DENTAL HEALTH

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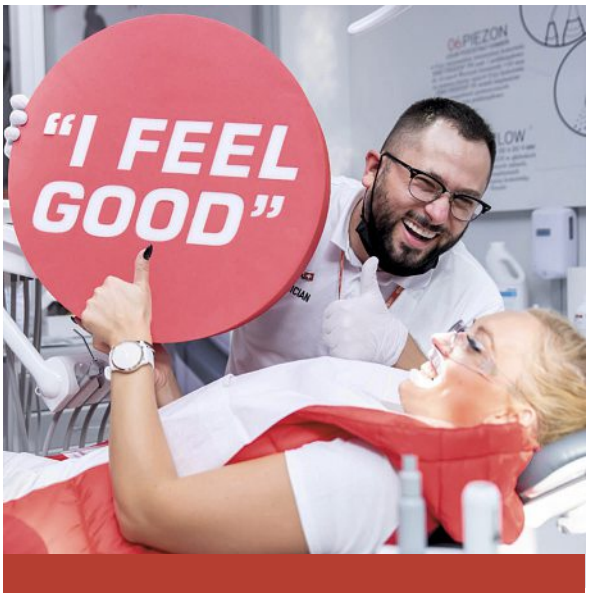

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The mission of BSDHT is to represent the interests of members and to provide a consultative body for public and private organisations on all matters relating to dental hygiene and therapy. We aim to work with other professional and regulatory groups to provide the highest level of information to our members as well as to the general public. The Society seeks to increase the range of benefits offered to members and to support this with a clear business and financial strategy. The Society will continue to work to increase membership for the benefit of the profession.

BRITISH SOCIETY OF DENTAL HYGIENE AND THERAPY
Promoting health, preventing disease, providing skills

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ON THE COVER

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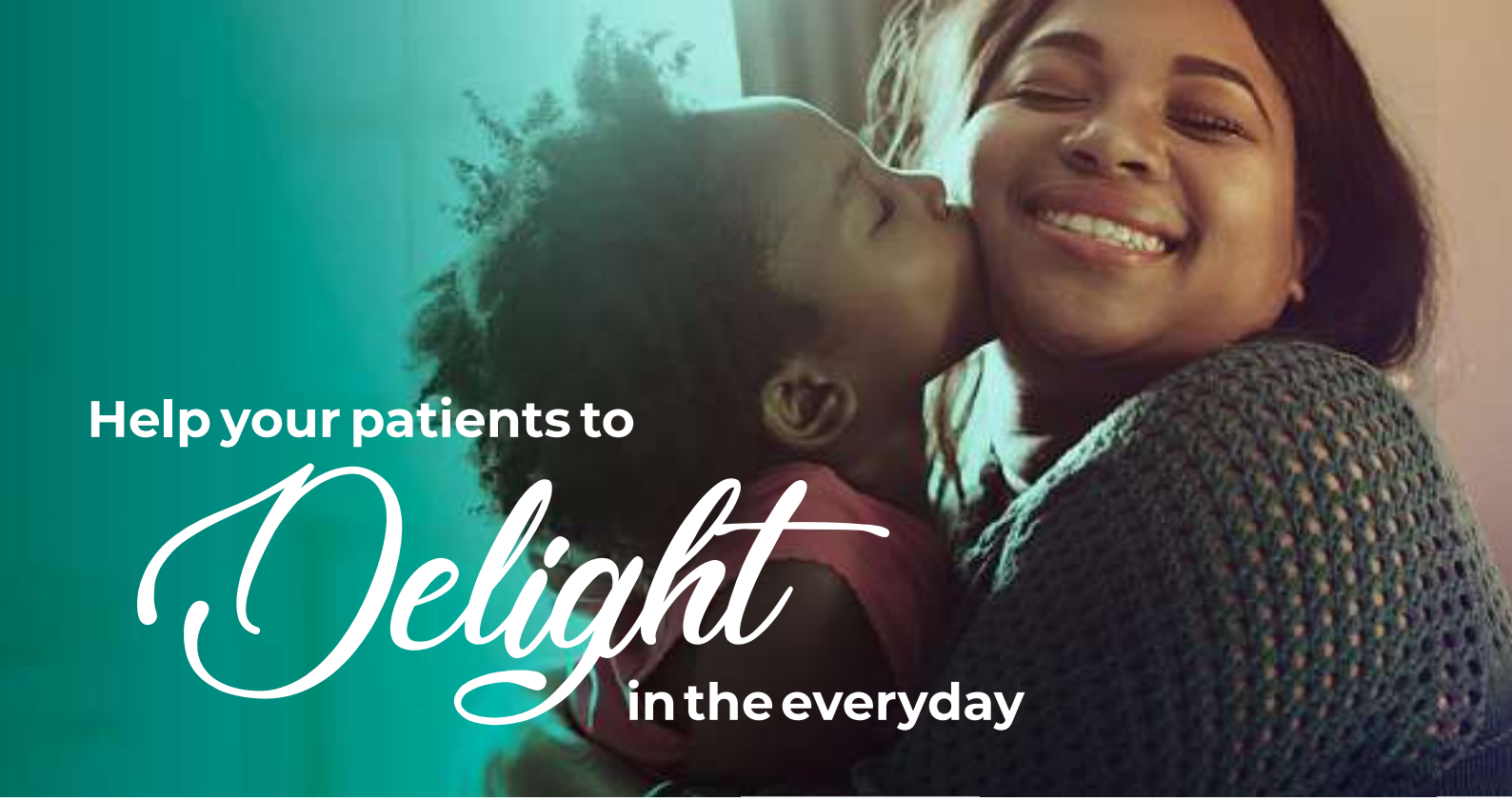

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10104611123 v 3.0 September 2021

Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard Adverse events should also be reported to Aspire Pharma Ltd. (Tel: 01730 231148)

References
1. Mucosamin Mouthwash and Mucosamin Oral Spray Instructions For Use. **2.** Cirillo, N. et al. (2014) A hyaluronic acid-based compound inhibits fibroblast senescence induced by oxidative stress *in vitro* and prevents oral mucositis *in vivo*. J of Cell Phys. **3.** Favia, G. et al. (2008) Accelerated wound healing of oral soft tissues and angiogenic effect induced by a pool of amino acids combined to sodium hyaluronate (Aminogam). J Biol Regul Homeost Agents. 2008: 22(2): 109-116

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EDITORIAL

Towards normal

In late April, Earth Day coincided with the overdue removal of the Standard Operating Procedures for NHS dentistry, by NHS England. The juxtaposition of these events struck me and I speculated, not for the first time, about the environmental cost posed by Covid-19. What is difficult as the editor of this journal, spending much of my working week checking papers, references and facilitating peer-review, is the dearth of evidence for the measures that were introduced.

The sheer volumes of plastic, latex and non-recyclable paper waste produced by dental practices and clinics over the last two years must be astronomical. Some of this may have been incinerated, possibly recovering some of the energy, but much will have gone to landfill and will remain there for hundreds of years.

There are other costs too, associated with the increased vigilance that we were forced to comply with. Not least of these is the reduction in capacity for both volume and scope of care occasioned by the fallow-time regulations. This reduction was undoubtedly compounded by the pay arrangements that were put in place to ensure the viability of NHS dental practices. NHS practice workloads are not scheduled to return to pre-covid output levels until July 2022. It remains to be seen whether we will experience a return to the scope and patterns of care that we employed prior to March 2020. The backlogs in routine preventive care caused by the prioritisation of urgent care will take months if not years to overcome and the expectations of patients used to more than 50 years of regular preventive care may well have been permanently undermined. Private practice has undoubtedly compensated to some extent: many private practices report that they have never been busier and are expanding their offering. This has, in turn, led to an increase in the relative value of private practices when compared to mixed and NHS practices. Dental supply companies report unprecedented demand for new equipment, mainly from private practices.

One notable lack of direction from the departments of health was regarding the use of air purification systems, with an emphasis on air changes per hour forcing many to work through last winter with the windows wide open. Once again, the environmental impact was seemingly not considered: the implication of '10 air changes per hour' is that the same air volume has to be heated 10 times per hour and whilst there are heat-recovery solutions available they are very unusual in small practice environments, as well as very expensive to install. Air purification and filtration systems on the other hand are simple to install, portable and are capable of filtering the air using HEPA filters that remove the smallest droplets that could be a vector for viruses. It is only in the latest guidance that their effectiveness has been recognised and their place in reducing fallow-times acknowledged. It is hard to understand why the health departments did not foster research into their use and encourage their adoption much earlier in the pandemic. These systems had been in common use in clinical environments in Hong Kong and other parts of Asia since SARS-2 was prevalent. Whilst there is an obvious, and not insubstantial, capital cost associated with their installation, and there would have been a call for immediate reimbursement of those costs if they had been mandated, it seems short-sighted when compared to the other long-term costs.

It remains to be seen how many of the changes to the way we work are irreversible: I am sure there are many colleagues who will feel anxious about relinquishing the sense of security afforded by FFP2/3 masks but I for one have found them a dreadful barrier to communication. Communication and empathy are such vital components of preventive practice that I genuinely hope our patients' interests are put first when we consider how we operate. I also hope, as an editor, to see research focussing on what we actually do. So much of the research on aerosols, for example, was not based on clinical practice where high-volume suction is common place and where the overwhelming majority of aerosol droplets produced are comprised of clean water from the dental unit.

I would be interested to hear your thoughts.

Heather Lewis

FROM THE PRESIDENT

The past few months have been busy here at BSDHT. I have represented the Society at a number of meetings, both in person and online, engaging with the wider profession to ensure that our members' best interests are a priority. As always, my administrative tasks continue to grow!

No 10 Downing Street

A highlight of my presidency, to date, must be receiving an email from Myles Stacey OBE, Special Advisor to the Prime Minster inviting me to attend a roundtable on access to careers in dentistry and progression in dentistry. The meeting was led by Myles accompanied by Caroline Johnson, MP for Sleaford and North Hykeham. I joined with representatives from four membership organisations: Jacqui Elsden President BADN; Abhi Pal President CGDent; and Martin Woodrow CEO BDA. Other attendees represented the various dental corporates.

There was a general feeling of excitement within the room in meeting at No 10 – a first for everyone! However, we had been invited for a reason, so we quickly focussed on the business in hand.

The first half of the meeting dealt with access to careers advice. Myles asked for those of us who are primarily dental professionals to reflect on our own experiences relating to careers advice; both Jacqui and I expressed a need for more signposting to other roles within the profession, such as dental nursing, dental hygiene and dental therapy as career options. Careers advice and work experience, in all areas of dentistry, are sadly lacking for 16-18-year-olds. The challenges of gaining work experience were discussed at length.

Career progression was the focus for the second half of the meeting and this was a golden opportunity to put forward the frustrations of our members, and the wider profession, including: the lack of structured career pathways; limitations for working to a full scope of practice, especially in a dental practice setting; the NHS contract; and the wider access to care issues. There was lively discussion throughout and Myles listened intently to all our comments, with what seemed to be plenty of note taking! We all hope that this roundtable has a positive impact at government level.

There was a cabinet meeting later that morning, so we were ushered out via the staircase with portraits of all past prime ministers displayed on the walls before a few hurried photographs on the doorstep. Many have asked me what it is like inside. An easy way to describe it is to watch the film *Love Actually* - the areas we accessed are just like that, only slightly less glossy. This was a very special experience and one I will not forget. I am proud to have represented the BSDHT and to have had a voice at the table.

