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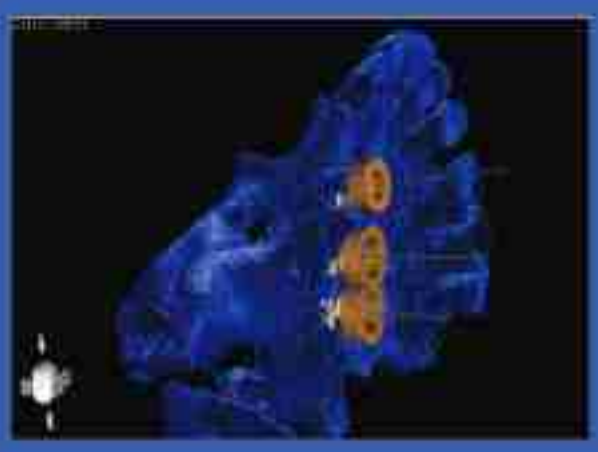

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SP 01/20: Antibacterial efficacy of Euclea divinorum extracts against Enterococcus faecalis.

Maina S

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Introduction : Enterococcus faecalis, persist after biomechanical cleaning and medication of root canal system and are associated with unfavorable treatment outcomes. The irrigants 5.25% sodium hypochlorite and 2% chlorhexidine gluconate do not meet the ideal properties an irrigant especially in total elimination of microorganism before root canal obturation. The aim of this study was therefore, to determine the antimicrobial efficacy of stem/twigs aqueous and ethanol extracts of Euclea divinorum against Enterococcus faecalis compared to these irrigant.

Methods: One hundred grams of Euclea divinorum stem/twig coarse powder was maceration in 1000 ml sterile distilled water and 80% ethanol, sterile filtration through 0.45µm pore size filter, lypolized and the ethanol filtrates reduced to powder or semisolid residue. Tenfold microdilution of 20 µl of 50 mg/ml extracts solution was carried out in 200 µl sterile microtiter plates which were inoculated with 10 µl of Enterococcus faecalis (ATCC® 29212™) suspension and incubated at 37°C for 24-48 hours. Sterile distilled water, 5.25% sodium hypochlorite and 2% chlorhexidine gluconate were used as negative and positive controls respectively. Growth was determined using absorbance BioTek Elisa ELx808 Photometer (BioTek Instruments, Inc. USA) with Gen5 Reader Control Software at 630 nm. Statistical Package for Social Sciences 21.0 for Windows and Microsoft Excel was used for data analysis. One way analysis of variance and post hoc Tukey's Honest Significant Difference test at $p<0.05$ were done.

Results: Growth inhibition of Euclea divinorum 50 mg/ml aqueous and ethanol extracts concentration against Enterococcus faecalis (ATCC® 29212™) were 74.11%±0.05 and 63.4%±0.04 and 89.76% ± 0.06 and 92.36 % ± 0.05 at 24 and 48 hours incubation respectively which were lower than those of 2% chlorhexidine but similar to 5.25% sodium hypochlorite.

Conclusions: The 50 mg/ml stem/twigs ethanol extracts showed significant growth inhibitory efficacy against E. faecalis comparable to 5.25% sodium hypochlorite.

SP 02/2020: Post-Treatment endodontic disease among patients seeking treatment at a referral Dental Hospital in Kenya.

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Introduction : Studies have shown an increase in prevalence of post-treatment endodontic disease among patients with previously root treated teeth, with some epidemiological studies recording a prevalence as high as 65%. It is therefore imperative that clinicians should be well versed with its presentation in order to effectively manage the condition. The aim of this study was therefore, to determine the characteristics of post-endodontic treatment disease among patients presenting with previous root canal treatment.

Methods: This was a descriptive cross-sectional study. The study population comprised of patients seen at the School of Dental Sciences (University of Nairobi), who needed treatment of a tooth/teeth with previous root canal treatment. Convenience sampling was used.

Results: A total of 42 patients participated in the study with 54 teeth presenting with post-treatment endodontic disease. The ages of most patients were distributed in the range of 31-40 years. Maxillary molars (25.9%) were the most commonly affected teeth. Thirty-nine (72.2%) teeth were asymptomatic whereas 15 (27.8%) were associated with pain of varying severity. Well defined radiolucent lesions were present in 59.3% of the cases while 74.1% of the teeth presented with voids within the root filling. Inadequate root filling length (79.6%) appeared to be the most prevalent characteristic of post-treatment endodontic disease.

Conclusion: Post-treatment disease in this sample presented with comparatively high substandard technical quality of root fillings and restorations.

SP 03/20: Age estimation in a Kenya population using Cameriere's open apex in dental panoramic tomograms

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3. Ministry of Health – Division of Forensic and Pathology Services, Nairobi, Kenya.

Background: Age estimation has become an important and relevant subject in the forensic field as part of the identification process. In the living, it is required in diverse context, for example, in determining the legal course of action for a subject who is a minor or an adult depending on the minimum age of criminal responsibility (MACR). It is also required in civil law for determining the legal age of marriage, work or social benefits and when settling immigrants.

In the forensic field, the use of teeth for age estimation has proved to be more reliable compared to the assessment of bone maturity. In 2008, Cameriere et al. used the measurement of the width of the open apices of incompletely developed teeth to predict age. This observation has been the bases for the proposed Cameriere formula for children's age estimation, as well as for estimating a cut off for the legal ages of 18, 14 and 16 years old. The method was developed using a European population but it has not been tested in a Kenyan population hence the need for the study.

Objective : To evaluate the accuracy of Cameriere's method of age estimation in a Kenyan population.
Methods and methodology: Cross-sectional study done at The University of Nairobi Dental Hospital. The study involved a total of 328 children aged 6 to 14 years. Dental age was assessed using Cameriere's method of age estimation and compared with the chronological age. Statistical significance was assessed using the paired samples t-test.

Results: There were156 girls and 172 boys with an average age of 9.48± 2.16 and 9.36± 2.02 years respectively. Cameriere's method significantly overestimated the overall age by 0.2±0.92 years (p0 0.000). The girls age was overestimated by only 0.13±0.89 years (p=0.067) while the boy's age was significantly overestimated by 0.25±0.94 years (p=0.001). Majority (250, 76%) of the children had their age estimated within one year of their actual age.

Conclusion: Cameriere's method performed well with slight overestimation of age. The formula should be modified so as to improve the accuracy especially in assessing the boys' age.

SP 04/20: Factors Associated with Resurgence Of Tobacco Snuff Use And Decline In Kiraiku Smoking In Lari-Sub- County Of Kiambu County.

