# Informing Effective and Economically Efficient Health Care Policies Through Prevention of Chronic Diseases and Lowering Hospital Administration Costs: An Interview Study

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Researchers have evaluated the efficiency of the medical system in developing countries and the deficient health care attention caused by bad financial management and lack of technology for chronic diseases. These specialized diseases demand more complex treatment and are costly. This interview study is focused on policy recommendations the government of Mexico could implement to optimize its economic resources and an effective healthcare system. These recommendations include socioeconomic reviews for each patient to evaluate the price of the consultation in specialized hospitals, an emphasis on the education of a healthy lifestyle and prevention of chronic diseases from a young age, an advancement in the infrastructure of hospitals in rural areas, provision of internet websites that include a directory of Mexican hospitals and inclusion of dental care in insurance packets. The study was conducted through a semi-structured interview with participants ranging from patients to doctors and clinic receptionists.

## Introduction

The primary aim of this study is to disclose and explore the deficiencies of the public and private medical services in Mexico through a semi-structured interview to identify policy recommendations the government of Mexico could implement to expand access to medical services that reach all citizens. The paper will address gaps in the literature on effective healthcare policies that will challenge factors such as insufficient resources and lack of preventive healthcare.

Around the world, it's estimated that half the population doesn't have access to basic medical services[1]. This phenomenon tends to intensify in developing countries, primarily because the government doesn't prioritize this issue's economic impact, leaving people paying out of their pocket and often falling into debt[2]. Preventive medicine and education are deficient, which leads to chronic diseases that impact the economy of the government and the individual[3]. The cost of medical care in the United States is high: it has been found that over one-third of people skip medical tests or treatments because of cost, especially dental care, and a quarter are unable to afford prescription medicine, with minorities suffering more from the high-cost[4]. Focusing specifically on developing countries, people in rural communities don't have medical facilities near their homes, so they postpone medical services or travel hours to arrive at the nearest hospital. If they suffer from an emergency, the ambulance often can't come in time in the rural areas, endangering their lives[5]. These aspects and necessities will be explored throughout this paper, focusing on public and private health care in Mexico. The report will examine the economic benefits of implementing a preventive system for chronic diseases through a healthier lifestyle and policy recommendations that the governments of Mexico could employ to provide adequate healthcare access for every citizen. Through semi-structured interviews conducted with patients and practitioners in Mexico, the study identifies areas of success and improvements for the medical sector. Finally, this paper adds to current knowledge and research concerning the insufficiencies in medical attention toward patients, especially in developing countries or marginalized groups in developed countries.

## Related Work

### Avoidable Medical Expenses in Hospitals and Substandard Infrastructure

The government and private companies cut expenses regarding the reparation of hospitals when the infrastructure is inadequate. Often, hospitals won't fix the damage to infrastructure, making the patients interact in significantly impaired environments since it's their only option to access medical care. Deficient hospitals are also factors in people selecting private hospitals to receive better healthcare conditions. Still, they are spending more money to be treated in a clean and decent environment. Another prominent hospital concern is ordering needless supplies, making the hospitals waste unnecessary money. As a result, initiatives like the Future Hospital project present infrastructure modifications through technology to reach a broader population

while integrating specialized medical services, such as mental health care. Nonetheless, a significant implication imperative to consider is the lack of healthcare policy recommendations for the government[6].

In the United States, $200 billion in 2012 represented unnecessary medical expenses, according to the IMS Institute for Healthcare Informatics. This money could pay for 24 million uninsured citizens. Additionally, 8% of the nation's healthcare expenses could be avoided. The IMS Institute for Healthcare Informatics determines that the nation's healthcare expenses can be avoided in six medical areas. These areas are mismanaged polypharmacy, suboptimal use of generics, medication errors, misuse of antibiotics, delayed evidenced-based treatment practice, and medication nonadherence. These areas directly correlate with preventive medicine. The amount of money that could be reduced from nonadherence is $105 billion[7].