Covid-19 Inquiry

This led on nicely to another opportunity to have our voice heard. A public inquiry will be held that applies to all sectors of society affected by Covid-19 and the government's handling of the pandemic. Sarah Buxton from FTA-law is working with

a barrister on the viability of the wider dental team directly affected being represented at the inquiry. BSDHT has been invited – along with the British Association for Private Dentistry (BAPD), Association of Dental Administrators and Managers (ADAM) and representatives from dental insurance and dental business - to form a small working group that will advise FTA-law on the impact the pandemic has had on the dental profession, our specific role within the team and the patients we treat. The aim of the inquiry is to provide answers to questions, put minds at rest and shape future policy. This is still in the early stages and I will keep members informed as the work continues.

Meeting with the GDC

Along with Miranda Steeples, President Elect, I joined with Lord Toby Harris, the new Chair of the GDC, and two of his colleagues at an online meeting. We discussed pertinent issues including: dental nurse chairside support; professionalism with a focus on CPD; the Scope of Practice review; and the overseas dentists' registration issue. The GDC is very much aware of its current image in the profession, and the need for change, and is keen for their council to engage by holding regular meetings with organisations such as BSDHT. Both Miranda and I felt this was a positive meeting and Lord Toby and the team listened to what we had to say.

OHC2022

Watch out for the launch of the OHC2022 programme and spring sale, 9th – 16th May. The president elect has been working hard to put together a fantastic programme of lectures, interactive sessions and hands-on workshops over the two days and we are all working on ideas for the Friday night party. This year's OHC really is going to be *The Business!*

Regional Group Spring Study Days

The spring study days have drawn to a close. Thank you to all the members that attended and to the regional group teams for their work to make them happen. I had the pleasure of attending, the north west, southern and north east study days and thoroughly enjoyed them all. There was a palpable sense of excitement and a lot of chatter throughout the meetings. For some groups this was their first face to face study day since autumn 2019. Look out for the autumn study day dates.

Dates For Your diary

The Wellness Day will be held on Saturday 21st May, in the beautiful surroundings of Bragborough Hall, home of BSDHT. There are limited tickets available for what is sure to be a morning of interesting lectures, by Mrs Juliette Reeves, Professor John Gibson, and Mrs Mhari Coxon, followed by an afternoon of activities all aimed to promote wellness in our daily lives, before ending the day with woodfired pizza and drinks.

Preparation for Practice Live

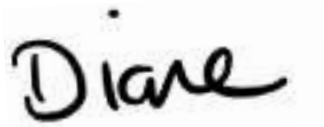
Thank you to Mrs Rhiannon Jones, Ms Claire Stott, Ms Lauren Barry and Ms Fran Robinson for making the first Preparation for Practice session such a success. The second session will take place on Thursday 23rd June and focus on employed and self-employed status, contracts and financial considerations throughout our careers.

Presenter Course

All you budding presenters, and members that would like to enhance their presenting skills, please join BSDHT Education Group member Tim Ives and his team on Saturday 25th June at Bragborough Hall. The interactive day will be full of tips and tricks for both face to face and online presenting. Places on the course are limited so book now.

Dentistry Show

The Dentistry Show is back this month and BSDHT will be there. If you are attending the two-day event on Friday 13th and Saturday 14th at the Birmingham NEC, please stop by the stand Q62 to say hello.



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BSDHT

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INFOGRAPHIC COMPETITION SHINING A SPOTLIGHT ON OUR WINNERS

by DIANE ROCHFORD, MIRANDA STEEPLES, SARAH MURRAY

The BSDHT dental hygiene and dental therapy infographic competition was launched at the OHC2021 in Glasgow and was designed to link with the conference theme 'See and Be Seen'.

The competition invited members to submit infographics that explained the role and skillset that dental hygienists and dental therapists can offer to patients within the dental team and illustrate how we positively contribute to patient care.

The competition attracted 14 members submissions, with half of those from our student members. Some individuals produced multiple infographics, so there was plenty for the judging panel to choose from.

The judges, Diane Rochford BSDHT President, Miranda Steeples BSDHT President Elect and creator of the competition and past BSDHT Honorary Secretary Sarah Murray, had some difficult decisions to make selecting the eventual winners and, due to the high standard, also award four highly commended prizes.

We are delighted to announce the winner of the dental hygienist infographic is **Abigail Goodyear**. Abigail's infographic demonstrates the key characteristics of an infographic and the layout meets the brief; she considers the diversity, inclusion and belonging aspect in the images used, and the role and skillset of the dental hygienist within the dental team is clear for members of the public. Abigail's prize is £400 of Amazon vouchers.

The well-deserved winner of the dental therapist infographic is **Kim Chambers**. Kim's infographic is impactful with a good balance of text and graphic; Kim certainly has shone a light on dental therapists and how they are an integral part of the team. Kim also receives £400 Amazon vouchers.

Highly commended awards have been awarded to: **Alishba Khan**, demonstrating the role of dental therapists; **Kate Belska** for both her dental hygiene and dental therapy infographic; **Louise Baguley** for her clear and bold dental hygiene infographic; and

Abigail Goodyear : **Winner dental hygienist category**

Kim Chambers: **Winner dental therapist category**

■ ***Alishba Khan:*** **highly commended**

■ ***Kate Belska:*** **highly commended**

■ ***Zakariya Islam:*** **highly commended**

Zakariya Islam for his dental hygiene and dental therapy tooth super heroes infographics, which is aimed at younger patients. Each of the highly commended infographics has been awarded £50.00 Amazon vouchers.

The judges would also like to acknowledge all the entrants and thank them for their variety of concepts, ideas and artistic skills - they are greatly appreciated.

The winning and highly commended infographics will be added to the website for download, so that members across the country can display them in their practices and really shine that spotlight on our professions. We would encourage you to download one of these and place them in your practices to promote the valuable roles we play within our dental teams.

Louise Baguley: **highly commended**

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*Green A et al. JDent 80 (2019) S33-S39, UK 2016, n=30. Zendium (containing Stereth-30) compared to a standard fluoride toothpaste containing SLS.

READERS FORUM

Racism: are we doing enough?

During Remembrance Sunday we often reflect that war in Europe is unlikely to happen again, partly due to years of peace and democracy in the European Union (EU). However, Europe has war in its lands once again.

I have been watching the events in the Ukraine with deep sadness, however, seeing President Zelensky's social media posts has been inspirational. Quite recently, he was a TV personality pretending to be a president. Within a short time he has become a war leader, conducting himself with dignity and veracious courage for the Ukrainian people.

In most wars we sadly see migration of peoples, fleeing the terror and we have witnessed this on the news reports covering the sad events in Ukraine. In the terror of war there is no doubt that the aim is survival! But at what costs? We forget that over the past few years some countries in the EU moved further to the right politically. It saddens me to see even in the event of war, the colour of your skin can be used to discriminate.

Indian and African students crossing countries that border the Ukraine, have encountered the most horrendous forms of discrimination. Similar to the Apartheid system in South Africa; whites first, Indians, then Africans. Will we ever see a time when a human is a human regardless of their skin colour?

Readers may wonder why this is relevant to dental health. I think we must ask ourselves about racism. Are we, as a profession, doing enough to tackle racism?

Leon Bassi

Using toothpaste after PMPR in patients with gingival bleeding

I am a dental hygienist and completed my degree in 2016 in Malaga, Spain and have been working in the UK ever since. I would like to share an idea with my peers.

In my clinical work, I have noticed that, generally, six in every ten patients present with generalised gingivitis. Having thought about what I could do to add another layer to the treatment I offer, I had the idea of polishing with toothpaste following scaling. I base this on the therapeutic benefits of toothpaste because, as far as I am aware, prophy paste does not have the same therapeutic benefits. I follow up with prophy paste to remove stain. I tend to use the toothpaste samples that the companies send to the clinic.

Prophylaxis paste is used for the complete removal of biofilm, supragingival stains, soft deposits and to make the surfaces of our teeth smooth. I have found no evidence of any clinician polishing with toothpaste. I would be interested to hear other readers' thoughts.

Ruben de Jesus Lima

REFLECTIVE WRITING

by CHALIS MATTHEWS

I was unfamiliar with the concept of reflective writing until I started studying at university. Little did I realise how important it would be to my education!

Some people enjoy reflective writing while others are not so keen. I enjoy it and have a simple, convenient way to write reflectively. It has shown me how to understand my strengths and weaknesses as a student, as well as how to effectively work on them moving forward in my career.

Why do we do it?

Reflective writing enables us to combine all our thoughts, feelings and interactions - based on an act, event, or experience - into a single account. This helps us to identify our strengths and our weaknesses within the different aspects of whichever role we are in. We are then able to adapt and improve our weaknesses, as well as enhance our strengths.

Reflective writing in a dental practice allows the team members to reflect individually, and collectively, and assess their roles and teamworking to develop strategies and ideas about where to improve. Ultimately, this will provide further benefits to the patients, and help improve the practice for everyone.

Benefits of reflective writing

There are multiple benefits to reflective writing, on an individual scale as well as practice wide. Some include:

- Allows individuals to identify their strengths and weaknesses from an act, event, or experience.
- Helps individuals utilise decision making skills and adaptability to improve weaknesses and enhance strengths.
- Allows individuals to look at the bigger picture and learn from their actions and experiences.
- Encourages individuals to grow and work towards being the best they can be.
- Helps individuals to self-monitor and take responsibility for themselves and their learning.
- Allows individuals to provide evidence of experiences, events or actions showing their capability and knowledge.

Looking at the flip side, and how it affects our patients, being reflective allows you to enhance your patient communication and care. We can reflect about so much from just an interaction, teamwork, thoughts and feelings, or even materials, to help us learn and build our knowledge.

How to reflect

There are multiple models available to help with reflective writing. These include: Gibbs reflective cycle; Driscoll's 'what model'; and the ERA cycle.[1]

The Era cycle was created by Jasper in 2013 and is one of the simpler models. It contains the stages experience, reflection, and actions.

Driscoll's 'what model', is a personal favourite of mine and has made reflective writing simple for me. It was developed by Driscoll in the mid 1900s. Again, it's a 3-way cycle. What? So what? Now what?

Gibb's 'reflective cycle' is more complex but provides more stages to think about. It is built up of six stages: description; feelings; analysis; conclusion; and action plan.

My 'tips and tricks' to tackle reflective writing

- Whenever you have a memorable experience or perform a skill or action always make a little note of it. I have a notebook dedicated to reflective writing. I try to write after each clinic session.
- Have a plan! Work out what you find easiest whether that be a model, trigger words or outline to follow. This will help you to maintain structure and gain the most out of your writing.
- Make time for reflective writing. Incorporate it into your timetable so you are always providing yourself with time to focus on looking back at scenarios and learning the most from them.

- Set yourself a word count. This helps to keep your account concise and to the point.
- Jot down ideas of what you wish to include. This could be in the form of a mind map, bullet points or little sentences.
- When using Driscoll's model, I like to think of sub-questions to help me reflect. For 'what?' I like to use: 'what happened?' and 'what were the results?' For 'so what?' I like to use: 'what do these results mean?'; 'How did I make these happen?' And for 'now what?' I like to use: 'what will I do next time?'

Some more questions to think about, that I like to use, are:

- What went well?
- Why did it go well?
- Would I change anything?
- What have I learnt from this?
- What feedback did I receive?
- How was situation rectified?
- What will I do differently?
- How did I benefit from this?

Finally, it is important to 'be yourself.' Remember, this is a reflective account for you! A piece of writing to help you learn from your experiences and actions. Do not get caught up in trying to make it perfect. Ensure you make it work for you providing you with a mini valuable lesson, just for you!

Author: Chalis is a second-year student at Cardiff University studying dental hygiene and therapy.

