

# STURESY 2024

“RESEARCH FOR THE FUTURE: SHAPING TOMORROW’S DENTISTRY TODAY”

DENTAL STUDENTS’ RESEARCH SYMPOSIUM

## Book of Abstracts

Volume 3



**Dental Students' Research Symposium**

**STURESY 2024**

**"Research for the Future: Shaping Tomorrow's Dentistry  
Today"**

**Book of Abstracts**

**Volume 3**

**Faculty of Dental Sciences**

**University of Peradeniya**

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Prof. M. A. M. Sitheequ

Prof. S.U.B. Tennakoon

Prof. H. D. W. T. Damayanthi Dassanayake

## **Technical Session II (Poster Presentations)**

Prof. B. R. Fernando

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

Dr. S. Krishnapradeep

## Message from the Chief Guest



It gives me immense pleasure to extend my warm greetings to the organizers, participants, and attendees of the Undergraduate Dental Symposium of the Faculty of Dental Sciences, University of Peradeniya.

As a leading institution committed to excellence in education, research, and service, the University of Peradeniya takes great pride in the achievements of its undergraduate students. This symposium stands as a testament to the dedication, curiosity, and innovation demonstrated by our young scholars. It provides an invaluable platform for fostering academic inquiry, sharing knowledge, and nurturing the next generation of dental professionals.

The theme of this symposium underscores the importance of continuous learning and the need to address the dynamic challenges in the field of dentistry. It is heartening to see our students actively engaging in research and discussions that have the potential to impact both clinical practices and the health and well-being of our communities.

I extend my heartfelt congratulations to the Faculty of Dental Sciences for organizing this event and to the students for their enthusiasm and hard work in preparing for it. I am confident that this symposium will inspire further collaboration, creativity, and excellence in dental education and research.

Let us continue to uphold the high standards of the University of Peradeniya and contribute meaningfully to the betterment of society.

Wishing you all a successful and enriching symposium.

**Professor Terrence Madhujith**  
**Vice-Chancellor**  
**University of Peradeniya**

## Message from Dean, Faculty of Dental Sciences



It is with great pride and anticipation that I welcome you to the Undergraduate Research Symposium (STURESYS 2024) of the Faculty of Dental Sciences. This event marks a significant milestone in our academic journey, showcasing the efforts and dedication of our undergraduate students as they embark on the exciting path of research and discovery.

The inclusion of research in our new curriculum reflects our commitment to nurturing a generation of dental professionals who not only excel in clinical practice but also possess a solid foundation in research methodology. By engaging in research, our students develop critical thinking skills, analytical abilities, and a deeper understanding of evidence-based practice—essential qualities for the advancement of dental science.

Presenting at this symposium provides an invaluable opportunity for students to enhance their communication skills, a cornerstone of professional development. It is the first step in preparing them for future academic forums, where they will confidently share their knowledge and contribute to the broader scientific community.

Furthermore, the collaborative nature of group research fosters teamwork, leadership, and mutual respect—qualities that are vital in the dynamic and interdisciplinary field of dentistry. Through these shared experiences, our students cultivate a research culture that will serve them throughout their careers.

I extend my heartfelt congratulations to all the participants for their hard work, dedication, and passion for inquiry. May this symposium inspire you to pursue research with curiosity and enthusiasm, and may it serve as a stepping stone toward a lifetime of learning and innovation.

**Prof. B. M. H. S. K. Banneheka**  
**Dean/Faculty of Dental Sciences**  
**University of Peradeniya**

## Message from the Chairperson, Faculty Research Committee



It is with great pleasure that I extend my warmest greetings to all participants of the Undergraduate Dental Symposium, organized by the Faculty Research Committee of the Faculty of Dental Sciences, University of Peradeniya. This symposium stands as a testament to the commitment and enthusiasm of our undergraduate students in pursuing research and contributing to the advancement of dental sciences.

Research is a cornerstone of academic excellence, and events such as this play a pivotal role in fostering a culture of inquiry, innovation, and intellectual growth among students. By engaging in research, our students not only broaden their knowledge but also develop critical skills that will serve them well in their professional and personal lives.

This symposium provides a unique platform for our students to present their findings, exchange ideas, and receive constructive feedback from peers and experts in the field. Such interactions are invaluable in shaping the next generation of dental professionals who are equipped to address the challenges of modern dentistry with evidence-based solutions.

I commend the dedication of the organizing committee, faculty members, and students who have worked tirelessly to make this event a success. I also express my gratitude to all the presenters, supervisors, judges of the sessions and attendees for their active participation and contributions.

As we celebrate the achievements of our undergraduate researchers, let us also look forward to a future where research continues to be an integral part of our academic endeavours. I hope this symposium will inspire many more students to embark on research journeys that push the boundaries of knowledge and enhance the quality of dental care in Sri Lanka and beyond.

Wishing you all a fruitful and enriching experience at the symposium.

**Prof. R. D. Jayasinghe**  
**Chairperson, Dental Faculty Research Committee**



# Keynote Speech

## Navigating the Research Journey: From Ideas to Publications

Prof. S. H. P. Parakrama Karunaratne

*Senior Professor and Chair of Zoology*

*Department of Zoology,*

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Knowledge generation refers to the process of creating new knowledge and understanding through scientific research, and the dissemination of findings. Although it is a crucial aspect of academia at universities and research institutes, involvement of professionals such as practitioners, managers, decision-makers, and policy-makers in research might address the gap between research and practice. We are now facing the fourth industrial revolution with emerging technical advances especially in the fields of energy, material science, internet and digital technology, robotics and artificial intelligence, autonomous vehicles, nanotechnology and biotechnology. etc. It will be difficult to identify the difference between the natural and the artificial in the years to come. Development of a dynamic research culture and generation of human resources with innovative ideas to face the challenges of the massive socio-economic changes is essential.

We have ample evidence to show that R & D activities of Sri Lanka were at great heights with countless innovations before the intrusion of foreign invaders. We lost our research culture and creativity, especially with the invasion of British rulers, and became a nation of maintaining the imported technology by changing both our habits and attitudes. Although the research and innovations were forced to be resurrected after the independence, we are still struggling to regain the research culture that we lost. A dramatic attitudinal change towards R & D, at all levels of the society, is indeed a necessity. Parents and teachers should take steps to secure the in-built research curiosity of children provoking observation skills and scientific thinking.

It has to be emphasized that both basic and applied research are equally important. For any country, a strong foundation in curiosity-driven basic research is a pre-requisite for developing applied research, innovations and economic growth. Some scientific discoveries come about after painstaking goal-oriented lab work finally yields the result that a researcher is trying to find. However, many scientific advancements and technological innovations have been the result of accidental discoveries. Research will give recognition to the individuals and to the institutions. Measures such as Hirsch Index or 'h' index and impact factors are widely used to assess performance. Publication of novel research findings in high-impact journals along with dissemination of research outcome and, discussions through international and national research symposia, are essential for the progress of science.

