

the
little
book of

Global Health Volume 1

Design
& Covid-19

Emmanuel Tsekleves
Fatima Ghani
Charles Ebikeme
Claudia de Souza Libanio
Yonette Thomas
Blaise Nguendo Yongsi
Leigh-Ann Hepburn
Pablo Hermansen

Global Health
Sig

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Editor of the Global Health Little Book Series:

Dr Emmanuel Tseklevs

ImaginationLancaster, Lancaster University



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The Little Book of GLOBAL HEALTH I Design & Covid-19

(Editors) Emmanuel Tsekleves, Fatima Ghani, Charles Ebikeme, Claudia de Souza Libanio, Yonette Thomas, Blaise Nguendo Yongsi, Leigh-Ann Hepburn, Pablo Hermansen.

¹ Design Research Society Special Interest Group on Global Health

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¹See <https://www.designresearchsociety.org/cpages/sig-global-health>

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What this little book tells you

This Little Book tells you about how the design research community is tackling Covid-19 across different parts of the world. It explores how and why design is uniquely positioned to contribute to the global pandemic relief effort. The first volume in this series, the Little Look presents the Global Health Special Interest Group and what it stands for. It then presents, through eight case studies, different ways in which design research is addressing some of the challenges posed by Covid-19 to our individual lifestyles and society.

What does the Global Health SIG stand for?

Health is a fundamental human right and a key indicator of sustainable development. Poor health threatens the rights of children to education, limits economic opportunities for men and women and increases poverty within communities and countries around the world.

The role of designers in indirectly supporting the promotion of healthy lifestyles or in their contribution to illbeing has emerged. This means designers now need to consider, both morally and ethically, how they can ensure that they 'do no harm' and that they might deliberately decide to promote healthy lifestyles and therefore prevent ill health.

Design's ability to engage real people and communities, understand everyday problems and implement the 'right' solution, not just the 'newest technology', enables it to act as a bridge between other disciplines. Despite this, research into the role of design in tackling the Sustainable Development Goals is disparate and detached. As such, there is a need to understand the role of design and promote a more cohesive strategy to tackle the Sustainable Development Goals.

To address this, the Global health SIG was created. Its focus relates to the UN's Sustainable Development Goal 3 "ensure healthy lives and promote well-being for all at all ages". The new goal for worldwide Good Health promotes healthy lifestyles, preventive measures and modern, efficient healthcare for everyone.

To reflect the global health ethos this SIG, ensures that DRS members are recruited and play a key role in the SIG, from across all continents.

Furthermore, emphasis is placed on the development of international events with a focus on the Global South, where several global health challenges and opportunities exist.

In the Global Health SIG we aim to:

1. further develop the research area of design for health at a global scale.
2. engage health and design researchers from the Global South in design for health.
3. develop and foster more research collaborations in design for health between DRS members and other researchers in the Global North and Global South.

We will recognise when we are successful when:

- There is recognition of design research by a number of researchers in international health committees and reported case studies in *The Little Book of Global Health Design*.
- There is greater participation and an increase in the number of paper submissions at DRS and other relevant events from the Global South.
- There are new research collaborations, research proposals, networks and events involving DRS members in this field.

One year, since the running of the SIG, we have run a number of activities. Key highlights include: a Conversation session at the DRS2020 online conference on *'Global Health in light of COVID-19: Reframing the Role of Design'*; publication of a chapter in the Handbook of Global health on ['Urbanisation & Cities as Drivers of Global Health'](#); development of Global Repository of Official COVID-19 Public Health Messages and Information; a series of capacity building webinars, in collaboration with UNU-IIGH, on Translation of health research to Policy focusing on early career researchers; and a web blog on ['Improving health communication to counter-misinformation during the COVID-19 pandemic'](#).

The DRS Global Health SIG Committee Members: Emmanuel Tseklevs, Fatima Ghani, Charles Ebikeme, Claudia de Souza Libanio, Yonette Thomas, Blaise Nguendo Yongsi, Leigh-Ann Hepburn, Pablo Hermansen.

The role of Design in tackling Covid-19

Global Health in light of COVID-19: Reframing the Role of Design – Notes from Conversation Session in DRS2020 Conference.

By Emmanuel Tsekleves, Claudia de Souza Libanio, Mariana Fonseca Braga, Badziili Nthubu, Jenna Mikus, Leigh-Ann Hepburn, Fatima Ghani.

The COVID-19 pandemic presents an unprecedented challenge, threatening the lives and livelihoods of millions of people around the world. While the epicentre of the pandemic was around Europe and the US, a growing number of cases are reported in Africa, Central, South America and Asia with potentially serious social, economic and political consequences for these regions. Some of the poorest societies in the world will be the least prepared and most vulnerable to the effects of the virus. Working with other sectors, design research can potentially address and mitigate the health, social, economic, cultural and environmental impacts of the COVID-19 outbreak in Low- and Middle-Income Countries (LMICs).

Research evidence has demonstrated the propensity of design to contribute significantly in health and wellbeing (Ulrich et al., 2008; Tsekleves & Cooper, 2017). However, the majority of the research tools and methods

are framed for use within a developed country context, with only limited work starting to emerge in LMIC context (Daudt et al. 2019; Tseklevs et al. 2019).

So, in order to encourage discussion on the topic, an online conversation session at DRS2020 Online Conference took place on the 14th of August 2020. The overarching question is: Which frameworks, methods and tools can be used from a systems and design approach to provide evidence for the social determinants of health in Low Middle Income Countries?

Within this context, the Conversation session explored the following:

1. How can design research help address and mitigate the health, social, economic impacts of the COVID-19 outbreak in Low- and Middle-Income Countries? Which design research methods and tools might be useful in that context?
2. Which sectors do design researchers need to work with to address? Which gaps/challenges are they likely to face in working with these sectors?

The research community, along with the design community are called upon to address and mitigate the health, social, economic impacts of the COVID-19 outbreak across the world and in particular in Low/Middle-Income Countries. Design's ability to engage real people and communities, understand everyday problems and implement the appropriate solution to a defined context integrating people's voices, experience, potential, creativity and needs into problem solving, sensemaking and decision making processes, not just the 'newest technology', enables it to act as a bridge between disciplines. It is an important and growing voice in this field that helps to bridge the gap between the rapid advancements in science, technology and engineering with people and contexts on an everyday level. Thus, design can take a leading role in research that addresses and mitigates the health, social, economic impacts of the COVID-19.

Question 1: *How can design research help address and mitigate the health, social, economic impacts of the COVID-19 outbreak in Low/Middle-Income Countries?*

Prior to responding to this question, it was discussed that one should recognise that Low/Middle-Income Countries (LMICs) have very different contexts, cultures, policies and social practices. Within that context there are chronic and systemic challenges related to access to education and the healthcare system. People do not generally trust in government and political leadership.

Tackling self-isolation in these contexts is very challenging. Sometimes, it is impossible to do this, due to the accommodation arrangements, public transport infrastructure, communication barriers, financial difficulties that force people to work in person, but also people's scepticism in following central government-led initiatives. This provides opportunities for design researchers. Opportunities to work with environmental design to recreate cities, taking into account where people are, where they live, their commute patterns, etc. Also, design research can work on developing new ways of communicating and interacting with other people and systems.

Furthermore, it creates opportunities to explore methods and tools, such as participatory methods that can help develop more bottom up and inclusive policy-making by (1) creating enabling infrastructures to build dialogues between citizens, public officials, civil servants and other stakeholders, (2) enabling reflection upon realities, and (3) collaborative action upon community needs, bringing their voices into public problem solving and planning. This is a shift of the designer role from designing for people to designing with people. This means that designers act as facilitators in these participatory or co-design processes, creating conditions or 'protected spaces' for non-experts to deploy their potential and creativity.

The pandemic has created challenges and opportunities regarding the use of visual communication to design messages and accompanied visuals, that are culturally, gender and context appropriate in promoting Covid-19 prevention. This is a time critical factor, as information is updated constantly with misinformation and inappropriate message and visual communication design confusing the public.

As the Internet becomes even more necessary for everyday activities such as studying and working during the Covid-19 pandemic, many people are still excluded from the opportunity to work remotely and to access education. This is due to the lack of access to technology resources and

sometimes because of the types of jobs that are often available to disadvantaged community members (e.g. informal work, low-income activities such as cleaning, construction work that requires commuting/'being present' etc). Therefore, there is the need to contribute to the eradication of the technological divide that exacerbates inequalities in LMICs and at the same time promote policies that enable people to access health, education and other diverse citizen services.

In doing so, design researchers and practitioners need to contribute to (1) ways to eradicate technological divides by understanding these barriers with communities and informing public policymaking, and (2) to promote accessible communication targeting Covid-19. Thus how we operate on communication in an accessible way becomes a key question that the design research community can address. As is the question on how design (co-design and participatory design) might help people in LMICs make better use of their potential and find potential in their creative languages. Designers could provide a structure to support people to dialogue, instead of bottom-up or top-down approaches. Therefore, having a structure to support dialogue may lead to meaningful communication, even in areas where there is low technology or digital literacy.