Correspondence: chalis.matthews@icloud.com

References

1. Libguides.cam.ac.uk. 2022. *LibGuides: Reflective Practice Toolkit: Models of reflection.* [online] Available at: https://libguides.cam.ac.uk/reflectivepracticetoolkit/models [Accessed 23 March 2022].

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References: 1. Nathoo S, Delgado E, Zhang YP, et al. Comparing the efficacy in providing instant relief of dentine hypersensitivity of a new toothpaste containing 8.0% arginine, calcium carbonate, and 1450 ppm fluoride relative to a benchmark desensitising toothpaste containing 2% potassium ion and 1450 ppm fluoride, and to a control toothpaste with 1450 ppm fluoride: a three-day clinical study in New Jersey, USA. *J Clin Dent.* 2009;20(Spec Iss):123 -130. **2.** Docimo R, Montesani L, Maturo P, et al. Comparing the Efficacy in Reducing Dentin Hypersensitivity of a New Toothpaste Containing 8.0% Arginine, Calcium Carbonate, and 1450 ppm Fluoride to a Commercial Sensitive Toothpaste Containing 2% Potassium Ion: An Eight-Week Clinical Study in Rome, Italy. *J Clin Dent.* 2009;20(Spec Iss):17- 22.

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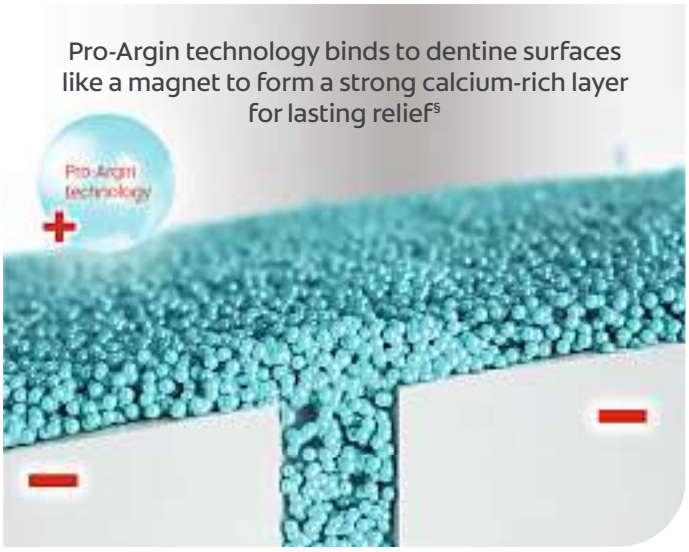

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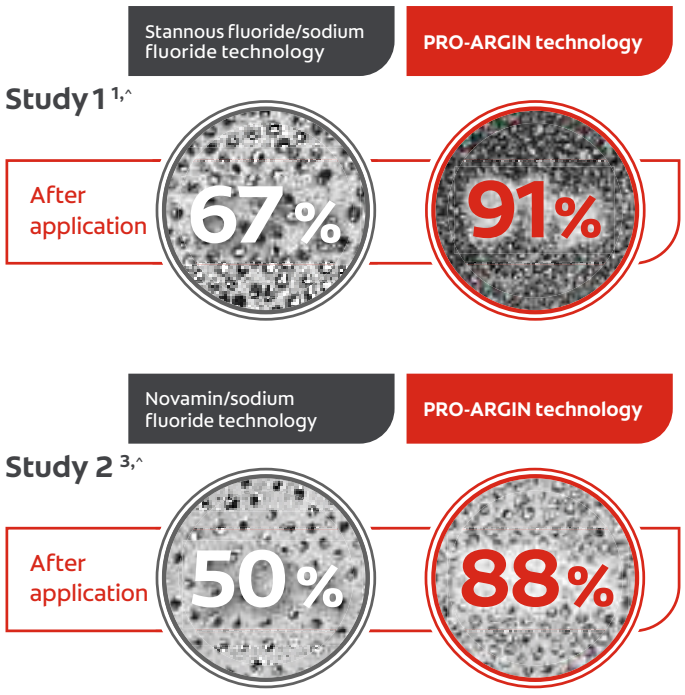

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DENTISTRY IN CAMBODIA

by MIRANDA STEEPLES

I have just returned from Cambodia where I worked in a team providing free dental care for impoverished children. There is a full-time dental team in Phnom Penh comprising: Dr Marin and Thida, his wife, who is a dental nurse; Tola, a 4th year dental student; and two trainee dental nurses, Rhien and Seren. Mini Molars pays the team and supports the trainees with their studies.

I spent time with the team at the clinic in southern Cambodia, in the Ream Commune, in Sihanouk Province. I was joined by Anni, a dental assistant from Hamburg, and later by Stephan, a dentist from the same clinic, and Ulf and Sombo, who are the founders of Mini Molars Cambodia with Jamie, Sombo's son.

Mini Molars was established in 2015 and has collaborated with other not for profit NGO's, such as AllKids - when possible. The team are based in Phnom Penh, but go to the province to work for a week, three times a year. The children receive access to this dental care thanks to the AllKids organisation who pay the dental team for their time.

The children's chart is entered onto a computer by the AllKids team. It contains information about their weight and oral hygiene habits - if they have, and use, a toothbrush and toothpaste, and how many times a day they brush their teeth. Their oral health and hygiene are assessed and noted.

They are asked if they have pain. This then becomes a three-way conversation with the dental nurse, who acts as an interpreter. Unfortunately, some of the children have learnt that if they say 'yes' to having pain, this often results in an extraction. So, even though some children present with extensive decay and abscessed teeth, they will say they do not have pain to try and avoid this.

The treatment priority is to:

1. Get them out of pain, often by extraction, occasionally a restoration;
2. Address any anterior issues;
3. Protect and maintain the molars – usually by fissure sealing;
4. Apply Fluoride varnish, give OHI, and a toothbrush with Fluoride toothpaste.

There is no set time limit for each child, but if a quadrant is being anaesthetised, you would do as much as you could in that region, with extractions limited to two per child, per appointment. AllKids said that in this last week, the team managed to assess and treat over 300 children!

The children were a delight to work with, and the team is caring and efficient in its work. I had a wonderful time with them and plan to go again soon. It is a humbling country to visit; the people I met were so friendly and kind, and it feels good to be able to use my dental therapy skills to help those who really need them, and who will benefit hugely from them.

I would like to take this opportunity to thank all those who were kind enough to donate different items and money for this project; I raised £1650 in donations to put towards a new autoclave! We could not do it without you. And if anyone reading this would like to give it a go, you can either contact me for further information, or visit the Mini Molars website.

Author: Miranda is a dental therapist and dental hygienist who qualified from the University of Leeds, and is delighted to have been able to utilise those hard-learned skills for good once again. When not delivering dental care overseas, she completed the ILM Level 5 mentoring qualification and is enjoying the role of BSDHT president elect.

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STUDENT LIFE LET'S START REVISING EFFECTIVELY!

by ALISHBA MAJED KHAN

Learning, revising and sitting exams through the pandemic? Quite frankly, it has all been a bit of whirlwind!

I began my education at the University of Sheffield at the peak of the pandemic. Lectures were delivered online: both pre-recorded and live. For the most part, I enjoyed the online lectures from the comfort of my own home, in my pyjamas chomping on my lunch and writing notes. With recorded lectures it was easy to start and stop when I liked, scribble my notes and carry on.

Soon enough I had compiled lots of notes, or should I say transcripts, but quickly came to the realisation that I was not actively learning. In fact, I was memorising and whilst this can be beneficial, it did not mean I had entirely understood the content!

I would spend hours writing notes but coming back to them nothing made sense. Something had to change.

Reconsider my revision methods

Active learning requires you to be able to apply the knowledge you have learnt and adapt this knowledge to real life situations. So, I started to look closely at my modules' criteria. These criteria came with aims and objectives, which is often on a slide in the lecture which I tend to skip over. However, this is a very important slide in a presentation. One that needs to be revisited at the end of the lecture to check that, as a participant, you are able to address all the objectives set. I condensed my notes to answer these objectives and along with it constructed my own questions.

Formulating questions for yourself is a great way of actively learning, it ensures the content you have covered has been remembered. Making a list of questions after every module and then answering them allowed me to identify the gaps in my knowledge. If I answered something incorrectly, or could not remember, I would make posters, mind maps and flashcards as a visual aid. Sometimes a page of words is exhausting to look at!

Practising answering questions and previous exam papers was the best end of topic revision for me. I would categorise exam questions and answer these as a summary to the content I had learnt. For example, if I had revised a topic on gingivitis, I would answer a past exam paper question on gingivitis to end my revision of this subject.

We were not given the mark scheme, or answers, with our exam questions. This was beneficial as it allowed my peer group to discuss and compare answers, share ideas and make suggestions to adapt our answers (all which I did in different coloured pens to highlight points I may have missed out!)

Should I go digital?

This is dependent on personal preference. Personally, I found a mixture of the two worked well for me, with access to various platforms. It is fun to work with new apps and this allowed me to type notes and add annotations to pictures with just a few clicks. But sometimes just a few coloured pens and paper would equally do the job for me!

It is important to consider what sort of learner you are. Do you like visual aids or prefer reading? Or do you like speaking aloud and listening? How do you learn? I would suggest you try a VARK (visual, aural, read/write and kinaesthetic) quiz and find out.

Good luck!

Author: Alishba is 2nd year dental hygiene and therapy student at the University of Sheffield.

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DEFENDING YOUR SCOPE OF PRACTICE

by FRANKLIN AMADI

I am sure that many of my peers will have experienced a colleague expressing surprise on learning just how broad a dental hygienist's scope of practice is. Weirdly enough, even some employing dentists do not know what we have been trained to do. So, how can we practice our full scope if our referring dentists do not know how much of an asset we are?

This article provides a few practical tips that may help you practice dental hygiene in its fullest sense. To ease recollection these tips can be summarised in three words: the will; the skill; and the way. The words are sequential, and progression is very much dependent on accomplishing the former.

The will: are you willing to practice your full scope?

For various reasons many dental hygienists are unable to work to their full scope of practice. However, if it is for reasons other than a lack of will on the hygienist's part, every other hurdle can be overcome. In many practices the principal dentist will have created a system which facilitates you to do more than just 'scaling and polishing'. However, if this is not the case where you work, do you have the will to speak up?

Will is very much linked to self-belief and determination, in essence you will only do what you believe in. Do not subscribe to erroneous beliefs such as, you need to be x years qualified or working in a hospital to have nursing support or take impressions. Even if something currently does not commonly happen where you practice, with belief it can come to fruition. I would encourage you to make a list of the reasons why you 'can't'. As long as a lack of determination is not on that list, anything is possible.

To strengthen your will, you must immerse yourself in learning and gain competence in the clinical techniques and indications for the parts of your scope that you wish to practice. Whether it is aesthetic (such as tooth whitening), preventative (such as fluoride varnish applications) or diagnostic (radiography), you should be able to confidently explain why this treatment, when performed by you, is of benefit to your patients, and the practice.

The skill: are you ready?

So, you have been able to convince your dentist to refer patients to you. Now you will need to deliver! There is a bidirectional link between confidence and experience: you are likely to feel more confident doing the things you have lots of experience in performing successfully.

As a student did you practice your scope as much as you could? To improve your skill set you must continue to challenge yourself so, when you are in the skills lab, do not always pick the easiest tooth to demonstrate your skill. When you are in clinic, desist from any speculation regarding the precise numbers of clinical activity needed for your portfolio, if there is a clinical need, gain as much practice as possible. Help other students, if you have the time, because it also enables you to see new ways of doing things and maybe adopt good practices.

