Effectiveness of a Diabetes Program based on eHealth on capacity building and quality of care in type 2 diabetes: a pragmatic quasi-experimental study.

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DIABETES BURDENS

10.5%
adults around the world are currently living with diabetes

44%
are undiagnosed

6.7 million
adults died to diabetes or its complications in 2021

US$ 966 billion
expenditure in 2021

4 in 5
people with diabetes live in low-middle income countries (LMIC)

Estimated Prevalence

South-Central America
9.4%
(IDF, 2021)

Argentina
12.7%
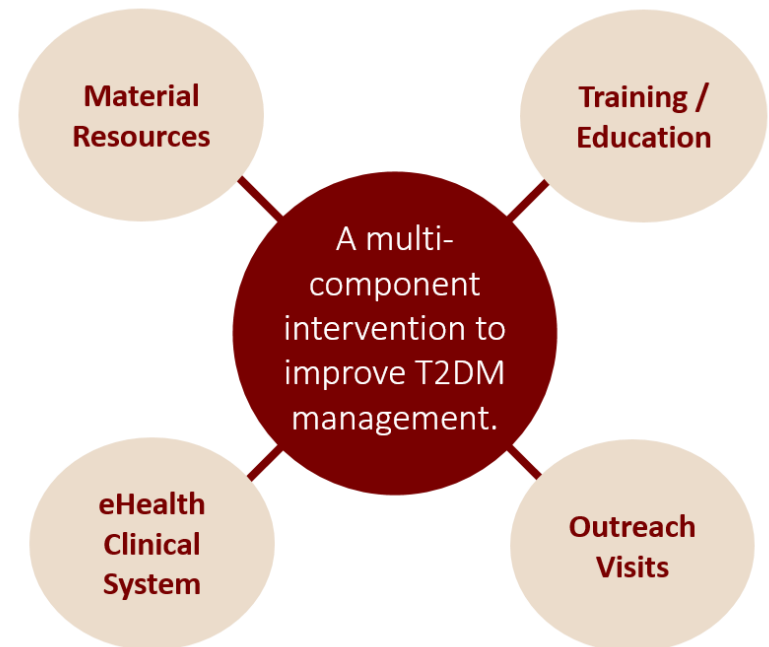(ENFR, 2020)

WDF 14.937 Diabetes Program Corrientes

developed by researchers from the Center of Excellence in Cardiovascular Health for South America, from the **IECS** in Buenos Aires (Argentina), has the support of Diabetes World Foundation and Government of Corrientes

WDF 14.937 Diabetes Program Corrientes

To strengthen primary care clinics to provide high quality of diabetes care and improve coverage in patients living in underserved areas in the province of Corrientes, Argentina.

1. Generate capacity building in the use of Clinical Practice Guidelines and educational interventions for primary health care teams.

2. Implement a Diabetes Registry and an **e-health strategy** to improve attendance and follow-up of patients in the health centers.

Material Resources

Training / Education

A multi-component intervention to improve T2DM management.

eHealth Clinical System

Outreach Visits

Santero M, et al. *Using mHealth strategies in a Diabetes Management Program to improve the quality of care in Argentina: study design.* Primary care diabetes, 2018. 12(6): p. 510-516.

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Quasi-experimental pre-post uncontrolled study

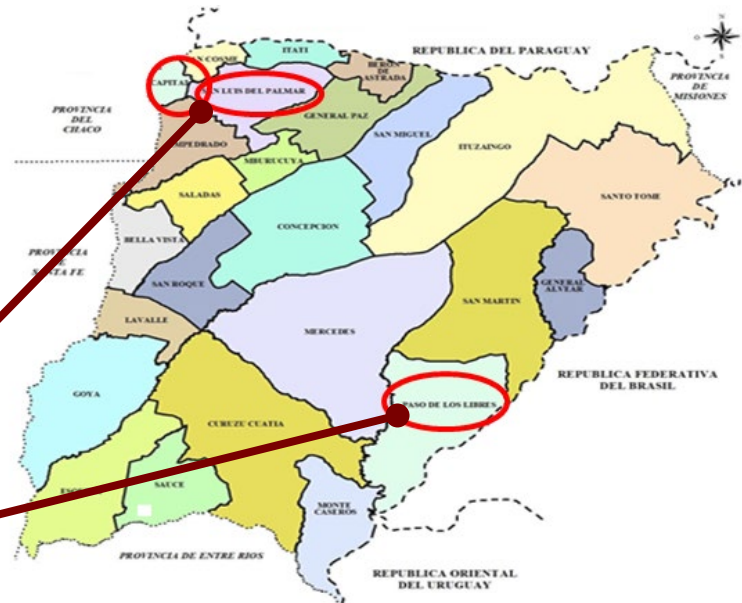### Qualitative data collection

19 PCCs included

- to be located in poor urban areas,
- have at least 800 outpatient visits/ month;
- employed community health workers,
- to provide free chronic medications,
- have an internet connection.