The pandemic demonstrated how important it is for everyone to participate in the prevention of the spread of the virus. However, in most LMICs, the governments and health professionals mostly worked in isolation to design and disseminate information on Covid-19 pandemic. Designers may bridge these disconnections by developing structures to help people (to empower them) to engage in dialogic processes.

Health is an area where everyone has a contribution to make and this is the same case for the Covid-19 pandemic. There is disconnection among many agents and actors working on Covid-19 prevention. Design researchers need to work, engage and integrate all sectors, especially enhancing and promoting networks with the private sector. Working better across and within disciplines is essential too, as schools of architecture, design and planning can collaborate on some of the challenges posed by Covid-19. Designers can support multi-stakeholder collaboration and foster co-creativity by taking on the role as a participant-facilitator in the design process. Involving key stakeholders and experts from all relevant

sectors and foundational subject areas could bring new perspectives and narratives to the design process (Venditti et al., 2017), stimulating and altering the way interventions are imagined, and subsequently designed.

Engaging communities, as one of the main actors, is critical. However, communities are not, for most of the time, prepared to work with creative tools, processes and creativity in general. Therefore, demystifying the creative design process for communities, facilitating them to become more creative in tackling their own challenges becomes a challenge and an opportunity for design researchers. Design research is challenged to empower people to deploy their potential to create and consume information that is accessible to communities, underpinning the translation of scientific knowledge and public health messaging into lay language and practice, bringing communities and stakeholders together. Governments and health professionals alone have not succeeded in communicating and to proposing feasible measures particularly for disadvantaged communities. This demonstrates that success in tackling COVID-19 canNOT be achieved by the government or health professionals alone. Also the challenge here is context; how design research may facilitate context-specific creativity.

Question 2: *Which sectors do design researchers need to work with to address and what are the gaps/challenges are they likely to face in working with these sectors?*

It was widely agreed in the discussion that an intersectoral approach to addressing global health is needed. In doing so, design researchers need to work with all sectors not just one. How one identifies who the key stakeholders are and how to bring them together were seen as being context specific and therefore something that cannot be defined from the outset.

The need to engage more with policy makers, recognising a current deficit in engaging effectively was also highlighted. Making it easier for them to engage with researchers was seen as key for this. Translating the findings in a language and format that is more easily understood by policy makers was also highlighted. Storytelling was proposed as a useful tool for that purpose. Storytelling is the natural language of persuasion, since any story has to involve both a sequence of events and the interpretation of their

meaning. Arts and Humanities researchers are generally very good storytellers, but do not often have the numbers to show. For policy and strategy, you need to have both. Thus, the coupling of design with evidence-based research provides opportunities for developing evidenced insights that make convincing arguments around our need to act.

Several approaches were also offered in successfully engaging with communities. Identifying the key actors and or gatekeepers that control access to communities is paramount. For example, in Botswana and other African countries like Kenya, Lesotho, South Africa, most villages have a local government system (Kgotla system) or Durbar in Ghana and other West African countries, where the chief is the central actor or gatekeeper controlling the community in terms of policy formulations and decision making, i.e. political, economic and the judiciary. The Kgotla is a space for dialogue where the community debate in a parliamentary way to reach consensus democratically (Ngwenya & Kgathi, 2011). Therefore, the kgotla role may be essential in organising community engagement activities around health issues. Other roles connected to the kgotla include village development committees, councillors and primary schools (leaders) who are often ignored in the health policy design. Design research is important to help these key roles to recognise their potential. Designers are challenged to interconnect key community roles with the central government and health professionals. This is important because village community leaders influence how the community perceives, interprets, and consumes knowledge related to health and wellness.

The importance of identifying key actors is also illustrated in the case of Brazilian informal settlements, where active community members, who are recognised and looked up by communities, have played a noteworthy role in combating COVID-19. There is a community distrust of politicians that discredits public messaging and public officials' voices and even leads to disbelief in the virus. In this context, these community influencers/gatekeepers have disseminated preventative measures and developed collaborative initiatives involving socially responsible companies, NGOs and the civil society to tackle the immediate effects of the pandemic (Fonseca Braga et al., 2020). This reinforces the need for communication that is trusted by communities and will be embedded in their practices, pointing out the role of 'who' is talking for community trust in public messaging.

How other disciplines perceive design research was discussed extensively, emphasising the misconception that exists within academia, communities and policy makers on that. For example, design researchers' interactions with African countries' governments show that most of the time they do not know how design can help address the problems their societies face. Design researchers need to find new ways of interacting with government officials and local communities. Understanding the government structure from central to local authorities is key. Avoiding hierarchies, i.e. top-down or bottom-up approaches to design, may help create a flat dialogic process. Most people in LMICs perceive 'design' as a craft subject, associated with making furniture and other domestic products. Hence, design research needs to adapt 'design' to fit the specific context through local systems, e.g. the kgotla system or using local activities/gatherings that people are familiar with rather than overly depending on academic conferences and seminars. This may help reduce the social and cultural barriers between researchers, government officials and community leaders. This makes it extremely difficult to engage. There is therefore a need to reposition design in practice. This presents a challenge and an opportunity.

Although those that have been exposed to design research recognise the value of the design mindset and the way it operates as key assets in design research, we should make a better job at promoting this to other disciplines. This is a design research community issue and responsibility, since most of the time we 'talk to ourselves' and are not always outward facing. Participating and engaging in conferences, events, public talks outside of the design research discipline, as well as involvement in projects that improve international knowledge and educate the next generation of thinkers via established international organizations (e.g., Engineers without Borders competitions, etc.) are good ways forward. Most importantly, promoting the decolonisation of design knowledge to reinvigorate the contents and context of learning in LMICs is paramount. This is a significant challenge in terms of changing people's mindset. Design curriculum at secondary and tertiary schools is isolated from the local context. Designers engaging LMICs may also focus on how their approaches are inclusive, context-specific, and embodied in the curriculum. This may include translating design tools and methods into local languages and using locally relevant social mechanisms (cultures, norms, and traditions) in design.

Covid-19: Global Health Design Research Case Studies

Here we present eight case studies from different parts of the world. Each case study provides an overview of on-going research on tackling covid-19 and its effects on society and the individual.

Case studies 1-3 provide global, regional and local perspectives on the application of communication design, visual communication design and other communication strategies to understand and improve the infodemic and mis-communication around Covid-19.

Case studies 4-5 present how different public health systems, namely in Brazil and the USA are coping with the challenges of the pandemic as well as the opportunities for change through the application of design research.

Case studies 6-8 explore the issue of social distancing in the student community and provide tools for social adaptation as well as maintaining social relations in light of Covid-19 and future pandemics.

Case Study 1: The good, bad & ugly of Covid-19 communication

By Emmanuel Tsekleves

In this unprecedented Covid-19 situation, Governments across the globe and policy makers are looking at each other for solutions inspiration, trialled policies and interventions they can implement by their own national and regional authorities. But have failed to establish international cooperation and knowledge exchange to cope with this. In this context, local COVID-19 communication plays a key role in informing citizens.

In response to that, the Design Research Society Special Interest Group on [Global Health](#), has developed an open access [repository](#) containing crowdsourced information on Covid-19 public health messages and information set by official national and international bodies. The aim is twofold. First, to develop an official of data on public messages and information on Covid-19 that researchers, public health authorities and policy makers can access and forward to communities globally. Second, to conduct a multinational and multicultural visual and language communication analysis of Covid-19 public health messages included in it.

Following a two-stage message/language framing and visual design analysis of crowdsourced official Covid-19 Public Health material from 46 countries, across five continents, and more in-depth analysis of 32 material from 17 countries, we present a few examples of good, bad and ugly covid-19 public health communication design.

In terms of message and language framing, the following example, from the Rwandan Ministry of Health on 'The Do's and Don'ts of face mask guidelines', demonstrates several good visual design and communication features. It features a consistent visual style, with an uncluttered layout that incorporate an easy path for the eye to follow. Important icons are bigger in terms of size and use contrasting colours to help readers distinguish clearly what they can and cannot do. In terms of message framing, the instructions are very practical and culturally appropriate and specific, as they provide a useful context on when, how to use, how to wash and procure, as well as common mistakes people make in all these points.



Figure 1.7. Communication material by the Rwandan Ministry of Health on The Do's and Don'ts of face mask guidelines.

In the example below, the poster is too busy in terms of visuals, whilst several of the clipart used are too small to see as is their corresponding caption. Some of the advice provided, such as 'Maintain at least 1 metre distance in marketplaces, medical stores, hospitals, etc' are unrealistic given the high-density population of cities in India. Another issue in this example, is the use of visuals, where the characters featured in them, do not represent the country's population demographics, as they feature only white persons. This is an element which has been observed in several materials from several countries from the Global South who seem to have copied and pasted messages as well as visuals from Global North countries' material.

