"CONTEXTUALIZING TUBERCULOSIS MEDICATION ADHERENCE IN INDIGENOUS COMMUNITIES OF THE HUASTECA POTOSINA: A ROADMAP TO ADEQUATE AI-FACILITATED APPROACHES"

TEJWAMEDHOMTALAB K'AL AN ILALIXTALAB ABAL AN TUBERCULOSIS BAN KUENCHALAB TENEK ANI NAHUATL TI AL AN TAMPOTS'OTS: JUN I BEL ABAL KA EYENDHA AN IT TOLMIXTALAB.

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INTRODUCTION

Tuberculosis (TB) is an infectious disease that causes lung conditions. Worldwide, tuberculosis is the thirteenth leading cause of death and the deadliest infectious disease behind COVID-19 (above HIV/AIDS) [1, 2].

The living conditions of indigenous communities make timely access to health services difficult, resulting in poor adherence to the TB therapeutic regimen. The 2020 Census indicated that 11.8 million people live in indigenous households in Mexico [3]. Tuberculosis primarily attacks people living in poverty, disproportionately affecting indigenous peoples.

Issues such as poverty, precarious housing, lack of access to medical services, cultural barriers, language differences and geographical remoteness, the latter is closely related to poor TB adherence. Given its importance it is within the Sustainable Development Goals (SDGs) to eradicate tuberculosis by 2030 [1].

Most indigenous communities of Huasteca Potosina are located in the Sierra Alta, hindering access due to the lack of infrastructure in roads and transport, making it difficult for residents to move to health units.

In this project we developed possible interventions that could reduce limitations by applying digital technologies as mediators in the treatment of TB, as in other countries where positive results have been achieved, in order to improve adherence by avoiding resistance and promoting a better quality of life.
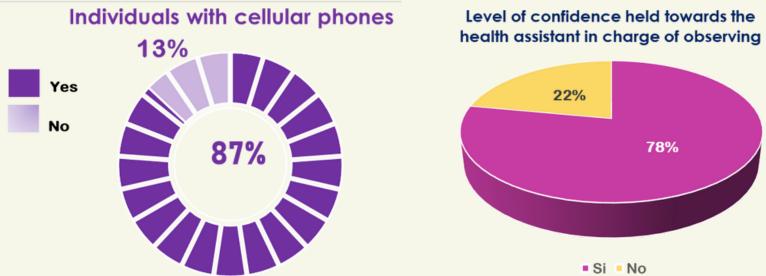
GENERAL OBJECTIVE

- Highlight the context of personal, socio-cultural, economic, and geographic limitations that influence patient adherence to tuberculosis treatment in the indigenous communities of Huasteca Potosina.

SPECIFIC OBJECTIVE

- Identify possible solutions by designing interdisciplinary interventions.

METHODOLOGY

The community of Tlaxco, Matlapa, San Luis Potosí was selected, which is located in the Sierra Alta with approximately 150 families. This marginalized community was chosen for its geographical location with respect to the municipal seat. Authorization of communal authorities was required for the application of the instrument (survey) designed specifically for this project. This involved convening a general meeting to inform the participants of the methods/objectives and to obtain their consent. Subsequently, 100 surveys were applied to heads of households and/or entire households in collaboration with a trained community health assistant; the selection criteria for participation were as follows: in order to assess the level of acceptability of the implementation of digital adhesion technologies for the treatment of tuberculosis.

DIFFICULTIES	POSSIBLE INTERVENTIONS
Geographic distance	• Assess the geographic location of the community. • Manage and invest in satellite network infrastructure for internet connection. • Implementation of digital adherence technologies that have been implemented in other countries (INDIA).
Economic	• Use of text messages to monitor the patient undergoing treatment, saving economic costs and travel time. • Creation of a database platform for TB-positive patients that works through applications to monitor drug administration in real time.
Sociocultural	• Education and promotion to the inhabitants of the indigenous community, providing information about the disease, its importance and the complications of not adhering to treatment. • Prevent social stigmatization towards people with this condition by creating Mutual Help Groups (GAM).
Linguistic differences	• Train the health promoter who speaks the indigenous language of the community by health personnel and who in turn trains female heads of household to provide improvements in adherence to treatment through monitoring and daily registration in the application.

Participants
16% / 84%
Feminine / Male

Indigenous language speaker
22% / 78%
Yes / No

Acceptance of the implementation of technologies aimed at facilitating TB treatment
12% / 88%
Yes / No

Individuals with cellular phones
13% / 87%
Yes / No

Level of confidence held towards the health assistant in charge of observing
22% / 78%
Si / No

TECHNOLOGICAL OPPORTUNITIES

Medication adherence for tuberculosis is a common difficulty for under-resourced communities across the world, and though DOTs (Directly Observed Therapies) have historically been used to improve adherence, increased access to technological resources has paved the way for DATs (Digital Adherence Technologies) to facilitate and compliment existing DOTs. Subbaram et al. provide an extensive overview of logistics behind multiple DATs, many of which are deployed in the global south under resource-constrained settings, broadly under the categories of: self-administered therapies, SMS-based strategies, and video DOTs. Each of these logistical paradigms have their own challenges, especially in the context of indigenous populations of the Huasteca Potosina, however the overarching benefit from these technologies is the compilation of relevant patient-centric data which can inform A.I./M.L. techniques to further increase medical adherence. At its most basic level, these methods compile proxies for historical TB medical adherence at the patient level, patient demographic features, as well as potential actions taken by (and facilitated by) the system monitoring adherence towards patients (such as automated reminders or calls from volunteers). As demonstrated in Killian et al. with data from 99DOTS (an SMS-based strategy in Mumbai, India) this data can inform the learning tasks of how to: a) identify patients at risk for dropping medication regimes and how to consequently b) optimize the allocation of limited volunteer resources toward the objective of minimizing the risk of patients dropping medication regimes. More recently, restless multi-armed bandits have been deployed in similar settings whereby limited resources are selectively allocated to individuals in health interventions with patients are modeled as arms of the RMAB (Mate et al., and Mate et al.).

CONCLUSION

One of the current challenges in the fight to eradicate TB is to avoid abandonment or non-adherence to treatment. In indigenous communities, addressing diverse needs such as lack of access to health services is paramount.

According to the data obtained from the instrument used, it was concluded that applying new technologies will bring great benefits, having the approval and acceptance of the indigenous population.

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