The flossing debate and what to make of it

By DTI

LONDON, UK/LEIPZIG, Germany: Last month, a story by the Associated Press (AP) claiming that the benefits of flossing have never been properly researched went viral. The resulting extensive media reports have taken one message from this: flossing is overrated. Is it really that simple though? This article attempts to summarise recent reporting on the topic and reactions by the dental community around the globe.

“There’s no solid evidence that flossing actually works” – this statement by his son’s orthodontist gave US reporter Jeff Donn the impetus that started the entire debate. Investigating this issue further, the AP national writer found out that since 1979 the US federal government has recommended flossing, first in a surgeon general’s report and later in the Dietary Guidelines for Americans issued every five years. “A combined approach of reducing the amount of time sugars and starches are in the mouth, drinking fluoridated water, and brushing and flossing teeth, is the most effective way to reduce dental caries,” the 2010 guidelines state.

Because these national recommendations must be based on scientific evidence under the law, Donn asked the US departments of Health and Human Services and Agriculture for their evidence under the Freedom of Information Act. In their response to the AP, the government acknowledged that the effectiveness of flossing had never been sufficiently researched. The flossing recommendations were consequently excluded from the 2015-2020 dietary guidelines. However, the same applies to the advice to drink fluoridated water and brush one’s teeth, which were both removed from the latest guidelines—yet nobody has concluded that tooth brushing is a negligible part of oral hygiene.

To be objective, existing research about the effects of flossing is weak, of low quality or has a moderate to large potential for bias having been conducted mainly on behalf of companies that manufacture floss; several review studies have found. As one of the many dental professionals commenting on this fact, Dr. Wayne Aldredge, President of the American Academy of Periodontology, acknowledged the weak scientific evidence and the brief duration of many studies. However, he still urged his patients to continue to floss in order to help avoid periodontal disease. “It’s like building a house and not painting two sides of it,” he explained in an interview. “Ultimately those two sides are going to rot away quicker.”

Just like Aldredge, dentists and dental associations around the globe have issued statements—for the most part vigorously defending flossing as an effective way to help remove plaque and food build-up between the teeth and thereby lower the risk of developing gingivitis, periodontitis and tooth decay. For example, the American Dental Association (ADA) stated that “a lack of strong evidence doesn’t equate to a lack of effectiveness.” Moreover, the ADA stressed that the Department of Health and Human Services reaffirmed the importance of flossing in a statement to the ADA on 4 August, stating that “professional cleaning, tooth brushing, and cleaning between teeth (flossing and the use of other tools such as interdental brushes) have been shown to disrupt and remove plaque”.

The German Dental Association stated that flossing remains an important means of cleaning interdental spaces, especially the narrow spaces of the anterior teeth. According to the organisation, current studies have neither demonstrated nor disproved the effectiveness of flossing. Nevertheless, patients should not conclude that less thorough dental care is advised.

Dr Øyvind Asmyhr, head of the Norwegian Dental Association, acknowledged in his statement: “There is much we do in medicine and dentistry that is not evidence-based, but that does not mean it does not work. All sense and clinical experience suggests that daily brushing combined with flossing helps to reduce the amount of biofilm (bacteria coating) on all tooth surfaces, which prevents the development of caries, gum problems and bad breath.” Moreover, Asmyhr remarked that until research conducted over longer periods proves the contrary, the dental association will continue to recommend flossing and sees no reason for people to change their oral health routine.

Commenting on the debate as well, the British Society of Periodontology highlighted that the evidence supports the use of small interdental brushes for cleaning between the teeth, where there is space to do so, in preference to flossing. In addition, the organisation referred to the official recommendation to patients agreed on during the 11th European Workshop in Periodontology on the prevention of periodontal disease in 2015: “Daily cleaning between your teeth using special interdental brushes is essential for treating and preventing gum disease. Floss is of little value unless the spaces between your teeth are too tight for the interdental brushes to fit without hurting or causing harm.”

Tackling all these opinions into account, what is it that patients and dentists can take away from the current discussion? Regardless of deficient study designs, inconclusive results or media sensationalism that picked up on only a tiny part of the underlying facts, there are at least two statements regarding flossing that can be acknowledged universally: First, flossing can cause harm if performed incorrectly. For example, careless flossing can damage the gingivae, teeth and dental work. Moreover, there is evidence that floss can dislodge bacteria that may invade the bloodstream and cause dangerous infections, which is especially of concern in people with a weak immune system. Second, common sense suggests that common oral problems such as cavities and inflammation in the interdental spaces can be avoided solely by removing debris between the teeth, which makes flossing beneficial for one’s oral health regardless.

Maybe the entire debate is best summarised by the words of Dr Tim Iafolla from the US National Institutes of Health, who said that, if the highest standards of science were applied in keeping with the flossing reviews of the past decade, then it would be appropriate to drop the flossing guidelines. However, he continued: “It’s low risk, low cost. We know there’s a possibility that it works, so we feel comfortable telling people to go ahead and do it.”
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Philips Zoom—Delivering the ultimate tooth whitening experience

**BY DTI**

**CAMBRIDGE & LONDON, UK:** Philips has come a long way since introducing its first patent for a light bulb with an extended burning time in 1905. Over more than 100 years, the Dutch company has continued to pave the way with groundbreaking products, such as medical X-ray tubes, radios, electric shavers and toothbrushes—innovations that made a small company from a town of fewer than 50,000 residents in the south of the Netherlands a household name around the globe.

