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Evidence attack in public health: Diverse actors' experiences with translating controversial or misrepresented evidence in health policy and systems research

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ABSTRACT

Bringing evidence into policy and practice discussions is political; more so when evidence from health studies or programme data are deemed controversial or unexpected, or when results are manipulated and misrepresented. Furthermore, opinion and misinformation in recent years has challenged our notions about how to achieve evidence-informed decision-making (EIDM). Health policy and systems (HPS) researchers and practitioners are battling misrepresentation that only serves to detract from important health issues or, worse, benefit powerful interests. This paper describes cases of politically and socially controversial evidence presented by researchers, practitioners and journalists during the Health Systems Research Symposium 2020. These cases cut across global contexts and range from public debates on vaccination, comprehensive sexual education, and tobacco to more inward debates around performance-based financing and EIDM in refugee policy. The consequences of engaging in controversial research include threats to commercial profit, perceived assaults on moral beliefs, censorship, fear of reprisal, and infodemics. Consequences for public health include research (er) hesitancy, contribution to corruption and leakage, researcher reflexivity, and ethical concerns within the HPS research and EIDM fields. Recommendations for supporting researchers, practitioners and advocates include better training and support structures for responding to controversy, safe spaces for sharing experiences, and modifying incentive structures.

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Introduction

Evidence manifests in various forms including empirical research, data from routine monitoring and surveys (Brownson et al., 2009), expert opinions (Parkhurst, 2017), community voice (Cain et al., 2017), tacit knowledge of implementers (Kothari et al., 2012), and even public polling (Burstein, 2003). Evidence provides policy makers with actionable information on which they base public health decisions intended to influence health outcomes (Brownson et al., 2009; Innvær et al., 2002; Orton et al., 2011). In this idealised process, there are several successful mechanisms whereby policymakers access evidence to inform their decisions: (a) researchers identify policy-relevant questions and find evidence that answers those questions, (b) programme managers collect and analyse data from monitoring systems that can help pinpoint emerging issues or differential coverage between communities, and (c) knowledge brokers, such as think tanks or even advocates and lobbyists, synthesise evidence for policy makers.

Evidence-informed decision making (EIDM) is influenced by far more than evidence. It is influenced by social goals (Burstein, 2003), contextual realities (Dobrow et al., 2004), political expediency (Cartwright & Hardie, 2013), funding, values and much more. In the field of health policy and systems research (HPSR), links between research, policy and practice become even more complex. The path between evidence and policy is not straightforward, particularly in instances when the results are controversial.

As EIDM is an inherently political process, the 3-i Framework, a political science framework with its three categories of influences on the policy-making process – ideas, interests, and institutions, provides useful principles for thinking about the impact of controversial or misrepresented evidence on health policymaking research and researchers. Interests describe the 'agendas of societal groups, elected officials, civil servants, researchers, and policy entrepreneurs' by examining (1) who wins and who loses from a policy change; and (2) How much they win or lose (i.e. the cost vs. benefit of the change) (Pomey et al., 2010). Ideas also have two components. First, 'research evidence' is our understanding about the way things actually are, and second, values describe 'what ought to be'. Distinguishing between these two concepts can provide insight into how ideas will be accepted in different cultural contexts. Finally, institutions are the 'the formal and informal rules, norms, precedents, and organizational factors that structure political behaviour' (Pomey et al., 2010), which could be government structures, networks, or foundational policy documents, e.g. constitutions, laws, and policies. Institutions often have vested interests that are difficult to challenge.

In this paper, we ask how researchers and policy makers, in different contexts, react to misrepresented or controversial findings. We do this by using the 3i framework to reflect on the experiences of seven cases ranging from addressing anti-vaccine movements in Costa Rica to questions about refugee health policy in Lebanon to complex debates about payment structures within the health financing community in sub-Saharan Africa. These cases inform our understanding of, and offer insights into, EIDM processes in different spaces: within high-level policymaking circles, among HPSR communities themselves, in reaction to powerful commercial interests, and in public debate. The narrative-driven experiences profiled in this paper were shared during a panel at the Health Systems Research Symposium 2020 (HSR2020) and provide a basis for inference about the political, religious, technological, and commercial factors that influence the use, misuse, and/or repression of controversial results. In these examples, we highlight researchers, journalists, advocates, and public health practitioners from across the globe who have battled personally as well as professionally to combat misinformation, misrepresentation, and confusion in the face, at times, of powerful interests working against the public's health.

The literature has examples of successful cases of evidence influencing policy and programmatic decisions, whether directly by researchers, through knowledge brokers (Jessani et al., 2016; McSween-Cadieux et al., 2019; Waqa et al., 2013) or via knowledge transfer platforms (Yehia & El Jardali, 2015). The power of supportive leadership has also been documented within tobacco control policy making in Mauritius (Kusi-Ampofo, 2021). Our goal is to unpack and problematise the processes and experiences of EIDM from multiple perspectives, and offer nuance to the hierarchies, power dynamics and competing interests that influence how, when and where evidence within global health is disseminated.