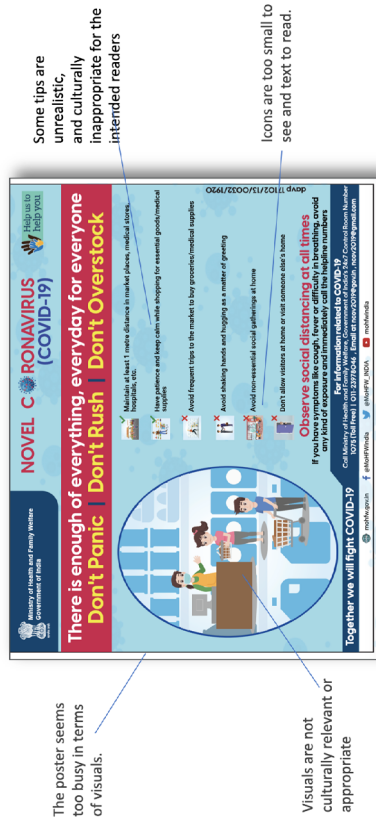


Figure 1.2. Communication material by the Indian Ministry of Health on not overstocking.

In relation to the example discussed above, the following one from South Africa does not include do consider ethnic diversity in its visuals, illustrating a predominantly all white family. Furthermore, there are no signposts on where or how to get more information and the text in the centre in white appears blurry due to incorrect application of antialiasing. Lastly, the message it provides appears to be distant 'WHO advise people to...' as it does not directly address the population and does not call for immediate action.

People of all ages can be infected by the new coronavirus (nCoV-2019). Older people, and people with pre-existing medical conditions (such as asthma, diabetes, heart disease) appear to be more vulnerable to becoming severely ill with the virus. WHO advise people of all age to take steps to protect themselves from the virus, for example by following good hand hygiene and good respiratory hygiene. #Coronavirus

health
DEPARTMENT OF HEALTH
REPUBLIC OF SOUTH AFRICA

NDPP
NATIONAL DISASTER PREPAREDNESS CENTRE

Actions are not linked to the targeted population

Does not explain why or encourage action now

The visual is not culturally relevant or relevant to the key message

It does not explain how to get further information

Figure 1.3. Communication material by the South African Department of Health on Covid-19.

Case Study 2: Communication Strategies for Combatting Covid19 in the African region

By Charles Ebikeme

Disease X was the knowledge that a serious international epidemic could be caused by a hypothetical unknown pathogen. We knew it would most likely emerge from an animal to human spill over zoonosis. We knew it had the potential to spread to all corners of the globe. Disease X was the name attributed to it by the World Health Organisation (WHO) in February 2018. Ultimately, Disease X turned out to be COVID-19.

The past decades should have been a dress rehearsal in pandemic preparedness. Starting with the severe acute respiratory syndrome (SARS) coronavirus in 2003, H1N1 “swine” influenza in 2009, middle east respiratory syndrome (MERS) in 2012, chikungunya in 2014 and Zika in 2015, as well as Ebola from 2014 to this day.

The question remains, why were we not better prepared, both at a technical level, and at a social level. In retrospect, it is unsurprising that a virus that preyed on our social dynamics would prove difficult to eliminate. In order to stop transmission, this virus would require the individual to think about the community, young to think of old, and the vulnerable to depend on the privileged. To eliminate this virus, it would require behavioural change on a scale that has so far eluded us. It would require leadership from national governments, strong policies, and proactive and rapid public health communications.

All countries utilize health communications in some capacity – such as for outbreak response – and these have traditionally been shown to be an effective way of driving health impact. Public attitudes towards policy decisions rest, in some part, on how those decisions are communicated to citizens.

Many governments traditionally implement a variety of innovations in communications to increase effectiveness. At times, these communications may also show they consistently miss a subset of populations (most often the most vulnerable) resulting in reduced equity of the health intervention.

Public Health communication & previous outbreaks legacy

Public health emergencies involving deadly infectious diseases, such as the one seen during the West Africa Ebola epidemic, traditionally involve a complex intersection of behavioural and emotional responses of the community. These shape, influence, and contribute significantly to disease perception, downstream effectiveness of preventative and control strategies, and ultimately can determine the course of the epidemic. For example, In Guinea in 2014, Ebola response teams were prevented from accessing populations in need due to mistrust, fear and suspicion of authorities. Alongside this, there was common mistrust and rejection of western biomedical medicine.

The outbreak in Guinea, Liberia, and Sierra Leone was the largest epidemic of Ebola ever recorded to date. One of the legacies of the Ebola epidemic is the further recognition that focused communication strategies can be effective in changing attitudes and behaviours during an outbreak. Such insights have been seen with other infectious disease epidemics such

as HIV/AIDS. To combat the Ebola epidemic, communication and subsequent messages were entrenched in the consideration of local knowledge and culture. With recognition from both national and international actors that communicating with populations needs to be customised and contextualised to the unique situation. Moreover, there was also recognition that communities need to be included in the solutions and messages being communicated. Epidemic response teams will benefit from the perspective of the recipients of their health messages.

After the SARS outbreak, Taiwan's Centers for Disease Control (Taiwan CDC) followed the WHO outbreak communication guidelines on trust, early announcements, transparency, informing the public, and planning, in order to reform its risk communication systems. The same risk communication framework in Taiwan has been used to respond to the 2009-2016 influenza epidemics, Ebola in West Africa (2014-16), and MERS-CoV in South Korea (2015) in the years post-SARS. Many communication strategies, ranging from traditional media to social and new media, have been implemented to improve transparency in public communication and promote civic engagement.

Public Health communication in the time of Covid-19

When the World Health Organisation declared Sars-Cov-2, the novel coronavirus, a Public Health Emergency of International Concern (PHEIC) on the 31 January, Dr Tedros, the Director General of the WHO, urged collaboration and cooperation among countries. In the months since then, what we have experienced was far from that - exposing the flaws in national science policy systems.

We are living through a collective realisation of how understanding science has tangible, practical, and immediate applications for our daily lives. Not simply the understanding of that science, but its implementation in managing the risk associated with the disease. The ongoing loss of life globally, articulated differently within individual nations and institutions, as well as the virus's ability to spread rapidly through communities due to asymptomatic carriers, has generated a need for political response and action through clear, detailed messaging to global constituencies. Analysis of a selection of African countries provides insights into the nature of pub-

lic health communication in the early months of the COVID-19 pandemic.

From the first weeks that Sars-Cov-2 was identified, governments had already begun to communicate on the novel virus and made information available to the public. In Senegal, the first public information on COVID-19 emerged from the Ministry of Health on 22 January (8 days before PHEIC). Rwanda's first press conference on COVID-19 was held on 23 January (7 days before PHEIC). Countries continued early communication with sustained messaging through a variety of different channels. Alongside posters, flyers, video and audio spots, Ministries of Health organised regular press briefings and statements. Governments also launched public health campaigns early on. Nigeria launched a public health campaign on March 9 (after registering just 2 cases). Kenya launched a public health campaign on March 1 in the absence of cases and deaths. Countries provided dedicated online COVID-19 portals with case and mortality information at a regional level.

Newly emerging contagious diseases have created a novel chance to examine how people perceive risk and respond to public health messaging during an epidemic. As was seen with Ebola, public risk perception of disease depends on effective government communication and health messaging. Such messaging also needs to be adaptive and evolve alongside public reaction and disease progression. For example, in the early phase of an outbreak, people may experience challenges when attempting to quantify the risk, which may lead to an affective reaction. Researchers have noted that the failure of risk communication about MERS at the time resulted in a significant social and economic disturbance.

Increasingly, online communications and social media have become an important source of health information for users worldwide. In 2020, at the height of the pandemic, the WHO became the UN organisation with the most followers on Instagram. African governments communication messages on social media employed use of local influencers and celebrities to transmit messages on public health prevention and promoting health seeking behaviours. More than in any previous infectious disease outbreaks, a digital pandemic was also raging alongside the real pandemic. As the novel coronavirus caused an increase in search for information with broad dissemination of false or misleading health information. Social media was

a tool to respond directly to false rumours as well as investigate rumours on outbreaks in different locations. In the age of social media, information travels wide and fast, emphasizing a need for accurate data to be corroborated swiftly and for preventing misleading information from wide dissemination. Many governments took a proactive stance and spoke directly to false information. There are wider implications for this flood of information, termed “infodemic” and the WHO have formalised this pillar as a strand of ongoing research that needs to be fostered in the wake of COVID-19. Several practical ways to leverage health communication strategies to overcome it have already been proposed, from collaborating with tech companies to having infodemic managers in health ministries and organisations.



Figure 2.1. Infodemic. Source: WHO/Sam Bradd

There is a tendency to think of communication only as determining “what” to say. However, effective communication is a complex process that requires not only consideration of content, but also consideration of how, to whom, at what point, and through which channel to deliver the messaging. Risk communication also considers the nature of risk, the audience’s characteristics and their risk perceptions, and the complex media and social environment. Often, communication experts are involved with health and medical professionals from the very beginning of the response to a public health crisis.

Over the years and over progressive outbreaks and epidemics, government public health messaging has evolved to be fully cognisant of the fact that how they communicate is just as important as what they communicate.

Case Study 3: Canada - Visual communication guidelines

Communication design for vulnerable populations during COVID.

By Gillian Harvey

The COVID-19 pandemic has collided with an increased need to provide clear, concise communication material to diverse audiences. In particular, this public health emergency has exacerbated the need for messages to be translated to vulnerable audiences and the public.