## Programme

- 8.15 a.m. Arrival of guests
- 8.30 a.m. Opening ceremony
- 8.40 a.m. Welcome address by Prof. B. M. H. S. K. Banneheka  
The Dean, Faculty of Dental Sciences
- 8.50 a.m. Speech by the Chief Guest, Prof. W. M. T. Madhujith  
The Vice Chancellor, University of Peradeniya
- 9.00 a.m. Keynote Speech by Prof. S. H. P. Parakrama Karunaratne,  
Senior Professor and Chair of Zoology  
“Navigating the Research Journey: From Ideas to Publications”
- 9.30 a.m. Vote of Thanks by Prof. R. D. Jayasinghe  
The Chairperson, Faculty Research Committee
- 9.35 a.m. Refreshments
- 10.00 a.m. Technical session I - Oral presentations
- 12.30 p.m. Lunch
- 1.15 p.m. Technical session II - Poster presentation
- 2.30 p.m. Awards ceremony
- 2.45 p.m. Closing ceremony

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# **Technical Session I - Oral Presentations**





## **Morphometric Analysis of Inferior Alveolar Canal Using Cone Beam Computed Tomography In a Sri Lankan population**

**\*L. A. I. U. Liyanaarachchi<sup>1</sup>, S. D. T. Laksala<sup>1</sup>, G. E. T. Lakshan<sup>1</sup>, P. M. Peiris<sup>2</sup>,  
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The Inferior Alveolar Canal (IAC) is a single intra-osseous canal present bilaterally in the mandible. Morphometric characteristics of the IAC are important in dental treatments and to prevent complications.

The aim of the study was to analyze the morphometric characteristics of IAC using Cone Beam Computed Tomography (CBCT) in a sample of attendees at Dental Teaching Hospital Peradeniya.

A retrospective descriptive study was conducted using 87 CBCTs which included 130 IACs. On trans-axial view, visibility, shape and distance to IAC from outer buccal and lingual cortical plates, from the inferior border of the mandible and root apices were assessed at 2<sup>nd</sup> mandibular premolar, distal roots of 1<sup>st</sup> and 2<sup>nd</sup> mandibular molar regions. Also, the horizontal and vertical relationships of the IAC to the tooth roots, course and presence of the bifurcation were evaluated. Parametric analysis was done using the Anova test and non-parametric analysis was performed using student T-test. Gender variation was analyzed by chi-square test.

The majority of canals were oval in cross-section. Similar to the literature, the location of the IAC was closer to the buccal cortical plate in 2<sup>nd</sup> premolar region, the lingual cortical plate in the 2<sup>nd</sup> molar and 1<sup>st</sup> molar region. The horizontal course of the IAC suggested an “S” shaped configuration, being buccal to 2<sup>nd</sup> molar root apex, lingual to 1<sup>st</sup> molar root apex, and apical to the 2<sup>nd</sup> premolar regions. This finding is in line with many research. In the vertical course majority of IACs were closest with the roots of 2<sup>nd</sup> molar followed by the 2<sup>nd</sup> premolar and 1<sup>st</sup> molar and showed a progressively descend course is more prevalent no significant association among gender was found. Irrespective of gender and side the prevalence of canal bifurcation was 44.6% and type IIIa being the most common.

Further studies with larger samples and more descriptive measurements are recommended as this being the first descriptive study on this area.

**Keywords:** Inferior alveolar canal, CBCT, canal bifurcation

# Denture Hygiene Matters: Awareness and Practice Among Denture Wearers Attending the Prosthetic Dentistry Clinic at Dental Hospital (Teaching), Peradeniya

\*K. K. H. Nideesha<sup>1</sup>, M. D. D. H. Perera<sup>1</sup>, S. D. Polgaspitiya<sup>1</sup>, R. M. Jayasinghe<sup>2</sup>, S. P. Abeyesundara<sup>3</sup>

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Proper denture hygiene facilitates the maintenance of good oral health and general well-being among denture wearers. This study revisits the correlations identified in a 2016 Sri Lankan study to examine their changes during the overlapping periods of the post-pandemic era and the current economic crisis. Results enabled dentists to provide their patients with individualised suggestions on denture hygiene.

This study aimed to evaluate the awareness and practices of denture hygiene among denture wearers. The hypothesis proposed that a lack of awareness could lead to inadequate or improper denture hygiene practices.

A descriptive cross-sectional study was conducted using convenient sampling, involving 153 participants. Data was collected through an interviewer-administered questionnaire. A planimetric assessment was used to measure plaque levels on the fitting surfaces of dentures for 83 participants, with the results analysed separately. Statistical analyses, including chi-square tests and analysis of variance, were performed.

The study found significant associations between occupation and awareness of denture cleaning methods ( $p=0.0184$ ) and between income level and denture cleaning practices ( $p=0.0319$ ). An increase in patients' age correlated with more frequent denture cleaning ( $p=0.0069$ ). There was a strong correlation between awareness and practice of denture cleaning methods ( $p<0.001$ ) and the removal of dentures at night ( $p<0.001$ ), and also between receiving denture hygiene instructions and the practice of removing dentures at night ( $p<0.001$ ). Plaque levels in upper dentures were associated with patient age ( $p=0.016$ ) and denture age ( $p<0.001$ ), and receiving instructions correlated with reduced plaque levels ( $p=0.025$ ).

In conclusion, proper denture hygiene instructions ensure better practices. Tailored interventions based on socioeconomic backgrounds are recommended to address knowledge gaps among denture wearers, regarding denture hygiene. Future research should involve larger, more diverse populations and assess the impact of targeted intervention.

**Keywords:** denture hygiene, awareness, practice, plaque levels

## Oral Hygiene Among Children with Cleft Lip and Palate and Parental Knowledge of Oral Hygiene Practices

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Oro-facial cleft is a major public health problem and children with clefts rarely escape dental complications. This study aimed to evaluate oral hygiene and comprehensively investigate the parental knowledge of oral hygiene practices among non-syndromic cleft lip and palate (CLP) children aged 3 to 12 years attending the oral and Maxillofacial Surgery (OMFS) Clinic, Dental Hospital (Teaching), Peradeniya.

A sample of 80 patients meeting the inclusion criteria was recruited over a 4-month period using convenience sampling. Data collection included questionnaire-based assessments of oral hygiene practices and parental knowledge, as well as clinical examinations to evaluate oral hygiene status.

The study revealed variability in oral hygiene behaviours, with 55% of children showing moderate plaque accumulation (Simplified Debris Index (DI-S) score 0.7-1.8) and 45% exhibiting high levels (DI-S score 1.9-3.0). The prevalence of dental caries was high, particularly in the 3to6year age group with a mean dmft score of 3.81. A significant association ( $p < 0.05$ ) was observed between the frequency of brushing and the DI-S. Furthermore, the type of cleft lip and/or palate was found to be related with the DI-S, dmft and DMFT scores. In addition, the findings indicated a significant association ( $p < 0.05$ ) between the educational level of parents and their knowledge of oral hygiene practices.

The results suggest the need for early, comprehensive preventive strategies and the importance of regular brushing for maintaining optimal oral hygiene. It also highlights the role of socio-demographic factors in shaping oral hygiene behaviours. While there are positive aspects, such as the general adherence to basic oral hygiene practices and the strong foundational awareness of the importance of oral health, significant gaps remain. Addressing these gaps through targeted educational interventions and customized oral hygiene programs can significantly enhance the oral health and overall well-being of children with CLP.