We present these cases as stories that share experiences with controversial or misrepresented research as a response to the current critiques of the HPSR literature and the encouragement to explore different ways of sharing and documenting cases that incorporate more personal and professional experiences than the typical case study approach (Social science approaches for research and engagement in health policy & systems (SHaPeS) thematic working group of Health Systems Global, Regional Network for Equity in Health in East and Southern Africa (EQUINET) et al., 2016). This is particularly relevant as we capture and share what is usually unevaluated and undocumented in traditional research literature: the unintended processes and consequences of politics and researcher engagement in HPSR Further, Heider (2017) cautions:

> the way effectiveness has been defined has kept attention focused on intended results. Most evaluations grapple with getting evidence to determine whether objectives were achieved and to measure an intervention's contributions. Fewer evaluations are able to collect evidence on effects outside the immediate results chain and identify unintended consequences.

Consequently, practitioners and researchers have not developed the reflex of considering unintended processes and consequences over time, which represents a critical blind spot in EIDM work.

Approach

In response to a call for abstracts for the Health Systems Research Symposium 2020 (HSR2020), the Translating Evidence to Action Thematic Working Group (TWG) requested TWG members to submit stories of controversial and misrepresented research findings for a panel presentation titled 'Evidence Attack: Stories on Controversial or Misrepresented Results'. TWG leaders advertised an open call to researchers as well as research users to submit their experiences on how they addressed controversial findings or misrepresentations of their research, and how these experiences affected them personally and professionally. This call for stories yielded five submissions. TWG leaders applied the following principles for purposive selection of stories: (1) ensuring geographic, gender, and topic diversity, (2) highlighting stories from non-traditional storytellers (e.g district health managers and journalists), (3) responsiveness of applicants, and (4) controversial and 'newsworthy' subjects.

The TWG leaders accepted three submissions and rejected two due to non-responsiveness from the applicant. Next, the TWG leaders conducted a purposeful search among their networks to identify stories that would meet our principles and thus identified another four storytellers. With this process, TWG leaders finalised the selection process with the seven cases.

Upon acceptance, the seven cases were video recorded as stories by the panellists in their language of choice and transcribed verbatim. English transcriptions and foreign language translations to English were provided to an editor for closed captioning on the videos for viewers. The edited videos were presented online at HSR2020 and archives of the panel and presentations are available for viewing (https://bit.ly/3oUu8Q7). Transcripts were used for

synthesising the cases and reflections for this paper. Summaries of all the cases can be found in Box 1.

Box 1. Case summaries

1: **The unintended consequences of publicising negative findings** – Performance-based financing (PBF) was an intervention introduced in Haiti in 1999 (Zeng et al., 2013). The intervention model was inspired by some of the ideas of the New Public Management approach. Since then, more than 30 global health organisations, including the World Bank, financially and technically supported the rapid expansion of this intervention across low- and middle-income countries (LMICs) (Turcotte-Tremblay et al., 2018). As result, there was perceived pressure on researchers, evaluators and local actors in the field to demonstrate its effectiveness (Turcotte-Tremblay et al., 2018). Despite the theoretical debates surrounding the unintended consequences of PBF, little research had been done on the topic. A team of researchers therefore embarked on a multiple case study on the *Unintended consequences of PBF* combined with health equity measures only to be met by resistance from some stakeholders (Turcotte-Tremblay et al., 2020).

2: **The challenges of disagreement between researchers and participants** – As PBF was starting to expand in sub-Saharan Africa, a vibrant *PBF Community of Practice (CoP)* emerged in 2010 (Gautier et al., 2018). The role of such CoPs in fostering the diffusion of the PBF policy was therefore a topic of great interest for a group of HPS researchers. With key stakeholder involvement in determining the scope of the study, researchers embarked on a mixed methods research design that included a social network analysis of the CoP's online forum active members, a semantic analysis of their online posts for a period of nearly seven years, interviews with 40 key informants and CoP document analysis (Gautier et al., 2020). However, CoP members' and the research team's interpretations of the power and knowledge flow within the CoP differed, which led to some discontent.

3: **Revealing advocacy tactics for tobacco control can be dangerous** – Industry – whether tobacco, alcohol or food – is known to wield disproportionate power over national policy processes (Amul et al., 2020; McCambridge et al., 2018; Ojeda et al., 2020; Smith et al., 2013). However, public health advocates in various countries such as Colombia (Uang et al., 2018) and Thailand (Charoenca et al., 2012) have found innovative ways to combat industry interference in order to advance public health. In the quest to share the tactics, tools and strategies used by such advocates as a means to advance public health policy advocacy and counter industry interference, researchers attempted to reveal *advocacy tactics for tobacco control* and publish the findings. However, imbalances in power between industry and advocates ultimately determined what could be disseminated.

