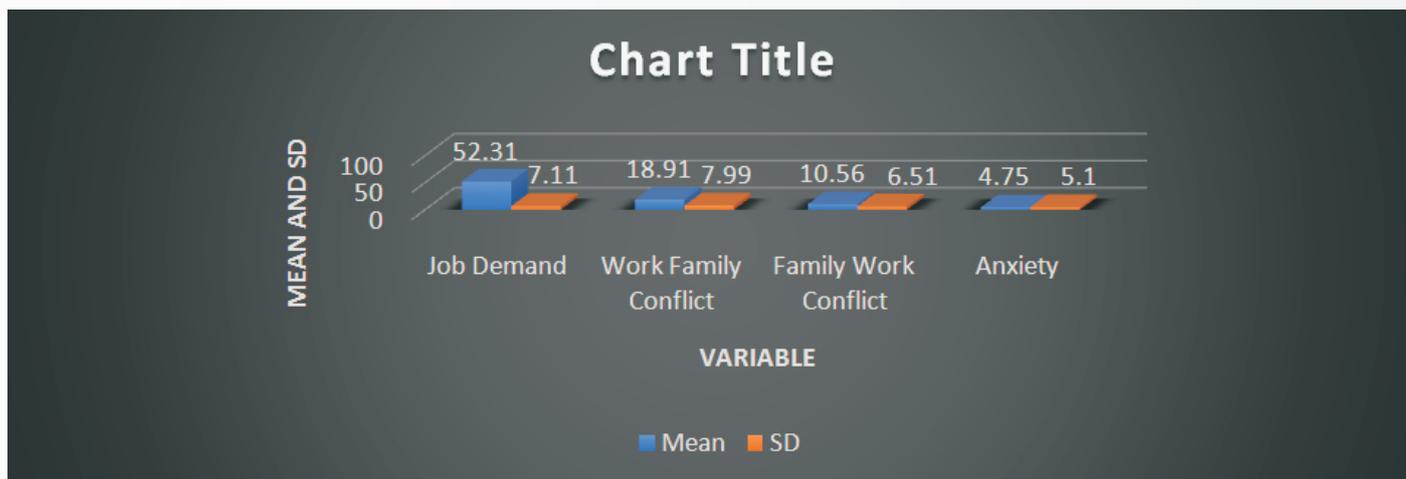|	N	Mean score	SD
Job Demand	101	52.31	7.11
Work Family Conflict	101	18.91	7.99
Family Work Conflict	101	10.56	6.51
Anxiety	101	4.75	5.1

Fig. 3: Mean and SD of job demand, work family conflict, family work conflict and anxiety in nurses

Table 2. Pearson correlation between job demand, work family conflict, family work conflict and anxiety in nurses

		Work Family Conflict	Family Work Conflict	Anxiety
Job Demand	Pearson Correlation	0.33	0.13	0.18
	Significance level	0.01	0.21	0.07
Work Family Conflict	Pearson Correlation	-	0.46	0.30
	Significance level		0.01	0.01
Family Work Conflict	Pearson Correlation	-	-	0.33
	Significance level			0.01

**. Correlation is significant at the 0.01 level (2-tailed).

Results

Above figure displays that mean score was found to be highest for work demand followed by work family conflict, family work conflict and lowest for anxiety.

The results revealed a significant positive correlation between job demand and work family conflict (r = 0.33, p < 0.01); work family conflict and family work conflict (r = 0.46, p < 0.01); work family conflict and anxiety (r = 0.30, p < 0.01); and family work conflict and anxiety (r = 0.33, p < 0.01).

Results also revealed that there was no significant correlation between job demand and family work conflict (r = 0.13, p > 0.05); and between job demand and anxiety in nurses (r = 0.18, p > 0.05).