**Keywords:** Cleft lip and palate, Oral hygiene, Parental knowledge, DI-S, dmft/DMFT

## Medical Practitioners' Knowledge and Perceptions Regarding Dental Education, Job Profile and Professionalism of Dental Surgeons

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In modern medicine, an interprofessional approach is essential to address complex health issues. Medical professionals must understand each other's training, competencies and maintain the highest standards of professionalism for effective teamwork. In an era where dental surgeons are expected to expand their roles beyond traditional dentistry, identifying and understanding the barriers that impede interprofessional collaboration becomes a timely requirement.

The study aims to assess the knowledge and perceptions of medical practitioners regarding dental education, job profiles and professionalism of dental surgeons in Sri Lanka, to address gaps that hinder effective interprofessional collaboration in government hospitals.

A descriptive cross-sectional study was conducted among medical practitioners and consultants employed within the government sector. A self-administered questionnaire was distributed in both hard copy and digital formats. Data analysis was carried out using SPSS version 25, employing descriptive statistics, Independent Samples T-test and One-way ANOVA, with a significance level set at  $p \leq 0.05$ .

A total of 426 responses were collected, of which 53.1% were males (male: female ratio, 1.13:1). Majority fell within the age category of 25-34 years. Respondents represented all provinces, hierarchical positions, hospital categories and universities. When categorizing medical practitioners based on the correct answers selected, only 10.1% had good knowledge of dental licensing and education, while only 12.3% had good knowledge of dental specialities and referral process. A Likert scale questionnaire based on the Professionalism Mini-Evaluation Exercise (P-MEX) by Cruess *et al.* was used to assess dental surgeons' professional behaviour and overall perception yielded a mean of 2.62, indicating room for improvement, especially in punctuality, excellence and communication. The study also reveals the necessity of a standardized patient referral system for government hospitals.

**Keywords:** interprofessional collaboration, professionalism, dentistry

## Awareness and Opportunistic Screening Practices for Oral Cancer and Pre-cancer Among Dentists in Sri Lanka

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Despite government efforts, the incidence of oral cancer in Sri Lanka has continued to rise, with many cases being diagnosed at advanced stages. Dentists' knowledge of oral cancer (OCA) and precancerous conditions, now classified as Oral Potentially Malignant Disorders (OPMD), is crucial for early detection through opportunistic screening, which can help mitigate its impact. This study evaluated Sri Lankan dentists' awareness and opportunistic screening practices, and barriers to effective screening of oral cancer and precancer.

A cross-sectional survey was conducted using a self-administered questionnaire. Knowledge of OPMD and OCA was scored, with participants categorized as satisfactory or unsatisfactory. Data analysis was performed using SPSS with associations tested via chi-square and logistic regression.

With a 9% response rate, the study included 150 dentists (mean age 42, 56% female), mostly practising in urban areas (80%) and with under 10 years of experience (42.7%). The majority (62%) worked in both government and private sectors, managing 26 patients per day in government practice and 9 in private. Half had attended a continuous professional development program (CPD) on OCA within the past 12 months. Squamous cell carcinoma was identified as the most common oral cancer (93.3%), with smokeless tobacco (94%), smoking (78.7%), and alcohol (59.3%) recognized as key risk factors. Satisfactory knowledge was more common among females, younger dentists, those working in both sectors and recent CPD attendees, although knowledge scores were not significantly linked to these factors.

Most dentists (89.3%) were confident in conducting oral exams, and 44% performed regular opportunistic screenings. Visual inspection and palpation were the main screening methods, with 90% referring suspected lesions to specialists. Time constraints were the main barrier.

While the study shows satisfactory knowledge among dentists, it highlights the need for ongoing CPD education. Despite the mandate for opportunistic screening, dentists need more encouragement to participate actively. The low response rate may limit the generalizability of the findings to all dentists in Sri Lanka.

**Keywords:** Knowledge, attitudes, practice, OCA, OPMD

## Empathy As a Professional Attribute and Its Socio Demographic Variations Among Dental Undergraduates of the University of Peradeniya

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Empathy is the ability to share someone else's feelings or experiences by imagining that person's situation. Empathy plays a major role dentist-patient relationship. This study aimed to evaluate the level of empathy using a validated tool and study its associations to confounding variables in dental undergraduates.

A cross-sectional study was conducted among 382 clinical dental undergraduates of the University of Peradeniya. Data was collected using a self-administered questionnaire survey. Jefferson's Scale of Physicians Empathy-Health professions student version (JSE-HPS) was used to assess Empathy. JSE-HPS is a valid self-reporting instrument comprising 20 items rated on a five-point Likert scale. High values indicating high levels of empathy. Data was entered and analyzed using GraphPad Prism software. Comparisons between subgroups and correlation analysis were done using non-parametric tests.

The response rate was 98.17%. Empathy score (JSPE-HPS) ranged from 29-76 with a mean of 51.93 ( $\pm 8.47$ ). Females demonstrated a significantly high mean score 52.46 ( $\pm 7.982$ ) than males 50.41 ( $\pm 9.644$ ) (Mann Whitney U test,  $P=0.0426$ ). There were no statistically significant associations between empathy scores and clinical semester, area of residence or monthly income. The mean empathy score was the highest 52.48 ( $\pm 7.84$ ) in the final year students and lowest 51.32 ( $\pm 8.872$ ) in 3rd-year students (Kruskal Wallis test,  $p=0.77$ ). A statistically significant ( $p<0.0001$ ) positive correlation was identified between the individual empathy scores and GPA (Spearman's  $r=0.2244$ ).

Female students demonstrated higher empathy scores compared to males. In addition, students with higher GPAs demonstrated higher empathy scores, iterating the fact that higher levels of empathy might be a contributing factor for better academic performance in dental undergraduates. Empathy should be a major focus in the dental curriculum for effective student learning and positive patient care outcomes.

**Keywords:** Empathy, Jefferson's scale of physician's empathy, dental undergraduates, Sri Lanka

## Evaluating the Effectiveness of Video-based Patient Education in Improving Knowledge on Oral Health Care Practices

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Patient education plays a crucial role in dentistry by promoting oral health and reducing the burden of disease. Traditionally, patient education has relied on didactic methods such as verbal instructions and demonstrations. However, with the rise of digital health, video-based education is emerging as a promising alternative. Despite its potential, the effectiveness of video-based methods compared to traditional approaches remains under-explored.

This study aimed to evaluate the effectiveness of video-based patient education in improving knowledge of oral health care practices compared to traditional didactic methods.

A quasi-experimental study was conducted at the Dental Hospital (Teaching), Peradeniya, involving 60 patients, with 30 patients in each group (test and control). Participants were selected through systematic random sampling and alternately assigned to two intervention groups. The test group was educated on dental plaque formation and plaque control using a video and the same information were delivered via the didactic method to the control group. Pre and post-intervention knowledge was assessed using a questionnaire and brushing technique was evaluated on a toothbrushing model with a standardized marking grid. Data were analyzed using SPSS 27.

