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What's in a Name?

MANISHA LAKHANPAL SHARMA 

Oral Medicine and Radiology (OMDR) is a discipline of dentistry concerned with the diagnosis and management of conditions that affect the oral and maxillofacial region. In any institute, it is the first department which interacts with the patient, chalks out a detailed treatment plan and garners confidence to the patient. Paradoxically, it is referred to as a non-clinical branch, the rationale of which being that, an oral physician dispenses only medicinal treatment to the patient. This logic is strange as an MD medicine in the same capacity does not belong to a non-clinical branch nor does MD radiology. On the contrary, these branches are highly valued by the aspiring candidates. The beauty of OMDR is an unexplored territory as this department has been reduced to a referral center by many. Lately, in dentistry, there has been a paradigm shift from a diagnosis and treatment centric approach to just treatment dispensing approach. This shadows the importance of not only correct diagnosis but also the underlying systemic health of an individual as well as the incidental findings. Therefore, there are many instances of treatment related complications, the worst being initiation of infiltration in a cancer patient undergoing extractions without being diagnosed or application of corticosteroid on a non-healing

tubercular ulcer. Oral medicine specialists do not deal with cadavers, slides, pipettes; rather they deal with patients suffering from devastating orofacial pain, premalignant lesions and conditions, diagnosis of malignancies, temporomandibular disorders, salivary gland diseases, oral manifestations of systemic diseases and the list goes on. Not only this, their eyes are trained to catch a variation in the grey scale on a radiograph depicting abnormality like no other branch. The advent of Cone Beam Computed Tomography (CBCT) has further elevated the field by adding a zing to 3D radiology. The advent of technology like LASER aids the branch to broaden the plethora of treatments starting from eradication of potentially malignant disorders to operculectomy. Now –a- days many institutes are stressing upon the concept of comprehensive clinical approach towards a patient. This gives an opportunity to the postgraduates to conduct the basic treatment modalities for the patient whether healthy or immunocompromised. The title non clinical somehow dampens the potential of the branch and dissuades candidates from selecting it as a postgraduate course. It is rightly said that “Words have meaning but titles have power”. In this case, the title does not justify the power of the branch.

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An Overview of HIV on World AIDS Day: A Short Commentary

MANISHA SINGH

Acquired immunodeficiency syndrome (AIDS) is caused by Human immunodeficiency virus (HIV). HIV infections cause a gradual decrease in CD4⁺ cells and these cells are an indicator of the immune system including the body's natural defence system against pathogens and illness.¹ AIDS is defined as the advanced stage of HIV infection with CD4 cell count less than 200/mm³. AIDS is characterized by immunosuppression which can result in several opportunistic infections, tumors, and cancers.

The World Health Organization (WHO) and UNAIDS in 2019 estimated that globally 38 million people were living with HIV, with 1.7 million people newly infected with HIV. WHO also estimated that approximately 6,90,000 people died due to AIDS related illness.² According to National AIDS Control Organization (NACO), Ministry of Health and Family Welfare in 2019 estimated 23.49 lakh people living with HIV, with 69.22 thousand people newly infected with HIV. They also estimated 58.96 thousand AIDS related deaths in 2019.³

The purpose of World AIDS Day is to educate people about the transmission of HIV. The spread of infection is mostly through sexual contact, infected mother to her baby and blood transfusion. Understanding the success of different approaches for prevention of HIV infection and its treatment is also important. This day is celebrated to give a tribute to the people living with HIV and to the people who sacrificed their life due to this deadly disease. Clinical testing should be done for every individual who are at risk of HIV infection.

Diagnosis of AIDS is presence of HIV infection. The investigation of HIV is done by viral culture, ELISA, Western Blot, and PCR. The patient with positive HIV infection should be started with Antiretroviral treatment to decrease the severity of the infection. The viral load should be checked for patients on ART to

know that any treatment modification is required, or the patient is responding well to the treatment.

Covid 19 has enrolled the entire country with its negative impact on society. HIV remains an important risk factor of Covid 19 infection and there is an increased mortality of HIV infected patients due to Covid 19 infection.⁴ People with low CD4 cell counts are at a higher risk of Covid 19 infection.⁵ These immunosuppressed patients should be tested for Covid 19 infection and adequate observation, and monitoring should be done to prevent further complications. They should be prioritized to receive vaccination when compared with individuals with no HIV infection.

HIV patients have oral manifestations such as fungal infections, viral infections, bacterial infections, HIV-associated malignancies, and other lesions including sialadenitis and aphthous ulcers.¹ Recent study on the oral manifestations of Covid 19 patients reported taste and smell alterations, xerostomia, aphthous-like lesions, herpetiform/zosteriform lesions, and salivary gland disease.⁶ Another study included mucositis, candidiasis, HSV-1 (Herpes simplex virus) infections as symptom of Covid 19 infection.⁷ Further studies should be carried in India to assess HIV patients with oral symptoms of covid 19 infection to improve the quality of life of HIV patients.

People should be advised on safer sex using condoms and to avoid sharing of injections to prevent transmitting HIV to uninfected people. It is important to prevent transmission of virus from mother to child during pregnancy and delivery. Pre exposure prophylaxis medicine is required for people who have regular exposure to HIV patients by choice or profession. Post exposure prophylaxis medication is required when the exposure of HIV is immediate and should always be given within 72 hours.



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CONCLUSION

This short commentary will help in decreasing the HIV infection and its progression to AIDS. Changing the attitude and behaviour of people toward this epidemic is important to decrease the spread of infection. Testing should be advised with the start of Anti-retroviral drugs once the patient is positive for HIV infection. Funding resources to the organisations working for HIV patients will improve the health status of these patients.