This case study discusses one way in which the design of communication material can help vulnerable populations navigate the uncertainty of COVID-19. Now more than ever, designers are being called on to provide information for vulnerable populations where many have limited health literacy skills (difficulty accessing, understanding, and acting on health information), limited English proficiency or physical or cognitive conditions that impede access to information” (Neuhauser et al., 2009).

In the province of Alberta, a western province within Canada with a population of 4 million people, there were 301 accidental opioid deaths between April 2020 to June 2020. This was a 97 per cent increase in the 153 deaths over the same period last year. The COVID-19 pandemic has collided with Canada’s ongoing overdose emergency to exacerbate harms for people who use opioids. In addition, many high risk populations have little access to information on how to live safely during a pandemic.

A small scale public information campaign was designed and distributed at high risk sites such as Supervised Drug Injection Sites and Community Centres for high risk adults and youth and for Essential workers that treat street youth.

Recent articles in the Guardian have acknowledged how much public health can be influenced by the effectiveness of its communication (Sodha, 2020). Historical examples of this include public education campaigns that were designed by Isotype in the 1920s to educate lay people about leprosy, and other examples of bold graphics used to raise awareness of public health issues in the 1980s.

The goal of this case study was to support the development of effective public health messaging that would lead to informed decision-making. By quantitative and qualitative evaluation of COVID-19-related visual communication from around the globe, we assessed: *(1) the visual presentation of information in order to support the underlying message(s) for harm reduction in high-risk populations; (2) how visual infrastructures impacts core socio-cognitive factors like self-efficacy involved in preventative measures.* The analysis and design of these materials were completed over a two-week period.

We used an evidence-based and outcomes-oriented approach based on evidence available in readability literature available from several information design sources. Because we were not able to include users in the design of these instructions, we studied how the visual presentation of information should be formatted in order to support high risk populations with low literacy levels. In general, our analysis focused on categorizing the information within current evidence-based practice literature.

- 1. Visual infrastructure:** This principle applies to the aspect of presenting the information in such a way that it would support, and not complicate cognitive load in an emergency. This includes designing the information in “chunks”. The chunks of a document must be “segmented into cognitively affordable chunks, clearly labelled by subtitles and supported by layout” (Noël et al., 2019). Chunking information allows the information to be digested slowly. This principle also includes consideration of a type size and style to aid legibility, and a legible typeface to ensure reading accuracy.

- 2. Writing:** This principle applies to the organization of the text, sentence structure, plain language and word order; active vs passive voice including the consideration of cognitive load principles which state that no more than 7 units of information, plus or minus 2, lists to highlight and summarize information rather than continuous prose are effective in memory and retention.
- 3. Visuals:** This principle applies to the syntax, the reference of spatial, semantic and real-world knowledge, using representational rather than abstract images recognition and semantic unity in the imagery. Images should not be contained within boxes as they are interpreted as stories in themselves, 3D drawings should be favoured over icons, and that images should be different from each other so as not to be confused.
- 4. Health Communication:** This principle is that information for a high risk audience often requires understanding that communication barriers are great and will result in limited health literacy skills such as difficulty accessing, understanding, and acting on health information.

These categories of evidence-based design principles are evident in an analysis of current COVID-19 communication materials created in the last 9 months. Despite many evidence based principles, there is no visual or theoretical framework for understanding visual infrastructure for emergency instructions for public health messages. This work has highlighted the importance of creating a framework for evaluating the role of public health messages within human centred design, emergency medicine, public health as well as visual analysis.

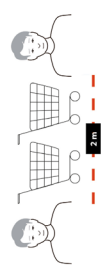
Based on this analysis, stakeholders, advisors in harm reduction team and researchers redesigned a set of materials that included these evidence-based principles. These materials included an information materials on how to prepare for the spread of COVID-19. Information materials include Preparing for Covid, How to Use more Safely During Covid and How to Clean and Disinfect During Covid. These prototypes were designed to be printed and distributed as necessary to Community based programs, Opioid Dependency Programs and Supervised Consumption Services.

What you can do to PREPARE FOR COVID-19.

1

Distance yourself


- Stay at least 2 metres (6 feet) from others.
- Wash your hands often.
- Wash your hands after coughing or sneezing? Sit it down and move back 2 metres.



2

Plan ahead

- Regular supply may be a problem, and sources may be different.



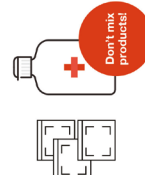
- Prepare for collecting or withdrawal. Stock up on razors. Talk to your health care provider.
- Call friends who can get away if needed during isolation.

CLEAN + DISINFECT to prevent COVID-19.

1

Clean visible dirt with

- Soap or baby wipes for hands and body
- Detergent for clothing and surfaces



2


What to Clean

- Wash before and after cleaning your space, and before and after using drugs
- Drug packaging: baggies, vials, packets, foil, papers
- Counter, table or surface before and after use
- Faucets, door knobs, drawer or cabinet handles
- Any equipment being reused (e.g., lighter, pipe)
- Equipment packaging (e.g. syringes, cookers, condoms)

3

Stock up in case of isolation


- Have 14 days of supplies, like drugs and equipment, or other necessities.



4

Have an isolation plan

- If you have a fever, cough, shortness of breath, difficulty breathing, sore throat, runny nose, or you have been near someone who might have COVID-19, isolate.



5


What to Destroy

- Disinfectant wipes (e.g., Clorox, Lysol) for surfaces
- Bleach or hydrogen peroxide for surfaces
- Alcohol (at least 70%) for hands and surfaces

6

What to Clean

- Take care of your skin to avoid skin breakdown from frequent cleaning.
- Use lotion, petroleum jelly, or whatever is available.



7

What to Clean

- Wash before and after cleaning your space, and before and after using drugs
- Drug packaging: baggies, vials, packets, foil, papers
- Counter, table or surface before and after use
- Faucets, door knobs, drawer or cabinet handles
- Any equipment being reused (e.g., lighter, pipe)
- Equipment packaging (e.g. syringes, cookers, condoms)

8

What to Destroy

- Disinfectant wipes (e.g., Clorox, Lysol) for surfaces
- Bleach or hydrogen peroxide for surfaces
- Alcohol (at least 70%) for hands and surfaces

9

What to Clean

- Wash before and after cleaning your space, and before and after using drugs
- Drug packaging: baggies, vials, packets, foil, papers
- Counter, table or surface before and after use
- Faucets, door knobs, drawer or cabinet handles
- Any equipment being reused (e.g., lighter, pipe)
- Equipment packaging (e.g. syringes, cookers, condoms)

10

What to Clean

- Wash before and after cleaning your space, and before and after using drugs
- Drug packaging: baggies, vials, packets, foil, papers
- Counter, table or surface before and after use
- Faucets, door knobs, drawer or cabinet handles
- Any equipment being reused (e.g., lighter, pipe)
- Equipment packaging (e.g. syringes, cookers, condoms)

Visit [alberta.ca](https://www.alberta.ca) or call the Addiction Helpline 1-866-332-2322 (24/7) for support.




Figure 3.1. Covid-19 prevention posters - Alberta Health Services - <https://www.albertahealthservices.ca/>

There are several challenges to the development and mobilization of communication materials this quickly, as a response to an emergency. First, the evaluation and development of public documents, however, needs to consider literature and a framework from public health, emergency medicine, and human centred design, in addition to just visual analysis. Second, working with users in development of materials for COVID-19 prevention would be a more robust way to approach the ideation and development process. Co-design methods of working have proven to be the most effective way in the development of communication materials for vulnerable populations.

Third, the challenge that lies is not in the development but in the evaluation, monitoring and testing of these documents. The next steps for this work are to gather feedback from high risk or vulnerable populations. We have developed a paper survey that will be used to gather the effectiveness and efficacy of these materials. Testing these new guidelines with a high risk population is one way to maintain the long term effectiveness of this communication in an emergency situation and will lead to long term communication standards and guidelines. Just as we have seen in literature about tsunami and fire evacuation procedures as well as in symbol design, continuing to assess the effectiveness of these materials will allow us to develop sets of procedures for emergency response across a variety of medium, languages and cultures.

Acknowledgements: Thank you to the Harm Reduction Team at Alberta Health Services, in particular Sara Gill, Nurse Educator and Amy Woroniuk, Director of Harm Reduction for the opportunity to guide this work.

Case Study 4: Brazil - Public Healthcare access for older people

Accessibility of the Public Healthcare Services to the Brazilian Elderly Population During the COVID-19 Pandemic.

By Cláudia de Souza Libânio, Emilene Zitkus, André Pimenta

The Brazilian Public Healthcare System (SUS) was designed to cover primary and clinical care in all regions of the country. Although the history of SUS is recent, being institutionalised in 1990, it serves around 162 million people of 209 million Brazilians. Among the challenges faced by SUS is to accommodate the needs of an ageing society. In Brazil the older adult population has doubled in the last 40 years, and life expectancy has increased 40% during the same period (Paim et al., 2011). Most of the elderly population (75% - 23,5 million) relies on the services provided by SUS only. This shift has significantly affected healthcare service in Brazil.

Since the establishment of SUS, a lot has been discussed by users, researchers, and healthcare professionals in order to improve the accessibility of the services provided to accommodate the diversity of people needs.