Discussion

Akram and et al stated that job demands were significantly related with the work-family conflict and the work-family conflict.[11] It can be observed from different studies that

job demands i.e., long working hours, ambiguity of work role, work role conflict, working in shifts and physical and psychological efforts lead to job strain resulting in overloaded role that culminates in work-family conflict.[12], [13]Insignificant correlation was found between job satisfaction and family work conflict by Al-Alawi et al. in 2021[14]. Vignoli et al. aimed at analysing workplace phobic anxiety in nonclinical context using the Job Demands-Resources model.[15] They found that exhaustion mediated between perceived job demands and workplace phobic anxiety and work engagement mediated between perceived job resources and workplace phobic anxiety. A significant positive correlation was found between work family conflict and family work conflict by Al-Alawi et al. in 2021[14].Zhang et al. studied 'how and when' work-family conflicts influenced anxiety indications. [16] Results showed that work-family conflict was related to anxiety symptoms directly.Zhou et al. found that there is a significant correlation between women's perceptions of both work-to-family conflict and family-to-work conflict with mental health.[17]. Our study found a significant positive correlation between job demand and work family conflict; work family conflict and family work conflict; work family conflict and anxiety; and family work conflict and anxiety.

Results also revealed that there was no significant correlation between job demand and family work conflict; and between job demand and anxiety in nurses.

Conclusion

Healthcare workers, especially nurses played a critical role during covid pandemic.They experienced fear of death, rejection by people who feared getting the virus from healthcare workers, lack of social support from family, relatives and neighbours, shift duties, working overtime, travelling issues, salary cut, etc. This study gave an insight about the correlation of job demand, work-family conflict, family-work conflict and anxiety;and need for intervention in hospitals for nurses. Results of the study can be used to spread awareness among nurses as well as institutions to focus on physical and mental health of nurses.Interventions can be planned to reduce their work-family conflict and help them work efficiently.

References

1. Li R, Chen Y, Lv J, Liu L, Zong S, Li H, Li H. Anxiety and related factors in frontline clinical nurses fighting COVID-19 in Wuhan. Medicine. 2020 Jul 7;99(30).

2. Al Maqbali M, Al Sinani M, Al-Lenjawi B. Prevalence of stress, depression, anxiety and sleep disturbance among nurses during the COVID-19 pandemic: A systematic review and meta-analysis. Journal of Psychosomatic Research. 2021 Feb 1;141:110343.

3. Gelsema TI, Van Der Doef M, Maes S, Akerboom S, Verhoeven C. Job Stress in the Nursing Profession: The Influence of Organizational and Environmental Conditions and Job Characteristics. International Journal of Stress Management. 2005 Aug;12(3):222.

4. Montgomery A, Spânu F, Băban A, Panagopoulou E. Job demands, burnout, and engagement among nurses: A multi-level analysis of ORCAB data investigating the moderating effect of teamwork. Burnout research. 2015 Sep 1;2(2-3):71-9.

5. Matziari A, Montgomery AJ, Georganta K, Doulougeri K. The relationship between organizational practices and values with burnout and engagement. Current Psychology. 2017 Jun;36(2):276-85.

6. Kossek, E., E. & Lee, K., H. (2017). Work-Family Conflict and Work-Life Conflict. Oxford Research Encyclopedia.Doi: https://doi.org/10.1093/acrefore/9780190224851.013.52

7. Penz, K., L., Kosteniuk, J., G., Stewart, N., J., Macleod, M., L., P., Kulig, J., C., Karunanayake, C., P. & Kilpatrick, K.(2019). Devlopment and psychometric evaluation of the Job Demands in Nursing Scale and Job Resources in Nursing Scale: Results from a national study. Nursing, Open, 6(2): 348-366. Doi: 10.1002/nop2.215.

8. Netemeyer RG, Boles JS, McMurrian R. Development and validation of work–family conflict and family–work conflict scales. Journal of applied psychology. 1996 Aug;81(4):400.

9. Barraca J, Yarto L., Olea J., (1997).Psychometric Properties of a New Family Life Satisfaction Scale. European journal of psychological assessment, 16(2), 98-106

10. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Archives of internal medicine. 2006 May

22;166(10):1092-7.

11. Akram MF. Relationship of Work-Family Conflict with Job Demands, Social Support and Psychological Well-Being of University Female Teachers in Punjab. Bulletin of Education and Research. 2020 Apr;42(1):45-66.