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Artificial Intelligence in Public Health Dentistry

SAHRISH TARIQ^{*1}, NIDHI GUPTA² , PREETY GUPTA³ , ADITI SHARMA⁴

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The educational needs must drive the development of the appropriate technology. They should not be viewed as toys for enthusiasts. Nevertheless, the human element must never be dismissed. Scientific research will continue to offer exciting technologies and effective treatments. For the profession and the patients, it serves to benefit fully from modern science, new knowledge and technologies must be incorporated into the mainstream of dental education. The technologies of modern science have astonished and intrigued our imagination. Correct diagnosis is the key to a successful clinical practice. In this regard, adequately trained neural networks can be a boon to diagnosticians, especially in conditions having multifactorial etiology.

KEYWORDS: Artificial Intelligence, Database, Machine Learning, Surveillance

INTRODUCTION

"Our intelligence is what makes us human, and AI is an extension of that quality"

Yann le Cun

Humankind has given itself the scientific epithet homo sapiens—man the astute, due to the fact our intellectual capacities are so indispensable to our existence and our sense of self. A human brain is an inimitable form composed of networks of interlinked neurons which transmit signals throughout the body. This unexampled nature of the human brain has usually made researchers and scientists inquisitive from time immemorial.

History dates back to as early as four hundred BC when Plato envisaged a basic model of brain function. Since then, the field of technology has witnessed numerous innovations that may simulate the functioning of the human intellect. The need for the constant quest has given upward thrust to what's referred to as artificial intelligence (AI), which is an exceedingly advanced system to mimic the functioning of the human brain.¹

Artificial intelligence (AI) is defined as: 'a field of science and engineering concerned with the computational understanding of what is commonly called intelligent behaviour, and with the creation of artifacts that exhibit such behaviour'.

The term artificial intelligence was first coined by John McCarthy in 1956. The programs of artificial intelligence technology like expert structures, game playing, and theorem-proving, natural language processing, image reputation and robotics in numerous fields like telecommunication and aerospace have grown manifold.

Technology has additionally revolutionized the sector of medicine and dentistry in the last decade, ranging from online scheduling of appointments, online check-ins in medical centres, digitization of medical records, reminder calls for follow-up appointments and immunization dates for children and pregnant females to drug dosage algorithms and adverse effect warnings while prescribing multidrug combinations and much more.

AI IN MEDICINE

The growing use of information systems in healthcare and the sizable boom of clinical databases require conventional facts analyses to be adjusted to a new computational model. Methods primarily based on artificial intelligence algorithms have found innumerable implementations in biomedical sciences. AI in standard and in medicine or dentistry, in particular, began outgaining its foothold with the arrival of data computing in addition to cloud computing potential and availability of the full-size quantity of data collection. AI has now been proven



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to be a powerful tool in establishing the correct diagnosis of numerous medical conditions, and in a few instances, more efficient.^{2,3}

Unlike humans, AI never wants to sleep. Machine learning models could be used to observe the vital signs of patients receiving essential care and alert clinicians if certain risk factors increase. Artificial intelligence is also being applied to surgical robotics as it will determine patterns inside surgical procedures to improve best practices and to improve a surgical robots' control accuracy to submillimetre precision. Robots have a superhuman ability to repeat actual motions. This is extremely helpful in hair transplant surgeries. Surgeons are able to move the camera just by moving their eyes. Surgeons are using robotic surgery platforms that use micro-instrumentation, flexible robotic procedures. Robotics improve outcomes for patients by accessing and treating disease through the body's natural openings. The platforms integrate endoscopes, instruments, and navigation into a single platform, allowing physicians to better conduct needs interventions.²

APPLICATION OF ARTIFICIAL INTELLIGENCE IN DENTISTRY

In the field of dentistry, AI is steadily making inroads into the field of radiography, with a focus on diagnostic records of virtual IOPAs/RVGs, 3-D scans, and cone-beam computed tomography. AI-driven custom-designed orthodontic treatments are a recent innovation. The use of computer-aided designs and computer-aided production technology for a precision fit of the prosthesis is another step forward in the field of restorative and prosthetic

may also have a significant impact on orofacial and craniofacial prosthetics.⁵ Thus, AI plays a critical role in every sector, from endodontics for apex location dentistry.⁴ This will not only help dentistry, but also in implantology for making precise surgical guides and determining cortical bone thickness.

ROLE OF AI IN PUBLIC HEALTH

Compared to humans, artificial intelligence-based virtual dental assistants can perform several tasks with greater precision, fewer errors, and less manpower. Some of these tasks include, booking and coordinating regular appointments according to the ease of the patients and dentists, alerting the patients and dentists about check-ups, each time any genetic or lifestyle records suggests expanded susceptibility to dental diseases, assisting the clinical diagnosis and treatment planning (figure 1). AI additionally promises to make healthcare more participatory, specifically if patients offer their data actively. Patients can be empowered through self-monitoring and self-management. Using these constantly collected data can also help to overcome the disadvantages of on-off-medicine, wherein patients are seen only for a few minutes, even as maximum health conditions are generally acquired over years, and come and go in intervals (e.g., periodontal disease). Continuous non-invasive monitoring of health and behaviour will enable a much deeper, individual understanding of the drivers and processes underlying health and disease.⁶ Diagnostic and treatment costs can be decreased, thereby relieving healthcare systems burdened through an ageing society with an increasing number of complex, chronically ill cases. AI can also assist to address shortages in workforce, as observed and

