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Navigating the pandemic: A critical perspective on COVID-19 responses in Central America

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ABSTRACT

Following the World Health Organization's declaration of the new coronavirus as a pandemic, nations had to act swiftly to draft effective strategies for the prevention and containment of COVID-19. International literature highlights a range of approaches taken by countries, with varying degrees of success, as measured by the quality and responsiveness of their public health systems. This brief perspective proposes a critical-gerontological reflection on the Central American countries, highlighting the divergent regional approaches to the pandemic that resulted in unequal figures between nations. Despite the intention to face the health challenge collectively, varying governmental positions had a direct impact on the health of the older population. Costa Rica and Panama responded similarly to the crisis, showcasing their better social and health scenarios compared to their peers. The Central American approach to public health was tailored to the political ideology of each country, rather than adhering to the common objectives set by the regional integration scheme in place. Despite the pandemic posing a challenge, the region remains committed to building universal, equitable, and comprehensive public health for older people.

Keywords: international health, pandemics, older adults

INTRODUCTION

Right at the start of the 2020 international health crisis, the Central American nations jointly developed a Regional Contingency Plan to address the socio-health crisis caused by the emergence of the novel coronavirus 2019 [1]. This plan aimed to reinforce national efforts to prevent, contain, and treat coronavirus disease 2019 (COVID-19) in the region. Such instrument combined the multisectoral responses of the seven founding members of the Central American integration system (SICA): Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. On 12 May 2020, the Heads of State and Ministers of Health held an extraordinary meeting, resulting in the development of a regional plan to be implemented in all countries, organized into five axes that ordered their strategies, namely: health and risk management, trade and finance, security, justice and migration, strategic communication, and international cooperation management [2].

While the group approach among Central American countries to socio-health and environmental emergencies has a successful track record of achievements, what happened during the first two years of the pandemic goes beyond the regional experience and imposes, so to speak, the need to rethink institutional response mechanisms due to the divergent response capacity of governments [3]. In this brief perspective, we raise some considerations about the unequal governance of older peoples in Central America during the pandemic, discussing the positioning of states at national and regional levels. For the most part, however, it aims to highlight differences in governmental approaches and their impact on the social and epidemiological behaviors of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), so the development of the arguments is supported by a simple descriptive stance through a narrative sequence.

The COVID-19 pandemic has had a more severe impact on the older population, despite higher infection rates among younger groups. This is because older adults are more vulnerable to a worse clinical prognosis due to pathophysiological frailty, comorbidities, and unhealthy lifestyle habits. As a result, this age group has higher case fatality rates. Individuals aged 65 years and older had the highest number of deaths in Europe in 2020 and 2021 [4]. In Canada and the United States, older patients had more admissions to intensive care units, but for shorter durations compared to other age groups. Premature deaths were mainly caused by risk factors such as smoking, alcohol consumption, and pre-existing cardiovascular diseases [5].

The statistics for the Latin American region were consistent with those mentioned above. Older adults accounted for most deaths in nearly all countries. Admittedly, Ministries of Public

This paper is an extract of the first author's doctoral thesis, in progress (2022-2026).

Health in Central America acknowledged that older individuals were particularly more vulnerable and required special attention. Epidemiological cuts show that during the first six months of the pandemic (mid-2020), older adults accounted for 70.0% of deaths in those nations. The most severe scenario was observed in Guatemala, Panama, and El Salvador [6]. Brief reports from the Nicaraguan and Belizean governments indicate that deaths were primarily concentrated in individuals over 60 years of age. Similarly, in Costa Rica, case fatality rate followed a comparable pattern, with a higher number of deaths observed in individuals over 70 years of age, as well as in those with hypertension, diabetes, and immunosuppression [7].

To control the spread of SARS-CoV-2, countries implemented multisectoral strategies and created special commissions to monitor the pandemic's multidimensional impacts. Hygiene measures were implemented, which were effective in reducing infections and deaths, despite presenting challenges in other areas. Central American governments' proposals prioritized interventions with older individuals but failed to address the central issue brought up by the pandemic, that of social inequality and inequity.

