Medical practice and allocation of human resources in health care settings in violent regions

El ejercicio médico y la asignación de recursos humanos en salud en regiones violentas

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https://doi.org/10.36105/mye.2023v34n3.04

Summary

Violence in Mexico, specifically in some states of the Mexican Republic where the population faces dangerous situations, has as one of the many consequences, the absence of medical personnel who work as professionals and provide health services in these rural areas. In this sense, it is important to consider that the allocation of human resources

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Reception: 29/04/23 Acceptance: 19/05/23

in health is fundamental for the functioning of an efficient system and to consider the reasons why doctors, from social service to the performance of their specialty, do not consider working in places where they feel vulnerable. In this process, it is important to make visible the ethical questions that may arise, so this paper aims to give visibility to the issue of exposure of circumstances, facts within this problem and raise the relevant policy issues within this context.

Keywords: violence and health services, medical work, resource allocation, physicians in Mexico.

1. Introduction

Medical work is a key activity for the fulfillment of a fundamental right such as the protection of health. However, performing this work has challenges and difficulties, not only because of its own nature, but also because of external phenomena, one of these being the high level of violence that occurs in some regions of the country.

In the first years of medical practice, from social service, during the process of specialization and up to practicing as a specialized physician, professionals who perform their functions in regions affected by violence are victims of: "attacks on individuals" (e.g., doctors, nurses, administrators, security guards, ambulance drivers and translators), "of obstructions" (e.g., ambulances stopped at checkpoints), of discrimination (e.g., personnel pressured to treat one patient over another), of "attacks and misappropriation of health facilities and property" (e.g., vandalism, robbery and theft of ambulances by armed groups), and the "criminalization of health workers" (1). They are also forced to treat certain patients under threat, so the above can be triggers that lead doctors to decide not to work in these regions, causing a significant deficit of medical coverage.

The first sections of the article provide a general outline of the academic and professional training of physicians in Mexico, the

https://doi.org/10.36105/mye.2023v34n3.04

human resources required to meet the country's health needs and their functioning within the national health system. The second part shows the level of violence, discusses its effects on medical work and the delivery of health services in the most affected regions. This information gives the guideline for the generation of the ethical questioning that emerges from the situation.

2. The medical profession in Mexico, from social service to specialization

The first year of medical practice is a period of connection with life as a student and that of a professional who has obtained a degree and license accrediting him/her to practice this profession in Mexican territory. In order to obtain the latter accreditations, it is a mandatory requirement to fulfill the social service. This essential activity, in the training as a physician can be performed in two modalities (in clinical and rural fields) and according to article 5 of the General Constitution of the United Mexican States "for the benefit of society and the state" according to the Academic Program of Social Service of the Faculty of Medicine of the National Autonomous University of Mexico (UNAM) (2).

Social service, created in 1936 during the six-year term of General Lázaro Cárdenas, was conceived as a response to the problem of health coverage in rural and needy regions, as well as a way to reward society. This in such a way that an agreement was established that same year between the UNAM and the Department of Public Health in which it became mandatory for medical interns to complete five months of work in rural areas in order to obtain their university degree (3).

Since then, the locations assigned to medical interns have been rural regions, most of which show less social and economic progress (4), where probably, for different reasons, some physicians with more years of professional experience do not accept to work.

https://doi.org/10.36105/mye.2023v34n3.04

Once they have completed this mandatory year and obtained their degree and professional license, recently graduated health professionals can begin to work and practice general medicine privately or in public institutions.

On the other hand, if a general practitioner wishes to continue his or her training, he or she can work as a specialist, for which he or she must take the National Examination for Medical Residency Applicants (ENARM) and be selected to occupy a place in one of the health care facilities that receive resident physicians who will carry out academic, assistance and research activities and thus obtain a degree as a specialist in a defined area of medicine (5).

These periods of teaching and professional training, which have been described in general terms, are characterized by multiple challenges, not only in terms of health issues but also in terms of social and cultural situations. An alarming phenomenon in some regions is the presence of violent acts that affect their population and the training process of health professionals (6).

This problem, that of insecurity in carrying out their work, is not a recent issue; health professionals have to face dangerous situations in order to perform their work which, on some occasions, is not possible; however, the negative consequence of this problem is that many people are unable to receive the medical care they need in a timely manner (7).

