Poor dental health may predict reduced ability to leave one’s house

By DTUS

SENDAI, Japan: Researchers in Japan have investigated the association between poor dental health and being housebound in the elderly, and found that having fewer teeth and no dentures were associated with future risk of being homebound, especially in people aged 65-74. The findings may have important implications for interventions that promote dental health and denture use to prevent older people from becoming confined to their homes.

The longitudinal cohort study used data of 2,035 men and 2,355 women between poor dental health and becoming housebound in the elderly, and investigated the association of teeth, affects food choice and nutritional intake, conversation, and facial attractiveness. Therefore, poor dental health could negatively influence social activities, leading individuals to isolate themselves from others. Being housebound in itself is a barrier to access to dental care.

According to the researchers, several possible pathways may link dental health and being bound to one’s home. For example, dental health, including loss of teeth, affects food choice and nutritional intake, conversation, and facial attractiveness. Therefore, poor dental health could negatively influence social activities, leading individuals to isolate themselves from others. Being housebound in itself is a barrier to access to dental care.

However, such a significant association between being homebound and dental health was not observed in participants aged 75 and over.

The researchers concluded that future intervention studies focused on improving dental health in order to prevent older persons in the Japanese population being homebound are required to verify the findings. They suggested that improving the rate of denture use among older people with fewer teeth could reduce their risk of becoming housebound in the future.

Testing toothpastes, toothbrushes

Improving dental hygiene products through virtual brushing

By DTUS

DESIGNING TOOTHPASTES and toothbrushes is a time-consuming process involving the production of numerous samples. Using a new type of simulation, various parameters such as bristle shape and abrasive particle size can be modified with just a click. This enables manufacturers to improve the quality of new dental care products and bring them to market more quickly.

When we wake up in the morning, there is a fur-like coating on our teeth. This is a biological film that forms overnight. Over time, this can lead to the development of cavities — which is why it is critical that we remove this "rug" using a toothbrush.

There is a large selection of dental hygiene products on the market, including brushes whose bristles are round, pointed, hard, and soft. There are also brushes with bristles of varying lengths. Until now, to determine which ones clean the most thoroughly while doing as little damage to the tooth enamel as possible, manufacturers have had to conduct experiments. This was also the case when selecting the right abrasive particles to be used in toothpastes. Various toothpaste formulations had to be mixed and then tested on artificial tooth enamel models — a laborious task. Another drawback to this approach is that the brush, paste and enamel can be analyzed by a complete system, which means that manufacturers have a difficult time determining which effects observed in these experiments are derived from which of the various parameters.

Help has arrived in the form of a new type of simulation developed by researchers at the Fraunhofer Institute for Mechanics of Materials IWM in Freiburg, Germany. “With our procedure, manufacturers of dental hygiene products can determine the cleaning effectiveness of each individual parameter in a fast, economical and reliable manner,” says IWM scientist Dr Christian Nutto. “Unlike in real-world experiments, the individual parameters in the simulation can be easily modified — be it the size, shape and quantity of abrasive particles in a toothpaste, or the material from which they are made, or the shape and elasticity of the bristles.”

Simulated tooth brushing

Researchers can increase the scope of the experiments far beyond what is possible in real-world testing, and that makes a noticeable difference in the quality of the products. What effects do the shape and stiffness of the bristles have when brushing? How do the different abrasives or toothpaste viscosity affect the enamel, and how do they affect their intended target, the biofilm on the teeth? Simulation testing can deliver reliable answers to questions such as these, and it does so much faster than the manufacturer ever mixes the toothpaste.

Nutto relies on SimPARTIX® simulation software developed at the IWM, which uses the Smoothed Particle Hydrodynamics (SPH) particle simulation method. “We specify characteristics for the abrasive particles such as density, shape and fill factor,” he says. Even parameters for the tooth enamel are included. The virtual toothbrush bristle is then rubbed over the tooth enamel, with the simulation providing data on how the scrubbing particles interact with the elastic bristles. It also calculates cleaning effectiveness, as well as the aggressiveness of the abrasives against the tooth enamel. Here, the team from the Powder Technology Fluid Dynamics group can vary the speed at which the bristles pass across the enamel as well as their pressing force. The SimPARTIX team, together with the Fraunhofer Institute for Algorithms and Scientific Computing SCAL, designed an additional software tool to integrate the particle simulation into standard simulation programs. But do the findings correspond to reality? The comparative experiments...
Tennis legend Martina Hingis becomes Curaden ambassador

By DTI

KRIENS, Switzerland: Curaden has named international tennis star Martina Hingis its global ambassador. As part of the collaboration, Hingis, who became the youngest Grand Slam champion of all time in 1996 and the youngest world No. 1 in 1997, will help raise awareness about oral health care and promote Curaden’s CURAPROX, swiss smile and megasmile brands.

