



STURESY 2022

“Z GENERATION RESEARCH FOR A BETTER TOMORROW”

DENTAL STUDENTS’ RESEARCH SYMPOSIUM

**Book of Abstracts
Volume I**



Dental Students' Research Symposium

STURESY 2022

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Volume I

Faculty of Dental Sciences

University of Peradeniya

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Technical Session I (Oral Presentations - Undergraduate)

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Prof. A. P. Kariyawasam

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Technical Session II (Poster Presentations - Undergraduate)

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Dr B. R. Fernando

Technical Session III (Oral Presentations - Postgraduate)

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Prof. N. S. Soysa

Prof. J. A. M. S. Jayathilake

Message from the Vice Chancellor, University of Peradeniya



It is with great pleasure that I send this message to mark the Dental Students' Research Symposium-2022 organized by the Faculty of Dental Sciences, University of Peradeniya.

The Faculty of Dental Sciences has played a crucial role in generating professionals including distinguished researchers for the nation and ahead in the field of Dentistry since its inception.

Research is a sort of learning activity that adds value to the students' experience. Participation in research or creative work broadens and deepens students' classroom learning while also assisting in the development of a number of talents valued by employers. Therefore, the students must be exposed to a wide array of paradigms that will enable them to broaden their views about the profession. I am confident that this event will give an ideal venue for dental students to discuss their discoveries in front of an esteemed scientific community, and that this will hopefully serve as a springboard for them to engage in fruitful research. I take this opportunity to appreciate the Dean and the staff of the Faculty of Dental Sciences and the members of the organizing committee for organizing this event. I congratulate all the presenters on their valuable contributions and wish all of you a productive and memorable experience.

Prof. M. D. Lamawansa
Vice Chancellor
University of Peradeniya

Message from Dean, Faculty of Dental Sciences



I consider it a pleasure and a privilege to extend this message of well wishes as the Dean of the Faculty of Dental Sciences, University of Peradeniya on the occasion of the undergraduate research symposium 2022. This will be a regular event from this year onwards as there is a research component of the revised 5-year dental undergraduate curriculum.

It is timely that dental professionals practice evidence-based dentistry and engage in lifelong learning to serve better to the general public. Research plays a vital role in this, and an inquiring mind is very important with this regard. Therefore, I am happy to see the faculty of Dental Sciences has given the necessary impetus in this direction with the necessary guidance to the dental students.

I would like to congratulate all the presenters and their supervisors with this regard. I would like to thank the chair of the Faculty research committee and the team for organising this event. Moreover, my sincere appreciation goes to all the evaluators of the student research projects for their hard work.

I would like to extend my sincere gratitude towards Prof. M. D. Lamawansa, Vice Chancellor of the University of Peradeniya for his unstinted support with this regard and the Keynote Speaker Dr U. J. M. A. L. Jayasinghe, Head/Dept of Radiography, Faculty of Allied Health Sciences, University of Peradeniya. Let me extend my sincere thanks to the President of the Kandy Society of Medicine, Dr Kanchana Edirisinghe for offering a KSM research prize for undergraduates which will encourage the students to engage in research as well as to get involved with professional organisations early in their career. Finally let me thank all my academic colleagues and non-academic members of the Faculty of Dental Sciences and all the dental students who are present today and helped to make this event a success.

Prof. Manjula Attygalla
Dean/Faculty of Dental Sciences
University of Peradeniya

Message from the Chairperson, Faculty Research Committee



It is with great pleasure that I write this message, on the occasion of Dental Students' Research Symposium - STURESYS 2022, organized to provide a platform to showcase research conducted by students of the Faculty of Dental Sciences, University of Peradeniya. This year, it is held under the theme "Z generation research for a better tomorrow". STURESYS 2022 is unique because, it provides a platform, not only to undergraduate students, but also to postgraduate students of the faculty to present their research findings.

The main aim of this symposium is to recognize, encourage and reward student achievements in dental research. Building enthusiasm for research is a difficult task in our student population due to dentistry being a degree programme that emphasizes more on dental skills development. Thus, students just starting to work on their undergraduate research projects are also invited, so that they will be motivated and gain educational experience in preparing a research presentation and presenting it to an audience.

As the Chairperson of the Faculty Research Committee, let me thank all members of the organizing committee, who worked tirelessly to make this event a success. We greatly appreciate the advice and guidance given by Prof. A. M. Attygalla, Dean, Faculty of Dental Sciences and Sri Lanka Dental Association-Kandy Branch for their unstinted support. Dr. J. A. V. P Jayasinghe, our former Dean is gratefully acknowledged for making the initial contact with the sponsors. Generosity of our sponsor, GSK Consumer Healthcare Pvt Ltd is also appreciated, without which this event would have been very difficult to organize. Finally let me wish all the students "best of luck" for their presentations and hope all of you will carry fond memories of this symposium.

Prof. Primali Jayasooriya
Chairperson, Dental Faculty Research Committee

Keynote Speech

Seeking Greater Depths with Collaborative and Multidisciplinary Research

Dr U. J. M. A. L. Jayasinghe

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To achieve rapid advancements in the acquisition of knowledge, modern research relies on multidisciplinary collaborative research. Modern research needs to answer a wide variety of fundamental questions ranging from those dealing with the most personal concerns such as “do I look good?” to those addressing the origin of the universe. Developing and conducting research to address the many possible topics of interest is challenging due to the large financial cost involved, the broad areas of expertise required, and the manpower required to carry out the research. Furthermore, ‘unanticipated’ discoveries require significant resources to validate the results before presenting them to the public, which is considered to be a great hurdle. The best solution to address these issues is collaborative and multidisciplinary research.

Well established collaborations have brought unforeseen advancements in various fields. The discovery of the Higgs boson is a ‘classic example’ of what collaborative efforts can bring-in. The Higgs boson was discovered at one of the largest research facilities in the world by two of the largest collaborations ever assembled in science, ATLAS and CMS. Without the large collaborative multidisciplinary teams, this discovery would not have been possible. Further, this approach leads to robust results due to the extensive discussions that continue within the collaborations. Collaborative and multidisciplinary approaches enable research to be performed that would otherwise be impossible by all means.

Programme

- 8.15 a.m. Arrival of guests
- 8.30 a.m. Opening ceremony
- 8.40 a.m. Welcome address by Prof. A. M. Attygalla
The Dean, Faculty of Dental Sciences
- 8.50 a.m. Speech by the Chief Guest, Prof. M. D. Lamawansa
The Vice Chancellor, University of Peradeniya
- 9.00 a.m. Keynote speech by Dr U. J. M. A. L. Jayasinghe
The Head, Department of Radiography/Radiotherapy,
Faculty of Allied Health Sciences, University of Peradeniya
“Seeking Greater Depths with Collaborative and Multidisciplinary
Research”
- 9.30 a.m. Vote of Thanks by Prof. P. R. Jayasooriya
The Chairperson, Faculty Research Committee
- 9.40 a.m. Refreshments
- 10.00 a.m. Technical session I - oral presentations (undergraduate)
- 12.15 a.m. Lunch
- 1.00 p. m. Technical session II – poster presentation (undergraduate)
- 2.20 p.m. Technical session III – oral presentations (postgraduate)
- 3.00 p.m. Awards ceremony
- 3.10 p.m. Closing ceremony

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Technical Session I

Oral Presentations (undergraduate)

Analysis of pH and Antioxidant Activity of Commercially Available Mouthwashes in Sri Lanka

*B. D. S. N. Neris¹, M. A. M. U. Nethmini¹, H. B. Y. Perera¹, K. N. K. Ranasinghe², K. S. N. D. Gunawardhana²

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Mouthwashes are used as an adjunct to mechanical plaque removal and aid in managing oral conditions ranging from halitosis to periodontal diseases. Mouthwashes are widely used for cosmetic or therapeutic purposes due to their antimicrobial, anti-inflammatory and anti-cariogenic properties. pH and antioxidant capacity are two important chemical properties of mouthwashes which are important to consumers, but the information about those properties of mouthwashes in Sri Lanka is scarce. Hence, the objective of this study was to analyse the pH and antioxidant activities of several commercially available mouthwashes in Sri Lanka regardless of their efficacy as antimicrobial agents.