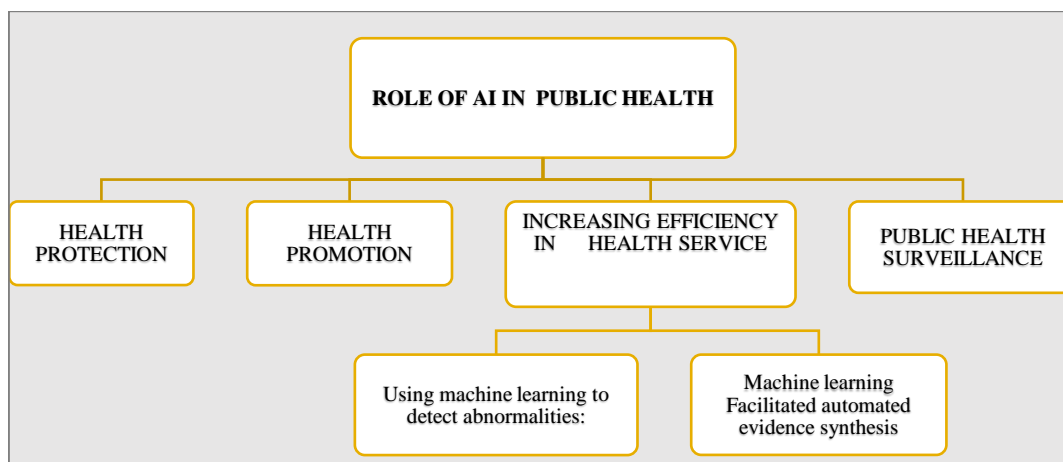


Figure 1. Role of Artificial Intelligence in Public Health

expected to continue in many parts of the globe, thereby assisting to attain the World Health Organization (WHO) Sustainable Development Goals.

Artificial Intelligence has been implemented in academic research and in inference tasks throughout the broader economic system with demonstrable success, however much less so for the core functions of public health, specifically protecting and promoting the health of populations. To date, vision statements at the future of public health have centred at the technical possibilities of artificial intelligence and much less on how social determinants would possibly have an impact on outcomes achieved with the aid of using it. Artificial intelligence has the capability to enhance the performance and effectiveness of processes throughout an expanded public health system.

I. HEALTH PROTECTION

The potential use of artificial intelligence in health promotion is by analysing patterns of data for almost real-time surveillance and disease detection. For example, it may be used to screen and identify suspected changed mucosa undergoing premalignant and malignant alterations, and it can be used to diagnose and treat oral cavity lesions. Even minute changes in single pixels that would otherwise go unnoticed by the naked eye are recognised. It may also provide emergency tele-assistance in cases of dental emergencies when the dental health care expert cannot be contacted.

II. HEALTH PROMOTION

AI offers targeted and personalised health advice based on risk profile and behavioural pattern. The skills of individual experts vary based on their prior knowledge and work experience. This is one of the reasons that people's interest in implementing computer-aided decision making has increased. For example, alerting the dental healthcare provider about any relevant medical history, that might accurately predict a genetic predisposition for oral diseases for a large population.

III. INCREASING EFFICACY OF HEALTH SERVICES

a). Using machine learning to detect abnormalities: Clinical Decision Support System, presents information to medical personals, patients or populations to provide efficacious and better health outcome for both individuals and populations

health outcome for both individuals and populations in general. AI is already playing a prominent role in medical imaging. AI powered by artificial neural networks can be just as effective as human radiologists at detecting signs of oral cancer as well as other conditions. In addition it might help clinicians spot early signs of disease.

b). Machine learning-facilitated automated evidence synthesis: The most tedious part is to enter structured information into the system, but with the arrival of voice recognition and the potential of artificial intelligence program to identify and extract information from scanned paperwork, this procedure has been simplified. Added to that is the interactive interphase which is designed to help the health care expert to comprehend a vast amount of information more efficaciously than human assistants and concurrently bridge the distance between the doctor and the affected person.

The important targets consist of documentation and scientific coding, organizing scientific complexity, storing and retaining patients' databases, monitoring patients' orders, monitoring health situations in addition to preventive measures, such as setting up regular reminders for patients who are on tobacco or smoking cessation programs.

IV. PUBLIC HEALTH SURVEILLANCE

Public health surveillance is the process of detecting, characterizing, tracking, and responding to disease outbreaks, other health threats (such as bioterrorist attacks, radiation exposure, or contamination of food or water supply), and other population-related health patterns (such as periodontal disease, oral cancer, or malnutrition).⁷ These surveillances occur at local, state, national, and global levels, and often require the integration of multiple organizations (e.g., hospitals, pharmacies, and public, state, and political health organizations) to achieve timely, focused, and effective response to emerging health events.

In this work, we focus on the role that artificial intelligence and mechanical learning can play in assisting public health with early, automatic detection of emerging outbreaks and other health-related patterns. Over the past decade there have been significant improvements in outbreak detection methods, including (but not limited to) local and temporary data analysis, integration of

multiple data streams, and improved detection performance measurement metrics.⁸

While many existing monitoring systems rely heavily on basic statistical methods such as time series analysis and the knowledge of public health professionals, we believe that the field of diagnostics is undergoing a major paradigm shift due to the huge increase in number, quantity, and complexity of available data sources. Current diagnostic programs rely heavily on large data from non-traditional sources, from internet search queries and user-generated web content, to electronic health records, to continuous data streams from sensory networks, mobile phones, and other location-aware devices. This shift in data analysis at the public scale will require a consistent shift in methods used in functional diagnostic systems, including techniques from artificial intelligence, machine learning, and data mining to determine large amounts of data, appropriate patterns, and assist in public health decision making. Experts will rely heavily on tools and systems that use advanced statistical methods to accurately distinguish associated ineffective patterns, scalable algorithms to process large amounts of complex, highly-dimensional data, and machine learning methods to further improve system performance from user feedback.