METHODS

This paper takes a critical reading approach anchored in medical-sociological and critical gerontology perspectives, rather than focusing on an epidemiological analysis of SARS-CoV-2 among older adults. A medical-sociological analysis provides a comprehensive understanding of the social aspects related to health. This approach not only considers the biomedical consequences of the phenomenon but also evaluates the sociocultural interplays. The critical-gerontological perspective offers valuable insights into the institutional forces that defend and guarantee the fundamental rights of older persons. The combination of both interpretive approaches delivers a comprehensive understanding of the impacts of the pandemic among older Central Americans with authority and clarity.

This paper confidently explores two points that have been overlooked regarding the bioethical principles of justice and protection for all in public health actions in Central America. Firstly, it asserts that despite having a regional integration system, the performance of SICA-derived bodies during health crises was inadequate. We do so by discussing the shortcomings of the joint-negotiation mechanism, which failed to address health inequities and instead highlighted the organizational gaps between countries. To illustrate this point, we examined the cases of Costa Rica and Panama and compared their roles to those of other nations with different socio-health backgrounds.

The second statement analyzes medical training in these countries and identifies factual elements that contributed to the inadequate health governance demonstrated by public health systems. These elements, when combined with SICA's regional bodies, would have generated a better vision of health.

Overall, the interest is not in exhausting possible discussions, given that the health crisis has positioned itself as an extra-temporal and multidimensional phenomenon, thus demanding consequent readings. The absence of this type of debate, on the contrary, hinders the possibility of pointing out areas for improvement in the Central American public health systems. This conceptualization is crucial for critical gerontology, medical sociology, and public health. By emphasizing the severity of the pandemic's impact on socially vulnerable groups, we can underscore the urgency of reforming and monitoring protectionist frameworks during unforeseen events, just as the one we experienced during the COVID-19 pandemic.

RESULTS & DISCUSSION

Bioethical Issues in Approach to Pandemic

Central America has a coexistence of democratic and dictatorial modes of public governance. This clash of purposes on the forms of State management impregnates and corrodes the public spheres, including health, which is a pillar for the welfare and development of older people. The region faces a practical breach in the constitutional items that prevent the people's right to health, mainly due to the inadequate health governance adopted by each country in recent years, which does not align with integration promises. It is worth noting that not all countries have included the right to health as an inalienable and irrevocable item in their Constitutions, unlike Costa Rica.

Costa Rica has achieved the best social and health rates in Central America and a top ranking in the Latin American region for the past six decades [6]. This contrasts with countries like Honduras and El Salvador, which have political constitutions that explicitly guarantee the right to health protection. Costa Rica's success in this area speaks to the effectiveness of its approach to healthcare. Adequate implementation of supply-side interventions to improve the delivery of care is necessary to ensure equitable realization of the right to health for all [10].

To provide effective geriatric healthcare, policy, and delivery, it is crucial to prioritize and consider the avoidable differences that shape, support, and guide public programs and services. The structuring of national health systems has a direct impact on the financing, functioning, and strengthening of health actions at national and regional levels [11]. The description of social determinants of health often oversimplifies the complex power relations and living conditions that affect older populations, hence this oversimplification is an example of how unsound institutional governance can perpetuate disparities in public health, as shown in **Table 1** [12]. Unfortunately, this is not a new issue in Latin American public management, and it is often exacerbated in countries with anti-progressive ideologies [13].

Moreover, **Table 1** shows two different human development scenarios among Central American countries. Costa Rica and Panama have the best social-sanitary conditions, resulting in longer life expectancies due to greater access to better quality basic services. In contrast, citizens of Guatemala, Honduras, Belize, Nicaragua, and El Salvador face greater difficulties in achieving human development. Deprivation and limited access to essential services are the primary reasons for this.