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2. Department of oral and Maxillo facial surgery, University of Nairobi.
3. Spectrum Legacy Company.

Introduction: Anecdotal information suggest that there is a resurgence of nasal and oral use of tobacco snuff while the smoking of Kiraiku (traditional processed hand rolled tobacco) has declined in Lari sub-county of Kiambu County. No studies have been conducted to verify these claims and explain the changes. It was therefore necessary to seek preliminary information that would enable development of a proposal for a research to answer these questions. This is important given that these practices have been associated with the development of oral cancer and pre-cancer as well as Maso-pharyngeal carcinoma.

Method: This was an exploratory research in which the principal investigation held an open discussion with three inhabitants of the sub-county who were claimed to have information on tobacco cultivation and consumption in the area. Discussion points included the history of tobacco snuff use and Kiraiku smoking in the sub-county; whether the claims of resurgence of tobacco snuff use and decline of Kiraiku use are true and the factors which could have contributed to the claimed changes in tobacco use.

Results. Information provided during the discussion suggested before the MAU MAU war of independent, the oral and nasal use of tobacco, smoking of conventional cigarettes and Kiraiku were practiced in the study area. However, during the MAU MAU war, the inhabitants boycotted the smoking of convection cigarettes which they associated with colonialism. However, Smoking of Kiraiku escalated and the prevalence rose. Tobacco snuff use also continued but was usually used by elderly men and women as a social past time, was claimed to be associated with longevity and wisdom and was one of the items used during marriage ceremonies. After Kenya attained independence, the cultivation of tobacco was replaced by coffee and tea which had better financial returns. Users of tobacco snuff and kiraiku relied on supplies from Meru, Embu and Machakos counties.

The prevalence of smoking kiraiku and use of tobacco snuff declined while the prevalence of smoking conventional cigarette increased. Further claims were made during the discussion that in the last 20yrs, there has been a resurgence in oral and nasal use of tobacco snuff among young adult aged 30yrss and below while smoking Kiraiku has continued to decline. More than 90% of motorcycle riders in the area are claimed to use tobacco snuff. The resurgence is being attributed to the momentum created by the now out lawed Mungiki sect which advocate for the return of the Kikuyu community to their cultural practices. To meet the demands, some inhabitants have started to re-introduce tobacco cultivation in the area.

Conclusion. The clams of resurgence in tobacco snuff use and decline in Kiraiku smoking appear credible. However, further studies are necessary to unequivocally confirm these claims and determine the factors associated with these changes.

SP 05/20: Development of a prototype for a restorative dental cement in Kenya

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Introduction : The aim was to develop a prototype for a restorative dental cement in Kenya. The motivation was a need for affordable alternative restorative dental materials in low- and middle-income countries in the era of dental amalgam phase down following the Minamata Convention on Mercury.

Methods: A quantitative, laboratory-based exploratory study conducted at the University of Nairobi, World Agroforestry Centre, Ministry of Mining, all in Nairobi, Kenya; and, Otto Schott Institute for Materials Research, Friedrich Schiller University, Jena, Germany. Materials evaluated were grey Portland cement (PC) clinker, Kaolin, Fly ash (FA) and blast furnace (BF) slag obtained in Kenya, and alkaline-activate aluminosilicates (AS) or geopolymers derived from them. The project comprised three phases: firstly, materials were characterized by compositional and particle size distribution analysis, in comparison to mineral trioxide aggregate (MTA); secondly, ionomer-type dental cements were formulated from clinker or geopolymers; finally, promising formulations were evaluated for setting time (ST), compressive strength (CS) and fluoride ion (F-) releasing profile. R-Studio 3.4.2 (2017) and Microsoft Excel (2013) were used for descriptive data analysis as well as for hypothesis testing. Continuous data was subjected to analysis of variance followed by Tukey's post hoc test at $a=0.05$.

Results: Only MTA contained Bismuth (24.72%wt, 11.92sd). Only FA contained fluoride (43.33µg/g, 5.77sd). Difference in mean particle size distribution of MTA, PC and geopolymers was not statistically significant (sieved through 120µm mesh, D50 for PC=12.46µm, 3.18sd, MTA=7.23µm, 3.43sd, AS=12.74µm, 3.79sd, F statistic=1.87, 2df, $p>0.05$). Experimental cements' setting reaction resembled glass ionomer cements, characterized by polyacrylates and tartrates formation. Cement MT and ST ranged between 30–90s and 135–480s, respectively. On exposure to moisture, FA/BF slag geopolymer cements disintegrated, clinker cements softened and became rubbery while Kaolin geopolymer ones remained stable. At 28d, the mean highest CS was for clinker cements (9.96MPa, 3.21sd) while the mean lowest CS was Kaolin geopolymer cements (2.00MPa, 0.23sd). Mean CS

for all cements increased over time (1d=0.41MPa, 0.08sd, 3d=1.69MPa, 0.49sd, 7d=4.31, 0.66sd, 28d=5.90MPa, 1.06sd), a statistically significant difference at different time points (F statistic=82.39, 3df, p<0.0001). Cements released F- dependent on the amount in the formulation. Kaolin/FA cements released the highest (1mmol/L at 28d).

Conclusion: Kenyan PC and related materials were similar to MTA regarding composition and particle size. These locally available AS materials formed ionomer-type cements although only Kaolin ones were moisture stable. Further studies should utilize tooth-coloured materials for aesthetically pleasing restorations.

SP 06/20: Oral Hygiene Knowledge, Attitude and Practices among Teacher Trainees in a College in Muranga County

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4. School of Dental Sciences

Introduction : Teacher trainees need to have good oral hygiene knowledge, attitude and practices to be able to inculcate these on the children they will be teaching. However, information on the status of teacher trainee is scarce. The findings of this study are expected to reveal the need for invention in teachers training colleges in the interest of oral health of school children.

Methods: This was a descriptive cross-sectional study targeting a computed sample size of 200 teacher trainees. Data on oral hygiene knowledge, attitude and practices was collected using structured self-administered questionnaire with closed-ended questions.

Results: 200 teacher trainees aged 18 to 40 years participated in the study. Out of the 194 participants who responded to the question on brushing, 96% claimed they brushed their teeth. 23% brushed once a day while 60.4% brushed twice a day. 70.8% used conventional toothbrush, 2.6% used chewing stick while 26.2% used both. Regarding tools they would use for interdental cleaning, 33.7% chose dental floss, 17.3% interdental brush while 26.5% chose conventional toothbrush. On the ideal time for brushing teeth, 73.2% chose after every meal. On the consequences of not brushing teeth, 40% mentioned tooth decay while 47% mentioned bad breath. Regarding the role of toothpaste, only 10.7% responded that it helps prevent tooth decay. Although 89.2% responded that it was important to visit a dentist, only 53.8% had visited a dentist of which only 45% did so for a checkup.