3. Human resources in health in Mexico

In Mexico, the health system is composed of the public and private sectors. Public institutions provide services to people with formal employment and those who do not have social security services. The private sector, on the other hand, provides services to people with the solvency to pay for these services (8). In this sector, according to the National Institute of Statistics and Geography (INEGI) in its press release 580/21, published in October 2022, reports that according

https://doi.org/10.36105/mye.2023v34n3.04

to the results of the National Survey of Occupation and Employment (ENOE), as of June 2021, there are 305,418 people (54% men and 46% women) employed as physicians[1](9). Seventy-six percent perform this occupation in a subordinate and remunerated manner, 12% are self-employed and the remaining 12% employ other workers. Of everyone hundreds of these professionals, 67 are general practitioners and 33 are medical specialists.

It is very important to mention that Mexico has 2.4 physicians per 1000 inhabitants, according to the first edition of *the Health Panorama: Latin America and the Caribbean 2020,* presented jointly by the Organization for Economic Cooperation and Development (OCDE) and the World Bank (10). Mexico is below the average of the countries of said organization, which is 3.5 doctors.[2] This same report indicates the importance of the skills, competence and productivity of health personnel as fundamental requirements for providing quality health services. In this logic, it is important to mention the training of human resources in health, from the academic point of view since they are a fundamental pillar in the functioning of the country's health system. We are referring to medical interns in social service and resident physicians. According to data obtained from the General Directorate of Health Information by the Corriente Alterna initiative of the UNAM, during 2021 there were 29,286 medical interns in social service in 2,929 medical units throughout the country. These units, located in rural communities or communities with difficult access, operate solely with the work of these professionals and in most cases; they perform their work in suboptimal conditions (11).

Another important block within the health services is that of medical residencies. According to the definition of the Official Mexi-

[1] The World Health Organization defines human resources for health as "any person who carries out tasks whose main purpose is to promote health." It includes professionals from different areas and occupations, who can work in the public or private sector or as volunteers who can provide or manage health services.

[2] Three Latin American and Caribbean countries are OECD member states: Chile, Colombia and Mexico. This average includes Chile and Mexico.

https://doi.org/10.36105/mye.2023v34n3.04

can Standard NOM-001-SSA3-2012, is a "set of academic, assistance and research activities to be performed by the resident physician within the medical units receiving residents, during the time stipulated in the corresponding academic and operational programs" (5); however, resident physicians are a fundamental part of the operational structure within the health services which are also directly affected by the problem of violence in some regions.

In a press release (12), the Ministry of Health stated that there are currently 135,046 certified specialists in Mexico, but that most of these professionals are found in Mexico City, Nuevo León and Jalisco, in contrast to other states such as Chiapas, Guerrero, Tlaxcala, Oaxaca and Veracruz, which do not have this number of specialists.

4. Violence

There are several approaches and definitions to characterize violence. The World Health Organization (WHO) proposes the following: "[violence is] the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that causes or is likely to cause injury, death, psychological harm, maldevelopment or deprivation" (13, p.5). It also characterizes the different types of violence, proposing three major categories according to the characteristics of the perpetrator of the violent act: self-directed violence, interpersonal violence, and collective violence.

Collective violence, in the WHO definition, refers to violence committed by large groups or individuals, as well as *gang violence*. However, the definition described by Rutherford includes violent organized crime, so we consider it useful to also cite his concept as "the instrumental use of violence by persons who identify themselves as members of a group against another group or set of individuals, in order

https://doi.org/10.36105/mye.2023v34n3.04

to achieve political, economic or social objectives and includes violent organized crime".

The above is important to mention since the rate of intentional homicides and violence since 2017 reaches figures comparable to countries in armed conflict, for what was called "war on drugs" (14,15).

From another point of view, the problems of violence in Mexico are not a recent outburst, but rather that Mexico has historically not solved different problems such as lack of employment, scarce government accountability or corruption at different levels, as well as other social and cultural factors that persist and not precisely because of the "myth of the war between cartels for drug trafficking" (16).

Having said this, an important notion is the concept that defines complex security environments, which refer to contexts of humanitarian and civil crises caused not only by armed conflicts but also by precarious conditions, disasters or lack of governance. In these situations, there may be attacks on individuals, obstructions, discrimination, attacks on health facilities or inappropriate allocation of supplies and even criminalization of health professionals (1). Therefore, it is worth mentioning that not only collective violence alone affects health care, but also other factors, such as precarious conditions and lack of governance. However, situations such as attacks on health centers are an important trigger for many physicians to fear for their safety.