An experimental laboratory study was conducted to analyse the pH and antioxidant activities of three different batches of ten commercial brands of mouthwashes in Sri Lanka. Antioxidant activities were evaluated with DPPH (2,2-diphenyl-1-picrylhydrazyl) and ABTS (2,2-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid)) assays and data were analysed using SPSS version 21.

pH values of mouthwashes ranged from 2.69 to 6.09 and a total of eight mouthwashes had a pH less than 5.5, the critical pH to start demineralization of teeth. Four mouthwashes showed remarkable antioxidant activities with the DPPH assay while five with ABTS assay. With DPPH assay, ascorbic acid (AA) equivalent antioxidant capacity ranged from 5.04 µg AA/ml to 119.87 µg AA/ml and IC₅₀ values ranged from 3.37 µl/ml to 74.97 µl/ml. Moreover, antioxidant activities with ABTS assay were measured as Trolox equivalent antioxidant capacity ranged from 0.14 mg TEq/ml to 2.16 mg TEq/ml suggesting good antioxidant activities.

Most of the mouthwashes evaluated in this study showed low pH, even below the critical value for enamel dissolution, which may be potentially erosive if not used properly. Half of the selected mouthwashes possess antioxidant activities which could be attributed to their herbal ingredients. These findings may be useful in mouthwash selection and further studies are required to explore additional properties essential for proper mouthwash selection.

Keywords: Mouthwashes, pH, Antioxidant activity, DPPH assay, ABTS assay

Impact of Pain Catastrophizing and Pain Sensitivity on Acute Pain Experience and its Recalled Ratings in Healthy Dental Students

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The memory for pain determines the suffering of patients and the outcomes of clinical interventions. Among the factors influencing pain and its memory, pain catastrophizing and pain sensitivity have been identified to affect the pain experience in patients and healthy individuals. However, information is limited on the specific impacts of situational and dispositional pain catastrophizing, and pain sensitivity on pain experience and memory. Elucidation of these would enhance pain care and pain research.

This study aimed to investigate the influence of two distinct forms of pain catastrophizing and pain sensitivity on acute pain experience and its recalled ratings in healthy young adults.

Ninety-six undergraduates of the Faculty of Dental Sciences, University of Peradeniya, were recruited as a convenience sample. Participants' demographic data were recorded. Their dispositional pain catastrophizing and pain sensitivity were assessed using the pain catastrophizing scale and pain sensitivity questionnaire. They were then subjected to cold pressor test (CPT) on non-dominant and dominant hands, and pain threshold and peak pain were recorded for each hand. Participants' situational catastrophizing was assessed concerning the pain they experienced during the CPT. One week later, participants recalled the peak pain experienced on each hand.

Stepwise multiple linear regression analysis revealed that pain threshold was significantly predicted by situational pain catastrophizing and Body Mass Index for both hands. Peak pain was predicted by pain sensitivity for the non-dominant hand ($P<0.05$) and by situational pain catastrophizing for the dominant hand ($P<0.001$). Recalled pain was significantly predicted by situational catastrophizing for both hands (Hierarchical regression analysis, $P<0.01$).

Of the two distinct forms, only the situational pain catastrophizing significantly predicted the threshold and recalled rating of experimentally inflicted acute pain in healthy young adults.

Keywords: Situational pain catastrophizing, Dispositional pain catastrophizing, Pain sensitivity, Pain memory, Cold pressor test

Prevalence and Associated Factors of Burnout Syndrome Among Dental Professionals in Sri Lanka

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Since dentistry is a profession demanding both physical and mental efforts as well as personal contacts, a dentist is at serious risk of developing a work-related health condition known as “burnout”. Though burnout is overlooked by many, with time it may lead to serious consequences causing threat to the workforce and a tragedy to the individual dentist. As studies on burnout among Sri Lankan dental professionals are lacking, we intend to raise awareness among dental practitioners to identify the burnout syndrome in its early stages for effective intervention.

Objective of this study was to determine the prevalence of burnout syndrome, burnout levels among different dental professionals, levels of burnout during the current COVID-19 pandemic and its relationship with sociodemographic, clinical variables, habits.

A cross sectional study was conducted among 145 dental professionals (85 females, 60 males), who were members of Sri Lanka Dental Association (SLDA) using a self-administered questionnaire disseminated via email. Data were analyzed using chi square test, Cramer’s V test and Mann-Whitney U Test using SPSS (version 20).

Nine percent had strong likelihood of experiencing some aspect of burnout. Of the study sample, 17.9%, 29.7% and 10.3% individuals scored positive on each dimension Emotional Exhaustion (EE), Depersonalization (DP), Personal Accomplishment Reversed (PAR) respectively. Significant association was observed between monthly income ($P=0.027$), number of hours working per day ($P=0.037$) and burnout while no significant relationship was identified with other variables.

In the literature prevalence of burnout syndrome fluctuates between 2% and 59% while our study showed relatively a low level (9%). Even so, considerable attention should be paid since it can have serious impact on dental workforce as well as individual dentist himself. Hence, early screening and effective intervention at early stages is of utmost importance.

Keywords: Burnout syndrome, Emotional Exhaustion, Personal Accomplishment Reversed, Depersonalization

Sexual Dimorphism in Permanent Mandibular and Maxillary Canines of a Sri Lankan Population

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Sexual dimorphism is one of the most important implications in forensic investigations and anthropological studies. Teeth are becoming good source of material for sex determination. Canine is the most preferred tooth for sex determination because canine is the strongest tooth in the oral cavity.

Objectives of this study were to investigate sexual dimorphism in permanent mandibular and maxillary canines of a Sri Lankan population, to determine whether the mandibular or maxillary canine is the most suitable canine for sex determination and to ascertain the most suitable dimension (labiolingual, mesiodistal and crown height) to determine sex of an individual.

The study was conducted using 384 dental casts (Males 192, Females 192) aged between 18 and 25 years, in a sample of Sri Lankan population. Casts were selected using convenient random sampling technique according to the selection criteria. Mesio-distal, labio-lingual and crown height of all the canines in the casts were measured using digital vernier calliper with an accuracy of 0.01 mm. Statistical analysis was performed using Minitab 17 and SPSS (Version 21). Unpaired sample t-test, paired sample t-test and point-biserial correlation were used for data analysis.