If you have already graduated, identify suitable training. Sometimes there are enhanced CPD courses that require you to create a portfolio. For instance, a course may require you to go back into your practice and take a set number of radiographs. This is good because it allows you to discuss clinical indications with your referring dentist and identify any barriers earlier. It also wakes up your dentist! You said you were going to do it, and they agreed, but are they now ready to provide the support?

The way: how would you carry out this clinical activity?

This is unique to every practice and involves logistical considerations. Arguably, three of the biggest are: Do you have a nurse? Are you in a suitable surgery? Do you have competition?

Nursing support

Personally, for me having the support of a dental nurse is the biggest one. Whatever treatment you want to perform, a strong argument can be made that it will be quicker and safer by having a nurse to support you. 'Quicker' should be obvious but safer may not be. Essentially, for every procedure you undertake, you should be competent to carry out the treatment and deal with any foreseeable complications. Complications are too numerous to list but it is not impossible that a medical emergency may arise, for instance. In all medical emergencies, it is necessary to call for help and/or get the emergency drugs trolley. If you are alone and nobody hears your cry, what next? Because nurses work with multiple clinicians, they are likely to have witnessed many successfully resolved clinical complications and can often tell you what the solution is. Nurses also work in the surgery longer than we do so know not just what is in your surgery but often what is in all the other rooms too.

For dental therapists, having full time chairside nursing support makes it easier to utilise our restorative skills. This support should not need to be an additional point to be negotiated with your principal dentist.

Suitable surgery

The room is very important. If you are hoping to utilise specialised equipment such as an Airflow and your surgery's chair is not compatible with it then you need to logistically work out how you can use a different surgery. Additionally, for some treatments it is necessary that you have space to store your peripherals. Your plans can be dead in the water if your plans did not incorporate the very surgery in which you intended to execute this clinical activity.

Competition

It stands to reason that you will have an increased chance of receiving referrals for any clinical activity that the dentists do not routinely do themselves. At some practices, the dentists prefer to treat their perio patients and, unsurprisingly, do not employ a dental hygienist. If the dentists undertake the clinical activity that is within our scope it is a good idea to open a conversation with them about benefits of you doing it instead. At interview stages it is good to know what the skill mix of the practice is, where possible it is also good ask the principal about their plans - an opportunity that is not currently present may present at a later stage.

Ultimately, if you have the will, you must also have the skill to deliver and a plan which details how you will execute this. The most important skill of all, which underpins everything we do, is communication. It is worth spending some time imagining how you would explain your plans to: a patient who previously did not know you could do this; a nurse you have never performed these procedures with; and the dentists you may need to get referrals from. Think of their likely questions and prepare answers. You should be aware of current guidelines and have an idea about cost and time.

Good luck!

Author: Franklin is predominately a Kent based dental hygienist. He is also a member of BSDHT's Diversity, Inclusion and Belonging (DIBS) team. Franklin is interested in the social issues within dentistry, motivation and empowerment.

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ON YOUR MARKS... RE-SET... GO!

by DAN NAYLOR

Friday July 26th, 2024, is set to be the opening ceremony of the next Olympics when elite athletes from around the world come together to complete in the 42 different events in order to be crowned the best of the best. But the hard work will not start and finish there. To gain a medal at the Olympics requires ability, be it natural or acquired, ultimate focus, extreme dedication and a clear understanding of your event. The blue-ribbon event is the 100m and as the eight athletes drop to their marks, muscles primed, breathing controlled and their focus directed on the 100 metres of track in front of them, all distractions are blocked out as they wait for the starter's pistol. For the preceding four years, and before, they have practiced the same routines and run this same race thousands of times to prepare for this single event. They are as ready as they can be to be the best they can be!

Preparation is key

Being prepared is not optional, it is a requirement. In the profession of dentistry, all too often a lack of preparedness leads to problems, be it a patient complaint or a failure in an inspection or more importantly in a treatment that you have undertaken; we need to have time to prepare!

On the 9th March, 2022 the dental teams of Wales were invited to listen to the deputy Chief Dental Officer, Warren Tolley and his colleagues from Welsh government present the plans for the next twelve months in NHS dentistry, giving the team precisely 16 working days to prepare to deliver their requirements. Now, one could argue that the vision has been known for some time, having been laid out in the 2018 document, A Healthier Wales.[1] Feeding into that piece of work was the oral health and dental services response and for those that are not aware of this document, the key priorities were:

- Timely access to prevention focused NHS dental care
- Sustained and whole system change underpinned by contract reform

- Teams that are trained, supported, and delivering this care
- Oral health intelligence and evidence driving improvement
- Improve population health and wellbeing

So, the strategy was clear, and, in fairness, 40 percent of Welsh NHS practices had begun the journey to address these changes, by taking part in the Welsh Dental Reform Programme. Then the Covid-19 pandemic hit, and the reform programme was paused. Welsh practices, under the instruction of the Chief Dental Officer, at the time, Dr Colette Bridgman, and Public Health Wales adopted a reduced service to address the dental emergency care of the population and minimise the risk to patients and teams.

So where are we now?

Teams are returning, where possible, to a more familiar routine of care. To say we have gone back to normal would be a huge misunderstanding and I would argue that it will never be the case; not because we can't but rather why would we? The pandemic has taught us several valuable lessons and raised some important questions and the profession must take time to consider their impact. Examples of these are:

- Correct personal prevention equipment and surgery design
- Environmental management and air quality
- Team development and avoidance of a workforce crisis
- Mental Health support

Leading to

- Who needs to access dental care and how often?
- What care should be available to sustain a population's dental health?
- Who is providing that care?

There are others, but the they all feed into the dental services response of 2018 above. As dental care professionals (DCPs), your role is key to the delivery of the dental strategy, especially with the current workforce crisis that is befalling the profession.

At present, it could be argued that becoming an NHS dentist has never been less appealing. With the huge administrative burden placed on NHS contractors and the unachievable targets that keep being set, changed and then reset, why would dentists choose this uncertainty over a more predictable and fulfilling private option? Alongside this, dentists also feel the NHS no longer offers the same environment to develop skills and training. As new graduates emerge with limited exposure to procedures, once taken for granted by previous generations, and an altered perception of what can be achieved and by when, caution must be noted. It reminds me of an old mantra I heard some 15 years ago; you don't know what you don't know!

So, what is in it for you?

That said, it is exciting times in Wales for dental care professionals. The development in North Wales of a new dental hygiene programme at Bangor University from September 2022 resulted in over 100 applications for the 12 places. The construction of a North Wales Dental Academy to support and upskill the profession along with the well-established dental therapy and hygiene BSc in Cardiff are all beginning to address the demand from practices to fill positions. The continued upskilling of the nursing team with initiatives such as Making Prevention Work in Practice (MPWIP) and additional funding for student nurse courses across health boards is also most welcome. But the team still needs a leader and with current legislation, as it is, the dentist's role is pivotal in the effective delivery of care.

One cautionary note in the development of the team must also be considered. If we are to promote team members through the ranks, be it a nurse to develop additional skills

Continued...

ON YOUR MARKS... RE-SET... GO!

initially and then on to perhaps a degree course in hygiene, therapy or even dentistry, that is to be applauded. However, the business of dentistry still requires nurses, as much as it does the other team members and so, without stating the obvious, we need to maintain a steady and effective supply of nurses before we start promoting what we have through the ranks and leaving vacancies.

The future…or next 12 months at least!

Covid has not gone away! Only last week we lost 15 hours of dentistry when a colleague tested positive for the virus and was unable to work. Patient cancellations and white space in diaries continue to be a huge issue and strangely, these are not metrics that form part of the data collection required by the Welsh Government. As for the team, our therapy department has never been more active and there has been a distinct change from a more periodontal to a restorative delivery. This has put more pressure on the therapy team as they step into a role that was once occupied by our dentists. Fortunately, over the last 12 months we have worked to support and train the team to expect this, but it is still a huge leap, and we continue to make sure treatment plans are reflective of their scope of practice and the support is in place.

As other team members move into unfamiliar roles, such as nurses delivering their own oral health and fluoride clinics, there cannot be an expectation from government that this will show immediate improvements in data. Patients have commented that they "…don't want to see someone else" and question why they can't see their dentist of the last 20 years or so. Lack of supporting publicity and education from the policy makers has once again left the team to deal with the fall out on a day-to-day basis.

So, we find ourselves in a position where we are underprepared to deliver a strategy that, until a few weeks ago, we knew very little about. In addition, we are required to meet targets that cannot be considered SMART (specific, measurable, ACHIEVABLE, realistic and time based). I wonder if Usain Bolt would have run 9.58 seconds with this level of preparation, on top of the threat of having his funding removed if he failed to achieve this result with his first attempt.

Author: Dan is a general dental practitioner and practice owner in North Wales. Dan is heavily involved in North Wales dentistry, representing the Local Dental Committee as secretary. He has also provided courses on virtual dental consultations for Health Education and Improvement Wales and continues to be involved in the development of the reform programme in Wales.

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Supporting our patients through the menopause and beyond

by JULIETTE REEVES

AIM

To provide an overview of the female hormones and how hormone status can impact on the oral health of our female patients through the menopause and beyond.

LEARNING OBJECTIVES

- To define the word menopause and identify factors that can influence when menopause begins.
- To provide an overview of sex steroid hormones and their actions throughout the life cycle.
- To discuss the potential effect of hormones on the periodontal health of female patients and the proposed mechanism of action.

LEARNING OUTCOMES

Following this article, the reader will be able to:

- Define the meaning of menopause and list those factors that influence the onset.
- Differentiate between the actions of the major sex steroids.
- Describe the proposed mechanism of how sex hormones affect the periodontal tissues.

Aligned with GDC development outcome C

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ABSTRACT

There are five key stages in the female life cycle: puberty; menstruation; contraceptive use; pregnancy; and menopause. Each of these phases involves fluctuating levels of sex hormones that have direct and indirect effects on oral health and may also influence susceptibility to periodontal disease. These changes in oral health are associated with more frequent and exaggerated inflammatory responses to oral bacteria, without an accompanying increase in plaque levels, that may initiate gingival and periodontal lesions.[1] Some of these changes include: bleeding on probing or with tooth brushing; inflamed gingivae; hyperplastic gingivae; pyogenic granuloma; tooth mobility; and bone loss.[2]

In addition, it has now been established that cardio-vascular disease (CVD),[3] diabetes[4] and adverse pregnancy outcomes[5] are all potential sequelae of poor oral health. It is imperative, therefore, that the dental team understand the effect of hormone status on the oral health of our female patients and recognise our role in the promotion of oral systemic health and the impact this has on the health of women.

This article aims to provide an overview of the female hormones and how hormone status can impact on the oral health of our female patients through the menopause and beyond.

KEY WORDS

Hormones, menopause, oral health

Menopause

Menopause usually begins at approximately 47-51[6] years of age, unless accelerated by hysterectomy or ovariectomy. Menopause is a point in time 12 months after a woman's last period. The years leading up to that point, when women may have changes in their monthly cycles, hot flashes, or other symptoms, are called the menopausal transition or perimenopause.[7] The word 'menopause' derives from the Greek 'men' (month or monthly cycle) and 'pausis' (end, stop), i.e., 'the cessation of monthly cycle.' The World Health Organization (WHO) describes it as the permanent cessation of menstruation as a result of the loss of ovarian follicular function.[8]

Several factors, including genetic and environmental factors, can influence when menopause begins. These include smoking more than 10 cigarettes a day and having a history of heart disease. For example, it has been found that women who had a history of heart disease reached menopause 1.4 years earlier than those without such a history (median age of 50.0 years vs. 51.4), and women who smoked 10-19 cigarettes a

day reached menopause sooner than those who had never smoked (50.2 years vs. 51.4 years).[9] At this stage there is a dramatic decrease in oestrogen and progesterone production. Whereas the pre-menopausal woman has cycling plasma levels of oestradiol and progesterone of 50 – 500 pg/ml and 0.5- 20 ng/ml respectively, the post-menopausal woman has non cycling, circulating levels of 5 – 25pg/ml and 0.5ng/ml respectively.[10] This represents a dramatic decrease of oestrogen and progesterone production and a 10-fold drop in circulating levels of female hormones.