In 2002, WHO in the *World Report on Violence and Health* mentions that mortality data, especially from homicide, war-related deaths or even suicides are an indicator of the extent of lethal violence in a region or country, as well as listing the consequences of social injuries related to violence (13). The analysis of these data is of great importance as it allows the identification of regions or communities at high risk of aggression. Thus, the main indicator for measuring the level of violence is homicide, since it is the "most serious and

https://doi.org/10.36105/mye.2023v34n3.04

visible of all violent acts" and the one most accurately reported in indexes and statistics (17, p.1).

In Mexico, according to the recently published press release (18) of INEGI, in July 2022, it was preliminarily announced that in 2021, there were 35,625 homicides and the main cause was due to assaults with firearms.

One way of making the importance of this problem visible is that it is the main concern of the population, as indicated by the *National Survey of Victimization and Perception of Public Safety* (ENVIPE) 2021(19) at the national level, 58.9% of the population aged 18 and over currently considers insecurity as the main problem, followed by unemployment with 41.5% and health with 40.2%.

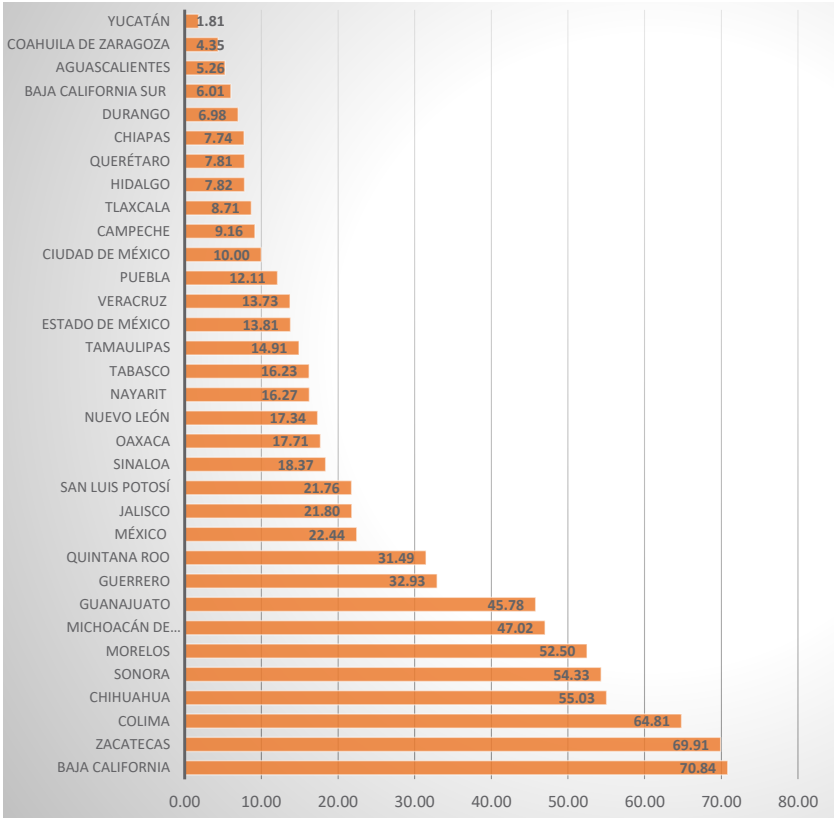
4.1. States with the highest level of violence

According to the *National Program for the Social Prevention of Violence and Crime* 2022-2024, six states (Baja California, Chihuahua, State of Mexico, Guanajuato, Jalisco and Michoacán) account for 50% of intentional homicides (19).

During 2021, most of the homicides were related to the operation of organized crime, since during this year the crime of drug dealing increased up to 139% (20). The ten states with the highest homicide rate per 100,000 inhabitants in 2021 were Baja California, Zacatecas, Colima, Chihuahua, Sonora, Morelos, Michoacán, Guanajuato, Guerrero and Quintana Roo, as shown in Table 1.