Active in the field of health care since the 1990s, the company began a new chapter several years ago with the acquisition of Discus Dental and its Zoom tooth whitening technology in 2010. According to then Philips Consumer Lifestyle CEO Pieter Nooij, the company took this step in order to complement its existing Sonicare portfolio of health care products, as well as strengthen its position as a leading oral health care brand and generate growth in the cosmetics dentistry segment. Today, according to Philips, ten million people have been treated worldwide with Zoom tooth whitening technology. Recent studies have shown that, compared with other solutions on the market, its 6 % hydrogen peroxide whitening gel, in combination with light-activated technology, achieves excellent results and overall patient satisfaction with minimal to no sensitivity.

Almost everything concerning Zoom is currently being researched and further developed at the Philips research site at the Cambridge Science Park, which is both the oldest such space in Britain and where major industry competitors like Toshiba and ARM Holdings have been conducting cutting-edge research for years. In this exclusive neighbourhood, established in the early 1970s, more than 30 Philips employees from around the globe are working on solutions that will soon benefit millions of patients around the world. One of the five major research centres in Europe, the site is closely linked not only to Philips's High Tech Campus in the Netherlands but also to over 80 research institutions in Britain and worldwide, including universities in Cambridge, Southampton and London. Overall, it adds to a network of more than 1,200 scientists conducting research on behalf of Philips all around the world. In addition to its focus on tooth whitening, the company performs research on microbiology and in- and outdoor location technologies at the science park.

In the Zoom laboratories, Philips scientists and research engineers are constantly at work to learn more about the processes behind the complex mix of chemistry and physics that help to whiten teeth. In in vitro studies, parameters are optimised before being tested on stained bovine models and finally validated on extracted human teeth. The results are continually measured after whitening, as well as for a further seven and 30 days in solution for hydration, which can affect the colour of the teeth. Through testing, among other things, engineers have been able to debunk a number of tooth whitening myths of the recent past, such as the assumption that using heat accelerates the whitening process. Instead they found that the hydrogen peroxide was rapidly converted into water and oxygen even before it was able to penetrate the dentine to have an effect.

In addition to its 6 % hydrogen peroxide whitening gel, which breaks the molecular bonds of stains in and on the teeth, Zoom therefore uses light-activated technology, which is similar to curing lights in restorative dentistry, through its chairside Philips Zoom WhiteSpeed Whitening LED Accelerator, to speed up the process and achieve better results. The system has proven to be 40 per cent more effective than non-light-activated systems and to whiten teeth by up to six shades in an hour. The latest generation of the whitening gel comes with amorphous calcium phosphate, also known as “artificial enamel,” that is applied through a dual-barrel syringe to reduce sensitivity by reducing fluid flow in the teeth.

Patients who want to whiten their teeth at home can do so using the Philips Zoom DayWhite and Zoom NiteWhite kits, which both promise maximum results within one or two weeks. However, dental professionals recommend a combined approach. “What I say to patients is that the Zoom procedure is a ‘kick start’ to their whitening journey,” explained Zoom user Dr Zaki Kanaan, a well-known dentist from Fulham in London. “You will notice a visible difference immediately upon completion of your Zoom and you will need to follow up the procedure with a few days of home whitening, rather than the 14- days of home whitening alone. Quite often patients go for the combination approach and some will of course opt for the take-home whitening alone.”

“Whichever option patients go for and even if this is predominantly take-home whitening in your practice, one thing’s for sure, professionally applied whitening is a ‘must have’ option for patients. There is a large segment of the population who will always want the quick route to what they want and if you don’t offer it, they will find someone who does,” he added.

Further information on Zoom can be found at www.philips.co.uk.

Light activation with the Philips Zoom WhiteSpeed Whitening LED Accelerator in the laboratory.

Dr Zaki Kanaan

Photograph of Philips Research Engineer Carolina Florez conducting tests. The Zoom has proven to be 40 per cent more effective than non-light-activated systems.
After its successful debut in 2015, formnext is already busy writing the next chapter of its success story. Around three months before the 2016 event (to be held from 15 to 18 November in Frankfurt/Main in Germany) is set to begin, exhibition space amounting to 150 per cent of last year’s total area has already been booked. This impressive expansion has been driven by the more than 120 new exhibitors and the many returning companies interested in reserving even more space based on their excellent results at the 2015 event.

The list of those exhibiting reads like a who’s who of the additive manufacturing industry: 3-D Systems, Additive Industries, Alphacam, ARBURG, Arcam, citim, Concept Laser, DSM (Bonito), EnvisionTEC, EOS, FIT, KEYENCE, HP, Materialise, Prodways, ReaLizer, Renishaw, Ricoh, Sisma, SLM Solutions, Stratasys, TRUMPF, voxeljet and XJet.

Other areas of industry will be represented too. In mechanical engineering, leading companies participating will include GF, Hermele and the DMG subsidiary SAUER. Along with companies boasting long traditions in conventional technologies (including Antonius Köster, BIKAR-METALLE, Heraeus, Käfer Werkzeugbau, Kriegelmann, Knarr, Lamy, Listemann and Werth Mechatronik), the software industry too will have a strong presence, with Altair, Autodesk, Dassault Systèmes, and software, systems and components, machines and related installations, as well as prototypes. The list includes newcomers from the fields of materials, engineering services and tool-making too.

In serving as a platform for new developments, technologies and manufacturing solutions, formnext 2016 will seek to surpass the extraordinarily high level of innovation that impressed experts last year.

“This year, plenty of market leaders will once again be unveiling their new products for the first time at formnext,” reported Sascha F. Wenzler, head of organisation for formnext at Mesago Messe Frankfurt/Main, the company staging the event. “We also have a number of highly innovative start-ups on board that will be presenting their own promising creations.”

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