## The Impact of Chronic Diseases Worldwide

Chronic diseases have been the leading cause of adult mortality[8]. Therefore, it's imperative to analyze the data from other countries and how chronic diseases impact their government. The prevalence of chronic diseases in the global population is expected to rise, especially among older people, since their organs begin to fail with aging[9]. People who develop chronic diseases often consume alcohol, drugs, and tobacco and eat an unbalanced diet. Chronic diseases are costly and long-lasting diseases, so the financial burden on government healthcare is severe. Nonetheless, this burden also impacts the people's economic budget, and the government doesn't provide patients with these diseases the medical support they need[10]. A person can develop chronic diseases after prolonged periods without exercising or being physically inactive. Among the medical problems that can develop are obesity, diabetes, cancer, and heart disease. Physical inactivity causes 15% of the expenses of non-communicable conditions. These diseases are also the most common in China. In the past 20 years, the cost of physical inactivity has kept increasing. Therefore, the economic stress of developing chronic diseases is very high. Healthy lifestyles can reduce the development of chronic diseases, such as cardiovascular diseases, diabetes, and cancer. Nonetheless, implementing communities that share approaches to healthier lifestyles can reduce the risk of developing a chronic illness[11]. Regarding the prices for certain chronic diseases, in Brazil, the cost of colorectal cancer increased from 18.54 million in 1996 to 37.64 million dollars in 2008. This is paramount for the study as it demonstrates the increase in prizes for chronic diseases. Lung cancer was the highest economic burden in 2009, with 57.4 billion USD in the United States. Having certain diseases determines the level of difficulty of receiving attention at hospitals. For instance, people with renal problems are most likely to pay for private health. Also, people with more family members pay privately since the public sector might only cover the limited services they require. In contrast, the private sector tends to prescribe more medicine and services, which are more expensive than the public sector[12].

## Mexico's Health Care System

WHO has recorded that low-risk to high-risk countries have an increase in cancers and cardiovascular diseases. This is an essential motivation to analyze the impact of chronic diseases in the Mexican government's budget, as it has been detected that countries of low-risk to high have had an increase in cancer and cardiovascular diseases[13].

In a research study, "Assessing Quality across Health Care Subsystems in Mexico," the researchers used a sample of respondents that showed that the healthcare systems favored private institutions over social security institutions. Analyzing the weaknesses of the Mexican healthcare system, Mexico has to address an increase in non-communicative diseases, and patients haven't been pleased with this service. 76% of Mexicans in a national survey in 2000 say that the Mexican health care systems require significant changes. Therefore, the Ministry of Health and the Instituto Mexicano de Seguridad Social decided to manage inequality and provide a medical service that could reach the goal of universal coverage by 2010 and support the uninsured citizens; they decided to create The Seguro Popular. This service consists of beneficiaries receiving access to health care[14]. It has been recorded that the people in the Prospera program have more effective access to healthcare services than those paying for private services. The purpose of the program is to comply effectively with social rights. Additionally, people with non-communicable diseases like diabetes have shown adequate access to health care. This specific data shows that in this area, Mexico's government is excellently supporting patients with chronic diseases to gain faster access to medicine and medical resources[15].

A survey conducted by Ensanut in 2012, gathering data from 50,238 households, showed that 24% had at least one member with diabetes, hypertension, or both conditions in their houses. Therefore, their expenditures were around 24% and 25% higher than those without a non-communicable disease. However, much of the population has yet to be diagnosed or receive treatment. As a result, Mexico is in the top rankings worldwide in child obesity, partially caused by ultra-processed foods and sugar-sweetened beverages[16]. The high rates of obesity, diabetes, and hypertension exhibit one primary weakness of the health care system in Mexico as it fails to diagnose at a practical rate.

The healthcare system in Mexico is in progress compared to many countries. This is true for its total spending per capita as well as the spending done by the government per capita. Still, the difference is evident in the number of doctors or nursing

graduates per 100,000 inhabitants. At 22.1%, pharmaceutical spending in Mexico is one of the highest in the world in terms of percentage of total health spending, almost twice that of the United States[17]. This is important because pharmaceutical spending is typically not covered by public health coverage in Mexico.

The Mexican government provides insurance to workers and their families, known as social security. If the individual is under the social security coverage of their company, the company pays for most of this insurance cost. Social security can be seen as a strength of the health care system as its coverage gives access to medicine, consultation, and surgeries. Nonetheless, as mentioned, this service is only exclusive to workers and their direct families[18]. Another way to receive public health care is by working in companies like PEMEX, a government company. However, PEMEX exemplifies the medical care system's deficiencies in the private sector. For instance, in 2014, a woman passed away from pneumonia due to an erroneous diagnosis. Another incident occurred in 2016 when a baby passed away from a misguided pregnancy follow-up. The hospital has tended to have poor diagnoses and inadequate attention to patients. Many patients have initiated legal action against the hospital, and doctors have gone on strike complaining about the services at PEMEX hospitals[19].

