



# RAKCODS E-NEWS, Volume 3.

Quality is not the end, It's a beginning!



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## CEO'S MESSAGE

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It gives me great pleasure to write a message for the third issue of the E-news, themed “Quality is not the end, it’s a beginning.” It is my vision to make Ras Al Khaimah College of Dental Sciences the best dental care center in the UAE in terms of patient safety and quality. Focusing and emphasizing on the phrase that “safety is our priority and quality our standard”, I believe that we have been on this long journey for the last seven years.

Together with the help of all the staff at RAKCODS, we are already committed to providing high quality and safe care to our patients. And the ever increasing number of patients visiting our clinics itself stands as a testimony to this.

In order to attain and achieve this goal we have a number of programs and processes in place to further improve our performance. We will be running a full-fledged Joint Commission International (JCI) accredited dental center catering to various dental specialty treatment procedures under the expertise of multi dental specialists.

Furthermore, we have an initiative in place to achieve the Canadian accreditation to ensure both the quality of our care as well as training of our students to meet the best international standards. Apart from that we are due to expand our dental services to the general public in the emirate of Ras Al Khaimah by procuring the CBCT and CAD CAM. CBCT is not easily available as an investigation tool in RAK, hence this service will provide the community an opportunity to avail this facility without having to travel to other emirates like Sharjah or Dubai.

In the future, we will continue sharing periodic updates on our achievements pertaining to quality and safety through the E-news. Finally, on behalf of the entire management and board I would like to extend my gratitude to all the faculty, staff and students for their outstanding contribution during all these years to enhance our journey towards quality and excellence.

Mr. Hassan Muhammad Khan  
CEO RAKCODS



## EDITOR-IN-CHIEF'S MESSAGE

Quality- A New Era Dawning at RAKCODS! It was not long ago that RAKCODS came into existence with a state of the art building and infrastructure. Also of importance is the fact that treatment to all the patients who enter this building is absolutely free of cost.

Having said that, the leadership and management now believe in the fact that “to err is human” and therefore it is better to set up quality standards so as to reduce and finally eliminate any errors from our side, thereby making us stand along with the rest of the quality healthcare facilities. This is possible if we focus on the quality of healthcare being provided taking into account various parameters which can enable us to quantify quality.

We believe quality consists of the degree to which health services for individuals and populations increase the likelihood of desired health outcomes (quality principles), are consistent with current professional knowledge (evidence based practice) as well as meet the expectations of the healthcare users (our patients). As understood, quality improvement is meant for enhancing safety, effectiveness, and efficiency which is achieved by deploying various methods. Both qualitative and quantitative healthcare improvement has become imperative.

Healthcare features are becoming complex with time and the requirement of new and enhanced methods is becoming inevitable. If we have to stay ahead in the competition then we should not get lost in the complexities of new features and get beaten down by new methods. For this it is mandatory that we make quality healthcare delivery our new religion. Hopefully, we have understood by now the importance of quality in our environment and how it influences patient safety and good treatment practices.

With this, I feel humbled to congratulate the leadership, management and the entire team of RAKCODS on embarking upon a journey of quality achievements by aiming high at the sky. This edition of E News is dedicated to quality and I truly believe quality is a journey and not a destination. So let us make this journey a wonderful and memorable one. Happy reading!

Dr. Vivek Padmanabhan  
Editor-in-Chief  
RAKCODS E-News

# Patient Safety Practices in Dentistry: “A top priority!” - A Review

## Introduction

Patient safety emphasizes on safety in the health care profession through prevention and reduction as well as the analysis and reporting of medical errors that may often lead to adverse effects. The discipline of patient safety is the coordinated efforts to prevent harm to patients caused by the health care system itself. Approximately 440,000 patients die per year due to hospital errors, injuries and accidents. In the 1990's, multiple reports quoting the same were published and that is when the World Health Organization decided on patient safety as an endemic concern.<sup>1</sup>

This article highlights the importance of patient safety in general and specifically with respect to dentistry. For a patient safe environment, the entire staff from the security personnel, attendants and nurses to the dental hygienists and dentists working in the institution should have patient safety as a culture in the very fabric of the institution. This culture is only possible when all the staff involved in the system are oriented and trained in all project initiatives with regards to improving quality. It is globally accepted that dental care in which all the possible risk factors involved, when controlled is the highest-quality of dental care.<sup>2</sup>

Quality assurance/improvement provides safety to patients and at the same time better legal security for dental practitioners.

## Patient safety & dentistry: the challenges & hazards

Patient safety plays a vital role in the dental office. The challenges faced by dentists regarding patient safety in the dental office include lack of patient safety culture among the staff working in dental hospital to potential danger inherent during treatment procedures. The concept is different from and still a bit immature compared to medicine and dental errors, in general are perceived as less serious than errors in medicine. Literature reports have indicated 10 in 1,000,000 deaths in the dental office due to negligence.

Like medical care, dental care is no less risky. The high-speed dental hand-piece rotating at a speed of 400,000 rpm can cause serious soft tissue injuries. Sodium hypochlorite using during endodontic procedures is extremely cytotoxic to tissues surrounding the peri-apical areas. Foreign body aspirations during procedures in the dental office have been commonly reported in literature.

### What is safety?

**S**-ense the error

**A**-ct to prevent it

**F**-ollow safety guidelines

**E**-nquire into accidents/deaths

**T**-ake appropriate remedial measures

**Y**-our responsibility



Additionally, hazards in the dental office may be:

**Biological** – constituted by infectious agents of human origin and include bacteria, viruses, fungi and prions. Infections such as HIV, Hepatitis B are communicable and at high risk of transmission from patient to doctor to the community.

**Physical** – dentists are at high risk of physical injuries through puncture wounds from needle and other sharp objects. Debris from the oral cavity may strike the eye. Percutaneous Exposure Incident includes injuries from sharps as well as cutaneous and mucous exposure to blood and/or serum.

**Chemical** – amalgam used as a restorative material in dentistry is highly toxic and may lead to mercury poisoning. Direct contact with chemicals such as iodine, eugenol, formalin, topical anesthetic gels may cause adverse reactions such as contact dermatitis.

**Musculoskeletal** – pain in the head, neck, shoulder due to a bent neck, repetitive twisted movement of hands and a strained posture at work is commonly seen in dentists. Dental surgeons may also be predisposed to disorders such as tendonitis, bursitis and synovitis.

**Radiation exposure** – x-rays at high levels of exposure and even at low levels over a prolonged period of time are carcinogenic, capable of damaging body cells and causing genetic changes.

Other risks/hazards may be from falls, psychological, due to exposure to laser beam, inadequate ventilation/sterilization. 3

So, who stands responsible? It is a shared responsibility and the patient safety web mainly includes the dentist, the entire clinical staff, the patients and the patients' families.

The current state of patient safety in dentistry is as such that action on known risks is very slow and the error and system failure is constantly repeated. Most of the events and incidents are not even reported. There is little to no understanding of the related causes and the impact generated if any is very limited. Sadly, the blame culture is still very much alive.



## Patient safety measures in dentistry

Safety measures begin with analyzing the existing system in which you are working and include continuous training programs & orienting and educating the staff regarding patient safety culture. The present existing system and its processes are compared with evidence based international standards. The best standards place data tools in strategic areas such as reporting of incidents and adverse events, auditing of medical records, patient satisfaction, feedback forms and other measures to analyze which areas need improvement.