12. Grzywacz, J. G., Arcury, T. A., Marin, A., Carrillo, L., Burke, B., Coates, M. L., &Quandt, S. A. (2007). Work-family conflict: Experiences and health implications among immigrant Latinos. Journal of Applied Psychology, 92(4), 1119-1130. https://doi.org/10.1037/0021-9010.92.4.1119

13. Thompson, C., & Prottas, D. J. (2005). Relationships among organizational familysupport, job autonomy, perceived control and employee well-being. Occupational Health psychology, 10(4), 100-118. doi: 10.1037/1076-8998.10.4.100

14. Al-Alawi, A. I., Al-Saffar, E., Almohammed Saleh, Z. H., Alotaibi, H., & Al-Alawi, E. I.(2021). A study of these effects of work-family conflict, family-work conflict, and work-life balance on Saudi female teachers' performance in the public education sector

with job satisfaction as a moderator. Journal of International Women's Studies, 22(1), 486-503.

15. Vignoli, M., Muschalla, B., & Mariani, M. G. (2017). Workplace Phobic Anxiety as aMental Health Phenomenon in the Job Demands-Resources Model. BioMed Research International, 2017, 1–10. https://doi.org/10.1155/2017/3285092

16. Zhang, H., Tang, L., Ye, Z., Zou, P., Shao, P., Shao, J., Wu, M., Zhang, Q., Qiao, G., & Mu, S. (2020). The role of social support and emotional exhaustion in the association between work-family conflict and anxiety symptoms among female medial staff: a moderated medication model. BMC Psychiatry, 20(1), 266. Doi: 10.1186/s1288-020-026732-2.

17. Zhou J, Yang Y, Qiu X, Yang X, Pan H, Ban B, Qiao Z, Wang L, Wang W. Serial multiple mediation of organizational commitment and job burnout in the relationship between psychological capital and anxiety in Chinese female nurses: A cross-sectional questionnaire survey. International journal of nursing studies. 2018 Jul 1;83:75-82.

Optimism, Coping and Quality of life in Nurses in COVID-19 Pandemic

Smt. Sangeeta Bhise
Nurse, BARC Hospital
Smt. Juhi Saliya, Psychologist *
(*Visiting Faculty at S. N. D. T. Women's University and St. Xavier's College)

Introduction

Reuters (2020) studied psychological distress and burnout experienced by nurses in India during the recent pandemic.Insufficient personal protective equipment and abuse or discrimination outside of work were the main causes of distress (1)Labrague and Santos 2020 showed that the severity and fatality of the disease created anxiety and fear in nurses that affected their health, well-being and their work output.

Frontline nurses who come in contact with positive corona patients often witness patients suffering and death , impacting their emotional health and causing compassion fatigue and post-traumatic stress which leads to higher anxiety and depression in nurses. (2)

Moghaddam and Dawson 2020 stated that psychological flexibility was significantly and positively associated with greater well-being, and inversely related to anxiety, depression, and Covid 19 related distress. Avoidant coping behavior was positively associated with all indices of distress and negatively associated with wellbeing, while engagement in approach coping only demonstrated weaker associations with outcomes of interest. (3) Both healthcare workers and the general public experienced psychological problems, including anxiety, depression, and stress, as a result of the rapidly increasing numbers of confirmed cases and deaths. Isolation of patients was essential which added to the stress and was likely to cause emotional health problems (Naeem et al., 2020).(4)

Zhang et al. (2020) elucidated the effects of optimism and work engagement and suggested a potential mechanism of action for the autonomy–organizational citizenship behaviour linkage. He conveyed that optimism was first sequentially associated with core self-evaluations and then associated with positive coping strategies, which was in tu-rn related to job satisfaction of Chinese specialist nurses. (5)

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In 2016, Sarafis et al reported that nurses had much more stress when they came into touch with mortality, patients and their families, confrontations with supervisors, and ambiguity regarding the therapeutic impact. Stress and the four aspects of the caring behaviour questionnaire had a substantial negative association. Discriminating stress was found to be an independent predictor of physical health and quality of life, whereas stress originating from disagreements with supervisors was found to be an independent predictor of mental health. Work stress has a detrimental impact on nurses' health-related quality of life, and patient outcome. (6) The study aimed to examine the association between optimism, coping and quality of life in nurses during the Covid pandemic.