PEMEX and social security don't consider aspects such as immigration status, race, and gender, which often define a person's ability to get employed at a company providing access to social security. Therefore, the government saw these deficiencies and assembled the Popular Service to protect these citizens because the rate of informal labor was around 55.7% in the third trimester of 2022[20]. The Popular Service is offered to every citizen who is not affiliated with the Social Security system or has insurance. However, this system failed to provide attention to many complex treatments for chronic diseases since the medical system focused for many years on preventing infectious diseases as they were the most prevalent at the time and cheaper to treat. With the establishment of the INSABI as the substitution for Popular Service, the spending on specialty diseases fell by 27%. Additionally, the government has yet to reduce out-of-pocket spending, and the resources for chronic diseases decreased by 26.9% with the new program[21]. Furthermore, people residing in rural areas often travel long distances to access a hospital. Therefore, these citizens with chronic diseases must relocate closer to medical facilities. Considering that 21% of people in Mexico live in rural areas, the number of Mexican citizens at a disadvantage in getting quick medical access is evident[22].

In 2020, the Mexican government began to label every product available in supermarkets with excess calories, sugars, saturated fats, salt, and trans fats. They also removed the cartoon characters on the front of these products to reduce the appeal to kids, which is a strength of the Mexican government to promote healthy lifestyles through more conscious consumption. With the incorporation of the seals, 80.8% of the products were deemed unhealthy. Another government strength recently incorporated in public schools is a new class called " Healthy Life," which promises to provide kids with sufficient information to aid their daily lives by making healthy decisions that will prevent chronic diseases in the long run. The issue with these resources implemented by the government is their slow impact. For instance, work on the food labeling regulation started in 2011 but only began to be implemented in 2020[23].

Recently, the government of Mexico was debating whether to delete 34 health norms. These norms range from the prevention, treatment, and control of deficiency diseases, essential health services, promotion and education for health in food matters, the comprehensive treatment of overweight and obesity, and child health care. The removal of these norms has brought concern to many doctors and patients as they believe these norms protect their healthcare rights, and without them, there is a risk of a lack of medical organization. Without the norms, there are no general requirements for medical procedures. The private and public institutions can decide and establish guidelines for these medical procedures. The institutions can take an extended time to develop these requirements, which brings concerns to patients and physicians. Between this time of organizing the new regulations, there might be uncertainty about how to proceed with the treatments and attention removed from the norms. Yet, the government is still deciding on their cancellation[24,25].

## Overview of Health System Worldwide

Governments across the world have different approaches to healthcare and health insurance. Nonetheless, the general objective is to provide universal health coverage and reduce the economic stress in families[26]. However, each country has different conditions and areas to focus on. Mexico and many developing countries have different insurance systems. Even with the lack of effectiveness of the public sector, the private sector has to offer those services but at a higher cost. Public insurance in Mexico is only 50% effective[27]. Therefore, it's crucial to analyze and discuss other countries' health systems that could be replicated in the Mexican healthcare system.

Healthcare in Switzerland is known for being effective. It is market-driven, and the state covers everyone with insurance, but it's expensive. Switzerland also has various healthcare insurance options, but the government sets the prices for the insurance, and the citizens can select their doctors. The government subsidizes people with low incomes who cannot pay for insurance. This practice could be applied in Mexico and seen as a relevant lesson? .

## Methods

The study involved interviewing thirty-five people over four rounds of semi-structured interviews with questions aimed at delving into the opinions and perspectives of patients, doctors, and administrators regarding their economic expenses in medical treatments, primarily related to chronic diseases. The first round of interviews took place at the Regional Hospital Lic. Adolfo López Mateo is part of the Institute for Social Security and Services for State Workers (ISSSTE) in Mexico City. This hospital offers many services, including medical attention and preventive medicine[?] . The interviewees were waiting for their consultation or family members receiving treatment in the medical unit; the participants were selected based on their relevance and connection to the study of chronic disease. The interviews took place in Mexico. Therefore, all discussions were in Spanish. One patient and one doctor were interviewed using Zoom software. The interviewees' roles varied in patients, doctors, and receptionists at clinics. Additionally, all the participants had diverse perspectives ranging from different social and economic backgrounds with diverse chronic diseases.

The circumstances in which the interviews were conducted outside the ISSSTE did not make it possible to extend them past ten minutes since most participants expressed they were in a rush. Therefore, to enrich the pool and diversity regarding economic status, access to health care, and also extend the interview time, the rest of the participants were contacted through word of mouth and invited to a local cafe shop with the intention for the interviews to extend and have a wider variety of experiences in the private and public sector. This second round of participants varied in profession, economic status, and education. Furthermore, the third round took place in a local market in Mexico City to make the pool of participants more diverse. The interviewees worked at the local market, selling food, clothing, and other services. The fourth round of discussions focused on the doctors' perspectives. The interviewees included two medical students during their social service year, the ex-president of the National Institute of Health Science and Nutrition, the ex-president of the Mexican Pediatric Association, two dentists, a specialist in public health, two receptionists at a local private clinic, and a receptionist of a private nutritionist. Appendix A provides the complete list of questions asked of the patients, while Appendix B lists the questions the doctors and medical practitioners answered. The questions were generated through artificial intelligence and modified by the researcher to ensure relevance to the study. Using artificial intelligence to create the question can raise biases of limited creativity and human judgment. However, the generated questions were used as a flexible guide because as the interview progressed, different questions were formulated.