During the audit of medical records, the process of proper patient identification, the initial assessment including pain scale measurements and fall risk evaluation with proper medical and dental history questionnaires and entry of the comprehensive treatment plan are evaluated. Other points noted are surgical site markings along with sign in and sign out procedures appropriately documented. The overall random check of medical records is thoroughly analyzed. Apart from this; the other required organizational practices are protocols for cleaning and sterilization of non-disposable instruments. A review of guidelines during a life-threatening emergency also needs to be reevaluated during endodontic and oral surgical procedures.

Furthermore, it is critical to ensure that proper clinical guidelines are standardized throughout the clinics. For instance satisfactory Root Canal Treatment procedures are validated by key performance indicators (KPIs) to generate an overall performance record. One example of such compliance is KPI to monitor whether the treatment was performed with or without rubber dam. Other KPIs may measure radiation exposure to deduce how many radiographs were taken during a single appointment and so on.

Apart from all the clinical measures employed, data collection and audit will further help us analyze the gaps for further improvement in order to enhance patient safety. Improvement in equipment and tools and sharing personal experiences in patient safety with your colleagues may also aid in improving quality.<sup>4</sup>

## Common errors in maintaining dental records

During routine auditing, most of the common errors observed are with the clinical documents in which wrong use of abbreviations/bad handwriting can lead to confusion or other errors related to inadequate information about the procedure along with its potential risks to avoid complications. Inaccuracies in patient referrals to other professionals may lead to mistakes.<sup>5</sup>

Most of the times, in case a medical error has occurred, an analysis of the root cause reflects back to inadequate documentation of clinical records, insufficient explanation of the treatment procedure done, its likely complications and lack of proper treatment planning especially in medically compromised patients.

Sometimes following the completion of a dental procedure, carelessness in following up with the patient may lead to post-operative complications and subsequently patient complaints. Other complications may occur due to accidents such as patient falls or sharps injuries which should also be recorded and monitored routinely. Therefore, maintaining well-written and accurate dental records are vital to both patient and staff safety.

## The Six International Patient Safety Goals are:

Goal 1 - Identify patients correctly

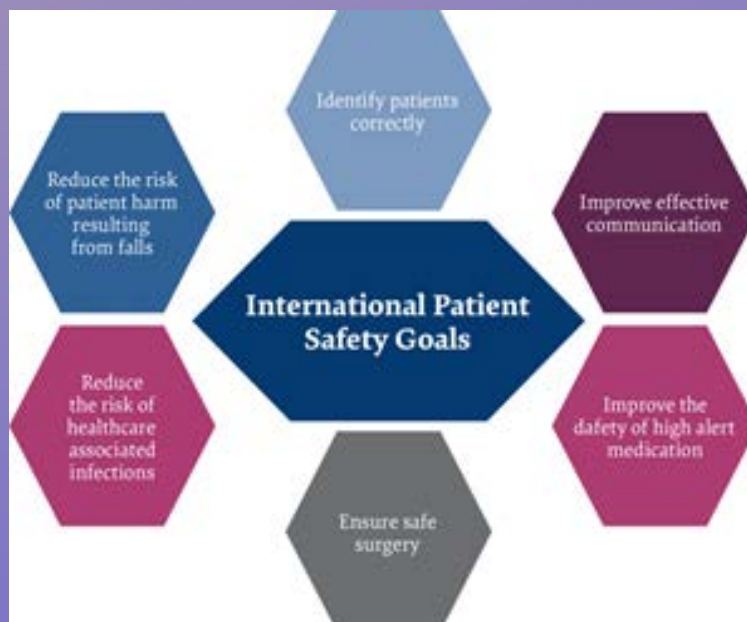
Goal 2 - Improve effective communication

Goal 3 - Improve the safety of high-alert medications

Goal 4 - Ensure correct site, correct procedure, correct patient surgery

Goal 5 - Reduce the risk of health care associated infections

Goal 6 - Reduce the risk of patient harm resulting from falls





## Barriers to implementing patient safety in dentistry

One problem is scarce resources in the form of inadequate staffing and increased workloads compelling patient safety to not be among one of the top priorities. There is a lack of vision in the senior leadership and resistance towards change. Covering up errors is a norm and there is little to no awareness of patient safety culture within the dental office.

## Future suggestions

To develop a multi-professional curriculum guide introducing patient safety as a separate discipline in the medical and dental professions. There is a need for improving the working conditions of the dental team complying with the patient safety measures as well as the development and training of a multi-disciplinary team of dentists ensuring effective implementation and monitoring of patient safety protocols in the dental office.

## Conclusion

Patient safety is an ethical obligation and should be a top priority. Patient safety can be improved using proper policies, education, communication, incident and adverse event reporting, and a proper action plan to improve processes, rectification, six-sigma monitoring and safety standards.<sup>6</sup>

The take home message from this article for all of us should be to never be afraid of giving up the good for the purpose of always aiming towards going for the great and the slogan for our organizations should be “Zero Harm” and “No Blame” to ensure a safe system for all to work in.



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Dr. Lovely .M .Annamma, BDS, MDS, DipNB, PhD

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# Moments Of Pride

## Dr. Mehria Wazin Intern

Dr.Mehria won the 2nd place under the category of poster presentation at the Current Trends in Biotechnology, CTBT 2019, Manipal University, Dubai. Her research topic supervised by Dr. Juma Alkhabuli and Dr.Hafiz Ahmed was on evaluating the antibacterial activity of propolis on oral pathogens.

The same research had helped her bag the 4th position at the 10th RAKMHSU Scientific Conference, 2019.



## Mr. Stancey D'Souza BDS, Year V

Mr.Stancey along with a team of three other students from the college of MBBS, RAKMHSU won the 1st position under the poster presentation category for his literature review on 'Natural orifice transluminal endoscopic surgery at the 10th RAKMHSU Scientific Conference, 2019.



# Moments Of Pride

## **Dr.Fatima Al Merbati and Dr.Maryam Janahiat Interns**

Dr.Fatima and Dr.Maryam participated in the symposium of the Emirates Endodontic Society (EES)/Emirates Medical Association (EMA) at MBRU, Dubai on 3-4th May,2019. They were the only undergraduate students presenting among other endodontic and pediatric residents.



## **Ms.Saman Saad, Ms.Sakina Abbas Ali, Mr.Stancey D'Souza YearV**

The team participated in the intercollegiate breast cancer awareness exhibition competition at RAKMHSU in October 2019. They secured the first position by presenting on the differences in dental treatment for a routine patient and a patient undergoing anticancer therapy.

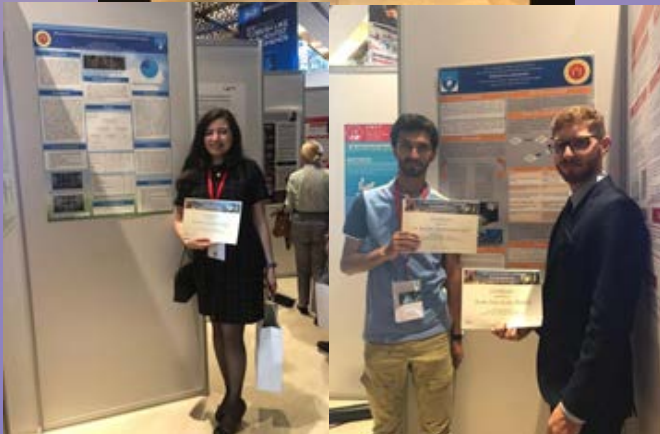


# Moments Of Pride

**RAKCODS students participated in the 11h Dental Facial Cosmetic International Conference & Exhibition at the Intercontinental Hotel, Dubai Festival City.**

The DFCIC offers dental professionals a chance to learn about the latest advancements and technology in dentistry as well as present their findings in the field.

Our students proudly presented posters on their research topics under the supervision of Dr.Huda M Abutayyem, Dr. Sabrin Ali Azim and Dr. Sally Kamal El-Din during the two-day event.



