BMJ Global Health

Peace and health: exploring the nexus in the Americas

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To cite: Hyder AA, Ambrosio NS, García-Ponce O, *et al*. Peace and health: exploring the nexus in the Americas. *BMJ Global Health* 2022;**7**:e009402. doi:10.1136/bmjgh-2022-009402

Handling editor Seye Abimbola

► Additional supplemental material is published online only. To view, please visit the journal online (http://dx.doi.org/10.1136/bmjgh-2022-009402).

Received 20 April 2022
Accepted 1 August 2022

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ABSTRACT

The relationship between peace and health is complex, multifactorial and fraught with challenges of definitions, measurements and outcomes. This exploratory commentary on this nexus within a focus on the Americas posits this challenge clearly and calls for more scholarship and empirical work on this issue from an interdisciplinary perspective. The overall goal of this paper is to try and explore the elements that impact the relationship between peace and health with a focus on the Americas (defined as countries spanning from Canada to Argentina) in the post-Cold war period. Focusing on the 1990s and onwards, we seek to underscore why violence continues to permeate these societies despite a third and lasting wave of democratisation in the hemisphere. We hope this will allow a more robust dialogue on peace and health in the regional and global health literature.

SUMMARY BOX

⇒ The article explores the complex relationship between peace and health in the Americas (defined as countries spanning from Canada to Argentina) in the post-Cold war period.
⇒ The relationship between peace and health is discussed considering populations affected by armed conflict experience severe public health consequences due to food insecurity, population displacement, the effects of weapons, and the collapse of essential health services.
⇒ Moreover, lack of peace is also manifested in armed violence, gang warfare, civil unrest and other forms of active insecurity and lack of safety which affects the mental and physical health of individuals and communities.
⇒ On the other hand, health interventions may be used as tools to promote peace during conflict, such as days of tranquility and cease fire to allow humanitarian aid and vaccination campaigns.
⇒ Reducing violence and promoting peace is a crucial health and policy issue in the Americas and represents a development challenge for the region.
⇒ This exploratory commentary on the nexus between peace and health calls for more scholarship and empirical work on this issue.

INTRODUCTION

The achievement of health within countries and around the world has been a goal for both nation-states and international bodies such as the WHO for decades. In September 2015, 193 member states of the United Nations (UN) adopted the Sustainable Development Goals (SDG) with the vision to build a world free of poverty, hunger and disease and to improve health. Many SDGs are interlinked and contribute directly or indirectly to improving health. SDG 3 (*ensure healthy lives and promote well-being for all by 2030*) explicitly calls for steps to end the epidemics of AIDS, tuberculosis, malaria and other infectious diseases by 2030 and aims to achieve universal health coverage, access to medicines and vaccines for all.[1] However, as important as these goals are, it is crucial to recognise that calls for advancements in health often overlook or fail to consider the role of violence in limiting our collective progress towards advancing individual and community well-being.

Peace within and across nations is also a stated goal of many governments and bodies like the UN. The birth of the UN (as the League of Nations) was a result of the devastating impact of the lack of peace and war in the world.[2] The relationship between peace and health has generally been discussed in the literature focused on a specific location, within the context of a particular war, or as pertaining to a specific incident. Banatvala and Zwi noted two decades ago that populations affected by armed conflict experience severe public health consequences due to food insecurity, population displacement, the effects of weapons and the collapse of essential health services.[3] These effects of war on public health include high mortality rates among refugees and internally displaced people, high morbidity rates from infectious diseases, psychological distress and disabilities related to injuries.[4] Likewise, deterioration of health and susceptibility to illness increases by lack of access to water and sanitation, food insecurity, crowding and the breakdown of infrastructure—consequences of lack of peace.[5]

Lack of peace is manifest not just as war or active conflict—it is also manifest in many countries around the world in contexts in which citizens and communities struggle to survive under the duress of persistent conflict, armed violence, gang warfare, civil unrest and other forms of active insecurity and lack of safety. In the Americas, as in other regions, violence can be state-sponsored and sanctioned. In addition, criminal violence has also become a global security threat as criminal organisations have evolved and interstate and civil wars have declined.[6 7] This type of violence may not escalate into cross-border or civil wars, but it nevertheless represents contexts in which mental and physical harm is inflicted on individuals and communities. And more importantly, these episodes are not isolated but represent patterns that repeat and spill over into neighbouring communities. As a case in point, De Jesus and Hernandes recently noted that citizens in present-day Central American countries, despite having transitioned away from the civil wars and authoritarian rule that afflicted these countries for several decades, continue to experience day-to-day generalised violence, which threatens the overall health and human security by causing persistent fear and chronic anxiety.[8] This chronic lack of peace is also a feature of countries and communities across the Western hemisphere and often is interspersed with more active states of war or violence. Such a situation has been attributed to the breakdown of health systems, disease interventions and poor health of the people in these regions. Laaser *et al* note that health systems must contribute to peace because aggression, violence and warfare are major threats to health and economic welfare.[9]

The overall goal of this paper is to try and explore the elements that impact the relationship between peace and health with a focus on the Americas (defined as countries spanning from Canada to Argentina) in the post-Cold war period. Focusing on the 1990s and onwards, we seek to underscore why violence continues to permeate these societies despite a third and lasting wave of democratisation in the hemisphere. Specifically, this paper hopes to document available selective data to showcase the importance of the endogenous relationship that exists between these two human goals (health and peace) and showcase the complexity of the pathways using regional examples and case studies. We seek to call attention to the variations in the levels of violence that affect why countries and citizens lack peace and how these lead to poor health outcomes, which in turn often contribute to further violence. We hope that this will allow a more robust dialogue on peace and health in the regional and global health literature.