- confirmed diagnosis of T2DM,
- > = 18 years and access to mobile phones,
- living less than 10 km from the PCC,
- signed the informed consent.

* Pregnant women at the time of screening and bedridden people were excluded.

Santero M, et al. *Using mHealth strategies in a Diabetes Management Program to improve the quality of care in Argentina: study design.* Primary care diabetes, 2018. 12(6): p. 510-516.

Materials / Resources

Kit Diabetes Room

Guidelines

Educational material

ICT System (Computer, Tablet, Mobile)

Como Haydee se aplica la insulina:
del miedo a la familiaridad

Resources are important to the quality of care.

eHealth Clinical System

Platform Web Diabetes

Server Web

App Sana

SMS Gateway

Diabetes Registry

Variables included from the registry used to create the algorithms used for the clinical decision support system

Example of an algorithm

Web based platform to send SMS

Example of an educational message

Outreach Visits

Audit

Retraining

Quality of care

Patient Enrollment and Follow-up

40%
New Diagnoses

	Baseline Visit (N=1065)	Follow-up 12 months (N=776)	Follow-up 24 months (N=565)	p*
	n (%)	n (%)	n (%)	
Process				
HbA1c testing	216 (20.28%)	268 (34.53%)	364 (64.42%)	<0.01
Cholesterol LDL testing	387 (36.34%)	229 (29.51%)	407 (72.04%)	<0.01
Triglycerides testing	332 (31.17%)	205 (26.41%)	363 (64.24%)	<0.01
Creatinine testing	102 (9.57%)	365 (34.27%)	496 (46.57%)	<0.01
Blood pressure check	1055 (99.06%)	776 (100%)	538 (95.22%)	NS
Monofilament - foot exam performed	662 (62.15%)	666 (85.82%)	493 (87.25%)	<0.01
Eye exam performed	230 (21.59%)	278 (35.82%)	186 (32.92%)	<0.01
Any treatment for diabetes$	887 (83.28%)	722 (93.04%)	553 (97.87%)	<0.01
Hypertensive# on antihypertensive medication	561/648 (86.57%)	529/617 (85.74%)	407/464 (87.72%)	NS
Age >= 40 & <= 75 years on statins	162/911 (17.78%)	194/691 (28.08%)	158/507 (31.16%)	<0.01
Intermediate Results				
Poor metabolic control (HbA1c >= 8%)	109/216 (50.46%)	121/268 (45.14%)	177/364 (48.62%)	NS
Uncontrolled blood pressure (>=140/90 mmHg)	499/1055 (47.25%)	325/776 (41.88%)	166/538 (30.85%)	<0.01

* p significant <0.05, NS= non-significant, N/A=not applicable; chi2 test for trends;
$ oral antidiabetics drugs, insulin or both

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Health Team Voice

Patient Voice

eHealth is a facilitator in the management of care.

The register extends the lenght of time of the visit.

"I use everything on paper, because to use the Tablet I need to be calm, If not I get angry and I touch anything ..."
(nurse, 54)

".. They are super! because it agree with the guides. I use the level of risk according to the color, so I know when I have to follow the patient...."
(physician, 57)

SMS are a positive influence for patients.

Facilitates the patient's learning processes.

Promotes the dissemination of the acquired.

Contribution to Psychosocial Support.

" I feel more accompanied, I feel calmer. At least, someone who always remembers me because when you receive something in your cellphone, in your phone, you feel more comfortable, more peaceful."
[Woman, 63 years]

Moyano D, et al.. *Perceptions and Acceptability of Text Messaging for Diabetes Care in Primary Care in Argentina.* JMIR Diabetes, 2019. 4(1): p. e10350.

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Barriers

- Antidiabetic medication shortage.

- Access to labs and specialist.

- Internet signal instability.

- Access (Floods).

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What the study left...

- Health team strengthened.

- Installed capacity to diabetes care.

- Transferred technology.

- Extended the program to 50 new PCCs.

- Media coverage about diabetes.

- 2 Papers published and 1 under review.

- And great team work ...

Despite numbers, it's always about people!