Over the next three years, 35-year-old Hingis will make several major appearances in her role as global ambassador for Curaden and CURAPROX at and alongside her sporting commitments as the current leading women’s doubles player, including teaming up with Swiss tennis professional Roger Federer at the Olympics in Rio de Janeiro in Brazil.

Ueli Breitschmid, owner and CEO of Curaden, said: “Martina Hingis is our perfect match—she’s our ideal fit for our company, which operates in over 60 countries. That’s because she’s a mature and credible ambassador who’s famous all over the world. She’s an exceptionally talented sportswoman with a strong personality and great self-reliance who will help us spread the word about our modern kind of oral health care in the best possible way. Together, we want to be the names on everyone’s lips in the future.”

Curaden offers over 120 products under the CURAPROX dental brand, which is sold in 60 countries. Its oral hygiene products are developed and manufactured in partnership with researchers, teachers and practitioners. Based in Kriens near Lucerne, Curaden employs some 300 staff across the world. In 2015, the company generated sales in excess of CHF130 million (€118 million) and manufactured over 28 million toothbrushes.

were conducted by Dr. Andreas Kiesow and his staff at the Fraunhofer Institute for Microstructure of Materials and Systems IMWS in Halle as well as the MikroTribologie Centrum µTC in Karlsruhe. In the tests, a brush bristle was placed in a fastener and brushed at a constant speed across an artificial tooth enamel model onto which toothpaste had been applied. It was concluded that the simulation can precisely predict how the toothpaste and bristles will affect the tooth enamel. At a later stage, it will also be able to predict the effectiveness of the toothpaste and brush at removing the biofilm from teeth.

Abrasive particles are a key component of toothpastes and serve to mechanically remove plaque from the teeth. But a good toothpaste should not be overly abrasive, as over the years the friction can damage the enamel, which does not regenerate. Furthermore, this damaging effect is far more pronounced on the soft dentine. For this reason, the representative body for dentists in Germany recommends that patients with exposed root surfaces choose a toothpaste with a low abrasive effect.

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(Source: Fraunhofer)
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Company introduces world’s first smart floss dispenser

By DTI

PALO ALTO, Calif., USA: For prevention of dental disease, the American Dental Association recommends flossing at least once a day to help remove plaque from interproximal areas that cannot be reached with a toothbrush. However, only a quarter of people use dental floss on a regular basis. In order to address this issue and improve oral health care, a U.S. company has now introduced Floss time, a novel smart floss dispenser. The patent-pending floss time can easily be mounted to the bathroom mirror or wall and automatically dispenses 18 m of floss at the push of a button. After floss has been dispensed, the device starts a 90-second flossing timer in the form of blue-flowing quadrants that move clockwise around the circular light ring, indicating how long the user should floss each quadrant of his or her mouth. Upon completion, floss time will light up with a blue smile. If not used daily, an orange frown or reminder light cues the user that it is time to floss again.

The device has a single- and dual-user mode and can thus be shared by two people. It can also be individualized using animal snap-ons to make flossing more appealing to children.

The use of dental floss is generally recommended in addition to daily toothbrushing. Insufficient flossing at least once a day to help remove plaque from interproximal areas that cannot be reached with a toothbrush is a powerful tool and worth remembering it every day. Carter added. “It is an incredibly powerful tool and worth remembering it is one we all possess.”

Dental caries treatment may prevent pneumonia in Parkinson’s patients

By DTI

KAOHSIUNG, Taiwan/KUALA LUMPUR, Malaysia: Pneumonia is a common condition in patients with Parkinson’s disease. A new study that explored risk factors for pneumonia development has now found that patients treated for dental caries had a reduced risk of pneumonia compared with patients who had not been treated.