Conclusion: The findings of this study have revealed a need for intervention to better prepare trainee teachers for the role of inculcating better oral health behavior and be role models for the children they will be teaching.

SP 07/20: Dental Implant Therapy at The University of Nairobi

Gichangi C.

School of Dental Sciences, University of Nairobi

Introduction: In Kenya, the use of dental implants is relatively new. The first dental implant at the University of Nairobi Dental Hospital was placed in 2006. No clinical evaluation or maintenance of these implants has been done. The purpose of this study was therefore to evaluate all the dental implants placed (2006-2017) for success, survival, failure and complications as part of the maintenance of the implants. This evaluation will form a baseline for future recall and maintenance as well as play a major role in establishing protocols for follow up of dental implant patients in the country. Currently there is a paucity of data on dental implants in the region. There are no guide lines on implant therapy from the Ministry of Health.

Methods. The records of all the patients who received implants at the University of Nairobi Dental Hospital between 2006 and 2017 were reviewed and attempts were made to recall all these patients. Demographic, implant, surgical and restorative details were obtained from patient records, and a questionnaire was administered to those patients participating to determine patient satisfaction and to carry out a clinical and radiographic examination.

Results. 29 patients participated, representing 55 of the 105 implants that had been placed between 2006 and 2017. Majority of the implants displayed optimum health, one had compromised survival with high occlusal load, and one had failed but had been replaced successfully. There was acceptable bone loss (< 2mm). The soft tissue health was also good even though very few patients reported the use dental floss as part of their oral hygiene routine. There were no major complications observed in the restorations, but fracture of veneering material was present in a few cases. Patient satisfaction was high,> 90%. Most (66%) of the implants were placed in the aesthetic zone and bone grafting done in 60% of the cases.

Conclusions. Although the small sample size of this study did not allow for multiple statistical comparisons, the study has provided valuable base-line information on the treatment and recall protocols for implant therapy carried out at the University of Nairobi Dental Hospital.

SP 08/20: Utilization of Computerized Systems among Dentists in Nairobi County

Mosoti CM, Gathece L, Dienya T, Wagaiyu EG

School of Dental Sciences, University of Nairobi

Introduction: The last twenty years have seen a steady increase in the use of computers for tasks that for a long time have been done manually. Moreover, information technology has been widely employed in nearly all sectors of the economy with remarkable impact in these sectors including healthcare.

Objectives : This study aims to determine the level of utilization, benefits and attitudes towards computerized systems among dentists who practice within Nairobi County

Methods: This was a descriptive cross-sectional study. A convenience sampling method was used to select 134 dentists who will participate in the study. . The data obtained through the questionnaire was analyzed sing a statistical package for social sciences (SPSS)

Results: A total of 104 reported use of computerized systems in their practice, 75(72%) in private practice and 29(28%) in public practice. 16 participants reported that they did not use any computerized systems in their practice, 100(62%) and 6(38%) in public practice. Chi-Square test of independence showed that there was a statistically significant association between the type of practice and the implementation of computerized systems among participants.(X2=6.078, df= 1, p=0.014).Computer based application used where 88(58.8%)for digital radiography and storage. Majority of the dentists who took part in the study 109(90.83%) had internet connection in their practice while 29(9.167%) did not have internet connection. Majority of the dentists 88(80%) had Wi-Fi internet connection.64 (58%) allowed access to the internet to staff only and 46(42%) allowed anyone who visited their practice to access the internet. 74(27.7%) use email for official enquiry with dental insurance providers.80(67%) had a website for the practice while 40(33%) did not have a website for their practice. 76(55.9%) used the website to publicize their practice. 50(40.83%) reported that high initial cost is the main challenge in implementing computerized systems in dental practice. All the dentists participating in the study 120(100%) agreed that it is necessary to computerize dental practice.

Conclusions : There is a high extent of implementation of computerized systems. However there is a higher level of implementation among dentists working in private practice than in public dental practices. There is a need to encourage funding computerization of dental practice in the public sector. There is a positive attitude towards the use of computerized systems among dentists in Nairobi County.

SP 09/20: Color and Shade Matching Modalities and Laboratory Communication Methods among Dentists in Nairobi, Kenya.

Omoro R A

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Background Information: Aesthetics play a very important role in achieving the success of direct and indirect dental restorations. Color is one of the crucial factors in achieving aesthetics with others being the contour and texture. Therefore, it is important to clearly understand the concepts of light and color and the strategies employed in shade matching in order to correctly assess the shade of the natural teeth, record it and effectively communicate it to the lab for fabrication of restorations.

Methods: The study was a cross-sectional descriptive study carried. The study population was made up of dentists currently practicing in Nairobi County. The study involved self-administered questionnaires to respondents and data collected analyzed using International Business Machine Statistical Package for Social Scientists (IBM SPSS Statistics 23.0) and Microsoft Excel Program. The results have been presented using Microsoft Word in text format, tables and charts.

Results: A total of 128 dentists (76.2%, n=168) participated in the study. 51.6% were male and 46.9% were females. Majority (97.7%) of the participants used visual methods of shade selection with varying frequencies. The most commonly used shade guide was found to be Vitapan Classical shade guide (47.5%). Machine aided methods of shade matching were employed by 7.8% of the dentists with the spectrophotometer being the type used by the majority (44.4%). In the laboratory communication methods, 98.4% of the participants employed the paper based methods.

Only 17.1% used the web based methods. 97.7% of dentists used natural daylight in shade selection. 97.6% of dentists matched shades on clean teeth, 58.6% removed brightly colored lipstick and draped brightly colored clothes before shade determination. Shade selection at the beginning of the patient's visit was done by 56.3% .68.0% selected the shades while viewing the patient at arm's length and at eye level, 45.3% selected the shades within 5 seconds while squinting their eyes. Comparison of the selected shade under different lighting was done by 35.9% and 50.8% of the participants looked at a neutral color in between shade matching.

Conclusion: Majority of dentists use visual methods of shade matching. Vitapan Classical shade guide is the most commonly used shade guide. In laboratory communication of the selected shade, the paper based method is the most commonly used. Most dentists are aware of the principles of shade matching however, a significant number do not put into effect these guidelines.

