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Oral Submucous Fibrosis

Continuing Dental Education [CDE]

Highlights

Common Medical Emergencies

Covid-19 Outbreaks in Hospitals

Discovering Thoughts, Inventing Future

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Continuing Dental Education [CDE] and its Role during COVID 19 Pandemic

By Lakshman Chowdary Basam, Revathi Peddu, Ram Chowdary Basam, Sravanthi Tammineedi, Prasad Mandava, Souren B, Devikanth Lanka & Sandeep T

Abstract- *Introduction:* Continuing dental education (CDE) has undergone enormous changes in recent years regarding its methodologies used, intellectual base, and the anticipation of what it should convey.

Objectives: Do contemporary educational interventions based on general practice change doctors' behavior, and improve patient outcomes? It has become a more critical concern for governments and patients as well as dental practitioners. As reaccreditation and quality assurance scientific programs have become more widespread, the effectiveness of continuing dental education in changing clinical practice has come under closer inspection. There is a definite need to focus on the role of CDE during the COVID-19 Pandemic and how to implement CDE programs related to awareness of COVID-19.

Results: In this review, we intend to describe various methods of educating dentists that improve patient outcomes, to examine the effectiveness of continuing dental education in clinical practice in particular, and some key points for ensuring success. Specifically, we focused on the role of CDE in the prevention and control of the COVID-19 Pandemic and various education methods that were efficient in attaining knowledge, attitude, and practical skills during the COVID-19 era.

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Continuing Dental Education [CDE] and its Role during COVID 19 Pandemic

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Conclusions: Many educational methods, along with CDE, are essential to meet the diverse treatment needs at present and in the future. In particular, CDE programs related to the awareness of COVID-19 are essential for the better control and prevention of it. During this COVID-19 era, it is mandatory to adapt to the new paradigm shift in continuing education towards e-learning and meet the academic needs in terms of procuring knowledge, attitude, and skills.

I. Introduction

In the ever-changing field of the dental health profession, continuing dental health education programs must be adaptable and forward-thinking. One organization member in a professional school referred to continuing education as "shouting out of the windows."[1] Continuing Dental Education [CDE] are activities to improve dentist knowledge, attitudes, and skills, to keep them current with the latest advances that increase patient-care processes and outcomes, to help them accept or reject advanced practices, and persuade them to abandon the use of existing care of lesser effectiveness.[2]

The movement to increase coordination among health professionals to improve oral health care outcomes is a significant priority for all health professions. Complex dental issues frequently seen in patients can best discuss inter-professional health care teams through a multisectoral approach.[3]

The recent outbreak of the COVID-19 pandemic has a community spread pattern and is highly infectious. As the virus is new, the knowledge regarding the COVID-19 among dental professionals is less. Also, because of the nature of the treatments performed, i.e., aerosol-generating procedures, dental professionals are at increased possibility of exposure to the COVID-19.

The purpose of this literature review is to present specific CDE techniques on physician -care processes, improvements of patient health outcomes, and to address the clinical implications of CDE programs during the COVID-19 pandemic. And almost none reviewed all CDE techniques and compared estimates of benefits in the field of dentistry.

II. Traditional Continuing Education Programs

It is a time-based system of credits awarded for attending conferences, workshops, or lectures. The activities are typically teacher-initiated, using passive educational models [lecture]. Recent studies suggest that health care professionals benefit from reflection on the progress and development of their next learning projects or questions. Dentists should consider the perspective of CDE consisting solely of lectures, grand rounds, or dental staff meetings. They should engage in educational projects that offer unique involvement in thinking about professional practice and identifying learning needs. [4]

To achieve its greatest potential, CDE must be indeed continuing, not casual, sporadic, or opportunistic. Dentists must recognize the ongoing opportunities to generate essential questions, interpret new knowledge, and judge how to apply it in clinical settings. Essentially, this means that CDE must be self-directed by the dentist, including the supervision of the content and context for training. In turn, the opportunities for self-directed learning must improve the knowledge and skills needed for critical reflection on practice and measurement of improvement. [5]

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a) International Accreditation Standards

Incorporation of research into dental education is very imperative for the growth of the dental career, and even though the accreditation principles in the USA and Canada and administrations such as the National Institute of Dental and Craniofacial Research offer the students with chances for research, their involvement in research organizations appears very inadequate.[6] The disputes with the present curriculum of dentistry enlisted by the National Academy of Sciences, USA, are as follows:[7]

- Basic science ideas being insipidly related to clinical education.
- The core curriculum is not adequately in equivalence with contemporary dental science and practice.
- Dentistry and medicine are poorly accompanying.
- The dental curriculum being overloaded hence does not permit scope for increasing innovative thinking skills.

In Pakistan, the CDE has extensive stretching skills essential to practice high-quality health care. According to the Pakistan Medical and Dental Council, precise standards and strategies were established to renew a license to practice dentistry. According to which, license to practice is specified to dental practitioners who underwent a CDE training for five credit hours in a year (for the general dentist) and ten credit hours (for specialists).[8]

In 2014, the Dubai Health Authority (DHA) was contented to present the CDE strategies, which epitomize a landmark to gratifying the DHA intentional objective, which is to "ensure quality, stability, and availability of health care specialists."

According to the DHA, the strategy guidelines include the following:

a. Benefits to the patient

- Patients accept safe, high quality, and evidence-based service.

b. Benefits to the dental professional

- Improve confidence in the distribution of professional care and service
- Endorses and preserve the capability to practice
- Improves contentment with work role
- Affords structure and provision for the health care professional and his or her esteemed goals
- Enriches career chances. [9]

Ucer et al. [10] inspected the present developments and grade of CDE in implant dentistry (ID) in Europe. In the utmost European nations, earlier surveys had revealed that recently graduated dentists do not get satisfactory theoretical information, particularly the clinical skills in ID through their undergraduate education. Therefore, they must obtain knowledge and improve capabilities through additional postgraduate learning. Despite the consciousness of several drawbacks and the variations needed in the current core curriculum, there exist frequent encounters in its execution, such as conservatism of the faculty and economic limitations related to the execution of the variations. The American Dental Education hurled the Instruction on Change and Innovation in Dental Education with the persistence of fetching about pioneering variations in the education of general dentists and has suggested some important doctrines such as critical thinking, enduring education, and incorporation of knowledge from research into the core curriculum.[11]

b) Various methods of educating dentists in CDE

They can be face-to-face or at a distance, and educators can be human or devices such as computers.[12] The most regularly used techniques generally were found to have the least benefit, and they must be changed.[2]

Education Methods for CDE

- *Didactic programs:.[*2,5].[13-15], *Information only*[2]
- *Clinical practice guidelines:*[2]
- *Interactive education:*[1,2] Effect of interactive programs in changing physician care is moderate to high.[13-15]
- *Audit and feedback:*[1,2] Changes in the clinical behavior can be measured with chart audit with feedback.[16-18]
- *Academic (counter-) detailing/ outreach:*[2]
- *Reminders:*.[1,2]

Frequent Knowledge explosion by attending CDE accelerates the half-life of information. A dentist should attend CDE as it maintains the professional competence, which will lead to an increased inter-sectoral exchange of knowledge and improves treatment quality.

Multifaceted policies: There are various means and methods to translate new knowledge into practice. They are available at two levels, and they are the health system and individual dentist levels. The remaining issue is organization and implementation by educators, funders, and dentists. Multifaceted policies are required for such complex policy organization, development, and implementation.[2]

There must be parallel awareness first that no single approach to professional education works best under all circumstances.[19]

Successful implementation also requires awareness of local healthcare organization needs, evidence of suboptimal use of effective care, and good estimates of costs of changing behavior.[20,21]

c) Recertification and reaccreditation

The primary purpose of continuing dental education is to maintain and improve clinical

performance. Recertification and reaccreditation are part of an international trend to shift the purpose of continuing dental education towards assuring adequate performance.[22]