The study included 2,001 participants newly diagnosed with Parkinson’s disease between 2000 and 2009. Over a mean follow-up period of about six years, 39 per cent of the patients were hospitalised for pneumonia. With regard to oral health status, the researchers observed that dental diseases were among the most common co-morbidities. About 48 per cent of the patients in the study had dental caries and over 44 per cent periodontitis. Moreover, the data analysis showed that the incidence of pneumonia in patients who had received treatment for dental caries was lower. They thus concluded that maintenance of good oral hygiene and control of oral biofilm formation reduce the number of potential respiratory pathogens, thereby lowering the risk of pneumonia, especially in elderly men.

The researchers found that older patients, males in particular, patients living in the northern, southern and eastern regions of Taiwan, and patients with lower income had a higher risk of developing pneumonia. For example, over 60 per cent of the participants who developed pneumonia were men. Of the patients hospitalised for pneumonia, about 93 per cent had a monthly income of less than NT$30,000 (US$928).

The study, titled “Risk factors for pneumonia among patients with Parkinson’s disease: A Taiwan nationwide population-based study”, was published on 27 April in the Neuropsychiatric Disease and Treatment journal.

Smiles in London, York and Liverpool rated best

By DTI

LONDON, UK: Brits may not like to show their smiles very often, according to research, but when it comes to ranking them, most consider Londoners, Yorkers and Liverpudlians to have the nicest smiles. All three cities scored highest in a recent poll commissioned by the Oral Health Foundation as part of National Smile Month. Overall, the foundation asked 2,000 Brits where they thought the best smiles in Britain are, out of 43 of the country’s most populous urban areas. While the capital and the two northern cities came out top, smiles in Salford, Wolverhampton and Luton were rated significantly lower.

“London may have a reputation for being a place that is very short on smiles but this couldn’t be further from the truth,” remarked Chief Executive of the Oral Health Foundation, Dr Nigel Carter, OBE, on the poll. “It shows that quantity is not always related to quality and when London residents do choose to smile their grins are showing the rest of the country the way forward.”

The survey findings were released on the first day of National Smile Month, the UK’s largest and longest running charity campaign initiative. Celebrated this year for the 40th time and held until 16 June, it is aimed at increasing awareness of the importance of oral health by highlighting key messages, such as the benefits of regular toothbrushing and visiting a dentist in order to develop and maintain a healthy mouth.

Thousands of individuals and organisations take part in the initiative every year.

“A simple smile can make others around you feel at ease. It is a highly contagious and plays such an important role in our lives that we should make our oral health top priority,” Carter added. “It is an incredibly powerful tool and worth remembering it is one we all possess.”
Presence of certain oral bacteria may indicate increased pancreatic cancer risk

NEW YORK, USA: Researchers have found that the risk of developing pancreatic cancer is associated with specific bacteria in the mouth. They hope that the findings could enable earlier and more precise treatment of the disease, which is one of the most common causes of cancer death in both men and women and results in more than 40,000 deaths annually in the U.S. alone.

Other studies have shown that pancreatic cancer patients are susceptible to periodontal disease, cavities and poor oral health in general. Therefore, the research team at the NYU Langone Medical Center set out to search for direct links between the makeup of bacteria driving oral disease and subsequent development of pancreatic cancer.

The researchers compared bacterial contents in mouthwash samples from 361 American men and women who had developed pancreatic cancer with samples from 371 people of matched age, sex and ethnic origin who did not. They found that men and women whose oral microbiome included Porphyromonas gingivalis, a major contributor to periodontal disease, had an overall 59 percent greater risk of developing pancreatic cancer than those whose microbiome did not contain the bacterium. Similarly, people with oral microbiomes containing Aggregatibacter actinomycetemcomitans, which has been associated with severe periodontitis, were at least 50 percent more likely overall to develop the disease.

“Our study offers the first direct evidence that specific changes in the oral microbiome represent a likely risk factor for pancreatic cancer along with older age, male gender, smoking, African-American race, and a family history of the disease,” said senior investigator and epidemiologist Dr. Jiyoung Ahn.

In another study published last month, Ahn and her colleagues showed that cigarette smoking was linked to dramatic, although reversible, changes in the amount and mix of bacteria in the oral microbiome. However, she cautioned that further research is needed to determine whether there is any cause-and-effect relationship, or how or whether such smoking-related changes alter the immune system or otherwise trigger cancer-causing activities in the pancreas.

The findings were first presented on April 19 at the annual meeting of the American Association for Cancer Research in New Orleans.
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