CONCEPTS OF PEACE AND HEALTH

Peace and health are complex and potentially interrelated terms which share social, psychological and spiritual dimensions.[10] Various definitions of peace have been proposed in the literature; for example, Royce defines peace as a 'condition in which individuals, families, groups, communities, and/or nations experience low levels of violence and engage in mutually harmonious relationships'. Peace has also been defined as an experience affecting people and in specific contexts such as in a community, family or nation.[11] Galtung famously distinguished between negative and positive peace, where negative peace is the 'absence of organised direct violence and war', and positive peace is 'the integration of human society'.[12] Positive peace involves the absence of structural and cultural violence and involves the presence of justice, harmony and equality; it views individuals as resilient, forgiving and tolerant to other human beings, despite differences in cultural and religious backgrounds.[12] Peace can be measured through statistics, levels of violence and archival data; but as a state, peace is seen as a process that evolves over time.

State and non-state actors seeking power and control over others disrupt peace by behaviours that employ force intended to hurt, damage or kill. These violent actions disrupt economic and social systems and divert economic resources to military and/or defensive ends rather than welfare needs. These actions can occur across and within geographic borders and boundaries and spill over into neighbouring regions and communities.

Health is also a complex phenomenon once a restrictive biomedical lens is removed. The most common aspirational definition of health is by WHO as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'; indicative of a holistic approach to individual health.[13] Makoul *et al* also identified four concepts of health: *capacity* where health is the means to living an active life; *control*, where health is the result of individual behaviours and is embodied in the self-control it takes to enact the behaviours; *physical* where the focus is placed on the body and biomedical criteria and *psychosocial* with a focus on mental, emotional, spiritual and social aspects of health, including self-esteem and self-concept.[14]

More recently, human health has been linked to non-human health in the 'One Health' concept as a 'comprehensive approach for addressing health threats at the human-animal-environment interface' to help prioritise diseases of zoonotic and vector-borne origin, re-emerging infectious diseases, antimicrobial resistance and food safety.[15] This concept suggests a multidisciplinary and comprehensive approach to health, which involves humans and animals in a balanced environment and highlights that everything is intrinsically interconnected.[15] The concepts of peace and health are concerned with security, and societies and individuals seek to minimise dangers or threats to their well-being. Since the 1990s, there has been a marked shift in the security and foreign policy communities in emphasising global health problems as threats to national security.[16] Increasingly, infectious diseases and the risk of pandemics, such as the SARS-CoV-2 global pandemic now underway, are often framed as 'security threats,' and nation-states and even

the WHO employ terminologies that signal that resources should be rapidly mobilised to respond to these health emergencies. In other words, the *securitisation* of infectious diseases has implications for governance. There are specific types of health issues being elevated in priority and considered problems that concern and justify their management by national security and law enforcement as well as public health specialists.[17]

In contrast, most public health concerns require investments in prevention and treatment efforts to address largely silent epidemics; for example, the rising crises of hypertension and diabetes, often undiagnosed in low–middle-income countries.[18] Health risks steadily rise for individuals and their communities without such investments and structured programmes; however, these threats are not usually viewed as urgent challenges to national security. In other words, although peace and health are related, there are pressures on the urgency to secure peace when threats are viewed as threats to national security that contrast with the attention demanded towards health needs that require longer term, more complex structural investments and for whose outcomes and improvements may be less tangible and visible.

These issues are especially relevant to the Americas. In the aftermath of the multiple economic and political crises that affected many of these countries, there has been an unravelling of fragile public health systems across Latin America. The longstanding fragility of health systems, especially in Latin America, is intrinsically linked with the type and quality of governance in these countries; and as these governments perceive national security threats, there are competing pressures to further reallocate resources towards these emergencies and away from what is perceived as less-pressing health problems.

SELECTIVE CASE STUDIES

Countries in the Americas have experienced different types of violence throughout their history up until the present day, including civil war, political violence, dictatorships, guerrilla movements, criminal violence and interpersonal violence. In the following paragraphs, we discuss a select number of case studies—as examples to showcase different types of violence in the region. The cases selected show the connection between different types of violence and a decline in health using quantitative data; they are specific to the Americas and have primary sources that allowed us to use such information.

Criminal wars in Central America and Mexico

Organised criminal groups ranging from local gangs to powerful drug cartels that operate across national boundaries, represent an important security threat in present day Central America. These criminal wars are also a central issue in state-society relations. Crime, and the failure of public security institutions like the police to respond effectively to crime, has come to define many people's relationship with the state. In response, significant proportions of these countries' populations support extralegal responses to crime, from seemingly spontaneous lynchings to more organised vigilante organisations.