**RAKCODS faculty members and interns attended the 7th Emirati-German Congress in Medicine and Dentistry at University of Sharjah.**

The 2 day program is led by experts and distinguished speakers from various leading institutions across the globe and the UAE in the fields of medicine and dentistry. The conference focuses on up-to-date research seminars and continuing education courses and workshops. Our interns experienced hands on implant placement and gained information on the use of CBCT for guided implant surgery during the workshops planned this year.



# Moments Of Pride

## Dr.Hala Zakaria

Associate Professor, Oral Radiology,  
Diagnosis and Medicine

Dr.Hala attended the PLANMECA Digital Dentistry Tour 2019 and the 3D imaging and dental implant workflow, UAE. As the student affairs chairperson of RAKCODS, Dr. Hala organized a number of events for the students some of which included Global Hand Washing and World Mental Health Days.

### Recent Publications:

- Evaluation of side effects of Caffeine on oral hygiene, Open Access EC Dental Sciences
- Correlation of stress and workload in dental students during clinical academic years, Hamdan Medical Journal (Provisional)
- Prevalence of stylohyoid complex elongation among patients attending RAKCODS Clinics, Brazilian Oral Research (Pending approval)



## Dr.Sabrin Ali Azim

Assistant Professor & Specialist, Oral &  
maxillofacial surgery

Dr.Sabrin attended the ACBID Congress in Turkey from the 24th to the 28th of April, 2019 where she successfully presented a topic on the quality of life in patients after simple and surgical extractions as well as a poster on the use of botox to treat cerebral palsy in children.

### Recent Publications:

- Parents' and dentists' knowledge, experience and practice regarding oral health care towards children with autism at Dubai Health Authority and Dubai Autism Center, Acta Scientific Dental Sciences Journal along with Dr. Sally Kamal El-Din.
- The use of botox injection to treat cerebral palsy in children, Open Access Journal of Dental Sciences, Medwin Publishers along with RAKCODS alumni Dr.Zahra Marzooq & Dr.Samar Turki.



# Moments Of Pride

**Dr.Huda Abutayyem**

**Assistant Professor & Specialist, Orthodontics**

Dr.Huda received a certificate of appreciation for moderating the 27th Global Summit Expo on Dental Sciences and Dental Practice at London, UK.

**Recent Publications:**

-Prevalence of Implanted Maxillary Canines and its Associated Anomalies among a Dental College Patients, EC Dental Sciences along with interns Dr. Farida Fouly and Dr. Nancy Awny among the co-authors.

-Robotic use in orthodontics: Literature Review, Oral Health and Dental Science, along with Dr, Juma Alkhabuli, Dr. Sally Kamal El-Din and intern Dr. Asim Anas among the co-authors.



# Moments Of Pride

## Mr. Lham Jan Morales Library Attendant

Mr.Lham Jan's photography has made way to the biggest selling English newspaper in the UAE, Gulf News. This is just one of his many incredible photographs published by the paper.





# Moments Of Pride

**Mr. Aldrich Acuino Reolo, Mr. Sumith John Samuel, Ms. Melody M. Barlaa**  
**– Assistant Nurses**  
**Ms. Unice F. Bautista – Head Nurse**

The group attended the Patient Safety Conference from October 24th to the 26th, 2019 at the Le Meridien Hotel, Dubai, UAE.

The conference featured multidisciplinary aspects on patient safety for health care professionalis spanning infection prevention & control, CSSD, key regional patient safety issues as well as the importance of workforce safety. This further empowered the attendees with knowledge and skills essential in making patient safety a continuing priority at RAKCODS.



**RAKCODS Nurses and Radiology Technicians**

“Hey! Hey! Are you okay?”

Your RAKCODS Nurses and RadTechs are certified Basic Life Support (BLS) providers.

-August 2019



# Moments Of Pride

Heartiest congratulations and best wishes to:

**Ms. Pratima Rai, Ms. Raushan Aara,**

**Ms. Janen Harrera, Mr. Ralph Maligro**

for passing their Ministry of Health Examination with flying colors.

-September

2019



# Moments Of Pride

## RAKCODS Alumni Achievements

### **Dr. Leila Mohamed Mostawe and Dr. Amna Essam Darwish, BDS 2018**

Dr. Leila and Dr. Amna under the supervision of Dr. Sabrin Ali Azim got their graduation research project ‘Being a left-handed dentist: Boon/flaw? A survey in dental colleges around the UAE’ published in the Journal of Medical Case Reports and Reviews.



### **Dr. Hawra Al Rashed, BDS 2019**

One of the infection control ambassadors (2018-2019) and an active member of the RAKCODS E-News, Dr. Hawra is currently doing her internship in Saudi Arabia. She actively participated and presented in a number of seminars and conferences during her academic years, the most recent being on the use of silver diamine fluoride in dentistry.

We appreciate all that she did and is doing for the college & wish her the best in her future endeavors.



# RAKCODS Milestones

## What's New

### The Planmeca Promax 3D Classic CBCT

The CBCT is not an investigation tool widely accessible within Ras Al Khaimah & RAKCODS is all set to procure and set up one within the premises in order to expand its dental services to the public.

The Planmeca Promax 3D Classic designed emphasizing on obtaining the minutest of details in 3D without a statistical reduction in image quality along with patient comfort is your entry into the world of CBCT imaging.



### Sol Laser-Denmat USA

Dental lasers have revolutionized the way doctors and dental professionals provide good quality care to their patients. And since RAKCODS firmly believes in quality, it has decided to introduce its clinicians to the SOL Desktop Dental Laser.

The SOL Desktop Dental Laser offers: An easy-to-see blue laser light aiming beam Disposable tips for various clinical periodontology and restorative procedures A maximum power of 3 Watts in continuous laser wavelength mode and 5 Watts in pulse mode

Delivering portability, power and precision, it features enhanced ergonomics and a simple interface intending to make laser dentistry easier than ever before.



## Pentamix 3 Automatic Mixing Unit

The department of Prosthodontics at RAKCODS has recruited this mixing unit to ease the process of impression making in the clinics. Compatible with alginate, PVS and poly-ether impression materials, it allows a homogeneous mix for exceptionally accurate and void free impressions.



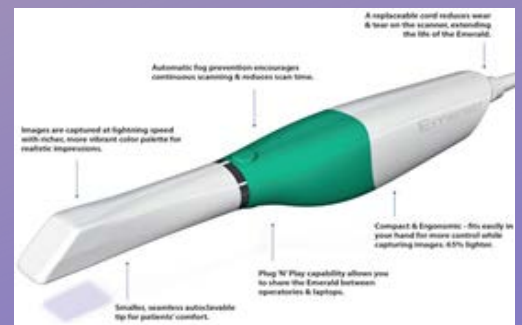
## CJ-Optik Flexion Microscope

With a huge range of magnification, an unparalleled field of view and an impressive depth of focus, this microscope has been designed to meet the needs of all general dentists. Featured with a true color corrected super-bright LED light source, great optics and ergonomics and unique documentation capabilities, RAKCODS is happy to present this for use to its budding dentists. See for yourself how good the Flexion is!



## The Planmeca Emerald Chairside CAD/CAM

This small and lightweight scanner considered the crown jewel of intraoral scanning will soon be available at the RAK College of Dental Sciences. The scanner's active anti fog feature allows it to be immediately ready for use in seconds following plug-in and its superior scanning speed ensures that dental arches be scanned effortlessly in a few minutes or less. Along with its ergonomic and user friendly design, it produces true-to-life colors with flawless details ensuring true digital accuracy. Comfortable for both patients and users, it offers unmatched flexibility by being able to capture quadrants or even full dental arches of the oral cavity. Clinicians can choose to complete their entire restorative work chair-side or conveniently export any part of it to their outsource partners using its data transfer feature through Bluetooth. Handy!