4: **Emotive topics result in conservative backlash in South Africa:** *Comprehensive sexuality education* (CSE) is critical to knowledge and awareness of health issues among youth and has been part of the school curriculum in South Africa since 2000 (Mkhwanazi et al., 2019). Given that implementation has been suboptimal (UNFPA, 2015), the Department of Basic Education (DBE), supported by donors and United Nations agencies, have committed to strengthening the CSE curriculum as well as training teachers. Before full roll-out, the DBE held stakeholder consultations to present the outcomes of using scripted lesson plans with teachers in 2019. These consultations included parents, teachers/ teacher unions, religious organisations and youth. However, there is growing religious backlash inclusive of parents and international organisation (Family Watch International, 2019) which are against implementation/ strengthening the CSE curriculum. An early career public health professional and advocate speaks to the debates around evidence related to CSE as experienced at a religious consultation on CSE hosted UNESCO and DBE in 2019.

5: **Challenging misinformation through the media in Costa Rica** – As science deals with a new virus, there are many uncertainties and unknowns. Fighting misinformation and fake news has become even more difficult as opposing groups take to social media. Traditional media is considered a trusted watchdog and intermediary for exposing how powerful actors obstruct information or spread misinformation. However, in the case of journalists working for *La Nación* newspaper in Costa Rica, efforts to counter specious information efforts were often hindered. The case highlights the challenges of countering dangerous misinformation on liberation therapy, HPV vaccine and COVID-19 through *Media Advocacy*.

6: **Countering misinformation about vaccines in India:** Vaccine hesitancy has become a widespread phenomenon as in this case from India (Babu, 2019; Nair, 2016; Nair et al., 2021). Malappuram is the most populated district in the state of Kerala with 4.6 million people. In 2017, the district had only 57% full childhood immunisation coverage – the lowest in the state (Malappuram District Medical Office, 2017). The district has also witnessed the re-emergence of vaccine-preventable disease outbreaks and child deaths (Sangal et al., 2017). Much of this can be attributed to organised anti-vaccination campaigns, religious fundamentalist groups, and faith in quacks and alternate medical practitioners who assume anti-vaccine positions (Mohan, 2016; Nair, 2016). In this case, we hear about the crucial role of *local government leadership* in countering vaccine hesitancy and mobilisation of a vaccination campaign.

7. **The controversy around limited use of evidence in health policy making: Lebanon and Ontario** – Policy development is influenced by numerous factors – including implementation practicalities – that at times supersede what the evidence indicates. In a study on *Syrian refugee health policy* in Lebanon and the province of Ontario, Canada, results revealed that use of research evidence in policy development was subordinate to key political factors, resulting in limited influence of research evidence in the development of both the Lebanese and Ontarian policy (Khalid et al., 2019).

Results

The experiences reflected in these cases touch on several common and overlapping themes both in terms of the power structures at play, the dynamic nature of EIDM, and the personal consequences that evidence advocates experienced. These are covered in turn first around consequences of engaging in controversial EIDM and then lessons learned.

Within each section, we also highlight the thinking about the impact of controversial or misrepresented evidence on health policymaking and researchers using the 3i framework. These cases

Table 1. Role of interests, ideas and institutions in panel cases.

Cases	Interests	Ideas	Institutions	Consequences
Unintended consequences of PBF	Large financial investments Employments and reputation of actors involved	Spread of the New Public Management approach	Many powerful global health organisations directly involved in the promotion of the intervention	Fear of reprisal from researchers and funders Threats of censorship
PBF Community of Practice (CoP)	CoP membership benefits such as career /professional opportunities Visibility of the CoP in global health governance arenas	Collaboration as a normative good CoP as a platform for Global South 'voice' and ideas		Researcher reflexivity Censorship of controversial results
Advocacy tactics for tobacco control	Commercial profit for industry Researcher intent to disseminate knowledge (e.g. advocacy tactics)	Public health protection vs individual rights	Publish or perish as incentive in academia Powerful private commercial industry	Fear of reprisal from industry Censorship of controversial results
Comprehensive sexuality education in South Africa	Strong support from youth Public health advocates want dissemination of public health knowledge Opposition primarily from religious figures Opponents. e.g. churches, want to restrict information based on moral codes South African National Department of Basic Education (DBE) working towards rolling-out strengthened CSE curriculum in schools, based on international guidance.	DBE developed scripted lesson plans and piloted teacher training; ensured continuous monitoring and evaluation (M&E) of CSE. Religious/moral arguments against CSE	Strong support from Government through a progressive Constitution and Bill of Rights Strong support from foreign donors and multi-lateral technical agencies Informal grouping of civil society youth groups and individual youth activists	Perceived assault on moral beliefs
Media advocacy in Costa Rica	Protection of private sector profits Maintain watchdog role of media in Costa Rica	Pro- / anti- vaccination ideologies	Institutional capacity gaps in media outlets around health reporting	Infodemics affect uptake of vaccines
Local government leadership to counter vaccine misinformation in India	Stakeholder engagement critical to success Alignment of interests across institutions waskey.	Key stakeholders supported alignment efforts as part of the broader strategy of vaccine acceptance Pro- / anti- vaccination ideologies	Key stakeholders supported alignment efforts as part of the broader strategy of vaccine acceptance	Infodemics affect uptake of vaccines
Syrian refugee health policy in Lebanon and Ontario	Government responsibility to manage health status of refugees Research that investigates government health policy processes	Research evidence subordinate to political influences	Government capacity and willingness to find and use research evidence	Fear of reprisal from government