SP 10/20: Pattern of Orofacial Bacterial Infections at Kenyatta National Hospital, Dental Unit from January 2016 to December 2018

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Introduction. Orofacial bacterial infections are a common presenting complaint in medical and dental offices and sometimes in severe cases, hospital emergency departments. Orofacial infections can be classified as odontogenic and non-odontogenic in nature. Odontogenic infections originate within the tooth or associated fungi or viruses and are characteristically caused by bacteria. Mucosal infections by bacteria account for the majority of the oral non-odontogenic infections. The clinical spectrum of orofacial bacterial infections is quite diverse ranging from localized and indolent conditions to life threatening conditions. Accurate diagnosis of orofacial bacterial infections is important both for timely treatment and for public health management

Materials and Methods. 214 clinical records of patients treated for orofacial bacterial infections at KNH were retrieved and manually assessed for the required information. Data was collected using a data collection form. Statistical Package for Social Sciences version 23 and Microsoft Excel 2013 were used for data entry and analysis.

Results. Male to female ratio was 1.4:1 with age range of 3 months to 78 years and mean age of 27.0 years. Swelling (96.30%, n = 206) was the most common symptom followed by pain (58.90%, n = 123) and trismus (41.60%, n = 89) while elevated tongue (12.10%, n = 26) was the least common sign. The most common source of infection was odontogenic (60.30%, n = 129) in nature. The permanent teeth (57.00%, n = 122) were more commonly involved than deciduous teeth (2.80%, n = 6). In both dentitions, the mandibular posterior teeth were the most commonly involved teeth.

Ludwig's angina (30.84%, n=66) and submandibular abscess (25.23%, n = 54) were the most common clinical diagnoses of orofacial bacterial infection. The commonly used treatment modality was a triad of extraction of the associated tooth, incision and drainage and antibiotic therapy. There was a good outcome (92.50%, n = 198) in most cases.

Conclusion. Orofacial bacterial infections are a common disease entity. These infections can occur among all sociodemographic groups. The most common source of orofacial bacterial infection was odontogenic in nature. Orofacial bacterial infections are potentially life-threatening if not diagnosed early and promptly managed.

SP 11/20: Evaluation of Occupational Injuries among Dental Students at the School of Dental Sciences, University of Nairobi.

Zablon H.

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Introduction : This research involves the study of occupational injury which trainee dentist are exposed to in their clinical years. The injuries commonly encountered injuries may include exposure to infectious diseases, percutaneous exposure incidents (PEI), radiation exposure, toxic dental materials, too much noise, dermatitis, musculoskeletal disorders, respiratory problems: eye injuries, and psychological problems. The most common of these injuries include the percutaneous exposure incidents such as needle sticks injury, sharps injury and blood-borne infections. This is also followed by musculoskeletal disorders of the neck, back, and shoulders. Such occupational injuries tend to affect the dental practices of the trainee dentists both during their clinical years and after in their dental practice. The broad objective of this research was to evaluate the occupational injuries among dental students during their clinical years.

Methods: The research was a descriptive cross-sectional study and it was conducted at The University of Nairobi Dental Hospital. The sample of the study were from dental students in their clinical years (4th and 5th years) and it involved 54 students who willingly gave their consent to participate in the research. Data was collected using close-ended, self-administered questionnaires and the data analyzed using SPSS (IBM). The data was presented in the forms of tables and charts.

Results: A total of 54 students participated in the study despite the total number of required students being 53. It was found that the students from the institution knew about occupational injuries the causes and the types of occupational injuries present. The study also showed that the students also are involved in some of the occupational injuries with needle-stick injuries (18.3%), then blood borne exposure (15.8%), exposure to radiation (15.1%), musculoskeletal disorders (14.4%), radiation exposure (13.3%), and spirit lamp/Bunsen burner burns (12.9%), eye, and dental toxic materials (10.1%) having the lowest injuries causes of occupational injuries.

The study also showed that the students knew how to manage and handle some of the occupational injuries when they occur i.e. 43 students (79.6%) while 11 (20.4%) students had no idea of the management protocol. Also, the level of awareness of occupational injuries was evaluated using posters or banners on occupational injuries were present in the institution and majority of the students reported that there was present i.e. 31 students (57.4%) while 23 students (42.6%) reported they were no any posters or banners in the institution. Also, the level of awareness of occupational injuries among the dental students was questioned and graded from excellent to bad with most students thinking it was good 20 (37%), followed by poor 15 (27.8%), fair 14 (24.8%), bad 3 (5.6%) and excellent 2 (3.7%).

Conclusion: The following conclusions were that the pattern of occupational injuries occurring at the institution being the same as those that are seen in the world dental institution including the causes and types of occupational injuries. Also, the study showed that the location of occurrence of most incidents to be the laboratories hence needed to follow up and find out how to lower the incidents. Finally, most dental students are aware of how to manage and handle occupational injuries but there is need for more training and education so as to improve the standards.

LS 01/20: PGD drilling technique and DBD² Line - SMART & CIT implant design

Uri A.

RAS Industries, Israel

Introduction: This presentation lecture is going back to basic implantology.
In this days, we are flooded by big companies that want us to use the modern way of putting implants' means use all kind of scanners and machinery for doing immediate implants and restoration.

It comes to the point that doctors forget the basic implantology, and don't ask themselves the basic question before they do the implants; to which kind of bone we enter, do we have enough place, should we drill the same way bone type 1 as type 4, can we compress bone, which bone can we compress, do we have enough attached gingival, what is the right design of implants, when to do immediate implants, immediate loading, or two stages implants.

We are going to deal with the most important thing and this is the bone the different kinds of bone the adjustment of the right way of drilling and the achievement of the best primary stability by the best design of implant surface and this is why we invented the **PGD drilling technique** and **DBD² Line - SMART & CIT implant design.**

Introducing ARDS Confident Drilling Technique, unique precise and simple bone preserving minimal drilling technique, which saves up to 40% of the bone.

Drilling on top the leading pin and creating the T SHAPE – only going through the cortical.
The exact desired location and angulations as was indicated by the leading pin.

Prevents vibration of larger drills – no damage to cortical bone.

Drill is smooth and works only at the apex – less heating of the bone.

Fast – minimum drilling, going from one pin to another with the same drill (until final diameter drill, according to the necessary implant).

ARDS PGD Drilling Technique also Flapless Surgery with a Stent. We decided to change to rolls and now you can use just the Pilot Drill and Guide Pin together with the stent.

DBD² Line- Implant Line Different Bone Different Design:

CIT Implant recommendation for narrow ridge (easy to insert in bone type1-2) and large sockets (where doctor usually want to fill the socket with an implant) Buttress thread -ideal to withstand vertical forces Eccentric groove – to cut bone and compress it towards the implant.

