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Too Easy to Forget? Honouring our Hard-Earned Lessons Learned Comparative Framework Matrix for Pandemics Similarities between COVID-19 and HIV/AIDS

Carl GA Jacob[1], Daniel Lagacé-Roy[2], and Patricia Lussier-Duynstee[3]

[1]Adjunct Professor, School of Nursing, Nursing History Research Unit, Faculty of Health Sciences, University of Ottawa, Lees Avenue, Room 313, Ottawa, Ontario, Canada K1N 6N5
[2]Full Professor, Department of Military Leadership and Psychology, Royal Military College of Canada, PO Box 17000, Station Forces, Kingston, Ontario, Canada K7K 7B4
[3]Faculty Emerita, School of Nursing, MGH Institute of Health Professions, Inc., 38 First Avenue, Boston, Massachusetts (MA) 02129, USA

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ABSTRACT

In this research paper, a comparative framework matrix for presenting similarities between two different pandemics is suggested to fill the void in this domain. It was generated using, primarily, COVID-19 and HIV/AIDS related taxonomies, reported in scientific literature published mostly by health and social science authorities and researchers. Second, using a literature review and a comparative methodology, and making use of, amongst others, several databases, scientific documents and grey literature mentioning similarities between COVID-19 and HIV/AIDS were identified, and their relevant content was displayed side by side in the comparative framework matrix. Thereafter, a comparative framework matrix in condensed format is presented to highlight the similarities between the two pandemics. Third, this research paper draws the readers' attention to one theme purposefully chosen from the condensed comparative framework matrix for pandemics, i.e., alternative theories of the COVID-19 and HIV/AIDS pandemics' origin. The results from this comparison show that similarities between the COVID-19 and HIV/AIDS pandemics exist, even at a granular level. Finally, some lessons learned from the comparison are suggested in the research paper's discussion section. The results from this research paper may help stakeholders compare future pandemics against past ones in a more structured manner to better, for example, detect where further research is warranted and where interdependencies and interconnectedness exist.

Keywords: COVID-19 and HIV/AIDS, Comparative Methodology, Comparative Framework Matrix, Alternative Theories and Treatments, Lessons Learned, Interdependencies and Interconnectedness.

Introduction

When the coronavirus (COVID-19) was a localized infection, then progressed to the level of a regional epidemic, and finally spread across nations and continents to become the COVID-19 pandemic (approximately 2020-2023), little or no peer-reviewed evidence-based medical research, as well as treatment regimens against the virus, were available or institutionalized. However, during such trying times, another type of research was prevalent[1,2]. It consisted of comparisons drawn mostly between the COVID-19 pandemic and the Spanish Flu epidemic (1918-1920). For example, COVID-19 was regularly called "the worst global health threat since the Spanish flu"[3]. Somehow, and somewhat incredible is that,

> The collective historic memory has glossed over a more recent global threat, the HIV/AIDS pandemic from the early 1980s, which despite tremendous medical advances, still affects millions of individuals worldwide. […] the worst thing we can do is to forget[4].

Interest in such comparisons originated, most probably, from the human need to search for common characteristics among pandemics[5]. In doing so, invested individuals created and used both pandemics' narratives to draw links, parallels, similarities, and differences, with the modern lens focused squarely on the COVID-19 and a few on the HIV/AIDS pandemics.

Oddly enough, authors, interested in the similarities between the COVID-19 and HIV/AIDS pandemics, presented diametrically opposite views on such an endeavour, or plainly questioned the purpose of such an exercise. On one hand, some authors affirmed that COVID-19 and HIV/AIDS are acronyms that designate dissimilar viruses, possess singular stories, and are separated by more than four decades[6,7]. One could add that they were also situated in very different socio-economic environments. Other authors, however; as well as several HIV/AIDS long-time survivors and activists, who were part of or played a key role in those events, mentioned that they were intrigued when asked to compare both events[6]. Moreover, they were not quick to draw comparisons between them as they did not completely agree with the process[1,2,7,8]. In fact, they saw hardly any direct links between the current pandemic and the HIV/AIDS one, as COVID-19 spreads efficiently by respiratory tracts, while HIV spreads inefficiently by a body fluid exchange. But foremost, the human body can eliminate the SARS-Covid-2 virus while it cannot eliminate the HIV virus as it integrates the body's genome[2].

It seems understandable that some individuals may find the comparison between both pandemics implausible and personal. One possible reason might be that they perceive that it may be an insult to the individuals who died from or are living with HIV/AIDS and that its peculiarities make it untouchable[8].

On the other hand, we find scholars and activists with lived experiences who faced the emergence of HIV/AIDS. Among them, we find this paper's research team who lived through both pandemics. It can affirm, that it is hard, when thinking about COVID-19, not to be tempted to draw comparisons or look for similarities between both pandemics[2]. In fact, for some, COVID-19 may seem like the repetition of the HIV/AIDS pandemic's early days, sparking feelings from those who have seen, read, and lived through both[2,9–12]. These individuals seem to be under the impression that a similar 'war' with the same discourse is once again upon us; perceive that it is the beginning or re-beginning of a pandemic that many have forgotten; or simply chose to ignore, the HIV/AIDS pandemic[1,2].

To help with this debate, one must acknowledge that there is a clear distinction between drawing links between and finding commonalities/similarities amongst pandemics. Drawing links between two events means that there is a relationship between them, where one affects the other, for example: investigating links between atmospheric pollution and climate change[13]. On the other hand, finding

commonalities/similarities between two events means that one is looking for features or attributes that are shared by both events, in this instance for example: a high number of deaths[13]. Each pandemic possesses unique and intrinsic patterns while possessing similarities with the other[2]. It appears that the COVID-19 and HIV/AIDS pandemics share several, if not many, similarities[6,8,9].

Therefore, this research paper undertakes to answer the following three research questions using a literature review and comparative research methodologies[1,2].

While the research team's authors agree with the existence of similarities between both pandemics, a structured approach for presenting these similarities does not seem to exist[1,7,9,14]. Thus, this research paper's first objective is to suggest a comparative framework matrix (Framework) for presenting similarities between pandemics. Second, if one examines both pandemics' trajectories, from the stage of an infection to a regional epidemic, and a full-blown worldwide pandemic, what similarities would one find between both pandemics? The third goal of this research paper is to offer an in-depth analysis of one theme purposefully chosen from the newly created Framework to emphasise the existence of similarities between the COVID-19 and HIV/AIDS pandemics, even at the granular level, as well as present some lessons learned from this example (see discussion).

As noted by Mattietto,

> A broad understanding of the COVID-19 (and HIV/AIDS) pandemic(s), from different perspectives (not only medical or biological, but also from anthropological and social angles) should help humanity face and win this significant challenge[3].

Conceptual Framework

In this research paper, the authors adopted the following definitions for the terms: coronavirus (COVID-19), human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS), pandemic, framework, comparative framework, interconnectedness, and interdependencies.

