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Is Flossing Just a Waste of Your Time?

If you didn't hear it from your dentist, you heard it from your mother: "floss your teeth daily!" Until recently, it was widely believed that flossing your teeth daily was essential for good oral hygiene. It also made sense; flossing removed food and other foreign particles from in-between your teeth that would've otherwise been stuck for days. Recent studies, however, has revealed that flossing might not be as essential for good oral hygiene as some have previously thought.

As reported by Colgate, a group of NYU researchers conducted an experiment on 51 twin pairs, each pair varying in gender and age from other pairs. What the researchers observed over the course of their two-week experiment was that pathogens and decay-causing bacteria were overabundant in the twin that did not floss regularly, as opposed to the twin that did floss. As explained by the researchers, these pathogens and bacteria caused increased gingival bleeding, which can lead to conditions such as gingivitis, a gum disease that causes inflamed gums, and/or periodontitis, a gum infection that causes damage to the gums, teeth, and jawbone. Still, these same NYU researchers later clarified that tooth and tongue brushing, along with flossing, all play vital roles in decreasing disease-causing plaque. A flaw in this experiment is that the researchers failed to keep track of other factors such as diet and brushing technique, both of which can influence the amount of plaque found on teeth. Another flaw is that the researchers only conducted this interview over a two-week period. Diseases such as gingivitis and periodontitis take months to develop, so it's impossible to make any concrete conclusions from a two-week experiment. It should be noted that the corporation that sponsored this research, Colgate, is for-

profit dental care company. It should also be noted that Colgate is approved by the ADA, the American Dental Association.

On the other hand, another study conducted by several researchers and doctors found that there's little evidence which suggests flossing plus tooth brushing is associated with long-term reduction in plaque. The experiment, directed by Jason Nickerson, a researcher from the Institute of Population Health in Ottawa, Ontario, Canada, Helen V Worthington, a scientist from the School of Dentistry, University of Manchester, Manchester, UK, and several other researchers and doctors, ran 12 trials, each of which had 582 participants floss and brush their teeth, and another 501 participants who only brushed. At one month, the researchers found that the group that flossed and brushed had a 0.13-point reduction on a 0 to 3 point scale for the Loe-Silness gingivitis index, compared to those who had only brushed. This is a less than 5% reduction in gingivitis. At three to six months, this value dropped to a 0.09-point reduction on the same scale, which is only a 3% reduction in gingivitis. As stated by Nickerson and Worthington, all trials still reported outcomes of plaque and gingivitis. A flaw in this experiment is again, lack of standardization of diets and brushing technique among participants, which arguably play a role in plaque buildup. It should be noted that neither the NYU researchers in the study run by Colgate, nor these researchers reported data for the outcomes of caries, which is the decay of teeth, or calculus/tartar, which is the buildup of bacteria, food particles, and minerals from saliva, resulting in hardened dental plaque. Both caries and calculus can lead to cavities and gingivitis.

Several studies on the effectiveness of flossing can be inconsistent because according to a review conducted by Dr. Joanna Asadoorian, Director of the School of Dental Hygiene, at the University of Manitoba, Winnipeg, Canada, reports on the effects of flossing can be influenced

by personal bias, technique, and floss types. Asadoorian criticizes preceding studies in their lack of a systematic technique, or for failing to disclose the techniques used by these studies altogether. According to Asadoorian, these are the studies which have concluded brushing to be insufficient for removing plaque in-between teeth. Although most dentists and other oral health professionals favor flossing as their top interdental cleanser, Asadoorian claims that floss holders, interproximal brushes, and power flossers all demonstrated equal capability in removing plaque and reducing gingival inflammation as manual flossing, concluding that all floss types are equally effective in short-term interdental cleaning. Surpassing these floss types is a simple interdental brush, which, as Asadoorian declares, is more efficient in removing plaque. Asadoorian also criticizes professional dental hygienists because based on Asadoorian's study, a third of these dentists fail to educate their patients on proper technique, whereas those who do, only demonstrate "traditional" oral hygiene instructions, failing to provide individuals with instructions and recommendations adapted to the individual's specific needs. Asadoorian concludes her review by stating that flossing should be recognized as having limited effectiveness, and should, at best, be used as an interdental cleaning technique alongside tooth brushing.

Ironically, flossing can be detrimental to oral health. A study published by the Journal of Clinical Periodontology explored the possibility of developing bacteraemia, the presence of bacteria in the blood, in subjects with periodontitis as a result of flossing. Conducted by Kenneth Crasta, Christopher Daly, and several other researchers and dentists from the Faculty of Dentistry, University of Sydney, the experiment consisted of 60 subjects with periodontitis, with subjects ranging in gender and age. Each subject's teeth were flossed using a standardized technique, and had blood samples taken 30 seconds and 10 minutes after flossing. Crasta and

Daly found that 40% of these 60 subjects tested positive for bacteraemia post-flossing.

