



RESEARCH ARTICLE

KNOWLEDGE AND ATTITUDE OF DENTAL AND ENT PROFESSIONALS TOWARDS PRE-PROCEDURAL USE OF POVIDONE-IODINE MOUTH RINSE DURING COVID -19 -- A QUESTIONNAIRE-BASED CROSS-SECTIONAL STUDY

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Abstract

Aims And Objectives: The aim of this study is to assess the knowledge and attitude of dental and ENT Professionals towards Pre-procedural use of Povidone-Iodine Mouth rinse during Covid -19. The latent objective was to revitalize the usage of pre-procedural Povidone iodine rinse in clinical settings for Covid-19 cross infection containment.

Material And Methods: A cross-sectional study was carried out in the Post Graduate Department of Periodontics and Oral Implantology, Govt Dental College & Hospital Srinagar, J & K. An online questionnaire was distributed among dental and ENT professionals including Interns, Junior residents, Post Graduate Students, Dental and ENT Surgeons. Online social media platforms were utilized to disseminate the questionnaire. The study had a sample size of 223 participants.

Results: 39.5% participants were doing pre-procedural mouth rinse of patients before Covid-19 pandemic. Post Covid -19 pandemic, 53.5 % practitioners started doing the pre-procedural mouth rinsing of patients. 51.9 % participants were using PVP-I as pre-procedural mouth rinse, 41.3 % of participants were using CHX while as 6.8 % were using any other rinsing agent. 52.2 % of participants viewed it as moderately effective in containment of Covid-19 cross infection. 43.5 % of participants considered PVP-I as having higher virucidal activity, 26.1 % of participants considered CHX as having higher virucidal activity. 30.4 % participants considered Hydrogen peroxide as more effective anti-viral agent than both PVP-I and CHX.

Conclusion: There is a dire need to raise awareness among practitioners in general and dentists in particular, regarding the virucidal activity of available mouthwashes as is backed by various in-vitro studies. With the Covid-19 pandemic carving out a new normal, the specialists dealing with aerosol producing procedures need to perform the clinical duties more safely. This would be a shot in the arm in our fight against SARS COV-2 driven pandemic.

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Introduction:-

The entropic Covid-19 pandemic crippled the whole world order as it caught the global system unawares. Manifested as a pandemic by the World Health Organization (WHO) on 11th March 2020, COVID-19 affected multitudinous individuals across the globe¹. Epidemiologic and genetic studies documented that sole animal to human transmission was the starting point of this outbreak, while continuous human to human interaction is now liable for its spread mainly through respiratory droplets, contact transfer, or faeco-oral route.² Since December 2019, health care workers are endeavoring on effective treatment plans and implementing strategies to control the spread of the virus.³ Virus concentration of $10^7/\text{mL}$ is found in the saliva during the early infectious period, thus augmenting the risk of cross-infection and instrument contamination.⁴ It has recently been found, through PCR assay techniques, that the nasopharynx appears to have a higher viral load than that found in the oropharynx.⁵

The oral cavity along with ENT region together form a perilously higher viral load compartment. Excessive viral load found in the nasal cavity, oropharynx, nasopharynx, and saliva is the reason behind the highest transmission risk in a dental care.^{5,6} Studies imply that respiratory droplets are a major source of cross-infection in a dental environment, usage of the handpiece or ultrasonic devices generate and release secretions known as aerosols and splatters, constituting saliva and blood along with bacteria and viruses ($0.2\text{--}2.0\mu\text{m}$ in diameter), which aerosolize into the surrounding environment, these aerosols can travel upto a distance of 3 feet (1m) and remain suspended in the air for 10 minutes.^{7,8} These contaminated aerosols might be inhaled by nearby people, causing respiratory complications among dental staff.⁹ Harrel and Molinari proposed the use of three protective coatings for health care workers which include personal protective equipment, mouthwashes, and high-speed suction instruments.⁹

Subsequent to the guidelines provided by CDC, Chlorhexidine (CHX) oral rinses gained widespread recognition to diminish the spread of COVID-19 virus via aerosols, however, literature mentions its poor antiviral properties in contrast to its antibacterial property.^{10,11} Antecedent in vitro investigations on the severe acute respiratory syndrome coronavirus (Sars-CoV) (2002–2003) and the Middle East respiratory syndrome coronavirus (MERS-CoV) (2012–2013), the causative agents accountable for the previous pandemics in history, revealed significantly higher antiviral properties of povidone-iodine (PVP-I) mouthwashes in contrast to other oral rinses which include chlorhexidine and benzalkonium.¹² 0.23% formulation of povidone-iodine (PVP-I) exceptionally inactivated SARS-CoV strains within 15 seconds of exposure.¹³ Bidra et al, in a recently conducted in vitro investigation, concluded that a 0.5% lowest concentration of PVP-I was required with a contact time of 15 seconds to eradicate SARS-CoV-2 virus successfully.¹⁴