Accessibility of the elderly population to the Brazilian health system poses a great challenge (Travassos & Viacasa, 2007). Difficulty in accessing quality public health services are related to the geographical distribution of health services in Brazil, as the current distribution does not meet the needs of the Brazilian population (Rocha et al. 2017). Other factors related to social discrimination also contribute to lack of access, such as: gender, race, educational level, social class and income level of the population.

Digital Accessibility in Brazil During COVID-19

The COVID-19 pandemic led to the digitization of the public health service in user care. In March 2020, the Federal Council of Medicine released online consultations (CFM - [CFM Resolution](#) No. 1,643/2002) covering teleorientation, teleconsultation and telemonitoring. Digital accessibility has become a key need, especially considering how it could benefit risk groups. Thus, teleconsultation can be an instrument for the diffusion of SUS services, as well as private health services, meeting citizens needs, without exposing them to the risk of contagion.

Recent research has also revealed an increased demand of digital health services by elderly people (Sun et al., 2020). In this way, studies can be developed to generate design strategies that aim to promote quality of life and wellbeing for elderly people in the Brazilian Public Health System. Through design strategies, they can study how to promote quality of life and wellbeing in the Brazilian health system through products, services, environments, processes and information that take into account diversity and that include all people, without restrictions. In addition, studies can be aligned with Goal 3 and Goal 16 of the United Nations Goals that deal with ensuring healthy lives, promoting wellbeing for all and promoting inclusive societies.

It is important that the design of digital healthcare services is appropriate and accessible to the elderly population, allowing them to take advantage of these resources. Thus, exploring design strategies (system design; user-centred design, inclusive design and user experience research) can improve user experience, enhance community impact in terms of changing mind-sets and promote quality of life and wellbeing for elderly people in the Brazilian Public health system. A case study on the accessibility of

some of the SUS services design has shown several areas where design could improve the elderly patients' experience (Zitkus and Libânio, 2019). Another study explored design opportunities and developed design guidelines in a specific SUS service context (Daudt, et al, 2019).

Designing Accessible Services for Elderly Users

There are several considerations that should be taken into account to make SUS digital services more accessible, some are infrastructural, and others are related to how the service is designed. For example, according to surveys conducted by IBGE (PNAD 2018), although in Brazil about 79% of households have an internet connection, there is a great disparity between urban areas (83.8%) and rural areas (49.2%). Also, the internet availability varies significantly among the five regions of the country. For example, the unavailability of the internet service in the Northern region is the main reason for the its lack of use, despite the region having the highest [mortality rates](#) due to COVID-19 in Brazil.

The IBGE survey also shows that, in 2018, only 38.7% of people aged 60 years or older used the internet in the three months prior to the survey. The proportion of elderly people using the internet also varies widely from region to region, with the lowest in the country being 27.8% of the elderly population in the North, and the highest 46.9% of the elderly in the Southeast (PNAD 2018). Therefore, considering that one of the risk groups in this pandemic are the elderly and they would be the ones who would benefit the most from the teleconsultation, they are also the ones who are mostly affected by digital exclusion.

When comparing the Brazilian context to the other countries' examples, we can see that there is still a long way to go, which can be a result of the challenges SUS has been facing (Daudt, et al. 2019). Therefore, in order to maximize the adoption of technology in healthcare for the inclusion of the Brazilian population, several factors related to current and the potential exclusion of a digital system need to be investigated, including digital illiteracy, low level of education and lack of interest. Identifying and understanding the problems surrounding digital exclusion in Brazil and planning design strategies for containing and eradicating exclusion are extremely important, which became evident in the current pandemic with the possibility of teleconsultation.

Case Study 5: USA - Design thinking and emancipatory public health

Creating patient-centred and equitable health research through design-based research methods.

By Lesley-Ann Noel

Who determines research priorities in public health? What if ordinary citizens could dictate what gets researched in the field of public health. In this study, researchers at Tulane University sought to use design thinking and qualitative research methods to understand the experience of the COVID-19 pandemic of residents of New Orleans. These methods would help these residents create research priorities to guide public health organizations. The aim of the ongoing research project is to develop research methods and tools that could be used by public health practitioners to create patient-centred research by using human-centred design methods. During this initial phase of the study, the researchers aimed to create the tools, test them with different participants groups and then create clear guidelines on how to use and adapt these methods to understand patient priorities. The general theme that was used to 'test' the methods was 'how had patient/public behaviour has changed due to the

COVID-19 pandemic?'. Ultimately it is expected that the methods could be used to understand public health issues in more general contexts. The research was undertaken remotely due to social distancing requirements during the COVID-19 pandemic, thus creating an additional constraint to using the methods.

When using design thinking, people are borrowing both the design process and the ways of thinking of designers to solve problems. The project began with an interest in using methods that would help public health practitioners to empathize with patients or members of the public, even during short workshops. Several design and qualitative research methods were selected for this project such as:

- Photo elicitation
- Poetry
- Cultural Probes
- Critical Utopian Action Research
- Narrative and Storytelling.

While all of the methods were not explicitly design methods, as a design-focused team, they were used through a design lens, using remote platforms that designers use and through a design understanding. A mixed team of professors and graduate assistants from design and public health backgrounds adapted the methods to see how they could be used in a public health context to understand the experience of the pandemic, in particular in a remote context. A series of five public workshops was created to explain and test the methods with interested participants who generally already had some familiarity with design, design thinking and research. Some of the methods were further tested with a small group of residents in New Orleans who did not have a background in design, design thinking or public health. The public workshops were led by graduate assistants from the School of Public Health, while the private workshops were led by a professor in design thinking. The workshops were held remotely via Zoom meetings and the online whiteboard platform Mural was used to support the discussion.

Photo Elicitation

In the first workshop, participants were invited to share a photograph demonstrating how their residences or surroundings had changed during the pandemic to protect their health. The photographs ranged from predictable such as packs of PPE, and signs reminding people to wear masks, to more unexpected self-care items, newly acquired pets and plants and finally items that suggested a concern about health such as roller skates and tennis shoes. The photographs were then used to spark conversations about the pandemic. After which participants identified the themes that were discussed.



Figure 5.1. A participant shared a photograph of her new roller skates as an example of health-related changes she had made in her behaviour during the pandemic. Other participants analysed what they thought this image meant during a discussion.

Critical Utopian Action Research

In this workshop, participants were introduced to Critical Utopian Action research, a future focused method in which participants reflect on what is wrong, imagine where they want to go, and then design a way to get there. In the first activity, after a discussion about the pandemic, participants 'time-travelled' to the year 2050, and reflected on the wonderful healthcare that exists in the future. They sent messages to people back in 2020, telling them what they could look forward to. Their reflections on the future helped uncover that the lack of equity in the healthcare system was deemed the main challenge among participants. They referred to a future where they would not worry about the cost of insurance or the cost of care. They would not have to choose between their jobs and their health. All doctors would accept all health plans, and these plans would probably not even be necessary, since there might be universal health care. They then designed ways in which they could reach the future they desired in 2020, making recommendations such as equity education for medical staff, actuaries and underwriters.

Narrative and Storytelling

In the final workshop of the series, participants learnt several techniques about using storytelling to map their experience of the pandemic. In one of the activities, they used the Narrative Arc, a literary device used to teach writers how to compose a story, to create their own story about a high or low point of the pandemic.

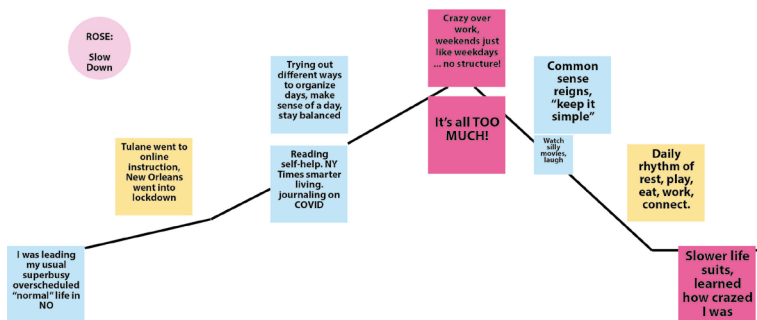


Figure 5.3 The participants used the Narrative arc to tell their stories about the pandemic.

Conclusions and recommendations for implementation

The public workshops were attended by people with a specific interest in design or research. These participants had good access to reliable internet via their computers or phones. They participated actively and use of the various methods sparked deep discussions about the experience of the pandemic, uncovering themes like anxiety, depression, a sense of loss, but also positive themes like gratitude, growth and hope. The conversations uncovered the impact of increased workloads and the lack of childcare on women, even women who did not have young children, as they, in their roles as grandparents and alternative caregivers, assumed greater responsibilities. The conversations provided rich data for public health practitioners to analyse on what is significant to members of the public.

The preliminary trials also demonstrated how the 'digital divide' could impact the use of these methods remotely. When the methods were used with the smaller group of New Orleans residents, the researchers were able to see the difficulty in conducting this type of research remotely, as participants used a variety of platforms to log in, such as phones, tablets and computers. Participants had fluctuating internet speeds and conversations were impeded by bad sound on some connections. There was also a high learning curve to understand the online whiteboard application.