Table 1: **Functions of Oestrogen and Progesterone**

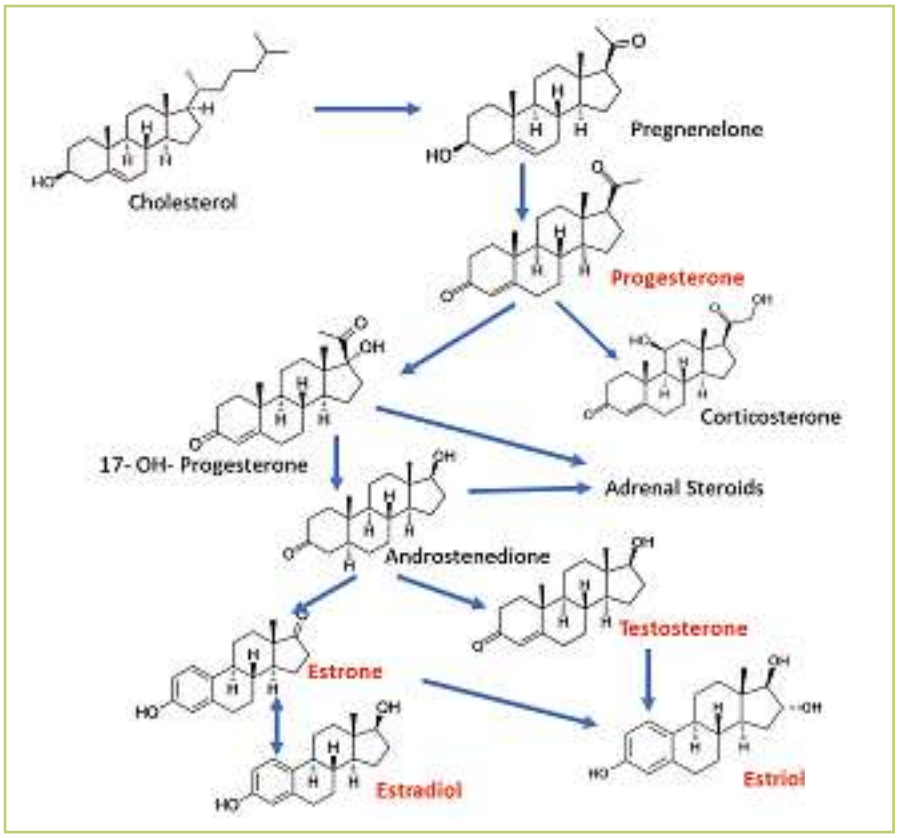
Functions of Oestrogens

- Promote development and maintenance of female reproductive structures
- Promote development of secondary sex characteristics
- Help control fluid and electrolyte balance
- Increase protein metabolism
- Promote growth in synergy with Human Growth Hormone
- Maintains bone density

Functions of Progesterone

- Precursor to other sex hormones
- Maintains secretory endometrium
- Natural diuretic
- Works in synergy with thyroid hormone
- Normalises blood clotting
- Stimulates osteoblast-mediated bone formation
- Helps regulate blood sugar balance

Figure 1: **Metabolic Pathway of Sex Steroid Hormones**



Steroid hormones

Steroid hormones are all derivatives of cholesterol and they can be divided into three principal sets: corticosteroid hormones (glucocorticoids, and mineralocorticoids); calcium regulating steroid hormones (vitamin D and its metabolites); and gonadal or sex steroid hormones (oestrogens, androgens, and progesterone). They are not bound but synthesized and immediately released. All steroid hormones are lipid soluble making them freely permeable to lipid membranes. They are not stored in cells and have a half-life of about 20 minutes.[11]

Oestrogen

Oestrogen is a class of hormones, which include oestradiol, oestriol and oestrone. Oestradiol (E2) is the most common type of oestrogen in females during their reproductive years. Whereas levels of oestriol (E3) rise during pregnancy and peak just before birth, oestrone (E1) is the only type of oestrogen present in the body after menopause. It is a weaker form of oestrogen and is also synthesised from adipose tissue and adrenal glands. The primary functions of oestrogen are highlighted in Table 1 and include the regulation of fluid and electrolyte balance and the maintenance of bone density.

Oestrogen also has known effects on the cardiovascular system: increased HDL cholesterol (the good kind); decreased LDL cholesterol (the bad kind). Oestrogens also relax, smooth and dilate blood vessels so blood flow increases. Oestrogens have antioxidant properties which are due to their ability to bind to oestrogen receptors and to up-regulate the expression of antioxidant enzymes via intracellular signalling pathways. Antioxidants quench free radicals, naturally occurring particles in the blood that can damage the arteries and tissues.[12,13]

Progesterone

Progesterone is the precursor to all other sex hormones (oestrogens, progesterone and testosterone) and the adrenal hormone corticosterone (Fig.1). It works in synergy with the thyroid hormone and helps regulate blood sugar balance and stimulate osteoblast mediated bone formation (Table 1). In fact, sex steroid hormones directly and indirectly exert influences on cellular proliferation, differentiation and growth in target tissues.[15]

Testosterone

Although primarily thought of as an androgen (male hormone), testosterone is also produced in relatively small quantities by the ovaries and is released into the bloodstream by the ovaries and adrenal glands. Combined with oestrogen, testosterone helps with the growth, maintenance, and repair of a woman's reproductive tissues, bone mass and human behaviours.[16]

Androgens may also play a role in the maintenance of bone mass. In association with oestrogen, testosterone inhibits bone resorption, inhibits osteoclastic function and inhibits pro-inflammatory prostaglandin synthesis. Testosterone stimulates bone cell proliferation and differentiation and has a positive effect on bone metabolism[17,18] (Fig. 2). Androgen receptors are found in both human gingival and periodontal ligament fibroblasts.[19,20]

Hormone receptors and target tissues

Targets for sex hormones were primarily thought to be: the reproductive organs; the vascular system; central nervous system; gastrointestinal tract; immune system; skin; kidneys; and lungs. Bone is also recognised as a target tissue for oestrogen and progesterone in bone density.

In periodontal tissues hormone receptors have been found for oestrogens, androgens and progesterone. Oestrogen receptors are also found on: periosteal fibroblasts; fibroblasts of the lamina propria; periodontal ligament fibroblasts; and osteoblasts.[21]

The proposed mechanism of how sex hormones affect the periodontal tissues is thought to be initiated by a sex steroid induced increase in specific microbiota. Immune endocrine interactions exaggerate periodontal responses in specific populations of fibroblasts and epithelial cells which are modulated by sex steroid hormones. This results in an increased release of pro-inflammatory cytokines, leading to the changes manifest in periodontal tissues[22,23] (Fig. 3).

The presence of hormone receptors in periodontal tissue means that hormone fluctuations and endocrine disturbances affect the periodontal tissues directly by modifying the tissue response to local factors and producing anatomic and immune changes in the gingiva that compromise the periodontium. A better understanding of the periodontal changes to varying hormonal levels throughout life can help the dental team in the diagnosis and treatment of oral conditions that are associated with the menopause.

Part two in this series will examine the oral manifestations of hormone deficiency throughout the menopause and beyond.

Figure 2: **Role of Oestrogen and Androgens in Bone Density**

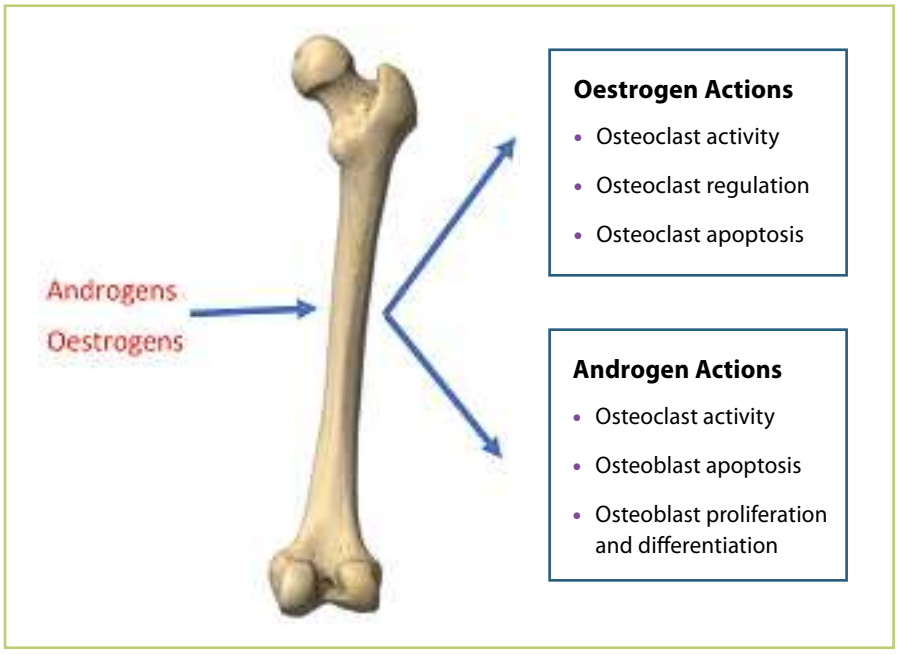
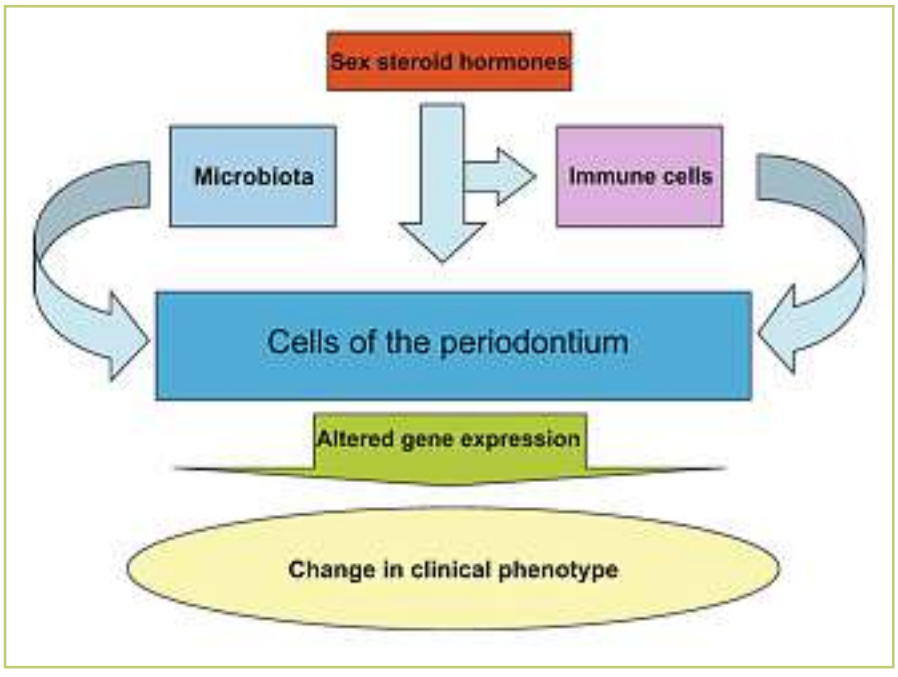


Figure 3: **Proposed Mechanism for Sex Steroid Influence on Periodontium**

Adapted from Marriotti et al 2013



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Neurodiversity in the work place

by CLAIRE BENNETT

AIM

To provide an overview of neurodiversity in the workplace.