CONCLUSION

The zenith of artificial intelligence along with digitization has seen a new era within the subject of dentistry and its future aspects seem extraordinarily promising. Thus, one motive to study is to learn more about ourselves. Another motive is to construct clever entities in addition to recognize them. Artificial intelligence nonetheless is in its infancy and in no manner can supersede human intelligence and skill. Nevertheless, this technology is assisting in creating more awareness concerning oral and maxillofacial disease, risk factors and at the same time encouraging patients for early treatment. AI has produced much large and staggering merchandise even at this early level. It's far clear that computer systems with human-level intelligence (or

higher) might have an enormous impact on our lives and on the course of civilization ahead.

While, in no ways, there exists a doubt within the supremacy of integrating AI into practice, it in no way substitutes the role of a dentist, since clinical practice is not only about diagnoses but additionally also includes correlating with clinical findings and imparting personalized patient care. Although AI can help in several ways, the very last call needs to be made by a dentist as dentistry is a multidisciplinary approach.

Predicting The Future Isn't Magic, Its AI

– Davis Waters

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Green Tobacco Sickness: A Review

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It is still an unknown fact among many that tobacco harvesters are at a potential at a risk of suffering from “Green Tobacco Sickness (GTS)”, with its prevalence seen mostly among Asian and South American tobacco harvesters. These harvesters working in hot, wet conditions are likely to develop GTS, as in such climatic conditions, the wetness and high humidity causes nicotine to reside on the surfaces of the leaves, while the high ambient temperature increases skin absorption, thereby increasing plasma nicotine concentrations by 30-45%. Patients suffering from GTS report nausea, vomiting, pallor, dizziness, headaches, increased perspiration, chills, abdominal pain, diarrhea, increased salivation, prostration, weakness, cough with or without expectoration, breathlessness and occasional reduction in blood pressure or heart rate. GTS is self-limiting and of short duration and hence treatment is not always necessary and not often sought by the harvesters. This review educates readers about GTS as well as encourages their participation in making tougher regulations in their respective countries for the control of this disease.

KEYWORDS: Tobacco, Nicotine, Nausea

INTRODUCTION

Contrary to human beliefs, it is not only the tobacco user who is at a risk of suffering from health consequences. It is also known to many that exposure to second hand smoke also can lead to various health ailments. Even lesser is known about “Green Tobacco Sickness (GTS)”, a condition mainly affecting tobacco harvesters with its prevalence seen among in Asian and South American tobacco harvesters.¹

Handling uncured tobacco through skin contact is toxic, with GTS first reported among tobacco workers in Florida (1970), initially diagnosed as “cropper sickness.” In due course of time, its causation was revealed to be the absorption of nicotine from wet tobacco plants and it was subsequently diagnosed as GTS.² It is an acute form of nicotine toxicity, usually occurring few to several hours after a continued exposure to green tobacco leaves during processing.

Nicotine has a low-molecular weight substance with a good lipid and water solubility which is easily absorbed via skin.³ This sickness is not well documented and is often underreported due to the fact that those who experience GTS are not able to correctly interpret their symptoms or its cause. Although GTS has not been associated with mortality and/or longterm morbidity, it leads to significant discomfort and lost productivity among

tobacco workers, apart from loss of pay for the time/day(s) not spend harvesting tobacco.⁴

Reports state India as the third country to have reported GTS among tobacco harvesters. In India, the bidi industry is the largest manufacturer of tobacco and its manufacture has provided employment to millions of people. Laborers working in hot, wet conditions are more likely to develop GTS, and the Indian climatic conditions are mostly hot and humid in nature. In such climatic conditions, the wetness and high humidity causes nicotine to reside on the surfaces of the leaves, while the high ambient temperature increases skin absorption, thereby increasing plasma nicotine concentrations by 30-45%.¹

SYMPTOMS

Patients suffering from GTS report nausea, vomiting, pallor, dizziness, headaches, increased perspiration, chills, abdominal pain, diarrhea, and increased salivation, prostration, and weakness, depending on the exposure, but are of short duration.⁵⁻⁷ These symptoms are neurological in nature. Other symptoms include cough with or without expectoration, breathlessness and occasional reduction in blood pressure or heart rate.^{8,9} Among those susceptible to GTS, the average length of the illness including treatment lies between 1 and 3 days (median = 2.4 days).¹⁰



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Among patients, nausea and faintness can occur within 15 minutes of skin contact, although the CDC reports a median time from exposure to onset of GTS as 10 hours (range: 3 to 17 hours).² Symptoms of GTS are similar in comparison to induced by pesticide exposure and/or heat exhaustion as well as nicotine intoxication experienced by novice smokers and hence, it has a tendency to be misdiagnosed by practitioners unfamiliar with this condition.

PREVENTION

The main precaution to prevent GTS is to avoid handling of wet tobacco by avoid working in tobacco fields during or immediately after a rainfall and delay work hours until dew has dried. It is also advised to wear protective clothing (e.g., PPE kit, chemical resistant gloves or rain gear) when working with wet tobacco plants; and change into dry clothing as soon as possible if clothing becomes wet.⁸ The simple act of washing hands has been reported to reduce the amount of nicotine on skin by 96%.

Precautions are not only to be practised by the tobacco workers, their employers need to take proactive measures like promoting a safe working environment, discussing routes of exposure and symptoms associated with the disease. They should advise and emphasise workers to change into clean, dry clothing and boots during the work day if these become wet as well as and allow flexible work hours.

TREATMENT

Workers have reported that a combination of tea and jaggery coupled with rest, was an effective way to cure the symptoms. Due to the nature of GTS being self-limiting and of short duration, treatment is not always necessary and not often sought by the harvesters.