https://doi.org/10.36105/mye.2023v34n3.04

Table 1. Homicide rate per 100,000 inhabitants, by state in 2021

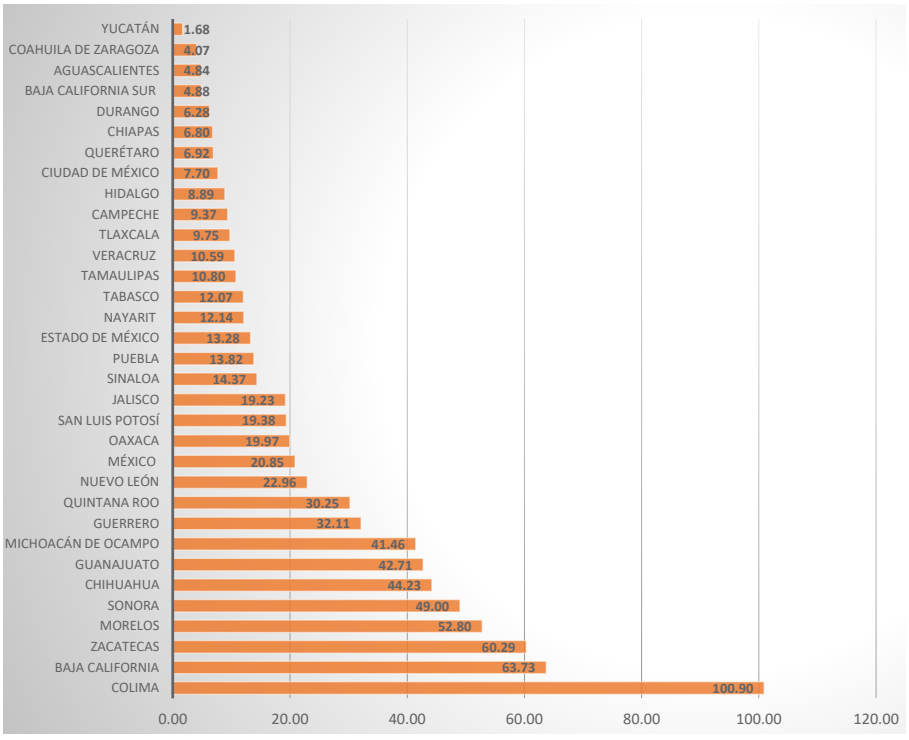


Source: prepared by the authors with data from the Executive Secretariat of the National Public Security System (February 2023).

Recently, organized crime activities have undergone changes due to the rapid territorial expansion of larger criminal groups and the proliferation of small nuclei that diversify the types of crimes. In addition, there have also been changes in the types of drugs trafficked (20), so that in 2022, the states in which these changes occurred, occupied the highest homicide figures, however, it is noteworthy that despite changing the ordinal place in the list, the same states remain, as shown in Table 2.

https://doi.org/10.36105/mye.2023v34n3.04

Table 2. Homicide rate per 100,000 inhabitants,
by state during 2022.



Source: prepared by the authors with data from the Executive Secretariat of the National Public Security System (January 2023).

5. Medical work in violent areas

Health care is an absolutely important issue for a population and any social issue that affects, it must be recognized and evaluated in the same way that the dangerous immediate and long-term consequences of violence for health and for the social and psychological

https://doi.org/10.36105/mye.2023v34n3.04

development of individuals have been recognized[3] (21). One of these consequences is the lack of medical personnel to cover the entire national territory.

The government assured that it faced a great challenge due to the lack of at least 200,000 physicians, since Mexico had 270,600 general practitioners at that time and should have 393,600, so there was a deficit of 123,000. On the other hand, the deficit of specialist physicians was 72,000 since it had 146,300 and should have 219,000 (22). The above figures were mentioned in general terms, without specifying each of the state or regional needs. It was argued that one of the main causes of this deficit is that medical schools do not accept enough students annually.

However, the international organization Médecins Sans Frontières, has documented that health services cannot operate due to the presence of organized crime groups in some regions (23), which has caused health personnel to migrate from these regions or even avoid them altogether, and that the provision of health services is scarce or non-existent (24), as working conditions do not provide facilities for the fundamental right to safe work.

A study of perceptions of working conditions in social service, for example, found that an overwhelming percentage of trainee physicians surveyed perceived insecurity in the following three broad areas.

The first is the one that directly affects people working as doctors: 37.4% did not feel safe in the town and 26.7% stated that they felt at risk of losing their life at some point; the second is that related to victims of attempts and execution of criminal acts: 35.9% indicated attempts to enter the health center without consent, 16.8% registered that they did enter the health center; 1.5% were victims of kidnapping or attempted kidnapping and 23.3% considered not continuing with the social service for these reasons.

[3] In 1996, the World Health Assembly in resolution WHA49.25 recognized the increasingly important consequences of violence in health services everywhere, as well as its detrimental effect on scarce health resources for countries and communities; and declares that violence is a major public health problem throughout the world.

https://doi.org/10.36105/mye.2023v34n3.04

The third is related to the inability to provide protection: the result was that 71.8% of the local authorities showed no interest in the safety of the doctor (25).