Keep watching this space for more on the new materials and equipment available for use in RAKCODS clinics!

## Quality is the standard and patient safety our priority.

For continuous improvements in the domain of Quality and Patient Safety, RAK College of Dental Sciences has been conducting various training's and sessions. The aim of these activities is to focus on enhancing awareness about Patient Safety as well as fostering teamwork and effective communication among the various departments of the college. These training sessions/workshops are conducted by professionals and attended by the college leadership, faculty, interns, nursing and administrative staff. In addition to regular workshops, RAKCODS celebrated its first World Patient Safety Day (World Health Organization) on the 17th of September, 2019. Faculty, students and staff participated in the event to renew their commitments towards the cause.

These activities are a reflection of the leadership's continued dedication to prepare the organization to achieve the internationally recognized Accreditation Standards in Quality and Patient Safety.

By: Dr.Imran Khoja, Sr.

Executive Quality & Patient Safety



## Infection Control: Radiology Rooms

Ras Al Khaimah College of Dental Sciences has taken the initiative to appoint student ambassadors from the clinical years of the institution in order to improve upon and ensure the implementation of certain infection control policies and procedures within the premises.

The current ambassadors include:

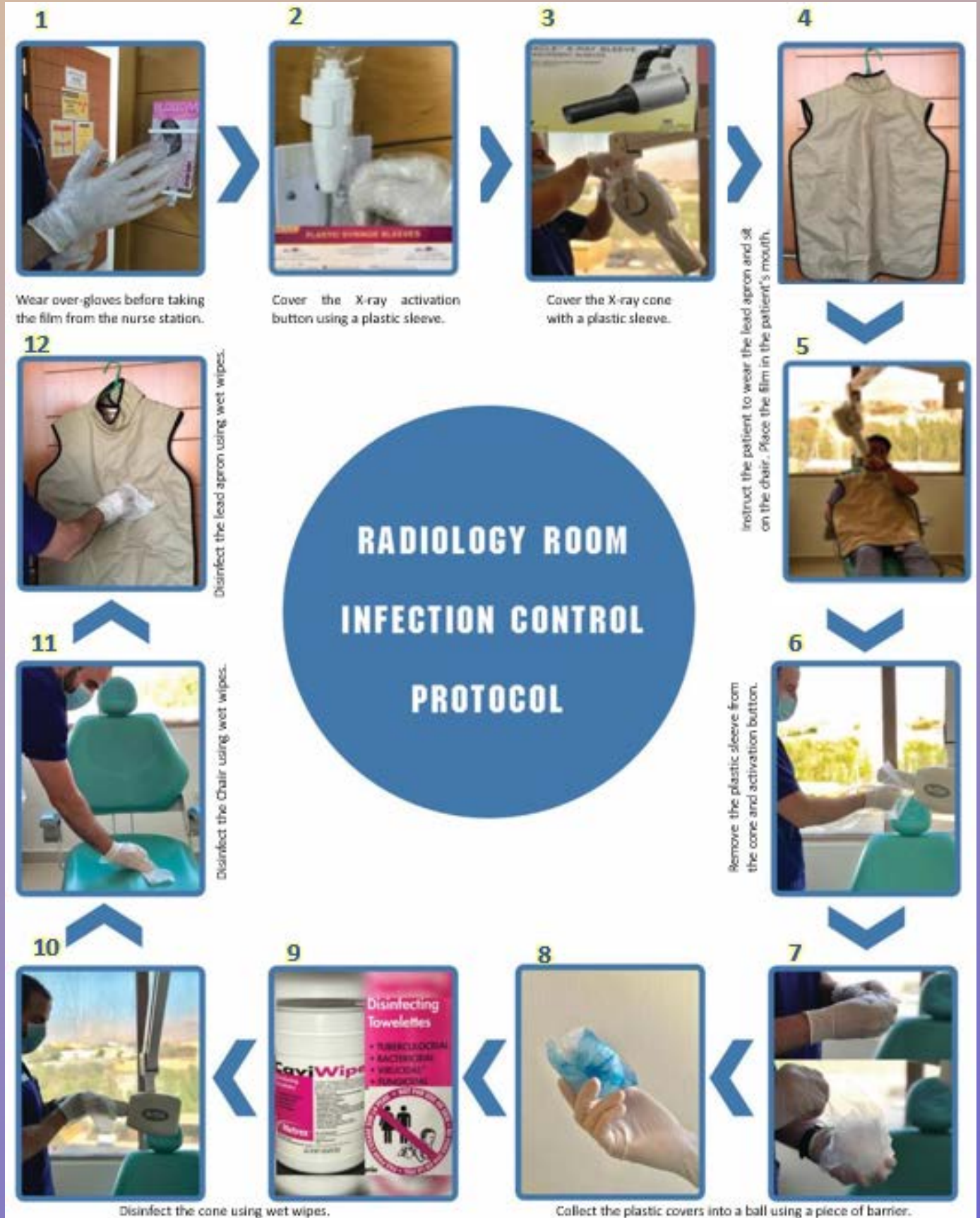
Dr. Besma, Dr. Hawra, Dr. Dana, Dr. Noor, and Dr. Abdulla (interns) and Ms.Saman, Ms. Samah, Ms. Rita, Ms. Lama, Ms. Noor, Mr. Ali and Mr. Fares from Year V under the supervision and guidance of Dr. Lovely Muthiah, Dr. Aqsa Khan and Ms. Unice Bautista. This will be the first ever student-faculty team formed in RAKCODS emphasizing on a truly modernized approach to managing academic and clinical performances alongside. Contributory ideas from both sides will be taken into consideration and given equal importance.

To initiate the process, the team has decided to focus on tasks one area at a time, starting with the radiology rooms on each floor. It was noticed that students do not give enough deliberation to appropriate infection control protocols while taking patient radiographs.

For quality and ease, the infection control team first requested for the order and purchase of new lead aprons, hangers for the lead aprons, disposable plastic sleeve barriers for the dental chairs, new x-ray cones & x-ray operating machines, new door handles and button presses as well as wall attachments to make it convenient for students to change into new gloves, pull out sanitary wipes and replace dental chair barriers easily.



The team has then come up with an easy step-by-step infection control chart for the students to follow in order to maintain a safe, clean and healthy environment for the patients, students and staff. For your reference, please find the radiology room infection control protocol below. Here's hoping all our future doctors practice it strictly to ensure a safe working environment for all.





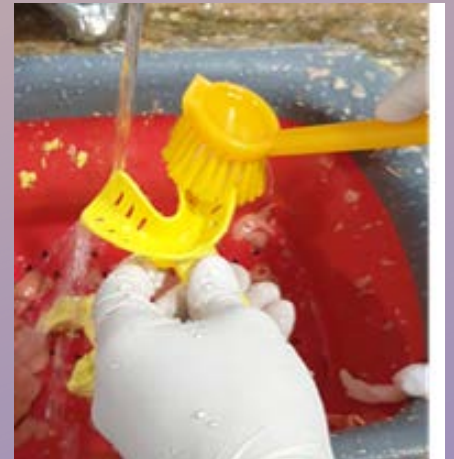
Additionally, Dr.Ahmed Jasim has come up with a step-by-step guide on how to clean the impression trays following pouring. Take a look!