The present study revealed that males show larger mean dimensions of canine teeth than females. Out of all four canines, mandibular canines show highly consistent results for sexual dimorphism. Crown height was found to be the best measurement to evaluate sexual dimorphism.

According to the results, it can be concluded that mandibular canines is the best canine and crown height is the best measurement to evaluate sexual dimorphism in identification of an unknown individual. This result can be utilized for the future studies to reveal the difference between tooth odontometrics among different ethnic groups in the Sri Lankan population.

Keywords: Canines, Sexual dimorphism, Sri Lankan population

Student-Teacher Interactions among Dental students and Perceived Barriers to Effective Student Teacher Interactions – A Questionnaire Based Study

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A substantial amount of healthy and favourable Student Teacher Interactions (STI) will straddle the Dental students and the academics in the Sri Lankan Dental undergraduate setup. The reasons that contribute to less interaction have not been well studied, hence it is important to assess the barriers for effective STI, to diminish the disparity between the students and teachers, in Sri Lankan Dental education.

Objective of the study was to identify the reasons for less interaction between students and academics in the Sri Lankan Dental undergraduate setup.

A descriptive cross-sectional survey was conducted, aided by a pre-tested, self-administered questionnaire which was dissipated among a total of 356 students and academics of Faculty of Dental Sciences, University of Peradeniya, Sri Lanka.

The study group consisted of 14.04% academics and 85.95% students. Self-related reasons were the major barrier prevailed among students to not to answer (48.75%) and not to ask questions (47.43%). Majority of the staff members (26.74%) perceived “university culture” for less STI. However, student related perceived barriers for less STI, while answering were significant among genders; previous bad experiences ($P=0.013$), being punished ($P=0.002$), and having felt peer pressure ($P=0.003$). In relation to asking questions, being punished ($P=0.016$) and having felt peer pressure ($P=0.025$), were significantly associated with the student gender.

The two main reasons for the students to not answer and ask questions were not knowing the answer and not having the ground knowledge to ask questions respectively. In addition, many students would interact more with their teachers, if certain circumstances might change, like reading around before asking or answering questions, letting the students be given a chance, to speak in their mother tongue.

Keywords: STI (Student Teacher Interactions), Perceived barriers, Levels of satisfaction, Other interactive components

Milk Feeding Patterns of Children with Cleft Palate Attending Dental Teaching Hospital, Peradeniya

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Babies with cleft palate face feeding difficulties and are often underweight. It is important to identify feeding practices that would help them gain sufficient weight for surgical fitness before cleft repair.

The objective was to describe the milk feeding patterns of children with cleft palate, attending Dental Teaching Hospital, Peradeniya (DTHP), by identifying the types of milk fed, methods of feeding, difficulties faced when feeding and remedies taken. The associations between feeding interventions, types of milk and average weight gain were analyzed.

A retrospective descriptive study was conducted at DTHP. The study involved babies with cleft palate, who had been introduced to solid foods and were below two years of age. Data was collected by administering a questionnaire to their mothers and by extracting the monthly weight of the child from the Child Health Development Record. Statistical analysis was performed with Microsoft Excel and SPSS version 22.0.

Babies were fed either breastmilk (3.9%), formula (3.9%), or a combination of both (92.2%). Most babies were fed breastmilk in the first three months, and formula milk in the next three. Breastmilk was fed by breastfeeding (41.2%), hand expression of breast milk (51%) or by manual pumping (45.1%). Spoon (11.8%), syringe (25.5%), bottle (100%), and cup (9.8%) were the devices used to feed milk. Bottle feeding was the most frequently used method. Rigid or squeezable bottles were used either with a normal or special teat. A statistically significant association was not observed between the type of milk fed, the method of feeding or the type of bottle or teat used and the babies' weight at 3 months or 6 months with Pearson's Chi-Square Test ($\alpha=0.05$).

The knowledge provided by this study would help parents select a type of milk and method of feeding which best suits their child, as each baby is unique.

Keywords: Cleft palate, Feeding, Breast milk, Formula, Bottle

Evaluation of Clinicopathological Characteristics of Oral Squamous Cell Carcinoma and Oral Leukoplakia Presenting with Candidal Infection

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Candidal infection within Oral Leukoplakia (OL) and Oral Squamous Cell Carcinoma (OSCC) could play a significant role in its pathogenesis and management. The aims of the study were to evaluate the clinico-pathological characteristics of OL and OSCC presenting with and without Candidal infection, to identify histopathological features supportive of Candidal infection in OL and to compare the proportions of OSCC presenting with Candidal infection on the tumour and in margins.

A convenient sample of 50 cases each of OL and OSCC diagnosed during 2019-2021 comprised of the study sample. All H&E-stained sections were observed under a light microscope and histopathological features supportive of Candida namely elongated retes, neutrophil microabscesses and germinal center formation were recorded. Thereafter, Diastase resistant Periodic Acid Schiff (D-PAS) staining was performed to detect pathogenic Candida. Statistical analysis was done using Chi square test considering $P < 0.05$ as significant.

Twelve out of 50 OLs and 13 out of 50 OSCCs presented with Candida. Though, statistically not significant, a higher percentage of females (40%), more non-homogenous OL (31%) and lesions with high-risk dysplasia (31%) presented with Candidal infection. Out of 12 cases of OL that were infected with Candida, 2 cases didn't show any histopathological features supportive of Candida in H&E sections. Twenty percent and 12% of the OSCC were positive for Candida within the tumour and in margins respectively.

Approximately 1/4th of OL and OSCC presented with Candidal infection. Therefore, it is recommended that all OL are routinely screened for Candida followed by treatment with antifungal drugs before the management of OL. There is a risk of underdiagnosing Candida in OL, when cases that require D-PAS staining is selected based on the presence of characteristic histopathological features. When considering OSCC, patients with Candida in tumour margins may benefit by giving post operative antifungal drugs.

Keywords: Candida, Oral Leukoplakia, Oral squamous cell carcinoma

In-vitro Analysis of the Antioxidant Potential of Geta Pera

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Psidium guajava is a commonly used fruit worldwide. It has many general and oral health benefits due to its antioxidants. There is limited reported evidence about the antioxidant potential of different parts of the local variety of *P. guajava* (Geta Pera).

Objective of this study was to determine the antioxidant capacity of stem, bark, leaves and fruit extracts of Geta Pera variety of *P. guajava*. An experimental laboratory study was carried out from January to May 2022 in the department of Basic Sciences, Faculty of Dental Sciences, University of Peradeniya. Decoction method was used to prepare the water extracts for each part. DPPH and ABTS assays were conducted in triplicate for each extract to determine lipid and water-soluble antioxidant capacities, respectively. Absorbance values were measured, and data analysis was done using one-way ANOVA in SPSS version 21.