The most effective methods derived include learning linked to dental clinical practice, interactive educational conferences, outreach events, and policies that include compound educational interventions (for example, outreach plus reminders): less effective approaches comprise audit, feedback, local agreement procedures the inspiration of judgment front-runners. The least effective approaches are also the most commonly used in general dental practice continuing dental education—namely, lecture format teaching and free printed material (including clinical guidelines).[2]

d) Role of Continuing Dental Education and Quality Assurance Programs

In discussing the potential impact of CDE, it is essential to address the crucial elements of the CDE program under consideration. Most of the CDE elements in this aspect include [23]Grand rounds-style lectures, Handouts, Self-assessment examinations for CDE credit, Telephone "hotlines" for authoritative consultation at no cost [2], and Wallet-size quick reference cards for dentists. Traditional CDE has not been associated with actual data based on local performance or with the knowledge by dentists that their subsequent practice patterns would continue to be monitored and compared with national standards. Stone et al. concluded economic incentives were the best motivator of patient behavior change, reminders were moderately useful, and information alone did not affect.[3]

e) Combination of educational interventions

Compounds of educational interventions were found to be better than single interventions. Organizational and management support were important additional factors in changing behavior. Peer review and group learning models were proposed as particularly relevant in general dental practice settings.[5]Combining techniques, for example, interactive education plus academic detailing, leads to an even greater effect than either achieves alone. [24,25]

f) Methods to implement in CDE in the future

- Team approach: There must be parallel awareness first that no single approach to professional education works best under all circumstances. Educators must use a collaborative team approach. i.e.., strategies that focus on teams and organizations, including unique practitioner social, political, and economic environments.[3] Clear models endure that can improve the likelihood of successful integration of evidence-based new practical clinical knowledge into clinical dental practice.[3]
- Implementation of Individual training sessions and educational activities such as rounds, educational meetings, dental conferences, refresher courses, programs seminars, workshops, lectures on the latest research methodology for human dental health care improvements in every aspect and symposia on trending technology should be taken into consideration in future.
- Consideration of lectures on research and research methodology at genetics and molecular levels will give a better contribution to the development of new advanced methods for the prevention and treatment of diseases by providing efficient dental care.
- Small group discussions on pediatric dental care that uses interactive techniques, videos, case studies will give the best impact on delivering an effective treatment and helps in the reinforcement of positive effect on both dentist performance and child oral health care.
- Computer-based instructional programs can be useful in propagating novel evidence and placing it in viewpoint for orthodontic health care professionals, as a minimum for those who are attentive in computer applications to their work.[26]
- Educational research suggests that dynamic graphics, or animation, can provide several advantages in a computer-based instructional lesson.[27]
- A fully organized, well-developed, and well-implemented continuing education workshop in leadership, mainly based on the latest techniques in leadership training, would have a positive effect on the skill, knowledge, and building up the self-confidence of dentists-managers. It is better to focus on developing leadership skills for the dental executive rather than providing information on practice management for the dental office staff in CDE programs. It is necessary to add postdoctoral leadership training programs in CDE to provide active leadership qualities that entail the dental executive a prospective leadership.[2]
- Patient-based interventions: Several patient-based educational interventions, especially those involving patient education materials, have been reported to be useful in implementing clinical practice guidelines concerning diabetes mellitus management[28], preventive strategies[29], and smoking cessation.[30]The essential skills required for success are collaboration, communication, professionalism. The ability to manage medically complex patients like diabetes mellitus[28], etc.. and behavior management of the medically compromised children is also a requirement. Evidence-based knowledge and skill, along with a

multisectoral team approach, is a particular requirement in treating these patients.

- Faculty training and continuing education for clinicians, residents, and allied health providers will be necessary for the widespread adoption of a team-based collaborative care system to treat patients effectively.[3] It's essential to organize meetings with industrial representatives making new advances in technology and research and sharing new ideas with them to make things which help humanity to cure dreadful diseases.
- One more important requirement to be added to CDE is to make the upcoming dentist aware of oral diseases and basic knowledge of the etiology of any condition apart from normal, to give the perfect diagnosis, by using new advanced technology, skill, and knowledge.

g) Key features for success

- Valued members for transmitting the information to practitioners,
- Targeting group interests and motivations,
- Using collaborative teamwork which will give the best output,
- Tailoring interventions to audience needs, and
- Including peer and senior administration support.
- The robust implementation also requires awareness of local healthcare organization needs, evidence of the suboptimal use of efficient care, and sound estimates of costs of changing behavior.[23]

h) Role of CDE programs during COVID – 19 Pandemic

CDE programs should address the People at High Risk of Infection

World Health Organization (WHO) announced that the COVID-19 outbreak had established a health care disaster On January 30, 2020 [31]. According to Wang et al. 2020[32], existing interpretations recommend that individuals of all age groups are generally prone to this new epidemic infectious disease. However, those who are in close interaction with symptomatic and asymptomatic patients. Both the health care personnel and other patients in the hospital are at greater risk of SARS-CoV-2 contagion. Since February 14, 2020, an aggregate of 1,716 health care personnel in China was disease-ridden with SARS-CoV-2, entailing 3.8% affected individuals countrywide, 6 of that group who have deceased.

Recommendations for Dental Practice Interim management on infection prevention and control during health care were suggested when COVID-19 contagion was suspected.[33]Along with this, the interactive sessions on infection control, maintenance of various devices will improve knowledge among health care professionals, especially those who were involved in treating patients directly.[34] Poor hand hygiene among health care workers is a crucial reason for the spread of hospital infection. Compliance of the health care professional towards hand hygiene is determined by individual consciousness, which can be attained through recurrent throw reminders. [35]The use of Flipcharts is inexpensive, simple to use as an education tool. It can be used as an operational substitute for video-aids for delivering education regarding hand hygiene in the presence of an expert trainer.[36] According to a recent systematic review on the usage of PPE in Pakistan concluded the Usage of PPE differs about the need, operating surroundings, and category of healthcare associates. To defend against respirational infections, the widely used PPE were face masks and gloves. Overall, the PPE usage was less, lack of availability and reuse of it were identified. [37]Until now, there has been no covenant on the delivery of dental amenities through the epidemic of COVID-19. Based on our knowledge and appropriate strategies and research, CDE programs should guide the dentists to take strict personal protection measures and avoid or minimize operations that can produce droplets or aerosols.

Audiovisual aids which fulfill proper demonstrative procedures regarding the 4-handed technique and the use of saliva ejectors with low or high volume as these are beneficial for controlling infection and reduce the production of droplets and aerosols respectively[38-40] Endorsements for Dental Education-related contests for medical and dental schools, as well as their allied hospitals, are noteworthy. It was conveyed that an open message among students, clinical trainers, and managerial staff would improve common conviction and ease good collaboration.[41]

Based on our knowledge of SARS and pertinent extremely pathogenic transmissible disease, we provide a little essential recommendation for dental education during COVID-19: First; during this pandemic, online orations, case training, and problem-centered learning lectures should be implemented to evade redundant aggregation of persons and related risk of infection[42]. Current smart devices and applications have made it conceivable for students to attend and evaluate lectures whenever possible. Second, it is worth promoting to reassure students to involve in self-learning, make exclusive use of online assets, and acquire about the modern academic growths. Third, throughout this period, it is informal for students to be pretentious by disease-associated distress and pressure. Dental colleges should be organized to deliver psychological amenities to those who need them [43].

In the course of the COVID -19 Pandemic, the continuing dental education programs in China were conducted through various online platforms, and there was a considerable increase in their number during this pandemic.[44]Students have the opportunity to gain collective procurement of knowledge, skills, and attitudes by using the four-component instructional

design model (4C/ID) model.[45]Its use in developing the various learning methods causes a paradigm shift towards tasks for learning from lectures.[46] By using this model in the continuing endodontic education, there was an increase in knowledge of the students and was operational in improving their practical skills.[47]So, it is suggested to use the 4C/ID model during the COVID -19 era for enhancing the communication skills and practical skills of students through distance education.

Entirely computer generated programs were not recommended. We can incorporate dental education by using manikin as an alternative to patient demonstrations during the pandemic. [48]The attitude, teaching skills of the faculty, and attitude of the end-users of the program in terms of advanced tools for e-learning determine the triumph of these programs.[49] Although the present education system in dentistry shows there are many difficulties in e-learning, [50] Authorities organizing CDE programs should give an additional academic score to the students in terms of merit for actively participating in these programs.

There is an immediate necessity to promote research-oriented CDE programs related to the spread of diseases via aerosols generated during various dental procedures. We must continuously address the infectious fears in CDE programs that may contest the current infection control schedule, particularly in dental practices and colleges of dental medicine.

i) Lessons practice

These are the few lessons for practice to the health care professionals involved in enlightening healthcare excellence.[51]

- Focus on the requirements for professional training and available resources
- Promoting an intellect of the community
- Proper usage of data in encouraging change in healthcare professionals' behavior.