1.Unclean Impression Tray



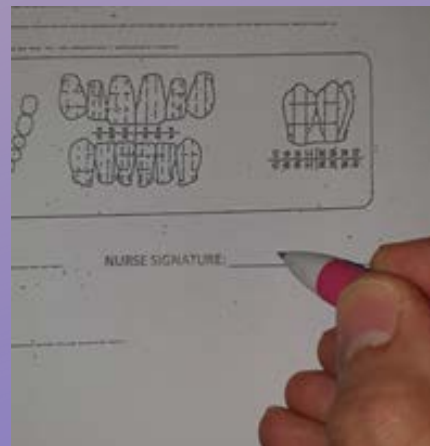
2.Remove the used impression material from the tray using a spatula or knife



3.Clean the tray properly using a brush and running water



4.Clean Impression Tray



5.Return the clean impression trays to the sterilization area of your clinic and get the respective nurse's signature on the lab job card

## **RAKCODS celebrates Global Hand-washing Day, 2019**

Clean hands improve patient safety. A simple act of washing your hands with soap is an effective and affordable method to reduce the burden of hospital-acquired infections. Every October 15th, the world celebrates Global Hand-washing Day, a day dedicated to promoting hand-washing with soap. RAKCODS celebrated Global Hand-washing Day this year to highlight the role dentists play in preventing the transmission of infections in healthcare facilities as part of improving patient safety globally.

Planned by the student affairs & infection control committees and student ambassadors, the event was held in the entrance foyer. Posters illustrating the World Health Organization approved method of hand-washing were displayed and videos encouraging patients to wash their hands were also played for the entire day. The students created a hand print mural by placing a hand print each on a plain canvas, pledging to improve their hand hygiene practices and educating their patients on its importance. Second-year students were assessed for their hand-washing skills and the winners were given a prize. A personalized frame was made to take pictures with and create memories of the event.

The committees plan for further such collaborations, encouraging student participants to serve as advocates and models for improved hand-washing behaviors and as ambassadors of patient safety as a whole. Through such events we hope to bring ourselves closer to achieving the mission of RAKCODS which is “preparing graduates who have evidence-based knowledge and skills in the dental profession, enabling them to make a valuable contribution at an individual level and for the community at large”.

**By: Dr. Aqsa Khan, Clinical Instructor**



## **The new HIMS at RAKCODS: recapitulating the events behind it.**

As I was browsing through my daily diary notes, I felt the need to pen down all the hard work put in behind the launch of the new HIMS at RAKCODS.

### **Reminiscing those HIMS days:**

HIMS or Health Information Management System used in the clinics of RAKCODS has its own story which deserves a narration. RAKCODS had a HIMS which was there from the last 6 years undergoing continuous transformation in its own ways. Then when the leadership changed gears and decided to embark upon the milestones of international accreditation, it became imminent that the HIMS at RAKCODS be accommodative accordingly.

After many discussions and meetings with the help of the RAKCODS IT department, a team of Max Tech from Pakistan was roped in for this software development. The team from Max Tech led by their CEO, Mr. Muhammad Nasrullah Randhawa took this challenge sportingly and formed an able team headed by their HIMS director, Mr. Siddiq ur Rehman.

The story is of pure hard work and team spirit. This success story was only possible with the vision of RAKCODS CEO Mr. Hassan Muhammad Khan who decided to enable the teams from RAKCODS and Max Tech to come together and work. Our respected Dean Professor Dr. Mohammed Mustahsen Ur Rehman was always ready to give suggestions and be firm on matters of target dates along with Mr. Nisar Ahmed Nisar, who kept the Max Tech team on their toes to complete every task on time. Mr. Tanveer Akhtar was the HIMS coordinator from RAKCODS. He was diligent enough to understand the modifications suggested by the Dean, Dr. Vivek Padmanabhan and Dr. Imran Khoja and convey it to the Max Tech team in the form of an SRS (software requirements specification) document. The Max Tech team was very accommodative, pleasant and patient with the never-ending modifications and demands of the RAKCODS team. Development started and Mr. Tanveer was engaged day and night with the team to complete all requirements. Finally, Dr. Vivek was very stringent in evaluating the software before its launch and only gave the green signal after he went through it thoroughly.

After the launch, what amazed me the most was the enthusiasm shown by the OPD doctors (Dr. Shumaila Azhar, Dr. Dragana Pajevic , Dr. Amna Rasheed) and other core faculty members such as Dr. Aqsa Khan , Dr. Abdullah Al-Yagoob along with the student representatives Ms. Lama (5th year) , Ms. Bisan (4th year) and Dr. Ahmad Dergham (Intern) who gave their collective student inputs to make the new HIMS even better. The receptionist Ms. Lhamqueen Morales and Mr. Attiq ur Rehman, the initial nursing assessment head Ms. Unice and Ms. Andrei also chipped in their valuable inputs. Most of the students discussed their feelings openly about the new HIMS and this enabled us to compile all the feedbacks received from the end user to make it more user friendly. Modifications, however, are still going on.

The key component in this success story was a highly focused team exhibiting professionalism, good attitude and dedication being monitored constantly at various check points by their leaders. I witnessed the intensity in which the team spent many days sorting out matters' way into the wee hours all alone in the 6th floor CLIQUE office room or in the second floor IT room (Mr. Tanveer, Dr. Vivek and the Max Tech team) at RAKCODS. I might have left out appreciating many who may have worked behind the HIMS by way of correspondence or who were a part of organizing in the team's arrival here. I have only mentioned my experience with the HIMS team and the people who I directly encountered during the HIMS journey.

### **The message below is dedicated to the HIMS Team:**

Dear Mr. Tanveer, Dr. Vivek, Mr. Siddiq, Mr. Mansoor, Mr. Tariq and the backup team members at Max Tech,

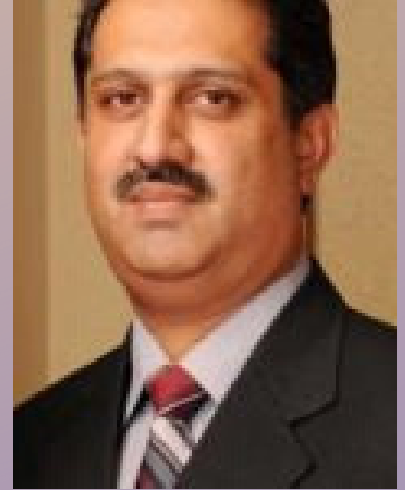
“With your hard work you have attained what we thought was impossible to do. You have proved us wrong and have achieved a mile stone so new. All of you and the backup team at Max tech deserve heartfelt appreciations and we are glad to have witnessed your sincere dedication and determination.”

Yours truly,  
An eye-witness.

# RAKCODS Team



# MAX-TECH Team

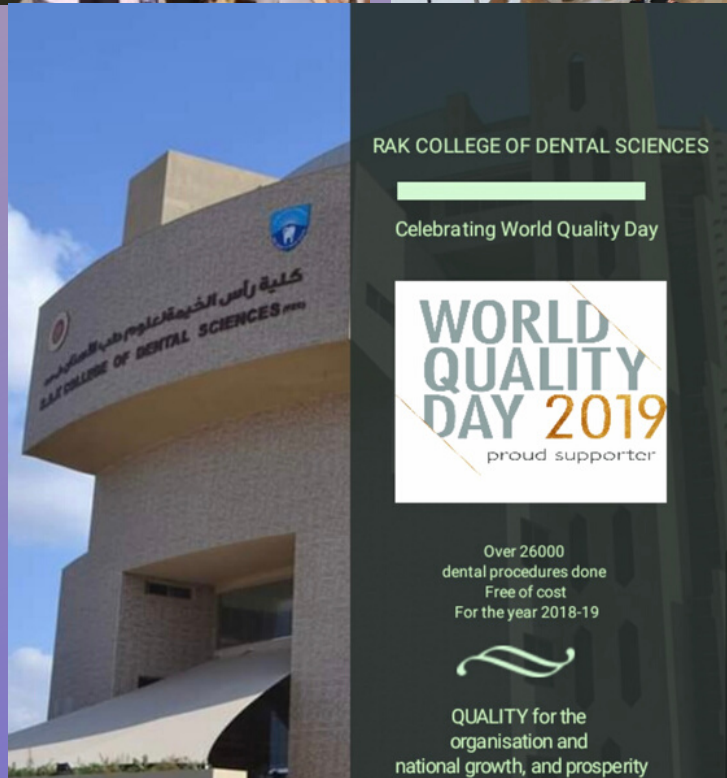


## RAKCODS celebrates World Quality Day, 2019

World Quality Day is designed to recognize the contributions of quality professionals across the globe and is an opportunity to celebrate the achievements of your team and organization throughout the year.