High antioxidant capacity was noted with all four parts of *Psidium guajava*. There is a significant difference of antioxidant capacity among them. Study showed that, the bark has the highest antioxidant capacity with a IC_{50} value of $0.183 \pm 0.004 \mu\text{l/ml}$ in DPPH assay and TEAC of $72.62 \pm 2.6 \text{ mg/ml}$ in ABTS assay followed by leaves (IC_{50} value- $0.524 \pm 0.005 \mu\text{l/ml}$, TEAC- $11.6 \pm 0.19 \text{ mg/ml}$), stem (IC_{50} value- $0.634 \pm 0.008 \mu\text{l/ml}$, TEAC- $10.45 \pm 0.98 \text{ mg/ml}$) and fruit (IC_{50} value- $7.33 \pm 0.03 \mu\text{l/ml}$, TEAC- $0.92 \pm 0.05 \text{ mg/ml}$).

This study provides a detailed analysis of the *in vitro* antioxidant potential of four different parts of Geta Pera. Further, *in-vivo* analysis is required to assess the *in vivo* antioxidant effects and elucidate the other systemic and oral health benefits of this underutilized plant.

Keywords: *Psidium guajava*, Antioxidant, DPPH assay, ABTS assay, Radical scavenging ability

A Study on Morphology and Morphometry of the Orbit in Sri Lankan Skulls

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Orbit is an important structure in the facial region. Knowledge of orbital anatomy can be helpful in disciplines such as orofacial surgery, forensics, orbital prosthesis and spectacle construction. There is no established data base in Sri Lanka regarding orbital morphometry.

This study was carried out to achieve two main objectives; Gender based and laterality comparison in relation to different orbital parameters.

This is a descriptive surveillance study which was carried out in Faculty of Dental Sciences, University of Peradeniya. Sixty-six gender-known adult skulls were used for the gender-based analysis. Seventy-two adult skulls were used for the analysis of laterality. Eight orbital parameters were measured; orbital height, orbital width, orbital index, orbital rim perimeter, bony orbital volume, inter orbital distance, bi orbital distance and the distance from the lower border of the orbit to the infra orbital foramen. Data analysis was done using one tailed t- test in SPSS 21.0.

Distance from lower border of the orbit to the infra orbital foramen was 6.98 ± 1.49 mm in males and 6.23 ± 1.56 mm in females. This parameter was significantly higher in males compared to females ($P < 0.05$). Orbital height was 33.14 ± 2.04 mm on the right side and 33.97 ± 2.55 mm on the left side. Left side orbital height was significantly higher than that of the right side ($P < 0.05$). All the other orbital parameters showed no significant difference based on either the gender or laterality.

The results of this study would contribute to establish a data base of skeletal morphometric norms for Sri Lankans

Keywords: Orbital morphology, Orbital morphometry, Sri Lankan, Skulls

Knowledge and Practice of Self-Mouth Examination (SME) among Patients Attending the University Dental Hospital, Peradeniya

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Sri Lanka has high incidence and high mortality rate of oral cancer. Improvement of awareness of oral cancer, OPMD and its risk habits is the pathway for prevention. As a health care professional, SME should be educated to the public as the most effective early detection tool of oral cancer because of its simplicity, low cost and ability to do by everyone.

Objective of this study was to assess the knowledge and practice of SME among patients attending the Dental Hospital, Peradeniya.

A descriptive cross-sectional study was conducted from November 2021 to July 2022. A self-administered questionnaire was used to collect data from 516 randomly selected outpatients attended the Dental Teaching Hospital, Peradeniya. The questionnaire consisted of socio-demographics data, fourteen statements to assess awareness of oral cancer, OPMD and their risk factors, knowledge about SME and practice of SME. Socio-demographic data was used as independent variables and others were used as dependent variables. Association between variables was checked by chi-square test.

Only 41% of the participants were aware of oral cancer, OPMD & risk habits satisfactorily. Knowledge of oral cancer was significantly associated with gender, ethnicity and level of education. Practice of SME was significantly associated with age, ethnicity and level of education. Only 47% of participants were practicing SME. Out of those who performed SME, only 40% had sufficient level of knowledge about SME. But 79% of the study population are willing to improve their knowledge.

This study revealed that the majority of the participants do not have satisfactory knowledge about oral cancer, OPMD and its risk habits and majority were not practicing SME. Education programs should be organized to educate the general public on SME, oral cancer, OPMD and risk factors.

Keywords: SME, Oral cancer, OPMD, Knowledge

A Retrospective Study on Biopsied Paediatric Pathologies in Oral and Maxillofacial Region in a Sri Lankan Population

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Oral and maxillofacial (OMF) pathological lesions and conditions presented in children show a considerable variation related to different regions in the world. This study was to assess the prevalence and distribution of different pathologies that were diagnosed in Sri Lankan children confined to head and neck region.

A retrospective analysis was carried out among ≤ 14 years pediatric patients that had been diagnosed histologically at the Department of Oral Pathology, Faculty of Dental Sciences, University of Peradeniya. Over a period of 35 years (1985-2020) demographic and clinical details were extracted from 4659 biopsy reports, and classified into six categories: reactive and inflammatory, infections, developmental, benign tumours, malignant tumours and other lesions. Descriptive statistical analysis and Pearson's Chi-square test were performed using SPSS (version 22) software.

Among these subjects 48.9% were males and 51.1% were females. Mean age was 9.32 ± 0.05 years. The most prevalent category was reactive and inflammatory. Majority were mucocele (61.0%) followed by fibrous hyperplasia and pyogenic granuloma. Dentigerous cyst was the commonest developmental lesion among followed by odontogenic keratocyst and haemangioma. Abscess was the commonest infection. The commonest odontogenic tumour was unicystic ameloblastoma and, dentigerous cyst was the commonest cystic lesion. Premaxilla was the commonly affected site for odontoma and compound odontome considerably common. Among them, 1.27% cases were malignant, with rhabdomyosarcoma being the commonest. From 57 cases of oral potentially malignant disorders 13 were oral submucous fibrosis. Mostly affected site was the lower lip. For benign tumours, mandible was the commonest whilst maxilla for malignant tumours. A statistically significant association was identified related to gender and the type of the pathology ($P=0.05$).

In conclusion, these results are in line with the literature. More multicentre studies are required to identify geographic distribution.

Keywords: Paediatric, Pathologies, OMF, Retrospective, Biopsy

Technical Session II

Poster Presentations (undergraduate)

Impact of Covid-19 on Academic Activities of Healthcare Stream Undergraduate Students of University of Peradeniya

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When major changes are imposed on education, it is important to explore their impact on the student community in order to overcome the problems associated and to look for room for improvement. The undergraduates in healthcare stream are unique because of their involvement in clinical training.

This study investigated the impact of COVID-19 on overall academic activities of Medical, Dental and Allied Health Sciences students in University of Peradeniya. In addition, it assessed the student's perception regarding the learning experience and methods of conducting the examinations.

This was a cross sectional – analytical type of study which was conducted among 773 health care stream undergraduates. A web-based questionnaire sent to the students via WhatsApp was used to collect data.

All the participants had at least one device to access the internet, and there was a statistically significant difference in the internet connection between urban and rural areas. ($P < 0.05$) Online lectures were the commonest mode of delivering theory (70%) during the pandemic in all three faculties. Out of which more than 55% have had a combination of Zoom live presentations, Narrated PowerPoint presentations, and Voiced video presentations while use of a single mode was scanty. Even though majority of the students felt that the online method was more effective compared to traditional face -to face lectures they wanted both methods for theory learning in the future.

