Background

Un equitable vaccine coverage
COVID-19 vaccine coverage (April 2021 – April 2022, Fig 1): 8.7% to 72.4% in high-income countries 0% to 10.6% in low-income countries Contributing to large socio-economic costs and slow recovery.

Wicked problems
‘Wicked problems’ (e.g., vaccine inequity) have no straightforward policy response that would adequately address their ‘wickedness’. Their properties include societal complexity, difficult to be formulated, causal webs, being a symptom of other problems, and more. [3,4]

Phenomenology
Phenomenological research focuses on structural elements of lived experience with foreground-background dynamics of attention. These dynamics occur as researchers or professionals are trained to pay attention to entities relevant to their disciplinary domain (‘work-world’). [4-5]

Systems thinking
Systems thinking attempts to understand how systems work in a holistic manner rather than in isolation. Identifying root causes of problems stimulate effective problem-solving of nonlinear and turbulent systems. [4]

Aim
1. Explore the value of combining phenomenology and systems thinking 2. Enhance understanding of wicked problems, such as vaccine inequity

Approach
Facilitate adequate intervention and policy design to better address wicked problems

Methodology

Motivation
Amidst a crisis, focusing attention might be seen necessary, though exacerbating existing silos.

Complexity of wicked problems necessitates innovative approaches that move beyond one particular ‘work-world’ to recognize inherent dynamics of attention that might otherwise go unnoticed.

Figure 1: The percentage of people fully vaccinated against COVID-19 over time per income group (I).

Results

Global (Fig 2)
Procurement: limited concerns for well-being of other nations → vaccine nationalism criticism and donations Response: strong focus on non-pharmaceutical measures → less attention to longer term socio-economic costs Supply and demand: foreground production capacity → overshadowing capacity issues on the demand side

Local
Tanzania’s approach to managing COVID-19 has seen several transitions. In 2020, emphasis shifted away from non-pharmaceutical measures towards local remedies for COVID-like symptoms. Treatment and testing protocols, backgrounded, increasing attention on practices pushed by political and religious leaders as. Following a change in presidency in 2021, a shift in focus was realized, with renewed attention directed towards comprehensive case reporting and procuring vaccines via COVAX [5].

Dynamics

Within COVID-19
- Varying priorities over time: different ‘work-worlds’ direct attention to specific issues
- Unintended consequences due to backgrounding: exacerbated vaccine hesitancy or wastage.
- Backgrounding can enable foregrounding of problems that were previously overlooked.

Beyond COVID-19
- ‘Backgrounding’ of other essential (health) system services: chronic care, routine immunization, sexual and reproductive health, etc. [6]
- Repeated cycles of “panic and neglect”: often focus on one crisis at a time
- Move beyond traditional approaches e.g., integrate social sciences in preparedness and response efforts

Take-aways

Wicked problems persist and a good understanding of the problem is required to assure adequate interventions and policy design. Combining phenomenology and systems thinking enables deeper understanding of how ‘wicked’ problems behave.

Further research is required to demonstrate the value and practical aspect of this combination in policy design, for instance, by extending it to other wicked problems.

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References
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Figure 2: Relative attention on three general dynamics during COVID-19, along with selected milestones events.
(A) Global daily confirmed COVID-19 cases over time (1).

(B) Percentage of the population fully vaccinated against COVID-19 in high-income countries and low-income countries (1). Full vaccination refers to receiving all doses prescribed by the initial vaccination protocol (commonly two doses). Those receiving 1 dose of a 2-dose protocol after having been infected with SARS-CoV-2 are not included to improve comparability across regions.

(C) Relative attention on different vaccine related issues evolving over time during the COVID-19 pandemic, along with selected milestone events depicted as letters on the timeline. This is done by approximating the foreground and background dynamics between the selected topics from a global perspective. These topics are bundled into three sets of issues: competitive dynamics of procurement; vaccine supply and demand dynamics; NPCs and response dynamics. Milestone events:

- A: January 30th 2020, the World Health Organization (WHO) declares the first outbreak of nCov-2019 as a ‘public health emergency of international concern’ (PHEIC) (a)
- B: February 7th 2020, the European Centre for Disease Prevention and Control publishes report on PPE needs in healthcare settings (b)
- C: March 11th 2020, Director General of the WHO declares COVID-19 a global pandemic (c)
- D: March 2020, science communication campaigns in European Union (EU) member states on social distancing, proper use of mouth masks and disinfection of hands (d)
- E: April 14th 2020, European Commission (EC) puts forward an European roadmap towards lifting COVID-19 containment measures of the first wave;
- F: July-August 2020, high-income countries start rushing the pre-order of vaccines, thereby exceeding the per capita need, e.g. the UK government pre-ordered 5 doses per capita (e)
- G: December 2020, EC and U.S. Food & Drug Administration grant conditional market authorization for the first COVID-19 vaccine: Comirnaty (BioNTech and Pfizer) (f,g)
- H: February 24th 2021, first shipment of vaccines from the COVAX Facility to Ghana (h)
- I: August 23rd 2021, the U.S. FDA grants full approval of the first COVID-19 vaccine: Comirnaty (i)
- J: January 2022, COVAX vaccine supply outstrips demand for the first time (j,k)
- K: August 31st 2022, U.S. FDA authorizes bivalent COVID-19 vaccines against the Omicron variant (l)


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