Interview with Dr Tina Mandel, University of Cologne, about her dental app

Diagnosis the digital way

Dr Tina Mandel, senior physician at the Clinic for Oral and Maxillofacial Surgery at the University of Cologne, has developed an app for patients that answers their dental questions before they visit their dentist. In an interview with Anita Wuttke and with "test user" Christian Berger, Mandel explains the idea behind her app.

Dr Mandel, what is your app all about?

Mandel: The app helps people who cannot or do not want to go to the dentist in person to digitally record their dental problems and send the resulting data to the dentist. The dentist then evaluates the data within 24 hours and writes a medical report. The patient is diagnosed and receives a treatment recommendation via an entirely digital route. If the patient's concern can be addressed remotely first, such as by writing a prescription or prescribing an antibiotic, this can be done directly through the app. However, the app is in no way intended to replace the dentist, as most dental issues need to be addressed at the dentist's office. The app is a low-threshold way for patients who need dental help to contact their dentist.

What is the story behind this idea?

I am active on social media in my role as a dentist. For two years now, I have used my TikTok account to educate users about dental issues. It started with the realisation that there was just too much misinformation being spread on social media. I wanted to counter this by offering professional information to people who are looking for solutions to their dental problems online. Interestingly, people ended up not only looking at my content, but also sending me private messages. Even though I had never directly offered any kind of digital consultation, I received a huge number of messages, with photos of their mouths and teeth and simple requests for advice. This taught me that there was a great need out there for dentists who can be contacted digitally. I created my app to meet that need.

Is your app already up and running?

The app is not yet available to everyone. We are in the test-flight phase, i.e. the app is fully developed and tested and has been released by Apple in the App-Store...

...What exactly does test-flight mean?

The app can only be downloaded by approved users. This is what we are doing at the moment to make sure that the app really works flawlessly and can be used by anyone who wants to. We will be ready in a few weeks.

We have someone here who has already tested the app—Christian Berger, dentist and president of BDIZ EDI. I am sure he will be able to tell us if the app works?

Berger: Yes, it certainly works! We dentists are also constantly learning throughout our professional lives. I believe that telemedicine and teledentistry will be an important part of dentistry in the future. We dentists have to get used to these developments. But dentists can certainly make diagnoses quite quickly and reliably based on short videos or on photographs of the patient's mouth, as long as the patient provides a few key details. This app puts patients on a safe path to a clear and reliable diagnosis. We will always have some patients who are deeply afraid of going to the dentist. As you said, Dr Mandel, an app like this can be a low-threshold offer. If only to reassure the patient that no, not every toothache requires an immediate extraction. It tells me that I can go to the dentist's office, where the problem can be fixed quickly, and then I will be relieved of my pain. I think this is an important way for patients to get a diagnosis without having to sit in the dentist's chair.

Anita Wuttke and Christian Berger spoke with Dr Mandel at IDS 2023.

A second important are I have in mind is the treatment of patients needing nursing care, whether at a nursing home or—and we are talking about a very large number here!—at home, being cared for by relatives. In both cases, it is helpful to use an app like this to make a diagnosis before you have to move that patient from the nursing home to the dentist's office or bring the dentist to the patient's bedside. For us dentists, it is important to know how to treat in advance, because then we can decide whether we can treat the patient at the bedside or whether we need to take the patient to a fully equipped dental office.

Dr Mandel, how exactly does your app work?

Mandel: The core aspect of the app is the patient's detailed medical history, which is critical to our dental diagnosis. The app is designed for patients—so that they can enter their data themselves. There is no need for a professional nurse or dental assistant to do this. Once the app is launched and the user has given legal consent, it goes straight to the heart of the matter, the questionnaire, which starts dynamically and follows a certain dynamic logic—patients are not asked to answer the same questions over and over. Rather, the follow-up questions are based on the answers already given. In other words, patients work their way towards their own diagnosis based on the ques-

tions and their answers. In this way, it is possible to collect specific data on relevant dental symptom patterns. To help us locate the affected site, we have developed a 3D model of the head and teeth with right/left markings to help patients orient themselves and locate the problem area.

As an additional tool for us dentists, we decided to use video. The smartphone's camera automatically focuses while taking a video, which is not the case with still images. In addition, the app automatically uses the flash of the rear camera so that the patient's mouth is always illuminated. This way we almost always get nice visual results.

So much for data collection. Patients are guided through creating a profile and then returned to the main menu, where the case is displayed along with its processing status. At this point, the data is transmitted to a live dentist in the background, who has received a signal and will evaluate the case within 24 hours. Patients receive push messages and see their report and treatment recommendation in the main menu, and a prescription if necessary. If they still have questions, they can use the chat function.

Does the app cost money or is it free for patients?

The app itself is free to download. However, due to the high development costs, intensive use is not free at the moment.

Have you contacted health insurance companies?

Yes, we have contacted major health insurance companies, and our discussions are already at an advanced stage.

Back to the "test user". Mr Berger, how easy is it to use the application?

Berger: The developers have obviously put a lot of effort into this application. Dr Mandel has already said that this is an intelligent application, which means that patients are guided in the right direction by their own answers. It is no secret that a diagnosis costs between 30 and 40 euros, about the same as a haircut, but you know that for that kind of money you do not always get a dental or medical diagnosis that is really helpful. In fact, it costs many times more for a bedridden patient to travel to a dentist's office than it does to use this app. If we can save a patient a trip to the dentist in the future because the diagnosis is something like you bit your cheek or tongue and it will heal without a dentist, then this app has provided value to that patient and to society. Personally, I find it fascinating that you can reach an individual diagnosis very quickly by asking questions. I have been able to verify that the conclusions are in line with the dentist's diagnoses. I think that there is a lot of potential in this for a lot of different patient groups.

Dr Mandel, are there other similar apps?

Mandel: In the field of dentistry, this is actually the first app anywhere. There are comparable apps in general medicine.

Thank you very much for your interesting comments. We will certainly stay on the ball!

In this interview, Dr Tina Mandel presents the app she developed for remote dental diagnoses.

The interview was recorded live at IDS Cologne. The video is available on the BDIZ EDI YouTube channel.