From novel to normal
power toothbrushes considers safety issues

By Shelly L. Campbell, RDH, MPH

The cabbage soup diet. NASA-inspired space food sticks. The belt massager machine to “jiggle away the pounds.” How are these things connected? These health fad, fitness offerings from the 1960s quickly faded from the public eye after failing to live up to the 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 feared causing electric shock. But unlike other inventors of health fads doomed to obscurity, those who created electric toothbrush manufacturers continued to evolve more streamlined and technologically advanced power toothbrush models over the next several decades.

Today, many children and adults have permanently replaced their manual toothbrushes with an electric model, having been won over by the electric brush’s reliable cleaning efficiency and ease of use. Value-based battery brushes, as well as premium multi-feature rechargeable electric toothbrushes (also referred to as power toothbrushes), are now mainstream, their popularity reflected in exponential growth over the last decade.1 Interestingly, a recent survey showed only 14% of women surveyed would consider giving up their power brush as a budget-saving sacrifice.2 It’s safe to say that power brushes are here to stay. Dental professionals see improvements in the oral hygiene and gingival health of patients who use power brushes both anecdotally and in large surveys.3 Additionally, clinical research over several decades has shown that in general, power brushes provide noticeable plaque removal benefits, with one brush technology – oscillating-rotating (O-R) – standing apart when comparing the numbers to analyze the results of the clinical research.4

In 2005, the well-respected international Cochrane Collaboration Oral Health Group published a review of 42 of these published clinical investigations, where power toothbrushes, including those with counter-rotational (e.g., Interplak®), oscillating-rotating (e.g., Braun/ Oral-B), and side-to-side (e.g., Sensi-Care®) modes of action, were directly compared to manual toothbrushes for clinical effectiveness in thousands of patients. With systematic review and meta-analysis [see Systematic review and meta-analysis [see Systematic review in the nuts/nutshell]], the Cochrane Group concluded that one brush type produced statistically significantly superior results. “Powered toothbrushes with a rotation oscillation action reduce plaque and gingivitis more than manual toothbrushing.”5

The safety question
Power toothbrush effectiveness is seldom debated, but are safety concerns involved? Could the documented connection between power toothbrushing and greater patient compliance6 lead to more gingival abrasion caused by longer brushing times or increased brushing frequency?7 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?

Although the Cochrane review didn’t evaluate safety as the primary objective, it did state, “Any reported side effects were localized and temporary.”8 Other studies and literature reviews have generally come to the same conclusion.9,10 Case closed. Or is it? Lingering questions about the safety of power brushes on hard and soft tissues have persisted in some quarters.11 Hygienists and dentists know that their patients take their professional product recommendations seriously, and they want to ensure they’re suggesting the most effective and safe oral commercial products and regimens.

The goal should be evidence-based recommendations as opposed to speculation, but keeping up with all of the literature and assessing the quality and relevance of each individual power toothbrush study requires a significant commitment of time and effort for professionals 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 published systematic review in the Journal of Periodontology considered theoretical safety concerns over powered versus manual toothbrushes through a comprehensive analysis of all relevant published reports. The Cochrane database of including Rotating Powered Brushes Compared to Manual Toothbrushes: A Systematic Review by Van Der Weijden et al.11

Here are the key findings:
What research was included? O-R power toothbrush safety research was chosen for partition to manual toothbrushes based on the Cochrane findings.12 All published and relevant article titles and abstracts through May 2010 were included in a full search of three major databases (e.g., PubMed-Medline), resulting in 809 potential publications that were evaluated, 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 randomized and blinded human subject clinical trials, which ranged from four days to three years. These included adults with and without elevated plaque, gingivitis and/or bleeding, children with and without orthodontia, and periodontal patients. Braun/Oral-B or Philips/ Jordan manufactured the power brushes in the reviewed studies, while 10 various comparator manual brushes were also represented. The majority of toothbrushing was unsupervised in the home setting.

Were O-R power toothbrushes associated with more gingival reces-
sion? 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.

Did O-R power brushes use more force than manual brushes? In the two force investigations, the average O-R power brush brushing force was significantly lower than the average manual toothbrush brushing force.

Was there more gingival abrasion with use of O-R power toothbrushes? Gingival abrasions that could potentially be caused by toothbrushing were found in both the manual and O-R power toothbrush groups, but the authors of the published reports described them as either negligible/not clinically significant, or occurring with about the same frequency in the manual and power brushing groups, and not significantly different when statistically 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 brushing damage, in vitro studies are a valuable step in identifying potential safety concerns (like abrasion potential) that are challenging to discover clinically. Four in vitro (laboratory) investigations not 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 boron 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...
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 product 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 on earth did the words “bacteria” and “floss” come to define our entire profession? Did we spend almost 3,000 grueling hours learning only how to teach people to brush “n’ floss” (don’t make acid). So a biofilm with early colonizers that doesn’t make acid. Pathogenic biofilm has a couple of early colonizers that can build a much smaller biofilm. Supplying the mouth with the right early colonizers that don’t make acid.