Majority of 60% undergraduates from all three faculties preferred to have traditional in class theory examinations/assessments. Majority disagreed (73. 82%), when asked whether clinical examinations/assessments on online a good method for evaluation of clinical skills.

This study elaborates the impact of COVID-19 on methods of learning and methods of conducting examinations in health care faculties. While students preferred online and traditional methods for theory and clinical teaching, they preferred traditional methods for examinations and assessments.

Keywords: COVID-19, Healthcare stream undergraduates, Theory, Practical, Examinations

Home Remedies Used for Nocturnal Dental Pain by Patients Attending the Dental Teaching Hospital, Peradeniya

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Nocturnal dental pain is regarded as a major oral health concern among patients as there is limited access to after office professional dental care. Hence, they practice home remedies to relieve nocturnal dental pain. It is worth to expand the knowledge on usage of home remedies for nocturnal dental pain among Sri Lankan population as there is a lack in literature.

The objective of this study was to assess home remedies used for nocturnal dental pain. It was aimed to identify the incidence, nature, and severity of nocturnal dental pain and furthermore, to ascertain perceived effectiveness of the common home remedies.

A convenient sample of 350 patients above 18 years of age who attended the Diagnostic Clinic, Dental Teaching Hospital Peradeniya were selected. Data were collected using an interviewer administered questionnaire. Results were analyzed through SPSS software and descriptive statistical analysis was carried out.

Overall, 55.7% patients experienced nocturnal dental pain. It was severe (82%), unbearable (76.6%) and mostly of a throbbing type (54.1%). Over 56% of the sample used home remedies for nocturnal dental pain followed by over-the-counter medications. Overall, 23.63% used clove oil (*Syzygium aromaticum*) to relieve nocturnal tooth pain and 8.18% used salt water. Out of the participants 80.9% had temporary pain relief with home remedies.

Nocturnal dental pain is common and severe pain for many patients. Most of the patients who get nocturnal dental pain use home remedies. Application of clove oil on the painful tooth and saltwater gargling have shown to provide temporary relief from nocturnal dental pain. It will be beneficial to extend the research interest on clove oil and other widely used home remedies for their effectiveness, side effects and complications.

Keywords: Nocturnal dental pain, Home remedies

Awareness on Oral Cavity Cancers among Health Sciences Students and Non-Health Sciences Students of the University of Peradeniya

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Oral Cavity Cancer (OCC) is considered one of the major health problems in the world. The prevalence of OCC is increasing especially in developing countries. In Sri Lanka, the most common cancer among men is OCC.

University students are expected to have a better knowledge regarding OCC. It's important to have an idea about their level of awareness as they can play a significant role in reducing the widespread presence of OCC. which are avoidable.

This study aimed to assess the knowledge level on OCC. among Health Sciences Students (Faculty of Dental Sciences, Faculty of Medicine, Faculty of Allied Health Sciences) & Non-Health Sciences Students (Faculty of Science, Faculty of Art, Faculty of Engineering) of University of Peradeniya and also to identify whether there is a gap in knowledge among these two groups.

A descriptive cross-sectional study was conducted at University of Peradeniya. Stratified random sampling method was used. The data was collected through self-administered pretested questionnaire as a Google form. Statistical Analysis was done using Statistical Package for the Social Sciences (SPSS) version 2021.

Overall, Health Sciences Students had a better knowledge regarding signs and symptoms of OCC. and OPMD ($P=0.004$) than Non-Health Sciences Students. Regarding etiological and risk factors ($P<0.05$), importance of early detection ($P<0.05$) and treatments ($P<0.001$) Health Sciences Students had a significantly higher knowledge. Overall awareness of OCC is significantly higher among Health Sciences Students ($P<0.001$)

Overall, the mean knowledge of OCC. was significantly higher in Health Sciences Students than Non-Health Sciences Students. According to our study we have identified that level of knowledge is poor in some aspects of OCC. such as risk factors, signs and symptoms & highlights the need of enhancing knowledge in both student groups.

Keywords; Oral Cavity Cancer, Oral Potentially Malignant Disorders (OPMD), Health Sciences Students, Non-Health Sciences Students

Impact of Tooth Loss and Denture Wearing on Nutritional Status of an Elderly Population Attending Dental Teaching Hospital, Peradeniya

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Poor oral conditions such as tooth loss and denture wearing could badly affect the nutritional intake of the elderly, leading to either malnourished or obese statuses.

This study aimed to assess the association between tooth loss and denture status on the nutritional status of an elderly population attending Dental teaching hospital, Peradeniya.

A descriptive cross-sectional study was conducted among 100 patients of 60 years and above, attending the Department of Prosthetic Dentistry, Dental Teaching Hospital Peradeniya. Data were collected by a self-administered questionnaire, patients' records and a physical examination to determine height and weight to calculate the body mass index (BMI). The collected data were analyzed using the statistical software Minitab v18.0. Descriptive statistics were presented as frequencies and percentages. Chi-Square test was used to assess the impact of tooth loss and denture usage and food avoidance, BMI, daily food intake.

Out of 100 participants, majority was females and 71% were between 60-69 years of age. Sixty percent were denture wearers and considering occluding pairs, 67%, 25% and 8% had 4 or less than 4, 5-8, 9 or more than 9 occluding pairs respectively. Fifty two percent, 8% and 40% of the sample were normal, under- and over-weight, respectively. There was no significant association of BMI with the number of missing teeth or the denture status. Being either underweight or overweight was not associated with the denture wearing status or occluding pairs. The frequency of grain intake and number of occluding pairs were associated with each other & the frequency of snacks intake was associated with the denture wearing status.

These findings indicate the significance of considering the oral health and denture status when developing nutritional strategies for elderly population.

Keywords: BMI, Nutritional status, Elderly, Oral health status, Denture status

Experience & Attitudes Towards E-learning Among 1st Year Undergraduate Students in Health-related Faculties of University of Peradeniya During COVID - 19 Pandemic

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The academic activities in higher educational institutes in Sri Lanka had been strongly affected by the COVID-19 pandemic and therefore, shifted from face-to-face learning to e-learning within a short period. The present descriptive cross-sectional study aimed to determine the knowledge, skills, experience, and attitudes towards e-learning among 1st year undergraduate students in health-related faculties of the University of Peradeniya during the COVID 19 outburst.

A Google form-based questionnaire comprising demographic data and socio-economic status, accessibility to internet, IT and English literacy, experience, attitudes, and barriers towards e-learning was sent to the target population from February 2022 to April 2022 and 394 responses were received. A point system was employed to give a score for the categorical data (IT literacy, English literacy, experiences, attitudes, and barriers). Data was analysed using SPSS Software (version 21) and expressed as frequencies and percentages. Chi-Square test, Mann Whitney U test and Kruskal-Wallis test were used to compare the data.

Faculty of Dental Sciences showed the highest average score for good experiences and attitudes towards e-learning while Faculty of Allied Health Sciences displayed the lowest among health-related faculties. Furthermore, students of FDS had experienced minimum level of barriers while those of Faculty of Veterinary Medicine and Animal Sciences experienced many barriers during online learning. There is a statistically significant difference in experiences, attitudes, and barriers towards e-learning among the students of four health related faculties and different socioeconomic status.