In some countries, the conditions for living an active and healthy old age are becoming discouraging. A common challenge for the region is high distrust in public institutions, with a regional average of 75.0% [12]. This figure may be the result of low state investment in education and social infrastructure, which is even more pronounced in countries like

Table 1. Sociodemographic prospects for Central America, by country & corresponding variables, 2022 [12]

Variable observed	BLZ	CRC	SLV	GTM	HND	PNM	NRG	CCA
Total population (1,000 people at mid-year)	394.9	5,123.1	6,292.7	17,362.7	10,121.4	4.,294.4	6,755.9	50,345.1
Annual population growth rate (60 & over)	NA	33.9	16.9	13.4	30.5	40.2	38.0	28.8
Crude birth rate (1,000 people)	17.8	11.7	15.8	20.9	20.9	17.4	20.0	17.8
Total fertility rate (children per woman)	2.0	1.5	1.8	2.4	2.3	2.3	2.3	2.1
Life expectancy at birth, absolute years (male/female)	68/75	75/80	67/76	66/72	68/73	74/80	72/78	70/76
Infant mortality rate (deaths per 1,000 live births)	10.1	6.8	9.9	19.8	12.8	12.7	12.3	12.1
Public expenditure on education: % of gross domestic product	8.7	6.7	3.4	3.3	6.4	3.9	4.6	5.3
Public expenditure on health as a % of gross domestic product	6.0	7.3	8.5	6.2	7.3	7.6	8.4	7.3
Population according to housing status by per capita income quintile (%)	NA	18.8	12.8	NA	14.6	11.3	NA	14.3
Population in overcrowded households (%)	NA	7.6	46.5	NA	49.8	32.3	NA	34.1
Households with availability of water in the dwelling (%)	NA	99.4	70.4	NA	87.8	94.9	NA	88.1
Households with availability of electricity in the dwelling (%)	NA	99.6	87.7	NA	89.4	92.0	NA	92.2
Households with availability of sanitation in the dwelling (%)	NA	47.8	47.1	NA	50.3	48.8	NA	48.5
Population without internet access at home (%)	NA	10.2	74.0	NA	72.9	27.5	NA	46.2
Hospital beds (10,000 inhabitants)	10.4	11.4	12.0	4.4	6.4	9.3	NA	9.0
Population without medical insurance (%)	NA	14.8	72.7	NA	84.6	45.8	NA	
Public social protection expenditure: % of gross domestic product	NA	4.6	6.5	3.0	.8	NA	.8	3.1
Population aged 60 & over without own income (%)	NA	19.4	30.0	29.3	NA	7.5	NA	21.6
Distrust in the political and state institutions (2020, %)	NA	72.0	76.0	78.0	85.0	77.0	63.0	75.2
People who consider that income distribution if unfair (2020, %)	NA	87.0	58.0	78.0	84.0	78.0	59.0	74.0
Trust in the police forces (%)	NA	50.0	58.0	28.0	27.0	48.0	32.0	40.5

Note. NA: Unavailable data; BLZ: Belize; CRC: Costa Rica; SLV: El Salvador; GTM: Guatemala; HND: Honduras; PNM: Panama; NRG: Nicaragua; & CCA: Continental Central America

El Salvador, Guatemala, and Honduras. During health crises, low trust in state institutions can lead to populations contesting measures or legal impositions. It then becomes extremely important to note how trust in public governance is crucial during such times.

On the other hand, access to fixed internet services in the region is low, with only positive values in Costa Rica and Panama [12]. This was a significant issue during the pandemic, as telemedicine became one of the most efficient interventions worldwide to avoid interrupting healthcare for older adults, particularly in mental health. Furthermore, these statistics indicate that Central American countries still have a long way to go in achieving digital inclusion for older adults.

The emergence of the pandemic made it necessary to rely on a multi-faceted approach, although the social aspect exacerbates the issue as it is a contributing factor to the spread of infectious diseases. Regardless of the epidemiological explanation, there is a social void that underlies it. COVID-19, being a highly infectious disease, is associated with higher mortality and morbidity rates in countries with denser populations [14].

Therefore, it may seem that countries with larger populations, such as Guatemala, Nicaragua, and Honduras, should have more registries than those with smaller populations, such as El Salvador, Belize, and Costa Rica. However, during the first few months, epidemiological reports from national health authorities and regional clusters, primarily published by the Pan American Health Organization, were not symmetrical. Central America became an interesting case for analysis due to its small size and high population density [15].

