From novel to normal: Power toothbrushes consider safety issues

By Shelly L. Campbell, RDH, MPH

The cabbage soup diet. NASA-inspired space food sticks. The hit massage machine to “jiggle away the pounds.” How are these things connected? These health fads, fitness offerings from the 1960s quickly faded from the public eye after failing to live up to hype, or by causing safety concerns.

Another health improvement introduction in the ’60s – the electric toothbrush - could have met a similar fate because early prototypes were bulky, unreliable and expensive, lacking an electric shock. But unlike other inventors of health fads doomed to failure, Oral-B Inc. recognized the potential for rechargeable electric toothbrushes (also referred to as power toothbrushes), are now mainstream, their popularity reflected in exponential growth over the last decade.1 Interest in electric toothbrushes is driven primarily by the electric brush's reliable cleaning efficiency and ease of use. Value-based battery brushes, as well as premium multi-functional rechargeable electric toothbrushes are now considered the future of oral health care.2 Manual toothbrushes have permanently replaced their counterparts in many countries around the world, and many dental professionals see the electric toothbrush as a budget-saving alternative to manual toothbrushing.

The safety question Power toothbrush effectiveness is seldom debated, but are safety concerns involved? Could the documented connection between power toothbrushing and greater plaque reduction observed in clinical research12 lead to more gingival abrasion caused by longer brushing times or increased brushing frequency? Does power toothbrushing result in more hard tissue wear compared to manual brushing? Will enthusiastic power brush users apply too much force and compromise their gingival tissues or promote recession?

Potential safety concerns (like abrasion potential) that are challenging to discover clinically. Four in vitro (laboratory) investigations noted eligibility criteria and were included in the review. The three trials evaluating human dentin found similar or less wear with use of the O-R power toothbrushes, compared with manual brushes used under simulated clinical conditions. The authors of the fourth study suggested that bovine enamel loss after an acidic attack may be increased with use of certain power brushes when used at the same brushing force. But understanding the clinical implications is difficult, given that toothbrushing forces have been measured expeditiously in initial studies and have gradually increased over the years.

Today, many children and adults have permanently replaced their manual toothbrush model, having been over by the electric brush’s reliable cleaning efficiency and ease of use. Value-based battery brushes, as well as premium multi-functional rechargeable electric toothbrushes are now considered the future of oral health care.2 Manual toothbrushes have permanently replaced their counterparts in many countries around the world, and many dental professionals see the electric toothbrush as a budget-saving alternative to manual toothbrushing.

The goal should be evidence-based recommendations rather than speculation, but keeping up with all of the literature and accessing the quality and relevance of each individual power toothbrush study requires a significant commitment of time and effort by profession- als who already have a lot on their plates.

In search of an answer Systematic reviews of health topics (see sidebar) can be a great asset to busy professionals who don’t have time to comb through the literature themselves. To address the power toothbrush safety question, a recently pub- lished systematic review in the Journal of Periodontology considered theoretical safety concerns over power versus manual toothbrushes through a comprehensive analysis of all relevant published reports. The reviewers conducted a quality-assessing, Rotating Powered Brushes Compared to Manual Toothbrushes: A Systematic Review” by Van Der Weijden et al.14

Here are the key findings: What was the research included? O-R power toothbrush safety research was chosen for consideration in this research.21-24 All published series, including those with language titles and abstracts through May 2010 were included in a full search of three major databases (e.g., PubMed-Medline), result- ing in 899 potential publications that were screened, with 55 meeting all predetermined eligibility criteria. The 55 studies in the final review were designed to measure soft and/or hard tissue safety by tracking either primary (gingival recession) or secondary parameters (observed or reported adverse events or hard tissue effects), or a surrogate parameter (stained gingival abrasion or brushing force).

What patients and toothbrushes were involved? There was considerable diversity among the nearly 2,000 patients included in the 51 ran- domized and blinded human subject clinical trials, which ranged from four days to three years. These included adults and children with and without elevated plaque, gingivitis and/or bleeding, children with and without orthodontia, and periodontal pa- tients. Braun/Oral-B or Philips/ Jordan manufactured the power brushes in the reviewed stud- ies, while 10 various comparator manual brushes were also rep- resented. The majority of tooth- brushing was unsupervised in the home setting.