III. Conclusion

Knowledge and healthiest practices in this field are continually changing. As new research and experience broaden our understanding, changes in research methods, professional techniques, or treatment may become necessary to be considered in CDE through a multi-sectorial approach. As evidence of the link between educational activities and improved patient care is necessary, CDE should create educational strategies for practicing dentists to improve clinical reasoning skills. Lifelong learning through CDE is essential for the dentist to maintain and increase competence in clinical practice. In particular, during the COVID-19 pandemic, it is imperative to educate the faculty and students through CDE programs regarding symptomology and diagnosis, possible transmission routes, following a standard personal protection barrier, infection control measures, maintenance of operating area and instruments, controlling stress due to fear of pandemic. Many educational options, along with CDE, are necessary to meet the diverse treatment needs at present and in the future.

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Assessment of House Officers in Management of Common Medical Emergencies in Teaching Dental Hospitals of Peshawar

By Muhammad Ihtisham Munawar

Abstract- *Introduction:* A medical emergency is a medical condition that requires immediate treatment. During practice, dentists face many emergency events especially medical emergencies.

Objectives: To assess the knowledge, confidence and skills of House Officers regarding chair side management of common medical emergencies in dental teaching hospitals of Peshawar.

Methodology: A Cross Sectional study design was conducted and self-administered questionnaire which included closed ended questions regarding knowledge ,clinical skills and confidence to deal with medical emergencies were distributed among the participants after taking written consent in three different institutions of Peshawar, SBDC; Sardar Begum Dental College, PDC; Peshawar Dental College, KCD; Khyber College Of Dentistry.

Results: Out of 140 house officers (majority females) from different dental teaching hospitals in Peshawar. Most of them responded correctly to the dental scenarios. Some of the house officers (44.3%) were not confident enough to deal with medical emergencies in their dental practice due to lack of skills in dealing with such scenario.

GJMR-J Classification: *NLMC Code: WB 105*

Strictly as per the compliance and regulations of:

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Conclusion: House Officers in dental teaching hospitals of Peshawar have enough knowledge about dealing with common medical scenarios that occur on dental chair during routine dental procedures.

I. Introduction

A medical emergency is a medical condition that requires immediate treatment. During practice, dentists face many emergency events especially medical emergencies. These emergencies should be treated and avoided because it puts the life of a patient at risk. These episodes usually occur due to lack of appropriate knowledge.[1]

As people age, the systematic conditions upsurge and with that, the dentists' are increasingly responsible for treating a growing number of elderly and medically compromised patients. Diseases that compromise the health lead to medical emergencies, which hinders the dental treatment.[2]

Fortunately, most of the medical emergencies encountered are not life-threatening .These medical emergencies usually occur during or after local anesthesia administration, mainly during tooth extraction and root canal treatment. Syncope was the most common medical emergency in eastern region of Saudi Arabia followed by Hypoglycemia. Dentists have the responsibility and are responsible for recognizing medical emergencies when they arise, along with being competent in managing them optimally.[2] However dental professionals' expertise and skills and the availability of essential emergency drugs and equipment can reduce the morbidity or mortality associated with medical emergencies. The Resuscitation Council, United Kingdom (UK), requires all dental clinics in the UK to have minimal emergency equipment that includes portable oxygen cylinder, oxygen face mask, set of oropharyngeal airways, device for inhaled bronchodilators, blood glucose measuring apparatus, defibrillator, suction and sterile syringes and needles. Similarly, oxygen, epinephrine, nitroglycerin, diphenhydramine, bronchodilators, aspirin, glucose, and aromatic ammonia are the basic drugs, which should be available in dental clinics.[3]

In the UK and New Zealand, studies have reported that almost 20% of dentists were not adequately prepared to manage the emergencies and that basic emergency drugs and equipment were not available in their clinics. Patients receiving dental treatment can experience syncope, allergic reaction,

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angina pectoris, cardiac arrest, fits and seizures, diabetic crisis, asthmatic attack, orthostatic hypotension, hypertensive crisis, and ingestion of a foreign body. Studies that have evaluated the prevalence of different medical emergencies indicate that syncope is the most common occurrence.[3]

There is a significant need for increased awareness among dental professionals about emergency medicine. Every dental professional should be trained in emergencies which may be life-threatening and should be able to deal with anywhere and any situation. Dental professionals should be aware of protocols for initial stabilization of the patient in the dental office. Emergency can occur in any dental office without any warnings. There is an increased number of medico legal cases due to rise in the number of deaths in the dental chair.[4] Therefore, there is need to ensure that effective undergraduate training is available to have better preparation for future dental practice. Such preparedness would include knowledge and skills of practioner, training of clinical staff, and availability of emergency drugs and equipment's in the dental setup.

II. Objectives

To assess the knowledge, confidence and skills of House Officers regarding chair side management of common medical emergencies in dental teaching hospitals of Peshawar.

III. Methodology

A Cross Sectional study design was conducted and self-administered questionnaire which included closed ended questions regarding knowledge ,clinical skills and confidence to deal with medical emergencies were distributed among the participants after taking written consent in three different institutions of Peshawar, SBDC; Sardar Begum Dental College, PDC; Peshawar Dental College, KCD; Khyber College Of Dentistry. All the house officers of these institutions were included which were present during the time of study.

a) Statistical analysis

Data was analyzed using SPSS 16. Frequency charts and tables were analyzed using descriptive statistics.

IV. Results

Out of 140 house officers (majority females) from different dental teaching hospitals in Peshawar. Most of them responded correctly to the dental scenarios. Some of the house officers (44.3%) were not confident enough to deal with medical emergencies in their dental practice due to lack of skills in dealing with such scenario. About (67.9%) have never attended any workshop on medical emergencies. However 94.9% of house officers are in need of further training in dealing with medical emergencies.

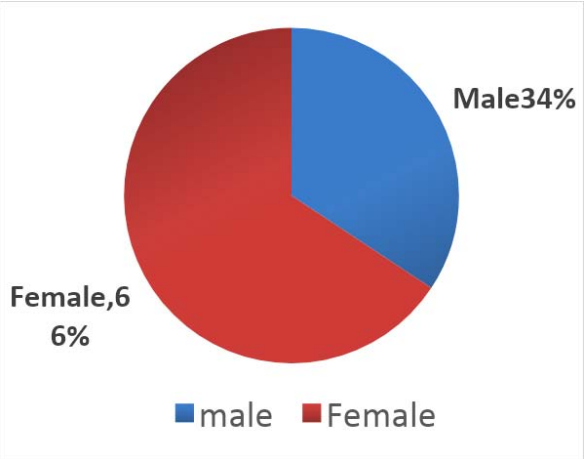

Figure 1: Gender distribution of participants

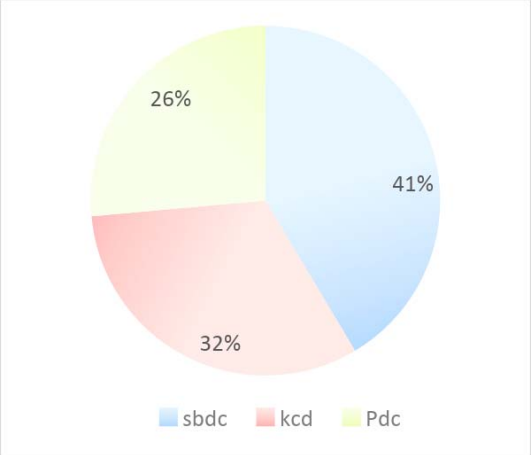

Figure 2: Frequency of Participants from different institutions

Table 01: Do you feel confident enough to deal with medical emergencies?

	Name of Institution			Total	P Value
	SBDC	KCD	PDC		
Yes	30(51.7%)	20(44.4%)	28(75.7%)	78(55.7%)	.013
No	28(48.3%)	25(55.6%)	9(24.3%)	62(44.3%)	

Table 02: A 27 year old female comes to the oral surgery department for extraction of her grossly carious tooth. After giving local anesthesia she went into state of syncope. How will you manage such case?

	Name of Institution			Total
	SBDC	KCD	PDC	
Start I.V line	0(0%)	0(0%)	1(2.7%)	1(07%)
Positioning patient in supine position with legs raised above the level of head	46(79.3%)	40(88.9)	32(86.5%)	118(84.3%)
Crush ammonia ampule under nose	12(20.7%)	5(11.1%)	4(10.8%)	21(15.0%)
Total	58(100.0%)	45(100.0%)	37(100.0%)	140(100.0%)

Table 03: How do you plan for extraction of a tooth in patient with prosthetic heart valve?