Criminal violence is responsible for four times more deaths worldwide than armed conflict and terrorism combined.[7] The unprecedented wave of organised criminal violence that has been affecting Central America in recent years can be traced back to political transformations and policy changes that disrupted the social and political order at the local level and redefined the organisation of illicit markets. There is a particularly rich literature on these issues, for example, which focuses on understanding the outbreak of violence and criminal rivalry in Mexico.[19] The use of organised violence in electoral contexts often targets candidates or intimidates voters, affecting political preferences and patterns of political participation. Finally, studies have investigated the impact of organised criminal violence on a number of outcomes, including political attitudes and behaviour, trust in institutions and health and education, among others.[19 20]

With more than 90 000 people disappeared and around 250 000 intentional homicides in the last 13 years, Mexico is one of the most severe cases of criminal violence.[19 21] Amidst this dramatic intensification of violence, there has been increased support for harsh, extralegal punishments; nearly 50% of Mexican citizens support lynching and 60% support the self-organisation of citizens into community police forces or self-defence groups.[22] Several political and socioeconomic factors drive Mexico's sharp increase in organised criminal violence; Trejo and Ley suggest that growing electoral competition and subnational party alternation during the 1990s disrupted networks of protection and informal agreements between organised criminal groups and local politicians, which resulted in drug cartels fighting against each other and state security forces for territorial control.[23] There is also evidence that the government's security strategy—heavily focused on the beheading of criminal organisations—has contributed to the escalation of violence.[24] The supply of assault weapons enabled by lax gun laws in the USA has also been found to fuel criminal violence, particularly in Northern Mexico.[25] From a political economy perspective, income inequality and economic shocks in rural Mexico also drive drug-related violence.[26]

Exposure to organised criminal violence affects people's lives in important ways. The so-called Mexican Drug War impacted individual and community-level outcomes, such as state capacity, policy preferences, trust in institutions and income growth, and there is evidence that such violence negatively affects a number of health-related outcomes. For example, Michaelsen and Salardi show that the psychological stress caused by violence negatively impacts performance at school.[27] Brown showed how exposure to violence in utero negatively affected health outcomes of newborns, particularly birth weight, via heightened psychological stress, changes in

maternal health behaviours due to increased stress, low economic well-being of the household and the mother's reduced consumption of nutritious foods and vitamins.[28]

Indigenous violence in Mexico, the USA and Canada

De Leff notes that internalised racism, although unconscious, influences our thoughts and actions within the family and with other social groups.[29] Today, Indigenous people experience invisible cultural racism in Mexico, which has a historical root in the four social class system imposed by the Spaniards, placing Indians at the lowest level of society after the Spaniards, Criollos and Mestizos. With time, the term Indian was related to the uncultured, the savaged and uneducated people.[29] A study analysed the effects of racism among indigenous pregnant women and their families in Veracruz, Mexico and showed that institutionalised racism related to reduced access to health services resulted in increased pressure on Indigenous women to use sterilisation measures; and the economic costs associated with the use of health services and mobility influenced Indigenous families to choose home births rather than hospitalisation. Additionally, discrimination based on indigenous language in Mexico is another expression of personally mediated racism; health professionals show prejudice and discrimination towards Indigenous culture which stigmatises local populations.[30]

According to Sabo *et al*, everyday violence exacerbates ethnoracial health disparities, and laws can cause the militarisation of communities.[31] In a survey conducted among US citizens and permanent residents of Mexican descent living and working in Arizona-Sonora, 90% of participants reported having suffered physical mistreatment during encounters with immigration officers. Many mentioned witnessing verbal abuse, humiliation, excessive use of force, profiling by immigration forces and ethnoracial profiling (characterised as having a Mexican appearance or skin colour) as common practices.[31] Residents who experienced any form of violence in encounters with immigration forces were more likely to suffer stress, have a compromised immune function, heightened inflammation responses, greater obesity and more severe chronic disease states such as diabetes.[31]

Likewise, a study conducted among 436 Indigenous men and women in Southeastern tribes in the USA revealed disproportionate rates of intimate partner violence (IPV). The study used the framework of historical oppression, resilience and transcendence to analyse IPV victimisation and perpetration. It revealed that more than 50% of participants experienced IPV and many participants mentioned experiencing domestic abuse and witnessing IPV as a child, while 61.4% of participants reported IPV victimisation, 49.6% IPV perpetration and 39% reported symptoms of post-traumatic stress Disorder.[32]

The historical impacts of colonialism and assimilation policies led to an intergenerational trauma, which continues to affect the health and well-being of Indigenous people in Canada.[33 34] Klingspohn mentions that First Nation communities face an epidemic of domestic violence, drug abuse and mental health issues as a consequence of assimilation policies implemented by a colonial government, which forced Indigenous children to leave their families and attend residential schools.[33] The Cedar Project among 788 participants of Indigenous people in Canada noted that more than 60% of respondents experienced emotional, physical or sexual abuse and more than 90% of participants experienced childhood maltreatment. It also showed that participants who suffered abuse were more likely to develop drug abuse, and respondents who suffered sexual abuse were more at risk of HIV infection.[33]