COVID-19 – The severe and contagious acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causes the coronavirus disease 2019 (COVID-19, coronavirus, or COVID). It affects mammals, birds, and humans. In humans, it brings about, for example, fatigue and breathing difficulties because of respiratory tract infections, as well as the loss of smell and taste, depending on the individual and the coronavirus' strain. Some of the symptoms may be mild while others may be lethal, or long-lasting (long COVID)[15–17].

HIV and AIDS – The human immunodeficiency virus (HIV) is the virus that attacks a human's immune system. If left untreated, it leaves infected individuals vulnerable to opportunistic infections and cancers leading to the acquired immunodeficiency syndrome (AIDS) over time[18,19].

PANDEMIC – "As the speed and scope of COVID-19's destruction shatters our societies, we are developing a visceral understanding of the word 'pandemic'"[20]. A pandemic is an epidemic that spreads to multiple continents or across international borders[17,21]. Therefore "individuals around the world are vulnerable to the same disease at the same time"[20].

However, for individuals affected and/or infected during a pandemic, the word pandemic's definition may be in an entirely different realm. For many individuals, a pandemic's definition is not medically, but personally, economically, or socially bound[20]. As mentioned so eloquently by Faulk,

> For some, pandemic means hurried goodbyes muffled by white masks and last looks obscured by plastic goggles; […], gurneys carrying away those we love through swinging doors into cold, sterile rooms filled with commotion and bright lights; […] that it is no longer possible to

> embrace those we have lived with and those we have lived for; […] a stranger behind a face shield asking us how far we will go in a battle that may not be ours to win; […] a crescendo of fevers, sweats, coughing, and shortness of breath until our exhausted chests give out and we slip into unconsciousness as we drown; and […] dying afraid and alone[20].
>
> For many, it is defined by the loss of a critical pay check […]; getting up very early to win a place in the front of miles of cars slowly snaking their way to the food bank outlet; waking up in the middle of the night wondering how to pay the rent and which particular credit card bill to pay this month; calling on a friend or relative for a loan… or a couch; choosing between hunger and homelessness, or disease and death[20].
>
> Others will define the word in yet another way. We see bars, restaurants and beaches filled with people shoulder-to-shoulder, singing and shouting, without heed of recommendations for masks or physical distancing. They either disregard or disbelieve that their behaviour may result in infection or death, and they are oblivious to the probability that they may bring the virus home to infect their families[20].
>
> Eventually, we will each gain our own understanding of the word "pandemic"[20].

FRAMEWORK – A framework is "a supporting structure around which something can be built; a system of rules, ideas, or beliefs that is used to plan or decide something"[22].

INTERCONNECTEDNESS – Interconnectedness is "defined as an awareness that the existence of all phenomena in the world is the result of the fulfilment of different causes and conditions, in which no entity can sustain independently without relying on other factors"[23].

INTERDEPENDENCIES – The term interdependencies involves interconnections /linkages/ (interrelationships)"[24]. Therefore, it leads to a relationship in which categories, sub-categories, and themes are "linked in a system of action in such a way that changes in one impact in some meaningful way on the attainment of needs, values, and/or desired outcomes of the others"[24].

Literature Review

A search for a comparative framework between pandemics, using databases and Internet, did not produce any results. However, it did yield some documents that can help create one, and thereafter, populate it. Such documents include other health and pandemic comparative frameworks (e.g., policies, technologies, legal work, investments, insolvencies, and resiliency), comparative pandemic literature (e.g., research papers and grey literature), and documents presented by health authorities (e.g., World Health Organization (WHO)), as well other documents (e.g., the political, social, economic, and environmental sciences), when presenting a pandemic's different impacts. A few of these documents are presented here as examples.

HEALTH AND PANDEMIC COMPARATIVE FRAMEWORKS

In the research paper published by Moy et al. titled *Standardising Policy and Technology Responses in the Immediate Aftermath of a Pandemic: A Comparative and Conceptual Framework*, the authors propose a comparative framework that "provides a qualitative taxonomy of government policy directives implemented in the immediate aftermath of a pandemic announcement and before vaccines are implementable"[25]. It also examines the "effect government interventions and technological responses have on

epidemiological and economic outcomes"[25], thus recognizing their interdependencies.

Although the present research paper is not related to the topic presented by Moy et al., it does use a taxonomy that is useful for the creation of a comparative framework matrix for pandemics, and thereafter, the integration of the themes they mention. First, they use the words mitigating or suppressing the spread of a virus, minimising the mortality and morbidity rates, testing, tracing, and treating for the term epidemiology. Second, they use the words mitigating the economic impact when mentioning the term economic outcomes[25].

COMPARATIVE PANDEMIC LITERATURE TAXONOMY

Many researchers and concerned individuals have attempted to look for similarities between past pandemics, such as cholera (e.g., first to sixth), influenza (e.g., the Swine flu (H1N1)), the human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), the Middle East respiratory syndrome (MERS), the plague (e.g., Bubonic), the severe acute respiratory syndrome (SARS), smallpox, the flu (Influenza), and the ZIKA fever, to name a few[26,27]. Their research seems to have produced similarities under several themes. A few examples of these articles are presented here to highlight the taxonomy used.

Similarities between HIV/AIDS and smallpox pandemics – In Lacroix's article titled *Science, opinion publique et resistance : de la variole à COVID-19*, the author points to the history of the infection, i.e., the discovery of the first cases, and the origin of the virus, i.e., an English illness imported by a Yankee. He alludes to virus prevention methods, i.e., placing patients in hospitals, combining a healthy lifestyle with isolation, i.e., quarantine, and public sensibilization about vaccines, as well as the use of religion to protect against the virus. He mentions treatments against the virus (e.g., vaccines), i.e., their effectiveness and the misinformation about and against them (e.g., vaccinophobia), as well as the need for scientific expertise. He talks about the virus' epidemiology, i.e., death tolls. Lacroix also refers to institutional impacts, i.e., the lack of past and present investments in health care to foster a more fulsome state of pandemic preparedness, as well as to the population's perception of hospitals. He outlines some political impacts, i.e., the pandemic's criminalization (e.g., mandatory vaccination or a fine), the dichotomy between the existence of individuals who chose to ignore the situation, or hold demonstrations to show their anger and resistance against a power deemed abusive; or, individuals, who, on the other hand, request more coercive measures (e.g., border inspections for travellers between the United States and Canada). He mentions social impacts, i.e., the living conditions of urban dwellers and their reactions to and scepticism about public health measures put in place to stop the virus' propagations in the general population (e.g., social gatherings (funerals)). Lacroix concludes his article by mentioning one's responsibility during a pandemic (e.g., individual interest versus collective good); and urges individuals to abandon their belief that it is others who are responsible for the virus' spread, and not oneself[28].

