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Surgery as a public health problem in Mexico and the concept of global surgery

La cirugía como problema de salud pública en México y el concepto de cirugía global

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Health is a fundamental right recognized by the United Nations General Assembly in 1966 and by Article 4 of the Political Constitution of the United Mexican States.

The role that accesses to health services plays in human development cannot be overlooked and those societies that guarantee this access through well-established systems have better levels of development and quality of life. "Global health" is one of the major issues of this century. In many countries, even those with well-developed and strong economies, there are groups with limited access to medical care.[1,2] Diseases that require surgical care for their management account for about 30% of the global burden of disease.[3] However, despite the magnitude of surgical diseases in the context of global health, surgery had not been considered as a relevant public health issue. It is estimated that currently almost 2/3 of the world's population does not have access to safe surgical and anesthetic care.[4,5] The poorest third of the world's population receives 3.5% of the surgical interventions performed each year.[6] This imbalance in the volume of surgery in low- and middle-income countries demonstrates that surgery remains "the forgotten stepchild of global health".[7]

In recent years, several initiatives have been developed to focus on this problem. One of the most widespread has been the Lancet Commission on Global Surgery (LCoGS) led by John G. Meara of Harvard Medical School, Andy Leather of King's College London and Lars Hagander of Lund University, who together with a group of commissioners, representatives of professional associations, governments, non-governmental organizations and academics from 110 countries generated a report entitled *Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development*[4] in which five key messages are postulated:

1. 5 billion people lack access to safe, affordable. and timely surgery and anesthesia.
2. 143 million additional surgical procedures are needed each year to save lives and prevent disability.
3. Every year 33 million people face catastrophic expenses due to paying for surgery and anesthesia.
4. Investment in surgical and anesthesia services is affordable, saves lives, and promotes economic growth.
5. Surgery is an indivisible and indispensable part of healthcare.

In addition, this report establishes six indicators that need to be measured to assess the current strength of a surgical system, the preparedness of a country to provide safe surgical care, and the state of protection against financial risk. The indicators are:

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1. Timely access to essential surgery: proportion of the population in each country that can access, in less than two hours, to a facility where cesarean sections, laparotomies and repairs of exposed fractures can be performed (Bellwether procedures).
2. Surgical specialist workforce density: number of surgical, anesthesia and obstetrics (SAO) physicians working in each country per 100,000 population. The goal is to have at least 20 specialists per 100,000 population.
3. Surgical volume: number of procedures performed in an operating room per 100,000 inhabitants per year in each country. The goal is a surgical volume of 5,000 procedures per 100,000 inhabitants.
4. Perioperative mortality rate: number of in-hospital deaths from any cause in patients who have undergone a procedure performed in an operating room, divided by the total number of procedures, presented as a percentage.

5 and 6. Risk of impoverishing expenditures and risk of catastrophic expenditures for surgical care: the probability of experiencing impoverishment (using a threshold of $1.25 per day, PPP) when surgical care is required and the probability of suffering catastrophic expenditures (10% of total income) when surgical care is required.

The LCoGS aims to implement these indicators and achieve the goals in 80% of the countries by 2020 and in 100% of the countries by 2030.

In Mexico there are multiple public health programs aimed at addressing the needs of the most vulnerable population, most of which are prevention, access and early detection, and care of infectious or chronic degenerative diseases. However, as in the rest of the world, surgery as a public health problem has received less attention in the country. Although, since the implementation of the so-called *Seguro Popular* in 2003, coverage and financial protection improved, there are still challenges and financial barriers to provide the necessary services. In a study on access to health care in Mexico, Gutiérrez et al. concluded that 48% of the population still does not have effective access to health services in the country, either due to lack of financial protection (54.3%) or due to limitations and barriers to access to care such as lack of quality in hospitals or geographic availability (45.7%).[8]

Mexico does not have a robust health information system with which to measure the state of surgical care. Based on some indicators proposed by the LCoGS commission, we find that the workforce density of surgical specialists is 40.2 per 100,000 inhabitants, being the double of the target suggested by the commission and slightly above the average for high-income countries. However, the surgical volume is estimated at 1,335 procedures per 100,000 population, which is well below the target of 5,000 procedures.[9] This information is disturbing and although there is a known underreporting due to the fragmentation of the health system, this may, on the other hand, indicate low productivity or difficulties of access to surgical care. The perioperative mortality rate was analyzed in a recent study, which found that the national mean mortality rate is 0.28 for cesarean section (range 0-0.95 per state), 4.64 for cholecystectomy (range 0.73-12.42 per state), 3.03 for appendectomy (range 0-9.55 per state) and 3.78 for inguinal hernia (range 0-12.64 per state). These figures are comparable to those of high-income countries, but it should be noted that they do not include data from the private sector.[10]

With respect to financial protection and the risk of impoverishing and catastrophic expenses, Shrime and his team developed a stochastic model to estimate the risk, incorporating the income distribution for each country analyzed, the probability of requiring surgery, and the medical and non-medical costs associated with care. In this analysis, the risk of incurring impoverishing and catastrophic spending for the general population was estimated at 54.5 and 27.8% respectively, while for the poorest population in Mexico it was estimated at 100 and 64.3% respectively.[11] Towards the end of 2019, the Mexican government decided to cancel *Seguro Popular* and implement the *Instituto de Salud para el Bienestar* (INSABI) and recentralize health services for the non-salaried population. This new attempt to

offer universal health care in Mexico came into operation at the beginning of 2020 and its rules of operation and financing schemes are still not well known, nor is it known what it contemplates regarding access to essential, safe, and affordable surgery.

These numbers and background highlight the importance of focusing on the surgical capacity and care needs of the population and the area of opportunity that exists for surgical care to acquire a relevant role in the country's public health.

Another innovative initiative is the collaboration between the UK's National Institute for Health Research Unit on Global Surgery (NHIR GSU) and GlobalSurg, an international network of surgical researchers interested in global surgical issues and part of the Surgical Gateway Research Foundation, a UK charity. The aim of GlobalSurg is to foster local, regional, and international integration and collaboration of surgical networks to participate in the development of global studies based on a collaborative model of peer-to-peer partnership previously published in Lancet and lays the foundation to be able to have a national registry to carry out similar projects in each country.[12] The main lines of research aim to generate indicators of quality and risk in general surgery. In November 2018 in Veracruz, Mexico, with the support of the universities of Birmingham, Edinburgh, and Warwick, as well as funding and logistical coordination by the NIHR GSU, the Global Surgery Research Center was integrated and has participated in multiple research projects coordinated by GlobalSurg and NIHR GSU, which have shown that mortality and risk of surgical site infection in high-income countries is lower than in middle and low-income countries.[13]

It is important that in the Mexican Association of General Surgery we become aware of the prevailing inequity in the surgical care of the population and join to participate actively in this type of initiatives. The responsibility of government authorities is to ensure that there is adequate infrastructure, political and economic stability, sufficient human resources, and financial protection systems.

It is imperative to dispel the notion that providing surgical care as part of other basic public health measures is too costly and complex. Improving access, quality, and safety of surgery for the population should not be considered a charity entrusted to philanthropic organizations on an intermittent basis because it is a fundamental right, a principle of justice and social responsibility regardless of countries and ideologies. Surgery is an essential component of universal health and must be addressed with a holistic approach to offer comprehensive solutions.

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