SMART Implant (US Patent No: 8491302), Double thread thin grove at the implant interface area with the cortical bone and single thread thick groves at the cancellous. This unique design allows facilitating the transfer of occlusal forces to the greatest surface area of the bone-implant interface for favorable load distribution. Also, it reduces the amount of bone removed by using a novel drilling procedure. A dual thread internal hex implant, helps to remove stress from the problematic cortical bone, close to the soft tissue. By transferring vertical forces to the cancellous bone and using its rich blood supply, the SMART implant enables better healing capabilities. SMRT More active entry in Spongiosal, more compression– better for bone type 3-4, Safe under the sinus.

LS 02/20: Progressive Smile Design, the Align Bleach Bond Technique.

Wallace A.

IAS Academy, Intelligent Alignment Systems, Trainer

An important concept in modern dentistry: ABB (Align, Bleach and Bond) technique is the most important concept to come along in dentistry in the last decade. it is applicable to both cosmetic and functional dental treatments. It is also suitable for every dentist to provide and can be used for a variety of indications. This, combined with its minimally invasive foundation, makes the concept a very useful tool in the modern general dental practitioner's (GDP) armamentarium.

Leading the way: Execution of every step of the ABB technique is critical to attaining a result that can be favorably compared to more invasive cosmetic techniques. When performed correctly,

it can prevent progression of tooth wear to a level where more challenging and/or expensive dentistry is needed.

The United Kingdom is leading the way but the concept is spreading rapidly. The ABB technique therefore offers a more attractive solution to patients, in turn resulting in high treatment acceptance and enhanced outcomes. In addition, it enables clinicians to practise the ethical and conservative dentistry they desire, while still taking into account long-term function as well as aesthetics.

A progressive concept: The ABB technique is a step away from traditional smile design protocols which are based on strict proportions and rules. ABB allows patients to make their own smile as beautiful as possible and makes ceramic makeovers less invasive if the patient chooses to proceed down that route.

Many of the studies that conventional smile design principles were created from actually show a wide variation on what dental professionals and members of the public view as aesthetic or unaesthetic. The ABB technique allows the patient to see how beautiful their own smile could look after treatment, in a manner that is progressive and conservative. This can help to manage their expectations as it can clearly demonstrate any limitations of treatment, and therefore increases the likelihood of patient satisfaction with the outcome. The patient can also choose their own treatment endpoint, which may be far short of the textbook ideal but still delivers on what they want to achieve.

The progression of treatment involves simple anterior alignment using aligners or fixed appliances. The teeth are then whitened at or near the end of alignment to improve the colour using chairside or take-home techniques. The next step is a simple chairside mock-up of the composite edge bonding that could be performed to complete treatment. This last stage enables the patient to visualize how this will look and to choose how many teeth, if any, they would like edge bonding added to. In some cases, patients prefer to progress to ceramic restorations for their ideal aesthetic outcome.

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Many clinicians also lack confidence in using composite effectively, which is often the ideal material to restore the damage caused by previous tooth wear. Following alignment to improve the occlusion and address the original cause of wear, composite facilitates the building up of the natural dentition previously worn in a completely non-invasive way.

The presentation will cover the main points of the progressive smile design and ABB concepts.
Conclusion: Knowledge of the ABB approach will help dentists to deliver the minimally invasive and effective treatment patients seek. It will also enable clinicians to maintain their patients' dental health for longer.

LS 03/20: Maxillary Sinus Augmentation: An Implant Perspective

Vinayak S

Private Practitioner, Nairobi Kenya

Introduction: Insufficient bone volume is a common problem encountered during the rehabilitation of edentulous posterior maxillae with implant supported prostheses. The combination of loss of residual ridge height and pneumatization of maxillary sinuses after tooth extraction often leave this site deficient of bone for implant placement. Maxillary sinus augmentation has shown to be a successful treatment

option for restoration of anatomic deficiency in the posterior maxilla. Currently, two main techniques exist for performing a maxillary sinus augmentation procedure. The direct approach involves access to the sinus membrane through either the lateral or palatal wall, while the indirect approach is performed crestally through the osteotomy.

Methods: A scientific rationale is presented for maxillary sinus augmentation based on a review of the academic literature. The indications, contraindications and surgical considerations of each approach will be presented along with clinical cases.

Results and Conclusions: Maxillary sinus augmentation has shown to be a predictable method to increase bone height in the posterior maxilla to allow for implant placement with long-term success. This presentation will review the anatomic considerations, indications, contraindications and surgical techniques for performing a maxillary sinus augmentation procedure to allow for the placement of dental implants.

LS 04/20: Dissemination of The National Oral Cancer Screening Guidelines

Dimba EAO[1], Ndegwa L[2].

1. School of Dental Sciences, University of Nairobi
2. Kenya Medical Research Institute

Background: The incidence of orofacial cancers in increasing globally particularly in Sub-Saharan Africa. Cancers of the mouth and peri-oral tissues occur due to a multiplicity of factors including tobacco use, harmful consumption of alcohol, betel/ areca nut chewing, environmental pollution, exposure to UVB and vitamin deficient diets. Despite advances in technology, the global prognosis of oral cancers has failed to improve significantly in the past half-decade. The surgical management of oral cancer in combination with adjuvant chemotherapy and radiotherapy carries a prohibitive cost. Experts agree that prevention is the most cost-effective method of management.

Justification for Screening: Early diagnosis of cancer has a statistically significant positive correlation with prognostication in terms of 5-year survival rates. A combination of visual and analytical screening gives a high positive predictive value for diagnosis and can be easily incorporated into all levels of care, starting from the primary health care level. With a high index of suspicion and an effective referral system, mortality of oral cancer has been reduced by up to 30% as evidenced by screening programs in India and Taiwan. For this reason, oral cancer has recently been added to the list of cancers where screening is an advisable intervention at national level.

The Process of Implementation of Screening Guidelines: A team of consultants have worked at national level to provide a standardized guideline for cancer screening at the request of the National Cancer Control Program. This document is in the process of being disseminated to all the counties through a series of workshops. The purpose of this session is to provide the leaders ad influencers of oral health in Kenya with the necessary protocols to set up diagnostic and referral systems within their areas of influence in both the public and private sectors, so as to ensure best clinical practices.

LS 05/20: Policy and legislative responses to cancer in Kenya in the last decade

Lukandu OM.