Figure 1 shows an example of different attacks suffered by doctors in some regions and their consequent mobilizations, a phenomenon reported by the media for more than 10 years (26).

Figure 1. Example of notes in the media where the growing situation of insecurity in the performance of medical work and the consequent mobilizations in protest are manifested

Date	Complaint
2011-2012	First journalistic notes that denounce that, for fear of violence, doctors leave communities in Durango and Tamaulipas, some have changed their hours of attention, they only treat acquaintances and refuse home visits.
2012	First union marches in Ciudad Juárez and Morelos; Doctors demand safer working conditions.
2012-2013	First notes on the death of doctors in social service. The emergence of #niunpasantemás. (#notanothermore.)
2014	The #y soy17 movement arose when 16 doctors from Guadalajara were accused and arrested for medical negligence.
2014	Union marches in Morelos to demand safer working conditions.
2014-2017	Increased coverage of kidnappings, murders and extortion of doctors in Guerrero, León, Jalisco, Veracruz and DF. Doctors are afraid of being "raised" by members of organized crime to care for bosses and drug traffickers.
2016	Doctors begin to organize against the conditions of insecurity at the national level and, on June 22, they carry out a strike organized by #yosoy17, with marches in Durango, Veracruz, Jalisco and the DF. They demand safer working conditions and the "non-criminalization of the medical act."
2016-2017	The number of communities abandoned by doctors in Guerrero and Durango increases.

Source: own elaboration.

https://doi.org/10.36105/mye.2023v34n3.04

It has been recorded that, in the last five years, a medical intern loses his life violently every year (27). In 2022, a 24-year-old medical intern who was performing his social service while carrying out his medical work in the state of Durango was murdered. The event sparked protests in different states of the country such as Coahuila, Oaxaca, Veracruz, Zacatecas and in Mexico City. During this demonstration, doctors in training asked the state, federal and university authorities to take measures that lead to solving the problem, in addition to the request through different non-governmental organizations to guarantee the well-being and safety of doctors (28).

On the other hand, there is no complete clarity about the official figures of this problem. The Federal Government's Health Secretariat reported 34 complaints of attacks or threats against medical interns from 12 higher education institutions; however, in another report from one of these institutions, it was reported that from January 2007 to September 2015, 50 complaints from student medical interns were registered (29).

In response to the problem of the decrease in human resources in health, in May 2022, various media outlets on their digital platforms reported that the government had offered expedited hiring and an increase in salaries to doctors who agreed to work in rural areas and if not, in order to guarantee the right to health protection for Mexicans, then they would seek to hire foreign doctors (Cuba, the United States and France) (30). It is important to note that said call does not specify the states or regions of the country in which the medical positions to be filled are located; however, it refers to the fact that there will be a benefit of "up to 30% bonus for working in rural areas", as well as "Payment for High Cost of Living and/or Isolated Area in various locations of the Federative Entities" (31).

In response to this initiative, Mexican doctors argued that the lack of coverage in some regions of the country is not the lack of professional personnel but rather the absence of adequate working conditions and security in these areas, as well as physical resources, medicines and medical equipment necessary to perform the job (32).

https://doi.org/10.36105/mye.2023v34n3.04

There is little research and information about the effects of violence on aspects of health care and how it affects the provision of human resources in health (23). Despite this, it is considered that attention should be paid to this phenomenon and address areas of opportunity, since in many cases in rural health centers, only the medical intern is responsible for 24-hour medical care. That is, these professionals must comply with a morning and evening schedule and on many occasions, they must pay attention even at night if emergency cases arise, circumstances that pose a high risk to the well-being and safety of the doctor.

6. Allocation of human resources in health

Assigning resources implies prioritizing the needs by virtue of the urgency that generates the greatest benefit or causes the least possible harm. If we talk about this determination process in terms of health protection, it can be seen that it is much more complex.

Let us understand the *micro allocation* of resources when you have to deliberate between which person will be chosen to assign a specific resource and the order in which they will receive it; for example, the use of a hospital bed or a mechanical ventilator. Likewise, the allocation of treatments or individual therapeutic measures, processes that are directly linked to the allocation of human resources in health, since it is important to have a professional at the local level, who is in charge of medical issues with a deep understanding of the circumstances and local context of the health status of a given population.