Workers experiencing GTS symptoms are encouraged to increase fluid intake, ingest dimenhydrinate (Dramamine), and rest. Dimenhydrinate is useful in treating GTS once onset has occurred as well as a prophylactic measure before harvesting tobacco. In the event that the symptoms need immediate attention, physicians can administer intravenous hydration, anti-emetics, and H₁ blockers (dimenhydrinate).²

CONCLUSION

This review is an attempt to educate readers about GTS, especially in countries like China, Brazil, India,

and Malawi which collectively produce more than 60% of the world's tobacco.¹³

Due to hot and temperate climates, few workers in India and Kentucky reported it being impractical and uncomfortable to wear the recommended protective clothing and hence, there needs to be additional protective measures in place.²

As most of the cases come in light when the patient presents oneself to the clinic,¹⁴ coupled with self-limiting nature of this disease, most cases go unnoticed. Therefore efforts are required to educate workers and their employers practicing tobacco farming.

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5-HT₃ Antagonist for Pregnancy Associated Nausea and Vomiting

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5-HT₃ antagonists appear to be an effective treatment option in the treatment of nausea and vomiting associated with pregnancy. Literature suggests an increased risk of congenital defects in fetuses exposed to ondansetron during pregnancy, especially during first trimester. Health authorities now suggest that this drug should not be used during this period. However, this decision is debatable and whether ondansetron can be used in pregnant women is still controversial.

KEYWORDS: Pregnancy, Nausea, Vomiting

INTRODUCTION

Nausea and vomiting of pregnancy are among the most frequently reported functional disorders in pregnant women.^{1,2} These disorders usually appear between week six and week nine of pregnancy, with a peak around week 11, and generally disappear at the end of the first trimester of pregnancy. Usually benign and classified among what are informally known as the minor ailments of pregnancy, they can, however, be disabling, and have a significant impact on women's quality of life.³ They must then be thoroughly investigated in order to rule out an underlying condition, and it may be desirable, in these situations, to offer women appropriate pharmacological management. In some countries, there is no recommendation for clinical practice in relation to the management of nausea and vomiting in pregnancy, but there are such recommendations in other countries.⁴⁻⁶ Of the recommended therapeutic strategies, ondansetron, proposed as second-line treatment in severe nausea and vomiting of pregnancy, has been shown to be effective. Although it is little prescribed during pregnancy in few nations, it is, conversely, widely used in the United States with, according to studies, between 5 and 10% of women exposed to it during pregnancy.⁷⁻⁹ In November 2019, the European Medicines Agency stated that this drug must not be used during the first trimester of pregnancy as it might lead to an increased risk of oral clefts, and increased risk of cardiac malformations.¹⁰

The published data relating to the possibility that ondansetron is teratogenic are relatively numerous

and disparate in terms of methodological quality. A recently published meta-analysis, concluded that there was no significant association between exposure to ondansetron in the first trimester and an increased overall risk of major malformations. However, it highlighted a slight increase in the risk of oral clefts and cardiac malformations such as ventricular septal defects.¹¹ The meta-analysis notably included the two publications which directed the recent position of the EMA.^{9,12} In one, results were drawn from a cohort of more than 1.8 million Medicaid-enrolled pregnant women in the USA between 2000 and 2013, 88,467 of whom had been exposed to ondansetron in the first trimester of pregnancy and had given birth to a live child.⁹ Well conducted from a methodological point of view and based on a large population sample, with the standard exclusion of pregnancies exposed to known teratogenic agents and children with chromosome abnormalities and considering a large number of potential confounding factors by using propensity scores, the authors found no increase in the overall risk of major malformations in the event of exposure to ondansetron in the first trimester of pregnancy.

Another study included a little over 860,000 mother-child pairs between 2000 and 2014.¹² The children involved were born alive, with no chromosome abnormalities, and the women had no family history of malformations and had not received any antiemetic other than ondansetron. Some studies have focused on the possible teratogenic effect of ondansetron. These included a monocentric



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retrospective cohort study which found an increased risk of ventricular septal defects in neonates exposed to ondansetron in the first trimester.¹³

It should be noted that these were cardiac abnormalities noted at birth, and no account was taken of the severity and spontaneous course of these ventricular septal defects. In 2020, a complementary analysis was conducted, restricted to women who had received intravenous ondansetron in the first trimester: no association was highlighted, either for the overall risk of a major malformation, for heart malformations, or for orofacial clefts.¹⁴ The last two studies did not highlight an increased risk of malformation in relation to exposure to ondansetron in the first trimester.^{15,16} To summarize this bibliographic analysis, although an increased risk of orofacial clefts cannot be formally ruled out in the event of exposure to ondansetron in the first trimester of pregnancy, if it exists it appears to be a very low risk, with a prevalence of around 0.11% in fetuses exposed in utero, compared to 0.08% in the general population. With regard to congenital heart disease and an increased risk of ventricular septal defects, the methodological limitations of the currently available studies mean that it is impossible to maintain that there is an increase in this risk.

On the basis of these data, the recommendations which lead to ondansetron being formally excluded from the therapeutic strategy of severe pregnancy-induced vomiting in the first trimester of pregnancy do not seem appropriate. Furthermore, this opinion is also shared by other experts in pre- and postnatal vigilance who are members of the European Network of Teratology Information Services.¹⁷

In practice, it seems reasonable to consider prescribing ondansetron to a pregnant woman with severe pregnancy-induced vomiting if first-line treatments, such as doxylamine alone or in combination with vitamin B6 or metoclopramide, have failed, and especially after week ten of pregnancy.¹⁸ Although it may be preferable not to use ondansetron before week ten, as a precautionary measure, exposure before this time should, nevertheless, not lead to the patient being worried: at most, good-quality ultrasound monitoring of the fetus targeted at the facial mass may be considered in principle. In order to best specify any potential risk this drug carries during pregnancy, and thus to better inform healthcare professionals and pregnant women, it is important to regularly update the state

of knowledge on this drug and pregnancy in the light of new publications.¹⁸ Ondansetron is a serotonin 5-HT₃ receptor antagonist, this receptor being involved in emetic reflex phenomena. It is indicated in the prevention of postoperative or chemotherapy-induced vomiting. Although its efficacy in nausea and vomiting in pregnancy has been proven, it does not as yet have a marketing authorization in this indication.