All the interviews were recorded through Voice Notes on the iPhone app for faster and more efficient interviews and transcribed through TranscribeMe software afterward. Finally, the transcribed version was translated from Spanish to English using the DeepL translator software and verified by the researcher. After reading the transcribed version, it was possible to identify opinions that share similar ideas and experiences, following the thematic analysis framework. Then, these ideas were separated into codes with significant quotes that complemented the themes that correlated with the main issues discussed in the related work section.

## Results

After the interviews were analyzed, transcribed, and separated into codes, the common themes that were identified in the codes were the lack of an accessible and high-quality medical unit, the increased difficulty of receiving treatment due to racial and language factors, the hurdles people face when attempting to exercise in their community, high levels of physical inactivity and limited or non-existent preventive actions or awareness; high economic burden and out-of-pocket expenses; and the dangers of the deficiency of dental care in the insurance packages and hospitals.

### Limited Access to Quality Affordable Healthcare and Inconvenient Appointments

The individuals expressed their concern over the disparities in the medical system. Although some could access free medical attention, this one often lacked quality and accessibility to all the materials and technology required for most complex chronic diseases. Conversely, those receiving quality service have been mostly treated at private hospitals with funding that allows the patients to access the technology to treat chronic diseases. The higher quality and free hospitals are only available to some. For instance, to access the National Institute of Health Sciences and Nutrition, the patient must have a specific profile that interests the scientist and doctors for research. As P5 said, "My mother told me that somewhere on the internet she had heard of the nutrition hospitals, and she took us, and fortunately I had a special type of diabetes that interested them as a case, so they accepted me." P7 said, "In the case of Nutrition Hospital, they don't accept all patients. You need to have a certain type of condition, and then it takes six months before they agree to the next appointment." Another example of quality and free services was the old medical care benefits the bank BBVA offered its workers. It offered surgery insurance and individual and family medical expenses insurance. P1 said "I am a retired BBVA Bancomer. I retired, and I have private medical service from the bank. Now, the bank no longer provides this service as an employee of Bancomer. Now, it is a benefit." These experiences demonstrate that accessing quality hospitals is often a benefit instead of a right.

Also, if a medical emergency, consultation, or treatment arises. In that case, workers have to decide whether to put their jobs in danger by getting fired since public hospitals offer very few consultations and changing this assigned appointment is extremely hard. P2 said, "When you are going to receive this service, it is not necessarily going to take place close in time and space, so moving is a problem if it's not necessarily close to your home. The date and time can be a problem if they give you a day that does not coincide with your working hours, then at that moment you will have to think about what is more convenient to lose that working day or to go to the service, it is also if you are going to be attended soon or after two weeks or three weeks."

## Race and Language Related to Reduced Insurance Coverage and Reduced Access to Treatment

Access to any medical institution in Mexico is limited for people who need to speak Spanish, whether they attempt to receive private or public attention. Most medical staff are not trained to provide the linguistic attention patients require. Therefore, they cannot be treated due to the language barrier or incorrect diagnosis. As P33 said, "Here in Merida, many Mayans do not speak Spanish. So, it is tough for us to do the translation and clinical interpretation for these patients. So, they may often not receive the treatment they should receive because we don't understand them." P34 said, "Socioeconomic status is the main determinant; racial origin is indirectly related to socioeconomic status and in some settings may imply discrimination. The unemployed or those with informal occupations have no public medical service, which is very precarious. In any case, they turn to a very primitive private system (doctors in pharmacies whose conflict of interest is obvious or neighborhood doctors)... Second-level hospitals generally provide better treatment but are few and almost always overcrowded. The National Institutes of Health are the other side of the coin as they generally provide excellent and efficient care. Still, their capacity is minimal compared to the need for care." As demonstrated, race and language are linked to reduced possibility of finding jobs with secure insurance options, and it's correlated with decreased access to health care.