The ecological plaque hypothesis states that caries and periodontal disease are caused by the most common biofilm-associated diseases in the world, originate from a disturbance of the oral microbiota in the mouth and create whitener teeth, fresher breath and healthier gums.

In the oral cavity, harmful bacteria convert sugar and carbohydrates into lactic acid. Lactic acid is the bacterial byproduct which is responsible for dental caries and the erosion of tooth enamel. Oral probiotics can inhibit the formation of acid and protect the teeth.

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PRECISION CLEAN BRUSH HEAD PROVIDES

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#1

continuing the care that starts in your chair
If the beneficial bacteria are first, return.

Bacterial disease condition will quickly occur. The colonizes first in the base of the mouth, utilizing nutrients, thereby impairing healing. Research has revealed that as soon as conditions favorable to the development of harmful bacteria were reduced in plaque samples taken from below the gum line, at the bottom of the periodontal pocket.

Within several hours after using an antibacterial mouthwash or breath freshener, the surviving bacteria that was present in the mouth before the product was used. Antibacterial mouthwash and breath fresheners promote killing up to 99.9% of bacteria and germs in the mouth. These products indiscriminately wipe out both the essential, good bacteria along with the harmful bacteria.

In clinical trials, twice-daily administration of Streptococcus rattus BH145® S. oralis KJ3™ and S. uberis K22™ substantively affected the levels of harmful bacteria in the mouth. The studies found that simply by using these oral probiotics, the levels of harmful bacteria were reduced in plaque samples taken from below the gum line, at the bottom of the periodontal pocket.

Oral probiotics are natural antagonists to the malodor-producing bacteria, quickly colonizing in the mouth to create a healthy balance of micro flora and resulting in long-lasting, truly fresh breath. The use of benign, commercial probiotics could therefore offer a complementary and more long-term treatment strategy to combat bad breath.

Oral care products and foods developed using this probiotic approach can safely maintain and promote oral health by normalizing the balance of the indigenous flora in favor of microorganisms associated with both healthy teeth and periodontal and gum tissues.

Oral probiotics can provide a deep impact in re-balancing the oral flora in a simple, painless, non-invasive daily routine. No other consumer product impacts oral health below the gum line to get to the root of the problem.

Fresher Breath

In general, amino acids are the main substrate for the production of oral pathogenic compounds. As freshly secreted human saliva contains low levels with a naturally high pH and low buffer capacity, as a result of bacterial puftruction by several anabolic species found in the oral cavity. The most widely used strategies in the treatment of halitosis are comprehensive oral hygiene, including tongue scraping and brushing, as well as the use of mouth rinses containing antiseptic and antibacterial agents. Antibacterial mouthwashes and breath fresheners promote killing up to 99.9% of bacteria and germs in the mouth. These products indiscriminately wipe out both the essential, good bacteria along with the harmful bacteria.

The story of oral probiotics gets better! This way of biofilm management with probiotics is also appealing due to numerous benefits.

Oral probiotics are natural and safe for use in the mouth. These products in- teract with the colony of the tooth’s surface and prevent the formation of biofilm. Because oral probiotics are a low-dose form of hydrogen peroxide, they do not plate out over the duration of the study. With daily use, the colonization of S. oralis KJ3 provides a consistent and expanding population for gradual and continual whitening effects.

The hydrogen peroxide metabolites of S. oralis KJ3 also contribute to the breath-freshening features of oral probiotics by inhibiting the growth of harmful bacteria. The decrease in these harmful bacteria results in a substantial reduction in the volatile sulfur compounds associated with bad breath.

Unlike other whitening products, oral probiotics are completely safe for veneers, caps and dentures.

Reexamination

Now ask yourself -- if you cannot motivate someone to achieve total dental biofilm removal with a toothbrush, can you get them to incorporate one single probiotic tablet a day into their routine? Using these tools addresses the forgotten reality of how much room a biofilm needs, the complexity of a mature biofilm, and the size of human cells. Stop wearing the badge of “Floss Hag” with pride. Serve yourself and your patients better by offering scientifically proven health-promoting products like oral probiotics.