Of the participants, 32 had previously visited a dentist but had not received formal oral health education. A paired t-test (95% confidence interval) indicated that both methods significantly improved knowledge and brushing skills ( $p < 0.001$ ).

Independent t-tests comparing the pre and post-intervention scores revealed no statistically significant differences between the test and control groups, either before the intervention ( $p = 0.460$ ) or after the intervention ( $p = 0.790$ ). The lack of statistically significant differences suggests comparable effectiveness between the two methods.

This study highlights video-based education as a valuable alternative to traditional approaches and suggests its potential for broader application in clinical settings. Future research could explore its long-term impact on patient outcomes and adherence to oral health practices.

**Keywords:** patient education, Video-based education, Didactic patient education, Oral health knowledge, Oral health care



## Cross Sectional Study on Proportions of Diabetic Patients Presenting with Oral Mucosal Lesions Caused by *Candida*

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Type 2 Diabetes Mellitus (DM) patients are more prone to develop oral candidal lesions. This study aimed to investigate the prevalence and clinicopathological presentations of oral candidal lesions in Type 2 DM patients in Sri Lanka.

A descriptive cross-sectional study was conducted with 352 Type 2 DM patients aged over 18 years, undergoing treatment for at least one year at T/H Peradeniya. Clinical photographs and cytological specimens stained with Periodic Acid Schiff (PAS) were used for diagnosis.

Approximately, 17.6% (63/352) of participants had oral lesions caused by *Candida*. The lesions included Denture Stomatitis (4.0%), Erythematous Candidiasis (3.4%), Pseudomembranous Candidiasis (3.1%), and Chronic Hyperplastic Candidiasis (2.8%). All patients were unaware of the presence of their lesions. Patients with Erythematous Candidiasis were significantly older than those without lesions (Mann Whitney U test  $p = 0.041$ ) and those with Denture Stomatitis had higher median glycemic levels (Mann-Whitney U test  $p = 0.045$ ). While not statistically significant, other lesions were more common in patients over 60 years with glycemic levels exceeding 110 mg/dl. Males were more likely to have oral candidal lesions (X<sup>2</sup> test  $p = 0.002$ ), except for Pseudomembranous Candidiasis and Denture Stomatitis, which showed a female predilection. Smoking (X<sup>2</sup> test  $p = 0.005$ ) and betel quid chewing (X<sup>2</sup> test  $p = 0.008$ ) were also significantly associated with lesions. Binary logistic regression analysis indicated that males had a higher risk (OR=3.160) and denture wearers had an increased risk (OR=2.348) of developing oral candidal lesions.

The prevalence of oral candidal lesions in Type 2 DM patients was relatively low, likely due to effective medical management. Routine intraoral examinations are recommended for early detection and management of these lesions in this at-risk population.

**Keywords:** Diabetes mellitus, *Candida*, Denture Stomatitis, Erythematous Candidiasis, Pseudomembranous Candidiasis, Chronic Hyperplastic Candidiasis

# Impact of Sleep Habits on Academic Performance among Dental Undergraduates of the University of Peradeniya

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Sleep plays a crucial role in human physiology and cognitive function, influencing academic performance. However, the relationship between sleep habits and academic performance among dental undergraduates remains underexplored in Sri Lanka. The aim of this study was to bridge this gap by exploring the relationship between sleep habits and academic performance among dental undergraduates.

The objective of this research was to investigate the impact of sleep habits (sleep quality and sleep patterns) during both the examination period and routine coursework, on academic performance among dental undergraduates of the University of Peradeniya.

This research employed a descriptive cross-sectional study design using a self-administered questionnaire. Sleep quality was assessed using a modified version of the Pittsburgh Sleep Quality Index (PSQI), and a set of questions was included to assess the sleep pattern. Academic performance was evaluated through cumulative GPA (CGPA). The data were analysed using non-parametric tests in SPSS software.

Participants comprised 76.1% female and 23.6% male students, with 57.9% engaged in preclinical studies and 42.1% in clinical studies. During the examination period, the mean sleep duration significantly decreased to  $4.92 \pm 1.42$  hours compared to  $6.64 \pm 1.09$  hours during routine coursework ( $p=0.000$ ). Poor sleep quality (PSQI score  $> 5$ ) was reported by 71.8% of students during the examination period, compared to 38.2% during routine coursework. However, no statistically significant correlation was found between sleep quality during the examination period and CGPA ( $p=0.966$ ). Ordinal logistic regression analysis revealed gender, academic level, residence, daytime napping and subjective sleep quality as significant predictors of CGPA.

There was no relationship between sleep quality and academic performance, whereas the “daytime napping” component of sleep pattern was associated with academic performance. Future studies could use objective methods of measuring sleep habits and academic performance to reduce subjectivity and improve reliability.

**Keywords:** sleep, academic performance, PSQI, GPA, undergraduates

## Free Sugar Consumption Patterns and Associated Factors Among 3-5-year-olds Attending Sirimavo Bandaranayake Specialized (Teaching) Children's Hospital, Peradeniya

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Excessive sugar consumption in preschoolers can lead to many negative health outcomes. The WHO recommends early intervention to reduce free sugar intake (FSI), requiring baseline information on sugar consumption and its associated factors. However, Sri Lankan studies on FSI are sparse. The objectives of this study were to assess the FSI patterns of 3-5-year-old children attending Sirimavo Bandaranayake Specialized (Teaching) Children's Hospital (SBSC), Peradeniya, and to determine the association between sociodemographic and environmental factors with FSI.

This mixed-method study was conducted in the outpatient department of SBSC, recruiting 240 children (3–5 years). A self-administered food frequency questionnaire (validated) and a questionnaire to assess sociodemographic and environmental factors were used with in-depth interviews (recorded for content analysis). Descriptive statistics and the Chi-Square test of independence were used to analyse the data.

The daily median FSI of the sample was 35.4 g/day or 10.9% of the daily energy requirement. The FSI levels were above the WHO recommendations with 54.2% of the sample exceeding 10% of TER (total energy requirement), and 82.5% exceeding 5% of TER. Bakery items and biscuits were the top contributors (21% each) to FSI, followed by chocolates (17%), and sugar-sweetened beverages (12%). Having more than 4 children in the family ( $p=0.037$ ), maternal employment status ( $p=0.043$ ), buying sweets on the way ( $p<0.001$ ) and snacking while watching television ( $p=0.049$ ) were significantly associated with FSI when the 10% recommendation of WHO was considered. With the 5% recommendation, having more than 4 children in the family ( $p=0.008$ ) and maternal education ( $p=0.039$ ) were significantly associated. The qualitative findings revealed the influence of grandparents and the preschool environment on dietary behaviours.

Tailored policies must be implemented during the early stages of life to combat high sugar intake to improve general and oral health among young children.

**Keywords:** free sugar intake, sweets and sugars, risk factors, sugar policy, preschoolers

## Relationship Between Intra Oral Sub-site and Lymph Node Involvement in Oral Squamous Cell Carcinoma

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Oral Squamous Cell Carcinoma (OSCC) is the most common cancer among males in Sri Lanka. Our aim was to identify the patterns of lymph node metastasis from different oral sub-sites and to determine the risk factors for metastasis.