	Name of Institution			Total
	SBDC	KCD	PDC	
Administer plane anesthesia	6(10.3%)	5(11.1%)	3(8.1%)	14(10%)
Antibiotic prophylaxis	20(34.5%)	25(55.6%)	15(40.5%)	60(42.9%)
Administer nitroglycerine	2(3.4%)	2(4.4%)	0(0%)	4(2.9%)
All of the above	30(51.7%)	13(28.9%)	19(51.4%)	62(44.3%)
Total	58(100%)	45(100%)	37(100%)	140(100%)

V. Discussion

Similar studies were done on knowledge, skills and confidence of dentists in dealing with medical emergencies. In *IRAN* a similar study was performed, the result was not that satisfactory, the level of knowledge of 23% dentist was poor, 37% average, 39% Good. Most of the participants showed enough knowledge about diagnosis and management of syncope/ faint (97.7%) and seizure 82 (95.5%). The level of knowledge of the respondents about other medical emergencies management were as follow: heart attack 77 (79.1%), orthostatic hypotension 60 (69.8%), hypoglycemic shock 58 (67.4%) supine hypotension of pregnancy 14 (16.3%), angioneurotic edema 14 (16.3%), hyperventilation syndrome 20 (23.3%), asthma attack 22 (25.6%) and thyroid storm 24 (27.9%).[4]

In *Qassim Province, Saudi Arabia,* Out of 350 questionnaires that were distributed among dental students 201 questionnaires were received and response rate was 57%. Numbers of valid cases for analysis were 153, 76 female and 77 male with age ranging 20 to 30 years.89% of participated inquired about Medical history involving medication and Allergy history before dental treatment. Among these participant 29.4% of them checked the vital signs and 37% participant were confident to handle any medical emergency in dental office. Almost 60% of participant knew about availability of emergency kit in their hospitals.[2]

A study in *PAKISTAN* showed most common medical emergency encountered in dental hospital was syncope (80.7%) followed hypoglycemia and cardiovascular episodes. It was observed that 43.8% were confident in dealing a medical emergency by themselves whereas the remaining was dependent on others to cope such situations. Moreover the result of the study shows that only 23% of dentists know how to position the chair in case of angina. Only 39% knew the route of administration of adrenaline, a principle drug in case of anaphylaxis as well as life threatening asthma.[5]

VI. Conclusion

House Officers in dental teaching hospitals of Peshawar have enough knowledge about dealing with common medical scenarios that occur on dental chair during routine dental procedures. But they lack skills and dexterity to handle such medical scenarios. Are in need of further training to deal with such medical emergencies more efficiently.

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[5] An Assessment of Dentists' Knowledge About Medical Emergencies. Owais Khalid Durranil, Kamran Khan, Sundish E Ahmed, Sundus Khan Hira Arshad, Ulfat Bashir; Pakistan Oral and Dental Journal, December 2015.

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Oral Submucous Fibrosis- God's Furry or Age Old Habits?

By Dr. Samiha Bari & Dr. Rashmi Metgud

Abstract- *Introduction:* OSMF is a potentially malignant disorder predominant in people of Asian descent. Copper plays important role in pathogenesis of OSMF. Lysyl oxidase is a copper activated enzyme critical for collagen cross linking. The uptake of copper into the epithelial cells occurs probably by a non-energy dependent diffusion. In Indians, the practice of drinking water stored in copper vessels for health benefits is being followed since ages.

Aims and Objective: The present study was conducted to study the effect of consuming water stored in copper vessels in predisposing an individual to OSMF by evaluating cytological smears.

Materials and Methods: Cytological smears were prepared, stained with Rhodanine stain and evaluated for the following groups.

Keywords: *copper vessel, water, OSMF, rhodanine*.

GJMR-J Classification: *NLMC Code: WU 113*

Oral Submucous Fibrosis- God's Furry or Age Old Habits?

Dr. Samiha Bari [α] & Dr. Rashmi Metgud [σ]

Abstract- Introduction: OSMF is a potentially malignant disorder predominant in people of Asian descent. Copper plays important role in pathogenesis of OSMF. Lysyl oxidase is a copper activated enzyme critical for collagen cross linking. The uptake of copper into the epithelial cells occurs probably by a non-energy dependent diffusion. In Indians, the practice of drinking water stored in copper vessels for health benefits is being followed since ages.

Aims and Objective: The present study was conducted to study the effect of consuming water stored in copper vessels in predisposing an individual to OSMF by evaluating cytological smears.

Materials and Methods: Cytological smears were prepared, stained with Rhodanine stain and evaluated for the following groups.

Group 1- Control group (n=10), individuals with no chewing habit and normal oral mucosa.

Group 2- Study group (n=10), individuals consuming water stored in copper vessel without areca nut consumption:

a) n=5, Individuals consuming vessel stored water throughout the day

b) n=5, Individuals consuming vessel stored water once a day

Group 3- Clinically diagnosed OSMF (n=10) with arecanut consumption history.

Statisical Analysis: Z test was performed to compare the staining intensity amongst OSMF patients and copper vessel water consuming subjects.

Results: The numbers of squames revealing presence of copper granules were higher in smears of Copper vessel water consuming subjects than OSMF.

Conclusion: In India, copper is used as a cost effective and traditional method of disinfecting water. This age old habit is still being practiced and inadvertent use of this habit might have led to the predisposition of Indians to OSMF.

Keywords: copper vessel, water, OSMF, rhodanine.

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I. Introduction

The exact etiology of OSMF is not well understood. Multiple factors such as genetic, autoimmune, nutritional and environmental are being studied. Among the environmental agents different oral habits like intake of spicy food, chewing of betel nut, betel quid and other preparations are included. Amongst these arecanut is confirmed as the main etiological factor.[1] These factors are known to have either a direct effect or indirect effect by mediating the immune system which is compromised in OSMF.[1]

Pathogenesis is believed to involve juxta-epithelial inflammatory reaction and fibrosis in the oral mucosa, probably due to an increased cross linking of collagen through an increase in lysyl oxidase activity. Fibrosis, or the building up of collagen, results from the effects of areca nut, which increases collagen production (e.g., stimulated by arecoline, an alkaloid) and decreases collagen degradation.[2],[3]

Copper, present in arecanut plays an important role in pathogenesis of OSMF. The enzyme lysyl oxidase is a copper activated enzyme critical for collagen cross linking. Copper is absorbed into the epithelial cells occurs probably by a non-energy dependent diffusion. Numerous factors influence the bioavailability and subsequent absorption of copper by the oral mucosa. In Indians, the practice of drinking water stored in copper vessels for health benefits is being followed since ages. The present study was being conducted to study the effect of this age old habit as a cause for predisposing Indian population to OSMF.

II. Materials and Methods

Exfoliative cytology was performed using cytobrush from buccal mucosal site. The participants were asked to rinse their mouth before smears were prepared. The prepared smears were transferred on the glass slides and were fixed using alcohol based fixative. The slide was stained for light microscopy with Rhodanine *(Lindquist method 1969)*[4].

Additional smears were prepared from control group. The smears were kept overnight in supersaturated copper sulphate solution and were used as positive controls.

The following groups were taken:

Group 1: Control group (n=10) i.e. individuals with no chewing habit and normal oral mucosa.

Group 2: Study group (n=10) consisting of individuals consuming water stored in copper vessel without any history of areca nut consumption. It was further divided into two sub groups depending on the duration of consuming water stored in copper vessel

a) n=5, Individuals consuming vessel stored water throughout the day
b) n=5, Individuals consuming water stored in vessel for overnight

Group 3: Subjects clinically diagnosed as Oral Submucous Fibrosis (n=10)

The whole smear was evaluated in a zig zag manner under 400x and 1000 cells per slide were evaluated for the presence of staining. For interobserver variability 3 persons randomly observed the slides and divided them into three groups depending on staining intensity as no stain, intermediate staining and intense staining.

III. Statistical Analysis

Z test was performed to compare the staining intensity amongst OSMF patients and copper vessel water consuming subjects. Also a comparison between the staining intensity of subjects consuming water stored in copper vessel throughout the day and subjects consuming water stored overnight (once a day) was done.

IV. Results

People consuming copper vessel stored water revealed staining comparable to that of OSMF patients. The majority of squames in both the groups revealed presence of copper granules. The results obtained were found to be statistically significant with a p value of 0.02. (Table 1)

Table 1: Comparison between subjects consuming Copper vessel stored water and OSMF

Groups	Mean	sd	p value
Copper vessel	677.1	283.92	0.02(S)
OSMF	628	226.9	

z test was performed and $p < 0.05$ was considered to be significant

People consuming copper vessel stored water throughout the day revealed dark red staining in majority of squames than the ones consuming water once a day. The results obtained were statistically highly significant with a p value < 0.0006 (Table 2).