Homicides in Puerto Rico and Jamaica

Latin American countries experienced high mortality rates from violence at the end of the twentieth century and the beginning of the twenty-first, which became a public health issue and drew the attention of governments and international development organisations. In Latin America and the Caribbean, interpersonal injuries and homicide are among the most significant concerns of governments in the area.[35] Briceño-León *et al* identified the specific structure of the built environment in cities, the culture of masculinity, drug markets, social norms and social inequality as factors that promote violence in Latin America.[36]

A study of violence in Puerto Rico initially focused on analysing risk factors from an individual and collective perspective.[36] A study of all homicides among residents of Puerto Rico for the period 2001–2010 revealed an average rate of 22 per 100 000 population, with an average lifetime risk of homicide death of 1 in 64 residents, 1 in 34 male residents and 1 in 459 female residents.[36] The study recommended the implementation of WHO's ecological model for violent injury prevention to identify risk and protective factors at the individual, community and society levels. It identified the possession of firearms as a common risk factor in violent interpersonal injuries; 9 out of 10 homicides among men were committed using a firearm (88.6%), compared with 5 out of 10 homicides among women (52.6%) (online supplemental figure 1). The study also revealed a geographic concentration of homicides in municipalities located near the metropolitan area of San Juan, which accounted for 60% of all reported homicides.[36]

Jamaica has had an increasing homicide rate over the last 30 years; a study covering 1998–2002 revealed that the rate of homicides for men between 15 and 44 years of age was 121 per 100 000, which was almost 10 times the rate for women.[37] The study noted that homicides were concentrated in the island-nation's capital, Kingston, and that most murders were committed with guns (66%) or knives (19%), and the motives were commonly related to disputes, reprisals, drug or gang-related activities.[37] Even though fewer in number, intimate partner homicide suicide also happens in Jamaica. A study from 2007

to 2017 identified 27 cases where men were the homicide offenders; in both rural and urban areas, guns and cutting instruments were the primary instruments, and the average age of the offender was 44 years. The study also concluded that interventions that could reduce these trends include the promotion of programmes for early warning, including school programmes on gender-based violence and guidelines to aid police in the handling of domestic disputes.[38]

Family violence in Brazil

Studies in Latin America show that domestic violence (abuse of women by their partners) constitutes a public health problem and a violation of human rights. Family violence causes physical injuries, stress, hypertension, depression, phobias, sexual disorders and increases mortality and morbidity among women in Latin America.[21 39 40] The UN noted that a characteristic of this type of violence is its invisibility, as only 2% of the sexual abuse of children and less than 30% of the sexual abuse of adult women were reported.[21] Family violence usually occurs indoors, between acquaintances, has a negative association with the sexual and reproductive health of women and is associated with lower education status and negative health behaviours.[41]

A study in Sao Paulo showed the prevalence of adolescent victims of family violence with particular attention to women living only with their fathers; women were identified as the primary victims of family violence and these patterns were found to be influenced by strong gender norms in that sociocultural context. Surprisingly, siblings were also found to be perpetrators of such violence (online supplemental figure 2). Such work shows the vicious cycle of aggression and risk of suffering violence perpetrated by an intimate partner in adult life in persons who experience violence within a family context.[42]

Gonçalves *et al* studied the risk of violence against women (VAW) in Latin America during the COVID-19 pandemic. They showed a 11% increase in Brazil compared with 145% in Argentina, 101% in Peru and 97% in Mexico. The absence of policies to promote women's health and prevent VAW during the pandemic and the greater vulnerability of most affected groups led to suspected under-reporting of incidents.[43]Another study also noted the decrease in reports of child maltreatment during the COVID-19 pandemic; since schools, teachers and principals are important reporters of such events, school closures are correlated with the 17.1% decrease in child abuse reports.[44]

ANALYSING HEALTH AND PEACE

Based on the Global Burden of Disease (GBD) data, the Americas is the most murder-prone region of the world: 48 of the 50 cities with the highest homicide rates are located in the region (four of them are in the USA).[45] The Americas is also the region of the world where the largest proportion of homicides is carried out with firearms. Latin America and the Caribbean, in particular, are home to 8 of the 10 most violent countries, and the USA is the country with the highest homicide rate among industrialised societies.[45] State actors are parts of the perpetrators of violence in these societies.

Quantitative measures for lack of peace are challenging and proxy conditions can be used to help understand its impact. Interpersonal violence is a leading cause of mortality and disability in the region of the Americas.[45] According to the 2019 GBD, more than 260 000 lives were lost due to self-harm and interpersonal violence in the Americas (table 1); these categories involve deaths from the intentional use of physical force, firearms and other means, use of power, threatened or actual, from another person or group and deliberate bodily damage inflicted on oneself resulting in death or injury.[46] Additionally, interpersonal violence was ranked as the third cause of disability-adjusted life years (DALYs) and the second cause of years of life lost due to premature mortality in the Americas.[45]

Although interpersonal violence and self-harm rates show a generalised decrease in the region in the last 5 years, the death and DALY rates per 100 000 in 2019 are still high compared with other regions (table 2). Within the Americas, the Latin American region has the highest death and DALY rates for these types of violence. These figures underscore the high burden of acute and chronic violence (reflective of lack of peace) that persists in the region.