Did O-R power toothbrushes associated with more gingival recession? No. A meta-analysis [see sidebar] of two six-month clinical trials focusing exclusively on gingival recession showed there were no significant recession differences between O-R power and manual toothbrush groups. There were no gingival abra- sion with use of the O-R power toothbrushes? Gingival abrasions that could potentially be caused by tooth- brushing were found in both the manual and O-R power toothbrush groups, but the authors of the published reports de- scribed them as either negligi- ble/not clinically significant, or occurring with about the same frequency in the manual and power brush groups, and not significantly different when sta- tistically tested.

How important is in vitro data? Did the in vitro studies show greater wear with O-R brushes? Since there is currently no standard methodology with enough sensitivity for long-term clinical assessment of hard tissue brush- ing damage, in vitro studies are a valuable step in identifying potential safety concerns (like abrasion potential) that are challenging to discover clinically.
Oral Probiotics – Overview

By Victoria Wilson, UK

Oral probiotics are live bacteria that are similar (or identical) to the beneficial microorganisms found naturally in the oral cavity. The addition of oral probiotics to an oral care regimen can restore the natural balance of beneficial bacteria, which can be depleted by diet, stress, medication, illness or other factors. Oral probiotics support tooth and gum health, white teeth and fresh breath.

How we eat did the words “brush” and “floss” come to define our entire profession? Did we spend almost 3,000 grueling hours teaching only how to teach people to brush “n’ floss” the same way over and over – you become really great at explaining the mechanical removal of plaque.

To start your own neurogenosis mission, open the brush and floss default story. Focus on the term biofilm management instead. The term biofilm is short and to the point. You talk about what biofilms are and what they do. Then you talk about oral probiotics. Then you talk about how oral probiotics can reduce oral biofilm, particularly in the secret spots where a brush and floss cannot reach. All probiotics work in the protective biofilm system, but only a few can function in the first six inches of the mouth.

Oral probiotics are a little different than their counterparts. Probiotics for the gut must make it past the hostile environment of the stomach. For example, you might find yourself with excessive numbers of live bacteria. This is so an appropriate number of live bacteria can make it to the intestines where they can do their work. Probiotic tablets are specially coated to help them stay together until they get to the right part of the digestive system, where the friendly bacteria are released. Oral probiotics must be activated in the mouth. Most people immediately think that the tablets or capsules are teeming with mobile probiotics. Not so. The bacteria are freeze-dried so that they can reanimate under moist conditions.

When using products containing freeze-dried oral probiotics in the mouth, understand their activation with the release of live, active bacteria that attaches itself to the surface of teeth and舌头, where it can grow. This pH alteration is energized by the mechanical force of brushing and then talk to your patients about biofilm. Then talk about how oral probiotics can reduce oral biofilm, particularly in the secret spots where a brush and floss cannot reach. All probiotics work in the protective biofilm system, but only a few can function in the first six inches of the mouth.

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References


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PRECISION CLEAN BRUSH HEAD PROVIDES

UP TO 5x

GREATER REDUCTION IN PLAQUE BIOFILM ALONG THE GUMLINE

5x

* vs. a regular manual toothbrush

Oral-B, most Dentist Recommended Toothbrush Brand worldwide

continuing the care that starts in your chair
Hygiene safety for your dental practice

As a leading dental company, KaVo is offering comprehensive, all-inclusive infection protection and more security for the patient and dental practice team. All KaVo units have an automatic ongoing and intensive sterilisation function which ensures the continuous germ reduction of the systems where water and air is applied and prevents the formation of microorganisms in peri-
dental spaces. In addition, the dental instru-
ting room functioning en-
tirely in a BKA compli-
ant manner. Of course, handles, instrument shelves, spitzion bowls and suction cannulas can be removed easily and without difficulty for cleaning and disinfec-
tion.

The smooth, closed and hy-

genically-friendly surfaces of the dental units also play a role in reducing the infection risk.

The KaVo ESTETICA E70 and E80 dental units also have with OXIMat and DEKamat a fully automatic hygiene system: the manual, time-consuming mix-
ture or refilling sterilisation and disinfectants are thereby a thing of the past. In the KaVo ESTET-
ICA E90, the optionally avail-
able CENTRAMIL takes over the central supply of the unit with DEKASEPTOL gel which ensures high-efficient cleaning and disinfection of the suction or drainage system which is sub-
ject to constant contamination.

With OXYGENAL 6, KaVo also offers an environmentally friendly method for cleaning based on hydrogen peroxide which has proven its effective-
ness, material compatibility and user-friendliness in daily prac-
tice.