Table 2: Comparison between copper vessel stored water consumed throughout the day and consumed once a day

Groups	Mean	sd	p value
A (consumed throughout the day)	848.2	506	0.0006
B (once a day)	138.236	298.46	

z test was performed and the results were found to be highly significant

V. Discussion

An epidemiological survey done have shown an increase in number in India from 250000 cases reported in 1980 to 2 million cases in 1993.[5] The epidemiological assessment of the prevalence of OSF among Indian villagers, based on baseline data, recorded a prevalence of 0.2% (*n* 10,071) in Gujarat, 0.4% (*n* 10,287) in Kerala, 0.04% (*n* 10,169) in Andhra Pradesh, and 0.07% (*n* 20,388) in Bihar. The prevalence among 101,761 villagers in the state of Maharashtra (central India) was 0.03%.[2] A study of Moradabad district (Nigam et al, 2014)[6] showed a prevalence rate of 6.3% while in a study of rural Jaipur population (Rohit Sharma et al, 2012)[7] showed prevalence rate of 3.39%. The variation can be due to difference in the availability of different products.

Hypersensitivity to chili or betel quid is explained as a common factor in OSMF development. However, its development is very rare in people of Mexico and South America even though their intake of chilies is equal to or even exceeds from people of India or south East Asia. Thus a genetic perspective is considered vital to explain this condition. Almost all carcinogenic agents, whether physical (radiation), chemical, or infectious (viruses), act as mutagens. They change the structure of the genetic material, producing point mutations, deletions, insertions, or rearrangement. Copper increases absorption of lysyl oxidase in oral submucous fibrosis patients that causes cross linking of collagen and makes it resistant to digestion by collagenase enzyme. Thus it could be stated that an increase in lysyl oxidase activity leads to accumulation of collagen[8].

According to *Rajendran et al 2001*[9] OSMF is believed to be a localized lesion of fibrosis in that part of the oral mucosa that had localized contact of copper, however visceral organ fibrosis was not evident. The bioavailability of copper and its absorption in the oral mucosa is influenced by numerous factors. Some of these include presence of amino acids, dietary fats, carbohydrates, mineral elements, pH of oral environment.

However the exact mechanism through which copper is absorbed by the cells of the oral mucosa is not properly known. In some literature role of membrane bound copper transporting adenosine triphosphates is evident and mentioned at cellular level.[10]

It is evident that copper binding sites form an extended polypeptide chain at the amino terminus of the transmembrane domain that regulates its absorption. The reason for accumulation of copper by cells are explained by the extracellular presence of tripeptide glycyl-L-histidyl-Llysine (GHL), where the first two residues of the GHL molecule are involved in the binding of copper, whereas the side chain of lysine may be involved in the recognition of receptors that function in the uptake of copper into cells. This tripeptide may be liberated within the lamina propria of areca chewers during the initial inflammatory phase of OSMF.[11] Interleukin -1 beta which has been shown to potentiate collagen synthesis in vitro is another important regulator of fibrosis that participates in the mediation of OSMF. Any interaction of copper with other agents in the nut, such as arecoline, and mediators of inflammation, such as cytokines, need further study.

Since ancient times Ayurveda has advocated the benefits of drinking water from a copper vessel. Ayurveda states that when you store water in a copper vessel it has the ability to balance all the three doshas in our body. Scientifically speaking, when water is stored in a copper vessel for over eight hours, very small quantities of copper get dissolved in this water. This process is called "oligodynamic effect" and has the ability to destroy a wide range of harmful microbes, molds, fungi etc. due to the toxic effect it has on living cells.

Modified Rhodamine stain is a copper specific stain and histologically demonstrates copper in the tissues.[12] Comparision of different histochemical staining methods has shown modified Rhodamine technique to be the method of choice for the detection of copper.[13] Copper appears red to orange-red stain and the nucleus was stained blue.[4] Irons RD et al have concluded that the Rhodamine method was found to produce the most reproducible results and a linear relationship between microscopical evaluation of the stain and actual tissue copper levels was observed. They considered that the Rhodamine method is applicable for the semiquantitative evaluation of tissue copper and provides a satisfactory screening method for the identification of abnormal tissue copper levels. They observed that a minimum of 60 g of copper per gram of tissue has to be present for cytochemical identification of copper using Rhodamine staining technique.[14]

Copper is widely used in household plumbing materials. It is also enters the water ("leaches") through contact with the plumbing. Copper leaches into water through corrosion. Copper can leach into water primarily from pipes, but fixtures and faucets (brass), and fittings can also be a source. The amount of copper in water also depends on the types and amounts of minerals in the water, how long the water stays in the pipes, the amount of wear in the pipes, the water's acidity and its temperature. Safety of leached copper does not appear to be an issue since studies have shown that the current WHO guideline of 2 mg Cu/L is safe.[15,16]

Arakeri G et al (2014)[17] conducted a study to evaluate that OSMF was significantly associated with a raised concentration of copper in drinking water. The study was carried out in a heterogeneous population in Hyderabad-Karnataka, India, a region with a high incidence of the condition. They evaluated 3 groups, each of 100 patients: those with OSMF who chewed gutkha, those who chewed gutkha but did not have OSMF, and healthy controls who did not chew gutkha. The difference between the groups in the mean concentration of copper in water measured by atomic absorption spectrometry was significant ($p<0.001$). There were also significant differences between the groups in mean concentrations of serum copper, salivary copper, and ceruloplasmin ($p<0.001$). The results confirm that copper in drinking water contributes to the pathogenesis of OSMF, but ingestion of copper is unlikely to be the sole cause.

In the present study a comparison between normal subjects, copper vessel stored water consuming and OSMF subjects showed difference in the no of squames showing positive staining. The normal subjects showed no staining (Fig1). Subjects consuming copper vessel stored water throughout the day and those consuming water stored overnight showed difference in the staining intensity (Fig 2, 3). People consuming copper vessel stored water throughout the day showed majority of squames showing dark red staining than the ones consuming water once a day(Fig4). The OSMF patients also showed positive staining but the staining was comparable with that of copper vessel subjects (Fig 5) as the OSMF patients taken were of clinically diagnosed Stage 2 patients.