World Quality Day is celebrated annually on the second Thursday of November and RAKCODS too decided to honor the quality profession this year on the 14th of November, 2019. This helped raise the profile of the brilliant work done all year round and highlighted the positive impact of quality on RAKCODS.

Planned by the student affairs & clinical committee of the college, students, faculty & other staff members gathered at the entrance foyer. Photographs were taken and refreshments enjoyed. And finally, together we pledged, quality is everyone's responsibility and we will keep getting better.





## RAKCODS Marketing Activities.

### RAK Academy – Community Awareness Campaign

RAK College of Dental Sciences performed oral health screenings for Grade 3 to Grade 5 students at the RAK Academy in Al Rams, Ras Al Khaimah.



### Sharjah Education Exhibition

RAK College of Dental Sciences as a constituent college of RAK Medical & Health Sciences University along with the American University of Ras Al Khaimah participated in the Sharjah Education Exhibition promoting studying in Ras Al Khaimah.



## Parent Open houses (Dubai / Sharjah / Alain / Fujairah / Abu Dhabi)

RAK College of Dental Sciences conducted Parent Open Houses all over the UAE to meet interested parents and students and provide them with information regarding the admissions process into the Bachelors of Dental Surgery (BDS) program.



## Career Fairs – UAE Schools

RAK College of Dental Sciences took part in career fairs at schools in different cities of the UAE to create awareness regarding a career in the field of dentistry and to promote the Bachelors of Dental Surgery (BDS) program at the college.



## Road Shows – KSA Schools

RAK College of Dental Sciences took part in career fairs at schools in the Kingdom of Saudi Arabia (Dammam / Al Khobar / Riyadh & Jeddah).



## Najah Education Exhibition, Abu Dhabi

RAK College of Dental Sciences participated in one of the biggest education exhibitions, the Najah Education Exhibition in Abu Dhabi to promote the Bachelor of Dental Surgery (BDS) program among the visiting schools as well as the walk-in parents.



# Knowledge Diffuser

## 3D Printing in Dentistry

Three dimensional or 3D printing was invented by Charles Hull in 1983. In dentistry, 3D printing has been developed to help patients accurately restore both aesthetics and function.

Dental aligners and night guards are just two prostheses created using this technology. 3D printing can also be used to fabricate crowns, bridges as well as oral surgical guides and models. 3D printing when done properly results in a satisfied patient outcome.

The teeth are first scanned and data entered into a software which then generates a model of the prostheses required. The model is then adjusted according to the required dimensions and fit. A vacuum may sometimes be used for this purpose. One of the most important advantages of 3D printing is that it saves the dentist and the technician a lot of time and effort.

Another advantage is that the 3D model is a more stable, durable and precise alternative to a plaster model. However, the cost of materials, maintenance and the need for skilled operators must be carefully considered. Despite these concerns, 3D printing is definitely the future of the dental industry and it can offer a lot of opportunities and exciting ways to make dental treatment easier for patients and dentists alike.



## Robotics and Dentistry

Robotics is that branch of technology which specializes in designing, construction, operation and application of robots as well as the computer systems for its control, sensory feedback and processing of the information.

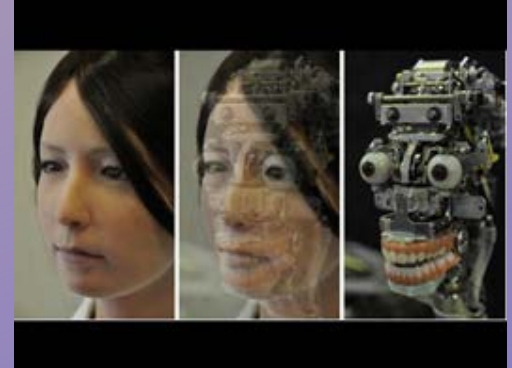
It was introduced by Isaac Asimov in his science fiction book named 'I robot' published in 1950. This article aims to review the current research on dental robotics along with some of the types of robots currently being employed in the field.

### Dental training robots

are patient robots being used for dental therapy training. They are “phantoms” consisting of a simple functional cephalic region and an arrangement of teeth that can be used for clinical training.

### Realistic human-like robots

These are realistic robots designed to simulate a number of typical patient gestures and responses allowing dental students to experience what it is like to work with a real patient. Robotic inventions such as the Geminoid equipped with advanced motion-capture technology can be controlled using a remote. Another robot in the Geminoid family, the Geminoid-F, is capable of mimicking human facial expressions, even laughing.



### Simroid

is a super-realistic dental training robot. What sets it apart is advancement in robotics and artificial intelligence that now makes it react with more lifelike and emotional responses. It is also able to rate and evaluate the treatment procedure performed using two cameras monitoring the student's every move and recording readings from its sensors.



## Endodontic Micro Robots

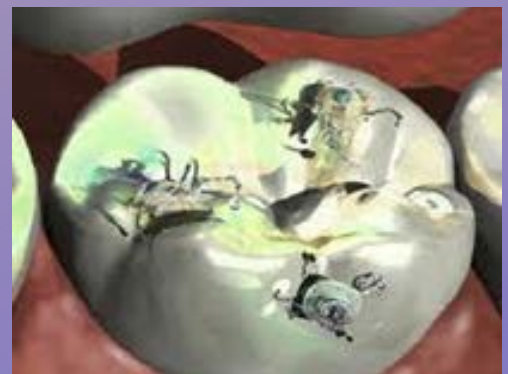
help provide safe, accurate, and reliable root canal treatment procedures for patients by preventing problems identified with conventional techniques such as inadequate access cavity opening or overzealous tooth removal. With the aid of online monitoring and intelligent management, this robot performs automatic probing, drilling, cleaning, and filling of root canals.



## Dental Nanorobots

Nanorobots are miniature devices that can be utilized to provide local anesthesia, cure hypersensitivity, complete orthodontic realignment procedures in a single visit, and ensure continuous oral health maintenance charting. Dental nanorobots can also be used to destroy caries causing bacteria or repair tooth blemishes where decay has set in using automated computer systems.

The intervention of robotics in the field of dentistry can offer improved, reliable, accurate and good quality treatment in a less amount of time. With the emerging technologies, the future of dentistry is uncertain and as competent practitioners we should be able to use and apply modern science to our routine clinical practices.