highlight how Interests, Ideas and Institutions are intersecting and fluid concepts (rather than mutually exclusive and distinct) so instead of introducing artificial boundaries, we instead draw the reader's attention to Table 1 at the end of this section which summarises how these concepts manifest in the cases. Additionally, we recognise that the 3i framework only accounts for what drives the policy making process, it does not account for the consequences of engaging in controversial research, an element that we add in Table 1 to capture the full cycle of translating research into policy and practice.

Reactions to controversial research

Threats to commercial profit (Interests and Institutions)

Although the findings of the *Advocacy tactics for tobacco control* case might provide lessons learned for tobacco control proponents in other countries, public health advocates in one country were concerned about that the report would be used against them by the tobacco industry and requested that the researchers do not disseminate the report beyond the project partners. Advocates in another country also requested that researchers limit their dissemination:

> One, we were told to wait before releasing our report until they had completed their most recent advocacy efforts. Two, the advocates amended aspects of the report and deleted tactics that they were still using. Three, they asked us not to share sensitive information related to the inner workings of their government.

In the case of *Media Advocacy,* liberation therapy in Costa Rica was being touted to foreigners as the cure for multiple sclerosis in 2010 (Turner, 2012). Patients arrived under the guise of medical tourism despite three red flags (a) absence of clinical and rehabilitative evidence (Traboulsee et al., 2018), (b) warnings by the prosecutor's office of the College of Physicians of Costa Rica, and (c) mass media coverage (Campbell, 2011; Perreaux, 2010; Rodríguez, 2010) including an inflammatory report. Instead, desperate patients trusted the clinic that advertised the false hope:

> The clinic where this therapy was practiced countered that report with everything they could, through advertising, through its social networks tried to say that this was hope for these people.

Unfortunately, less than three months later, a 35-year-old Canadian man died in Costa Rica after having undergone this therapy. Further investigations as well as an admission by the original scientist in 2017 of its ineffectiveness (Branswell, 2017) finally led to abolishment of the therapy.

Perceived assault on moral beliefs (Ideas and Institutions)

Several public health issues stir intense emotion due to their strong attachments to religious and moral beliefs. Historically these include euthanasia, abortion (Cartwright & Hardie, 2013), blood transfusion, and sexuality, amongst others. Engaging in such topics is bound to be controversial, and perceived assaults on moral beliefs spur passionate resistance. The introduction and adoption of *Comprehensive Sexuality Education* into schools in South Africa since the year 2000 was supported by compelling evidence to address the high HIV burden and high levels of teenage pregnancy in the country (UNFPA, 2015). However, in attempting to roll-out scripted lesson plans to strengthen the curriculum, there has been strong opposition to the government from key stakeholders: 'I had noticed over the past two years or so, there was a growing concern in mainstream media by religious stakeholders, parents and teachers that Government would be teaching children pornography and promoting sexuality'.

Government has since held consultations with diverse stakeholders, including anti-CSE groups, across all religions and ethnicities on the roll-out of the scripted lesson plans for CSE. Several argued that Government was promoting sinful, immoral behaviour going as far as engaging legal representation and mobilising parents and teachers to support the cause. At present, the roll-out of a strengthened CSE curriculum in the country has been halted due to the growing backlash.

Infodemics and public persuasion (Interests and Ideas)

An infodemic is a situation in which there is an excessive amount of information (true as well as false) concerning a particular issue. This often foments confusion as well as difficult decision-making. Kerala is one of the most literate states in India with massive digital penetration making it an ideal environment for infodemics, such as WhatsApp messages of anti-vaccine campaigners amplifying stories on minor adverse events. In the case of *Local government leadership,* key government personnel note,

> The antivaccine propaganda groups camouflaged their ideas with talk about seemingly innocent lifestyle advice of healthy food, organic farming. The problem is, alongside this, they would circulate conspiracy theories like international drug mafia pushing vaccines for profit at the cost of [developing nations].

Further, reliance on traditional health communication channels like classes and posters, rather than social media, only persuaded well-educated mothers to accept government sponsored immunisation but could not persuade their families and male heads of households living abroad who could not be reached via traditional mechanisms.

