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Mexico, Dietary Diseases

### **Obesity and Disease in Mexico: The Great American Export?**

Since the mid 1900's, as urbanization and access to fast food have increased around the world, global obesity has also grown. These trends have been particularly impactful in Mexico, where, along with obesity, rates of dietary disease have accelerated over the past half-century. Historically, it was commonly believed these diseases concerned only the rich, as only they could afford the excess food necessary to become overweight, but this is no longer the case. In 1950, Mexico's leading cause of death was parasitic and infectious diseases, which accounted for 34.65% of deaths. Yet, by 2015, such diseases accounted for only 2.5% of deaths, due to the advancement of vaccines (UANL). While rates of parasitic and infectious disease have fallen, dietary diseases such as diabetes and hypertension are now a much larger cause of mortality. Dietary diseases are rampant, and diabetes alone accounts for over 76,000 deaths a year as the leading cause of death (Dávila-Cervantes and Agudelo-Botero, World Health Organization). While the rest of the planet faces a similar challenge, it is acute in Mexico. In comparison, diabetes is the seventh leading cause of death in Canada (Statistics Canada). Furthermore, dietary disease impacts the health and quality of life for many more, even when it does not result in death. Mexico recently surpassed the United States as the world's most obese nation, and the problem is even more prevalent in youth, with nearly one-third of children and adolescents overweight (UNICEF Mexico).

As the second-largest economy in Latin America, Mexico is a federal presidential republic with three branches of government. Its economy relies considerably on exporting vehicles, machinery, and equipment to other North American countries. Of its population of 129.2 million people, 80.16 % live in urban areas, and 19.84% in rural areas (World Bank). Mexico's topography varies; approximately two-thirds of its land consists of plateaus, and the remaining third is mountainous (Country Profile: Mexico). The Tropic of Cancer splits Mexico into two separate climate zones. The land above it experiences typical winter weather with lower temperatures and less rain, and the land below it has a consistent temperature between 24°C and 28°C. Mexico is quite religious, with 82.7% of its population practicing Roman Catholicism (Central Intelligence Agency). However, recent research shows a shift away from Catholicism and a rise in Atheism. Between 2014 and 2018, the percentage of Mexican Catholics decreased by 9%, and many Mexicans disagree with church teachings based on its traditional values in a world where gender roles are becoming less pronounced (Pew Research Center).

Mexico also has a well-known history of political corruption, which has only heightened economic and social inequality. From bribes in everyday transactions to the secret exchanges of millions of pesos by high-ranking government officials, this system has disproportionately affected poor families by making them even poorer (Morris, Stephen D). Mexico has a very uneven wealth distribution, with the top one percent owning about half of the country's wealth. As a result, many families are too poor to have access to healthcare (The Borgen Project).

The typical family today consists of four people. Though the traditional Mexican family lived in a multigenerational household, many families are now shifting towards the nuclear structure. In line with a

global trend, female household leaders are rising within Mexico. Family remains a core value of Mexican culture and the average family is extremely close-knit. The typical family originally lived on a family farm which was passed down through generations, where it grew and raised its own produce and animals. The family farm was self-sustaining and used its harvest for plant-based, home-cooked stews with squash, carrots, potatoes, green beans, mole, and corn-based tortillas. However, many families have now moved to the city for economic and employment reasons (Naude and Taylor). Though about 20% of Mexicans live in rural settings and depend primarily on agriculture for food and income, the income generated is typically quite low, about one-third of the national average. Agriculture contributes only 5% of national GDP, explaining this rapid movement to cities. As a result, the typical Mexican diet has shifted and is now “Americanized,” consisting of new household staples such as mayonnaise, beef, and oils; dinners are typically pork-based and cooked in lard. Meals and ingredients like these used to be reserved for special occasions, but are now becoming much more common. The average Mexican consumes 1,928 calories a day in packaged food and fast drinks, the highest level in the world (Daniela Carina Bermudez). As a result of the shift towards gender equality, mothers have less time to send homemade lunches to school, so kids bring snacks — such as *chilaquiles*, chips, or candies — or buy snacks from nearby food trucks.