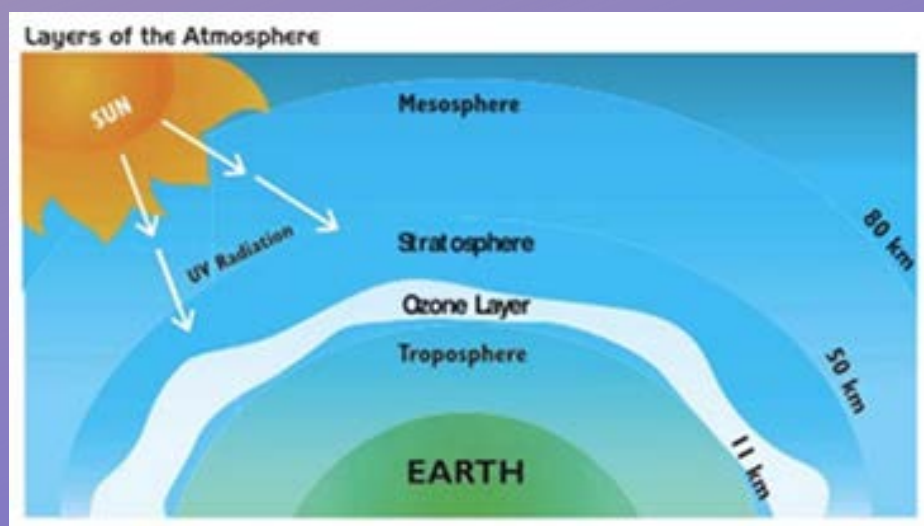
## Ozone therapy in dentistry

Ozone (O<sub>3</sub>) is a natural gaseous molecule made up of three oxygen atoms. The word ozone originates from the Greek word ozein, which means odor and was first used in 1840 by the German chemist Friedrich Schonbein also known as the father of ozone therapy.

The stratosphere layer of the atmosphere contains abundant ozone which protects the living organisms from the ultraviolet rays. Ozone is heavier than air and hence it falls downwards to earth from high altitudes. It cleanses the air and combines with any pollutant that it comes in contact with. This is the earth's natural way of self-cleansing.

The first dentist to use ozone therapy in his practice was E.A. Fisch in the 1930's, to aid in wound healing and disinfection practices during dental surgeries. The use of ozone in dentistry has been proposed because of its biocompatibility as well as its antimicrobial, disinfectant and healing properties. In the last decade, a number of therapeutic protocols with ozone have been developed to deal with infection control, treat periodontal disease, remove caries and perform root canal treatment procedures. This review is an attempt to highlight the various ways ozone therapy can be used in the field of dentistry.

Ozone therapy has a wide range of applications in infection control owing to its unique antimicrobial effect. Ozone causes inactivation of bacteria, viruses, fungi, yeast and protozoa. It disrupts the integrity of the bacterial cell envelope by the oxidation of phospholipids and lipoproteins. Ozone at low concentrations of 0.1 ppm, is sufficient to inactivate bacterial cells including their spores. In fungi, O<sub>3</sub> inhibits cell growth at certain stages, budding cells being the most sensitive & with viruses, it damages the viral capsid and upsets the reproductive cycle by disrupting the virus-to-cell contact with peroxidation.



Dissolved ozone in water may allow dentists to disinfect desks, floors and other surfaces without the need of chemicals in the clinical setting. Ozone can be also used in dental lines where it helps massively decrease bacterial load and eliminate biofilm providing the highest quality water for treatment procedures minimizing cross infection risk. Dentists can use ozonated water to wash their hands and to clean instruments prior to disinfection and/or sterilization.<sup>1</sup>



Ozone can be also be used in the field of prosthodontics as a denture plaque controlling & cleaning aid essential for the prevention of denture stomatitis. This can be achieved by the topical application of ozonated oil over the tissue surfaces of the dentures. This is supported in a study conducted by Arita et al where it was found that rinsing dental dentures with flowing ozonated water for 1 minute helps in reducing the number of *Candida albicans* on denture bases.<sup>2</sup>

Ozonated water (added to ultrasonic systems) has further been found to present with a strong bactericidal activity against various Gram positive and negative microorganisms present in dental plaque.<sup>3</sup>





While in the field of endodontics, ozone has presented as a solution for the eradication of *Enterococcus Faecalis* particularly resistant to sodium hypochlorite and implicated as a major causative factor of failed root canal treatment procedures. Additionally, the bone at the end of the roots is often shown to harbor pathogenic bacteria for many years after traditional root canal therapy has been completed. Ozone can eliminate bacteria infesting this region and remove toxic waste products that effectively prevent complete healing of the osseous structures.<sup>4</sup>

Prevention of infection and enhancement of bone regeneration is seen when ozone is bubbled into the socket for about 40 seconds, following conventional implant placement procedures.<sup>5</sup>

In conclusion, ozone therapy is a very quick, minimally invasive, effective, easy and painless adjunct to many procedures in dentistry. As we are now using modern science to practice dentistry, this is a promising treatment modality for various dental problems in the future.



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By: Ms. Jihan Hicham Al Jarrah, Year IV.

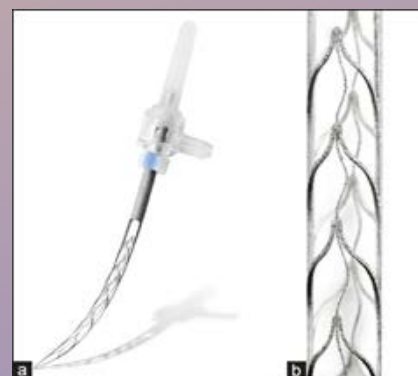
## The Self-Adjusting File

One of the crucial steps in root canal treatment is to achieve adequate cleaning and shaping. The purpose of this is to remove all debris from the root canal. The canal is commonly enlarged to three files sizes larger than the largest first file to reach the full working length of the tooth root canal. This is believed to remove the inner part of the dentin and allow adequate irrigation to the calculated working length.

Understanding the root canal shape of every tooth is essential for performing a good quality root canal treatment procedure. A common misconception among dentists is that all root canals have a uniform, round cross section. While this might stand true for upper incisor teeth, it is not the case for the rest of the teeth in the oral cavity. The goal of cleaning and shaping can be easily accomplished using rotary as well as hand files, usually if the canals are round in cross section and straight and narrow.

This has led to the launch of the Self Adjusting File (SAF) which adapts itself dimensionally to every tooth root canal's cross section and curvature. It respects the shape of the canal and ensures the removal of an even dentin layer 60 to 75  $\mu$ m thick from all the surfaces instead of forcing the canal into a round shaped, straight preparation.

The shape of the SAF remains rooted to the conventional hand and rotary files with a solid metal shaft and blades/flutes running throughout to help with cutting the dentin within the canal. However, the SAF is the first file to have a hollow shaft with a nickel titanium lattice. Because of this thin lattice, no pressure is generated within the file. The system is designed for minimally invasive cleaning and shaping and includes a self-adjusting file operated by a vibrating headpiece with 3000 to 5000 vibrations per minute as well as a special irrigation device (VATEA Irrigation Device, ReDent-Nova) connected by a silicone tube to the file's shaft. This means that the cleaning and shaping process along with the irrigation at flow rates of 1 to 10mL/min are achieved simultaneously.



However, the canals will first have to be instrumented or negotiated with size 20 and size 30 K files respectively. Then the 1.5mm-2mm in diameter SAF will be inserted to the full working length of the canal while it is rotating. The file will then attempt to acquire the original dimensions of the tooth root canal's specific cross section. The instrumentation with the SAF is carried out using an in and out motion for a total of 4 minutes per canal in two cycles of 2 minutes each. During the first minute of each cycle, 3% sodium hypochlorite will be used as an irrigant solution while 17% EDTA is used for the second minute. This results in a clean and mostly smear layer-free dentinal surface in all parts of the root canal.

After successful cleaning and shaping of the canals using the self-adjusting files, the obturation of the root canal system can be done using any of the accepted obturation methods.