OBJECTIVE

- To gain an understanding of neurodiversity in the workplace.
- To gain an appreciation of the role of employers with regard to neurodiversity in the workplace.
- To gain an understanding of dyslexia and inclusivity in the workplace.

LEARNING OUTCOMES

- Readers should be able to:
- Identify the issues surrounding neuro diversity in the work place.
- Discuss inclusivity in the work place in relation to neuro diversity.
- Apply an understanding of the principles of the article to foster an inclusive work place.

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ABSTRACT

Neurodiversity is a term devised by sociologist Judy Singer in the 1990s: it promotes neurodevelopmental differences by describing the limitless individual and uniqueness in cognitive functioning within society.[1]

As a society, we are all neurodiverse: diversity is the trait of a group, not of an individual. Whether neurotypical or neurodivergent, all individuals should be treated equally. Putting it simply, it is our brains that are different.

Neurodevelopmental differences, where the brain functions, learns and processes information differently, affects 1 in 7 people in the UK.[2] Neurodiversity is not a scientific term or a diagnosis. It is a term that is used to positively encourage neurodevelopmental differences, encouraging society to reject the culturally entrenched negativity that typically surrounds those perceived as different, such as the neurodivergent.[3]

KEY WORDS

Neurodiversity, dyslexia, inclusion

Learning differences

Neurodiversity can cover a broad spectrum of neurological conditions of specific learning differences. Attention Deficit Hyperactivity Disorders (ADHD), Dyspraxia and Dyslexia are natural and expected variations of the human genome.

Attention Deficit Hyperactivity Disorders

People who live with ADHD experience disruptions in daily life in such high levels that their daily lives become disordered to a considerable and sometimes a disabling extent (Fig.1).[4]

Dyspraxia

People living with dyspraxia (or developmental coordination disorder) have muscle coordination and perception difficulties, including: vision; hearing; and proprioception. Developmental delays might be seen in some areas and heightened sensitivity

Figure 1: ADHD experiences

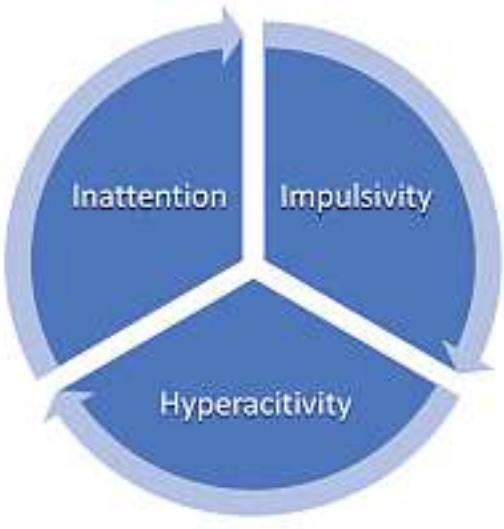

Figure 2: **Co-occurring difficulties with dyslexia**

Co-occurring Difficulties with Dyslexia
Language
Motor coordination
Concentration
Personal organisation

or abilities in others. Dyspraxia exists on its own but is often diagnosed with dyslexia, ADHD and other conditions.[5]

Dyslexia

Dyslexia is a learning difficulty that affects the skills involved in reading and spelling, especially phonological awareness, verbal memory and processing speed. Dyslexia is an array of elements, not a distinct category, and there are no clear cut-off points. Dyslexia occurs across all intellectual abilities. Co-occurring difficulties with dyslexia are demonstrated in figure 2.[6]

Dyslexia is usually a 'hidden' disability, and older and middle-aged individuals often might be unaware that they have difficulties.[7] Dyslexia is likely to affect 10 per cent of workplace colleagues. Since the Paterson ruling in 2007, dyslexia is now recognised as a disability and is covered by the Equality Act 2010.[8]

Inclusivity

Diversity of all kinds can contribute to creativity, innovation, and competition.[9] The benefits of a diverse workforce, including neurodiversity, go beyond political correctness and lead to better decision-making, incredible innovation and higher engagement in the workplace.[10]

Healthcare industries are experiencing a skills shortage. Utilising these often overlooked and highly capable talent pools could make a positive difference to this shortage. Universities and dental schools are now making it easier to attract these talent pools by creating more inclusive learning environments to recruit previously overlooked neurodivergent individuals.

Universities are attempting to become inclusive in their approach to dental education. Queen Mary University is pioneering the way by excusing students from live lectures, allowing them to take notes from recordings in their own time. This step to adapt the learning approach may attract more neurodiverse students who might have previously been excluded from traditional dental education.[11]

The improvement of inclusive learning environments at universities could increase the number of neurodivergent employees in healthcare. However, some recruitment processes overlook the neurodiverse talent pool because individuals may not, at first interview, tick the boxes of what makes an excellent candidate and often struggle to fit the profile for prospective employers.[12] The Chartered Institute of Personnel and Development reported that only 10 per cent of human resource (HR) professionals in the UK consider neurodiversity in their organisation's approach to people management. However, many dental professionals often conduct the recruitment process in general practice. Therefore, all recruitment processes should adapt their methods to accommodate individuals living with neurodiversity, whether driven by an HR professional or an individual.[13,14]

Dyslexia in the workplace

The Equality Act 2010 legally protects people from discrimination in the workplace and broader society, meaning reasonable adjustments must be made in the workplace.[8]

It is not just the workplace setting where dyslexia can be overlooked. Health care providers, often forget to ask adults about learning and reading disabilities. Dyslexia can affect the ability to process information in short-term memory. Individuals might struggle with concentration, reading, writing and spelling.[15,16] Although based only on anecdotal evidence, people are said to remember 10 per cent of what they read, 90 per cent of what they say and do. Dyslexia and learning disabilities are often excluded from medical and social history forms. As a profession, we are still asking patients to read information leaflets and fill in medical history forms on paper or computers without asking about learning difficulties. Yet, dyslexia is thought to be the most common learning difficulty in the world, affecting 1 in 7 people.[16] Although the Equality Act 2010 states that there is a requirement for: "*…restricting the circumstances in which employers can ask job applicants questions about disability or health*". The act also requires public sector organisations to make reasonable changes to their approach and provision to ensure services are accessible to disabled people and the rest of society.[8]

Employers have a legal duty to ensure employees are not discriminated against. Discrimination is when an education provider or employer mistreats an individual and places them at a disadvantage compared to non-disabled people. Employers must make reasonable adjustments to the workplace to enable the member of staff to carry out their role to a satisfactory standard and relies on individuals to declare their disability. If a person with dyslexia has been fortunate enough to have had their difficulties recognised at an early age, they may well have grown up with the confidence and assertiveness to explain their problems clearly to managers and colleagues at work and request the help they need to do their job efficiently. However, many people with dyslexia may have little or no understanding of the true nature of their difficulties and so will be poorly placed to make a case for themselves about requiring support in the workplace.[16,17] Many people are still choosing not to disclose their dyslexia diagnosis for fear of discrimination, fear of being ridiculed, and the resulting emotional impact.[18]

As the Equality Act 2010 relies on individuals requesting reasonable workplace adjustments, maybe it would be less discriminative to apply basic principles in all workplaces, removing the need for disclosure. The Government guidance document, *Oral care and people: learning disabilities and research*, has also highlighted the need for better learning disability training for dental care staff. People with learning disabilities may require clear, simple and possibly repeated explanations.[19,20,21]

Inclusive strategies for dyslexia

A person with dyslexia may have difficulty reading, writing, saying long words, remembering instructions and appointments.[22] Any changes you can make to accommodate people with dyslexia, including the 7.1 million adults in England with poor literacy skills, is good practice for everyone, whether a colleague, employee, student or patient.[23]

Clear communication and checking for understanding are essential. Where possible, provide instruction or introduce new concepts one at a time.[24] Ask for instructions to be repeated to confirm that the instruction has been understood correctly. Consider backing up multiple instructions in writing. This can then be supported by using a mix of verbal, visual and written formats to convey information to prevent using just written media.[25] Highlight the salient points in a document and give summaries of critical knowledge on pastel coloured paper such as cream, pale yellow, pale blue and pale pink. Allow plenty of time for people to read and complete any tasks. Provide all hard copy resources on coloured paper. When providing written information, remember that font size and form are essential. Fonts should be rounded to allow space between the letters, with Arial and Trebuchet MS, preferred to Times New Roman. The latter contains confusing ticks and tails, which can create difficulties. Printing information on coloured paper makes reading easier for some people with dyslexia. The colour of paper varies between individuals, but black print on cream paper is the combination that suits most people.[26]

The team can ensure that work areas are organised, neat and tidy. Essential items must be returned to the same place each time. Surgeries should be well lit, and workstation computers should have individual logins allowing users to change the screen's background colour to suit personal preference and fitted with an anti-glare screen filter.

Dental software companies and providers must continue to support by improving automation of appointments to calendars on smartphones, removing the need for printed or written appointment confirmations and automated alerts to support memory challenges. Some dental software have introduced spell check to clinical notes, but further development is essential that caters for medical and dental terminology.[26]

Conclusion

Neurodiversity covers various neurological difficulties, and they can be varied and diverse in nature. While these disabilities are recognised more clearly these days there is still a long way to go to change attitudes and behaviours in society.

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Effectiveness of air polishing in non-surgical treatment and maintenance of periodontal and peri-implant diseases – a review of the literature

by SIMONA KILIOKE

ABSTRACT

Aim
To scope available evidence for the impact and effectiveness of air-polishing use in non-surgical periodontal treatment and maintenance and critically assess the significance of the findings for application in clinical practice.

Methods
A critical narrative review was conducted. Research evidence was retrieved from MEDLINE and CINAHL databases and a hand search. The CASP critical appraisal tool was used to evaluate the qualitative methodology research findings.

Results
Following the initial database search, 240 studies were identified: 180 studies remained after duplicates were removed for screening and another 117 were excluded as only the titles and abstracts were available. The 63 full-text articles were assessed for eligibility and 57 articles excluded within the context of the inclusion and exclusion criteria. Eight studies were included in this literature review after the CASP tool was utilised.

Conclusion
The evidence thus far suggests that air-polishing therapy improved periodontal clinical outcomes for the first three months of periodontal maintenance therapy. However, conventional treatment remains 'gold standard' for long-term periodontium improvement. Further quality, independent research is required to establish any long-term effects of air-polishing on clinical outcomes for periodontally compromised patients during non-surgical periodontal treatment.

KEY WORDS

Air-polishing, non-surgical periodontal treatment, sub-gingival air-polishing, peri-implantitis.

Introduction

According to the World Health Organization, dental treatment averages 5% of total health expenditure and 20% out-of-pocket health expenditure in most high-income countries.[1] Periodontal diseases, which include peri-implant diseases, are a significant contributor to the global burden of oral disease. Peri-implantitis is one of the most common causes of late implant failure. The prevalence of peri-implantitis is approximately 20% of implant patients after 10 years of placement. The prevalence of peri-implant mucositis is even higher.[2]

Supra- and subgingival biofilm removal is a central part of initial periodontal therapy and periodontal maintenance therapy.[3] Treatment involves various techniques including hand and ultrasonic instrumentation. More recently, air polishing has gained momentum as a treatment modality.[4,5,6,7] With a growing need for effective and cost-efficient therapy, air-polishing technologies may be an innovative way to maintain and support our implant and periodontally compromised patients.