The initial analysis of the experience of using these methods has led the researchers to consider some additional remote engagement approaches for the implementation of the second half of the study.

Aknowledgements

This study was conducted to support the work of Social Entrepreneurship / Public Health professor, Dr. Alessandra Bazzano as part of the Eugene Washington PCORI Engagement Award to use equity-focused design to improve community participation in public health research against COVID-19.

The workshops were developed by Dr. Noel with the support of design thinking graduate assistants: Natalie Hudanick, Sneha Rout, Niesha Ford, Dr. Shaymaa Abdalal and Michaeline Anglemire.

Case Study 6: Mexico - Space adaptation for social interaction

Proposal for intervention and adaptation of spaces with health parameters, in the face of COVID-19.

By Leobardo Armando Ceja Bravo, Judith Montaña Hernández, Miguel Ángel Rojas Sánchez

The De La Salle Bajío University is located in the city of León, Guanajuato, Mexico. It has a population of approximately 10 thousand people, including students, teachers, administrators and support and maintenance personnel. Such a quantity of population in transit and movement within their campuses, is extremely complex and at the same time, it can be considered a space with a high probability of contagion. Within this context, since the middle of March and to this day, the operational functions that were usually carried out continue to be suspended, as a result of the moment in which we find ourselves in relation to the pandemic that afflicts us worldwide, and in the Mexican national context, seeking in this way "to guarantee services and assistance, are planned and adopted based on their opinion and local contexts." (OMS, 2020, p. 6). One way to achieve the reduction of infections by COVID-19 is oriented to the distance that can be established between people. For this, the suggestion in the indication of various measures that contribute to regulation in circulation, socialization and interaction, can be considered as a good tool. From a design approach, this can be done.

One of the fundamental elements to keep in mind and for which it is committed within the design process, is centered on the idea of citizenship. Therefore, thinking in the sense of design oriented towards the citizen is central, for this, signage is one of the central resources for this purpose. It has the power, clarity and subtlety in the organization, orientation and regulation of the interactions that can be established between different groups of people. The design through the use of signage fundamentally has the purpose of guiding, distributing and redirecting people, without making them feel restricted or unable to carry out an activity.

Within the health contingency that is currently being experienced worldwide. Thinking about the ways that people were socializing and what is required now is critical. For this, proposing effective strategies of social behavior implies a profound change in their habits, for which it is necessary to investigate in each context the way in which people previously behaved and the way in which they socialize, likewise, It is important to identify and relate the type of activities associated with the various configured spaces. Once taking into account these spatial conditions, it is necessary to understand some of the general guidelines suggested by various international bodies such as the WHO (2020). In this sense, the search for distancing alternatives turns out to be an important alternative, which must be mediated through signage indications that contribute to the expected social action in controlled sites.

Research in design will be essential to understand the actions, behaviors, habits and ways of life of people in social contexts, in that sense, it will be essential to propose alternatives for socialization and interaction in the midst of a context of uncertainty such as the one that we are today and where the search for well-being is paramount. In this sense, design as a project activity is positioned as an activity through which it is possible to reestablish, modify, adapt and, above all, project possibilities of adjustments, inviting people to be aware of themselves and their environment. Through their own acts or actions, without being invasive, restrictive or normative. Perhaps that is precisely where the preventive power associated with the design and type of messages that it emits in a given site resides. It is in the midst of this context that it is important to emphasize the preventive, formative and regulatory nature that design can provide to people within determined social contexts.

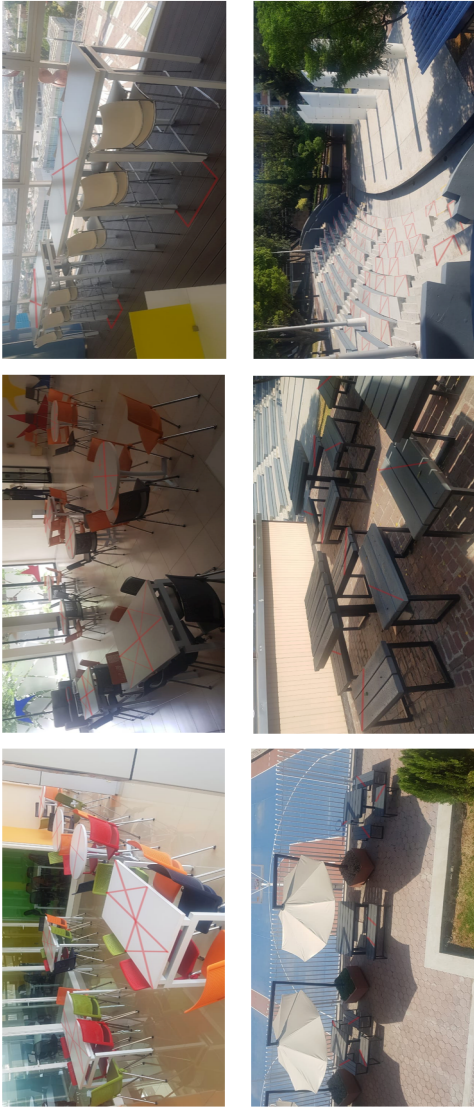


Figure 6.1 Example of marking personal distance indoors (upper part images) and outdoor spaces (lower part images). Preparation of the research team, 2020

In the case to which we refer, it is vitally important to be able to clearly inform and instruct the correct distance, the type of routes that people can do and the best way to do it safely, all without losing the objective of fulfilling the activities that they are destined to carry out, and above all, it is very useful to follow the health instructions, which both at a personal and group level emphasis has been placed on following.

In the case to which we refer, it is vitally important to be able to clearly inform and instruct the correct distance, the type of routes that people can do and the best way to do it safely, all without losing the objective of fulfilling the activities that they are destined to carry out, and above all, it is very useful to follow the health instructions, which both at a personal and group level emphasis has been placed on following.

Understanding the prevailing problems is essential to be able to make any design proposal, in this case, the biggest challenge was understanding what is associated with COVID-19, and the official recommendations that have been emerging over time are decisive. The knowledge of the different spaces and the actions that need to be carried out provide guidelines for the development and visualization of intervention proposals. (See Figure 6.1). Therefore, the proposed design is given as an application framework to the various spaces and campuses that the University has, starting with common areas and outdoor spaces for socialization and is oriented towards the delimitation, signaling and orientation of the circulation of people. In this way, the contribution of the design is clear, subtle guiding and non-intrusive.

We reiterate that from the design point of view, researching to consider the greatest of these implications is constituted as one more element of assessment, interaction and reduction of risk factors so that people in general and each of those involved in particular can synchronously contribute to an institutional dynamics oriented towards the awareness of well-being.

Case Study 7: USA - Visualising college students lives during the Pandemic

Visualizing One Week of College Students' Lives During the Pandemic.

By Yvette Shen

COVID-19 has significantly changed nearly every aspect of college life since its outbreak. Students' daily routines, from how they learn to how they live, are altered in a way no one anticipated. As one of the largest institutions in the nation, the Ohio State University has set up a number of guidelines and requirements in order to keep the campus safe and healthy. Most classes are moved online, masks are required along with strict social distancing measures. Large communal student life events are non-existent, and student centers and other facilities are either closed or opened with safety protocols in place. The "traditional" college experience is being stripped down to only the bare essentials.

Adapting is not easy. All these changes are profoundly affecting students' physical and mental well-being. In an Information Design class (DESIGN 5505) at the Ohio State University, eleven 3rd year undergraduate students of Data Analytics major collected one week of data in the Autumn of 2020, and counted the lifestyle changes they have experienced

intentionally or unintentionally during this unusual time. This information design project requests students to use their personal activity data as empathy-based opportunities to provide better insights into their current status of physical and mental health. The recorded data include: the frequency of handwashing and mask wearing moments; the amount of time spent indoor vs. outdoor and the activities involved; the frequency of socializing with people; the amount of time spent in virtual space and the distances traveled in the physical world; and any activities taken for their mental, emotional, and physical health. Students then used information structure and visual design methods to communicate their data through the expressions of graphs, charts, icons, and diagrams. The following examples of the information design outcomes show how different pieces of data were collected, analyzed, categorized, and presented in visual manner.

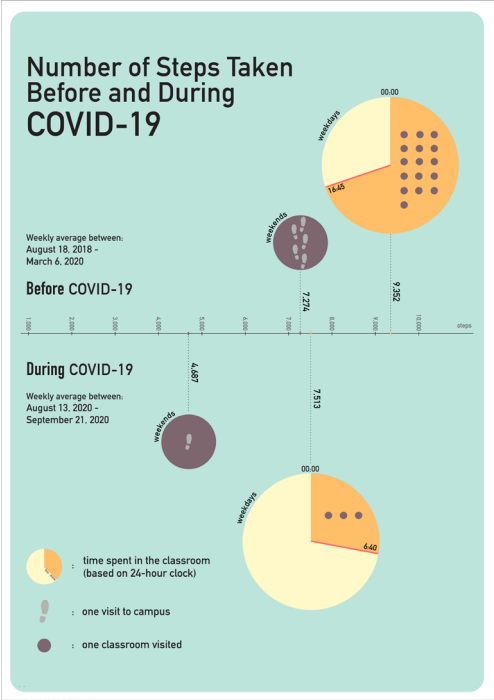


Figure 7.1. Number of steps taken before and during the pandemic visualization.