On the basis of the efficacy data and safety data, the preferred first-line treatments are either doxylamine, alone or in combination with vitamin B6 or metoclopramide. If these options are not suitable, the use of ondansetron may be envisaged if possible as a precaution after week 10. The use of this antiemetic is nevertheless very common and the data in pregnant women exposed in the first trimester of pregnancy are very numerous and reassuring. In some countries, other compounds are suggested, but their use has not always been assessed in this indication.

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Curious Case of Rodent Poison: A Case Report

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Osteonecrosis was first described as a consequence of ionizing radiation used in the treatment of malignant tumors but later a variety of causes for osteonecrosis were found which include, Medication induced, radiation induced, chemical induced and infection induced. Terms such as: bisphosphonate osteonecrosis (BON), Bisphosphonate Associated Osteonecrosis of the Jaws (BONJ), Bisphosphonate Related Osteonecrosis of the Jaws (BRONJ), Antiresorptive Osteonecrosis of the Jaw (ARONJ) and Medication Related Osteonecrosis of the Jaw (MRONJ) have all had proponents and all continue to be utilized. However, Migliorati first proposed a designation of the disease as osteochemonecrosis. This case report is about a chemical induced osteonecrosis patient who placed rat poison inside the mouth.

KEYWORDS: Osteonecrosis, Rat Poison, BRONJ, MRONJ

INTRODUCTION

Osteonecrosis of the jaw (ONJ) was previously defined as exposed, necrotic bone in the maxillofacial region for at least 8 weeks in patients receiving an antiresorptive medication for primary or metastatic bone cancer, osteoporosis, or Paget's disease, with no previous radiation therapy to the jaws.^{1,2} Recently, the AAOMS revised the definition to include exposed bone, or bone that can be probed through an intraoral or extraoral fistula in patients on antiresorptive or antiangiogenic medications.³ Osteonecrosis was first described as an outcome of ionizing radiation which was used in the management of malignant tumors.⁴ Later, osteonecrosis came upon as an outcome of the prolonged use of some varieties from the bisphosphonates (BPs) and lately as a result of the use of medications which act on bone remodelling and anti-angiogenesis.⁵⁻⁷ Here we report a case of a 36-year-old female patient corresponding to the clinical and histopathological features of Osteonecrosis in the palatal region.

CASE REPORT

A 36-year-old female patient came to our department with a chief complaint of exposure of bone in upper front tooth region of the jaw for past 1 year. History revealed that patient had placed the rat poison mixed in papaya fruit in the mouth for sometime and had spat it out apparently because of change of mind. She was rushed to the hospital for emergency management and gastric lavage was done. Two days after hospitalization she noticed the upper front teeth have become mobile and they fell off by themselves subsequently and she

also noticed that one half of roof of the mouth had become black in colour. After discharge she consulted a private dental practitioner who removed the blackened tissue completely. After few days patient became aware of exposure of the bone as she could feel the sharp edges with her tongue but there was no pain or discomfort. She consulted few dental practitioners during the past 1 year. When surgical management was advised she was not willing for treatment. One of the dental practitioners referred her to our institution. She had no apparent systemic illness, no drug history and no deleterious habits.

On examination there was an exposure of bone on the palatal aspect from 21 to 25. The junction between the exposed bone and the adjacent palatal mucosa was well demarcated (figure 1). Exposure of bone on the labial aspect of 22 to 25, destruction of labial cortex in 22,23 with pus discharge was also seen (figure 2). The exposed bone appeared avascular and necrotic. On palpation, the patient had no tenderness anywhere on the exposed bone but the patient had sensation and could feel the touch. With all the clinical findings and the history, a provisional diagnosis of osteonecrosis due to contact with harmful chemical was given and the differential diagnosis of mucormycosis and osteomyelitis were considered.

Regarding the investigation an OPG was taken and the visibility of the outline of sockets in relation to 22 & 23 even after 1 year suggestive of unhealed non-vital bone (figure 3). A PNS view was taken and there was no



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Figure 1. Exposure of bone seen on the palatal aspect with well-defined borders between exposed bone and palatal mucosa

evidence of involvement into the nasal cavity, maxillary sinus or other adjacent structures. Hematological parameters were within normal limits. Cytological smears were taken from the exposed bone and a few fragments of bone were removed and were sent to Department of Oral Pathology for microscopic examination and the results showed no evidence of fungal hyphae. Then a bone biopsy was done and sent to Department of Oral Pathology and the results showed it as a necrotic bone because it showed bone trabeculae with empty lacunae (figure 4).



Figure 2. Destructed labial cortex with pus discharge



Figure 3. OPG showing outline of sockets in 22 and 23 even though it was extracted 1 year ago suggesting unhealed non vital bone

With all the clinical, radiographic and histopathologic findings, a final diagnosis of chemical induced osteonecrosis of the left maxilla was given and the patient was referred to the department of oral and maxillofacial surgery for further management. Surgical resection was done on the left side of the palate and the healing was good (figure 5) and the patient was on regular follow up.