Similarities between the HIV/AIDS and influenza pandemics – In their article titled *What Difference Does a Century Make? Pandemic Responses to Influenza and COVID-19*, Fahrni and Jones talk about prevention measures (e.g., avoiding crowds and socializing); cancelling visits to hospitals and long-term care facilities; closing some public venues (e.g., cinemas); encouraging coughing or sneezing into one's handkerchief; disinfecting public transportation; getting lots of fresh air and sunshine; isolating when ill; keeping children and teens at home; practicing social distancing; refraining from spitting in public places; special remain-at-home measures for people over 70 years old; promoting bedrest when feeling unwell; frequent handwashing; working from home; as well as disinfecting the lodgings of individuals who have recovered. They also allude to treatments and vaccines, (e.g., the inexistence or unavailability of

effective scientific treatments or vaccines). Fahrni and Jones mention pandemic economic impacts, i.e., the loss of family and shopkeeper incomes, as well as the need for wage replacement. They talk about the pandemic's human and social impacts (e.g., concerns, resistance, dissension, and a sense of injustice over public restrictions). They mention the political impacts of sweeping measures i.e., closures of public and private gathering places and institutions (e.g., bars, concert halls, churches, commercial gyms, community centres, daycares, ice rinks, libraries, movie theatres, schools, universities, and swimming pools). They also mention the criminalization of the pandemic (e.g., arrests and imprisonment for violation of public health edicts (proclamations, rules, regulations, and laws). Fahrni and Jones conclude their article by suggesting that a political defence to health measures and restrictions was that: "Everyone had to do their bit"[29].

In Reynaert's article titled *De la peste au coronavirus : 7 choses à savoir sur l'histoire des épidémies*, he talks about the history (e.g., humans with hands soiled with faeces, or rodents being at the origin of the infection by passing under fortifications and transmitting the disease to humans). He mentions the misinformation circulating about the virus (e.g., how Jewish people imported the virus by poisoning wheels, or the vengeance of Ancient Gods). He alludes to some symptoms (e.g., individuals suffering from severe diarrhoea which can lead to death from dehydration within hours). He mentions many transmission factors (e.g., the spread of the virus throughout the world because of global trade using ships, and railways). Finally, Reynaert talks about the virus' epidemiology (e.g., death tolls and pandemic waves), and their impact on Indigenous peoples[30].

Similarities between the COVID-19 and H1N1 pandemics – Bernhard, in her article titled *H1N1 flu vs COVID: Comparing Pandemics and the Response*, talks about the virus' history, i.e., the origin (e.g., the first cases or outbreak), and alludes to the signs and symptoms (e.g., mild to moderate). She mentions the virus' transmission and talks about some aspects of the virus' virology (e.g., asymptomatic individuals and the incubation time). Bernhard also alludes to some prevention measures (e.g., lockdowns, closures, and quarantine); mentions treatments, vaccines, and drugs (e.g., clinical trials, first shipments); and explores who to vaccinate first (e.g., first responders, health care workers, seniors, or most infected population groups, and children). She discusses vaccinophobia, and alludes to epidemiological themes (e.g., the severity, the number of infected individuals, the most affected and infected communities, death tolls, and waves). Finally, Bernhard mentions an institutional impact i.e., how hospitals and other facilities are impacted by the increasing number of infected individuals (e.g., using tents and parking garages as hospitals)[31].

Similarities between the COVID-19 and HIV/AIDS pandemics – Since the start of COVID-19, some researchers and concerned individuals also started looking for similarities between the COVID-19 and HIV/AIDS pandemics[2]. A few examples of these articles are referenced here for their significant input into the comparative framework matrix, namely, *Covid-19 et VIH : le vent se (re)lève? Sida et Covid-19 : « Aujourd'hui, c'est un peu la même inconnue »*; *Facing the fear: How the responses to Covid-19 and HIV/AIDS compare?*; *COVID-19 and HIV Are Not the Same. But they're Similar in Many Ways That Matter*; *Covid-19 et infection à VIH/sida : « C'est la même chose? » (ou pas) : Que sait-on?*; *VIH et Covid-19 : Que sait-on?*; *Covid et VIH - La démocratie sanitaire en crise… de confiance*; *Waves of an epidemic: HIV/AIDS has clues on how Covid-19 will unfold*; *How to Survive a* Pandemic; HIV *Experts and Activists on Lessons Learned, the Portrayals* of *HIV/AIDS, SARS, H1N1, and COVID-19*; *Developing Data Against HIV and COVID-19;* the *Forum about COVID-19 and HIV/AIDS*; *Response of Clinicians to the Current COVID-19 Pandemic: A View from the Past*; and *This HIV/AIDS Specialist Explains Its Similarities and Differences, COVID-19 and HIV/AIDS*[2,6–9,12,27,32–39]. A summary of the narrative of three of these articles is presented here.

In *Covid-19 et VIH : le vent se (re)lève?,* Brancourt reports that both pandemics exhibit a high number of deaths, a decline in civil liberties, and a medical community that is challenged by new viruses, turning in circles, fumbling, making mistakes, and oftentimes not knowing anything about the infection. He shows how leaders and administrative authorities lacked anticipation; rejected responsibility; transferred responsibility to individuals; underestimated the danger; and refused to consider the social dimension. In both cases, priority was given to the economy rather than supporting individuals through the pandemic. In both instances, vulnerable minority strategies were being repeated, such as treating individuals differently according to their economic status. This behaviour resulted in the stigmatization of marginalized groups and individuals who were already marginalized, and the precariousness of the already most precarious[2].

O'Loughlin, in his article *Facing the fear: How the responses to COVID-19 and HIV/AIDS compare?* noted two types of commonalities: unequal and equal. He goes on to note several unequal commonalities when both pandemics first appeared, such as the reported number of deaths (e.g., it seemed much higher for HIV/AIDS than for COVID-19); and the reported amount of stigmatization was more prevalent for HIV/AIDS infected individuals than for COVID-19 infected individuals, although some stigmatization of Asian Americans was reported. He also points out some equal commonalities, such as the need for collective action, and a forceful and clearly communicated government response when dealing with bans (e.g., social gatherings), closures and prevention methods. He alludes to the population's sense of fear, anxiety, foreboding, and dread of the virus, often accompanied by the presence of hysteria, social isolation, loneliness, abandonment, and depression in the population most at risk or infected (e.g., rejection from friends and families, and visitor restrictions). Demands for benefits were placed on government and health care authorities (e.g., free and universal testing, paid sick leave, nutrition assistance, childcare for frontline workers, and financial help to stop evictions) on behalf of marginalized and most at-risk communities[7].

In the article titled *For Those Who've Lived Both, COVID-19 Carries Echoes of the Early AIDS Crisis*, Williams, in an interview with Weinstein, notes that, at first, individuals were languishing and dying in high numbers, in isolation, victims of a strange, unknown, and deadly virus. Yet, despite an increasing death toll, public health and media concerns, government leaders seemed to display a certain level of denial and indifference for the most vulnerable groups in society. Both pandemics highlighted the inequalities (e.g., unemployment, homelessness, discrimination, stigmatization, and ostracization), and health disparities amongst some communities (e.g., gay community, and African Americans) in the world. Both gave indications that they would be extremely important pandemics because of the number of individuals infected and the death toll. Both pandemics, in their separate times, dominated public and private conversations, which were often filled with rumours and misinformation. Both proved that fear and ignorance were more potent weapons, often overpowering reason and science in the public arena, as opinions formed on what remains a polarizing debate. Both infections lurked in the body of asymptomatic individuals and could eventually kill them. Both pandemics necessitated populations to change habits (e.g., social distancing, mask wearing, and quarantine). Finally, in both instances, frontline health care workers (e.g., doctors and nurses) became heroes in their respective pandemics[9].