Students of all four health related faculties still prefer face-face learning due to several unpleasant experience, attitudes, and barriers that they have understood during online learning. In addition, experiences, attitudes, and barriers towards e-learning are highly variable among the students of different health related faculties of University of Peradeniya and those of different socioeconomic status. Future research is suggested on the effectiveness of online learning, online learning platforms, learning goals and students' preferences and characteristics.

Keywords: E-learning, Experiences and attitudes, Barriers, COVID 19, Health-related faculties

Comparison of the Antioxidant Activity of “Moonamal” (*Mimusops elengi*) Mouthwash Prepared at the Faculty of Dental Sciences with a Commercially Available Herbal Mouthwash and a Chemical Mouthwash

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Mimusops elengi bark extract has been used in traditional medicine to control periodontitis since ancient times. However, its efficacy against the major etiological agents of periodontitis such as periodontopathic bacteria and aberrant host immune response derived oxidative stress are not completely characterised yet. In a previous study, a *M. elengi* bark extract-based mouthwash formulated at the Faculty of Dental Sciences was reported to have inhibitory effects on the keystone periodontopathic bacterium *Porphyromonas gingivalis*. However, the ability of this mouthwash to neutralize oxidative stress has not been elucidated yet.

Objective of the present study was to analyse the antioxidant activity of this mouthwash and compare it with that of a commercially available, frequently used chemical mouthwash and a herbal mouthwash.

The *M. elengi* mouthwash was prepared according to the protocol optimized at the natural products research laboratory of the faculty. Antioxidant activities of all three mouthwashes were analysed using DPPH and ABTS assays. The results were expressed as mean \pm SD (n=3) and compared using One way ANOVA followed by Tuckey's post hoc test ($P < 0.001$).

The DPPH assay results expressed as Ascorbic acid equivalent antioxidant capacity (AAEAC) and the ABTS assay results expressed as Trolox equivalent antioxidant capacity (TEAC) for *M. elengi* mouthwash ($1.09 \pm 0.016 \mu\text{g/ml}$, $15.57 \pm 0.129 \text{ mg/ml}$) were significantly higher than those of the commercially available herbal mouthwash ($0.01 \pm 0.000 \mu\text{g/ml}$, $9.76 \pm 0.128 \text{ mg/ml}$) and the chemical mouthwash ($0.001 \pm 0.000 \mu\text{g/ml}$, $2.57 \pm 0.085 \text{ mg/ml}$).

The *M. elengi* mouthwash formulated at the Faculty of Dental Sciences is a rich source of natural antioxidants. Its antioxidant activity is superior to the commercially available herbal and chemical mouthwashes tested in the study. Our finding provides further evidence for the potential of this mouthwash to be used as an adjunctive therapy for controlling periodontitis.

Keywords: *M. elengi*, Periodontitis, Antioxidant activity, Adjunctive therapy

Panoramic Radiographic Evaluation of Developmental Dental Anomalies in Children Attending Dental Hospital, Peradeniya

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Developmental dental anomalies (DDA) occur during morphodifferentiation or histodifferentiation stages of tooth development. They consist of changes in the tooth number, size, structure, and position in the jaws. The present study was conducted using digital panoramic tomographs (DPTs), since very few clinical studies on DDA had been done in Sri Lanka.

Objective of this study was to determine the prevalence of DDA on panoramic radiographs of 6 - 18 years old patients attending to Dental Teaching Hospital Peradeniya and to assess the presence of commonly identified DDA with respect to the gender and the site of occurrence.

A retrospective, quantitative study was conducted using 924 digital panoramic radiographs of 6 – 18 years old children (Male - 513, Female - 411) who attended Dental Teaching Hospital Peradeniya from August 2019 to December 2021. Low quality radiographs and radiographs of patients under fixed orthodontic treatments and jaw fractures that affect the natural eruption of permanent teeth were excluded. Data analysis was performed using SPSS software version 2021. Chi- square test and analysis of variance were conducted. Descriptive data were reported as frequencies.

Out of the total analyzed, 447 DPTs showed at least one DDA, with equal gender distribution. Taurodontism was the most common DDA. Prevalence of hypodontia, impaction and supernumerary were 12.8%, 8.2% and 4.8% respectively and more prevalent in the maxillary arch.

Although the occurrence of DDA is not always symptomatic, they can lead to several clinical problems. Detailed clinical and radiographic assessment is needed for the accurate diagnosis. The present study concludes that the DPTs can be used as a routine diagnostic tool to identify DDA at this age group.

Keywords: Developmental dental anomalies, Digital panoramic tomography, Prevalence

Formulation and Evaluation of the Anti-Microbial Efficacy of a Herbal Hand Sanitizer

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Hands are the primary mode of transmission of microbes and infections. Hand-washing is critical for infection control and the ability to prepare a herbal hand sanitizer is important due to numerous ill effects of alcohol based hand sanitizers and it will be a solution for high demands and a low supply chain for ethanol and isopropanol, especially during pandemics since natural extracts of plants and herbs have numerous bioactive products that show antimicrobial effects.

The objectives of this research were to formulate a herbal hand sanitizer using leaf extract of *Vitex negundo* and to determine its growth inhibitory effects on microbial isolates of *Escherichia coli*, *Staphylococcus aureus*, *Candida albicans* and *Pseudomonas aeruginosa*.

Growth inhibitory effects of crude extract of *V. negundo* on standard isolates of *S. aureus*, *C. albicans*, *E. coli*, and *P. aeruginosa* and thirty of each of clinical isolates of *S. aureus* and *C. albicans* were observed by agar well diffusion technique and measured the inhibitory zones in millimetres. The results obtained were compared with a WHO recommended standard hand sanitizer.

There was a significant difference among four groups of standard isolates ($F_{(3,24)}=23.18$, $P=2.86E-071$) and between antimicrobial effects of standard hand sanitizer and extracts of *V. negundo* ($F_{(1,24)}$, $P=3.08E-12$). The leaf extracts of *V. negundo* had better antimicrobial effect on standard isolates of *S. aureus* than other microbes even though it was less effective than WHO standard hand sanitizer. In clinical isolates, *V. negundo* showed better antimicrobial activity on *S. aureus* compared to *C. albicans* but less effective than the standard hand sanitizer.

A herbal hand sanitizer formulated using leaves of *V. negundo* would be an attractive alternative due to the proven antimicrobial efficacy of its leaf extract. The results from the present work suggest and support the utilization of *V. negundo* with a better effect in the formulations and further in commercially available products.

Keywords: Hand sanitizers, *Vitex negundo*, Antimicrobial

Difficulties Encountered by Patients with Cleft Lip/Palate (CL/P) Awaiting Surgery at Dental Teaching Hospital, Peradeniya During the COVID-19 Pandemic

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COVID-19 has negatively impacted on CL/P patients, hence they are experiencing difficulties due to postponement of elective surgery, countrywide lockdown, travel restrictions and reduced family income. Also, it has *adverse consequences* on psychological wellbeing of the patients.

Objective of this study was to identify the difficulties encountered by CL/P patients awaiting surgery at Dental Teaching Hospital, Peradeniya during the COVID-19 pandemic.