### Physical Inactivity Due to Poor Public Facilities and Lack of Time Constrains for Low-Income Working People

Most individuals expressed physical inactivity regardless of the parks near their houses since they have to inhale the garbage and the odors from animal defecation. People avoiding exercise in parks leads to increased motivation to pay for a gym, leading to additional costs. In rural areas, inactivity increases due to the need for more access to sports facilities. P3 said, "There are parks near my house with equipment and everything. But there is another problem, which is the pets. A person goes running, and in the dog section, it smells very bad. Also, it is known that fecal waste releases certain bacteria that affect the eyes. So maybe there are spaces, but they are unsuitable for exercise." P8 said, "Where I live, there is a park in really bad condition: it has a lot of garbage. You want to exercise, and it's terrible. You run, and of course, you breathe all the garbage around the park because there is no garbage truck. There is no maintenance of the park."

Additionally, people with low incomes tend to work extended shift hours, making them choose not to exercise. P4 said, "Well, the obstacle [for exercising], I can say that my job is sedentary. I'm at my computer eight hours a day, and you could say that's the obstacle; you get used to not moving and see it as something normal." P2 said, "I think we have more and more lifestyles that are extremely sedentary, that do not require us to be physically active, that do not involve us moving our bodies, so we are sitting on a bus or in the subway or our vehicles, we spend significant periods without doing the physical activity that would be important, so the time we spend on other activities during the day competes with how much time we can dedicate to exercise." The quotidian sedentary lifestyle and the impediment of exercising in parks due to poor conditions are correlated with developing chronic diseases such as diabetes, obesity, heart diseases, high blood pressure, and strokes.

### Limited Preventive Medical Care and Information on Treatments

Most agreed on the lack of preventive medical care and little education on preventing chronic diseases. Many agreed that at school, the education on diabetes is very brief and general. P15 said, "Many times, the lack of education about the disease makes them [patients] unaware of that part of the disease, and they bet more on medications than on a change in their lifestyles. Then, at an economic level, we can see the repercussions of the fact that they increasingly require other types of technologies and more expensive medications to achieve control of their diseases." Additionally, the participants discussed the importance of educating the family about their genetic history if they have a chronic condition. P15 said, "I believe, from my point of view, that we should focus more on prevention. If you know that you have relatives with chronic degenerative diseases, we would have to bet on educating the family so that they know more about this disease and how to prevent it so that this does not have an impact on the out-of-pocket expenses, which is the term for what one spends at a particular level on health." P2 said, "I think we have this problem that it is hard to see in the long term; we go more for the immediate… Let's consider an important health problem in Mexico, such as diabetes. Diabetes may have a genetic component, but that genetic component is minuscule compared to the impact that lifestyles have on this condition, so why do we have such a big problem with diabetes?... We do

not realize how expensive not only in financial costs but also in human costs." There is a culture of seeing quick results except for prevention and informing. P25 said, "All the rare diseases have been excluded from the budget. All of these diseases are budget-consuming. Here [medical system], all this should be preventive medicine." Without mentioning the economic impact, access to specialized treatment and finding a specialized doctor is complicated. Preventive medicine and education are correlated with a decrease in chronic diseases as these conditions can be detected earlier.

Those in the private hospital sector agreed that the medical system is a bureaucracy and are deprived of receiving complete medical information. Most expressed concern and fear of going into the private sector and being forced to afford high amounts of money for unnecessary surgeries and procedures. P6 said, "When I was pregnant, Social Security told me my pregnancy was high risk. And I said, but I am 37 years old. And when I went to the private hospital, they encouraged me to have more pregnancies. I would think, but why do they scare me so much at Social Security, telling me it is a high-risk pregnancy? And they told me, because of my age, that it was the third cesarean section I had had. But I think Social Security makes you participate and updates you on the appropriate medical information for your particular health and age. Social Security would have to absorb a risky third or fourth cesarean section [and so they care], but in the private one, you would have to pay for it [so they do not care]."

### Financial Burden and Extra Expenses

Individuals have expressed the extreme financial burden of paying for expensive private healthcare services for chronic diseases or the insurance companies that have stopped them from enjoying their personal lives. It has impacted their economy and has acted as an extra expense to their family budgets. P14 said, "Well, I'll tell you this story of this lady who has to worry every year about her insurance. She even told me that because of her pension, she could not work, and with that, she could live off the services, but her reason to work is the medical insurance [she gets from work], which is very expensive." P25 said, "Well, the challenge is to find, first of all, it depends on the insurance or ISSSTE, and then to find a specialist doctor who treats them. Another one is that the medications are very expensive. All the immunological ones are costly, for example, those with arthritis or those with cancer. More than oncology, immunology is used often, and immunology is very expensive." Chronic disease costs also vary; some are significantly more expensive than others. Most specialized medicines and treatments are difficult to find and more pricey; they cannot buy generic prescriptions. This cost falls heavily on the family budget; as P35 says, "The economic impact on family spending is very high; it is like paying the monthly payment for a cheap car or annual primary school tuition."