Similarly, misinformation on the human papilloma vaccine (HPV) – mandatory for 10-year-old girls in Costa Rica since 2019 (Cerdas & Ávalos, 2019) – was being actively spread by anti-vaccination advocates and conservative groups, including 'No a la Vacuna Preventiva contra cancer de cervix en Costa Rica' (No to the preventive vaccine for cervical cancer in Costa Rica) and the conservative group 'Despierta Costa Rica' (Costa Rica, wake up) through social media. Tactics included fear mongering amongst the population stating sterilising properties of the vaccine. The anti-vaccine movement tried to persuade parents to fill out letters asking the Health Ministry not to vaccinate their daughters and lobbied an Argentinian doctor to denounce the vaccine. Some parents went to court demanding their right not to vaccinate their family members. Journalists in the *Media Advocacy* case valiantly tried to correct the misrepresentations (Rodríguez, 2019a) as well as report on these tactics by encouraging vaccination (Avalos, 2019b), countering myths about vaccines (Hidalgo, 2019), and highlighting legal accountability for parents refusing vaccinations for their children (Avalos, 2019a; Retana, 2019).

With respect to *Comprehensive Sexuality Education,* there appears to clear support among youth representatives who value the importance of learning about issues of sexuality, health, gender, dealing with rape and HIV prevention. The DBE as a key stakeholder has committed to implement CSE including using evidence to strengthen CSE. Additionally, youth stakeholders are supportive of CSE, however growing conservative backlash based on misinformation (e.g. 'stop teaching our children pornography') threatens the gains South Africa has made in implementing CSE within schools.

Censorship (Interests)

Risk to organisational or personal reputations resulted in overly cautious responses that at times undermined the research process and led to the suppression of the evidence – whether to protect individual lives and careers, organisational reputations, or other vested interests. In some cases, this manifested as open disagreement – with opposing interests clashing. For example, the results from the *PBF CoP* study drew criticism from some of the most influential CoP members who requested revisions and rephrasing in several sections of the paper. In response, the researchers clarified the original purpose of the study, how they had reached their conclusions, and defined areas for change in agreement with some of the CoP members' comments. As a result, statements in the draft paper for the research were edited by the research team, nuanced and reshared with the CoP prior to publication but this time, instead of criticism their results drew silence.

In the *Unintended consequences of PBF* case, the concerns invited interference: 'our independence as researchers was threatened when a representative of the organisation that funds the intervention requested that they review all of the articles that came out of our research'. Meanwhile, partners in the advocacy tactics for tobacco control case meticulously combed the entire report deleting terms such as 'lobbying', 'advocacy', 'tactics', and anything related to foreign assistance.

Fear of reprisal (Interests and Institutions)

In three of the seven cases, panellists felt that the controversy raised by the evidence they highlight put their – and their subjects' – personal and/or professional lives at risk. For instance, researchers in the *Unintended consequences of PBF* case were met with warnings such as 'with this topic, you will not make any "friends"' and 'you will not be able to get a job in some organizations'. The study itself identified corruption due to perverse incentives. The sensitivity and potential inflammatory consequences of the results led researchers to fear reprisal and threats to their careers, particularly when they heard about others in neighbouring countries being harmed. 'It shows that the stakes are high!' and can undoubtedly influence how researchers approach publicising findings.

Genuine fear led to advocates in another country of the *Advocacy tactics for tobacco control* case to exercise extreme caution:

> These advocates were scared […] – during one of our group meetings, they closed the door and asked the restaurant staff to leave fearing that the restaurant staff were eavesdropping for the industry and/or might share the information with the wrong people. They also warned that the report cannot be widely distributed because it will hurt their movement and set them back.

In cases where advocates did agree to publish their tactics (Hoe et al., 2021) the political context differed. For example, one country was less sensitive to the issue of international collaboration as tobacco control often involves transnational advocacy networks. Moreover, it is important to note that some government officials declined participation.

The case on *Syrian refugees health policy* found that there was limited use of research evidence to inform the health policies of a vulnerable population that at the time was generating massive media attention, both in Canada and in Lebanon and globally (Khalid et al., 2019; Khalid et al., 2020). As a result, there was genuine fear of reprisal from both the Canadian and Lebanese government once the results of the study were published. There was concern that both governments would publicly attack the results of the study to defend their statements that their policies were indeed evidence informed. There was also fear that the results of the study might impact professional career prospects within the government or access to government policymakers for future research studies.

Lessons learned

Evidence: Necessary but not sufficient (Ideas and Interests)

While there is a recognition that evidence or facts are under attack because of the rise of individualised interpretation, the strongest ally in these controversial battles remains rigorous facts, data and evidence. All cases demonstrate that the power of the evidence and the legitimacy of the process provided confidence in continuing the fight. All cases however also cautioned that politics, other powerful actors, values, and commercial interests, amongst others can tip the balance. This statement from the journalist who spoke on *Media advocacy* highlighted that:

> The number of journalists specialized in health and science is very low. When media does not have that level of expertise is easier to fall for imprecision or to give voice to people in pseudoscience. Newsrooms need to get resources in other to educate their journalists in these topics so they can do the best job possible and not fall for pseudoscience.