Despite the challenges posed by the pandemic, there were also well-known technocratic obstacles that are defined by race, age, and social class. Therefore, a thorough and deliberate reading was mandatory, with timely action from the Central American states. Limited government investment in health has historically been a recurring issue for these nations, resulting in two main problems: underreporting rates and poor quality of medical records [16, 17]. Overcoming this challenge can be difficult, as public health systems are currently undergoing significant changes in how they record, process, and produce health situational analyses [18]. Planning, implementation, and evaluation are the three cornerstones of this process. During a pandemic boom, timely healthcare decision-making relies on well-designed technological structures and fixed mechanisms for professional updating and qualification of human resources responsible for recording and drafting population health reports [19].

The lack of real-time statistics on the impact of COVID-19 on the elderly population raised important issues. Firstly, the unavailability of socio-health data resulting from the pandemic hindered the development of time-bound programs and public policies for the social protection of most affected individuals. The economic challenges faced by Central American countries jeopardized the maintenance of social assistance systems for vulnerable groups, especially those persons in a condition of functional dependence or socio-familial fragility. Public resources allocated for aid must have been based on verified data, which was neglected by authorities during the pandemic.

Indeed, reliable data had to be provided not only on epidemiological traces, but also on the allocation of public financial resources for pandemic management. Despite the epidemiological information shared, it only gave an initial idea of the behavior and lethality of the disease in the older population, without exploring the situational context and how older adults dealt with the disease. The absence of this information absolved the states of responsibility, which was the most common claim.

Not unexpectedly, gaps in access to health services between rural and urban areas also led to disparities in the campaigns to combat SARS-CoV-2. A study by Central American researchers found notable deviations in access to drinking water and sanitation services in Guatemala, Honduras, and El Salvador [20]. In that matter, the World Health Organization established that food, clothing, and hand disinfection were effective measures to reduce infections, due to the

susceptibility of SARS-CoV-2 and other respiratory viruses to high temperatures. Therefore, it is likely that many deaths could have been prevented. Moreover, low adherence per dose and early death from related diseases, such as immunosuppressive and cardiovascular diseases, led to decreased compliance with the COVID-19 vaccination schedule in the older population [21].

The government's failure to consider the needs of indigenous populations is also a crucial issue that needs to be addressed. The international literature on COVID-19 highlights numerous hardships faced by indigenous peoples due to the approach of local authorities [22, 23]. Prior negotiation with community leaders is often necessary to approach their social practices and cosmovision, respectfully, leading to bioethical conduct on the part of health authorities. Acknowledging the subjectivity that transcends indigenous care practices should be the foundation of health strategies, as the biomedical model is not part of the health-disease *continuum* within these communities. Although technical guidelines existed for addressing the pandemic in indigenous communities, they failed to consider the anthropological aspects of health specific to each group. This limited prompt and effective responses to the needs of these communities. This is particularly sensitive in Central America, where there are over sixty ethnic groups living in remote and hard-to-reach areas [24]. Each country displayed socio-territorial specificities that influenced how the pandemic affected vulnerable classes, including indigenous older adults.

Unfortunately, no official data exists on the mortality and morbidity rates of COVID-19 among elderly indigenous populations. Estimates suggest that 85.0% of deaths may have occurred in individuals over 60 years of age [25]. Additionally, the scarcity of medical records regarding the pandemic's impact on indigenous peoples highlights a lack of understanding of the consequences of the pandemic on a population that comprises approximately 28.0% of the total number of inhabitants in Central America [26]. This bureaucratic obstacle represents a challenge to strengthen public healthcare systems in these countries and creates uncertainties in achieving human development objectives in the region.

For instance, regional organizations such as the Economic Commission for Latin America and the Caribbean (ECLAC) have already called for the disaggregation of health statistics by ethnicity. However, Central American countries continue to process information in a generalized manner, hindering the development of a comprehensive healthcare model [25]. As embodied in the regional health policy 2015-2022,

> "despite the institutional scope of regional integration, which places it as one of the most advanced community management processes in Latin America, in the field of health it has not advanced to the same extent" [27, p. 7].