As Mexico has urbanized and diets have changed, so too have activity levels. Children, in particular, spend more time in front of screens and less time on playgrounds and outdoors (Galaviz, et. al). Even typical factory work that used to demand manual labor is now mechanized (Adams). The combination of these factors create a significant health threat to Mexican society, and is growing exponentially.

Many experts link this shift to NAFTA and other trade agreements signed by the Mexican government in the late 1990's (OXFAM International). One of NAFTA's main selling points for Mexico, with its high levels of food insecurity, was that food would be cheaper and more accessible. NAFTA opened up the country to foreign imports, especially American imports, and rates of malnutrition dropped significantly, leaving only 1.6% of children and 3.6% of the total population hungry in comparison to the 6.2% of Mexican children who were malnourished in 1988 (World Bank, National Health and Nutrition Surveys, Shamah-Levy et al.). Despite this apparent success, imported food has been calorie rich and nutritionally empty. Other foreign countries have also been investing in Mexico, catalyzing the growth of fast food chains and stores that sell products high in oil and corn syrup. The Mexican owner company of the top convenience store, OXXO, receives hundreds of millions of dollars of foreign investment annually, mostly from the US and Canada (Jacobs and Richtel). In addition, most top supermarket chains are operated by American companies; 1 in 5 Walmart stores worldwide are in Mexico (Barstow).

One negative impact of increased imports is the devaluation of products upon which Mexico's population and economy once depended. Corn, a major ingredient in foods like tortillas, *elote*, and stews, is less popular than highly processed imported foods. Corn prices are 45% lower, so farmers are forced to sell most of their corn harvest and instead buy cheap sodas and sugar to sustain their families. Imports of high fructose corn syrup, on the other hand, jumped by \$340 million between NAFTA's signing in 1994 and 2016 (Jacobs and Richtel). Farms that once grew countless varieties of brightly-colored corn or *maize* varieties — all of different heights, textures and flavors — are closing, and genetic diversity is being lost to the preferred sugary flavors. By 2009, canola oil was Canada's top export to Mexico. NAFTA marked the point in Mexico's history when urbanization accelerated, also drastically altering traditional lifestyles.

Dating back to the 1960s, climate change has had major effects on farmland, increasing temperatures and drought. According to the Climate Change Reality Project, temperatures in some parts of Mexico could rise by almost 4° C by the end of the century. Though Mexicans may not feel the effect in their everyday lives, for *campesinos* (small village farmers), it is difficult to be self-sustaining without rivers or rainfall to irrigate the land. The lower productivity of crops due to climate change is yet another factor causing farmers to migrate to larger Mexican cities (Feng et al.). The average farmer today is 50 years old, demonstrating the younger generation is migrating to cities (Workers on Mexico's Export Farms). When they arrive in those cities, they buy their food in supermarkets, where there is lack of regulation and nutritional labels to identify unhealthy foods. Because of this, once someone develops Type 2 diabetes or hypertension, they are often unaware and don't seek appropriate treatment. Only 47.3% of Mexicans with high blood pressure are aware of their condition, and only 73.6% of that population receives treatment for it (OECD Reviews).

While the Mexican government has banned junk food in schools, food marketing around schools remains just as prevalent, if not more. They are the perfect place for junk food companies to target their advertisements. Today's Mexican children crave sugar and can easily fulfill those cravings with the cheap chips and snacks offered just outside their schools. A study by the US National Library of Medicine found that, near 43 schools, there were a total of 278 food and beverage advertisements, over half of which were for sugary beverages, a stark comparison to the 3.2% for water. 15.8% of the advertisements were for sweet snacks, and 9.4% for chocolates and candy (Barquera et al.). Although the guidelines set by the Mexican government are technically followed, corporations find other ways to entice school children.