In Number of Steps Taken Before and During COVID-19, the step counting data recorded by the smart phone App were used. Comparison of weekly average steps before and during COVID-19 shows the decline of walking opportunities. Because most classes have moved to virtual settings, students have been losing the normal exercise for walking to different buildings and strolling to places around campus (Figure 7.1). Staying active regularly has become challenging because of the limited exercise options. One student used data from her exercise tracking App and calendar App to compare her physical activities before and during COVID-19. She was able to reach her daily exercise goal of 30 minutes in only four out of twenty-six days in the time of COVID-19 (Figure 7.2).

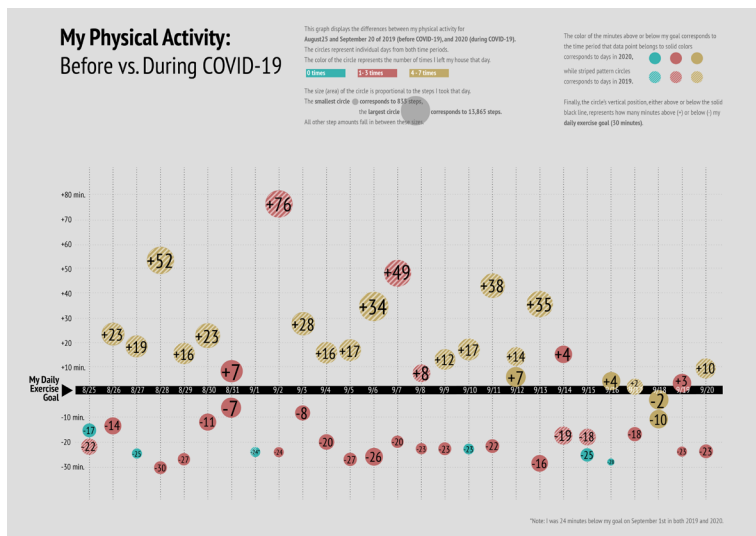


Figure 7.2. Exercise app data visualisation during the pandemic.

Mask-wearing, handwashing, and social distancing are highly effective in preventing or slowing down the spread of the virus. By arranging data into 24-hour time sequences in spiral form, One Week in a Pandemic lays out how these prevention measures become part of our daily routines (Figure 8.3). All safety protocols, well-intentioned as they are, leave students feeling cooped up in their rooms all day long with fewer chances to

interact with others. Home has become the center of nearly everything: it's the classroom, the library, the cafeteria, the cinema, and the social club. To cope with the feeling of loneliness, students have been exploring social-distancing ways to connect with their friends through phones, virtual meetings, and virtual watch parties (Figure 8.4). One student was astonished to see his daily phone usage took up more than 50% of his awoken time. The lack of social activities also results in an increased amount of sleep hours and naps during the daytime (Figure 8.5). From cooking to painting and more, some students have also picked up old hobbies or learned new skills amid the time spent with their roommates.

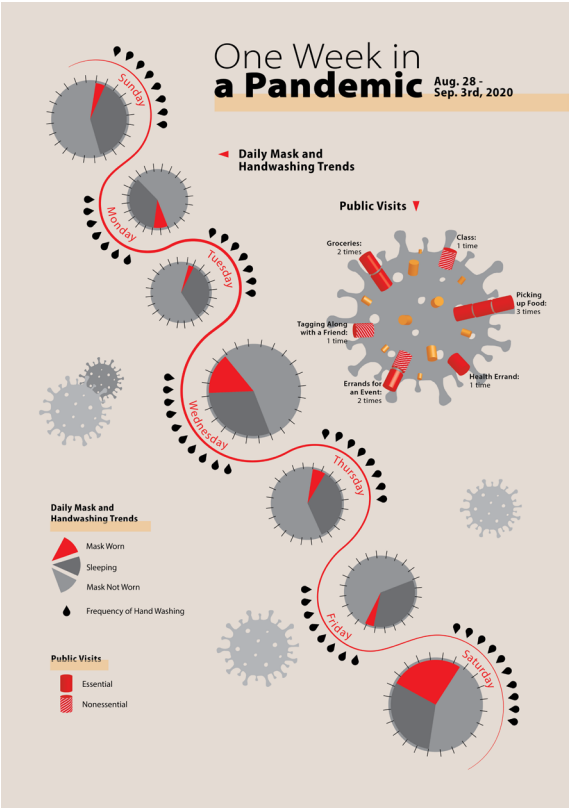


Figure 7.3. Routine adoption during the pandemic visualisation.

Research has shown that self-awareness and self-reflection is in direct correlation to physical and mental well-being (Harrington & Loffredo, 2010). The information design projects demonstrated in this case study are aimed to help students process what they are experiencing and understand their needs during the Pandemic. Data visualization tasks are used to cultivate students' abilities of taking notice of their behaviors and thoughts as they unfold. Design principles and visualization techniques are applied to achieve information visual hierarchy and reveal the patterns, trends, and outliers in students' daily life data.

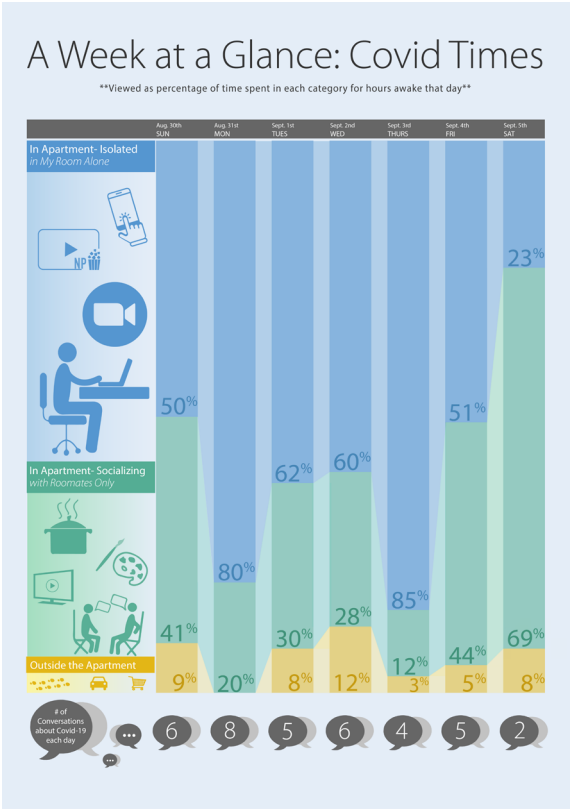


Figure 7.4. Social-distancing ways to connect with friends visualisation

By identifying these patterns and trends, students then can reflect on the current situation, integrate learnings, and assess their well-being goals. The visualized data results also highlight some of the rising physical and mental health concerns during these unprecedented times. Therefore, in this case study, Information design practice functions both as a design artifact and a research method to provide more insights into the situation. Although many things feel beyond our control right now, we must take charge of what we can do to build our emotional resilience and strengthen our physical health.

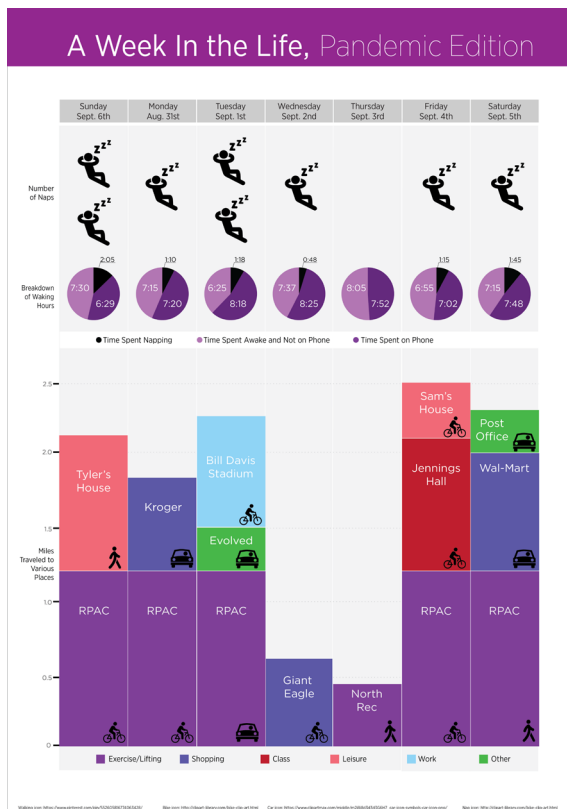


Figure 7.5. Sleep data visualisation during the pandemic visualisation.

Case Study 8: China & USA: Sex, social distancing and the pandemic

Casual Sex During the COVID-19 Pandemic: Risks, Recommendations and Spaces for Design Intervention.

By Isabel Prochner, Zhiru Chen, Ting Kang and Hao Lu

“Sex is the opposite of social distancing” said Dr. Kimberly Langdon in an interview with *Cosmopolitan* magazine (Hsieh, 2020, para. 19). The article—in the normally risqué American women’s magazine—stressed the dangers of casual sex during the pandemic and debunked wishful thinking that wearing a mask or facing away from each other during sex would prevent infection.