Unsteady Responses to Not Consistent Strategies

The North Central American Arc countries (Guatemala, Honduras, and El Salvador) promptly closed their land, air, and naval borders in response to the COVID-19 pandemic [28]. While this decision was made for preventive reasons, it is possible that leadership bias was also a factor. Notwithstanding this action may seem unsurprising given the circumstances, it is important to consider the potential influence of personal biases on such decisions. Governments' lack of flexibility created technocratic barriers to receiving humanitarian aid, affecting not only human resources but also the acquisition of non-perishable food, clothing, and healthcare equipment. Therefore, it is important to strike a reasonable balance for the greater wellbeing of the population, even if this requires thinking outside the box.

The pandemic highlighted the relevance of coordinated healthcare systems at all levels of care. It was not just this event that made it necessary for health organizations to update their guidelines. Cuts in public spending for healthcare also unveiled issues in primary and specialized care [29], then reflected in the massive recruitment of health personnel. A shuddering plea from health professionals was echoed around the world in response to the poor responsiveness of public health systems [26, 30]. A study that investigated the strategies and impacts of mass recruitment in European countries found that,

> "the implementation of many of these changes necessitated rapid adoption of emergency legislation to give planners, providers and commissioners of health services temporary new powers related to changing recruitment, planning and integration of these new workers in clinical practice" [31, p. 53].

However, despite the government's efforts, these measures were only temporary and had little lasting impact due to the decline in job contracts afterward.

The inadequate public health governance was related to the unfulfilled commitments made by these countries in various international laws, which directly affected the organization of SICA [32, 33]. The health decrees and guidelines instituted within the Council of Central American Ministers of Health were limited by the lack of a cyclical feedback mechanism. Such a mechanism should have deemed not only the initial stage, when the ordinances came into force, but also joint spaces for their reformulation, as appropriate. Moreover, if each public health system faced its own institutional challenges and had different approaches, it is reasonable to assume that these circumstances should have been better addressed by the region, since they would have an immediate impact on the health care of older adults. The rapid spread of the pandemic and the high mortality rates made it extremely difficult for Central America to overcome together.

Let's examine a practical example: the issue of COVID-19 vaccine coverage. This is a clear illustration of current management failures. The joint-negotiation is a health strategy implemented by the Council of Ministers of Health of Central America. Its purpose is to improve access to quality, safe, and effective medicines at more favorable prices. This allows for the optimization of health institution budgets, in accordance with Central American community law [34]. Costa Rica established pre-manufactured acquisition channels for a significant number of doses to protect its healthcare workers and administer the first doses to the most vulnerable groups, particularly older adults. Panama began its immunization campaign one month after Costa Rica, also prioritizing older adults as a vulnerable group [35]. Despite starting negotiation procedures months earlier, the rest of the countries experienced a delay of more than two months in addressing the logistical complexity. This difference in organization resulted in the loss of thousands of older adults and increased hospital occupancy rates, particularly in intensive care units, as shown in **Table 2**.

Table 2. Overview of COVID-19 vaccination among Central American countries during first half of 2021 [37]

