

Dulce Wireless Tijuana Toolkit: An Online Guide for the Treatment of the Patient with Type 2 Diabetes

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Diabetes is a global epidemic and represents one of the greatest burdens for the Mexican health and social insurance providers such as Seguro Popular that covers 50.4% of the Mexican population, and the Mexican Institute of Social Security (IMSS) that covers 38.1% of the Mexican population. According to the 2016 National Health and Nutrition Survey, almost 75% of the Mexican population over 20 years old is considered to be obese or overweight [1]. Mexico is a country with high diabetes prevalence (9.4%, ENSANUT, 2016). While 87.8% of the people with diagnosed Diabetes are receiving treatment, approximately 75% of individuals in Mexico with type 2 diabetes have not reached adequate glycemic control and will continue to be a major challenge in terms of complications [1-4].

The International Diabetes Federation affirms that culturally appropriate diabetes education models that have been proven to have good results in improving life's quality of the patient with Diabetes remain severely limited in low and middle-income populations [2]. One program that has demonstrated efficacy in improving glycemic control, behavioral indicators, and long term cost reductions in Mexican American patients with type 2 Diabetes living in the United States in the San Diego-Tijuana border region, is Project Dulce™, developed by Scripps Whittier Diabetes Institute in La Jolla, California. This model uses trained nurses in care support, peer-led diabetes self-management education and a basic registry, based in the Chronic Care Model (<https://www.scripps.org/services/metabolic-conditions/diabetes/project-dulce>).

Given both, the high mobile technology penetration in Mexico (where at least 84% of adult people use a cell phone [5], and almost 60% of population are internet users) and, that the global epidemic of diabetes calls for innovative interventions, a group of researchers from the School of Medicine and Psychology of the Autonomous University of Baja California, formed an alliance with a Family Medicine Unit from the Mexican Institute of Social Security (IMSS), non-governmental organizations from both sides of the border (International Community Foundation (ICF) and Fronteras Unidas Pro Salud), Qualcomm® Wireless Reach™ and Iusacell (now AT&T).

This multisector and binational group decided to evaluate the effectiveness of adapting the Project Dulce™ clinical educational model for the Mexican population, with and without wireless technology, compared with standard clinical care, in order to improve glycemic control and other clinical and self-reported outcomes in patients with poorly controlled type 2 diabetes at a Medical Family Unit in Tijuana, México.

The main objective of, what came to be known as, the Dulce Wireless Tijuana (DWT) intervention, was to improve the quality of life of patients that suffer Type 2 Diabetes by implementing a chronic care model improved with the use of 4G wireless technologies that is based on the strategy of Project Dulce™, where the nurses work closely with an interdisciplinary group of physicians in a clinic and with outreach workers in the community. The clinical study was conducted over a 10-month period. Clinical and self-reported outcomes were assessed at baseline, month 4,

and month 10.

Results found that patients with the educational intervention had a greater reduction in absolute levels of glycated hemoglobin A1c (HbA1c) than the control group. The use of mobile technology contributed to increase patient satisfaction because they felt more connected to and supported by the health team.

The DWT study demonstrates how integrating chronic care self-management education with innovative mobile technology and community collaboration can be an effective approach to improving diabetes outcomes.

Final results were published in the April 2016 issue of Diabetes Technology & Therapeutics [6] and were so significant that Qualcomm® Wireless Reach™ funded a second phase for the development of an online toolkit as a user-friendly resource to facilitate the replication or adaption of the DWT strategies.

The DWT Toolkit is based on best practices used in the ground-breaking DWT mobile health clinical study and its main purpose is to be a dynamic guide for replicating the best practices used in the DWT study. It provides up-to-date information to health professionals, health educators, outreach workers, dieticians, health administrators, government agencies and non-governmental organizations, who wish to implement an effective strategy to combat the epidemic of Type 2 diabetes.

The professional or health entity that decides to follow this replication guide will be able to implement the DWT model, a model that has proven to be effective in reducing levels of HbA1c. This model integrates mobile wireless technologies, education and community care. The Toolkit contains the published clinical study, a testimonial video, patient education videos, motivational messages, surveys, a guide on how to use the content for adapting and implementing the DWT model, and technical manuals for the DWT Mobile System, which includes a web platform for health care providers linked to a mobile app to be used by diabetes

patients on a smartphone, tablet or other mobile device.

The mobile app enables patients to receive notifications and reminders from their health care providers, respond to interactive surveys and view short videos and brochures to help them better manage their medical condition.

The online toolkit was launched in February 2018. It is now available for free on the ICF website: <https://icfdn.org/dulce-wireless-tijuana/> for health care institutions that are interested in adopting the DWT chronic care model and mobile technology system in their diabetes patient care practice.

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