HEALTH AUTHORITY TAXONOMY RELATED TO PANDEMICS

When examining literature produced by the World Health Organization (WHO), the United States Centers for Disease Control and Prevention (CDC), the Public Health Agency of Canada, UNAIDS, one notices the following taxonomy used when

mentioning pandemics, namely, history, signs, stages, symptoms, transmission, virology, pathophysiology, diagnosis, prevention, treatments, research, prognosis, and epidemiology[19,40,41].

OTHER TAXONOMIES RELATED TO PANDEMICS

In their article about the lessons learned and the questions remaining about COVID-19, Fang et al. review what they have learned about the epidemiology, clinical features, diagnosis, treatment and prevention of the infection, and identify the essential questions that remain to be answered. They presented both the lessons learned and the questions remaining in two tables that can surely serve as models for the list of sub-categories and themes in the future comparative framework matrix (e.g., epidemiology (transmission), socioeconomic (disparities), clinical (age, sex and comorbidities), diagnosis (testing), treatment (therapies and medication), prevention (vaccines and masks), virology viral diversity, prior exposure, clinical (complications and management), and diagnosis (testing)).

When looking for the taxonomy used in the sciences when talking about pandemics, an important aspect appears. It is often the political, social, economic, and environmental sciences who present a taxonomy about the diverse impacts of pandemics (e.g. the economic impact of pandemics).

From the above-mentioned literature pertaining to pandemics, one notices that the taxonomies presented focus on, namely, the history of the virus, prevention methods/measures, treatments/ vaccines/drugs, the epidemiology of the virus, signs/stages/symptoms (3Ss), transmission factors, the virology of the virus, and vaccination measures/phobia, as well as the institutional, political, human/social, economic, and environmental impacts of pandemics. Therefore, these taxonomies will greatly help build a robust comparative framework matrix (Framework) for comparing pandemics, as it will use an institutionalized taxonomy drawn from several documents and domains (see the Framework section of this research paper).

Methodology

This research paper uses a comparative methodology. This methodology employs "several objects (phenomena or events) of study to identify similarities"[42] and differences using thematic comparisons to inform different audiences, such as democratic government leaders, policy writers, and researchers. These different audiences' responsibility is crucial when dealing with a pandemic. As so eloquently mentioned by Sheridan,

> In these moments, three things must prevail: sound policy formed by experts in close alignment with science and facts; mature politics by leaders who set aside ideology, (listen to stakeholders), take responsibility, and unite us under comprehensive legislation; and public knowledge of facts, not spins on stories that propagate more confusion and distrust. […] Politics and pandemics are inextricably linked[43].

In this research paper, the focus is on similarities between the COVID-19 and HIV/AIDS pandemics that could have been forgotten or even overlooked. These two pandemics were selected because a prior act of comparison established a productive comparability, as highlighted by the many authors cited in the literature review of this research paper[44].

To perform comparative research, one must observe, analyse, describe, and explain, when possible, their similarities, in this instance. To compare these two pandemics, an iterative thematic analytical approach, that lasted over three years, led to the selection of categories, sub-categories, and themes for comparison as they emerged from the data, starting with those identified in the literature review. It contained the following steps: 1) creating an initial Framework on an EXCEL sheet with the following labels: at the top - *HIV/AID, and Comments, COVID-19 and Comments*; and on the left-hand side – categories,

and sub-categories; 2) identifying possible similarities (themes) as they emerged in the media (audio, visual, and written), which included, but where not limited to, the radio (listening to the news), television (watching and listening to the news), and written media (grey literature), as well as database searches in Research Gate, Google Scholar, the Virtual University of Ottawa Library, PubMed, JSTOR, SCOPUS, and Ovid to name a few, using key terms such as HIV, AIDS, COVID-19, pandemic, epidemic, similarities, commonalities, links, and excluding information pertaining to the differences between the two pandemics (total scan results: 198 documents); 4) adding categories and sub-categories to the Framework as they emerged from the data; 5) inputting identified possible similarities (themes) into the Framework under the appropriate categories and sub-categories; 6) identifying reliable reference sources for each possible similarity using the electronic databases mentioned above (note: It was not always possible to obtain scientific references for the COVID-19 pandemic as it was still unfolding); and 7) synthesizing the information in narrative and table formats, i.e., condensed comparative framework matrix[45,46].

Results

The research paper starts by putting forward a Framework for pandemics where categories, and sub-categories are indicated. Second, it presents the similarities discovered between the COVID-19 and HIV/AIDS pandemics as themes in the Framework newly created. Thereafter, the research paper proposes a narrative for one theme chosen purposefully, from the newly created Framework, to further confirm the existence of similarities between both the COVID-19 and HIV/AIDS pandemics, even at the granular level.

A. COMPARATIVE FRAMEWORK MATRIX FOR PANDEMICS (FRAMEWORK)

A Framework was created by using the taxonomies and structure from four types of sources; the taxonomy found in the comparative frameworks related to health and pandemics, comparative pandemic literature, documents from health and science authorities when talking about pandemics, and other documents (e.g., social sciences) related to pandemics.

Using the above-mentioned literature, two categories, i.e., the biomedical and non-biomedical (impacts) categories were created. Thereafter, each category was divided into multiple sub-categories. The biomedical category holds ten sub-categories, namely, history, 3 Ss (signs, stages, and symptoms), transmission, virology, pathophysiology, diagnosis, prevention, treatments and research, prognosis, and epidemiology sub-categories. Finally, using the same literature, themes are suggested. For example, under the biomedical category and treatments sub-category, the research team suggests the following themes: alternative/complementary/experimental/unconventional/unorthodox treatments, limits, and medical themes to the Framework user (see Table 1. Comparative Framework Matrix for Pandemics – Biomedical Category).

Table 1. Comparative Framework Matrix for Pandemics

CATEGORY & SUB-CATEGORY	THEME	COVID-19	COMMENTS	HIV/AIDS	COMMENTS
A. BIO-MEDICAL					
1. History					
2. 3 Ss					
3. Transmission					
4. Virology					
5. Pathophysiology					
6. Diagnosis					

CATEGORY & SUB-CATEGORY	THEME	COVID-19	COMMENTS	HIV/AIDS	COMMENTS
7. Prevention					
8. Treatments/Research					
9. Prognosis					
10. Epidemiology					
B. NON- BIOMEDICAL					
1. Economic					
2. Human & Social					
3. Institutional					
4. Political					
5. Environmental					

On the other hand, the non-biomedical (impacts) category holds six sub-categories, namely, economic, human, social, institutional, political, and environmental impacts. For each sub-category, the authors of this research paper suggested a list of themes to the Framework user. For example, under the non-biomedical category and the economic impact sub-category, the income, cuts, and losses' themes are suggested by the research team to the Framework user (see Table 1. Comparative Framework Matrix for Pandemics – Non-Biomedical (Impacts) Category).