PVP-I is an auspicious anti-viral agent.¹⁴ PVP-I dissociates and releases free iodine that is responsible for its virucidal activity, making it a decorated anti-viral agent in fight against Sars-CoV-2. Pittsburgh in their protocol counselled COVID-19 patients, people at risk and front-line medical staff to use 0.4% and 0.5% of PVP-I solution via nasal route and oral rinse, respectively.¹⁵

The prospect of this study is to assess the knowledge and attitude of dental and ENT professionals towards pre-procedural use of Povidone-Iodine Mouth rinse during Covid -19 and to revitalize the usage of PVP-I rinse in clinical settings for Covid-19 cross infection containment.

Material AndMethods:-

A cross-sectional study was carried out in the Post Graduate Department of Periodontics and Oral Implantology, Govt Dental College & Hospital, Srinagar. The study spanned over 3 weeks period, from 25October 2021 to 11November 2021. The sample size consisted of 250 participants. Keeping in view the Covid-19 surge and related SOP's, an online questionnaire was distributed among dental and ENT professionals including Interns, junior residents, Post Graduate residents and clinicians. The questionnaire was prepared after a diligent scrutiny of available literature pertaining to Covid-19, SARS and mouth rinses. The questionnaire was formed on Google Forms in English language and was circulated on social media accounts like LinkedIn, WhatsApp, Facebook, Twitter, and E-mails to reach the target population. The questionnaire was designed in a simple yet comprehensive manner. It was validated and open-ended. A pilot study of 15 samples was conducted for the validation of questionnaire. Anonymity was taken utmost care of and participation was made voluntary and optional. Frequency and percentages were estimated for all categorical variables.

The Ethical approval for this survey was obtained from the Institutional Ethical Review Committee. (OMFS/GDC-S/11384 Dt. 23/10/2021)

Results:-

A total of 223 responses were received out of a total of 250 questionnaire forwards. The participants included professionals from multiple states of India with majority of them being from J & K. 121 (54.26 %) participants were females and 102 (45.74%) were males. Before the Covid-19 pandemic, 39.5% participants were doing pre-procedural mouth rinse of patients while 18.6 % participants did it occasionally. After the Covid -19 pandemic struck, 53.5 % practitioners started doing the pre-procedural mouth rinsing of patients, 30.2 % participants still did not, while as 16.3 % do it occasionally. Among the participants doing pre-procedural mouth rinse, 51.9 % participants were using PVP-I as pre-procedural mouth rinse, 41.3 % of participants were using CHX while as 6.8 % were using any other rinsing agent.

28.3 % of participants were of the view that pre-procedural mouth rinse is highly effective as a preventive measure for SARS CoV -2 cross-infection, 52.2 % of participants viewed it as moderately effective, 17.4 % reported it as slightly effective and 2.1 % considered it as “not effective”.

Regarding the Virucidal activity of mouth rinsing agents, 43.5 % of participants considered PVP-I as having comparatively higher virucidal activity, 26.1 % of participants knew CHX as having higher virucidal activity. An astonishing percentage of 30.4 % participants considered Hydrogen peroxide as more effective anti-viral agent than both PVP-I and CHX.

ENT practitioners had higher awareness (98 %) regarding pre-procedural use of PVP-I as containment measure for Sars-CoV-2 as compared to Dental Practitioners (83%) ($p=0.031$)

About 87.1% of the dental practitioners agreed that they are exposed to highest risk of getting infected by coronavirus not only due to their close contact with infected patients but also due to inhalation of aerosols and 76% of the ENT practitioners strongly agreed with the same statement. Almost 83 % of the general dental practitioners strongly agreed that they educate their parents about COVID-19 disease and its transmission whereas 69 % ENT practitioners strongly agreed that they educate their parents about COVID-19 disease and its transmission ($p=0.001$)

Discussion:-

Mouth rinses have attained a new distinction among dental profession amid the Covid-19 pandemic. Various studies were conducted to establish role of various mouthwashes against SARS CoV-2. Povidone iodine has emerged as an effective pre-procedural mouth rinse with many studies establishing its role in reducing the viral cross infection besides helping in faster clinical recovery from Covid. Knowledge about viricidal activity of Povidone iodine among dental and ENT professionals needs to be elucidated so that more awareness could be spread for larger benefits and effective control of Covid Cross-infection in clinical and healthcare settings.