Methodology

105 qualified nurses, working in Covid -19 outpatient department and inpatient departments were selected from various hospitals in Mumbai. Minimum educational qualification of diploma in General nursing and Midwifery was compulsory to participate in the study. Nurses had varied years of experience. A correlational research design was used. The data was collected by using the Life Orientation Test- LOT-R (Scheier& Carver,1992), Brief Cope Scale developed by Carver (1997) and The World

Health Organization quality of life assessment (WHOQOL) developed by The Whoqol Group (1998).

Hypotheses

Hypothesis 1: There will be no significant correlation between Optimism and Coping in Nurses in the Covid-19 pandemic.

Hypothesis 2: There will be no significant correlation between Optimism and Quality of Life in Nurses during the Covid-19 pandemic.

Hypothesis 3: There will be no significant correlation between Coping and Quality of Life in Nurses in the Covid-19 pandemic.

Sample

The sample consisted of 105 nurses between the age group of 25-55 years. The sample was selected by using the purposive sampling method. There were 14 male and 91 female participants.

Tools

For the current research following tools were used:

Life Orientation Test- LOT-R

Life Orientation Test- LOT-R (Scheier & Carver,1992) is10-item measure of optimism versus pessimism. Of the 10 items, 3 items measure optimism, 3 items measure pessimism, and 4 items serve as fillers. Respondents rate each item on a 4-point scale: 0 = strongly disagree, 1 = disagree, 2 = neutral, 3 = agree, and 4 = strongly agree. LOT-R is a revised version of the original LOT. The original LOT had 12 items: 4 worded positively, 4 worded negatively, and 4 fillers. Exploratory factor analysis yielded the same two factors, positively phrased optimistic items and negatively phrased pessimistic items, as Scheier and Carver reported.

Brief Cope

Brief Cope was developed by Carver (1997) to assess coping strategies both behavioural and psychological that people employed to master, tolerate, reduce or minimize stressful events. It contained 28 items and was rated by the four-point Likert scale, ranging from I haven't been doing this at all (score 1), I've been doing this a little bit (score 2), I've been doing this a medium amount (score 3) to I have been

doing this a lot (score 4). In this study, the higher score represents greater coping strategies used by the respondents. The scales were not summed and no total score was calculated. In total, 14 dimensions were covered by this scale. These were self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioural disengagement, venting, positive reframing, planning, humour, acceptance, religion and self-blame. Every dimension had two items. The scale demonstrates excellent reliability and validity. Cronbach's alpha for each of the 14 subscales ranges from 0.54 to 0.90.

**The World Health Organization quality of life assessment (WHOQOL)**

The WHOQOL (1998) is a quality-of-life assessment developed by the WHOQOL Group with fifteen international field centers, simultaneously, in an attempt to develop a quality-oflife assessment that would be applicable cross-culturally. The WHOQOL-BREF is a 26-item instrument consisting of four domains: physical health (7 items), psychological health (6 items), social relationships (3 items), and environmental health (8 items); it also contains QOL and general health items. Each item of the WHOQOL-BREF is scored from 1 to 5 on a response scale, which is stipulated as a five-point ordinal scale. The response options range from 1 (very dissatisfied/very poor) to 5 (very satisfied/very good). The scores are then transformed linearly to a 0–100-scale. Both the WHOQOL-100 and the WHOQOL-BREF have been shown to display good discriminant validity, content validity and test-retest reliability. Their sensitivity to change is currently being assessed.

Method

The researcher presented the topic to the ethics committee at the hospital. After the approval was received from the ethics committee, data collection was initiated. The consent was taken from participants for collecting data. Participants were informed about the confidentiality of the data. Descriptive statistics and Pearson correlation was used for analyzing the data.

Table 1. Descriptive statistics of Optimism, Coping and Quality of Life of Nurses