In recent years, especially the past decade, the Mexican government and international organizations have been hard at work trying to combat this issue. The most well-known attempt at a solution is the government's tax on sodas and high-calorie snacks. Many sources find the tax was partially successful, but did not achieve its overarching goal. While people initially slowed their buying, many still do not understand the connection between junk food and health. Poor, rural families, who were hit hard by the tax, simply reallocated a greater proportion of their income (currently an average of 19%) towards the same unhealthy products, thereby worsening Mexico's problem of income inequality. According to government data, the lowest income households still contribute 62% of the tax's total income.

Another initiative, Procampo, was put in place in 1994 to reduce NAFTA's burdens on poor farming families. It provides over \$1.3 billion in cash to almost three million farmers who plant certain basic crops such as corn and wheat. For global comparison, Canadian agricultural subsidies are \$3.7 billion, and US agricultural subsidies are \$19.1 billion. Procampo was originally intended to provide low-income rural farmers with steady cash flow and enable them to compete with international companies. Despite its intentions, the financial boost creates deeper financial inequalities within Mexico (MEXICO: ADVOCACY). It does not increase the amount of food in local markets, nor benefit the small farmers, who continue to flee to cities. Instead, the majority of Procampo's money goes to those who least need it: landlords who raise rents to take advantage of the subsidies. The FAO found that landowners' incomes increased by 18-27% following this policy.

To combat the multi-faceted issue of dietary diseases and associated health issues at its root, it is critical to increase awareness amongst youth. The first few years of life is when children develop important

lifestyle habits that will shape the rest of their lives (Ruelas). PROGRESA provides cash to poor rural families if their children regularly attend school and health care centers (Skoufias et al.). It is arguably Mexico's most effective program, as proven by the International Food Policy Research Institute, given that it "contains a multisectoral focus. By design, the program intervenes simultaneously in health, education, and nutrition." It earned global recognition by the World Bank, which called it "a model from Mexico for the world." (Skoufias) However, the program fails to serve those who truly need its services, as only 45% of the households covered are truly eligible; the rest of the program has been subject to corruption, leaving many eligible families uncovered. Many rural families have reported that inclusion in the program seems almost like a lottery and the conditions became more and more specific over time in order to maximize the program workers' profits (Kidd).

Despite Mexico's advancements, in order to successfully curb obesity, a more comprehensive approach is necessary to address major remaining challenges. Firstly, by raising awareness regarding the issues; secondly, by reducing exposure to dietary risk factors; and finally, by increasing the quality of the healthcare system, specifically identification and diagnosis of pre-diabetic patients and making treatments more effective. Current initiatives have not been adequate thus far because they only combat a part of the issue.

Firstly, as the Mexican government has already realized, education is a crucial tool in preventing and controlling dietary diseases. The root of all of these dietary diseases is obesity, caused by unhealthy diet and lifestyle. Beyond education, lifestyle changes must be made and monitored. Researchers at the American Diabetes Association did a study on 256 randomly selected Mexicans living near the US-Mexico border with type 2 diabetes. There was consistent intervention over a one-year period where volunteer healthcare providers provided health advice. The workshops took place in community-based sites offering activities that reflected the cultural preferences of the subjects, and dietitians led visits to local grocery stores, pointing out products that were both cheap and healthy. Additionally, each subject was instructed to bring a close friend to meetings. The experiment showed much higher diabetes knowledge and lower HbA1c (a measure of blood sugar) levels (Brown et al.). The factors that made this experiment successful were the combination of consistent check-ins, increased awareness, and the presence of a friend for accountability. Because Mexican communities are very close-knit, a culturally competent approach like this one is most effective. According to Georgetown University,

A culturally competent health care system can help improve health outcomes...and can contribute to the elimination of racial and ethnic health disparities. Examples of strategies...include providing relevant training on cultural competence and cross-cultural issues to health professionals and creating policies that reduce administrative and linguistic barriers to patient care. (Georgetown University)

As previous approaches and initiatives by international bodies in Mexico have proven thus far, lack of cultural competence often results in dissatisfaction and refusal to participate. The nature of Mexican society includes the expectation that family members will support each other through all conditions (Station, Ross D).