A descriptive cross-sectional study was conducted using an interviewer administered telephone survey questionnaire among 68 parents of CL/P children. The questionnaire consists of questions related to demographic data, received medical advice, impact of travel restrictions, and impact on psychological and economic condition during COVID-19 pandemic.

Among 68 participants, about 84% participants, were able to get advice regarding CL/P complications and 93.8% were able to get advice regarding medical illnesses. Among postponed surgeries (88.2%), 83.3% were due to COVID-19 pandemic. A considerable number of participants (88.5%) were worried about the surgical delay and 63.2% of parents were having stress related symptoms. Only 16.2% of the patients were unable to attend their regular follow ups mostly due to the lockdown (27.3%) and unavailability of the transport method (45.5%). Inadequate family income was reported by 75% of the participants during COVID-19 pandemic. But for more than half of the participants, it has not affected when taking care of their child.

CL/P patients awaiting surgery are experiencing psychological stress and reduced family income due to COVID-19 pandemic. Even though there were difficulties, most of them were able to attend their regular follow ups and able to get enough medical advice. These findings can be used to implement strategies to develop and improve health care delivery system during a pandemic like COVID-19.

Keywords: Cleft lip/palate patients, COVID-19, Difficulties

Awareness on the Impact of Common Oral Diseases/Conditions on Systemic Diseases in Adult Patients Attending the University Dental Hospital, Peradeniya

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There is well established evidence that multiple non-communicable diseases are linked with common oral diseases and their risk factors. Hence, it is important to assess the awareness on the impact of common oral diseases on systemic health. This would be useful to highlight the significance of oral health for general wellbeing as well as to motivate an individual to attend for needs of existing oral and systemic diseases.

The main objective of this study was to assess the awareness on the impact of common oral diseases/conditions on systemic diseases in adult patients attending the Dental Hospital, Peradeniya. An interviewer-assisted, self-administered questionnaire was used among 405 new adult patients attending the hospital. Responses were analyzed using IBM SPSS 21.0.

Although awareness score values ranged from 0-100, the majority (75%) had score levels below 30. Participants with education qualification of G.C.E A/L and above scored a statistically significant higher mean value of awareness (mean 21.9, SD 16.41) compared to the participants with lower education qualifications ($P=0.004$). Among the participants, 21.2% ($n=86$) had comorbidities. Although no association was observed between the presence of comorbidities and the awareness level ($P=0.27$), patients with comorbidities scored a lower mean value (18.9 ± 15.38) than those without comorbidities (21.02 ± 15.89).

This study demonstrated a considerable low awareness on the impact of common oral diseases on their systemic health. Awareness level showed a positive relationship with the educational level. A low awareness level was observed in patients with comorbidities. Thus, a high need exists to make the necessary strategies to improve the delivery of health education and the relevant health policies.

Keywords: Awareness, Oral diseases, Systemic effects, Systemic diseases, Adult patients

Awareness on Interdental Cleaning Aids (IDCAs) and Their Use and Perceived Benefits by Dental Students of the University of Peradeniya

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Oral hygiene practices play a crucial role in maintaining good oral health. In addition to the toothbrush, IDCAs are used to clean interdental areas of teeth. Dental caries and periodontal disease can be prevented through proper tooth brushing and interdental cleaning. Dental professionals play a vital role in introducing IDCAs to patients. Dental student's knowledge of IDCAs may influence how they view the importance of prescribing them for patients in future practice.

The main objective of this study was to determine the awareness about IDCAs, their use and perceived benefits among dental students of University of Peradeniya. A self-administered questionnaire-based descriptive cross-sectional study was conducted among 1st to 4th year dental students. A pre-tested online questionnaire was circulated, data analysed by using Chi Square and SPSS software.

Although most students (>90%) demonstrated satisfactory level of awareness of IDCAs, there were gaps in knowledge/understanding regarding some aspects. Their usage of IDCAs as a part of self-care practice was low (Dental Floss-35%, Toothpick-19%, End Tufted Toothbrush-5.5%, Inter Dental Bottle Brush-4.7% & Oral Irrigators-0.8%), with duration of usage by a majority (76%) was <3 months, and a minority (15%) for >1 year.

Although a large majority of students have satisfactory knowledge/application of IDCAs, their perception for self-use and prescription-practice appears inadequate. Knowledge, application and self-use of IDCAs of students in clinical years was not significantly different from students who are yet to commence clinical training.

Keywords: Interdental cleaning aids, Awareness, Benefits, Dental students

Knowledge and Attitudes Regarding COVID-19 and Preventive Practices of COVID-19 Among Patients Attending the Dental Teaching Hospital, Peradeniya

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COVID-19 is caused by SARS-COV2 which spreads via droplets and aerosols. Public adherence to COVID-19 prevention, and practice of health is influenced by their knowledge and attitudes. The objective of this cross-sectional study was to assess the knowledge, attitudes and practice regarding COVID-19 among patients attending the Dental Teaching Hospital, Peradeniya.

A self-administered questionnaire was used to collect data from 397 participants who were selected using Systematic Random Sampling. The mean COVID-19 knowledge score was 10.65 (SD = 1.24, range 6-12), attitude score was 8.94 (SD = 0.99, range: 3 - 10), practice 12.52 (SD = 2.54, range: 3- 16). There were significant associations between knowledge vs. ethnicity and knowledge vs. education ($P < 0.001$). Attitude score was significantly associated with the education level and the ethnicity ($P < 0.05$). There was a significant association between practice score and the gender ($\chi^2 = 6.62$, $df = 2$, $P = 0.037$).

A significant positive correlation found between knowledge score and attitude score (Spearman's $r = +0.317$, $P < 0.01$), and between practice score and attitude score (Spearman's $r = +0.122$, $P = 0.015$).

Majority of patients attending DTHP belonged to 20-81 age group. Sinhalese females who studied up to A/L in rural areas had come mainly for restorative or rehabilitation purpose. Their monthly income was below 25000 LKR. Majority participants were fully vaccinated for COVID-19. The higher means of knowledge, attitude and practice scores indicate that the patients attending the DTHP have good knowledge, attitudes and practice regarding COVID-19.

Keywords: Knowledge, Practice, Attitude, Covid -19

Online Gaming and Social Networking Behaviour Among Dental Undergraduates of the University of Peradeniya

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With the progressive development of internet usage and changes in the teaching and learning methods over the past few decades, the university students are more involved in online activities. The communication and entertainment using the internet has also become popular and thus the internet usage is an indispensable tool for university students.

The general objective of the study was to assess the online gaming and social networking behaviour of the dental undergraduates of the University of Peradeniya. Specific objectives were to determine the average time spent, gender difference, reasons and its' impact on health and the academic performances.

It was an observational cross-sectional questionnaire-based study. The population was the undergraduate dental students of all four semesters in year 2021. Purposive sampling technique was used. Inclusion and exclusion criteria were considered. Questionnaire was self-administered as a Google form via email and WhatsApp platforms. Statistical analysis was done using IBM Minitab and SPSS 22. Chi-square test and t-test were used to determine the association between variables.