Please note that for simplicity, even though both pandemics are still active around the world, the past tense was used by the authors as often as possible. Also, for simplicity, the research team opted to present the Framework in a condensed format to highlight the many themes found when looking for similarities between both pandemics (see Tables 2 and 3. Condensed Format – Comparative Framework Matrix for Pandemics).

Table 2. Condensed Format: Comparative Framework Matrix for Pandemics – Biomedical Category

BIOMEDICAL CATEGORY (Covid-19 versus HIV/AIDS)	
Sub-Categories	Themes
1. History	Discovery, origin, & origin – alternative theories
2. 3 Ss	Signs, stages, & symptoms
3. Transmission	Individual/communities/countries/ continents, occupational transmission, contributing factors & controversies
4. Virology	Coinfection/dual/reinfection, immunity & mutations
5. Pathophysiology	Functional changes & infection process
6. Diagnosis	Human rights, testing & testing results
7. Prevention	Controversies, methods/strategies
8. Treatments & Research	Alternative/complementary/experimental/unconventional/unorthodox, limits & medical, tests/treatments/vaccines & technologies
9. Prognosis	Life expectancy & recovery prospect
10. Epidemiology	Catastrophic dilemma, contact tracing, infection rates, surveillance & waves

Table 3. Condensed Format: Comparative Framework Matrix for Pandemics – Non-Biomedical (Impact) Category

NON-BIOMEDICAL (IMPACT) CATEGORY (COVID-19 versus HIV/AIDS)	
Sub-Categories	Themes
1. Financial	Income, cuts & losses (jobs, businesses, housing, etc.)
2. Human & Social	Benefit-finding, communication, emotions, heroes, information influencers, intimacy, media/web, public demands, religion, responsibility, role models, sense of community, shaming, social divides & stigmatization, 'The New Tomorrow' vocabulary
3. Institutional (health care)	Ethical issues (refusal to care, triage, etc.), system & responsibility issues
4. Political	Action/inaction, criminalization, denial, downplaying, fight against infection, government vs. medical experts, initiatives, legislative power, responsibility & travel restrictions
5. Environmental	Natural resources to build coffins & CO2 emissions during quarantines and/or lockdowns

The Framework's user must remember that the sub-categories, and similarities (themes) mentioned in the Framework are illustrational in nature, and in no manner, thought to be an exhaustive representation of the similarities between the two pandemics.

B. COVID-19 AND HIV/AIDS PANDEMICS: SIMILARITIES

Apart from the many similarities cited in the newly created Framework under the section labelled themes presented above, this paper's research team chose to present a narrative for one theme, i.e., origin – alternative theories.

Example: Origin – Alternative Theories

Under the biomedical category and the history sub-category, three themes emerged from the data pertaining to the similarities between the COVID-19 and HIV/AIDS pandemics. They are the discovery, the origin, and the origin – alternative theories themes. For this research paper, the research team elected to present the origin – alternative theories theme to the reader to highlight several similarities between the COVID-19 and HIV/AIDS pandemics, even at the granular level.

First, one must note that "Scholarship on alternative explanations of HIV/AIDS [and COVID-19] use a range of terminology including: 'myths', 'legends', 'lay theories', and 'conspiracy beliefs'"[41], mostly from voices of dissent. These individuals called dissidents "part company with reason and evidence"[33]. Therefore, this research paper presents this example using a similar terminology.

When it was revealed that the pangolin might be the source of the first COVID-19 human infection, while the macaque might be the source of the first HIV human infection, some individuals (e.g., politicians and religious authorities), and scholars (e.g., scientist and researchers) voiced their dissent with these revelations and generated alternative theories, which fell under the myths (legends and lay theories), conspiracy, and divine/nature labels[28,33,47–51].

For the origin of COVID-19 myths, dissidents believed that it was triggered by bacteria, or propagated by houseflies or mosquitos, while others thought that it was distributed through 5G networks, or that a laboratory vaccine experiment being developed in Huang, China, might have gone wrong (still under investigation)[47]. For COVID-19 conspiracies, some believed that the pandemic was just a hoax[47]. That the virus was being used as an artificial bioweapon, or ever-more fantastical claims (e.g., the COVID-19 vaccine was being used to introduce microchips in humans) (see Table 4. Similarities: Origin – Alternative Theories)[4,20,33,47,52–63].

Table 4. Similarities: Origin – Alternative Theories

SIMILARITIES: ORIGIN - ALTERNATIVE THEORIES		
Domain	**COVID-19**	**HIV/AIDS**
1) Myths		
- animals		- dogs
- infectious pathogen	- bacteria	- bacteria - fungal growth - herpes virus - infections {hepetitis A and B, syphilis, and gonorrhoe) - pathogen (in tomb)
- people		- gay men (e.g., genetic predisposition, cancer or lifestyle) - bisexual men - Africans - Haitians
- pollution	- 5G networks	- toxic exposures
- propagation	- houseflies/mosquitos	- airborne gay illness
- vaccines	- laboratory vaccine experiment gone wrong	- vaccine gone wrong
- other		- communism - malnutrition - poverty - human secretions (urine, feases, saliva, and sweat) - King Tut tomb - gay sex areas (clubs, backrooms and baths)
2) Conspiracies		
- bioweapon	- artificial bioweapon	- bioweapon
- denialist	- a hoax	- did not exist
- plots/schemes	- to introduce microchips in humans	- scheme by the pharmaceutical industry - plot by the extreme right or an arm of the government (CIA) to dispose of groups of people (homosexuals, Africans, African Americans, & drug addicts) - details manufactured & propagated by a group of individuals with a hidden intent
3) Divine/Nature		
- retribution	- retaliation	- onslaught - wrath - punishment - retaliation against sinners - vengeance

For the origin of HIV, similar individuals presented alternative theories which fell under the same terminology. For HIV myths, dissidents believed that it was a genetic predisposition for gay men, an airborne gay illness, a gay cancer, or that it was inflicted or caused by gay men's lifestyle and their toxic exposures[4,20,33,47,55–62,64,65]. Such exposures included having a high level of sexual promiscuity

(e.g., many sexual partners, sexual voracity, or promiscuity), sex with White men, "rimming", fisting, or fist 'fucking', possessing multiple sexually transmitted infections, and/or bowel infections, as well as using recreational drugs (e.g., poppers (isoamyl, isopentyl, isopropyl, and isobutyl nitrites), multiple-displacement amplification (MDA), and ethyl chloride), lubricants while having unprotected sex with homosexual, and/or bisexual men, as well as urine, faeces, saliva, and sweat[4,20,33,56–62,65,66].

Other myths cited for the origin of the HIV virus attribute the source to dogs, Haitians, or Africans, a host of ills including the herpes virus, an infectious pathogen (e.g., hepatitis A and B, syphilis and gonorrhoea), a multitude of different factors consisting of malnutrition, poverty, pollution (e.g., formaldehyde and artificially generated gravity waves), communism (e.g., from a San Quentin communist prisoner), or a disease in the King Tut's tomb, i.e., disease brought to the U.S.A. during the King Tut exhibit[33,64,66,67]. Finally, it was suggested that clubs, back rooms, and baths' "walls and floor(s) encrusted with bacterial and fungal growths might have a connection to the disease"[66].