Stakeholder engagement and coalition building critical (Interests and Institutions)

Engaging with stakeholders in any research process comes with a unique set of challenges, as all these cases make clear. A concerted multi-stakeholder and multipronged strategy was put in place in Malapurram to advance Measles-Rubella vaccination for 1,200,000 children demonstrating *Local government leadership*. The momentum of the vaccination campaign (Naha, 2019) helped with routine immunisation activities resulting in a 2019 district vaccine coverage of 92.5%. District and local government officials have vowed to approach adverse situations through coordinated actions between implementors and communities: 'We learned that misinformation and vaccine

reluctance can be reduced with persistence, collaboration, opposing information in established channels, and thinking out of the box to find new channels to spread correct messages'.

In the study on *Syrian Refugee health policies,* the intention of the researchers was not to expose governments but rather facilitate policymakers' use of evidence for decision-making to address the health of a vulnerable population. However, the results generated significant media attention – both print (O'Reilly, 2018, 2019) and radio (Anderson-Birmingham, 2019) – leading to concerns within the research team that policymakers would raise issues with the findings. The importance of having buy-in from government stakeholders required diplomacy but also highlighted the importance of trusted and reliable connections to government actors and interested and committed policymakers who value the role of research evidence in informing policymaking (Khalid et al., 2019).

Researchers working on the *PBF Community of Practice (CoP)* case noted that what had been missing but of great importance was the need to clarify researcher, as well as study participant, expectations from the beginning. In the case of *Media Advocacy,* engaging with the public helped citizens to overcome their fears (Rodríguez, 2019a; Rodríguez, 2019b). In 2019, 95% of 10-year-old girls had two HPV vaccine doses. In 2020, however, the COVID-19 pandemic made it more difficult for parents to get their daughters to health services, vaccination coverage dropped to 85% for one dose and 75% for two doses (Rodríguez, 2021). Nevertheless, the Costa Rican health system is trying to vaccinate all girls.

Global momentum around *Comprehensive Sexual Education* resulted in increased political commitment worldwide. In 2008, ministers of education and health from Latin America and the Caribbean signed a Declaration committing to deliver sexuality education and health services. Similarly, in 2013, 20 countries across Eastern and Southern Africa endorsed a Ministerial Commitment on CSE and Sexual and reproductive Health services for adolescents and young people. UNAIDS and the African Union have recently cited comprehensive, age-appropriate sexuality education as one of five key recommendations to fast track the HIV response and end the AIDS epidemic among young women and girls across Africa. This global coalition has been important in advancing South Africa's CSE agenda.

In reflecting about their experiences, several panellists (and co-authors) felt, if starting again, they would still have pursued their controversial topic but would have changed their approach by engaging stakeholders earlier; this was especially true for those aware of the controversy a priori. They also reflected on the critical importance of support structures (i.e. someone in their corner), especially within their organisations, that made it possible to weather these controversies. Examples such as research committees and supervisors within academia as well as government and non-governmental agencies were mentioned. Such structures and processes are necessary so as to incentivize, support, protect, and defend those who try to uphold the integrity of facts and high-quality evidence.

Balancing personal stakes with public good is challenging (Interests and Ideas)

For many academics in these cases, censorship has meant sacrificing advancement in their careers where 'publish or perish' is the dominant mantra. As in the *Advocacy tactics for tobacco control* case, researchers wanted to publish the tactics to advance policy advocacy to counter industry interference, but they were struck with a dilemma: 'How do we as academics balance our professional and institutional requirements to publish with the need to protect our partners and the important work that they do?' The research team invoked the non-maleficence principle of research ethics (Coughlin, 2008) and withheld all publications as they sought to 'do no harm' to the national tobacco control movement.

However, in some cases, the benefit to society superseded individual threats to careers resulting in very different decisions. For instance, in the case of *Syrian refugee health policy,* sharing results that affect public policy was important for transparency purposes as well as to build and maintain public trust (Coughlin, 2008). Therefore, the research team proceeded with publications as well as media engagement. In the *PBF Community of Practice (CoP)* case, some CoP members perceived

the CoP as a platform for voices from the Global South, particularly those of African practitioners. A social network analysis of the CoP however implied the inverse: that the CoP was led by North-based members, although their prominence tended to decrease with time, and that the CoP primarily diffused North-based knowledge and standards (Gautier et al., 2020). Publication proceeded regardless of respondent hesitancy after considered judgement and with the support of senior professors. In the study on the *unintended consequences of PBF*, the researchers published their findings while ensuring protection of collective identifiers (such as districts).