In addition to the treatment units, the tool portfolio of KaVo is also appealing due to numer-
ous hygiene effects: effective re-
suction steps, for example, pre-
vent contamination of the inside of the tools and thereby support hygiene safety. The Planmeca protective coating of the tools not only of-
ers excellent gripping proper-
ties, while the central KaVo is your top choice as partner when it comes to hygiene safety, also for instru-
ments.
There are a number of reasons to choose Philips Sonicare.

Removes up to 7x more plaque between teeth and overall.*

Performs up to 31k brush strokes per minute.

The #1 most-recommended sonic power toothbrush by dental professionals worldwide.

Ask your dentist about Philips Sonicare today!

*FlexCare Platinum and DiamondClean compared to a manual toothbrush.
Philips introduces its best brush yet: Sonicare DiamondClean, helping users achieve brushing brilliance every time

By Philips

DUBAI, UAE - Philips is proud to present the new Sonicare DiamondClean – a brush that takes sonic tooth brushing to its most sophisticated level and which delivers Sonicare’s best clean yet removing up to 100% more plaque in hard to reach places than a manual toothbrush.

Sonicare DiamondClean harnesses Philips Sonicare’s patented sonic technology to produce a powerful dynamic cleaning action for a difference users can see and feel. It is gentler on teeth and gums than a manual toothbrush, helping to keep teeth stronger and healthier for longer. Philips Sonicare gently whips toothpaste into an oxygen-rich foamy liquid and directs it between and behind teeth and along the gumline, where plaque bacteria flourish. Sonicare DiamondClean is clinically proven to remove up to 100% of plaque from hard to reach places and to improve gum health in just 2 weeks. It is also clinically proven to whiten teeth in 1 week; and its gentle technology actually helps protect against gum irritation and recession to help reduce sensitivity. Now is the perfect time to give your teeth the celebrity treatment and switch to Sonicare to really experience the difference.

Highly charged

DiamondClean’s chrome base also features a unique charging glass that can be used for mouth rinsing, but also incorporates the latest in inductive charging technology to charge the toothbrush as it rests in the glass – making it stylish enough to display in the most fashionable bathroom. Not only is Sonicare DiamondClean Philips’ most advanced brush yet, it’s also our most easy to use and stylish. DiamondClean’s power handle has a ceramic finish and a chrome accent ring highlights the elegant neck of the brush. The technology in the handle is hidden so that the sleek matte finish of the brush is uncluttered by electronic visual displays. Only when the on button is pressed are the brushing modes illuminated to reveal the array of options. These are then simply selected by scrolling down using a one button action.

When travelling or on the go, Sonicare DiamondClean is designed for convenience with users being able to keep their brush fully charged using a revolutionary USB travel case that can be plugged into almost any laptop computer and saves the hassle of having to pack plugs and adaptors. But only the most intrepid travellers need worry about this advanced feature as Sonicare DiamondClean holds an impressive three weeks charge.

Brilliant cut

Sonicare DiamondClean brush heads also sport a new diamond-cut tuft formation to provide you with an even more efficient brushing experience. The uniquely designed diamond bristle heads have 44% more bristles than Philips Sonicare’s standard sized ProResults brush heads, providing you with both superior plaque removal and whiter teeth. The heads come in two sizes – Standard and Compact – for focused cleaning in areas of special need, for orthodontic patients and those with smaller mouths.

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Contact Information

For more information about Philips Sonicare DiamondClean or the Philips Sonicare range, including copies of clinical studies, visit www.mea.philips.com/e/oralhealthcare/ar
Infection control in dentistry has never been more essential

By Dr. Safura Baharin, Malaysia

The World Health Organization (WHO) has reported a rise in airborne infections worldwide. Tuberculosis in particular has increased in the developing world.[1,2] It has been stipulated that the recent exposure to tuberculosis in susceptible DHCP is greater than in healthy individuals. Bennett et al. concluded that dentists and their assistants, who are exposed for approximately 15 minutes during peak aerosol concentration, have a slightly higher risk of exposure to Mycobacterium tuberculosis than the general public does.[3] During this period, the DHCP inhales about 0.014–0.12 µl of aerosolised saliva, which may contain viable pathogens that will have a detrimental effect on the health of susceptible DHCP.

With all of this in mind, it is the responsibility of DHCP to adhere strictly to recommended infection control guidelines and policies. Several measures should be taken to reduce and control airborne contamination in the dental clinic. For example, it has been demonstrated that the use of a mouthrinse, high-volume evacuation, or a combination of both methods significantly reduces the number of colony-forming units in aerosols emitted during ultrasonic scaling.[4] Routine use of rubber dam isolation provides a clean and dry area for placement of dental restorations, prevents saliva and blood splatter, and protects the patient’s mouth and airway.