For HIV conspiracies, some believed that the pandemic did not exist[33]. Others thought it was a scheme wherein the pharmaceutical industry could create a billion-dollar market, i.e., the AIDS industry, for drugs to treat a harmless virus; the result of a polio vaccine (smallpox) gone wrong in Central Africa; a covert plot by the extreme right, or by an arm of the government (e.g., U.S. military laboratory, depending on who is spinning the tale); or that there was an attempt by the CIA to dispose of (social cleaning) (poison and kill) homosexuals, Africans, African Americans, and drug addicts[33,64,66]. Finally, "some dissidents believed that the actual details about the origin of the HIV pandemic are (were) manufactured and propagated by a group of individuals with a hidden intent"[33].

When all explanations, rationale and otherwise, failed to convince individuals about the origin of the virus, many (e.g., the church and some governments) used the ultimate justification for its origin. Such a justification was based on religious or cultural beliefs. For example, the HIV virus must have been a Divine (e.g., God or demons) onslaught, wrath, retribution, punishment, or retaliation against sinners (e.g., homosexuals), or put simply, Nature's vengeance against homosexuals[20,33,34,47,55–59,61–63,65,66,68–84]. More so, Strub considered that it was "a consequence of immorality"[66], while President Reagan considered that the poor homosexuals had "declared war upon nature, and now nature is (was) exacting an awful retribution" (see Table 4. Similarities: Origin – Alternative Theories)[66].

As agreed above, although both pandemics are very different in nature, the results from this research indicate that both pandemics generated alternative theories as to its origin in three specific domains, namely, myths (legends and lay theories), conspiracies, and divine/nature (see Table 4. Similarities – Origin: Alternative Theories). For example, under the first domain labelled myths, individuals during both pandemics cited that an infectious pathogen (e.g., bacteria or virus), or a certain kind of pollution (e.g., 5G or toxic exposure) was at the origin of the pandemic. They also thought that the pandemic was the result of a vaccine gone wrong (e.g., in laboratory (Covid), or once fabricated (HIV)) (see Table 4. Similarities: Origin – Alternative Theories).

Under the second domain labelled conspiracy theories, many individuals during both pandemics denied its existence (e.g., a hoax, or it did not exist); that a virus was used as a weapon to eliminate individuals from certain social groups (e.g., minority groups and the 2SLGBTQ+ communities), or that there was a plot (scheme) under way (e.g., introduction of chips in humans or a hidden agenda by a group of individuals). Finally, under the divine/nature theories domain, individuals during both pandemics stated that the divine/nature's retribution on humanity was at the origin of those two pandemics (see Table 4. Similarities: Origin – Alternative Theories).

Discussion

This section looks at five aspects of this research paper, namely, the overall intent, the literature, the framework, the example, and the lessons learned from the example.

First, this research paper did not aim to contribute to our understanding of the increasing number of actual or potential pandemics, the reason these pandemics occur, or the rationale behind the accelerated speed of emerging pandemics. More so, its intent is not to critically reflect on the historical, socio-economic, and political conditions in which these pandemics struck; or the links between accelerated global extractive capitalism and the increasing number of infectious diseases that end in pandemics.

However, this research paper's framework presents the bio-medical category (history) which provides ample substance for reflection on the zoonoses origin of some pandemics, while the non-biomedical (impacts) category gives sufficient content for reflection on the diverse impacts of both pandemics (e.g., economic, human, institutional, political, social, and environmental), as well as the many interdependencies and interconnectedness between categories, sub-categories, and themes.

Second, the narratives pertaining to the similarities between pandemics mentioned in the literature review confirm the following points. When looking for similarities between pandemics, authors mentioned some sub-categories and themes, mostly in the bio-medical domain. Although they helped build and populate a robust Framework, few talked about the interdependencies or interconnectedness of these sub-categories, or themes, or between the bio-medical and non-biomedical (impacts) themes.

As one may suspect, there is an important and often unreported interdependency or interconnectedness between sub-categories and themes, as well as between the bio and non-biomedical (impacts) categories that the use of this Framework will help highlight. For instance, the epidemiology of the pandemics has economic, human, social, institutional, political, and environmental impacts that cannot and should not be discounted by researchers and other authors. The categories, sub-categories, and themes help draw a complex picture, tell a story, of pandemics, from its small beginning to a full-blown pandemic and its impacts on the economy, as well as on lives, institutions, politics, and the environment.

Therefore, a column named 'interdependencies/ interconnectedness' could be added at the extreme right of the Framework to comment on the influence each of the categories, sub-categories and themes exhibits on each other and plays in the 'life' of a pandemic.

Third, our research team found only one paper that used a framework for reporting on the COVID-19 pandemic, Fang et al. Unfortunately, it was not used to compare pandemics. It was used for reporting their findings about the lessons learned from COVID-19, and the questions remaining from this pandemic[41]. The taxonomy used for their framework resembled the one proposed for the bio-medical category in the newly proposed framework. It included themes about epidemiology, virology, diagnosis, treatment, and prevention, while using the following additional sub-category: clinical. However, they did not mention the following sub-categories: history, 3Ss, transmission, pathophysiology, and prognosis. We opted not to use the sub-category clinical as the research team felt that the information under this sub-category could be captured under the treatments and research sub-category. Unfortunately, there was no non-biomedical (impacts) category in their framework.

Our research team also found one paper that possessed a comparative framework for reporting on pandemics, Moy et al. Unfortunately, the framework was created to report on the policy and technology responses in the aftermath of a pandemic. Such a framework is far from the intent of the present research paper, but it did use a taxonomy useful for the creation of the Framework (e.g., epidemiology and economic outcomes/ impacts).

Henceforth, it is hoped that the use of a comparative framework matrix will help researchers report similarities in a systematic way using an institutionalized taxonomy that highlights those similarities; mentions where interdependencies/ interconnectedness exist; and identifies where future research ought to be focussed. Foremost, reporting similarities in a structured manner will improve the disclosure of information that might otherwise have been concealed or simply cut off from the narrative by their otherwise well-intended authors.

For example, presenting information about a few bio-medical themes (e.g., history, treatments, and research), while omitting to mention the history, signs, stages, symptoms, transmission, virology, pathophysiology, diagnosis, prevention, prognosis, and epidemiology themes, will undermine the importance these themes play in both pandemics at the bio-medical level. On the other hand, omitting to talk about the impacts (e.g., economic, human, social, institutional, political, and environmental) will weaken the importance these themes play in both pandemics at the non-biomedical level, therefore presenting only a portion of the representation of both pandemics, while omitting, as mentioned before, the pertinence and existence of interdependencies/ interconnectedness between categories, sub-categories and themes.

Reporting similarities in a structure manner will also help stakeholders (e.g., scientists from the medical establishment, researchers, government, and concerned individuals) make decisions grounded on evidenced-based information.