All excisional biopsies of OSCC with neck dissection from 2010 to 2020 were collected from the archives of the Department of Oral Pathology, Faculty of Dental Sciences. Demographic, clinical and histopathological parameters including tumour site, tumour size, tumour differentiation, pattern of invasion, depth of invasion (DOI) and nodal metastasis were recorded in this retrospective study. Also, habit history was recorded. Descriptive statistical analysis and Pearson's Chi-square test analysis were conducted using IBM SPSS.

A total of 499 OSCC cases fulfilled the inclusion criteria. The male: female was 2.8:1 and the commonest sub-site was the buccal mucosa (39.1%). The majority of them had T2 and T3 tumours whilst 54.9% were well-differentiated. Most buccal tumours were T3 and tongue and FOM were T2. Although T3 tumours were in the BM, the highest rate of metastasis (37.5%) was from the floor of the mouth (FOM) followed by retromolar region (RMR) (36.7%) and tongue (33.02%). The lowest was from the palate. A significant relationship was observed between sub-sites and tumour size ( $p < 0.01$ ). Most buccal tumours were ended in levels I & II whilst cancers from the tongue, FOM, alveolar ridge and RMR were metastasized up to level IV. Further, a higher metastatic rate was noted where the tumour had invasive pattern IV and  $DOI \geq 4$  mm. A significant relation was found between sub-site and habits and a higher metastatic rate was noted those who had more than one habit ( $p < 0.05$ ).

This study highlighted the intraoral sub-sites are important to consider when managing neck dissections. Pathological parameters are also important when planning neck dissection. Habit intervention, health education and screening programmes should be done since the majority of them present with late stages having more than one risk habit.

**Keywords:** OSCC, lymph node, habits, metastasis, depth of invasion

## Evaluation of Correlation Between Mesio-Distal Width of Permanent Incisors and Arch Width in a Sample of Sri Lankan Population

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This study examines the correlation between incisor width (IW) and arch width (AW) within the Sri Lankan population to establish population-specific dental parametric standards, thereby enhancing the fields of forensic odontology and evidence-based clinical dentistry.

A cross-sectional study was conducted to investigate a hypothesized correlation between the mesio-distal width (MD) of permanent incisors and arch width (AW), aiming to examine this relationship and assess sexual dimorphism in incisor width (IW), involving individuals aged 18 to 30 years, representing both sexes, with casts selected through random sampling. Measurements of maxillary and mandibular incisors, inter-canine, and inter-molar widths were taken using a digital vernier calliper, with each measurement triplicated. Pearson correlation coefficient and t-test were performed for statistical analysis.

A statistically significant correlation was observed among all upper arch dimensions ( $p < 0.05$ ), except for the average AW of the upper inter-molar region and average MD of the upper left lateral incisor (21). Lower AW significantly correlated with MD of lower incisors ( $p < 0.0001$ ). Males showed statistically higher IW mean values ( $p < 0.05$ ) than females, with the only exceptions being upper right (12) and left (22) lateral and lower left central incisors. IW and AW showed a significant correlation ( $p < 0.05$ ) in both arches for both sexes, with few exceptions. No significant correlation was found between the upper inter-molar width and the MD of 12, 21, and 22 in males. In females, the same lack of correlation was noted for 22 and lower right lateral incisors with respective inter-molar widths.

The findings suggest that the inter-canine AW may be the most reliable dimension predictable from the MD of incisors for both sexes and vice versa. The study also confirms sexual dimorphism in incisor size, with males exhibiting significantly larger MD values, with few exceptions. Future investigations into different populations would broaden the understanding of these relationships.

**Keywords:** Incisors, arch width, mesio-distal width, correlation, sexual dimorphism

## **Technical Session II - Poster Presentations**



# Experience of Intermittent Pain in the Back, Neck, Shoulder, or a Combination of These Areas Among Dental Undergraduates of the University of Peradeniya: An Examination of Underlying Correlates

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Dentistry involves physical stress, raising the risk of work-related musculoskeletal disorders (WMSDs) and chronic pain influenced by central sensitization, peripheral mechanisms, and psychological factors. This cross-sectional analytical study explores neural and psychological factors linked to intermittent back, neck, and shoulder pain in dental undergraduates, testing the hypothesis that those experiencing work-related stress and intermittent pain may show early signs of central sensitization (CS), indicating potential risk for WMSDs.

The study recruited 31 dental undergraduates with intermittent neck, back, or shoulder pain (test group) and 32 pain-free students (control group) at the Faculty of Dental Sciences, University of Peradeniya. Dispositional catastrophizing was assessed, while reaction time (RT) and pain-inducing filament thickness (PFF) were measured using Von-Frey Filaments (VFF). A cold pressor test measured pain threshold (PT), peak pain (PP), and maximum pain tolerance (MPT) in both hands. Situational catastrophizing was evaluated in relation to CPT.

Independent sample t-tests and ANOVA showed no significant differences between groups in RT, PT, PP, and MPT, with only a marginal difference in PFF ( $p=0.05$ ). Both situational ( $p=0.048$ ) and dispositional catastrophizing ( $p=0.017$ ) differed significantly ( $p<0.05$ ), with a larger difference in dispositional catastrophizing. In test participants, PT and MPT were negatively, and PP positively associated with situational catastrophizing ( $p<0.05$ ); dispositional catastrophizing showed weaker associations.

The study found no significant differences in measures of CS between test participants and pain-free controls. However, higher catastrophizing in the test group suggests increased pain concern, potentially affecting central processing. Experienced physical stress doesn't appear to raise chronic pain risk in this cohort. Further research is needed to explore clinical implications and improve the quality of life for those with WMSDs.

**Keywords:** chronic pain, catastrophizing, central sensitization, reaction time, cold pressor test



## Comparative Analysis of the Antibacterial Activity of Natural Cinnamon Oil, Clove Oil and Commercial Eugenol Against *Streptococcus mutans*

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Dental caries is a significant public health concern impacting the quality of life. *Streptococcus mutans* is identified as the key pathogen for the development of dental caries. Eugenol, a natural compound derived from clove and cinnamon, has emerged as a promising therapeutic agent in dentistry due to its antibacterial, anti-inflammatory, and analgesic properties. Even though the antibacterial activity of cinnamon oil, clove oil and Eugenol has been explored in various studies, studies on comparative analysis of these three components are scarce in Sri Lankan literature. As economic uncertainties affect supply chains, it is important to seek sustainable substitutes by investigating locally available ingredients such as cinnamon and clove oil instead of imported Eugenol.

This study aimed to evaluate the anti-bacterial effect of commercial Eugenol, natural oils extracted from clove buds (*Syzygium aromaticum*) and Ceylon cinnamon (*Cinnamomum verum*) leaves against *S. mutans*.

In this study, commercial Eugenol and natural oils extracted by steam distillation from clove buds (cultivated and commercial) as well as cinnamon leaves were used. Antibacterial activity against standard *S. mutans* was analyzed using a disc diffusion assay. Inhibition zone diameters by each disc were measured in four different directions. One-way ANOVA was employed to analyze differences in antibacterial efficacy.