Table 1 Number of deaths in the region of the Americas, both sexes, all ages, 2019

	All Americas	Latin America and the Caribbean	USA and Canada
Deaths			
Self-harm	95 199	45 152	50 047
Interpersonal violence	173 872	155 611	18 261
DALYs			
Self-harm	4 298 148	1 815 904	1 903 093
Interpersonal violence	10 237 963	8 741 325	1 197 087

Source: Global Burden of Disease Study 2019 (GBD 2019).
DALYs, disability-adjusted life years.

Table 2 Burden of disease rates in the Americas, both sexes, all ages, 2019

	High income	LAC	Southern Cone	USA	Canada
Deaths per 100 000					
Self-harm	11.40	6.41	11.54	13.83	12.87
Interpersonal violence	0.82	25.96	5.82	5.40	1.51
Physical violence by firearm	0.23	18.30	3.29	3.96	0.47
DALYs per 100 000					
Self-harm	419.34	310.74	550.20	580.25	580.17
Interpersonal violence	72.26	1495.83	381.66	364.99	122.62
Physical violence by firearm	12.57	1044.14	182.50	232.07	28.58

High income: Western Europe Region; LAC: Andean Latin American, Caribbean, Central Latin American, Tropical Latin American Region; Southern Cone region: Argentina, Uruguay and Chile (Source: Global Burden of Disease, 2019).
DALYs, disability-adjusted life years.

In terms of who is most affected by violence, most female violent deaths occur in young girls and sexual and domestic violence are important drivers of everyday VAW.[46] Both contextual factors (eg, socioeconomic conditions and childhood exposure to crime and violence) and individual incentives are important predictors of criminal involvement.[47] Several studies have provided evidence that material incentives influence violent crime engagement, and others have emphasised the role of nonmaterial motivations, such as status and respect in society and social and peer networks.[48 49]

The health and peace nexus has been explored qualitatively as well. A study explored the perspectives of youth residing in Central America on the impact of day-to-day generalised violence on their health and security.[8] It defined the lack of health as 'not experiencing peace within the family, the community, and the country', and generalised violence as 'a systemic phenomenon that is generated and reproduced through the complex interactions of structural inequities and unequal power relations'. These youth viewed generalised violence as a powerful determinant of their own health at multiple levels.[8] This study used the Latin American Social Medicine and Collective Health approach to conceptualise the phenomenon of generalised violence, which goes beyond the analysis of underlying social determinants of health and considers broader political, social and cultural movements.[8]

The quantitative and qualitative explorations of pathways between health and peace exemplified above show both the challenges of defining this complex relationship and its multidimensional nature. Unfortunately, there is limited work on the overall relationship and more importantly no consensus on any metrics or pathways that can be universally accepted in discussions of peace and health—thus the need for more scholarship on this issue.

INTERVENTIONS FOR PEACE AND HEALTH

When peace and health are analysed holistically, the methods and goals for health promotion and peace promotion can become analogous and intrinsically interrelated; health promotion and peace promotion aim to achieve social harmony and cooperation. For example, the presence of medical professionals from the International Committee of the Red Cross or Médecins sans Frontiéres is seen as impartial, treating victims and people from all sides of a conflict without prejudice.[10 50] Or the reference to 'peace-health initiatives' for those programmes, which intend to improve the health of a population, while contributing to peace and security, and the transition to peace in war or conflict zones usually improves health and healthcare of the population.[51]

Public health programmes and policy initiatives may contribute to creating peace.[10] For instance, the Red Cross promoted the formation of national societies to coordinate the implementation of sanitary and social actions in several Latin American countries in times of peace and to agree on the treatment of prisoners and victims in times of armed conflicts in accordance with humanitarian principles.[52] The 'Health as a Bridge for Peace' plan implemented by the Pan American Health Organization (PAHO) in the 1980s in Latin America contributed to the Esquipulas peace process by the negotiation of days of tranquillity to carry out a vaccination campaign to eradicate wild-type poliovirus.[53] PAHO worked closely with governments, the UNICEF, the Red Cross and the Catholic Church to negotiate 'days of tranquillity.' Ceasefire negotiations took several months before days of tranquillity were established for vaccination of children in El Salvador; eventually, 3 days of tranquillity were held every year from 1985 to 1991 and several sectors of society contributed to taking children to health posts. Approximately, 20 000 children were vaccinated and collaboration between all stakeholders (including armed groups) contributed to building trust among people. The plan also had positive outcomes in Peru, where (in 1991), after the case of a child with paralysis became public knowledge, a mop-up campaign was carried out, visiting almost two million households. The military and Shining Path guerrillas cooperated with the initiative, and polio

was finally eradicated from the country. This strategy developed by PAHO was later adapted by WHO, and, through the implementation of days of tranquillity, vaccination campaigns were implemented in India, Angola, the Democratic Republic of the Congo, Afghanistan and other endemic countries to eradicate polio.[53]