Date	Country and procedures followed
November 24, 2020	President Nayib Bukele of El Salvador announces an agreement with AstraZeneca-Oxford for the purchase of 2 million doses in the first three months of 2021.
December 15, 2020	Panama approves emergency use of Pfizer/BioNTech vaccine.
December 24, 2020	Costa Rica begins inoculating the elderly and health workforce with the Pfizer vaccine.
December 30, 2020	El Salvador approves the importance of the AstraZeneca-Oxford vaccine.
January 12, 2021	Guatemala signs purchase agreements with Johnson & Johnson, Moderna and Pfizer.
January 21, 2021	Panama begins vaccinating citizens with Pfizer-BioNTech doses.
February 17, 2021	Panama continues to immunize citizens after the second batch of approximately 67,000 doses of Pfizer vaccine arrived. El Salvador begins administering the first doses of AstraZeneca-Oxford vaccine from a batch of 20,000 vaccines.
February 23, 2021	Nicaragua receives its first batch of an undisclosed number of doses of Sputnik V vaccine, which was a donation from Russia.
February 24, 2021	Honduras approves Russian vaccine Sputnik V for emergency use.
February 25, 2021	Guatemala approves Russian vaccine Sputnik V for emergency use. Guatemala and Honduras each receive 5,000 doses of Moderna from Israel.
March 02, 2021	Nicaragua starts vaccinations & begins administering doses of Russian vaccine Sputnik V to citizens with chronic diseases.
March 03, 2021	Guatemala receives 200,000 doses of Covishield vaccine from India, produced in collaboration with AstraZeneca-Oxford of India.
March 07, 2021	Nicaragua receives 200,000 doses of Covishield vaccine from AstraZeneca-Oxford of India.
April 01, 2021	Panama approves Russian vaccine Sputnik V for emergency use, second vaccine approved by country after Pfizer-BioNTech.
April 04, 2021	El Salvador receives one million doses of Sinovac.
April 06, 2021	Guatemala announces an agreement to purchase 16 million doses of Russian Sputnik V vaccine. The doses were scheduled to arrive in two weeks.
April 09, 2021	Panama approves the emergency use of the Chinese vaccine Sinovac, the third vaccine approved in the country.
April 21, 2021	Spain's President Pedro Sanchez announces that 7.5 million doses of vaccines will be donated to Latin America and the Caribbean after July when at least 50% of Spain's population is expected to be fully vaccinated.
May 13, 2021	El Salvador sends 34,000 doses of AstraZeneca-Oxford vaccine to seven Honduran towns after mayors posted petitions on social network.
May 20, 2021	Nicaragua approves the application of the Sputnik Light vaccine
June 09, 2021	The United States will donate 20 million vaccines for the COVAX program in Latin America and another 20 million directly to Panama, Costa Rica, Argentina, Colombia, Dominican Republic, Haiti, and Mexico. The United States announced its support for waiving intellectual property protections for COVID-19 vaccines.
June 12, 2021	Mexico starts sending 100,000 doses of AstraZeneca to Belize.
June 16, 2021	Costa Rica rejects a planned delivery of the Chinese vaccine Sinovac due to concerns about its efficacy.
June 27, 2021	COVAX facility received its first shipment of vaccines donated by the United States involving 1.5 million doses destined for Honduras.
July 01, 2021	Panama announces arrival of one million vaccines in July 2021.
July 02, 2021	The United States announces plans to send 1.5 million doses of Moderna to El Salvador. Hours later China announces the same amount of Sinovac doses.

According to statistics released by ECLAC on July 15, 2022, the full-immunization rates for the following countries were Costa Rica at 81.0%, El Salvador at 68.5%, Guatemala at 36.3%, Honduras at 52.9%, Nicaragua at 61.5%, and Panama at 72.8%. The data does not include epidemiological cutoffs for Belize, although estimates drawn by the same institution assume about 46.0% [36]. Although the coverage rates within and between countries are residual data, generally affected by under and late reporting, these figures reveal the different strategies and priorities adopted by each nation. Furthermore, these numbers highlight the need to reflect on what is bioethically just within the framework of the joint-negotiation proposed by SICA [37].

In addition to socioeconomic factors and weak health sovereignty, local health facilities working in family and community health arrangements also encountered impediments. The reality in many Central American settings, particularly rural areas, portrayed poor planning at the macro level and questionable distribution of vaccines at the micro level. This undermined daily vaccination rates and average monthly inventory in all countries, since the distribution of vaccines was primarily focused on large metropolitan areas due to their high population densities and infrastructure that was better suited for meeting the vaccination schedule.

The challenges related to the COVID-19 vaccine supply chain are not exclusive to Central America, they have been extensively described in international literature and are reportedly responsible for approximately 20.0-30.0% of preventable deaths in developing countries [38].

Central American public health systems can learn a lot from this experience. During epidemic booms, it is important to focus on the clinical-epidemiological aspect, but this alone is not a universal solution to the problem. The statistics observed in the first two years, which continue to be seen to a lesser extent today, indicate the complexity of the approach due to the unique socio-territorial characteristics of each country. Once again, the mortality, case fatality, and morbidity rates illustrated the significant health inequalities and inequities in the region.