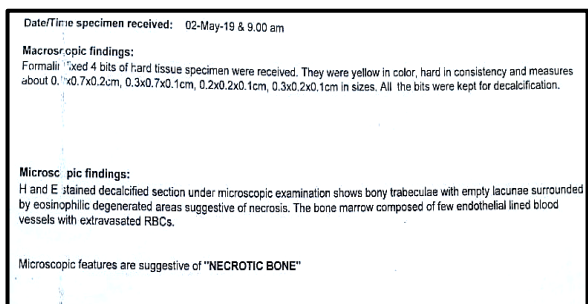


Figure 4. Bone biopsy report

DISCUSSION

Osteonecrosis of the jaw (ONJ) is described as a bone infarction due to ischemia. It is a clinically devastating condition that can affect the patient's quality of life. The main predisposing factors for ONJ are surgical intervention and oral mucosa breakdown in patients encountering to radiotherapy and chemotherapy agents.⁸ Medication-related osteonecrosis of the jaws (MRONJ) can also be defined clinically by necrotic bone exposure nevertheless, clinical manifestations without the exposure of bone, such as hypoesthesia/numbness of lower lip (Vincent's symptom), deep periodontal pocket, trismus, loose tooth and non-odontogenic pain.^{5,6}



Figure 5. Post operative clinical picture showing good healing

Migliorati first proposed the term osteochemonecrosis. This term continues to be prestige because of the increasing numbers of drugs coorrelated with the disease, as well as its similarity to the designation of osteoradionecrosis.⁹

American Association of Oral and Maxillofacial Surgeons (AAOMS) proposed a staging for system is that the patients should be on an anti-resorption drug, should have no previous history of Head & Neck radiation therapy or metastatic diseases in the jaws and should have signs and/or symptoms of duration of at least 8 weeks. The reason for this 8 weeks duration is that it takes longer time period for the bone to demonstrate evidence of associated osteolytic or sclerotic changes in the radiograph.

Treatment strategies continue to stress prevention and others include antiseptic rinses, systemic antibiotics, and cleaning or removal of dead bone from the affected area. Generally, therapy focuses on controlling pain and preventing infection so that the body can heal properly.¹⁰

CONCLUSION

ONJ is a multifactorial disease in patients with primary or metastatic bone malignancy or osteoporosis undergoing systemic antiresorptive therapy, where the pathophysiology has not yet been fully determined.

Other than Drugs and radiation some chemicals can also cause osteonecrosis of the jaw. In the present case osteonecrosis occurred because of the contact of palatal mucosa with the rat poison and the mucosa was

sloughed off with the bone exposed. In this case, surgery was the only option. More awareness is needed for the public besides doctors about the ill effects of chemicals and the resulting osteonecrosis and the early diagnosis with faster and accurate treatment is mandatory to save the vital structures of the oral cavity.

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A Cross-Sectional Study to Assess Awareness and Practices Related to Prevention of COVID-19 Amongst Local Vendors around Medical and Dental Establishments

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INTRODUCTION: Even as the world is returning to normalcy after COVID-19, there is still a need to be cautious and adopt proper hygiene practices and social distance norms.

AIM: To assess the awareness and practices related to prevention of covid-19 amongst local vendors around medical and dental establishments in Northern India.

MATERIALS AND METHOD: This cross-sectional study was conducted over a period of one month using a pre-tested and pre-validated questionnaire. Vendors near ten medical and dental establishments in north India were contacted by standardized volunteers to prevent bias. They were located within the range of 250 meters on both sides of these facilities through convenience sampling. Data was coded, entered in MS excel, descriptive statistics were applied. Statistical tests included the student's independent t-test and multiple logistic regression. P value was kept significant at <0.5 and software used was SPSS version 23.0.

RESULTS: Most vendors were males (76.7%), were operating shops on rent (47.7%) and had passed middle school (40.2%). A Majority of them were aware of common symptoms (99.4%), while 90.1% were aware about the mode of transmission. All vendors knew about the availability of the vaccine (100%). and 78.2% of the vendors were fully vaccinated, while 04 (1.3%) were not vaccinated yet. However, only 60% (p=0.03) of the vendors practised hand washing, distancing from sick, no handshake, use a cloth while coughing/sneezing as preventive measures.

CONCLUSION: There is still a need for continuous education of the food vendors regarding proper and hygienic practices as well as mask wearing to fight off this dreaded pandemic and return to normalcy as soon as possible.

KEYWORDS: Vendors, Covid-19, Hygiene, Masks, Compliance

INTRODUCTION

The human race has been witness to numerous epidemics and pandemics which have affected millions of lives, either resulting in morbidity or mortality. Even as we humans boast of numerous advances in medicinal and allied research, the threat of new, undefined pathogens that pose an invisible threat to human lives. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) is a novel coronavirus that had brought the human life on a standstill and several parts of the globe were staring at a global, economic and healthcare system(s) related crisis.¹

With the world returning to normalcy, thanks to the combined efforts of all healthcare workers, men and women in uniform and researchers who developed the vaccine to combat this deadly virus, there is still a need to maintain proper precautionary measures and social distancing norms. In addition, a correct knowledge of preventive measures and practicing respiratory hygiene is utmost important to break the chain of transmission. This can be achieved through frequent communication between health care providers and the

public.²

The nature of the work profile of these vendors puts the vendor at risk of either being affected with the disease, or serving as a potential carrier of this virus. They need to be in constant contact with people, and handle the exchange of currency and it has been scientific studies have shown the potential of a virus and norovirus to be transmitted through banknotes and coins.³ In a study done in India, 42.3% of the vendors opined that it is difficult for an ordinary road side food vendor to provide cent percent quality, hygienic & nutritious food and a majority of the vendors were not using soap for washing hands.⁴

Keeping the above facts in mind, it is important that in a post COVID-19 world, street vendors pay proper attention to proper and safe hygienic practices to prevent the further spread of this disease. Hence, the present study was undertaken with the aim to assess the awareness and practices related to prevention of Covid-19 amongst local vendors around



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medical and dental establishments in Northern India.