Variables	N	Mean	SD
Optimism	105	14.32	2.701
Coping	105	65.41	12.39
Quality of Life	105	96.91	10.79
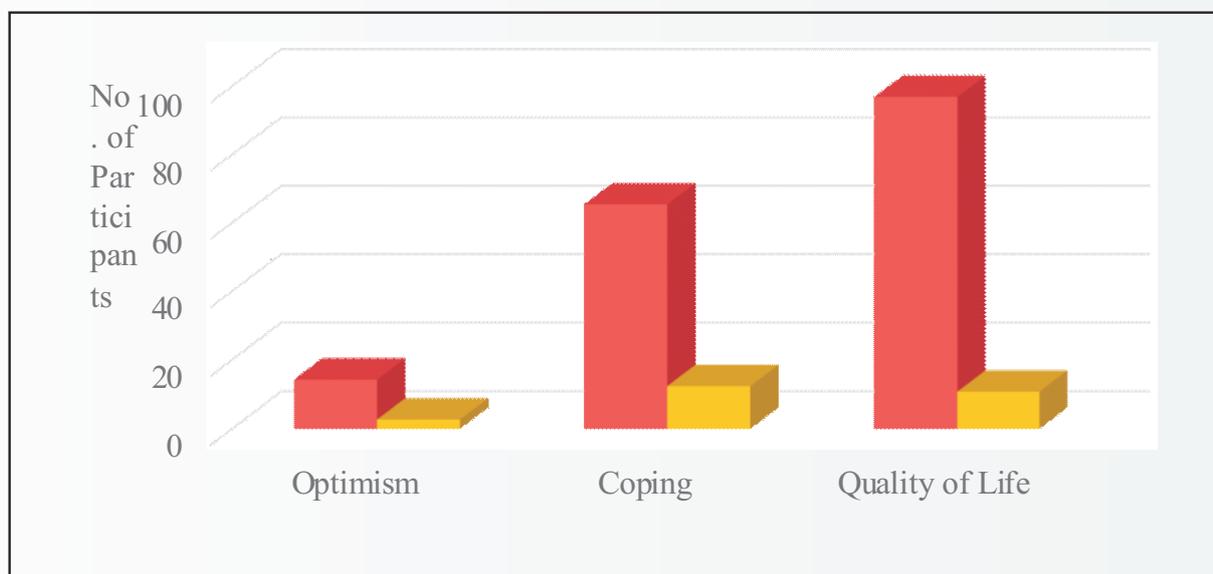
Fig. 1: Mean (■)and SD(■) of Optimism, Coping and Quality of Life of Nurses

Table 2. Pearson Correlation between Optimism, Coping and Quality of life in nurses

Variables	Coping	Quality of Life
Optimism	0.19	-0.12
Coping	-	-0.09

Results

As can be seen in table 1 and figure 1, the mean and SD for Optimism were 14.32 and 2.701 respectively. 65.41 and 12.39 were the mean and SD for Coping respectively. And the mean and SD for Quality of life were 96.91 and 10.79.

The results revealed that the correlation between Optimism, Coping and Quality of Life in nurses was not significant during the Covid pandemic.

Discussion

Researchers have found that Optimism was positively related to positive reinterpretation and growth, social support, coping, acceptance, suppression of competing activities, and planning, and negatively related to mental disengagement, behavioural disengagement, focus and venting of emotions, denial, and religious coping (Pacheco & Kamble, 2016). (7)

The association between hope/optimism and emotional weariness was partially mediated by positive coping. The association between hope/optimism and emotional weariness was also largely mediated by negative coping (Ding et al., 2015). (8) In 2013, Mishra discovered a considerable difference in optimism levels between males and females, with females outnumbering males. The amount of optimism also varied dramatically across four age groups, with the 25–30-year group having the highest level of optimism and the 45–50-year group having the lowest. (9)

According to a study conducted by Cruz et al. in 2018, nurses reported that the social relationship domain had the highest quality of life, while the physical domain had the lowest. On the four domains of quality of life, optimism and proactive coping, as well as gender, marital status, and hospital type, had a statistically significant multivariate effect. (10) According to Kate et al., seeking social support as a coping technique had a negative link with all quality-of-life dimensions, but avoidance and problem-focused coping showed no correlation with any of the quality-of-life domains. (11)

Better QOL and mood were associated with the use of emotional support and acceptance coping methods, whereas denial and self-blame were adversely associated with these outcomes (12).

Our study revealed that the correlation between Optimism, Coping and Quality of Life in nurses was not significant during the Covid pandemic. Further studies are needed to describe the relationships of above parameters at other time points.