Moi University School of Dentistry

Abstract: Cancer is among the leading causes of morbidity and mortality in the world. The number of new cases of cancer continues to rise and it is expected to reach more than 25 million per year within the next 2 decades. The annual economic burden of cancer to the world is approximately 1.2 trillion dollars both in prevention and treatment related costs. More than 30% of cancer deaths can be prevented. Effective interventions have been shown to reduce cancer incidences and to improve the lives of cancer patients, irrespective of resource constraints. Overall planning according to available resources is key to any effective cancer control programme.

In Kenya, the cancer burden continues to rise too, with an estimated 47 000 new cases per year and an estimated 33000 deaths per year. Among key interventions that have been put in place in Kenya include change of public policy, legislation and advocacy. This presentation highlights key legislative and policy changes geared towards cancer prevention and control in Kenya since the year 2008.

LS 06/20: Status of the Global Dental Amalgam Phase Down and Implementation of the Minamata Convention on Mercury in Kenya

Kisumbi BK

School of Dental Sciences, University of Nairobi.

Objective : The aim is to present a situational overview of the global and national implementation of the dental amalgam phased-down measures to enable the delegates to discuss and input.

Methods: The Minamata convention on mercury (MCM) was adopted on 19th January 2013 and came into force on 16th August 2017. Kenya is among the 128 signatories to the MCM and is in the process of ratifying it to join the current 105 parties. It is the lack of best waste dental amalgam management that makes dentistry contribute to the worlds' anthropogenic mercury release to air, soil and water affecting human health and the environment which the MCM seeks to address. The MCM calls for voluntary gradual reduction in the use of dental amalgam (DA), prevention of dental caries and increased use of mercury free restorative materials. Whereas at least two countries have phased out the use of DA, uptake and implementation has advanced at varied paces, as countries are at diverse levels of disease burden, prevention and legislation on dental materials.

Results: The delegates who are key stakeholders of the Dental amalgam phase down (DAPD) will be versed with the level of implementation of MCM globally as well as the measures that constitute the global DAPD. On-going activities of the convention will be discussed and national planned activities presented. Creation of awareness of the challenges facing the DAPD globally and contribution by the dental sector will be discussed.

Conclusion: Countries that have succeeded in dental amalgam phase down approaches have included DAPD and minimal invasive dentistry in Universal health coverage and sustainable development goals. In addition, engaged stakeholders of which the dental sector is key.

LS 07/20: Barriers to Policy Implementation: Drawing from The Amalgam Phase down policy

Wetende A

School of Dental Sciences, University of Nairobi

Delivery of high quality and consistent health care provision remains a big challenge in Kenya. Most health-related policies aim to enhance quality of patient care, individual and professional development, while ensuring a safe environment to enhance quality of life. In Kenya, we are currently developing our oral health policy. Developing a policy is just the first step. For policies to contribute to the successful delivery of health services, they must be effectively implemented. Dental Professionals usually perceive benefits enshrined in policies, especially those which affect practice, but they also cite barriers in implementation of these important policies.

These barriers may include: Lack of knowledge and intent of the policy compounded by lack of clarity on operational guidelines for implementation from the lead sector, inadequate financial and human resources, unavailability of infrastructural requirements being advocated in the policy and opposition from professionals who refuse to embrace the proposed changes. Lack of support from stakeholders due to different priorities, lack of incentives, and limited resources may also hinder implementation of health policies.

LS 08/20: GIC- Cention - N - Amalgam

Nathwani NK

Private Practitioner, One Oak Dental Clinic Nairobi Kenya.

Numerous direct filling materials are available from the modern dental practice amalgams introduced to Western dentistry in the 19th century. Glass Ionomer cements introduced in the 1970's and the standard use of composites in the 1980's.

Resin modified GIC's and compomers were introduced in the 1990's and our current decade saw the launch of several bulk fill composites.

This presentation will dive deep into the scientific detail and background of Cention-N, comparing its advantages and disadvantages to the regularly used amalgam and GIC. From durability to mechanical strength, to their respective ion releasing components. Cention-N belonging to a group of alkasites, the alkaline filler present regulate the pH value during acid attack therefore preventing demineralization.

LS 09/20: Molar Incisor Hypomineralisation (MIH): Challenges and opportunities

Nduguyu K

Private Practitioner, Nairobi

Abstract: Molar incisor hypomineralisation (MIH) is a congenital enamel defect that affects the first permanent molars and permanent incisors and rarely primary molars. The incisors have yellow-brown opacities on the facial surfaces. These opacities are irregular on the facial surfaces. The molars have also a yellow-brown discoloration that appears after the teeth erupt. The discolorations are usually on the cuspal third of the crowns. There is subsequent post-eruptive breakdown of these lesions due to their hypomineralised nature predisposing to early caries in newly erupted first permanent molars. In addition, in some cases, there can be increased sensitivity due to chronic irritation of the dentine as a result of the porous nature of the hypomineralised enamel.

Diagnosis of MIH can easily be confused with other developmental defects of enamel like dental fluorosis or hypoplasia. Diagnosing of MIH for the incisors is straight forward because of the distinct appearance of the discoloration. Molars pose a challenge because of early post-eruptive breakdown of the crowns and superimposed caries.

The aim of management of the incisors is to improve aesthetics. Several options are available from remineralisation with remineralising agents like MI-Paste TM, direct composite veneers to resin infiltration with ICON TM infiltrant.

Management of molars is difficult due to the early post-eruptive destruction of the crown and in cases of hypersensitivity poor co-operation due to inability to achieve adequate anaesthesia. Silver Diamine Fluoride can be used to reduce the hypersensitivity. Glass ionomer restorations are recommended because they can bond to the defective enamel. Definitive restorations are preformed crowns either stainless steel or zirconia. Extractions can be timed so that the second molar drifts into the position of the first molar.

LS 10/20: The place of nitrous oxide sedation (laughing gas) in general and paediatric dentistry

Ireri SK.

Kenyatta National Hospital

Introduction : Nitrous oxide/oxygen inhalation sedation has been in use in surgery and dentistry since 1844. Worldwide it has gained popularity in developed countries as well as some African countries. Although it has potential to reduce anxiety, associated trauma as well as reduce use of General anaesthesia, in Kenya the use in dentistry is very limited. From a clinical perspective, as more information and knowledge is acquired by both practitioners and patients there is need to embrace its use.

Objectives : The aims and objectives of this presentation is to give a synopsis of the clinical application of nitrous oxide/oxygen inhalation sedation in general and paediatric dentistry. The following will be discussed; Pharmacologic properties, mode of action, considerations for use, safety, care and education.