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By: Ms. Samah Salam Rady & Ms.Rita Channo

# Exploring Research at RAKCODS – A Survey!

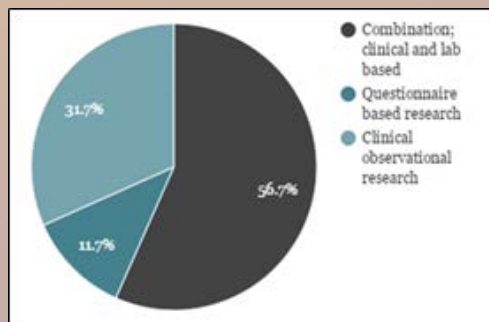
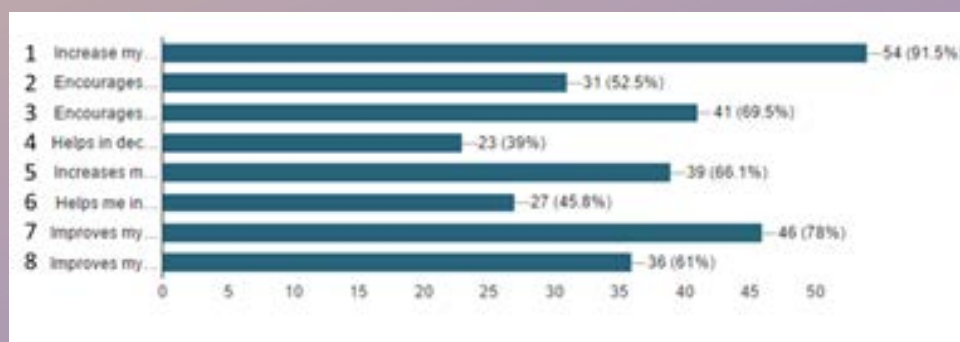


Figure 1. The type of research study preferred by students at RAKCODS



1. Increases my knowledge
2. Encourages translational research and clinical application
3. Encourages me for further reading and research work
4. Helps in deciding future career to be clinician, academician, or researcher
5. Increases my ability of critical thinking
6. Helps me in problem solving
7. Improves my reading and scientific writing skills
8. Improves my presentation skills

Figure 2. Students' opinions about the benefits of research studies carried out at the college

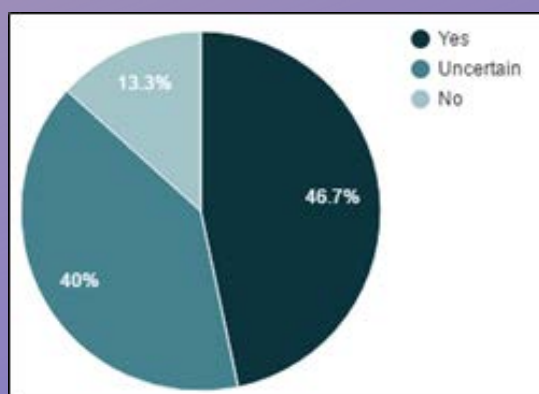


Figure 3. The % of students from RAKCODS aiming to get their research studies published

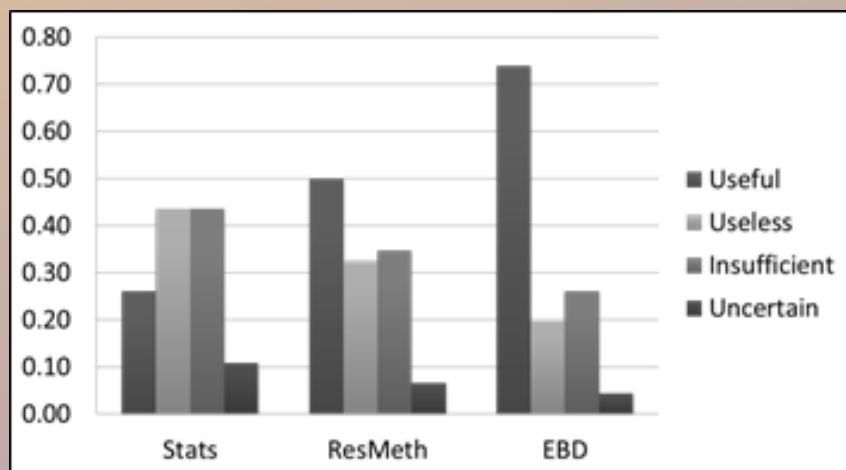


Figure 4. Students found courses taken in the final years at RAKCODS such as Evidence Based Dentistry more useful than those taken in their preliminary years

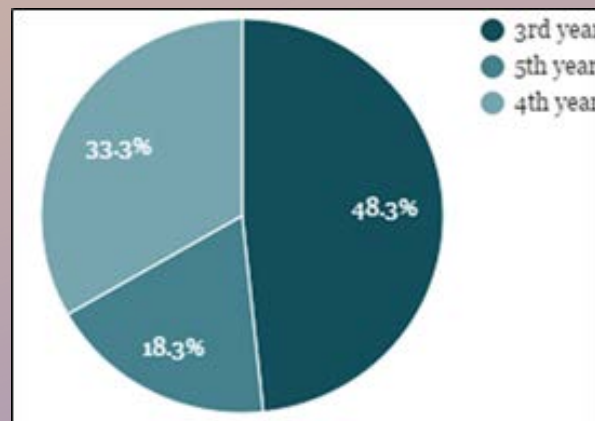


Figure 5. From which year would students prefer starting their graduation research project?

The grade should influence the GPA	The grade should not influence the GPA	Should carry numeric marks	Should be evaluated as pass/fail only	Should be dissertation Only	Presentation only	Presentation + dissertation	Should be limited to literature review	Should include all research modalities
11.9%	61%	10.2%	57.6%	23.7%	11.9%	28.8%	10.2%	32.2%

Table 1. Students' opinions regarding the format of research in the curriculum

Finding a proper topic	Deciding research direction	Obtaining ethical approval	Lack of time	Limited facilities	Limited budget	Inadequate supervision	Lack of collaboration with other universities	Finding an enthusiastic partner
55.9%	32.2%	67.8%	83.1%	64.4%	44.1%	33.9%	39%	28.8%
Lack of personal interest		Consumption of additional time			Difficulty in organization		Inattentiveness	
61%		37.3%			49.2%		10.2%	

Table 2. Obstacles faced while carrying out a research project at RAKCODS

# Facilities at RAKCODS

## Our library

The RAKCODS library & E-library located on the 4th floor of the building provides a dynamic learning environment with adequate space, sufficient resources and high-quality services to all its users. It has a modern ambience & is staffed by courteous and competent professionals.

Our thoughtful print collection and E-resources available on the information portal provide an excellent learning experience to students, faculty members and research scholars alike. With over 2500+ books, 40+ online text journals, 50+ computers and 2 OPAC systems, we at the library ensure that our college community is provided with all the necessary facilities deemed necessary for learning.

### Highlights:

- Reference Services
- Circulation Services
- Reprographic Services
- Inter-library loan
- Digital & Audiovisual Resources

For any suggestions or special requests regarding the library, please don't hesitate to contact the library team.

Supervisor – Dr. Shadi El Bahra

Librarian – Mr. Muhammad Amir

Library attendant – Mr. Lhamjan Morales

# Facilities at RAKCODS



# Celebrations

Excited Bahraini students at RAKCODS celebrate Bahrain's victory at the 24th Arabian Gulf Cup along with pre-national day celebrations.





# RAKCODS CELEBRATING 48th UAE NATIONAL DAY, 2019. LONG LIVE OUR COUNTRY, ITS LEADERS & ITS CULTURE.