References

1. Reuters. Nurses suffer burnout and psychological distress in the COVID fight -association. Entertainment Times. Oct 11 2020.- https://timesofindia.indiatimes.com/life-style/healthfitness/health-news/nurses-sufferhttps://timesofindia.indiatimes.com/life-style/healthfitness/health-news/nurses-suffer-burn-out-psychological-distress-in-covid-fightassociation/articleshow/78599665.cms

2. Labragoue L J, De Los Santos, J.A.A. Fear of COVID-19, psychological distress, work satisfaction and turnover intention among front line nurses. Journal of Nursing Management.2020;1-9.https://doi.org/10.21203/rs.3.rs-35366/v1

3. Dawson D L, Golijani-Moghaddam, N. COVID-19: Psychological flexibility, coping, mental health, and wellbeing in the UK during the pandemic. Journal of Contextual Behavioral Science. 2020; 17, 126-134. doi.org/10.1016/j.jcbs.2020.07.010

4. Naeem, Irfan, Javed. Coping with COVID-19: Urgent need for building Resilience through Cognitiv Behaviour Therapy.KMUJ2020.12;1. https://doi.org/10.35845/ kmuj.2020.20194

5. Zhang H, Zhao Y, Zou P, Liu Y, Lin S, Ye Z, Tang L, Shao J, Chen D. The relationship between autonomy, optimism, work engagement and organisational citizenship behaviour among nurses fighting COVID-19 in Wuh: serial multiple mediations. BMJ Open. 2020 Sep 14;10(9): e039711. doi: 10.1136/bmjopen-2020-039711

6. Sarafis, P., Rousaki, E., Tsounis, A., Malliarou, M., Lahana, L., Bamidis, P., Niakas, D., & Papastavrou, E. (2016). The impact of occupational stress on nurses' caring behaviors and their health-related quality of life. BMC Nursing, 15(56), 1-9. DOI: 10.1186/s12912-016-0178-y

7. B Pacheco, S Kamble. The Role of Optimism in Stress and Coping of Undergraduate Students in Goa. International Journal of Indian Psychology. 2016; 3 (2). DOI: 10.25215/0302.079, DIP: 18.01.079/20160302

8. Ding Y, Yang Y, Yang X, et al. The Mediating Role of Coping Style in the Relationship between Psychological Capital and Burnout among Chinese Nurses. PLoS

One. Apr 21 2015;10(4): e0122128. doi: 10.1371/journal.pone.0122128

9. Mishra, K K. Gender and age-related differences in optimism and good life. Indian Journalof Social ScienceResearches.Ma2013;10(1):9-17. https://www.researchgate.net/profile/Krishna-Kumar-Mishra/publication/265683327_Gender_and_age_related_differences_in_optimism_and_good_life/links/541841650cf203f155ada28a/Gender-and-age-related-differences-inoptimism-and-good-life.pdf

10. Cruz JP, Cabrera DNC, Hufana, O D Alquwez N, Almazan J. Optimism, proactive coping and quality of life among nurses: A cross-sectional study. Journal of Clinical Nursing. 2018; 27: 2098– 2108.https://doi.org/10.1111/jocn.14363

11. Kate N, Grover S, Kulhara P, Nehra R. Relationship of quality of life with coping and burden in primary caregivers of patients with schizophrenia. International Journal of Social Psychiatry. 2014;60(2):107-116.https://doi.org/10.1177/0020764012467598

12. Nipp RD, El-Jawahri A, Fishbein JN, et al. The relationship between coping strategies, quality of life, and mood in patients with incurable cancer. Cancer. 2016;122(13):21102116. https://doi.org/10.1002/cncr.30025

ACADEMIC ACHIEVEMENTS

Poster presentation

Dr Debjani Pal, Medical Officer in-Charge, Mandala dispensary, was awarded 1st prize for her poster 'Awareness on Cancer Care' presented in 50th Annual Golden Jubilee Conference of General Practitioners' Association, Greater Mumbai in April 2022.

Dr Vaishnavi Kumba presented a poster on 'Sinonasal Glomangiopericytoma; Differential Diagnosis from Solitary Fibrous Tumor. A Case Report and Review of Literature' by Dr Raji T Naidu, Dr Susan Cherian, Dr Vaishnavi Kumba, Dr Uma P Chaturvedi, Dr Prachi Gaddam at MAPCON 2021 on 25th September 2021 (Virtual mode KIMS, Karad).