Results/impact: It is intended that the myths/fears associated with inhalation sedation in a clinic set up including safety concerns will be demystified.
It's also hoped that this presentation will spur an interest in practitioners to get evidence based scientific information and seek to get relevant training on the safe use and embrace nitrous oxide/ oxygen inhalation sedation in clinical practice

LS 11/20: Research Misconduct

Lukandu O.

Moi University School of Dentistry

Abstract: Goal of presentation

- To define and describe types of research misconduct and questionable research practices
- To briefly describe current approaches to dealing with the issue of research misconduct

- Outcomes

o By the end of the presentation, listeners are expected to have gained a fair understanding of the types of research misconduct and current approaches to dealing with the problem

- Main highlights

o Definition of research misconduct and questionable research practices

o Types of research misconduct (RM) and questionable research practices (QRP)
o Examples of RM and QRP from various parts of the world
o Approaches to improving responsible research (reducing RM and QRP)

CASE REPORTS

CS 01/20: Amlodipine Induced Gingival Enlargement (Dige) Non-Surgical Management: Case Report.

Liz N, Mwai G.K.

Moi Teaching and Referral Hospital, Dental Department

Introduction: Gingival overgrowth/enlargement may occur as an adverse effect of systemic medications mainly: Antihypertensives, Immunosuppressants and Anticonvulsants. Gingival overgrowth presents challenges such as difficulty in performing and maintaining good plaque control and also provides a niche for further growth of micro-organisms thus increasing the risk of developing dental caries and periodontal disease. Meticulous oral hygiene, professional scaling and root planning, drug substitution and surgical therapy if required, remains the main stay of available treatment modalities.

Methods: We report the diagnosis, non-surgical management and follow up of a case of gingival enlargement in a 58-year-old female hypertensive patient currently under amlodipine therapy for three months.

Conclusion: Meticulous oral hygiene and elimination of inflammatory nidus is key in management of subgingival enlargement. remarkable reduction in inflammation and muco-gingival lesion to acceptable levels was observed after phase-1 of therapy. This reiterates the importance and effectiveness of non-surgical treatment modalities as their primary role is to reduce the inflammatory component present in the gingival tissues.

CS 02/20: Cyclosporine Drug induced Gingival Enlargement (Dige): A Case Report

Edita KW, Mwai GK.

Moi Teaching and Referral Hospital, Dental Department.

Introduction: DIGE is a rare debilitating condition. It may lead to: unfavourable aesthetics, altered phonetics, and a susceptibility to dental caries. The main approach to managing DIGE is customized plaque control, gingivectomy, gingivoplasty as well as drug substitution where possible.

Methods: We report the diagnosis, non-surgical and surgical management as well as follow up of a severe case of cyclosporine induced gingival enlargement in a 65-year-old male.

Conclusion: Early diagnosis via opportunistic screening of patients as well as sensitization of medical teams regarding drug induced gingival enlargement is of key importance.

HO 01/20: Progressive Smile Design, the Align Bleach bond Technique; An important concept in modern dentistry

Wallace A.

IAS Academy, Intelligent Alignment Systems

ABB (Align, Bleach and Bond) technique is the most important concept to come along in dentistry in the last decade. it is applicable to both cosmetic and functional dental treatments. It is also suitable for every dentist to provide and can be used for a variety of indications. This, combined with its minimally invasive foundation, makes the concept a very useful tool in the modern general dental practitioner's (GDP) armamentarium.

Leading the way: Execution of every step of the ABB technique is critical to attaining a result that can be favorably compared to more invasive cosmetic techniques. When performed correctly, it can prevent progression of tooth wear to a level where more challenging and/or expensive dentistry is needed.

The United Kingdom is leading the way but the concept is spreading rapidly. The ABB technique therefore offers a more attractive solution to patients, in turn resulting in high treatment acceptance and enhanced outcomes. In addition, it enables clinicians to practice the ethical and conservative dentistry they desire, while still taking into account long-term function as well as aesthetics.

A progressive concept: The ABB technique is a step away from traditional smile design protocols which are based on strict proportions and rules, ABB allows patients to make their own smile as beautiful as possible and makes ceramic makeovers less invasive if the patient chooses to proceed down that route.

Many of the studies that conventional smile design principles were created from actually show a wide variation on what dental professionals and members of the public view as aesthetic or unaesthetic. The ABB technique allows the patient to see how beautiful their own smile could look after treatment, in a manner that is progressive and conservative. This can help to manage their expectations as it can clearly demonstrate any limitations of treatment, and therefore increases the likelihood of patient satisfaction with the outcome. The patient can also choose their own treatment endpoint, which may be far short of the textbook ideal but still delivers on what they want to achieve.

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Journal of the Kenya Dental Association (JKDA)

INFORMATION FOR CONTRIBUTORS

The Journal of Kenya Dental Association (JKDA) is a quarterly publication that provides a forum for publication of original scientific articles, reviews, clinical case reports and opinion pieces concerning the dental sciences and oral health care.

1. The JKDA Editorial Process

All the manuscripts submitted to the JKDA are peer reviewed, and every submission will be acknowledged by email within a week. The first stage of review examines the originality of the material presented, scientific relevance and statistical consistency.

The manuscripts are then further reviewed by at least two external referees before evaluation at an editorial panel meeting.

A final decision on publication will be communicated to the submitting/corresponding author within 3 months of manuscript submission. Proofs will be sent to authors for final publication approval except in the case of letters to the editor and obituaries.

Manuscript Submission

1.1 Type of Manuscript

Articles should report data from original research that is relevant for the provision of oral health care in developing countries. Reviews must be objective, comprehensive analyses of the subject matter, giving a current and balanced view of the issues discussed. Case reports must be authentic, appropriately illustrated and of critical significance to the practice of dentistry. Letters to the editor should not be more than 800 words and should contain only one illustration and not more than 5 references. Priority shall be given to letters responding to articles published in the journal in the last four months.

Editorials are usually commissioned, but unsolicited communications of up to 1,000 words are welcome. These will also be subjected to a peer review process. Obituaries which are of interest to the JKDA readership may also be submitted. The formal obituary should contain the following information: full names, date and place of birth, education history, degrees and qualification, year and place of qualification, recent appointments and achievements, family members and date and cause of death.

1.2 JKDA Policy and Ethics

We only accept manuscripts not already published elsewhere or under consideration by any other journal or publication.

The submission should include signed consent for publication from all authors. Each author's contribution to the paper should also be indicated. An accompanying letter should indicate each author's name, degrees and professional titles. It should also include the work affiliation, and complete address, as well as telephone number and email address.