MATERIALS AND METHOD

The present study was designed to be cross-sectional in nature, conducted over a period of one month (July 2021-August, 2021) using a pre-tested and pre-validated questionnaire adopted from Shastri et al. and obtaining a proper ethical clearance.⁵ Vendors near ten medical and dental establishments in north India were contacted and data was collected by the standardized interviewer in hindi. To avoid social desirability bias, no personal data of the respondent were collected. Also, data was collected by standardized volunteers not associated with the study to prevent interviewer's bias. Vendors located within the range of 250 meters on both sides of these facilities were included in the study using convenience sampling.

Data collected was coded, entered in MS excel, descriptive statistics were applied. Statistical tests included the student's independent t-test and multiple logistic regression. P value was kept significant at <0.5 and software used was SPSS version 23.0.⁶

RESULTS

The demographic details of the vendors is depicted in table 1. Most vendors were males (76.7%), were operating shops on rent (47.7%) and had passed middle school (40.2%). The least of graduated were vendors were graduates (11.0%). 21.8 % of the vendors were employees and were working for someone else.

DEMOGRAPHIC DETAILS	Frequency (%) (n=331)
Sex	
Male	254(76.7)
Female	77(23.3)
Ownership Type	158(47.7)
Shop owner (On rent)	
Shop owner (Self-Ownership)	101 (30.5)
Employee	72(21.8)
Educational status	
Illiterate	42(12.6)
Primary school	35(10.6)
Middle school	133(40.2)
High school/ Higher secondary	85(25.6)
Graduate and above	36(11.0%)

Table 1. Demographic details of the vendors

Significant responses of the vendors to the questionnaire is depicted in table 2. It was observed that most vendors are aware of common symptoms (99.4%, p=0.01), while 90.1% (p=0.03) were aware about the mode of transmission. All vendors knew about the availability of the vaccine (100%, p=0.02). 78.2% of the vendors were fully vaccinated, while 04 (1.3%) were not vaccinated yet. However, only 60% (p=0.03) of the vendors practised hand washing, distancing from sick, no handshake, use a cloth while coughing/sneezing as preventive measures.

While observing the responses of the vendors regarding their practices (table 3), most vendors reported having their source of information from internet and media (57.1%, p=0.03), and fortunately, while reporting hand washing practices, most vendors reported that they washed their hands very often(44%), and this was found to be significant (p=0.03). It was observed that 35.9% of the vendors wore their masks occasionally followed by 32.7% vendors were reported to wear their masks, although it was placed below their nose. These differences in mask wearing was also found to be statistically significant.

DISCUSSION

The results of the present study, based on the aim of assessing the awareness and practices related to prevention of Covid-19 amongst local vendors around medical and dental establishments in Northern India revealed a need for better education of the vendors to better control and prevent the spread of the pandemic as they are often in contact with the general population; at places like bus stands and railway stations, they often come in contact with those travelling from all corners of the country; and thus making them vulnerable without adopting proper hygienic practices.

A majority of the vendors were males (76.7%), and this is in agreement as per the study findings of Thakur CP et al.⁷, who reported a prevalence of 97% male vendors. However, in contrast, among studies conducted by Mohamed A et al.⁸ (72%) and Nkosi NV et al.⁹, (73.4%) females vendors formed a majority as vendors. These findings are dependent of various factors, a few of them being the local beliefs, geographic location and presence of basic facilities around these vendors.

An encouraging fact was that 99.4% of the vendors were aware of the common symptoms of Covid-19. This is agreement to studies conducted by various

	Frequency (%)	p-value
Are aware of common symptoms	329(99.4)	0.01
Aware about mode of transmission	301(90.1)	0.03
Practised hand washing, distancing from sick, no handshake, use a cloth while coughing/sneezing	199(60.1)	0.03
Knew about availability of vaccine	331(100.0)	0.02
Vaccination Status		
Fully Vaccinated	259(78.2)	0.01
Partially Vaccinated	68(20.5)	0.02
Not Vaccinated Yet	04(1.3)	0.04
Elderly age group is most affected by this virus	283(85.5)	0.01

Table 2. Significant responses to the questionnaire

authors.^{5,10,11} This could be due to the reason that the medium of knowledge dissemination has increased in general, ranging from newspapers to smartphones. In our study, most vendors (57.1%) got their knowledge regarding COVID-19 from Internet and social media, whose use was quite prevalent during the nation-wide lockdown.

PRACTICES	FREQUENCY (%)	p-value
Source of information		
Family, relatives and friends	53(16.1)	0.03
Media	89(26.8)	
Internet and social media	189(57.1)	
Hand Washing Practices		
Never	33(9.9)	0.03
Before eating	56(16.9)	
Sometimes	88(26.5)	
After every customer	9(2.7)	
Very often	145(44)	
Mask Wearing among vendors		
Not Wearing	52(15.7)	0.02
Wearing Mask, but below nose	108(32.7)	
Occasional Mask wearing	119(35.9)	
Wearing all the time	52(15.7)	

Table 3. Practices related to prevention of COVID-19 by the vendors

It was also overwhelming to know that all vendors knew about the availability of vaccine (100%). In addition, 78.2% vendors were fully vaccinated, while 20.5% of them took the first dose of the vaccine. However, efforts should be made to encourage the

remaining 1.3% of vendors who have not started their vaccinations yet.

It was observed that 35.9% of the vendors wore their masks occasionally followed by 32.7% vendors were reported to wear their masks, although it was placed below their nose. Similar findings were reported by et al. who reported that 85% of males and 87% of females were only wearing masks; thus indication that even after educating the general public at various levels, total mask compliance by the population is yet to be achieved.

CONCLUSION

Based on the results of the previous study there is still a need for continuous education of the food vendors regarding proper and hygienic practices as well as mask wearing to fight off this dreaded pandemic and return to normalcy as soon as possible.

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