Additionally, public medical care offers only essential services. Private is not an option. It is costly for chronic and specialized diseases. The public sector makes them pay for extra expenses like the materials they lack or a long transportation journey since most specialized hospitals for chronic diseases are far away from most rural communities or areas far distant from Mexico City, and the number of these hospitals is limited. P11 said, "There is only one [hospital] that does dialysis, but it has no equipment, and if there is no longer a catheter if you want the patient to be dialyzed, you must buy it. Also, regarding transportation, they are patients that you can not send by public transport because they are very delicate. We had to hire a car early in the morning and wait outside the hospital because they did not let us enter." The bad conditions and treatments in hospitals can be correlated to a deterioration in the patient's health, which can worsen their chronic illness and produce a poor healthcare outcome.

### Slow Service and Confusing Governmental Policy Changes

Public services tend to be far away for most people and are extremely slow. It takes months to schedule appointments; that's a factor making people choose the private sector as their symptoms are too intense to wait for an appointment, but those who don't have money are compelled to wait to receive public care. P17 said, "The public sector has fewer and fewer resources to carry out the treatments; far more people go to the public sector than to the private sector... I think that one of the reasons why they choose to go to a private clinic is because it takes them a long time to get a consultation in the public sector. If they have pain or something, they prefer to go to the public clinic if they can afford to wait for an appointment, but if they have an emergency, they go to the private clinic."

Additionally, the participants expressed that the medical system changes a lot in government, which causes confusion and varies in quality. P5 said, "There is not much transparency in the operations of the health services and, in particular, in the health services linked to the Ministry of Health, they change many names and goals. This means that every six-year term is different and can be very confusing for the people because not all the individuals, not all the people in Mexico, are the same." P2 concluded, "Health spending priority depends on the government that we have, and the truth is that the government's bet on health is lower than in other countries in the world, not only in Latin America. That is one of the main barriers; we do not bet on health in general, which is reflected in the fact that we do not have so much technology. We have old and obsolete medicines, and we believe that paracetamol will cure a patient." The government's policy changes are associated with poor, constant preventive campaigns, which can lead to the development of chronic diseases.

### Prevalence of Poor Dental Care and Link with Chronic Diseases

Most insurances don't include dental care; very few companies offer this service, and it only covers essential treatments, which is costly. P20 said, "The treatments they have are very limited; they are, for example, cleanings and extractions, but they do not cover everything that one does in a specialty... dental is much more expensive, so people choose a very basic one [insurance]. Generally, they use major medical expenses insurance that doesn't include dental or includes very basic because it is cheaper." Only one company provides dental insurance in Mexico, an extra expense, and the technology used in dental treatment is costly.

In terms of the public sector, the patient must wait for a consultation but has the risk of developing a worse dental situation since they have a limited catalog of dental procedures. Patients in the private sector wait until they can't handle the pain and postpone treatments. If the patient doesn't treat a minor dental problem, it can develop into something more serious, it is much more challenging to restore the tooth, and it becomes much more expensive. Even if one loses their teeth, they develop digestive problems that can become chronic diseases. The government believes dental care is not an area to focus on and does not consider that it can aggravate and even be a factor in developing chronic diseases. P19 said, "Well, it's not just the [dental] pain, which is quite annoying. Pain makes people very desperate. And the more you let it happen, the worse the situation, and the more problems or difficulties it is to restore the tooth. And that affects aesthetics, but later the patient has problems eating and cannot digest well."

## Discussion

Through the semi-structured interviews, it was possible to identify the main problems people struggle with receiving medical attention. The interviews gave a broader perspective and awareness about the lack of adequate economic finance regarding preventive medicine for specialized treatments of chronic diseases. Therefore, these main concerns can be correlated with the related works when discussing the financial burden that affects people's economic budget and, in a way, dictates their lives.

The results agree with previous economic research focusing on medicine. For instance, the study "The Erosion of Retiree Health Benefits and Retirement Behavior: Implications for the Disability Insurance Program"[28], connects that retirement can be delayed to pay for insurance coverage. This agrees with surveys done in other countries that found that retirement caused significant disruption to health benefits, causing many to delay retirement. In addition, the research on the "Association between oral health behavior and chronic diseases among middle-aged and older adults in Beijing, China"[29], complements the finding on the relationship of poor dental hygiene with the development of chronic diseases, that if not prevented, can produce a major economic impact in the families budgets. This was also identified in the related works section: chronic diseases worldwide have been increasing due to factors such as the consumption of tobacco. Therefore, the cost has increased.