The impact of the Colombian Peace Agreement on social determinants of health using documentary data over 10 years showed a strong positive correlation with the peace process; the analysis documented a reduction of 'economic, educational, health, and social inequalities and inequities'.[54] Another study showed that reduced exposure to societal violence during pregnancy was associated with reducing the risk of stillbirths and perinatal deaths and suggested that the Colombian peace process may have contributed to better population health at that time.[55] A study also showed that mental health inequalities were reduced over a 4-year time frame through reductions in the influence of variables, such as residence in conflict-affected territories, working in the informal sector or experiencing internal displacement after the peace agreement.[56] However, according to another analysis, inequalities in catastrophic health expenditures did not decrease following the Colombian peace agreement.[57] Truth commissions and teaching about the past conflict have been considered to help prevent the recurrence of violence and promote peace, and initiatives have explored this impact in pedagogy through a survey conducted among teachers in Colombia.[58]

Arya developed a comprehensive model for 'peace through health,' which builds on a public health prevention model where war is seen as a disease, and health interventions allow the implementation of preventive measures.[50] This incorporates a distinction between the capacities of medical professionals to act for peace under the categories of character, knowledge and activity (online supplemental figure 3).[50] *Character* represents the perceived personality traits (altruism, personification, solidarity, dissent, diplomacy) of medical professionals, which guide the delivery of health services in conflict situations or war zones. *Knowledge* involves not only what medical professionals know but also their training, skills and expertise that allow doctors to work in post-traumatic situations; apply conflict analysis and mediation principles and acquire a better understanding of the concepts of peace and conflict while working in the field. *Activity* refers to medical professional activity and completes this model on the premise that preparing for war is not only a social, political or economic issue but also a medical one.[50]

Another approach identifies *health-peace mechanisms* used by health professionals to contribute to peacebuilding through: (1) conflict management (also known as medical diplomacy), (2) solidarity, (3) strengthening of the social fabric, (4) dissent and (5) restricting the destructiveness of war. Such mechanisms are characterised by altruism, science and legitimacy, also traits of healthcare.[51]

Several studies have also emphasised the role of state-criminal group relationships as a key factor in understanding the challenges that state-sponsored violence and organised crime pose in terms of peacebuilding and democratic rule. Within this framework, the existing literature has identified various forms of criminal governance prevalent in Central America and shed light on how communities respond to crime and violence in contexts of low state capacity.[59] These responses include social mobilisation, vigilantism and generalised support for extra-legal violence.

Economic evaluations of peace interventions are uncommon in the Americas. One cost-effectiveness analysis of a peace management initiative (which included mediation and dispute resolution; grief counselling and therapy; mainstreaming unattached youth and involving the broader community in building a culture of peace) to reduce homicides in Jamaica over a 5-year period showed a reduction of 96% with a cost/benefit ratio of Jamaican US$12.38 saved per dollar spent.[60] Such analysis would help inform further dialogue on exploring the value of peace for health and development in the Americas.

CONCLUSION

Reducing violence and promoting peace is a crucial health and policy issue in the Americas and represents a development challenge for the region. Much of the current debate on interventions to reduce violence and promote peace focuses on specific measures is based on evidence from studies in high-income countries. These interventions often include: (1) preventive measures, such as the identification of risk and protective factors; (2) law-enforcement approaches, such as punishment and incarceration and (3) rethinking policing strategies, such as hot spots and place-based policing, the incorporation of technology in policing and community-based approaches.[9 50 59 61] We need to gather additional evidence on what works to reduce violence, especially in low and middle-income countries of the Americas to better inform and design policies in the region. The relationship between peace and health is complex, multifactorial and fraught with challenges of definitions, measurements and outcomes. This exploratory commentary on this nexus within a focus on the Americas posits this challenge clearly and calls for more scholarship and empirical work on this issue from an interdisciplinary perspective.

Acknowledgements We would like to thank Dr. Abdul Ghaffar for the opportunity to contribute this paper.

Contributors All authors are qualified for authorship and that all who are qualified to be authors are listed as authors on the byline. All authors have contributed equally to the development of the paper.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data sharing not applicable as no datasets generated and/or analysed for this study.