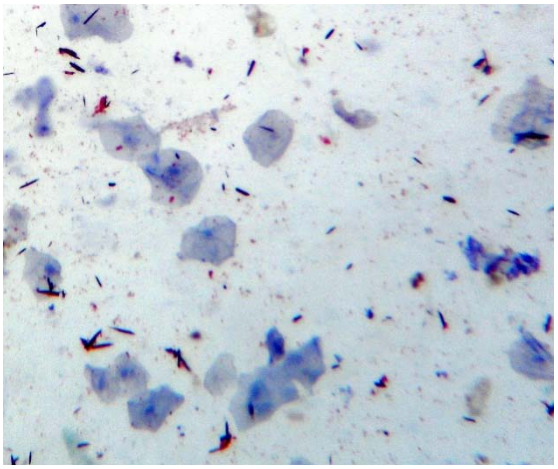

Fig. 1: Normal mucosa showing no stain

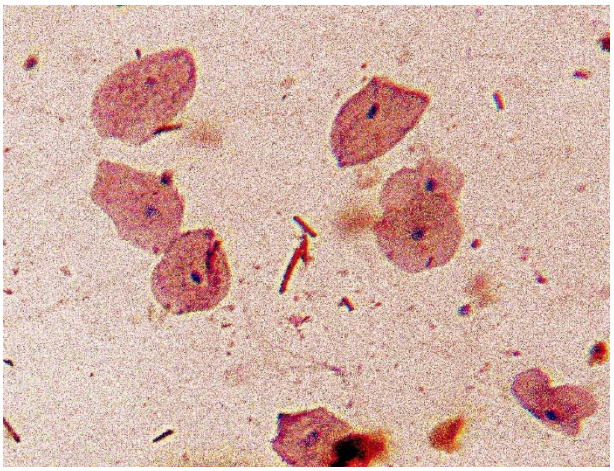

Fig. 2: Copper vessel water consumed throughout the day

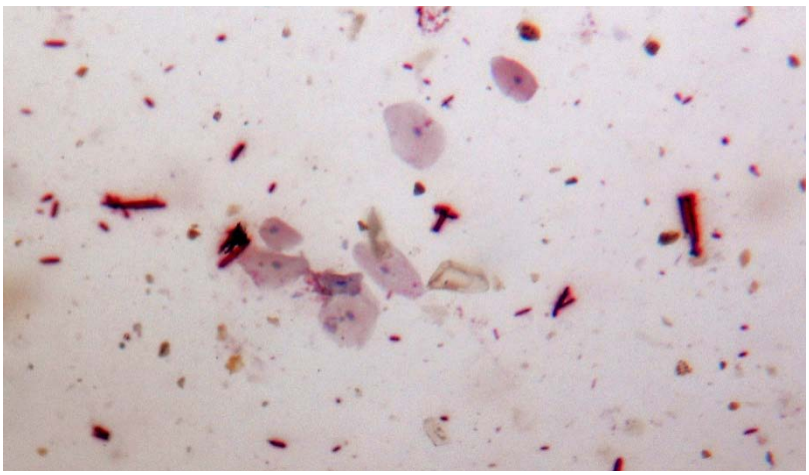

Fig. 3: Copper vessel water consumed once a day

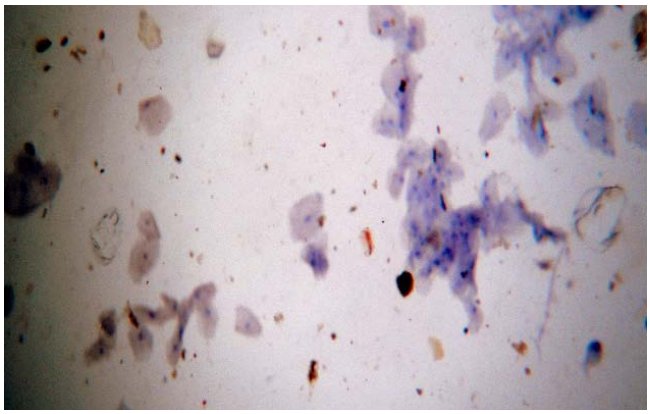

Fig. 4

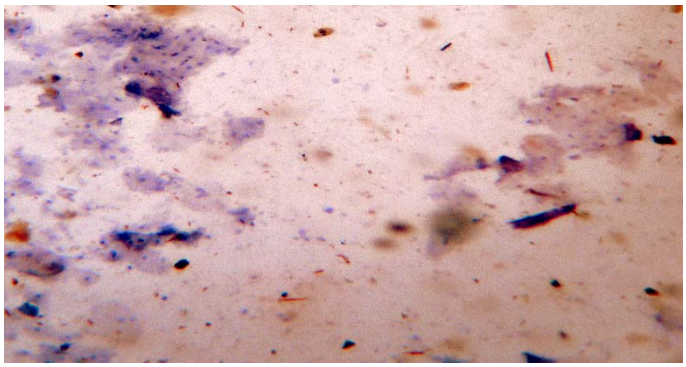

Fig. 5: OSMF showing variability in staining

The copper sulphate dipped smears showed red staining and was taken as positive controls (Fig 6).

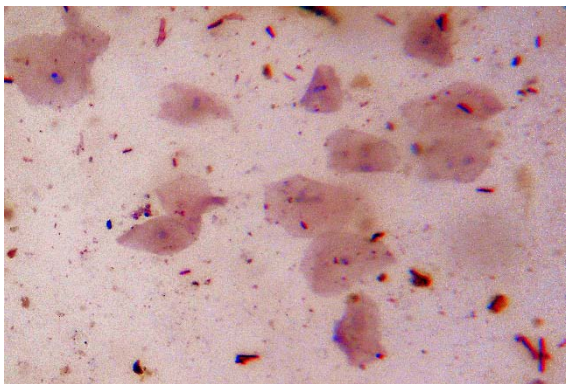

Fig. 6: Copper Sulphate Dipped smear

In mammals, copper can be absorbed from the stomach to the distal small intestine. A critical component of copper gastrointestinal balance involves enterohepatic circulation. At least one-half of the amount of copper reaching the small intestine reappears in the bile as strongly bound compounds, and is lost in the stool. The distribution of copper throughout the body is mediated by ceruloplasmin, albumin, and other quantitatively less important copper binders.[18]

Copper added to cooked foods with high protein contents, such as chicken liver or chick peas, was more poorly absorbed by rats than copper supplied from other vegetable and animal sources.[19]

A study was conducted by Janet R Hunt(2001)[20] that showed that although copper was less efficiently absorbed from a vegetarian diet than from a nonvegetarian diet, the total apparent copper absorption was greater from the vegetarian diet because of its greater copper content.

Storing water in copper and silver pots finds mention in ancient texts of Ayurveda for purification of water.[21] A study conducted by Sudha et al (2009)[22] provided laboratory evidence of the antibacterial activity of copper pot in distilled water.

In India, copper is used as a cost effective and traditional method of disinfecting water. It is also used

because of its health benefits mentioned in the Vedas. This age old habit of consuming copper vessel stored water is still being practiced. The present study findings suggest that the inadvertent use of this age old habit has led to the predisposition of Indians to OSMF. Moreover majority of the Indian population is vegetarian in diet that makes higher copper bioavalability as compared to those having a non-vegetarian diet.

All these factors may be helpful to some extent in providing an explanation to the fact that why OSMF is more prevalent in Indian population. Although further research with a large sample size is needed to prove this hypothesis.

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Covid-19 Outbreaks in Hospitals and Dental Clinics of Pakistan

By Dr. Tariq Akbar, Dr. Sobia Hasan, Dr. Anum Zahid, Dr. Sadia, Dr. Faiqa Ashraf, Dr. Talha Rafiq & Dr. Muhammad Rizwan

Abstract- *Background:* An outbreak of Corona virus disease (SARS-CoV-2) was first identified in Wuhan, China and spread worldwide. This disease was officially named as Corona virus disease (COVID-19) by WHO on February 12, 2020. The main routes of transmission of SARS-CoV-2 are through respiratory droplets and direct contact with the infected person. There is a high risk of COVID-19 transmission in dental practices. The aerosols and droplets generated during dental procedures can increase risk of transmission. Due to the high risk of COVID-19 transmission via dental practice, the dentists need to take infection control measures. SARS CoV-2 can be prevented in the dental setting by taking protective measures i.e. using adequate personal protecting equipment (PPE), prescribing mouth rinses prior to dental treatment, cleaning and disinfecting workplace and good ventilation.

Keywords: *COVID-19, dental knowledge, PPES, dental practice, disinfectants.*

GJMR-J Classification: *NLMC Code: WU 29*

Strictly as per the compliance and regulations of:

Covid-19 Outbreaks in Hospitals and Dental Clinics of Pakistan

Dr. Tariq Akbar [α], Dr. Sobia Hasan [σ], Dr. Anum Zahid [ρ], Dr. Sadia [ω], Dr. Faiqa Ashraf [¥], Dr. Talha Rafiq [§] & Dr. Muhammad Rizwan [χ]

Abstract- Background: An outbreak of Corona virus disease (SARS-CoV-2) was first identified in Wuhan, China and spread worldwide. This disease was officially named as Corona virus disease (COVID-19) by WHO on February 12, 2020. The main routes of transmission of SARS-CoV-2 are through respiratory droplets and direct contact with the infected person. There is a high risk of COVID-19 transmission in dental practices. The aerosols and droplets generated during dental procedures can increase risk of transmission. Due to the high risk of COVID-19 transmission via dental practice, the dentists need to take infection control measures. SARS CoV-2 can be prevented in the dental setting by taking protective measures i.e. using adequate personal protecting equipment (PPE), prescribing mouth rinses prior to dental treatment, cleaning and disinfecting workplace and good ventilation.

Aim: The aim of this study is to determine infection control measures taken by dentists during COVID-19 outbreak. This study may be useful in reducing the risk of COVID-19 transmission during clinical practice.

Materials and Methods: This study was a Cross-sectional; based on Google form questionnaire, conducted among 250 dentists working in dental clinics and hospitals of Pakistan, to study the knowledge of dentists about infection control measure for Covid-19 and structure of their work place. Dentists with age range of 25-40 years of both genders were included in research.

Results: Out of 250, 80% of the dentists were of 25-30 years of age, 18.8% were 30-35 years of age, and 1.2% was 35-40 years of age. 62.8% graduated from private institutes, 35.6% graduated from public institutes and 1.6% was graduates of other institutes. 49.2% participants were working in a private hospital/clinic and 37.2% in a public hospital. 48.8% of the participants were working but less frequently, 22.0% were assisting emergencies only, 18.8% were not working because of pandemic and 10.4% were not working due to other reasons. 64.8% of the participants had received only general instructions about COVID-19 preventive measures, 28.4% had not received any training and only 6.8% had received practical training. 24.0% were provided with disposable surgical masks for assisting patients, 21.6% with N95 masks, 13.6% with disposable surgical caps, 13.6% with protective goggles and 16.0% with face shields. 42.4% were using disposable surgical masks for assisting patients, 25.6% were using N95 masks, 17.2% were using surgical masks over N95 masks, 10.0% were using double disposable surgical masks and 0.8% was using surgical masks over reusable fabric masks. The structure of prime workplace of 36.4% participants was adapted to allow patient's treatment during the pandemic, only waiting area of 28.4% was adapted, entire work environment of 21.2% was adapted and according to 14.0% the only office was adapted. 56.4% of participants and their employees were following official recommendations for routine clinical practice; while 30.8% weren't following any recommendations.52.0% were screening their patients by performing face to face application of specific questionnaire and only 10.4% of them were checking temperature of their patients. 33.9% were using 70% alcohol as a disinfectant, 18.4% were using diluted sodium hypochlorite, 17.2% were using bleach, 4.9% were using undiluted sodium hypochlorite and 6.4% were not using any disinfectants or antimicrobials.