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Hygiene safety for your dental practice

As a leading dental company, KaVo is offering comprehensive, all-inclusive infection control and personal care for the patient and dental practice team. All KaVo units have an automatic oxygen and intensive sterilisation function which ensures the continuous germ re- duction of the systems within, the important water and prevents the formation of microorganisms in peri- odontal and gingival tissues.

In addition, the dental in- strument rinsing function en- sures all tools are rinsed before beginning treatment and after each patient treatment au- thority by re-balance of the oxygen in a BKA compli- cant manner. Of course, handles, instrument shelves, spittoon bowls and suction cannulas can be removed easily and without difficulty for cleaning and disinfec- tion.

The smooth, closed and hygiene-friendly surfaces of the dental units also play a role in reducing the infection risk.

The KaVo ESTETICA E70 and E90 dental units also have with OXIMAT and DEKAMAT a fully automatic hygiene system: the manual, time-consuming mix- ture or refluffling sterilisation and disinfectants are thereby a thing of the past. In the KaVo ESTET- ICA E90, the optionally available CENTRAmat takes over the central supply of the unit with DEKASEPTOL gel, which ensures high-efficiency cleaning and disinfection of the suction or drainage system which is sub- ject to contamination.

With OXYGENAL 6, KaVo also offers an environmentally friendly cleaning system 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 numerous hygiene effects: effective re- sistance steps, for example, prevent contamination of the inside of the tools and thereby support hygiene safety. The Plasmaspray coating of the tools not only of- fers efficient gripping proper- ties but is also easy to clean. For decades, KaVo tools and turbines are thermally disinfected and sterilizable. Minimal gap dimen- sions also make hygiene safer and more efficient.

With the QUATTROcare Plus, KaVo is offering an excellent tool for a validated, RIN-compliant and cost-efficient interior cleaning and the maintenance of instruments. Because: to ef- fectively prevent infections, den- tal transfer elements must be cleaned and disinfected inside and out.

Due to its many years of ex- perience with dental practice hygiene, the proven and coor- dinated KaVo hygiene system (360° competence) with proven effective- ness and excellent stability of the materials used, KaVo is your top choice as partner when it comes to hygiene safety, also for instruments.
There are a number of reasons to choose Philips Sonicare.

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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.

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.

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 fashion-forward 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.

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.

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. Saffura Babarin, 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 risk of exposure to tuberculosis in susceptible DHCP is greater than in healthy individuals. Bennett et al.[3] 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.[8]

During this period, the DHCP inhales about 0.014–0.12 µl of aerosolised saliva, which may contain viable pathogens that may 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.[13] Routine use of rubber dam isolation provides a clean and dry area for placement of dental restorations, prevents salivary dry area for placement of dental restorations, prevents salivary contamination and protects the patient’s mouth and airway.

Using personal protective equipment (PPE), such as surgical masks and spectacles, can reduce the risk of acquiring airborne infections.[4–9] Blood cells, as well as bacterial and viral particles, can survive inside handpieces even after disinfection. They may therefore be sterilised between patients.[17,18] The clinic floor should be disinfected and cleaned with an antimicrobial disinfectant solution at least twice per day to eradicate any bacterial residue from splatter or aerosols. It is a well-known fact that private dental clinics sometimes employ dental assistants who have not received certified training. Improperly trained personnel, however, may lead to poor infection control practices. It is the responsibility of every dentist to educate and train his or her assistants in the standard procedures. Furthermore, DHCP must be aware of their oral health and hygiene.

Dental professionals are at high risk of cross-infection. A report published in 2010 has shown that in developing countries, for example, the number of dental staff has not increased in line with the population.

In the middle of a multi-chair dental clinic.[14] All clean, unused instruments and equipment should be kept in closed cabinets or drawers to prevent contamination. Other important measures that must be taken to prevent cross-infection include adequate sterilisation of dental instruments, disinfection of work surfaces before and after each dental procedure, disinfection of all dental materials and work sent out to the laboratory, and 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 active, as good ventilation is vital.

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.[14] Residual bacterial aerosols can be removed through air filters or ultraviolet light. As splatters can travel as far as the door or even under the door, the risk of cross-contamination remains high.[15] 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. 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. 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. 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. 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. 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.

The World Health Organization (WHO) has recommended to breastfeed in areas of severe acute respiratory syndrome (SARS) outbreaks in Asia that saw over 6,000 people infected, resulting in about 9 per cent mortality. Only two cases have been detected 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 from reliable sources, such as the CDC, WHO, Association for Professionals in Infection Control and Epidemiology, and Organization for Safety, Aspers and Prevention, is necessary for the dental team.

The world is very small.

Using personal protective equipment such as surgical masks, safety glasses as well as disposable gowns and gloves is vital. (Photo: Tyler Olson/ Shutterstock)