Methodology

Search strategy

The PICO (Population/problem, Intervention/exposure, Comparison and Outcome) tool was deemed the most appropriate to utilise for this literature search.[8] Initially, eight groups of search terms were formulated for a search strategy under the following headings: 'air-polishing'; 'non-surgical periodontal treatment'; 'peri-implantitis'; 'periodontal diseases'; 'sub-gingival air-polishing'; 'supportive periodontal therapy'; and 'peri-implant maintenance'. These keywords were entered into the search bar of the database, using the Boolean 'OR' operator, and the concepts are combined with Boolean 'AND operator' of searches by groups terms. In this literature review CINAHL complete and MEDLINE with Full Text databases were accessed to increase the chance of retrieving relevant papers through EBSCO host search engine, considering the limitations of this review and timeframe.

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*Source: A survey of 201 dental hygienists in the UK, Ipsos (2019)

Table 1: Inclusion and exclusion criteria

Inclusion	Exclusion
Use of air-polishing/abrasion	In vitro
Published in English	Published in other languages
Published between 2000-2021	Published before 2000
Randomized controlled trials	Case studies
Systematic reviews	Review papers
Full-text available	
Peer-reviewed papers	

Inclusion and exclusion criteria

The inclusion and exclusion criteria were set according to the relevance of this study and in order to reduce search results into a more focused collection (Table 1).

Results

Eight studies were identified for inclusion within this review: five randomised control trials: Trtic et al. (2021)[9]; Jentsch et al. (2020)[10]; Sekino et al. (2020)[11]; Tsang et al. (2018)[12]; Lupi et al. (2017)[13]; and three systematic reviews: Nascimento et al. (2021)[14]; Zhang et al. (2019)[15]; and Schwarz et al. (2015)[16] (Table 2). Specifically, two papers [13,16] met the inclusion criteria for the use of air-polishing in peri-implant disease during non-surgical treatment and the remaining six [9,10,11,12,14,15] researched air-polishing use on periodontally affected teeth during maintenance and non-surgical therapy phases.

The type of specific powders (Fig. 1) used for air-polishing therapy during non-surgical treatment varied. Six studies reported the use of erythritol and glycine powders during non-surgical treatment or supportive therapy.[9,10,11,12,13,16]

However, the RCT's included in the systematic review undertaken by Nascimento et al. (2021)[14] and Zhang et al. (2019)[15] used trehalose and sodium bicarbonate powders. There are currently several types of powders available including: sodium bicarbonate; aluminium trihydroxide; calcium carbonate; bioactive glass; glycine; and trehalose. The low-abrasive powders are glycine and trehalose, which is the smallest non-essential amino acid found in protein. With a mean size of less than 45 µm, glycine powder particles are approximately four times smaller than particles of conventional sodium bicarbonate powder, while trehalose has an average particle size of 30–65 µm. Notably, glycine powder particle size is approximately four times smaller than that of conventional sodium bicarbonate powder and has the lowest Mohs hardness number of all of the air polishing powders currently available. Calcium carbonate is a naturally occurring substance found in rocks, sea shells, pearls, and egg shells. Aluminium trihydroxide is much more abrasive than sodium bicarbonate and can be damaging to many dental restorative materials.[23]

All studies in this review included probing depth and bleeding score values. Additionally, five of the studies [9,10,12,14,16] used air-polishing as an adjunct for non-surgical treatment and others [11,13,15] for maintenance only. Interestingly, three of the studies[9,13,15] used air-polishing techniques sub gingivally alone in comparison with manual plaque removal, while in all other studies the air-polishing devices were used as an adjunct to conventional treatment.

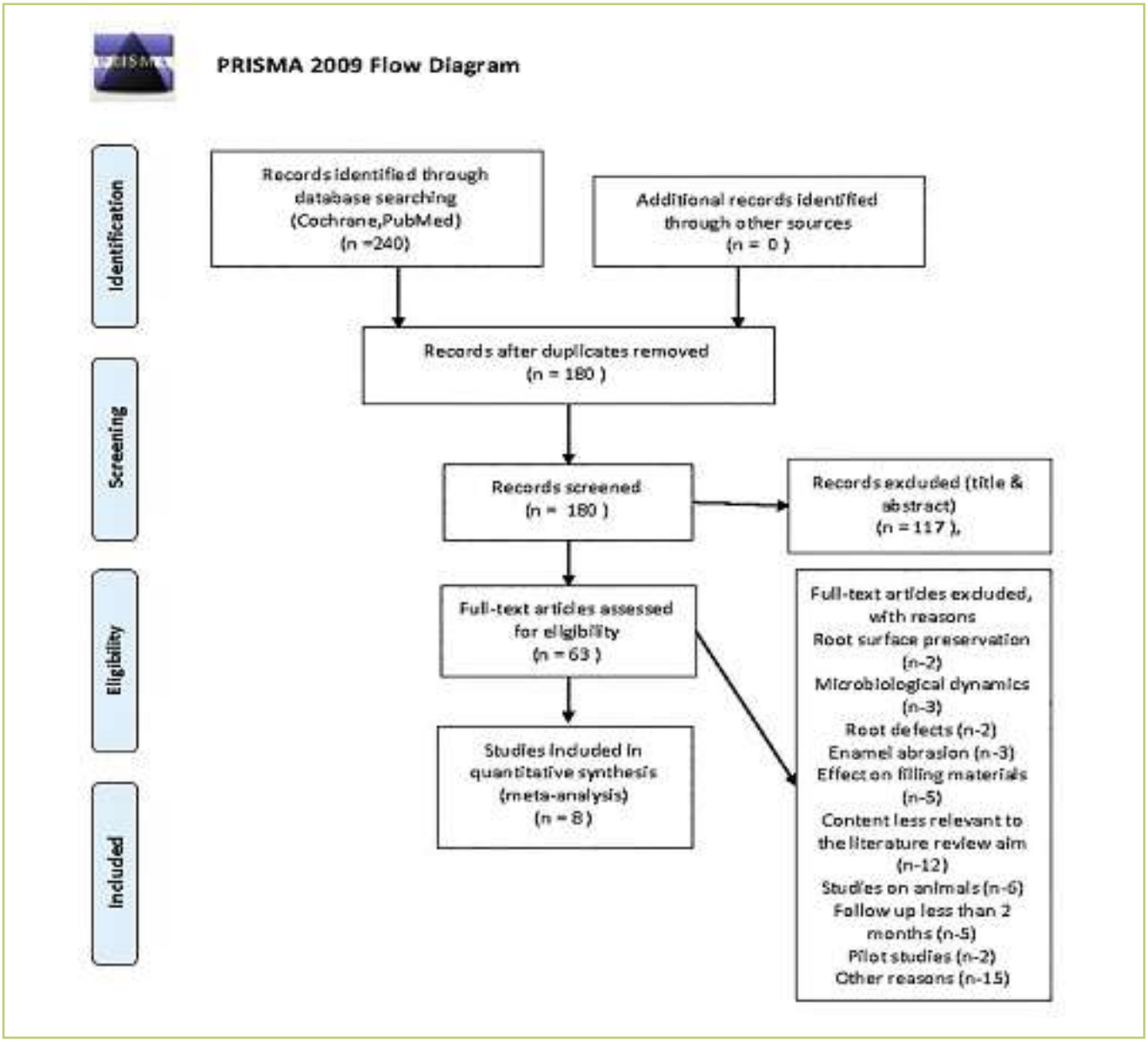
Overview of study methods

The quality of the studies varied. Single-blinded and double blinded randomised control trial designs were utilised in five [9,10,11,12,13] studies. However, only two studies reported the method of randomisation used: Lupi et al. (2017)[13] tossed a coin - a simple randomization technique – while Jentsch et al. (2020)[10] used a computer-generated system.

Table 2: The studies included in the literature review

Authors	Inclusion	Publication
Trtic N et al.[9]	Subgingival air-polishing treatment in patients with aggressive periodontitis	*Vojnosanit Pregl 2021*
Jentsch H et al.[10]	Adjunctive air-polishing with erythritol in nonsurgical periodontal therapy: a randomized clinical trial	*BMC Oral Health 2020*
Sekino S et al.[11]	Clinical and microbiological effect of frequent subgingival air polishing on periodontal conditions: a split-mouth randomized controlled trial	*Odontology 2020*
Tsang YC et al.[12]	Subgingival glycine powder air-polishing as an additional approach to nonsurgical periodontal therapy in subjects with untreated chronic periodontitis	*Journal of Periodontal Research 2018*
Lupi SM et al.[13]	Air-abrasive debridement with glycine powder versus manual debridement and chlorhexidine administration for maintenance of peri-implant health status: a six-month randomized clinical trial	*International Journal of Dental Hygiene 2017*
Nascimento G et al.[14]	Use of air polishing for supra- and subgingival biofilm removal for treatment of residual periodontal pockets and supportive periodontal care: a systematic review	*Clinical Oral Investigations 2021*
Zhang J et al.[15]	The clinical efficacy of subgingival debridement by ultrasonic instrumentation compared with subgingival air polishing during periodontal maintenance: a systematic review	*The Journal of Evidence-based Dental Practice 2019*
Schwarz F et al.[16]	Efficacy of air polishing for the non-surgical treatment of peri-implant diseases: a systematic review	*Journal of Clinical Periodontology 2015*

Figure1: **PRISMA diagramme**



All three systematic reviews used randomised clinical trial papers for a comprehensive review and data analysis. Nascimento et al. (2021)[14] and Zhang et al. (2019)[15] used an independent reviewer to assess the quality of the included studies along with the Cochrane Handbook tool. However, Schwarz et al. (2015)[16] used only the Cochrane tool, which is a quality assessment tool for quantitative studies, developed by the Effective Public Health Practice Project in Canada; it covers any quantitative study design for assessing papers quality and risk of bias.[17]

Analysis and discussion

Air-polishing versus conventional treatment

Three studies [9,13,15] compared air-polishing therapy with conventional treatment.

Strong evidence was made by Zhang et al. (2019)[15] who reviewed six split-mouth design RCTs to reduce variations on individual healing responses. Their inclusion and exclusion criteria were reported in detail, along with two independent reviewers. The comprehensive search strategy was described, including Grey literature to reduce bias. The heterogeneity was reported with respect to study design, study population, product used, statistical analysis, and follow-up time. Nothing statistically significant was found in the long-term studies relating to periodontal pocket depth (PPD), clinical attachment loss (CAL), plaque index (PI) and gingival recession (GR). PPD was evaluated in five of the six studies. Most of the included studies reported statistically significant reduction in PPD following subgingival air polishing. However, one study showed no difference after subgingival air-polishing compared with baseline, and ultrasonic debridement was significantly more effective than subgingival air-polishing in reducing PPD. However, four studies demonstrated no statistically significant difference between the two methods in PPD reduction. Measurement of CAL was conducted in three of the studies. There was no statistically significant difference in relative attachment levels between subgingival air-polishing and ultrasonic debridement groups in two studies. In contrast, one study reported that CAL significantly increased in the control group after three and six months compared with baseline and air-polishing groups. Gingival recession was measured in two studies and no statistically significant difference was found between two groups in terms of

gingival recession over one month, three months, six months and twelve months.

The same effect of clinical outcomes was found by Trtic et al. (2021)[9], favouring air-polishing treatment outcomes only at first three months follow up. In five studies, [9,10,12,14,16] where air-polishing was an adjunct to non-surgical treatment, no statistically significant differences were found for short- and long-term clinical outcomes.