Age, gender, and race had severe implications in the pandemic, as communicable and non-communicable ailments such as malnutrition, violence, and primary healthcare complaints. However, governments consistently acted in their own interests, leading to an asymmetrical approach, and invalidating ideals of comprehensive regional development.

Unqualified Professionals for a Skyrocketing Demand: A Crisis Foretold

In addition to the contexts mentioned above, the low educational profile of older adults and their caregivers led to a lower degree of health literacy. Older patients with higher health literacy can fully understand the information provided by professionals and are better equipped to care for their health and well-being [39]. Older individuals with higher levels of education showed a greater degree of acceptance towards the COVID-19 vaccine during the pandemic [40].

Additionally, adherence to health measures mandated by authorities was positively correlated with intention [41].

In Central America, geriatrics training is often overlooked at a time when few universities offer specialization in Geriatrics and Gerontology [42-46]. Consequently, the healthcare workforce faced numerous challenges in providing high-quality care, as many had not had appropriate contact with older patients during their undergraduate training. The scenario sketched during the pandemic reinforces the urgency of rethinking medical training and other related areas, given the increased trend in the rate of population aging in these countries. This trend is not necessarily accompanied by enough qualified professionals to meet the demand.

Even in countries like Costa Rica, where medical education is recognized for complying with international quality standards, there is still an ideology rooted in the biomedical model [47, 48].

Currently, the process of incorporating patient-tailored learning models into regional healthcare is gradual [49, 50]. Counter-hegemonic medical training is crucial in developing an ethical, resolute, and humanized approach to healthcare for older patients. Studies show that curricula with methodologies that move away from the biomedical model leads to greater efficacy and self-guided learning. This is because there is less emphasis on measurement and more emphasis on listening, which allows for a broader range of perspectives on social narratives [51].

A restructuring of medical training and learning models is necessary to improve human resources and the quality of geriatric care for older patients. We agree with Rodríguez-Álvarez and Ponce-de-León-Rosales [52] on the importance of a fresh viewpoint on the post-COVID-19 agenda and the control of medical narratives:

> "To move forward in the care of patients with post-COVID-19 condition we need an interest-free academic discussion based on clear technical and scientific knowledge, which is also empathic to the suffering imposed by COVID-19 on patients and their families, yet retains a clear, public health perspective and remains capable of adjusting as new knowledge becomes available. We need objective and, ideally, simple criteria to identify through clinical and laboratory studies including biomarkers, and then correctly treat, those whose health has been compromised beyond the acute phase of the infection, and those whose problems might derive not as direct sequelae form the disease but form the pandemic in all its dimensions. Furthermore, these starting points should not only lead to clinical guidelines, but also to the adoption of institutional administrative procedures, and to the creation of materials aimed at educating the population at large, considering both international guidelines as well as local regulations" [52, p. 75].

Achieving this objective is not an easy task. It requires a comprehensive understanding of the diverse contexts that make up the Central American reality, as well as the ability to design realistic proposals. The health and education sectors must work together to improve the living conditions of the population. To accomplish this, the region must prioritize evidence-based public health and address the shortage of scientific cooperation between nations [53].

Specialized regional bodies can encourage stakeholder involvement, particularly in improving national plans for science, innovation, and technology in health. Likewise, continued, and significant investment is needed to bridge the region's long-awaited human development.

CONCLUSIONS

While it may not have been possible to prevent all deaths in the older population due to their chronic pre-existing conditions, the lack of coordination between healthcare levels and apathy towards necessary health measures undoubtedly contributed to the region's dismal infection statistics. The differences in prioritization of COVID-19 immunization campaigns among countries largely explain the variations in mortality and case fatality rates.

Additionally, less strict restrictions in some areas may have influenced the timing of epidemic peaks across countries.

The pandemic's devastating impact may have prompted Central American governments to reflect individually and collectively. Health agencies ought to review their functions, identify shortcomings, and propose improvements based on the principles of autonomy, beneficence, non-maleficence, and justice, which are crucial in the healthcare of older adults. Although the pandemic was handled differently across Central America, it is important not to overlook the lessons learned and the strength of the people's spirit.

Today, older adults are demanding greater visibility and the fulfillment of their rights more than ever before. This requires a response from the states that is in line with their position.

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