Response rate was 97% (n=294). Out of the respondents only 48.3% (n=139) were engaged in online video gaming and 98.6% (n=284) in social networking. A significant difference in online gaming behaviour between males and females was found ($P=0.0001$). Majority of the students had engaged in online gaming to alleviate the stress. There was a significant difference in health impact between social network users and non-users ($P=0.037$).

According to the recent GPA, both groups did not show any impact on academic performances. However, only social networkers while they are offline showed symptoms like feeling depressed, moodiness, and becoming nervous and online gamers while they are offline did not show symptoms. We did not compare the gamers and social networkers.

It can be concluded that online gaming and social networking behaviour of the dental undergraduates of the University of Peradeniya were popular modes of leisure activities which did not impact on their academic performances based on their recent GPA.

Keywords: Online gaming, Social networking, Social media, Dental undergraduates

Technical Session III

Oral Presentations (Postgraduate)

Antioxidant Activity of the Different Solvent Extracts of *Osbeckia octandra* Leaves

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Oral cancer is prevalent in South Asia, and associated with chewing of Arecanut (AN), a major ingredient in betel quid. Studies show that AN induces carcinogenesis via oxidative stress, by forming reactive oxygen species in the oral mucosa. Plants rich in phenolic compounds are known to have high antioxidant capacity and can support for maintenance of the balance of free radicals in the body.

The focus of this study was to evaluate the antioxidant activity of *O. octandra* leaf extracts as a part of the research designed to elucidate anticancer properties of *O. octandra* in AN induced oral cancer.

Air-dried, powdered *O. octandra* leaves were extracted sequentially into n-hexane, ethyl acetate and methanol using ultrasonication. The antioxidant activity of the extracts was investigated using 2, 2-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging and Ferric Reducing Antioxidant Power (FRAP) assays. IC₅₀ values of extracts were calculated from DPPH assay and compared with that of butylated hydroxyanisol (BHA). FRAP assay results of the sequential extracts were expressed in µg ml⁻¹ ferrous sulphate equivalent units.

The IC₅₀ values of DPPH radical scavenging n-hexane and ethyl acetate extracts of *O. octandra* leaves were 157 and 405 ppm, respectively. Methanol extract showed the highest radical scavenging activity with an IC₅₀ of 8 ppm. The FRAP assay also showed similar Fe³⁺ reducing potential, with methanol extract having the highest reducing ability.

The results indicate that the methanol extract of *O. octandra* leaves has a high antioxidant activity compared to its moderately active n-hexane and ethyl acetate extracts making it a potential source of natural antioxidants with promising anticancer activity. Thus, further studies are expected to investigate the anticancer activity of *O. octandra* leaf extracts using *in-vitro* and *in-vivo* experiments.

Keywords: *Osbeckia octandra*, Antioxidant activity, Anti-cancer, DPPH assay, FRAP assay.

Evaluation of the Contribution of Osteopontin Secreting Fibroblasts and Epithelium in the Pathogenesis of Oral Submucous Fibrosis

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Oral submucous fibrosis (OSF) is a disease with dysregulated collagen metabolism leading to fibrosis of the oral mucosa. Osteopontin (OPN) has been shown to play a role in lung fibrosis by modulating the immune response via T lymphocytes. Therefore, this study aimed to identify the presence of OPN positive fibroblasts (OPN-F) and OPN expressing epithelium at different stages of the natural history of OSF.

Five μm thick tissue sections of 106 OSF and 29 cancers arising in the background of OSF (CaOSF) were stained with anti-OPN antibody according to the manufacturers' instructions. Quantification was done by counting OPN positive and negative fibroblasts in 5 high power fields to obtain a mean value. OPN expression in the epithelium was identified by membranous positivity and recorded as present or absent. Lichenoid infiltrate (LI), which is predominantly composed of T lymphocytes, was identified in 41 OSF cases included in the study sample. Statistical analysis was performed considering $P \leq 0.05$ as significant.

At all stages of fibrosis, OPN was located in exaggerated amounts in the extracellular environment but was conspicuously absent in the juxta-epithelial zone. The OPN-F counts at different stages of the disease, in mean rank (MR) were 75.2 in early and intermediate fibrosis (EIOSF), 69.72 in advanced fibrosis (AOSF) and 51.71 in CaOSF. Accordingly, EIOSF had a significantly higher OPN-F count than CaOSF ($P < 0.05$). Results also revealed that OPN-F counts in the presence of LI (MR=62.54) was significantly greater than the OPN-F counts in the absence of LI (MR=47.80, $P = 0.013$). Almost 57% of OSF at all stages of the disease expressed OPN in the epithelium. In contrast to OPN-F, similar numbers of OSF with and without LI expressed OPN in the epithelium ($P > 0.52$).

Significant increase in the number of OPN-F in OSF showing lichenoid infiltrate supports the contribution of OPN towards recruiting inflammation inducing T lymphocytes to the site of the lesion which ultimately may contribute to tissue fibrosis. It is recommended to perform further experiments to support these preliminary findings and identify if the role of OPN in OSF is similar to that of lung fibrosis.

Keywords: Oral submucous fibrosis, Immunohistochemistry, Osteopontin

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Infrared Spectroscopic Analysis Based Spectral Biomarkers for Oral Cancer Screening: A Preliminary Analysis

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Oral Squamous Cell Carcinoma (OSCC), defined as cancers of lip, tongue and mouth are the most common cancers among males in Sri Lanka. OSCC can be preceded by Oral Potentially Malignant Disorders (OPMD) which are clinically evident as Leukoplakia, Erythroplakia, Oral Submucous Fibrosis (OSF) & Oral Lichen Planus (OLP). Despite, numerous advances of diagnoses and therapies, OSCC possesses a significantly lower survival rate. Serum can be considered a first-line diagnostic tool in patients with suspicion of OSCC.

Attenuated Total Reflection Fourier Transform Infrared spectroscopy (ATR-FTIR) can be successfully applied for discrimination between OSCC, OPMD and healthy controls (HC). Histopathological evaluation remains the golden standard method for cancer detection. However, these methods are invasive to the patients. Hence, it is a timely approach to understand the utility of other emerging techniques which could be used in conjunction with the histopathological assessment.

The present study investigates the applicability of ATR-FTIR spectroscopy in distinguishing the sera of OSF, OLP, OSCC patients and healthy controls (HC). The study group included 55 subjects: 15 each with confirmed OSCC, OLP and OSF by clinical, histological, and pathologic examination and 10 HCs without any pathological findings. The mid-infrared (IR) absorbance spectra (400–4000 cm^{-1} range) were measured using Perkin Elmer Spectrum two Ft/IR-equipped with an Attenuated total reflectance attachment.

The results obtained for ATR-FTIR spectroscopy, indicate that spectral signals accredited to the carbohydrates, inorganic phosphates, and amide I/II (secondary structure of the protein) oscillations were sensitive to the changes allied with the progression of OSCC. Several spectroscopic biomarkers have been identified as potential predictors of OSCC and OPMD development.

Thus, ATR-FTIR spectroscopy can serve as a powerful implement to understand the alterations in the biological components besides distinguishing OSCC, OPMDs and healthy serum samples.

Keywords: ATR-FTIR spectroscopy, Oral squamous cell carcinoma, Serum, Diagnostic tool

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