Lupi et al. (2017)[13] showed a significant improvement in clinical outcomes in treating peri-implant disease with air-polishing versus manual debridement in a six month clinical trial. In their air-polishing therapy group, PPD reduced significantly in six months ($P<0.001$), whereas in the other group no significant increase was observed after three and six months. In addition, the periodontal depth mean values were significantly different at three ($P<0.05$) and at six months ($P<0.001$) in the two groups. Clinical attachment loss in both groups was not significant after three and six months' observation. The BOP in the air-polishing group decreased significantly at six months ($P<0.001$) and a significant decrease in bleeding score at three ($P<0.05$) and six ($P<0.01$) months was observed. However, patients with only 4mm probing depths were selected for this study, resulting in air-polishing for maintenance purposes only.

In the work by Nascimento et al. (2021)[14] only one RCT included in their systematic review showed glycine powder-based air-polishing therapy to be more efficacious than conventional treatment in the removal of subgingival biofilm. It is worthwhile to note, that this RCT was funded by EMS Corporation based in Switzerland, along with another two trials included by Schwarz et al. (2015)[16] in their systematic review about implant maintenance. Evidence suggests that industry reshape fields of research through the prioritisation of topics that support its policy and legal positions, while distracting from research that could be unfavourable.[22] It becomes difficult to interpret the findings and it is not possible to determine whether studies with negative results have been subjected to bias.

Differentiation on clinical indices

All eight studies included periodontal pocket depths and bleeding on probing indices. However, five studies[11,12,13,14,15] additionally measured clinical attachment loss, giving an accurately valuable for clinical outcome of long-term data interpretation. Three studies[9,10,16] measured plaque index. Additionally, three studies[9,10,12] added the microbiological analysis of periodontal pockets in their test and control groups, resulting in periodontopathogenic bacteria reduction for a short-term in comparison to air-polishing versus manual conventional treatment. Another two studies,[9,15] additionally compared gingival recession values, where no differences were found between air-polishing versus manual debridement.

Powder used

Inclusion criteria for periodontally compromised patients regarding probing depths varied in the studies: the researchers noted between 3.5 and 9mm pocket depths. According to the manufacturer's guidance of air-polishing treatment, the EMS device can be used for pocket depths between 4 and 9mm, while 10mm pockets are advised to be treated by ultrasonic scaler during acute inflammation and if heavy calculus deposits are present. EMS Airflow guided biofilm therapy uses a combination of air, warm water and ultrafine powder to help remove plaque, calculus and staining.

The NSK dental air-polishing device provides clinical based evidence that biofilm can be removed between 3-6 mm below the gingival margin. This air-polishing system functions according to an operative principle of air-polishing. It creates a mixture of air and powder by introducing pressurized air into the powder bowl. The powder inside the bowl is stirred up and transported towards the outlet for air-powder flow. The interaction of solid particles with the tooth surface results in biofilm removal. This company also provide an additional 'Perio nozzle' capable of reaching up to 16mm. Glycine and erythritol powder should be used for periodontally compromised patients.[18] Most of the studies used glycine and erythritol powders in the clinical trials. However, noticeable differences between the studies and type of powders used has not been detected on clinical outcome indices in this review.

Risk of emphysema

Emphysema is a potentially serious clinical complication of dental treatments resulting from forceful injection of air into connective tissues below the dermal layer.[19] In their work, Sekino et al. (2020)[11] and Schwarz et al. (2015)[16] reported that emphysema was not detected after air-polishing therapy – the other studies did not count this as a clinical outcome to be considered. However, there is some evidence of emphysema after air-polishing on both periodontally affected teeth and implants.[20]

Peri-implantitis and air-polishing

In this narrative review only two studies[13,16] included data about air-polishing on peri-implantitis in vivo.

Schwarz et al. (2015)[16] found that at three, six and twelve months following glycine powder air-polishing therapy, a statistically significant reduction in bleeding on probing was noted compared with mechanical debridement. Similar findings were noted by Lupi et al. (2017).[13] However, both studies included patients with 3-4mm pocket depths in these trials. This could imply that air-polishing is efficacious in maintenance phases of treatment only.

There was a lack of peri-implantitis clinical trials included in the reviews. The manufacturer of air-polishing devices advise to use a 'Perio nozzle' for implant treatment and only glycine or erythritol based powders. Schwarz et al. (2015)[16] found in their systematic review that glycine powder is less abrasive to titanium surfaces than sodium bicarbonate. EMS and Air-N-Go protocols suggest a treatment for 4-10mm pockets, while NSK Dental provides a perio tip with 16mm length of actual size. Furthermore, the studies including clinical trials of peri-implant treatments with air-polishing, were sponsored by the companies mentioned above. Clinical studies of treatment in deep peri-implant pockets are needed for better understanding of the effect of air-polishing treatment during non-surgical therapy.

Device settings

The air-polishing pressure and time spent on the treated surface should be detailed for accuracy of clinical outcomes. Five studies included these details[9,10,11,14,16] and applied a five second treatment for their test groups. However, where air-polishing was combined with manual debridement, the time scales used for hand or ultrasonic instrumentation were not reported. This does raise a question about the statistical significance of the

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results where longer time was spent on manual debridement before the air-polishing treatment was applied. Clinician dexterity and experience may also have a role to play. Clear guidance in application modes for air abrasive devices is required: Air-N-Go and EMS recommend 5 seconds per site, 3 to 5mm distance from the tooth between an angle of 30 and 60 degrees[18]; NSK-Dental recommends an angle between 10 and 60 degrees and provides evidence of biofilm removal from tooth surface in 4.8 seconds in 6mm periodontal pockets. In the studies by Trtic et al. (2021)[9] and Sekino et al. (2020)[11] the EMS Air-flow Master unit was used on each tooth surface area for 4-5 seconds. The specially designed nozzle for subgingival air-polishing was applied on treated sites in both trials.

Nascimento et al. (2021)[14] described the choice of application mode and to which surface it was applied. Few studies described the angulation applied. Sekino et al. (2020)[11] reported the water and powder pressure settings in their study. There is evidence that applying air-polishing treatment for 10 seconds per site results in no clinically significant differences.[21] The lack of application mode settings of air-polishing devices in the studies, results in higher bias of the clinical outcomes. Additionally, the clinician will find it difficult to adapt to the evidence-based practice, due to insufficient information about the different setting modes used in the trials.

Commercial companies

The majority of the studies that included air-polishing, were sponsored by the manufacturers. Evidence suggests that industry reshapes fields of research through the prioritisation of topics that support its policy and legal positions, while distracting from research that could be unfavourable.[22] In this literature review only two studies[13,16] declared that they had been sponsored by the commercial company involved with the device, while three others[9,10,11] offered no information about funding, but named the specific type of the unit used in the trials.

The systematic review by Nascimento et al. (2021)[14] included RCTs that were both sponsored and independently undertaken: seven of the 13 RCTs were commercially funded. The studies that included the effect of air-polishing on peri-implant treatment were all commercially sponsored. Industry sponsorship is a key source of bias that can affect research at multiple stages. It becomes difficult to interpretive the findings and it is not possible to determine whether studies with negative results have been subjected to publication bias.

Conclusion

The literature review and the evidence evaluated suggests air-polishing can be beneficial for the short-term improvement of periodontitis and peri-implantitis, particularly during the maintenance phase of treatment. However, the lack of independent RCT studies in non-surgical peri-implant treatment failed to show a clinical benefit of air-polishing during the non-surgical periodontal treatment phase. Further longitudinal studies with larger sample sizes are required to clarify the exact benefits of air-polishing treatment for controlling inflammation and maintaining long-term periodontal health. There have been fewer studies comparing air-polishing to conventional treatment alone.

There is evidence that air-polishing reduces bleeding on probing and plaque indices in the short-term, efficiently removing biofilm. However, currently there is no strong evidence of reduction in periodontal pockets depths or gains in clinical attachment levels over a long-term, either on periodontally affected teeth or implants.

Recommendations

Currently, there is a lack of studies for long period follow-up and many of the studies were sponsored by a commercial company. Consequently, independent research is needed with an agreed protocol for study design. Furthermore, studies of air-polishing use in furcation areas during nonsurgical treatment would be welcome. This is a developing, emerging area and results from various device trials may provide further practice-based evidence in the years ahead.

Study limitations

All efforts were made to conduct a rigorous and structured literature search. However, it is acknowledged that eligible studies may not be included within the literature review due to reviewer skill level, the search methodology such as the choice of keywords or selected information databases, and limitations in terms of time and resources. It is therefore likely that a weakness of the literature search conducted only in English could lead to missed current studies in research area. These limitations do mean that the literature search draws on only a section of all current work available. A better resourced team could have provided a more comprehensive review of all current research literature.

Conflicts of interest: The author declares there is no conflict of interest for this study.

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Table 3: **Powder Hardness in Mohs scale**

Abrasive	Particle Size (µm)	Mohs Scale of Hardness	Use	Contraindications
Sodium Bicarbonate	74 average[2] (Angular shape)	2.5	• Supragingival stain and plaque removal on anatomic crown	• Blood pH conditions • All aesthetic direct placement • Root surface • All restorations • Root surface
Aluminum Trihydroxide	80 to 325	4	• Supragingival stain and plaque removal on anatomic crown • Alternative to Sodium Bicarbonate • Heavy stain	• All restorations • Root surface
Calcium Carbonate	55 to 70 (Rounded shape)	3	• Supragingival stain and plaque removal on anatomic crown	• Blood pH conditions • Effects on root surfaces and restorations unknown
Calcium Sodium Phosphosilicate (Bioactive Glass)	30 to 90	6	• Supragingival stain and plaque removal on anatomic crown • Remineralization • Desensitizes, but safe use on cementum and dentine has not been shown	• Abrasive effects on enamel, root surface, and restorations unknown
Glycine	50 to 60 25 20	2	• Supra- and subgingival plaque removal	• Less abrasive on composites than Sodium Bicarbonate • Root surface effects unknown

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London	N/A	BDA Offices, Wimpole Street, London	Simona Dzimanaviciute	londonsecretary@bsdht.org.uk
Midlands	Sat, 15th October 2022		Joanna Ericson	midlandssecretary@bsdht.org.uk
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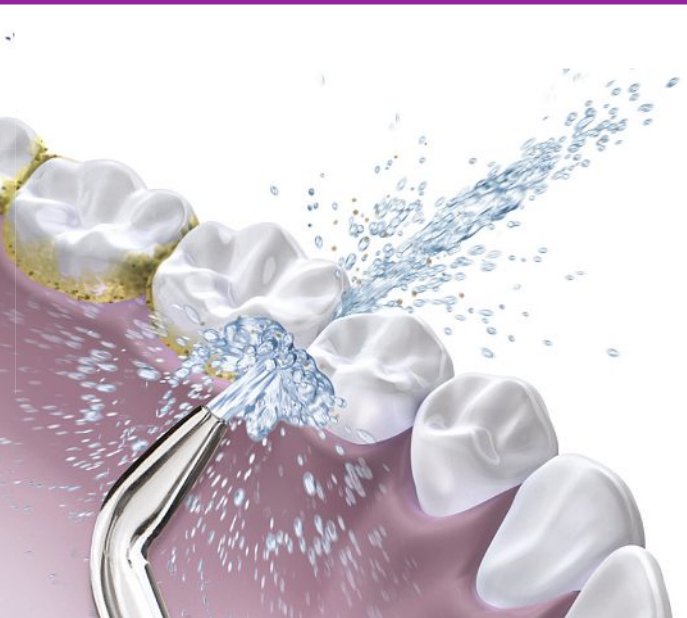

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