The Mexican government could build this proven model to a larger scale, and do so cost-effectively. Local medical facilities would purchase educational materials, minimizing additional expenses. The sessions would continue taking place at free, community-based sites. The remaining costs would be on an individual level on the patient's end, such as buying different food. Thus far, the federal government has not proven to be able to effectively monitor health initiatives within the entire country, so it is important

that this system employs local governments at different levels to monitor initiatives to increase accountability. Such an effort would address both the issues of education and consistent healthcare check ins. Importantly, it uses a culturally-appropriate approach that previous initiatives have not. Since other programs have a history of becoming corrupt in Mexico, measures would need to be taken to minimize that possibility. Firstly, the program does not require a large amount of funding to begin with, and that funding would need to be directly distributed to the different locations, rather than being concentrated by one identity/individual. Next, each program would be required to publish where their funding is directed towards in local newspapers or magazines monthly, to ensure accountability.

Another possible solution is striving for agricultural self-sufficiency in major healthy food staples, an advantage that Mexico used to have. While this is an ambitious goal, given that Mexico is so dependent on trade that it imports 40% of its corn, it would have a significant impact (Cohen et al.). This type of program would provide support to rural farmers to expand production and improve efficiency of corn farming by offering a consistent, guaranteed price for corn. If the market price falls below a certain level, the government would pay the difference. With more corn available at a reasonable price, consumers will be able to recover and preserve their traditional culinary roots and maintain a healthier, more balanced diet with fewer processed foods. Funding could also be put towards healthy food companies that are currently not very successful in the Mexican market

One possible issue that could arise from this approach is a market crash. Ideally, this would be a temporary solution to help the consumer market regain interest in buying corn and develop demand. The government will have to be careful not to set the guaranteed price too high as to alter the market in a way that the average Mexican consumer will not be able to meet. The USDA has implemented a very similar program for crops including corn and soybeans. It “recalibrates crop insurance based protection based on expected commodity prices and risk in the market (American Farm Bureau).” The factors that are considered are the previous season’s prices, each farmer’s yield history, and market expectations (AFFB).

The Mexican government puts billions of dollars into reversing NAFTA’s effects every year, but, as proven above, this has been ineffective. By simply redirecting this money to a more efficient use, corn farmers will be incentivized to increase their production and make Mexico more self-sufficient. If this funding is not sufficient, the World Health Organization (WHO) and the United Nations (UN) have expressed interest and put efforts towards reducing dietary diseases in Mexico. The Mexican government can partner with one or both of these bodies to work towards a solution. This approach will be more effective than previous initiatives because it combats the problem from both the consumer/patient side, and the food production side, and props up the dying corn industry to increase demand. It is important to note that, while this program may not bring farmers who have migrated to cities back to the countryside, it will slow the exponential rate at which they are moving, and increase crop productivity. More than enough workers in the agricultural sector remain in rural areas, so the Mexican government should focus its energy on incentivizing them to stay there.

As we have seen, the dietary disease crisis in Mexico is a complex issue, and therefore requires a multi-faceted solution. The development of this problem can be attributed to four main factors. Firstly, urbanization has led to an increase in access to fast food and an alteration of the traditional diet; secondly, free trade agreements have accelerated this shift; thirdly, there is a lack of awareness regarding a healthy diet and the negative effects of an unhealthy lifestyle; and, finally, the health care system is failing to

diagnose dietary diseases early enough. The combination of these factors has been deadly for the Mexican people, and there is great urgency to address it effectively.

The imperative extends beyond the borders of Mexico. In 2017, poor diet was responsible for approximately 10.9 million, or 22% of deaths worldwide. (Afshin et al). Ultimately, diabetes, hypertension, and other dietary diseases are a global issue that faces much of the population on the planet. Success models from a country like Mexico can be replicated around the world, helping to address a global challenge through international cooperation.

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