

CLAS Summer Grant
Research Report
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Chronic diseases such as hypertension and type 2 diabetes are increasingly affecting Latin America: currently about half of the years of life lost in the region are attributable to chronic diseaseⁱ. In Chile about a third of the adult population has hypertension: double the prevalence in the United Statesⁱⁱ. While Chile has been recently categorized as a high-income country by the World Bank, income inequality is extremely high, and the difference in quality of life between the richest and poorest wealth quintiles is stark. Unsurprisingly, the poorest sector of the population also bears a disproportionately large disease burden, particularly of chronic diseases.

Risk factors for chronic diseases are often more prevalent in low-income populations, and Chile is no exception. Common risk factors include being overweight or obese, a diet low in fruits and vegetables and high in sugars, and a sedentary lifestyle. Chile currently holds the record for the highest soda consumption per capita, having surpassed the United States in recent years.

So, how can a country halt or even reverse the trend of increasing chronic disease?

There are two main policy areas to focus on: prevention, and treatment. Prevention – or preventing those who aren't sick from becoming sick has been the focus of a major policy movement in Chile, something the New York Times recently called “the world's most ambitious attempt to remake a country's food culture”ⁱⁱⁱ.

The movement includes several high-profile policies: a sugar tax introduced in 2014 which, at 18% is one of the highest in the world. A ban on marketing of unhealthy foods to children which includes the removal of all mascots from cereal boxes, cookies, and candy. And, the Food Labelling Act, which adds stop sign-shaped labels to all foods high in sugars, salt, fat, or calories.

Evaluations of these policies are currently ongoing and it's likely too early to say whether they have successfully prevented any chronic disease.

In the meantime, Chile is also working to better control disease among patients already diagnosed.

Health care in Chile is two-tiered, with three quarters of the population using the large government provided system, FONASA, and the rest paying for private insurance. In the public sector, the Ministry of Health established the *Programa de Salud Cardiovascular* over 15 years ago. This program includes free primary care as well as free medications for patients diagnosed with hypertension, type 2 diabetes, and/or dyslipidemia.

An interesting component of the cardiovascular program, and the focus of my research, is the appointment reminder system. Patients attending primary care facilities who are enrolled in the

cardiovascular program receive an SMS reminder 48-24 hours before their scheduled appointment. If they do not have a cell phone an automated call is made to their landline. Importantly, the patient has the option to respond either confirming or cancelling the appointment. If it is cancelled, the slot is automatically assigned to another patient.

In a public health care system health care provider working hours and wait times for appointments are major ongoing concerns. This appointment rescheduling program has the capacity to function both as a timely reminder to patients with chronic disease, and, as a way to improve efficiency within the system. Since patients are able to cancel on short notice the facility might be able to see more patients overall, as fewer slots will be waste on no-shows.

Last summer, our team worked to evaluate the impact of the SMS appointment reminder program on the number of appointments made at each facility. Since the program was implemented in different facilities at different times, we were able to evaluate the program's impact on two groups: chronic patients who receive the SMS reminders, and, non-chronic patients who do not receive the reminders but who attend clinics where the SMS program was implemented.

Interestingly, we found that the SMS reminders did not change the number of appointments chronic disease patients attended, on average. While at the time we didn't have the data to test this, it seemed that some chronic patients were cancelling on short notice. This allowed for more appointment slots to open up for non-chronic patients: we found that non-chronic patients who attend clinics with the SMS program attended more appointments.

This study left us with more questions than we started with and so I returned to Santiago, Chile in summer 2019 to continue the work, this time more closely with the Ministry of Health. I was based on the Primary Care Division of Chile's Ministry of Health in Santiago (MINSAL DIVAP). During the month I spent there, I worked with local researchers to access and clean the four large datasets we will use in this new impact evaluation: electronic health records from primary care appointments, medication prescription and withdrawal data, emergency room records, and data on SMS reminders sent and received.

These data are huge in scale – they represent about 60% of all patients in Chile with a chronic disease. Now, we will be able to measure not only the impact on appointment attendance, but also the impact of the program on health and health behaviors, such as prescription refills.

The evaluation team – myself, DIVAP, and collaborators at La Pontificia Universidad Católica de Chile public policy school – worked to create an evaluation plan, and formalize study outcome definitions. This summer I (re)learned to be patient when working “in the field”, despite being based out of a well-functioning ministry of health office in a high income country. As is always the case, something that seemed achievable in a summer – transferring four already collected datasets from the ministry to my server – was highly time consuming and is still ongoing in early September! Still, the analysis plan we created is very exciting, and the results of this study will be used to directly inform decisions at Chile's Ministry of Health.

ⁱ Anauati MV, Galiani S, Weinschelbaum F. The rise of noncommunicable diseases in Latin America and the Caribbean: challenges for public health policies. *Lat Am Econ Rev.* 2015 Dec 1;24(1):11.

ⁱⁱ Fasce E, Campos I, Ibáñez P, Flores M, Zárate H, Román O, et al. Trends in prevalence, awareness, treatment and control of hypertension in urban communities in Chile: *J Hypertens.* 2007 Sep;25(9):1807–11.

ⁱⁱⁱ <https://www.nytimes.com/2018/02/07/health/obesity-chile-sugar-regulations.html>