Discussion

In this paper, we used the 3i framework to showcase seven unique cases in which the use of evidence for public health benefit was under attack. That the 3i framework was appliable to seven different contexts and research questions shows that the framework is analytically generalisable and could be applied to other, similar situations or cases. There are several threads that weave through these stories with respect to the drivers as well as consequences of the attacks. These include threats to commercial profit, perceived assaults on moral beliefs, censorship, fear of reprisal, and infodemics – all of which relate to the interests, ideas and institutions that can drive or stall policy change. Importantly, these domains do not stand alone but rather intersect in important ways (Parkhurst et al., 2021). While normative values like moralistic arguments against CSE or vaccination are not surprising, these cases also highlight areas not typically explored, such as how funders can have powerful and resistant interests to critical evidence, situations in which non-governmental actors push for censorship when research can expose them to greater industry scrutiny, or how social media groups are used to spread and counter-attack misinformation.

As researchers are dissuaded from collecting, uncovering, and disseminating controversial results, the HPSR community risks not publishing findings that challenge pre-existing ideas and frameworks. Relatedly, Savigny (2020) raises the impacts of gendered violence aimed at female academics disseminating their research online including 'silencing' whereby women who have been harassed have changed their research focus or avoided public attention of their work. Other scholars have also highlighted concerns around censorship as highlighted in our cases here. For example, a study found that global health researchers have experienced pressure to provide unequivocal policy-relevant conclusions (Storeng & Behague, 2017). Moreover, in some countries like Ethiopia and Rwanda, the strong influence of authorities has even led to self-censorship among scholars, although these issues are often silenced (Østebø et al., 2018). Case studies describing how research is affected by evidence attacks in public health are therefore sorely needed.

In reflecting on these cases we assert that there are four consequences of misinformation and controversial research topics: research(er) hesitancy, contribution to corruption and leakage, HPSR reflexivity, and ethical concerns. Threats to careers and lives leads to our first consequence from these cases: **research(er) hesitancy.** One driver of hesitancy is that researchers are often not prepared to handle the controversies that result from their work, as reported in the *Syrian Refugee health policies* case. While this may be partially explained by some panellists being early in their research careers at the time, it also suggests a blind spot in HPSR training. Capacity building to address this gap can focus on how to engage stakeholders in sensitive political positions, crafting media messaging on controversial findings to avoid misunderstandings, strategies to manage potential backlash from vested interests, and tactics for reformulating dissemination and advocacy efforts. Also, discussions around incentives for researchers to engage in activities that help promote research results have been mounting with several recognised advantages and disadvantages (Biswas & Kirchherr, 2015; Blenner et al., 2017; Blomley, 1994; Doberstein, 2017; Freudenberg, 2005; Gregson et al., 2012; Jessani, 2015; Jessani et al., 2020; Johnstone, 2017; Maxey, 1999; McKay & Monk, 2017; Smith & Stewart, 2017; Watermeyer, 2015; Zardo, 2017). Some of these relate to the public good argument mentioned earlier but others require more thought on protective measures similar to those for whistleblowers, such as anonymized reporting and authorship, that are unique to non-

research actors such as the media and industry. Though we did not explore these here, we also believe that research addressing how gender and ethnicity influence and mediate reactions to controversial or misrepresented research is warranted, including any resulting impact in academics' career trajectory.

Researcher protection leads into our second consequence: misinformation provides greater opportunities for continued **corruption and leakage.** Given that drivers of misinformation are often emotional, commercial, or financial, the efforts to undermine systems and organisations that find and promote evidence grow bolder and stronger. Panellists reflected that misinformation around their topics is due, in part, to key stakeholders who either lack awareness or knowledge about the issue or have conflicts of interest around acknowledging controversial results. For example, the *Unintended consequences of PBF* study uncovered corruption and significant conflicts of interest in the management of PBF projects. Similarly, tobacco industry interference in public health measures led to fears of reprisal among advocates which also hampered research dissemination efforts in the *Advocacy tactics for tobacco control* case. Those who benefit from such practices have a significant incentive in maintaining the status quo including, as reported in the cases, threats and intimidation. In particular around issues of public debate, like false information about vaccination efforts in India (*Local government leadership)* and Costa Rica (*Media Advocacy)* or *Comprehensive Sexuality Education* in South Africa, instituting social media surveillance to track misinformation and combat it in real time is critical.

The field of HPSR is in the unenviable position of balancing these tensions and concerns, while also ensuring the accuracy of evidence brought to bear in discourse that affects the public's health. This raises our third additional consequence: the importance of **reflexivity within HPSR**. HPSR researchers have numerous choices when it comes to their role in the research process and the interpretation of findings. For example, choosing to engage with politicised evidence can affect key actors in the HPSR ecosystem, opening a window to discuss the inherent challenges in the field of HPSR as well as EIDM. Reflexivity on the power that each of the organisations and the roles the panellists play is also crucial to thinking about how to address controversy when it arises. Still, HPSR can also address its own biases and limitations – including any implicit bias against researching untouchable subjects or organisations because of internalised norms within the field. Frank discussion about (i) how the field itself manages controversial and contradictory evidence in its debates, (ii) proactively addressing conflicts of interest within the field, (iii) developing a standard practice of 'safe spaces' where researchers and practitioners can raise their fears about retaliation without judgment, and (iv) de-incentivizing the 'publish or perish' model in academia are all potential starting points.