In vitro studies have demonstrated a bactericidal and virucidal role for some of the over the-counter mouthwash solutions. Meanwhile, Game theory and Evolutionary Biology suggests that inhibiting cooperation -reciprocal altruism- between two organisms can negatively affect their survival.¹⁶

Significance of mouthwashes remained a neglected area for aerosol reduction during COVID-19 crisis. The outcomes are valuable to organize “infection control” training programs accordingly. Secondly, it would also welcome researchers for further clinical trials.¹⁷

The present study was carried out with a latent objective of furthering the concept of Pre-procedural mouth rinse particularly of PVP-I. This may reduce the risk of transmission to HCW providing routine care. Further reduction of risk of transmission may be achieved by similar application of PVP-I to the HCW providing the care as a form of prophylaxis.¹⁸

Imran e, Khurshid Z Adanir et al, 2020 in their KAP survey underscored the need for a requisite understanding of the disease and its transmission is to depreciate the spread of infection.¹⁷ The present study was carried with the objective, as a means to achieve the same end.

In a global survey by Tariq et al, only 27.1% dental practitioners accord with the fact that mouthwashes could reduce the risk of COVID-19 infection.¹⁹ Contradictorily, in our study a mere 2.1 percent of participants considered pre procedural mouthwash as 'not effective' as a containment measure for air borne Covid-19 cross infection while as the rest of the participants viewed it as effective albeit to certain grades (Highly effective:28.3%;Moderately effective: 52.2%; Slightly effective: 17.4%).These findings also contradict the findings of Quadri et al, in his survey less than 50% of healthcare workers in Saudi-Arab correctly identified that COVID-19 is an airborne disease.⁸

In a study by Mouhat et al.²⁰, majority of healthcare workers reported for using mouthwashes prior to dental services. This is consistent with the results of present study wherein majority of participants (53%) were doing pre-procedural use of mouthwash. These results, however, differ with the findings of Ahmed et al,²¹ and Lodhi et al,²² who reported that a majority of dental practitioners are ignoring the use of oral mouthwashes in their dental practice.

In the study by Imran, Khurshid, Adanir et al¹⁷, only 31.5% participants endorsed with the statement while 52.3% respondents acknowledged the viricidal activity of mouthwashes. In the present study, 43.5 % of participants considered PVP-I as having comparatively higher virucidal activity, 26.1 % of participants knew CHX as having higher virucidal activity, while as 30.4 % participants considered Hydrogen peroxide as more effective anti-viral agent than both PVP-I and CHX.

In the event of a pandemic, ascertaining strategies to prevent or reduce infection serves well in public interest in contrast to identifying the disease and evaluating its response.²³ Individuals can better defend themselves and would seek immediate medical care in case of emergencies if their level of awareness is raised regarding the disease.²⁴ An investigation on the MERS outbreak unveiled that lack of knowledge was one of the aggravating factors for the disease spread.²⁵

Hence with the aim of our study, we analysed the knowledge and attitude of practitioners towards procedural mouthwash use. At the same time our objective was to instill, in the deep senses of practitioners, the quest of knowing, gaining more knowledge and adopting the practice of pre-procedural mouthwash use.

Data collection for this analysis was done over a brief span as the sole intention was to raise awareness among practitioners. Future broad-based studies should be carried out to the same end. Furthermore, data could not be generalized since most responses collected were from Kashmir, Jammu and Ladakh regions only, hence, cannot be globalized. Clinical trials and descriptive studies focusing on the anti-viral properties of different mouthwashes are highly recommended.

Conclusion:-

There is a dire need to raise awareness among practitioners in general and dentists in particular, regarding the virucidal activity of available mouthwashes as is backed by various in-vitro studies. Mouthwashes especially PVP-I is a potential anti-viral agent which can significantly reduce viral load in saliva and subsequently in aerosols thus limiting the spread COVID-19 infection. With the Covid-19 pandemic carving out a new normal, the specialists dealing with aerosol producing procedures need to perform the clinical duties more safely. This would be a shot in the arm in our fight against SARS COV-2 driven pandemic.

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