Fourth, the theme presented in this research paper, derived from the biomedical category and the history sub-category, was chosen for several reasons. It provided a greater interest to the research team. The theme helped present a new and different perspective when looking for similarities between pandemics. It was often cited within the feud of controversies for both pandemics. The theme also provided a straightforward, poignant, and in-depth example of the similarities between COVID-19 and HIV/AIDS pandemics that will help understand the domain. Finally, the theme raised awareness and highlighted its important position and significant worth within the Framework.

The research team recognises that other themes could have been chosen to draw attention to the similarities between the COVID-19 and HIV/AIDS pandemics. For example, from the biomedical category, the origin of the pandemic theme could have been chosen, i.e., the zoonosis theory, and from the non-biomedical (impacts) category, the economic impact theme could have been selected, i.e., income, cuts, and losses (e.g., jobs, businesses and housing). They would have certainly shown how these two pandemics seem to share a zoonosis origin and mostly impact, in an unequal fashion, most vulnerable social groups, such as the elderly, and certain communities (e.g., immigrants and 2SLGBTQ+).

Finally, the narrative for the example presented in this research paper, i.e., Origin – Alternative Theories, draws the reader's attention to the valuable lessons one ought to learn from those theories. As mentioned by Fang *et al.*, "as we now confront COVID-19, there are many similarities and lessons [learned] from HIV (/AIDS) […]"[47].

The reader must remember that, when a culprit virus causing an infection, an epidemic, and thereafter, a pandemic appears, scientists, and researchers from the medical establishment attempt to use facts to identify where and when the virus started, and how it spread[85,86]. Thereafter, they use those facts to develop a theory that fills the human need to know and understand how and why the pandemic occurred, as well as draw lessons learned[87]. For the HIV/AIDS pandemic, it took more than twenty years for scientists and researchers from the medical establishment to develop theories and answer questions about the origin of the HIV virus, and draw lessons learned[85].

Therefore, it may take some time before similar individuals can investigate the various theories for

the origin of the virus that led to an infection, and thereafter, a pandemic; develop theories, and answer questions concerning the COVID-19 pandemic before any theory is confirmed, i.e., takes hold and held as true, refuted, or simply dismissed[47,77,88].

In the meantime, when "leading doctors and researchers are […] admitting that they don't know what's going on"[89], the lack of answers to those questions creates an information vacuum. Often, alternative explanations or theories for the origin of the virus, fabricated by lay individuals, non-scientists, non-researchers, as well as some members of the medical establishment, or elsewhere, are poised to fill the vacuum with 'lay theories', and 'conspiracy beliefs', or perpetuate 'myths', and 'legends'[33,64]. These same individuals are often motivated to create these alternative theories by other reasons than science, where "rumours and ignorance took [take] the place of science and medicine"[77]. Often, alternative theories reflect the social, political, and religious issues/interests of the time (e.g., racism, authority, pollution, and cultural and religious beliefs)[33,64]. Sometimes, they may be farfetched (e.g., a conspiracy against individuals from specific communities); a now and then factor of probability (e.g., a human error in a laboratory); and, at other times probable (e.g., a human contact with an infected animal, i.e., zoonosis origin). As Kramer declared, in frustration,

> For two years, we've heard a different theory every few weeks. We grasped at the straws of possible cause: promiscuity, poppers, back rooms, the baths, rimming, fisting, anal intercourse, urine, semen, shit, saliva, sweat, blood, blacks, a single virus, a new virus, repeated exposure to a virus, amoebas carrying a virus, drugs, Haiti, voodoo, Flagyl, constant bouts of amebiasis, hepatitis A and B, syphilis, and gonorrhoea[89].

Finally, conspiracy or genocide theories are connected to low levels of trust in a context of threat and from low levels of comprehensive, accessible (and reliable) information in a context of unknowns and uncertainties[64,90]. As mentioned by Faulk, "In a world turned upside down, conspiracy thinking combats our feeling of confusion and helplessness, giving us a sense of control in a world without control, and making us feel safer in a world without safety"[20]. As Dickinson adds, alternative theories "help determine how people individually respond to […] (the epidemic) and how the epidemic is responded to collectively"[64].

With the speed at which information and misinformation circulate, it is and will be even harder to stop the spread of alternative theories that will help charlatans from taking advantage of the situation and, unfortunately, desperate and dying people in search of answers or treatments.

It is evident that the COVID-19 and HIV/AIDS pandemics have many similarities regardless of their fundamental differences (e.g., the type of virus and the infection method). Those similarities exceed, by far, the biomedical aspects of those pandemics, i.e., the non-biomedical impacts.

Contribution and Value

This research paper will help writers form sound policy in close alignment with facts drawn from the Framework, which in turn, will help government pass comprehensive legislation for health care authorities to implement. The data collected will help other researchers identify where information is strong and where it is lacking, or where further research is warranted. Finally, other stakeholders (e.g., the public) will be informed using facts about pandemics that are drawn from credible sources, science, thus discarding misinformation.

"Comparative research does "claim to illuminate and, in this respect, (can) bring key issues into sharper relief which can, in turn, inform debates" [91]. Ultimately, comparative research can help by "broadening our knowledge (and understanding) of the diversity of possible solutions and in challenging and revitalizing our past perceptions of

the underlying rationales, the fabric, and the functioning of"[92], and "provide[ing] unexpected insight"[45] into, pandemics.

Additionally, this research paper contributes to the comparative domain, the study of pandemics, the health care system, and government.

Comparative domain – Using the Framework for presenting commonalities, or in this case similarities, between pandemics, in the results and discussion sections, highlighted the usefulness of the instrument for drawing a more structured pandemic picture. It will also assist researchers, and other individuals, in finding similarities between pandemics.

The study of pandemics – Presenting one example of similarities between the COVID-19 and HIV/AIDS pandemics (theme) highlighted the usefulness of the instrument when researchers and other individuals are looking for similarities between pandemics, even at the granular level. It also helps researchers identify where further research is needed, filling the knowledge gap about pandemic commonalities; filter the information circulating about pandemics, to either affirm or refute information; and create valuable trustworthy information that can be disseminated through internal and external channels (e.g., social media).

Using a structured account of similarities between these two pandemics drew attention to the sometimes-mentioned economic, human, social, institutional, and political impacts, and seldom-mentioned environmental impact (e.g., the disposal of PPE (face masks, hand gloves, suits, etc.) and the generation of a huge amount of hospital waste). It also highlighted the interdependencies/interconnectedness between bio and non-bio-medical categories, sub-categories and themes that only the use of a structured approach, such as a comparative framework matrix, can emphasize.

The research team is acutely cognizant that a systematic approach to presenting similarities between past pandemics would have been arduous without the advent of information technology. Information technology gives researchers the opportunity to access information that was unavailable, or difficult to access, not too long ago, regardless of the pandemic.

Health Care System and government – The Framework may serve as the guide that so many health care authorities and government seemed to long for, in the fight against a pandemic that no one saw coming or was adequately prepared to address. It may inform future biomedical and non-biomedical decisions policy makers will need to make to stop the spread of the disease, or in the control of its various impacts on the population and its diverse communities, and the country. But more so, the use of the Framework may help bring about structural changes which may positively impact the population's health determinants (e.g., economic, cultural, political, and social). As such, it may bring about modifications in the distribution of material and symbolic power and resources, and […] public policies across sectors, thus diminishing inequities in health and health-promoting resources across and between nations and communities[93].