Manuscripts resulting from clinical research work should include proof of ethical approval to conduct the study, and are expected to have adhered to the Helsinki declaration. Authors are encouraged to write their report using STROBE checklists for observational studies and CONSORT checklist for clinical trials. Clinical trials must also be registered, with published protocols. Systematic reviews and meta-analyses should preferably be reported using PRISMA checklist.

Manuscripts containing clinical photographs should include signed consent for publication from patients. In addition, the photographs should be adequately disguised so that the patient is not identifiable.

Written permission from original author for reprinted tables or figures should be included.

Conflict of interest should be stated. Source of funding should be included. The role of the funding entity in the entire research and publication process should be stated clearly. Possible sources of conflict include: Direct funding for the research or publication; Funding you have received from any organization involved in this or similar research; Any position you hold in an organization that is involved in this or similar research.

The JKDA holds all submissions in confidence, and this extends to the reviewers. Our reviewers are normally blind to the authors to enhance impartiality in the review process.

1.3 Format and Style

The manuscript should be submitted through email as a Word document. All images should be copied onto a Word document.

Artwork guidelines: Illustrations, pictures and graphs, should be supplied in the highest quality and in an electronic format that helps us to publish your article in the best way possible. Please follow the guidelines below to enable us to prepare your artwork for the printed issue as well as the online version.

Format: TIFF, JPEG: Common format for pictures (containing no text or graphs).EPS: Preferred format for graphs and line art (retains quality when enlarging/zooming in).

More information on authorship and contributorship may be found at <https://publicationethics.org/authorship> <https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects><https://www.strobe-statement.org/index.php? id=available-checklists> <http://www.consort-statement.org/consort-2010> <http://prisma-statement.org/> More information on conflict of interest in publication may be found at <https://publicationethics.org/competinginterests>

Placement: Figures/charts and tables created in MS Word should be included in the main text rather than at the end of the document.Figures and other files created outside Word (i.e. Excel, PowerPoint, JPG, TIFF, EPS, and PDF) should be submitted separately. Please add a placeholder note in the running text (i.e. "[insert Figure 1.]")

Resolution: Rasterized based files (i.e. with .tiff or .jpeg extension) require a resolution of at least 300 dpi (dots per inch). Line art should be supplied with a minimum resolution of 800 dpi.

Colour: Please note that images supplied in colour will be published in colour online and black and white in print (unless otherwise arranged). Therefore, it is important that you supply images that are comprehensible in black and white as well (i.e. by using colour with a distinctive pattern or dotted lines). The captions should reflect this by not using words indicating colour.

Dimension: Check that the artworks supplied match or exceed the dimensions of the journal. Images cannot be scaled up after origination Manuscripts should be in English, typed in Ariel size 12 font with double-spacing. The AIMRADAR format (Abstract,

Introduction, Materials and Methods, Results and Discussion, Acknowledgements and References) should be used where applicable. Keywords should be included at the end of the abstract. The same subheadings should be reproduced in the main text of the manuscript.

The corresponding author should be clearly indicated. Articles should be between **two and four thousand words, with a maximum of eight figures**. Case reports are limited to one thousand five hundred words, inclusive of a structured summary of not more than one hundred words. This must be in the form of a Structured Abstract to include (where relevant) the following headings: aim(s) or objective(s), study design, setting, participants, interventions/ methods, main outcome measures, results and conclusions

For reviews, the abstract and manuscript should be structured according to objective(s), data sources, study selection data extraction and conclusions. Statistical methods should be defined and the level of significance used, clearly stated.

If the manuscript is part of a series of publications or if essential components of the paper such as methodology have been published elsewhere, copies of related papers already published should also be submitted. Any non-standard questionnaire should also be submitted for possible publication if considered necessary by the reviewers. Obituary announcements should be 400 words or less, accompanied by a good quality colour passport size photograph.

Submissions by email. Papers and articles for submission may be sent as Word file attachments by email. Figures should be inserted where appropriate in the text. Files must be virus checked before sending but if discovered to be infected may be deleted without opening and the sender informed.

Products, Units Abbreviations and Symbols. Non-scientific abbreviations such as etc., e.g. should not be used. Where possible all products (drugs, dental materials, instruments and equipment etc.) should be referred to by generic names. Otherwise product names must bear an initial capital letter and their manufacturer or supplier should be indicated in parentheses. Units used must conform to the Système International d'Unités (SI). Generally accepted abbreviations and symbols may be used provided that the terms appear in full together with the abbreviation when first used in the text e.g. fluoride (F), decayed, missing and filled surfaces (DMFS), and thereafter F, DMFS. The two-digit tooth notation system of the FDI must be used (see Int Dent J 1971 21: 104). Bacteria must be described by their generic and species names – both in full on the first occasion, subsequently the generic name may be abbreviated.

Illustrations. Submitted illustrations must be numbered consecutively with Arabic numerals and their orientation indicated. Lettering and symbols should be of sufficient size to permit reproduction without loss of detail. A concise legend must be provided for each figure, typed in consecutive order. Tables should be Vertical and horizontal rules should not be used. A brief explanatory caption should be placed at the top of the table.

References. Only references which are clearly related to the authors work should be quoted. The **JKDA allows up to twenty references for original articles**, forty for reviews and ten or less for case reports. **The Vancouver style** should be used. References should be numbered in the order in which they appear in the text, and these numbers should be inserted as superscript each time the author is cited. At the end of the manuscript the full list of references should give the names and initials of all authors unless there are more than six, when only the first six should be given followed by et al. The authors' names are followed by the title of the article; the title of the journal abbreviated according to the style of the Index Medicus and Index to Dental Literature; the year of publication; the volume number; and the first and last page numbers in full. Titles of books should be followed by the place of publication, the publisher, and the year. Information from manuscripts not yet in press, papers reported at meetings and conferences, or personal communications may be cited only in the text and not as a formal reference. Internet references should quote the URL and date of access.

The author is responsible for the accuracy of the reference list at the end of the manuscript and for permission to cite unpublished material.

Examples: Book.

1. Schubert M M, Epstein J B, Petersen D E. Oral complications of cancer therapy. In: Pharmacology and Therapeutics for Dentistry, 4th Ed, Yagiela J A, Neidle E A, Dowd F J (Eds). The CV Mosby Company, St. Louis, 1998. pp 644 – 655 Internet access

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3. Mirza. East Afr. Med. J. 1988; 65:353 – 354. Article.

4. Awange D O, Onyango J F. Oral Verrucous Carcinoma: Report of two cases and review of literature. East Afr Med J. 1993; 70: 316 – 318.

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