The mean zone of inhibition of commercial Eugenol, clove oils (commercial and cultivated buds) and Cinnamon oil were  $20.33 \pm 0.94$  mm,  $20.5 \pm 1.48$  mm,  $20.31 \pm 1.56$  mm and  $20.61 \pm 1.11$  mm respectively. There was no significant difference in the antibacterial activity among the examined compounds.

Therefore, the study concludes that the natural oils from Ceylon cinnamon leaves and clove buds exhibit similar antibacterial effects to commercial Eugenol against *S. mutans*. Further investigations are needed to explore additional properties of these natural oils, potentially substituting commercial Eugenol as a cost-effective therapeutic agent in dentistry.

**Keywords:** *S. mutans*, Ceylon Cinnamon, Clove, Eugenol

## Effectiveness of Locally Prepared Soap against Normal Hand Flora of Healthcare Workers and *Streptococcus pyogenes*

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Soaps are the most widely used disinfectant all around the world. Still, many diseases prevail among populations, which can be controlled using proper hand hygiene. Although many commercial soaps brand them as “antibacterial,” their authenticity should be addressed.

The objective of the study was to compare the antibacterial efficacy of laboratory-prepared soap with a commercially available soap against *Streptococcus pyogenes* and pooled hand flora from healthcare workers (HCWs). Utilizing locally available ingredients, the laboratory soap was produced and anti-microbial sensitivity was detected by the agar well diffusion method.

The antibacterial efficacy of both soaps was evaluated simultaneously and the inhibitory zones corresponding to each soap were measured and plotted using SPSS software for statistical analysis. A two-sample t test was conducted for the hand-pooled flora and it yielded a t-value of -6.79 with 51 degree of freedom and a p-value < 0.001. The null hypothesis was rejected, indicating there is a significant difference in the means of the diameters of inhibitory zones. Mann-Whitney u test was conducted for *Streptococcus pyogenes*. The Mann-Whitney U test yielded a p-value of 0.025.

Moreover, it was observed that the mean diameters of laboratory soap were greater than those of commercially manufactured soap, with mean diameters of 11.15 mm and 11.02 mm for pooled hand flora and 6.48 mm and 8.34 mm respectively.

Hence, the study revealed that locally prepared plain soap with quality ingredients give a superior effect on microbes than antibacterial soaps available in the local market and this cost-effective, eco-friendly soap could be promoted and industrialized.

**Keywords:** hand hygiene, *Streptococcus pyogenes*, soap, antibacterial efficacy, hand flora

# Assessment of the Accuracy of “Gutta Purcha Indentation Method” in the Measurement of Working Length During Root Canal Treatment With Crown Down Principle

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Root canal treatment (RCT) is crucial for maintaining tooth function and aesthetics, with success largely depending on accurately determining the working length (WL) of the tooth. Studies show that conventional methods like the tactile length (TL) and electronic apex locator (EAL) sometimes lead to inaccurate results. This study introduces and evaluates gutta percha (GP) indentation method as a new potential alternative for WL determination.

The aim of this study was to assess the accuracy and reliability of GP indentation method, TL method and EAL method with actual WLs. The main specific objectives were to construct an equation to calculate WL with the use of WL measuring methods and to introduce a new method to measure the actual WL in extracted teeth.

A cross-sectional analytical study was conducted involving 45 extracted permanent 1<sup>st</sup> and 2<sup>nd</sup> maxillary and mandibular premolars. Actual WLs were measured: actual WL method 1 (AWL1); given in the literature and actual WL method 2 (AWL2); a new method. Then TL, EAL, and GP indentation lengths (using three types of GP) were measured by four operators. Data analysis was done using SPSS version 27 software ( $p < 0.05$ ).

Results indicated that TL was significantly less accurate for first premolars, while GP indentation and EAL methods showed no significant difference compared to actual WLs. Both methods effectively predicted actual WL.

The study suggests that the combination of EAL and GP indentation methods is the most reliable approach for measuring WL in permanent premolars. Recommendations for future research include utilizing a broader range of tooth types and performing *in vivo* measurement of clinical WLs followed by *in vitro* measurement of actual WL to enhance accuracy in clinical settings.

**Keywords:** root canal treatment, working length, GP indentation, electronic apex locator, actual working length

## Preliminary Evaluation of a Modified Caries Risk Assessment Tool for Preschool Children in the Kandy District, Sri Lanka

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Sri Lanka lacks locally developed, cross-culturally validated Caries Risk Assessment Tools (CRATs) to predict caries risk in preschool children, despite the high burden of Early Childhood Caries (ECC). The study aimed to modify the American Academy of Pediatric Dentistry's CRAT by incorporating local factors to predict caries risk in preschool children in the Kandy district of Sri Lanka.

A cross-sectional descriptive study was conducted among a sample of 349 preschool children in the Kandy district comprising a clinical oral examination on the child, and data collection from the parent by a pre-tested, self-administered questionnaire. Data entry and analysis were conducted using the SPSS-26 Statistical software package. Chi-square test was used for the bivariate analysis and binary logistic regression with backward condition option was used for the multivariate analysis.

The average age of the children was 4.32 years, and ECC prevalence was 74.8%, with a mean dmfs score of 6, ranging from 0 to 56. Notably, 75% of the children had never visited a dentist. Among the array of risk factors assessed; significant factors associated with caries risk included parental education (father's education:  $p=0.008$ , mother's education:  $p=0.031$ ), family income ( $p=0.003$ ), professional fluoride exposure, past dental visits ( $p=0.0001$ ) and the reason ( $p=0.0001$ ), child's plaque score ( $p=0.0001$ ), parental knowledge of the aetiology of caries ( $p=0.003$ ), and grandparents' influence on snacking ( $p=0.034$ ). Binary logistic regression analysis indicated that higher maternal education increased the caries risk among preschoolers, while higher paternal education and dental visits due to a reason other than toothache were protective factors.

Given the high prevalence of ECC and the fact that 75% of preschool children have not accessed dental care, our findings emphasise the urgent need for preschool-based oral health promotion programs to enhance parental awareness. Additionally, improving access to available paediatric preventive dental care services is crucial. Further research is needed to validate the modified CRAT for this population.

**Keywords:** Early childhood caries, Caries Risk Assessment Tools, Protective factors, Caries prevention, Oral health promotion

## Assessing Job Satisfaction as a Component of Work-Life Balance Among Dental Surgeons in Sri Lanka

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Work-Life Balance (WLB) is essential for personal and professional harmony across all professions, particularly in dentistry. This study examines Job Satisfaction (JS) as a key element of WLB among dental professionals in Sri Lanka, where economic challenges have heightened the workload and financial pressure. This research aims to evaluate job satisfaction among dental surgeons in Sri Lanka, by examining their WLB and quality of life, while identifying key influencing factors. Additionally, the study seeks to propose actionable strategies for enhancing WLB within the dental profession.