### Policy Recommendations

The interviews obtained the perspectives and concerns of a vast pool of participants from different economic backgrounds regarding the medical system. Therefore, this paper proposes suggestions for the government of Mexico that could translate into efficient money management of chronic diseases through improved attention to patient welfare, improved public hospitals, and insurance options.

- Provide a socio-economic review to establish the cost of consultation and medicines for patients with chronic diseases in specialized hospitals and efficient management in distributing specialists without concentrating them in one hospital. After a socio-economic review, the consultation fees are established based on their economic possibilities. The genetic alternatives for patients with low economic possibilities should be evaluated for medication.

- Prioritize education and prevention of chronic diseases by implementing school-based and health care programs. Parents should educate their kids regarding healthy lifestyles and habits. Many participants expressed that households have an extreme influence on their approach and accessibility to addictive substances such as drugs and alcohol, which can correlate to the development of chronic diseases. The family also comes into play when there is a genetic pattern of chronic disease since it's beneficial for families to know how to self-care to control their disease. For diabetes, for instance, spending money on a balanced diet and exercise would be cheaper than treating a chronic illness. However, the government should allocate some money to maintain parks and athletic facilities in communities and municipalities. If the government prioritizes prevention, it would be cheaper than treating more chronic diseases with the few technologies and specialists that hospitals currently have.

- Develop better facilities in rural areas with doctors and specialists who can provide preventive information to the people living in these communities to reduce the risk of developing chronic diseases. If the hospital constantly maintained the infrastructure, the government would save a lot of money spent on repairing severe infrastructure damage. Nonetheless, the government should have a prioritized budget for the maintenance of infrastructures.

- Implement a website and campaigns incorporating all the public hospitals and resources people in Mexico could use. Everyone should know the hospital they can visit according to their needs and location. The government should ensure that effective treatment is available at sites accessible locally and not somewhere distant; this will prevent racial and language barriers as they could be accessible in rural areas with doctors or translators who speak the dialect of that place.

- Include dental care into the insurance packets with specialized treatments, and in regards to the public health system, incorporate specialized doctors so the patients with low economic resources can get treatment and prevent dental problems from developing into more complex and expensive treatment conditions that could, in turn if the patient doesn't treat it promptly, evolve into chronic diseases; such a chronic disease would also increase the out-of-pocket expenses because the patient would have to deal with expensive treatments in a private hospital as the public hospital only treats basic procedures.

The policy recommendations represent economic constraints for the government since the government might need more economic possibilities for these actions. The current government in Mexico also represents a constraint as the financial budget might be used for other projects. Additionally, there needs to be more specialists in Mexico, as it is possible to have specialists in all hospitals, especially rural ones.

## Conclusion

Based on interviews with patients and practitioners, this study provides policy recommendations emphasizing methods to help the government effectively manage its economic resources. These suggestions prioritize public healthcare access and quality, focusing on the communities in rural spaces that have been mostly overlooked in receiving adequate access to healthcare. Additionally, it reduces the expenses and personal financial burden of chronic diseases by utilizing a fraction of the government's budget for medical attention, preventive medicine, and education. These preventative methods include dental care, self-care, a balanced diet, exercise, and education. Additionally, it's imperative to look at the methods of other countries as insight for replication in their successful approaches to preventive medicine and the promotion of a healthcare culture.

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# A Interview Questions

## A: Interview for Patients

### *A.0.0.1 Overall Experience*

- Can you share your experience with accessing healthcare services? Have you had difficulty getting the medical care you need? Please elaborate on specific cases you have encountered.
- From your perspective, what are the main barriers people may encounter when trying to access health services? How do these barriers affect people's ability to receive timely and appropriate medical care?
- How do you think the healthcare system could be improved to make it more accessible and equitable for all patients? Are there any specific changes or reforms you would like to see to address existing problems?

### *A.0.0.2 Exercise and Healthy Diet*

- How important do you think regular exercise is to maintaining a healthy lifestyle? Please share your opinion on the benefits of physical activity.
- What motivates you to exercise regularly and do you encounter any barriers to incorporating exercise into your daily routine?
- In your community, do you think there are enough opportunities and facilities to promote physical activity and healthy living? How do you think the local environment supports or hinders healthy choices?
- Maintaining a healthy diet is essential to overall well-being. What difficulties, if any, do you encounter in maintaining a healthy diet and how do you overcome them?