On the other hand, the *macro allocation* of resources refers to an area of greater magnitude such as the allocation of budgets or the evaluation of the health program that will be given priority, since medical care is not the only important good, so it is necessary to discern other needs within the existing health system (33).

Although these decisions seek the maximum benefit, within the *macro-allocation* there is also the management of human resources in

https://doi.org/10.36105/mye.2023v34n3.04

health, which includes planning, organizing and distributing in an adequate and optimal way the coverage of all the health needs of the people, as well as having strategies and policies that allow these professionals to want to be part of this system, not only for the economic incentives but also for the professional and personal satisfaction (34). From this point of view and taking into account the situations described in the previous sections, we can outline the complexity and challenges involved in the management of these resources as an important link between the needs of *micro-allocation and macro-allocation.*

7. Right to health protection, autonomy and conflict in the allocation of human resources in health

To the extent that we explain the nature and importance of each of the elements that make up the relationship between health, the macro-allocation of resources (including human resources in health) and violence, there are conflicts that are essential to describe. Although it is not necessary in this article to propose a forceful solution to the health problem caused by violence or to the general problems of the Mexican health system with respect to the lack of human resources in health, nor to obtain particular conclusions, it is about to make the situation visible and show it from an ethical point of view within the approach of regulatory issues that are expected to be resolved in future works.

Likewise, it is important to raise the importance of health from a philosophical and legal perspective. Philosopher Norman Daniels explains that any theory of justice would also have to address questions of health in such a way that health care (including public health) is special because it protects normal functioning, which in turn protects the range of opportunities open to people (33).

In the same sense, from the legal point of view, the right to health is a fundamental human right and the Mexican constitution refers to

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the right to health protection.[4] It implies that the country's health authorities must organize, plan and regulate the operation of the national health system. This responsibility includes making decisions regarding the allocation of resources, not only material, physical or economic, but also human resources. We will think that, therefore, and in order to achieve the objective of protecting people's health, strategies must be created to ensure that there are medical personnel that cover the national territory.

Violence is one of the main factors for which there is a lack of medical personnel in the regions affected by this problem. Therefore, it is necessary to reflect on what different circumstances has caused the lack of medical coverage since doctors, in a genuine exercise of their autonomy such as their "ability to choose, to make their own decisions and to act in accordance with them" (35), they decide not to work in the affected areas.

The first thought about these circumstances is to understand that there is a conflict, since the decision of the doctors could harm the right to health protection of the people who would be beneficiaries of the medical service, absent for the moment.

The conflict lies in the allocation, by the state, of the necessary resources to safeguard the right to health protection. If health professionals do not agree to work in these areas, it is to protect their own well-being, in any case, it is also about issues related to their health and life, which is why they decide not to go to these places, until the following situations are met: (i) better security conditions in these areas; (ii) improvement in working conditions, as well as better economic remuneration and (iii) increase in physical and material resources, as well as medicines and medical equipment. So, we find the following questions: is it prudent to increase the incentives

[4] Art. 4 of the Political Constitution of the United Mexican States: "Everyone has the right to health protection. The law will define the bases and modalities for access to health services and will establish the concurrence of the Federation and the federal entities in general health matters, in accordance with the provisions of section XVI of art. 73 of this constitution".

https://doi.org/10.36105/mye.2023v34n3.04

for doctors to agree to go to these areas, or should resources be allocated to plans that improve violence in these regions? Is it considerably ethical to spend more resources on this strategy and neglect other programs that would also be important in other areas of health? Is it prudent to expand and improve the hospital infrastructure in these areas, which would improve the conditions to carry out medical work?

Answering these questions and probably many others that would emerge from the discussion is very complex and is not the objective of this paper, however, we find that the current proposal of only getting medical personnel to go to the affected regions is an unbalanced alternative that could not benefit and does not represent a solution to the problem.

For this reason, it is essential to invest in studies and research that address this type of social issues that affect the health of the population and try to find effective solutions to improve health coverage in these marginalized places.

8. Conclusions

Health is a valuable asset that allows individuals to have a good development in many aspects of their lives and to create the health of all within society. However, some social phenomena could affect good health. One of these phenomena is violence, which in some regions of Mexico has become an alarming public health problem, since it hinders the delivery of these services. In the process of knowing the circumstances and giving an idea of the choice of the most appropriate way to improve it, different ethical conflicts come to light that are still difficult to resolve, so that more research is needed to understand and find solutions to this situation.

https://doi.org/10.36105/mye.2023v34n3.04

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