Finally, these similarities highlighted the many unequal impacts that such pandemics have on individuals, communities, nations, and the world. Unfortunately, they also reaffirmed the existence of a dominant social order that is racist, sexist, and homophobic; exposed social divisions; as well as deepened and clarified fissures in the social order (inequities)[2,94].

Therefore, public policy must ensure that individuals remain accountable for their actions through the creation and implementation of laws, regulations, plans, and actions, and that these measures are justifiable and just (equitable). As mentioned by van Wyk,

> In a personal context, accountability involves being answerable for one's behaviour, and accepting the consequences of one's actions, whether positive or negative; […] owning up to mistakes; taking responsibility for personal actions;

> and working to make amends for any harm caused. When people […] are accountable, they are more likely to make decisions that are in the best interest of […] the wider community[95].
>
> In a broader societal context, accountability might involve holding individuals, organizations, and institutions responsible for their actions and decisions, and ensuring that they are held to account for any harm caused[95].

Public policy must also ensure that the measures fairly consider the needs of individuals while balancing those of the majority; and that they emphasize that those policies are not just for the privileged. Finally, public policy must attend to the histories of both the COVID-19 and HIV/AIDS pandemics to learn from them[2].

Strengths and Limits of the Study

While this research paper provides a Framework – a systematic approach to presenting similarities between different past or current pandemics, the research team realizes that it possesses several strengths and weaknesses. First, the research team showed that it possessed solid knowledge and experience of these two pandemics, as it has lived and are still living through both. It afforded a strong grasp of both events and the ability to flag similarities as they arose in the media, or were mentioned in scientific and grey literature, through its biased eyes[5]. However, this strength also formed the major weakness of this study, as the research team believed at the onset that many similarities existed between these two pandemics. However, it clearly declared its bias. Thereafter, it managed to unveil many documents, scientific and grey literature, to support the many points it put forward in this research paper. It presented them using a narrative and detailed Framework containing several categories, sub-categories, and themes. The research team also offered to the reader one example of similarities between the two pandemics using a comprehensive narrative to substantiate its hypothesis. In so doing, it hopefully managed to convince the reader of the existence of similarities between these the COVID-19 and HIV/AIDS pandemics, even at the granular level.

Secondly, this paper uses a considerable amount of grey literature to support its findings. However, the research team was able to find a great amount of evidence-based literature which used the same taxonomy and information to support its findings. By doing so, it successfully lowered the grey literature's impact on the study.

The difficulty with using a comparative methodology is that, for each object of study, different countries, institutions, researchers, or individuals use diverse sub-categories and themes, as well as dissimilar definitions for them[44,92]. The Framework presented by the research team intends to help somewhat with this issue by drawing taxonomies from different credible sources, such as the World Health Organization (WHO), the United States Centers for Disease Control and Prevention (CDC), the Public Health Agency of Canada, and UNAIDS to create the biomedical category, sub-categories, and themes of the Framework. However, it may very well be that this issue is more of a concern for the non-biomedical category, as it was created more intuitively and iteratively, drawing categories from the social (e.g., financial, human/social, institutional, political) and environmental sciences and themes from anecdotal information, ongoing media reporting, grey literature (e.g., annual reports, government documents, and evaluations), and scientific research, to name a few. However, the research team hopefully succeeded in persuading the reader that they were indeed pertinent and widely used in the social sciences[96].

Finally, Miri identified other limitations to the comparative methodology, such as, how difficult, costly, and time consuming this type of research is compared to research that is non comparative. Miri also found that other limitations consisted of the

types of data that can be collected, the search for equivalence between problems to be discussed, the limited generalizations that may be drawn from the results, and the rare possibility to perform rigorous theory testing or experimental research[97].

Future Studies

In their future studies, researchers may want to further develop the Framework and investigate more in depth alternative theories for both pandemics presented in this research paper. They may choose to focus their research where information is lacking, as identified in the Framework (e.g., non-biomedical (impacts) category), and interdependencies/interconnectedness. Researchers may also desire to focus their research on the differences between these two pandemics to brush a full portrait of the comparison between them, as noted, this research focused exclusively on the similarities between the COVID-19 and HIV/AIDS pandemics. Finally, new research may seek to understand the reasons behind the increasing number of potential or actual pandemics, why these pandemics occur, or the rationale behind the accelerated speed of emerging pandemics. It may critically reflect on the historical, socio-economic, political, and environmental conditions in which these pandemics struck, as a baseline for evaluating risk, should another viable virus emerge, or the links between accelerated global extractive capitalism and the increasing number of infectious diseases that end in pandemics.

Conclusion

This research paper aimed to answer the following three research questions using a literature review and a comparative research methodology. The first objective was to suggest a comparative framework matrix (Framework) for presenting similarities between pandemics. The second one was to examines both pandemics' trajectories to find similarities between them. The third goal of this research paper was to offer an in-depth analysis of one theme purposefully chosen from the newly created Framework to emphasise the existence of similarities between the COVID-19 and HIV/AIDS pandemics, even at the granular level, and to offer some lessons learned from this example.

The research team examined both the COVID-19 and HIV/AIDS pandemics' trajectories. It's combined lived experience afforded it a solid grasp of both events, and the ability to flag similarities, through its biased eyes, as they arose or were mentioned in research papers, grey documents, the media, etc. It presented them in a Framework to prove the existence of similarities. It presented a condensed version of the Framework to highlight those similarities. One theme was purposefully chosen from the newly created Framework, designed specifically for this intent, to emphasise the existence of similarities, even at the granular level.

It is hoped that the framework presented in this research paper will help researchers understand a pandemic, while providing valuable information and guidance on how to manage a time marked by a high number of deaths, as well as a high level of fear and hysteria[8]. It is also our belief that researchers can learn from past pandemics to help chart the best course of action during future ones. Our best teachers, the lessons taken away from those experiences will help us safely navigate our way through present and future pandemics[26]. For example, it should entice researchers to push further their reflection on pandemics to deconstruct some persistent myths and conspiracy theories, take the measure of government, and public health authorities' actions or inactions while considering the taboo around individuals' intimate life; and to research the human, social, financial, and environmental impacts of pandemics. Finally, the complex picture the Framework helps to draw may certainly help to bring about structural changes that will help eliminate inequities in the health domain.

Catalan *et al.*, concludes by musing that,

There was also a sense among some that another infectious epidemic may appear on the horizon at some stage. While COVID-19 is not specifically transmitted by sex, it is highly infectious and transmitted by close contact, which includes sex. So just like HIV appeared from nowhere, once again, we need to find a way to prevent – as well as cope with – novel infections[4].

HIV, like COVID-19, reminded us of the unknown unknowns of a threatened nature. Yet each time we humans are threatened by a new challenge from microscopic bugs, we seem to need to re-learn the lessons. It is easy to forget[4].

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