A descriptive cross-sectional study was conducted among all the dental professionals registered under the Sri Lanka Dental Association excluding interns, dentists above 65 years and strictly administrative personnel using a validated questionnaire via email, yielding a response rate of 11.7%. Data was analysed by the Kruskal Wallis test and Mann-Whitney U test using SPSS version 20 with a significance level set at  $p \leq 0.05$ .

The study evaluated dentists on six subcomponents: career choice satisfaction, fulfilment of expectations, continuing education access (CEA), specialization access, career flexibility, and colleague support. Significant differences were found in the fulfilment of expectations based on sex, age, monthly income, and partner's occupation. Satisfaction with continuing education varies by sex, age, and income, while age, income, and partner's occupation also influence satisfaction on career flexibility. Key work-related factors affecting WLB included excessive workload, long working hours, and stressful work environment. Major life-related challenges were caregiving responsibilities and financial burdens. The study suggests strategies such as effective task prioritization, setting clear boundaries between professional and personal life, and taking regular breaks to enhance WLB among dentists.

In conclusion, male dentists, older individuals, and those with higher incomes reported greater satisfaction, while female dentists faced specific challenges.

**Keywords:** work-life balance, job satisfaction, high workload, financial pressure, career flexibility

## Antioxidant and Antibacterial Properties of a Commercially Available Ayurvedic Polyherbal Powder

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There has been a rise in oral herbal formulations that claim to provide various benefits for oral health, yet they often lack scientific evidence to support these claims. In this study, we evaluated the antioxidant, antibacterial, and antifungal properties of a commercially available polyherbal duodenary formulation introduced as a betel quid substitute with claimed oral health benefits.

Water and methanol were used as solvents for extraction, and the percentage yields were calculated. Total phenolic content was measured using the Folin-Ciocalteu (F-C) method, and antioxidant activity was assessed via the DPPH assay, followed by the calculation of IC<sub>50</sub> Ascorbic Acid Equivalent Antioxidant Capacity (AEAC). The extracts were also tested for antibacterial activity against the cariogenic bacteria *Streptococcus mutans* and antifungal activity against opportunistic *Candida* species using an agar well diffusion assay. All experiments were conducted in triplicate, and the results are presented as mean ± SD.

The methanol extraction yield was 34.91%, higher than the 21% yield from water extraction. Gallic acid equivalent concentrations for methanol and water extracts were 36.41 mg GAE/g DW and 16.27 mg GAE/g DW, respectively. The IC<sub>50</sub> values for DPPH radical scavenging activity were 24.81 ± 0.62 µg for methanol extract and 24.16 ± 0.59 µg for water extract. Despite their strong antioxidant properties, neither the methanol nor water extracts showed significant antibacterial or antifungal activity against *S. mutans* or *Candida* species.

These findings suggest that while the polyherbal powder is a rich source of antioxidants, it may not be effective as an antibacterial or antifungal agent under the conditions tested. Further studies are needed to evaluate its antimicrobial potential against oral pathogens and assess its safety and long-term effects before considering its use for oral health conditions.

**Keywords:** antioxidant, antibacterial, anticandidal, *S. mutans*, *Candida*

## Assessment of Antimicrobial Activity (AMA) of Different Toothpastes Available in the Local Market, Sri Lanka

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Tooth brushing with toothpaste prevents dental caries and oral candidiasis caused by *Streptococcus mutans* and *Candida albicans* respectively. The objective of this study was to investigate the antimicrobial activity (AMA) of some toothpastes available in the local market against *S. mutans* and *C. albicans*.

In this invitro study, a total of seventeen toothpastes from seven different brands (A, B, C, D, E, F & G) were tested for AMA against standard *C. albicans* and *S. mutans* using the agar well diffusion method. The AMA was detected by the diameter of the ZOI. A comparison of AMA among the toothpastes was performed using one-way ANOVA in SPSS version 27.

The mean diameters of the ZOI for *C. albicans* ranged between 1.15 cm - 2.00 cm and *S. mutans* ranged between 1.52 cm - 2.36 cm. Two tested pediatric toothpastes from the above brands showed AMA at a lesser degree. Fluoridated non-herbal adult toothpastes from brand A (A4) and brand F (F1) were the most active toothpastes against *C. albicans* ( $p < 0.05$ ) and *S. mutans* ( $p < 0.05$ ) respectively.

A4 and F1, belonging to fluoridated non-herbal toothpaste preparations are the most effective toothpastes against *C. albicans* and *S. mutans* respectively. Their pediatric toothpastes were less effective than other subtypes of those two brands. Fluoridated non-herbal toothpastes seem to be more effective than fluoridated herbal and herbal toothpastes. Further studies on the chemical contents of toothpaste would be useful to elaborate the differential AMA of these toothpastes.

**Keywords:** anti-microbial activity, *C. albicans*, *S. mutans*, toothpastes, agar well diffusion method

## Analysis of the Effectiveness of Locally Prepared Domestic Soap Against *Staphylococcus aureus* and Hand Flora of Patients Attending Dental Clinics

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An average of 3,200 different microorganisms from over 150 species, including *Corynebacterium*, *Staphylococcus*, and *Streptococcus*, colonize in the natural flora of hands. While some have beneficial roles, others can be pathogenic. The best choice of handwashing product remains debate regarding the efficacy in eliminating pathogens. This study investigates the effectiveness of plain soap against a commercially available medicated soap in reducing *Staphylococcus aureus* and other common microbial flora.

Plain soap was formulated with basic ingredients following guidelines from the Industrial Technological Institute of Sri Lanka, while a widely used antibacterial soap from the Dental Teaching Hospital Peradeniya served as the control. Finger washings from thirty patients were analyzed against standard ATCC cultures of *Staphylococcus aureus* to assess antibacterial activity using the agar well diffusion method. Statistical analyses, including descriptive statistics and two-sample t-tests, were conducted to compare soap effectiveness.

Results indicated a mean zone of inhibition for plain soap significantly greater than that of the medicated soap ( $p < 0.001$ ) in pooled hand flora samples. A two-sample t-test also revealed a significant difference ( $p < 0.001$ ) in the mean inhibition diameters against *Staphylococcus aureus*, further supporting the plain soap's effectiveness. Multiple inhibitory zones were observed on plates with pooled hand flora, and overgrowth on inhibitory zones in both *Staphylococcus aureus* isolates and pooled samples suggesting a re-establishment of normal hand flora.

In conclusion, the findings advocate for promoting plain soap as a cost-effective and environmentally friendly alternative to commercial antibacterial soaps, enhancing infection control and hand health. Future research should explore the specific organisms contributing to the re-establishment of hand flora for a comprehensive understanding of hand hygiene practices.

**Keywords:** hand hygiene, *Staphylococcus aureus*, plain soap, antibacterial effectiveness, microbial flora



## Comparison of Results of 1st Semester BDS University of Peradeniya with the GCE Advanced Level Exam in the Academic Years 2017-2020

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This study investigates the influence of Advanced Level (A/L) exam performance on first-semester Bachelor of Dental Surgery (BDS) outcomes, exploring the impact of extracurricular activities, tuition frequency, and other relevant factors. A descriptive cross-sectional and analytical study was conducted at the Faculty of Dental Sciences (FDS), University of Peradeniya (UoP). Data was collected using a pretested self-administered questionnaire for qualitative insights, while quantitative data was sourced from the undergraduate division.