Our fourth, and final, consequence is the need for **additional ethical considerations** when misinformation is prevalent. Research ethics which intend to promote and respect personal autonomy through informed consent and beneficence principles often drive research decisions (Alliance for Health Policy and Systems Research [WHO] with the Global Health Ethics Unit [WHO], 2019). Yet, we know that for HPSR these principles are inadequate, as practice and research are often intertwined, stakeholder participation is often deeply embedded in the research, and the harms and benefits of research are often complicated by group and individual interests thus requiring a more expansive interpretation of the principle of justice (Pratt et al., 2020). The cases in this paper point directly to tensions between these ethical principles. The *PBF Community of Practice (CoP)* and the *Advocacy tactics for tobacco control* cases highlights ethical challenges with stakeholder participation as communities and advocates requested edits to the findings. Several cases also highlighted controversial findings that had large group benefits, but came with threats to social norms, including the rollout of *CSE* to adolescents in South Africa and *Local government leadership's* response to vaccine hesitancy in Kerala, India. The complexity of ethics in medical tourism (Penney et al., 2011; Turner, 2012) as well as media reporting (Pullman et al., 2013) as in the *Media Advocacy* case has also been explored.

Connecting to the bigger picture

We cannot discuss controversial evidence or misrepresented results without addressing the assault on data and research evidence that has been escalating in recent years. The rise and power of social media (Vosoughi et al., 2018), political polarisation, declining trust in institutions, and the increasing difficulty of teaching students to critically evaluate sources of information have put credible facts and evidence, their sources and their reliability all under attack. The idealised conception of EIDM is therefore eroding, as misinformation, pseudoscience and 'fake news' forge their own paths into the psyche of individuals, communities, populations and entire systems. These in turn influence how policymakers consider and weigh evidence against other factors. These dynamics have become even more evident as the national and global response to the COVID-19 pandemic has evolved. Others have noted that misinformation leads to the erosion of civil discourse, political paralysis, alienation and disengagement from political and civic institutions, and policy uncertainty at national level (Kavanaugh & Rich, 2018).

In response, we have seen (a) the rise of independent fact checkers with over 156 noted in 2018 (Stencel, 2018), (b) educational conferences focused on pseudoscience and quackery (World Academy of Science, Engineering and Technology, 2021), (c) mass education campaigns urging public scrutiny of social media (Hutchinson, 2020), (d) courses to equip researchers in advocacy and knowledge translation skills (Boston University School of Public Health, 2019; Jessani et al., 2019; Research Advocacy Network, 2020), (e) engagement of professional communication and advocacy professionals (Steffens et al., 2019), (f) new partnerships and coalitions for greater impact (Steffens et al., 2019), and (g) collective calls to protect the independence and integrity of global health research (Storeng et al., 2019). This supports the assertion by Hilgartner and Bosk (1988) that agendas develop through the involvement of multiple institutions that go beyond governments and narrowly defined policy communities. However, these approaches may be insufficient to overcome the challenges around controversial research even when it is legitimate, rigorous, and sound.

These seven cases represent different contexts and health topics yet illustrate a spectrum of threats to EIDM related to vested interests, contested ideas, varying rules of engagement, political economy, power asymmetries, insidious processes, and technical capability for EIDM at institutional, organisational and individual levels. In their study on the arenas model, Smith et al. (2021) also highlight actors such as international donors, civil society, industry, scientific researchers, and the media – all actors that we demonstrate in these cases having played critical roles in EIDM. While the examples presented in this paper explicitly highlight the importance of understanding and engaging key stakeholders, what is implicit but equally critical is having an awareness and perhaps even proactive exploration of power dynamics in the context coupled with regular reflection on addressing these in a way that ultimately benefits public health. Analysing the levels, spaces and forms of power, and their interrelationships can perhaps guide how strategic engagement and advocacy can be designed to respond to opposing forces (Luttrell et al., 2007).

The case vignettes presented in this article raise several important issues which we outline below:

- How do we deliberately and effectively train academics to better navigate these kinds of complicated waters, and what strategies can be developed to better protect researchers from the types of attacks shared in this paper?
- We need to advocate for a practice agenda that reforms how we do HPSR that recognises power differentials within the field and seeks to address them. What is the best way to advance this that is not solely an academic or intellectual exercise but advances into a practical enterprise?
- How do we ensure that academic research and practice advances practical application, helps us rethink key concepts, and illuminates blind spots in theory?
- How do we protect the integrity of good evidence, even if controversial, to avoid misrepresentation and the infodemic that follows?
- How can we pressure-test the notion that the process for EIDM is inherently political and that researchers need to be not just policy savvy but also politically astute?

- Journals are frequently biased towards successes – we need more publication of 'failed' cases and controversial cases that fully explore the politics of research that also force researchers to engage in more reflexivity.
- How do powerful interests influence research processes, dissemination and evidence-based decision making?

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