“I wanted to create a whole new experience of toothbrushing”

An interview with designer Shirin Fani, Iran, about the Tooth Hero

Children usually don’t like brushing their teeth. However, a new oral hygiene set, called the Tooth Hero, will encourage children to do so in a playful and interactive way. Shirin Fani, who graduated from the University of Tehran, Iran, and studied industrial design in Austria. DT International editor Claudia Duschek spoke with her about the unusual device, for which she received this year’s national James Dyson Award, an international student design competition run in 18 countries.

Claudia Duschek: What was your intention behind developing a dental tool for children?

Shirin Fani: I graduated in June this year from the University of Applied Arts in Vienna. For my diploma project, I wanted to design something for children in order to make their lives healthier in a smart way. I started to spend a lot of time with them and found out that children don’t like brushing their teeth and when they do, they don’t do it correctly. Parents usually have to do a follow-up brushing to ensure that their children’s teeth have been cleaned properly.

How can this be achieved with the Tooth Hero?

There are some common methods for encouraging children to brush their teeth, like toothpastes with different flavours, toothbrushes with images of comic heroes, and brushing their teeth, like toothpastes with different components to make those bacteria visible for the children to identify them as enemies they can fight. This is why I came up with the idea of a brushing game in the form of an interactive brushing guide.

Could you please explain the design and function of your innovative device? The Tooth Hero consists of a multifunctional brush set with three parts, including a pH meter, an ultrasonic toothbrush and an ultrasonic tongue cleaner, and comes with a projector.

As acidic pH levels caused by some foods make one’s tooth enamel vulnerable, the pH meter measures whether it’s the right time to brush. When it turns green, the pH value in the child’s mouth indicates that he or she should brush but when it turns red, then he or she still has to wait. Furthermore, always having an acidic pH level can be a sign of caries and a visit to the dentist is recommended.

The projector is the fun part. With a brushing game that can be downloaded from the Internet, it shows the bacteria depicted as coloured dots on any surface in the bathroom. The tip of the toothbrush communicates the brushing pattern through sensors. The game is not finished until all the dots have disappeared and all the teeth have been brushed.

Did you consult dental and educational staff for advice on designing the device?

Yes, of course. I read a lot and talked to dentists and parents about the Tooth Hero concept. I even accompanied some children to their dentist. I showed a number of dentists the prototype and discussed the project and its approach with them a great deal.

How has your project been received so far?

The brush set was tested by children from the start of the project. I received feedback from children throughout, from the very first idea of the product until the finished prototype. For them, using the Tooth Hero meant winning a game, which they loved. The device gives children the opportunity to be the heroes of their teeth by fighting the bacteria that live in their mouth. In this manner, brushing rules can be taught, for instance, high brushing pressure can result in loosing points in the game.

What are your plans now? Are you going to develop more dental design products and market your idea?

I found it fun to design for children. Winning the award was a step towards converting my concept into a real product. I haven’t introduced the project to any company yet because I only finished the project at the end of June but I’m planning to approach some companies because I absolutely believe in this project and its potential to be a real product and new trend in oral care for children.

“...The device gives children the opportunity to be the heroes of their teeth...”

Surgical factors that influence the aesthetic treatment outcome

Dental implants provide a predictable means for replacing missing teeth. Increasingly, the demand for implant treatment involves not only the restoration of function, but also achievement of an aesthetically pleasing prosthesis that blends imperceptibly with the rest of the natural dentition.

Both surgical and restorative factors contribute and interact to achieve an aesthetic treatment outcome. Surgically, the clinician is mainly able to influence the hard and soft-tissue architecture of the edentulous space, which in turn provides the soft-tissue frame for the prosthetic reconstruction.

A detailed evaluation of the site is required as a first step. Sites that are compromised by loss of bone and soft-tissue height may be difficult or impossible to reconstruct to the original pristine form. Limitations of treatment and the risk of adverse aesthetic outcomes need to be recognised, and communicated to the patient before the commencement of treatment.

A number of surgical factors are under the control of the clinician. Positioning the implant in the correct restorative position is a critical determinant of aesthetic outcome. Malpositioned implants may be associated with adverse soft-tissue outcomes, including loss of papilla and recession of the midfacial mucosa.

Facial malposition can be a risk with immediate implants placed into extraction sockets. When multiple adjacent teeth are removed, it is often necessary to replace the missing soft tissue by addition of pink porcelain to the cervical regions of the prosthesis.

In severe malposition cases, the only practical solution is to remove the implant, reconstruct the ridge and insert a replacement implant in an optimal axial position.

In summary, achieving acceptable aesthetic outcomes with implants depends upon proper evaluation of the site and technically proficient placement of the implant with adjunctive augmentation procedures. When adverse outcomes occur, treatment options are limited. The adage that “prevention is better than cure” holds true for implants and adverse aesthetic outcomes.

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