Conclusions: Dentists are at high risk of COVID 19and they should wear all Personal Protective equipment i.e. N95 mask, gown, face shield, goggles and gloves while dealing patients suspected or confirmed of COVID-19.Patients and attendants should be screened before any procedure or entrance at dental hospitals/clinics. Dental Practitioners must receive training on use of PPE, Donning and doffing of PPE and proper disposal of PPE.

Keywords: COVID-19, dental knowledge, PPES, dental practice, disinfectants.

I. Introduction

COVID 19 is caused by a novel corona virus SARS-CoV-2, that began in Wuhan, China in late 2019. World Health Organization (WHO) declared Corona virus disease as public health emergency of international concern on January 30, 2020. [1] The transmission of COVID 19 can occur by direct, indirect or close contact with the infected person. The most common routes of transmission are droplets and close contact. Moreover, SARS-CoV-2 is also detected in gastrointestinal tissue, tears and conjunctival secretions of patients with COVID-19. [2]

The most commonly stated symptoms of covid-19 are fever, dry cough and myalgia. In addition to these, nausea, diarrhea, reduced sense of smell (hyposmia) and abnormal taste sensation have also been reported. [3] The Dental Practitioners are at high risk of COVID-19 due to the nature of their profession, close proximity to the patient and exposure to saliva, blood and other body fluids during dental procedures. [4] Most of the dental procedures produce droplets and aerosols, for this reason infection control measures must be taken by the dentists. [5]

SARS CoV-2 can be prevented in the dental setting by taking protective measures like prescribing

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mouth rinses prior to dental treatment, wearing medical masks, cleaning and disinfecting workplace, good ventilation and limiting aerosol generating procedures. [6] No specific antiviral treatments or vaccines are available for SARS-CoV-2. Therefore, the treatment is symptomatic and is limited to support and palliative care. [7]

The aim of this study is to determine whether dentists of Pakistan are well aware of infection control protocols and are implementing them in their dental practices. This study may be useful in reducing the risk of spreading COVID-19 during clinical practice.

II. Materials and Methods

a) Study Design

A Cross-sectional study was conducted among dentists working in dental clinics and hospitals of Pakistan. The study was approved by Research Committee of Riphah International University, Islamabad, Pakistan.

b) Sample Selection

A Sample of 250 individuals (118 Males, 132 Females) was collected from dental practitioners working in different dental clinics and hospitals of Pakistan. Their ages ranged from 25 to 40 years.

c) Data Collection

Respondents for this study were recruited through online google form that included information on demographic characteristics, professional profile and knowledge of infection control measures taken by dentists during COVID-19 outbreak. In total, 250 respondents provided consent to participate in the survey. Participation was on a voluntary basis. The data were collected and statistically analyzed using the Statistical Package for the Social Sciences (IBM SPSS-22).

d) Questionnaire

All the dentists were asked to fill a questionnaire. The questionnaire contained a series of questions regarding infection control measures taken by dentists during COVID 19 outbreak.

e) Questionnaire Design

The questionnaire was divided into three sections:

Section I: Questions related to demographic and professional profile

Section II: Questions related to infection control measures in professional practice during the pandemic

Section III: Questions related to structure at prime workplace

f) Inclusion Criteria

1. Both genders
2. Age range 25 to 40 years
3. Dentists working at dental clinics/ hospitals

g) Exclusion Criteria

1. Dentists who were younger than 25, older than 40
2. Dentists who were not doing any practice

h) Statistical Analysis

IBM SPSS Statistics for Windows, version 22.0, was used for the statistical analyses. Descriptive statistics were reported using frequency with percentages for categorical variables.

III. Results

The 250 participants were 25-40 years of age, 80.0% were 25-30 years of age, 18.8% were 30-35 years of age, and 1.2% were 35-40 years of age. (Table 1)

Table 1

Age

		Frequency	Percent
Valid	25-30	200	80.0
	30-35	47	18.8
	35-40	3	1.2
	Total	250	100.0

52.8% were females and 47.2% were males. (Table 2)

Table 2

Gender

		Frequency	Percent
Valid	Female	132	52.8
	Male	118	47.2
	Total	250	100.0

Of the study participants, 62.8% were graduates of private institutes, 35.6% were graduates of public institutes and 1.6% were graduates of other institutes. 49.2% of the study participants were working in a private firm (hospital/clinic) and 37.2% were working in a public hospital. (Table 3)

Table 3

From which type of institution did you graduate in Dentistry?

		Frequency	Percent
Valid	Public	89	35.6
	Private	157	62.8
	Other	4	1.6
	Total	250	100.0

60.8% of the participants hadn't done post-graduation in dentistry, 22.0% had completed their post-graduation and 17.2% of the participants were enrolled but hadn't completed their post-graduate education. (Table 4)

Table 4

Have you completed postgraduate education in Dentistry?

		Frequency	Percent
Valid	Yes	55	22.0
	No	152	60.8
	No, but I'm currently enrolled	43	17.2
	Total	250	100.0

48.8% of the participants were working but less frequently, 22.0% were assisting emergencies only, 18.8% were not working because of pandemic and 10.4% were not working due to other reasons. (Table 5)

Table 5

How do you describe your current work status in the place you work most?

		Frequency	Percent
Valid	I'm working, but less frequently	122	48.8
	I'm assisting emergencies only	55	22.0
	I'm not working because of the pandemic	47	18.8
	I'm not working due to other reasons	26	10.4
	Total	250	100.0

64.8% of the participants had received general instructions or online training regarding COVID-19 preventive measures, 28.4% had not received any training and 6.8% had received practical training. (Table 6)

Table 6

Have you received any training on COVID-19 preventive measures?

		Frequency	Percent
Valid	No	71	28.4
	Only general instructions or online training	162	64.8
	I have received practical training	17	6.8
	Total	250	100.0

31.6% had received training on use of different personal protective equipment, 24.4% had received training on standard PPE insertion and removal sequence, 18.0% received training on preparation of the office before and after appointments, 11.0% received training on infection control in workplace and 14.0% received training on COVID-19 screening in patients.

Participants were asked to describe about their work status during the pandemic. 34.4% of the participants were intermediately prepared to assist patients with confirmed cases of COVID-19, 23.2% were poorly prepared, 23.2% were not prepared at all, 16.0% were well prepared and 2.8% were very well prepared. (Table 7)

Table 7

How prepared do you feel to assist patients with confirmed diagnosis of COVID-19?

		Frequency	Percent
Valid	I do not feel any prepared	58	23.2
	poorly prepared	58	23.2
	Intermediately prepared	86	34.4
	well prepared	40	16.0
	very well prepared	7	2.8
	6	1	.4
	Total	250	100.0

Participants were asked about PPE availability for appointments in their work place. 24.0% were provided with disposable surgical masks, 21.6% were provided with N95 masks, 13.6% were provided with disposable surgical caps, 13.6% were provided with protective goggles and 16.0% were provided with face shields. 42.4% of the participants were most frequently using disposable surgical masks for assisting patients, 25.6% of the participants were using N95 masks, 17.2% were using surgical masks over N95 masks, 10.0% were using double disposable surgical masks and 0.8% were using surgical masks over reusable fabric masks. (Table 8)

Table 8

Currently, which type of mask are you most frequently wearing for assisting patients?

		Frequency	Percent
Valid	Disposable surgical mask	106	42.4
	N95 mask	64	25.6
	Surgical mask over N95 mask	43	17.2
	Two disposable surgical masks	25	10.0
	N95 mask over surgical mask	10	4.0
	Surgical mask over reusable fabric mask	2	.8
	Total	250	100.0

According to 36.4% participants, the structure of prime workplace was adapted to allow patient's treatment during the pandemic, according to 28.4% only waiting area was adapted, according to 21.2% the entire work environment was adapted and according to 14.0% the office was adapted. (Table 9)

Table 9

Was the structure of your main workplace adapted to allow patients' treatment during the pandemic?