REFERENCES

1 Joint Sustainable Development Goals Fund. Good health and well-being, 2022. Available: https://www.jointsdgfund.org/sustainable-development-goals/goal-3-good-health-and-well-being
2 United Nations Geneva. League of nations, 2022. Available: https://www.ungeneva.org/en/history/league-of-nations [Accessed 18 Jan 2022].
3 Banatvala N, Zwi AB. Conflict and health. public health and humanitarian interventions: developing the evidence base. *BMJ* 2000;321:101–5.
4 Levy BS, Sidel VW. Preventing war and its health consequences: roles of public health. *War and public health* 1997;388.
5 Zwi A, Ugalde A. Towards an epidemiology of political violence in the third World. *Soc Sci Med* 1989;28:633–42.
6 Pettersson T, Eck K. Organized violence, 1989–2017. *J Peace Res* 2018;55:535–47.
7 United Nations Office on Drugs and Crime (UNODC). *Patterns and criminal justice response*. Global Study on Homicide: Homicide trends, 2019. https://www.unodc.org/unodc/en/data-and-analysis/global-study-on-homicide.html
8 De Jesus M, Hernandes C. Generalized Violence as a Threat to Health and Well-Being: A Qualitative Study of Youth Living in Urban Settings in Central America's "Northern Triangle". *Int J Environ Res Public Health* 2019;16:3465.
9 Laaser U, Donev D, Bjegović V, *et al*. Public health and peace. *Croat Med J* 2002;43:107–13.
10 Abuelaish I, Goodstadt MS, Mouhaffel R. Interdependence between health and peace: a call for a new paradigm. *Health Promot Int* 2020;35:1590–600.
11 Royce A. A definition of peace. *Peace and Conflict* 2004;10:101–16.
12 Galtung J. *Theories of peace: a synthetic approach to peace thinking*. Oslo: International Peace Research Institute, 2005: 1967. 238.
13 World Health Organization. Constitution, 2022. Available: https://www.who.int/about/governance/constitution#:~:text=Health%20is%20a%20state%20of,belief%2C%20economic%20or%20social%20condition [Accessed 18 Jan 2022].
14 Makoul G, Clayman ML, Lynch EB, *et al*. Four concepts of health in America: results of national surveys. *J Health Commun* 2009;14:3–14.
15 Pettan-Brewer C, Martins AF, de Abreu DPB, *et al*. From the approach to the concept: one health in Latin America-Experiences and perspectives in Brazil, Chile, and Colombia. *Front Public Health* 2021;9:687110.
16 Kamradt-Scott A. *Managing Global Health Security [dissertation*. Aberystwyth Gales: Aberystwyth Univeristy, 2008.
17 Katz R, Singer DA. Health and security in foreign policy. *Bull World Health Organ* 2007;85:233–4.
18 Ibrahim MM, Damasceno A. Hypertension in developing countries. *Lancet* 2012;380:611–9.
19 Rosen JD, Zepeda R. Lexington Books. In: *Organized crime, drug trafficking, and violence in Mexico: the transition from Felipe Calderon to Enrique penA Nieto*, 2016.
20 Ishiyama J, Betancourt Higareda FC, Pulido A, *et al*. What are the effects of large-scale violence on social and institutional trust? using the civil war literature to understand the case of Mexico, 2006–2012. *Civil Wars* 2018;20:1–23.
21 United Nations. The world's women. Trends and statistics, 2022. Available: https://unstats.un.org/unsd/demographic-social/products/worldswomen/ww2000pub/#overview [Accessed cited 2022 Jan 18].
22 Schedler A, guerra Elaniebladela. CIDE. In: *2da. Edición: Los ciudadanos ante La violencia criminal organizada*, 2018.
23 Trejo G, Ley S. Why did drug cartels go to war in Mexico? Subnational Party alternation, the breakdown of criminal protection, and the onset of large-scale violence. *Comp Polit Stud* 2018;51:900–37.
24 Phillips BJ. How does leadership decapitation affect violence? the case of drug trafficking organizations in Mexico. *J Polit* 2015;77:324–36.
25 Dube A, Dube O, García-Ponce O. Cross-Border spillover: U.S. gun laws and violence in Mexico. *Am Polit Sci Rev* 2013;107:397–417.
26 Enamorado T, López-Calva LF, Rodríguez-Castelán C, *et al*. Income inequality and violent crime: Evidence from Mexico's drug war. *J Dev Econ* 2016;120:128–43.
27 Michaelsen MM, Salardi P, Violence SP. Violence, psychological stress and educational performance during the "war on drugs" in Mexico. *J Dev Econ* 2020;143:102387.
28 Brown R. The Mexican drug war and early-life health: the impact of violent crime on birth outcomes. *Demography* 2018;55:319–40.
29 Fortes de Leff J. Racism in Mexico: cultural roots and clinical interventions. *Fam Process* 2002;41:619–23.
30 Dörr NM, Dietz G. Racism against Totonaco women in Veracruz: Intercultural competences for health professionals are necessary. *PLoS One* 2020;15:e0227149.
31 Sabo S, Shaw S, Ingram M, *et al*. Everyday violence, structural racism and mistreatment at the US-Mexico border. *Soc Sci Med* 2014;109:66–74.
32 McKinley CE. "It just took something from me": A mixed-methods examination of intimate partner violence victimization and perpetration among U.S. Indigenous peoples. *Psychological Trauma: Theory, Research, Practice, and Policy* 2021;14:1–10.
33 Klingspohn DM. The importance of culture in addressing domestic violence for first nation's women. *Front Psychol* 2018;9:872.
34 Pearce ME, Jongbloed K, Pooyak S, *et al*. The cedar project: exploring the role of colonial harms and childhood maltreatment on HIV and hepatitis C infection in a cohort study involving young Indigenous people who use drugs in two Canadian cities. *BMJ Open* 2021;11:e042545.
35 Zavala-Zegarra DE, López-Charneco M, Garcia-Rivera EJ, *et al*. Geographic distribution of risk of death due to homicide in Puerto Rico, 2001-2010. *Rev Panam Salud Publica* 2012;32:321–9.
36 Briceño-León R, Villaveces A, Concha-Eastman A. Understanding the uneven distribution of the incidence of homicide in Latin America. *Int J Epidemiol* 2008;37:751–7.
37 Lemard G, Hemenway D. Violence in Jamaica: an analysis of homicides 1998-2002. *Inj Prev* 2006;12:15–18.
38 Pottinger AM, Bailey A, Passard N. Archival data review of intimate partner homicide-suicide in Jamaica, 2007 - 2017: focus on mental health and community response. *Rev Panam Salud Publica* 2019;43:e99.
39 Heise L, Ellsberg M, Gottemoeller M. *Ending violence against women (population reports, series L, no. 11*. Johns Hopkins University school of public health, center for communications programs: Baltimore, 1999.
40 Carcedo A, Zamora A. Organización Panamericana de la Salud. In: *Ruta Crítica de las mujeres afectadas POR La violencia intrafamiliar. Ruta crítica de las mujeres afectadas POR La violencia intrafamiliar*. 205, 1999.
41 Andrade ABde, Azeredo CM, Peres MFT. Exposure to community and family violence and self-rated health in the Brazilian population. *Rev Bras Epidemiol* 2020;23:e200039.
42 Ralo JM, Schor N, Tavares CM, *et al*. Prevalence of family violence and associated factors among in-school adolescents in São Paulo, sp, Brazil. *J Interpers Violence* 2016;31:1618–33.
43 Gonçalves Júnior J, Maia MAG. Moreira, Jorge Lucas de Sousa, Dias HS, Félix EB, Machado SSF. domestic violence against Latin American women and female mental health during the new coronavirus (SARS-CoV-2) outbreak. *Int J Inj Contr Saf Promot* 2021:1–4.
44 Katz I, Katz C, Andresen S, *et al*. Child maltreatment reports and child protection service responses during COVID-19: knowledge exchange among Australia, Brazil, Canada, Colombia, Germany, Israel, and South Africa. *Child Abuse Negl* 2021;116:105078.
45 Pan American Health Organization. The burden of other forms of interpersonal violence., 2022. Available: https://www.paho.org/en/noncommunicable-diseases-and-mental-health/noncommunicable-