### *A.0.0.3 Drugs and Alcohol*

- Can you share your opinion about the availability and accessibility of drugs and alcohol in your community? Are you concerned about substance abuse?
- What do you think could be done to address problems related to drug and alcohol addiction and provide better support for those struggling with it?

### *A.0.0.4 Financial Aspects of Healthcare*

- How do you manage the financial burden of healthcare, including medical treatment and prescription drugs?
- Have you experienced difficulties in affording necessary medical services and, if so, how have you dealt with them?

### *A.0.0.5 Infrastructure for Patients*

- From your point of view, how well equipped are the health facilities in your area to meet the needs of patients?
- Are there any specific improvements you would like to see in the healthcare infrastructure to improve patient experience and outcomes?

### *A.0.0.6 Perception of the Healthcare System*

- What is your level of satisfaction with the overall healthcare system in your country/region? Please share your opinion on its strengths and weaknesses.
- Do you think there are disparities in healthcare services based on socioeconomic factors or geographic location? If so, could you elaborate on these disparities?

### *A.0.0.7 Awareness and Education*

- How do you stay informed about health-related issues and medical advances? What sources of information do you rely on?
- Do you think there is sufficient public awareness and education about preventive health care and healthy lifestyle choices? If not, what aspects need to be improved?

### *A.0.0.8 Challenges in Seeking Medical Help*

- Have you ever delayed seeking medical help for financial or other reasons? If yes, what were those reasons and how did they affect your health?
- What support systems or resources do you think are crucial for people who face barriers to accessing medical care?

### *A.0.0.9 Health Policies and Government Involvement*

- Do you think the government plays an active role in promoting public health and providing affordable health options?
- What changes would you like to see in health policies to better address the needs of ordinary patients?

### *A.0.0.10 Support Systems and Community*

- How important do you think community support is in promoting healthy living and providing assistance to those in need of healthcare?
- Have you experienced positive or negative effects of community involvement in healthcare and how has it influenced your well-being?

## B: Interview for Doctors

- From your point of view as a medical professional, how would you assess the equity of the current healthcare system in terms of access to healthcare services and resources?
- In your experience, have you observed disparities in access to healthcare based on factors such as racial origin and social status? How do these factors affect patients' access to necessary medications and treatments?
- How do you feel about the accessibility of patent medicines for patients? Have you come across cases where the cost of medicines has posed a problem for people seeking treatment?
- Do you think the government should place more emphasis on promoting physical activity and providing resources to lead healthier lives and prevent chronic diseases?
- What factors do you think contribute to a significant number of people not exercising regularly or maintaining a healthy diet?
- In your experience, what specific measures, policies, or initiatives have had the greatest impact on the efficient detection and prevention of chronic diseases?
- From your medical experience, do people who lack social security or health insurance face higher risks of developing chronic diseases? What are the potential health implications for this population?
- Do you think it is worthwhile to increase spending on social security to improve overall well-being and social development, especially in terms of access to healthcare and public health outcomes?
- In your experience, what is the main reason why patients opt for private sector healthcare services instead of using public healthcare options?
- From the point of view of a healthcare provider, how do you feel about the idea of the government funding all or a significant portion of its citizens' medical expenses?
- What practical measures or policies do you think can be implemented to ensure that the majority of the population has better access to quality healthcare services, including diagnosis and prevention of chronic diseases?

# B Participant Demographics

**Table 1** Demographics of Participants

| ID | Gender | Role |
|---|---|---|
| P1 | M | Patient |
| P2 | M | Patient |
| P3 | F | Patient |
| P4 | F | Patient |
| P5 | M | Patient |
| P6 | F | Patient |
| P7 | F | Patient |
| P8 | M | Patient |
| P9 | M | Patient |
| P10 | M | Patient |
| P11 | F | Patient |
| P12 | M | Patient |
| P13 | F | Patient |
| P14 | F | Patient |
| P15 | F | Doctor-Specialist in Public Health |
| P16 | M | Patient |
| P17 | M | Physician |
| P18 | M | Physician |
| P19 | F | Dentist |
| P20 | F | Dentist |
| P21 | F | Patient |
| P22 | M | Patient |
| P23 | F | Receptionist |
| P24 | F | Receptionist |
| P25 | F | Doctor-Specialized in Pediatrics |
| P26 | M | Patient |
| P27 | M | Patient |
| P28 | M | Patient |
| P29 | M | Patient |
| P30 | M | Patient |
| P31 | M | Patient |
| P32 | M | Patient |
| P33 | M | Doctor-Urologist |
| P34 | M | Doctor-D. in Biochemistry of Nutrition and Metabolism |
| P35 | F | Receptionist |