		Frequency	Percent
Valid	No	91	36.4
	Yes, the waiting room	71	28.4
	Yes, the office	35	14.0
	Yes, the entire work environment	53	21.2
	Total	250	100.0

56.4% of participants and their employees were following official recommendations for the clinical routine in their main workplace, while 30.8% weren't following any recommendations. (Table 10)

Table 10

Did you (or your employer) follow official recommendations for adapting the clinical routine in your main workplace?

		Frequency	Percent
Valid	Yes	141	56.4
	No	77	30.8
	Maybe	32	12.8
	Total	250	100.0

28.0% of the participants fully disagreed with social distancing measures adapted in their cities, 27.6% partially agreed, 27.6% fully agreed and 16.8% disagreed. (Table 11)

Table 11

Do you agree with social distancing measures adopted currently in your city?

		Frequency	Percent
Valid	Fully disagree	70	28.0
	Not agree or disagree	42	16.8
	Partially agree	69	27.6
	Fully Agree	69	27.6
	Total	250	100.0

When asked about COVID-19 screening before appointments in main workplace, 52.0% answered that they perform face to face application of specific questionnaire for COVID 19. 29.2% performed previous application of specific COVID 19 questionnaire via telephone, text message or similar. 10.4% performed temperature check of patients in the office. 5.6% requested temperature check before patient arrival at the office, 2.4% recommended mouthwashes or antimicrobials in the office and 4% recommended mouthwashes or antimicrobials for the patients before their arrival at the office.

33.9% of the participants were using 70% alcohol to disinfect contaminated surfaces at their prime workplace, 18.4% were using diluted sodium hypochlorite, 17.2% were using bleach, 4.9% were using undiluted sodium hypochlorite and 6.4% were not using any disinfectants or antimicrobials. (Table 12)

Table 12

Which of the followings disinfectants or antimicrobial agents are you adopting to decontaminate surfaces or the environment in your main workplace?

		Frequency	Percent
Valid	None	27	6.4
	70% Alcohol	144	33.9
	Bleach	73	17.2
	Diluted Sodium hypochlorite	78	18.4
	Undiluted Sodium hypochlorite	6	4.9
	Phenolic compounds	3	19.3
	Total	250	100.0

IV. Discussion

Universal precautions should be taken by dental practitioners to minimize the spread of corona virus and its associated disease. Centers for Disease Control and Prevention (CDC) recommends using additional infection prevention and control practices during the COVID-19 pandemic, along with standard practices recommended as a part of routine dental healthcare delivery to all patients. According to Centers for Disease Control and Prevention (CDC) recommendations, dental healthcare personnel (DHCP) should wear eye protection in addition to facemask to ensure protection of the eyes, nose, and mouth; use an N95 respirator or a respirator that offers an equivalent or higher level of protection during aerosol generating procedures.

All patients should be considered as potentially infected by Corona virus and all dental practitioners

need to review their infection control policies during these challenging times. This might reduce the risk of spreading COVID-19 during clinical practice.

According to predictions, COVID-19 will persist in our population although it will be less virulent. Thus it is important to take precautionary measures to contain the spread of virus. Through this study, we also invite researchers to further investigate the infection control measures taken by dentists during COVID-19 outbreak.

V. Conclusion

Dentists are at high risk of COVID 19 and its associated disease. Dental practitioners should wear a facemask at all times at their workplace. All patients and their caretakers/attendants should be screened for fever and symptoms consistent with COVID-19 before entering the health care facility. Number of visitors to the health care facility should be limited to only those who are essential for patient's well-being.

The Personal protective equipment (PPE) recommended when caring for a patient with suspected or confirmed COVID-19 includes respirator/facemask, eye protection (goggles or face shield), gloves and gown. Dental Practitioners must receive training on use of PPE, Donning and doffing of PPE and proper disposal of PPE.

Aerosol generating procedures (AGPs) should be avoided as much as possible. If Aerosol generating procedures (AGPs) need to be performed, Dental practitioners should take all protective measures i.e. use of N95 Mask or high level respirator, protective eye goggles, face shield, gloves and gown.

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Introduction

FMRC/AMRC is the most prestigious membership of Global Journals accredited by Open Association of Research Society, U.S.A (OARS). The credentials of Fellow and Associate designations signify that the researcher has gained the knowledge of the fundamental and high-level concepts, and is a subject matter expert, proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice. The credentials are designated only to the researchers, scientists, and professionals that have been selected by a rigorous process by our Editorial Board and Management Board.

Associates of FMRC/AMRC are scientists and researchers from around the world are working on projects/researches that have huge potentials. Members support Global Journals' mission to advance technology for humanity and the profession.

FMRC

Fellow of Medical Research Council

FELLOW OF MEDICAL RESEARCH COUNCIL is the most prestigious membership of Global Journals. It is an award and membership granted to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Fellows are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Fellow Members.

To the institution

Get letter of appreciation

Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.

Exclusive Network

Get access to a closed network

A FMRC member gets access to a closed network of Tier 1 researchers and scientists with direct communication channel through our website. Fellows can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation

Certificate

Certificate, LoR and Laser-Momento

Fellows receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

Career | Credibility | Exclusive | Reputation

Designation

Get honored title of membership

Fellows can use the honored title of membership. The “FMRC” is an honored title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., FMRC or William Walldroff, M.S., FMRC.

Career | Credibility | Exclusive | Reputation

Recognition on the Platform

Better visibility and citation

All the Fellow members of FMRC get a badge of "Leading Member of Global Journals" on the Research Community that distinguishes them from others. Additionally, the profile is also partially maintained by our team for better visibility and citation. All fellows get a dedicated page on the website with their biography.

Career | Credibility | Reputation

Future Work

Get discounts on the future publications

Fellows receive discounts on the future publications with Global Journals up to 60%. Through our recommendation programs, members also receive discounts on publications made with OARS affiliated organizations.

Career | Financial

GJ Internal Account

Unlimited forward of Emails

Fellows get secure and fast GJ work emails with unlimited storage of emails that they may use them as their primary email. For example,
john [AT] globaljournals [DOT] org.

Career | Credibility | Reputation

Premium Tools

Access to all the premium tools

To take future researches to the zenith, fellows receive access to all the premium tools that Global Journals have to offer along with the partnership with some of the best marketing leading tools out there.

Financial

Conferences & Events

Organize seminar/conference

Fellows are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent. Additionally, they get free research conferences (and others) alerts.

Career | Credibility | Financial

Early Invitations

Early invitations to all the symposiums, seminars, conferences

All fellows receive the early invitations to all the symposiums, seminars, conferences and webinars hosted by Global Journals in their subject.

Exclusive

Publishing Articles & Books

Earn 60% of sales proceeds

Fellows can publish articles (limited) without any fees. Also, they can earn up to 70% of sales proceeds from the sale of reference/review books/literature/publishing of research paper. The FMRC member can decide its price and we can help in making the right decision.

Exclusive | Financial

Reviewers

Get a remuneration of 15% of author fees

Fellow members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

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Become a member of the Editorial Board

Fellows and Associates may join as a member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer.

Career | Credibility | Exclusive | Reputation

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 5 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 10 GB free secure cloud access for storing research files.

ASSOCIATE OF MEDICAL RESEARCH COUNCIL

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The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Associate membership can later be promoted to Fellow Membership. Associates are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Associate Members.

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Earn 60% of sales proceeds

Associates can publish articles (limited) without any fees. Also, they can earn up to 30-40% of sales proceeds from the sale of reference/review books/literature/publishing of research paper

Exclusive | Financial

Reviewers

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Financial

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 2 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 5 GB free secure cloud access for storing research files.

Associate	Fellow	Research Group	Basic
$4800 **lifetime designation**	$6800 **lifetime designation**	$12500.00 **organizational**	APC **per article**
Certificate, LoR and Momento **2** discounted publishing/year **Gradation** of Research **10** research contacts/day **1 GB** Cloud Storage **GJ** Community Access	**Certificate,** LoR and Momento **Unlimited** discounted publishing/year **Gradation** of Research **Unlimited** research contacts/day **5 GB** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**Certificates,** LoRs and Momentos **Unlimited** free publishing/year **Gradation** of Research **Unlimited** research contacts/day **Unlimited** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**GJ** Community Access

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

Copyright

During submission of the manuscript, the author is confirming an exclusive license agreement with Global Journals which gives Global Journals the authority to reproduce, reuse, and republish authors' research. We also believe in flexible copyright terms where copyright may remain with authors/employers/institutions as well. Contact your editor after acceptance to choose your copyright policy. You may follow this form for copyright transfers.

Appealing Decisions

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Medical Research Paper

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

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Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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