Dr Vaishnavi Kumba also presented a poster on 'Histopathological study of urinary bladder lesions and its clinical correlation' by Dr Vaishnavi Kumba, Dr Tejaswani Kotian, Dr Uma P Chaturvedi, DrPrachi Gaddam, Dr Raji T Naidu, Dr Susan Cherian at APCON 2021 on 3rd Dec 2021 (Virtual mode Chattisgarh IAPM Conference)

Publications

1. Laiby R, Debjani P, Prashant B. Knowledge, Attitude and Practices Towards Tuberculosis: Study amongst urban adults visiting the community health center. Int J Med Public Health. 2022;12(1):28-32.

2. Bhedasgaonkar S S, Manral H, Nadkarni S U(2022). Case report of an unusual presentation of Vogt-Koyanagi-Harada disease as Bilateral Acute Angle Closure; J Clin Exp Ophthalmol. 13 (2022),13:911

3. Bhangui A S, Bhedasgaonkar S, Nadkarni S. (2021)A Case Report on: Caterpillar Hair in Eye. J Clin Exp Ophthalmol. 12:875

4. Gaddam Prachi R, Sruthi Mayura, Susan Cherian, Naidu Raji, Chaturvedi Uma P. Utility of Routine Clinical Laboratory Tests in COVID 19. Sch J App Med Sci. 2022 Mar 10(3): 297-301.

5. Raja S Vipparla, Raji T Naidu, Susan Cherian and Suresh S Shettigar. Molecular Subtyping of Invasive Breast Carcinoma by Immunohistochemistry and Five-Year Survival Study. Annals of Pathology and Laboratory Medicine. 2021, 8 (9);https://doi.org/10.21276/apalm.3064.

6. Bhirud PH, Kate JA, Toal PV, et al. Dexmedetomidine with Low-dose Ketamine vs Dexmedetomidine Alone for Sedation and Hemodynamics in Otological Surgeries under Monitored Anesthesia Care. J Res and Innov Anesth 2022;7(1):14–18.

7. Mekewar S, Bhirud PH, Chellam S, et al. Confirmation of Endotracheal Tub Placement in Trachea Ultrasonography vs End-tidal Capnography with Auscultation: An Observational Study. J Res and Innov Anesth 2022;7(1):5–9.

Candidates passing DNB exam in 2022.

Congratulations!!

Dr. Sayali Jodh
Dept. of Ophthalmology

Dr. Kaushal Bhonsle
Dept. of Anaesthesia

Dr. Aditya Khot
Dept. of Anaesthesia

Dr. Dhanashree Niwal
Dept. of Obstetrics & Gynaecology

Extracurricular Achievements

Dr Urmila Peshoton, Medical Officer, OYC Dispensary won the following awards

1st runner up in Hannur Bamboo Forest Ultra-Marathon,2022, Bangalore.

2nd runner up in 'Running Ocean' 10 km Port Trust Run.

7th ranking in Ahmedabad 42.2 km marathon.

Smt. Sarita Khanvilkar of Ajanta group won the best artist (Female- Drama) award at XXXV DAE Sports and Cultural meet.

Dr Julli Bajaj was awarded **1st prize** in poster competition "Independent India@75 Self-Reliance with Integrity" organised as part of Vigilance Awareness Week in Nov 2021. She was also awarded 2nd prize in poster competition "Safety precautions in COVID pandemic work place" organised by IHSS in March 2022 and **1st prize** in group song along with Championship trophy at 36th DAE All India Sports &Cultural Meet, held at Heavy Water Plant, Manuguru in March 2022

Social Outreach Program

Department of Anaesthesia, in collaboration with BARC Staff Club, organised 'Compression Only Life Support' workshop for community awareness on 1st May 2022. Sitting(left to right) - Dr Aditya Khot , Dr Jalpa Kate, Dr Pratibha Toal, Dr Kajal Dalal, Dr Kaushal Bhonsle

Standing (left to right) – Shri. Krapit Shreni, Dr Deepali Singh, Dr Rudhra J, Dr Akshita Puppala, Dr Sneha Toal, Dr. Nidhi Chitravanshi, Dr Swati Gupta, Dr Ankita Sankhala, Dr Thankuraj B

Chief Editor
Dr Shrividya Chellam
Dept. of Anaesthesia & MOIC Casualty Unit, BARC Hospital
Anushaktinagar, Mumbai - 400 094.