diseases-and-mental-health-data-14 [Accessed cited 2022 Jan 18].
46 Institute for Health Metrics and Evaluation (IHME), University of Washington. USA.Self-harm and interpersonal violence – level 2 cause, 2022. Available: https://www.healthdata.org/results/gbd_summaries/2019/self-harm-and-interpersonal-violence-level-2-cause [Accessed 18 Jan 2022].
47 Fearon J, Hoeffler A. *Benefits and costs of the conflict and violence targets for the post-2015 development agenda. conflict and violence assessment paper, Copenhagen consensus center*, 2014: 1–65.
48 Lindquist MJ, Zenou Y. Crime and networks: ten policy lessons. *Oxf Rev Econ Policy* 2019;35:746–71.
49 Draca M, Machin S. Crime and economic incentives. *Annu Rev Econom* 2015;7:389–408.
50 Arya N. Peace through health I: development and use of a working model. *Med Confl Surviv* 2004;20:242–57.
51 MacQueen G, Santa-Barbara J. Peace building through health initiatives. *BMJ* 2000;321:293–6.
52 Liscia MSD, Alvarez AC, Roja LC. el panamericanismo y la salud en el período de entreguerras [The Red Cross, Pan-Americanism and health in the inter-war period]. *Salud Colect* 2020;15:e2116.
53 de Quadros CA, Epstein D. Health as a bridge for peace: PAHO's experience. Pan American health organization. *Lancet* 2002;360 Suppl:s25–6.
54 Mondragón-Sánchez EJ, Barreiro RG, Lopes MVdeO, *et al*. Impact of the peace agreement on the social determinants of health in Colombia. *Rev Bras Enferm* 2021;74:e20200892.
55 Buitrago G, Moreno-Serra R. Conflict violence reduction and pregnancy outcomes: a regression discontinuity design in Colombia. *PLoS Med* 2021;18:e1003684.
56 León-Giraldo S, Casas G, Cuervo-Sánchez JS, *et al*. A light of hope? inequalities in mental health before and after the peace agreement in Colombia: a decomposition analysis. *Int J Equity Health* 2021;20:39.
57 León-Giraldo S, Cuervo-Sánchez JS, Casas G, *et al*. Inequalities in catastrophic health expenditures in conflict-affected areas and the Colombian peace agreement: an oaxaca-blinder change decomposition analysis. *Int J Equity Health* 2021;20:217.
58 Velez G. Teaching truth in transitional justice: a collaborative approach to supporting Colombian educators. *Health Hum Rights* 2021;23:91–103.
59 Felbab-Brown V. *Bringing the state to the slum: confronting organized crime and urban violence in Latin America*. Brookings Institution, 2011.
60 Ward E, McGaw K, Hutchinson D, *et al*. Assessing the cost-effectiveness of the peace management initiative as an intervention to reduce the homicide rate in a community in Kingston, Jamaica. *Int J Public Health* 2018;63:987–92.
61 Bank W. *Pathways for peace: inclusive approaches to preventing violent conflict*, 2018.