A weak positive correlation was found between A/L Z-scores and first-semester GPAs across four academic batches: 2017/2018 (0.289), 2018/2019 (0.221), 2019/2020 (0.392), and 2020/2021 (0.347). Notably, 51.1% of students were admitted to the FDS on their second A/L attempt and 72.4% took the exam in Sinhala medium. Participation in extracurricular activities during A/L years was low at 30.1%, increasing to 48.1% in the first semester of university. Lecture attendance was high, with 45.6% of students attending more than 91% of lectures, although many reported challenges being away from home during their first semester.

The A/L exam has a weak positive impact on first-semester BDS performance. Key factors influencing success include the number of A/L attempts, General English results, and the medium of instruction. In contrast, extracurricular participation did not show a significant correlation with performance, while consistent lecture attendance was associated with higher GPAs. Future research should focus on further examination of university entrance criteria and consider mandatory lecture attendance to enhance academic support and improve outcomes.

This study provides valuable insights into how foundational education affects higher learning in dentistry and could inform policies aimed at improving student success.

**Keywords:** A/L Exam, Z-score, BDS, GPA

## Molecular Identification of *Streptococcus mutans* Clinical Isolates and Analysis of their Sensitivity to a Poly-Herbal Oral Healthcare Formula Prepared at the Natural Products Research Laboratory of the Faculty of Dental Sciences

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Dental caries is the most prevalent oral infection of children and adults worldwide. One of the major cariogenic bacteria in oral biofilms is *Streptococcus mutans*. Therefore, testing the sensitivity of clinical isolates of *S. mutans* is crucial in the process of developing oral health-care products targeted to control dental caries.

Objectives of this study were isolation and precise identification of *S. mutans* from plaque samples obtained from caries active children and analyze the sensitivity of these clinical isolates to a poly-herbal oral healthcare formula (POF) prepared at the Natural Products Research Laboratory of the Faculty of Dental Sciences.

Bacterial DNA were extracted from streptococci colonies isolated from culturing plaque samples and a standard strain of *S. mutans* (ATCC 700610) grown on Mitis salivarius agar. Subsequently, *S. mutans*-specific Sm479F/R primers were employed to amplify a 479 bp segment of its *HtrA* gene which was imaged after electrophoresis. The sensitivity of confirmed clinical isolates to the POF was tested using disk diffusion test. Results were expressed as mean  $\pm$  SD and analyzed using one-way ANOVA and a post hoc Tukey's test ( $n=3$ ).  $P<0.05$  was considered statistically significant.

Ten clinical isolates of *S. mutans* from dental plaque samples were precisely identified by PCR using *S. mutans*-specific primers. According to the results of the agar disk diffusion assay, all ten clinical isolates were sensitive to the tested POF and their mean activity indices were between  $0.77\pm 0.03$  –  $1.02\pm 0.00$ . The efficacy of this POF against these clinical isolates was comparable to that of chlorhexidine.

Therefore, the tested POF has the potential to be developed as an adjunct to control dental caries by inhibiting *S. mutans* growth. Further studies are warranted to test the effect of this POF on the acidogenicity and biofilm formation by these clinical isolates.

**Keywords:** *Streptococcus mutans*, dental caries, PCR, agar disk diffusion

## **Assessment of Variations in Adverse Effect of Carbamazepine in Patients With Trigeminal Neuralgia- A Retrospective Study**

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Trigeminal neuralgia is a sudden, severe, brief, stabbing, and recurrent neuropathic pain within one or more branches of the trigeminal nerve. Type 1 as intermittent and Type 2 as constant pain represent distinct clinical, pathological, and prognostic entities. Although multiple mechanisms involving peripheral pathologies at the root and dysfunctions of the brain stem, basal ganglion, and cortical pain modulatory mechanisms could have a role, the neurovascular theory is the most accepted. Diagnosis is essentially clinical; magnetic resonance imaging is useful to rule out secondary causes and detect pathological changes in affected root and neurovascular compression. It is pharmacologically managed primarily with CBZ and Ox CBZ with the addition of certain drugs as well.

Various studies have revealed that there are certain adverse effects of drugs while treating TN. This study aims to see variations of the adverse effects of CBZ related to TN. Up to 574 people have hospital diagnoses, thus our data was processed using the 119 people who continue to frequently visit the clinic after 2022.

The instrument we used to measure various adverse events is Minitab software which reveals a certain relationship between CBZ and the adverse effects according to various data. Adverse effects also have significant variations in the demographic data, medical conditions, dosage, and duration. According to the results, Allergies have mostly occurred acute adverse effects in TN patients who had initially started taking CBZ. Other variations were assessed as Full Blood Count values and liver function test results with the CBZ dose which showed some significant changes as well. The conclusion of this research is there are certain parameters verifying adverse effects related to CBZ. Regular follow-ups are essential to mitigate the risks and enhance therapeutic outcomes for patients with TN.

**Keywords:** Trigeminal Neuralgia, Carbamazepine, adverse effects, Full Blood Count

## Perception, Knowledge and Practices About Non-Communicable Disease-Related Health Risks Among Medical and Dental Undergraduates in the University of Peradeniya

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Currently, chronic non-communicable diseases (NCDs) are the leading causes of mortality, morbidity and disability with rising prevalence among young adults. Despite being a knowledgeable population, Medical and Dental undergraduates may be at high risk of developing NCDs due to unhealthy lifestyles.

The study aimed to assess the knowledge, perception and practice about NCD related health risks among Medical and Dental undergraduates of the University of Peradeniya.

A descriptive cross-sectional analytical study was conducted among Medical and Dental undergraduates at the University of Peradeniya. A self-administered, pre-tested online questionnaire was used for data collection and 270 responses (medical-185, dental-85) were included in the data analysis, which was conducted using Power BI and Mann-Whitney U test ( $p < 0.05$ ).

The study suggests a significant difference between Medical and Dental undergraduates regarding their knowledge of NCDs (Diabetes Mellitus:  $p = 0.0046$ , Hypertension:  $p = 0.0189$ , Dyslipidemia:  $p = 0.0004$ ) with Medical undergraduates showing a higher level of knowledge. But interestingly there is no significant difference between them regarding health-related behaviours such as regular physical activity ( $p = 1.0$ ), smoking ( $p = 0.45$ ), alcohol consumption ( $p = 0.45$ ) and healthy dietary habits ( $p = 1.0$ ). Notably, 64.0% of the participants were not engaging in regular physical activities, 89.6% were not adhering to a healthy diet, 12.5% were consuming alcohol, and 3.3% were smoking. Furthermore, only 25.92% have engaged in regular health checkups as a preventative measure.

In conclusion, having a higher knowledge and perception about NCDs does not necessarily result in better health practices. This study encourages universities to promote a supportive environment to overcome the shortcomings within the university that prevent healthy practices.

**Keywords:** perception, knowledge, practice, NCD, undergraduates



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