According to Crasta and Daly, the reason is that flossing can lead to papillary bleeding, which exposes open tissue to an already existing infection around teeth and gums, such as periodontitis. This open tissue allows bacteria that was once on the surface to penetrate and enter the bloodstream. Despite flossing being recommended for preventing such diseases as gingivitis and periodontitis, Crasta and Daly conclude that flossing can result in acquiring bacteraemia in those with periodontitis. Although 40% is a significant result, Crasta and Daly's experiment can be criticized for experimenting on a relatively small sample size, thus concrete conclusions cannot be drawn from this experiment.

According to former studies, the benefits of flossing is inconclusive, and for those with existing oral infections, flossing can even be harmful. But for those seeking to lower their chances of attracting gingivitis and/or periodontitis, and for better oral hygiene in general, is flossing still worth it? Based on the conclusions that Kacey Deamer, a staff writer at Live Science, received from several experienced dentists across the country, the possible benefits of flossing still outweigh the inconvenience. One of these dentists, Dr. Tim Pruett, claims that each tooth has five surfaces, two of which (the sides), can't properly be cleaned with just brushing. For good oral hygiene, Pruett stresses the importance of dislodging bacteria and other foreign particles from in-between your teeth, particles which, if left undisturbed, can develop into diseases. It should be noted that Dr. Tim Pruett invented and owns Flossolution, an electric flossing system. Another dentist, Dr. Tim Iafolla, who's also a public health analyst at the National Institutes of Health's National Institute of Dental and Craniofacial Research, argues that weak evidence for the benefits of flossing does not necessarily correspond to the ineffectiveness of flossing. As a dentist, Iafolla still recommends all his patients to floss daily as he claims that

it's immediately obvious, from observing their teeth, which patients floss and which don't.

Another dentist, Dr. Edmond Hewlett, who's also a professor at the UCLA School of Dentistry, claims that not only are the results from the experiments concluding the ineffectiveness of flossing weak and inconclusive, but the experiments themselves are flawed. Hewlett argues that designing and conducting a study to specifically provide unequivocal evidence of the ineffectiveness of flossing is difficult. What Hewlett argues to be undeniable, however, is the fact that plaque, bacteria that gets on teeth every day, causes gingivitis. Hewlett maintains that flossing, and other interdental cleaning, are low risk; he claims that one would have to go out of his way to hurt himself from flossing. Even if there is a small benefit, Hewlett argues that it'll be worth all the while to prevent such diseases as periodontitis, a condition that almost half of Americans suffer from. It should be noted that Dr. Edmond Hewlett is a spokesman for the ADA, a continuing and avid supporter of flossing for good oral hygiene.

It's clear from existing research and studies that not only is there a lack of concrete evidence for the benefit, as well as ineffectiveness of flossing, but it's also challenging to acquire such evidence in determining a strong conclusion. There's an overabundance of factors that play into plaque buildup, or lack thereof, such as tooth brushing technique, diet, and the use of other oral products such as mouthwashes. It's difficult to find and monitor a large sample size to such a degree for months, which is the time it takes for oral diseases such as gingivitis and periodontitis to develop. Conclusive evidence on this issue is so vital because oral diseases is such a widespread problem in America, as almost half of Americans suffer from periodontitis. The sooner researchers find an answer, the sooner people can start taking the correct actions towards better oral hygiene.

References

- Asadoorian, Joanna. "Flossing: CDHA Position Paper." *Canadian Journal of Dental Hygiene (CJDH)* 40.3 (2006): n. pag. Web. 29 Mar. 2017.
- Crasta, Kenneth, Christopher G. Daly, David Mitchell, Brad Curtis, Douglas Stewart, and Lisa J. A. Heitz-Mayfield. "Bacteraemia Due to Dental Flossing." *Journal of Clinical Periodontology*. Blackwell Publishing Ltd, 11 Mar. 2009. Web. 29 Mar. 2017.
- Deamer, Kacey. "Should You Still Floss? Here's What the Experts Say." *Live Science*. Purch, 11 Aug. 2016. Web. 29 Mar. 2017.
- Sambunjak, Dario, Jason W. Nickerson, Tina Poklepovic, Trevor M. Johnson, Pauline Imai, Peter Tugwell, and Helen V. Worthington. "Flossing for the Management of Periodontal Diseases and Dental Caries in Adults." *Wiley*. John Wiley & Sons, Ltd, 07 Dec. 2011. Web. 29 Mar. 2017.
- Sälzer, Sonja, Dagmar E. Slot, Van Der Weijden Fridus A., and Christof E. Dörfer. "Efficacy of Inter-dental Mechanical Plaque Control In managing Gingivitis – a Meta-review." *Journal of Clinical Periodontology*. Blackwell Publishing Ltd, 31 Mar. 2015. Web. 29 Mar. 2017.
- "Twins Study Confirms Benefits of Flossing." *Colgate Oral Care Center*. ADA, 01 Jan. 2009. Web. 29 Mar. 2017.