Using personal protective equipment (PPE), such as surgical masks (with at least 95% efficiency against particles 2.5 µm in diameter), can have a detrimental effect on susceptible individuals. During treatment, the dentist’s face, the patient’s face, and the area around the patient’s mouth are most affected by splatter, as the majority of the splatter is directly projected at them.[5, 10] According to studies, the most contaminated area during a dental treatment is around the nose and inner corner of the eyes.[11]

Splatter consists of large particles of greater than 100 µm generated during the use of dental equipment, such as turbines, ultrasonic scalers, or water and air syringes. Owing to this, splatter can become infectious to healthcare workers sent out to the laboratory, and maintaining regular maintenance of the dental water lines and equipment, which has the potential to harbour bacteria. All dental water lines should be purged at the beginning of each day for between 5 and 10 minutes and flushed thoroughly with water, as residual water may become contaminated overnight and biologically develop along the inner side of the tube. Purging will result in a significant decrease in bacterial counts.[5, 10]

The Canadian Dental Association recommends rinsing high-speed handpieces for 20–30 seconds after each treatment to purge all potentially contaminated aerosolised saliva, which may contain viable pathogens that will have a detrimental effect on the health of susceptible DHCP.

Regular maintenance of the air-conditioning system is recommended too, as good ventilation has a diluting effect on the airborne microbial load, especially at night when the clinic is closed.[14] Air samples taken at different times at a multi-chair dental clinic showed that bacterial aerosols are more concentrated during treatment and that there is higher concentration of circulating bacterial aerosols at the beginning of the day, which may be related to reduced ventilation.[4] Residual bacterial aerosols can be removed through air filters or ultraviolet light.

As splatters can travel as far as the door or 100 cm away, measurements of both methods significantly reduce the number of colony-forming units in aerosols emitted during ultrasonic scaling.[4] Routine use of rubber dam isolation provides a clean and dry area for placement of dental restorations, prevents saliva and blood splatter, and protects the patient’s mouth and airway.

Using personal protective equipment (PPE), such as surgical masks (with at least 95% efficiency against particles 2.5–5 µm in diameter; changed for every patient or every 20 minutes in an aerosol environment or 60 minutes in a non-aerosol environment), safety glasses with lateral protection to prevent contact with eyes, as well as disposable gowns and gloves to reduce the penetration of or contact with bacterial aerosols and splatters, is vital.

The world is very small.

Diseases can spread easily if infection control measures are not adhered to. (Photo: lightpoet/Shutterstock)

By Dr. Raghu Puttathaiah, USA

The Middle East Respiratory Syndrome (MERS) is a respiratory condition associated with a specific strain of coronavirus called MERS-CoV. The clinical scenario includes severe respiratory illness, fever, cough and shortness of breath, leading to death in about a third of those infected. While MERS was first reported in 2012 in the Arabian Peninsula, cases have now been reported in over three dozen countries, spanning Asia, Europe and North America.

While this disease has been noted to spread from those infected to their caregivers or those living in close contact, it has not yet been found to spread in community settings as seen during the severe acute respiratory syndrome (SARS) outbreak in Asia that saw over 8,000 people infected, resulting in about 9 per cent mortality. Only two cases have been reported in the US, both of whom had a recent history of travel to Saudi Arabia. The Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) are concerned about the potential of MERS to spread globally and therefore are providing information and control measures similar to those provided during the SARS and influenza A (H1N1) outbreaks. With respect to dentistry, if there is a vaccine available for any infectious disease of public health concern, we must take it before it affects us. With regard to infection control, if we as dental care providers feel ill or feel that we are about to fall ill, we must not go to work but stay away from people, including co-workers and patients, until the symptoms resolve. We should also inform patients prior to their appointment that, if they are not feeling well, they should reschedule the appointment.

Basic infection control measures, such as frequent hand-washing, wearing a mask, and following standard and additional precautions, the last being specific to MERS, must be adhered to strictly. The world is very small with respect to travel and the spread of disease from one continent to another can happen within a day. Keeping abreast with rapidly changing information on diseases such as MERS and other relevant sources, such as the CDC, WHO and infection control and epidemiology, and organization for safety, aspens and prevention, is necessary for the dental team.