For the most part, research has shown that many people are limiting contact with sexual partners outside their social bubbles (e.g. Ko et al., 2020; Lehmillier et al., 2020). However, sex is a reality; as an article title in *The Washington Post* read *“Yes, some people are still having one-night stands”* (Bonos, 2020). An interviewee in the article noted *“I would risk my health a lot sooner for a sexual experience than I would for a haircut”* (Krista interviewed in Bonos, 2020, para. 6). This scenario was the starting point for a semester-long design research project in an MFA Design course

at Syracuse University in the USA. From September-December 2020, Professor Isabel Prochner and graduate students Zhiru Chen, Ting Kang and Hao Lu have been exploring how sex and intimate contact might be safely supported during a long-term pandemic. The project has a multinational perspective—focusing on the USA and China—as Chen and Lu are studying from their homes in China and have explored local perspectives toward the issue.

There are different virus prevention measures and levels of adherence to virus guidelines in the USA and China, and both countries are experiencing different realities at the end of 2020. While virus cases are spiking in the USA, life has mostly returned to normal in China. On the other hand, discussions about casual sex are more familiar and comfortable in an American context. It is difficult to find pandemic guidelines for casual sex in China. This case study highlights existing research on risks and recommendations for sex during COVID-19 and presents design explorations by Chen, Kang and Lu.

Risks and Recommendations for Sex during COVID-19

Casual sex is one of the highest-risk activities during the COVID-19 pandemic. Research suggests that the virus might be present in semen and other excretions. Though, as authors of *“Sexual Health in the SARS-CoV-2 Era”* write, *“these data are moot, given that any in-person contact results in substantial risk for disease transmission”* (Turban et al., 2020, p. 1). Consider the exchange of air and saliva and all the surfaces the virus could contaminate.

When public health guidelines exist, the suggestions are fairly consistent: ‘solo sex’ and sex with a housemate (spouse, roommate, etc.) are safest and masks and disinfection (hand washing, shower, etc.) are essential for sex with a partner outside your social bubble. Even outside the USA, the New York City guidelines are often cited and commended for their realistic and sex positive attitude. As they note, *“[d]uring this extended public health emergency, people will and should have sex”* (NYC Health, 2020, p. 1). Historically, abstinence programs and messaging have not been successful (Santelli et al., 2006) and they become decreasingly realistic as the pandemic continues. Sex is a natural part of life, motivated

by attraction, pleasure and the expression of affection, among many things (Meston & Buss, 2007). As Chantelle Otten, director of the Australian Institute of Sexology and Sexual Medicine wrote, “[s]ex has always been a great stress reliever and mood booster ... it can anchor us to the present, making us feel stable and secure in the now (which is a rarity at the moment)” (Otten in Dewitte et al., 2020, p. 549).

Design Response

Chen, Kang and Lu have been exploring how design can positively contribute to this difficult situation. Each student is looking at a different aspect of the problem. To begin, a lot of sex is moving online, with people trying sexting and cybersex sometimes for the first time (Lehmiller et al., 2020). Kang argues that this is positive: while it doesn’t enable physical touch, it provides intimacy and a way of having sex without risk of COVID-19 infection. However, she is deeply concerned by internet safety and the risks of hacking and non-authorized recordings by a partner. There is also the issue of using platforms like Zoom and Google Meet for private and intimate activities. After potentially spending hours in video calls for school or work, these business platforms could feel misaligned with sex. There’s also risk in blurring boundaries between work and play, where an off-colour screen name from the night before or misuse of a work account could mean big trouble. Kang sees potential in the design of more secure online platforms, and trustworthy mainstream video calling platforms specially designed for sex and intimacy.

Chen is focusing on trust and dating, especially during the move from an online connection to an in-person meetup. She is exploring how Soul—the popular Chinese dating app—could help build trust and ensure greater safety for users. This project has potential applications to other dating apps and explores important ethical questions: What is the responsibility of dating platforms to keep users safe during the pandemic? What amount of health information should be collected and how might it be shared with new partners? Whose responsibility is it to share potentially stigmatizing information? Finally, Lu is exploring how we might design new forms of physical touch. Moving away from a pure focus on sex, Lu points out that some people have not experienced any form of touch since the beginning



Figure 8.1. New forms of touch during the pandemic.

of the pandemic. There is also a significant reduction in handshakes, kisses, hugs, and other contact. Touch is an indispensable social language with a multitude of purposes like building bonds, communicating relationships, showing affection, and offering reassurance. Lu argues that design can help identify low-risk forms of touch during COVID-19. He provocatively asks: What would it take for elbow bump greetings to become more popular? How might we learn a new form of physical contact? How might we embody meaning in new forms of touch? This exploration could also be extended to simulations of touch through AR/VR and/or physical artefacts.

Conclusion

Despite the risks associated with casual sex during the pandemic, this taboo topic is underexplored and underaddressed in both American and Chinese contexts. It was a rich and challenging topic for our MFA Design class, and new territory for design. The summer 2020 cover of *Innovation* magazine read: *"A pandemic grips the world. What can designers do about it? As it turns out, a lot."* This applies to design interventions for sex during the pandemic. Chen, Kang and Lu's design explorations addressed the online world, in-person interactions, and the move between online and in-person. While the application of this research must be context-specific, cybersex, online dating and the need for physical touch are common experiences across borders. There are many more design and design research needs in each of these areas. There are also significant related issues like access to medication (e.g. birth control and Pre-Exposure Prophylaxis for HIV), pregnancy care, and support for sex workers during the continuing pandemic.

Summary

This Little Book has outlined the role design research is currently playing in tackling Covid-19 and its associated challenges on people globally. Through eight case studies it has shown the propensity of design research in tackling the current pandemics as well as ways of strengthening public health and other government institutions to better address future pandemics. Lastly it has demonstrated the commitment of the design research community to lead initiatives and projects that contribute towards the goal of Global Health.

References

- Bonos, L. (2020, August 24). Yes, some people are still having one-night stands. The Washington Post. <https://www.washingtonpost.com/lifestyle/2020/08/24/hookup-casual-sex-dating-tinder-pandemic-one-night-stand/>
- Daudt, F.; Tonetto, L.M.; Rosa, V.M.; Renck, P.B.; Libânio, C.S.; Fontanella, L.L. Opportunities to design for the wellbeing of children undergoing cancer treatment at a Brazilian Hospital. International Association of Societies of Design Research Conference. Manchester: IASDR, 2019.
- Dewitte, M., Otten, C., & Walker, L. (2020). Making love in the time of corona—Considering re-relationships in lockdown. *Nature Reviews Urology*, 17, 547-553.
- Fonseca Braga, M., Romeiro Filho, E., Mendonça, R. M. L. O., Oliveira, R. G. L. & Pereira, H. G. G. (2020). Design for Resilience: Mapping the Needs of Brazilian Communities to Tackle COVID-19 Challenges. *Strategic Design Research Journal*, 13, (03).
- Harrington, R., & Loffredo, D. A. (2010). Insight, Rumination, and Self-Reflection as Predictors of Well-Being. *The Journal of Psychology*, 145(1), 39–57
- Hsieh, C. (2020, July 7). Sorry, but doggy-style sex isn't really safer than missionary when it comes to spreading COVID-19: And all your other questions about whether safe sex is possible while social distancing, answered. *Cosmopolitan*. <https://www.cosmopolitan.com/sex-love/a33236083/safe-sex-positions-covid/>
- Ko N.-Y., et al. (2020). Changes in sex life among people in Taiwan during the COVID-19 pandemic: The roles of risk perception, general anxiety, and demographic characteristics. *International Journal of Environmental Research and Public Health*, 17(16).
- Lehmiller, J. L., Garcia, J. R., Gesselman, A. N., & Mark, K. P. (2020). Less sex, but more sexual diversity: Changes in sexual behavior during the COVID-19 coronavirus pandemic. *Lei-sure Sciences*.
- Meston, C. M., & Buss, D. M. (2007). Why humans have sex. *Archives of Sexual Behavior*, 36(4), 477-507.
- NYC Health. (2020, June 8). Safer sex and COVID-19. <https://www1.nyc.gov/assets/doh/downloads/pdf/imm/covid-sex-guidance.pdf>
- Neuhauser, L, et al. 2009. Participatory design of mass health communication in three languages for seniors and people with disabilities on Medicaid. <https://doi.org/10.2105/AJPH.2008.155648>
- Ngwenya, B.N. and Kgathi, D.L., 2011. Traditional public assembly (Kgotla) and natural resources management in Ngamiland, Botswana. *Rural Livelihoods, Risk and Political Economy of Access to Natural Resources in the Okavango Delta*. Nova Science Publishers, Botswana, pp.249-262.
- Noël, G. 2019. Designing bowel preparation patient instructions to improve colon cancer detection: Evidence-based design criteria for patients' documents. <https://doi.org/10.1075/idx.25.1.09noe>
- Paim, J., Travassos, C., Almeida, C., Bahia, L., & Macinko, J. (2011). The Brazilian health system: history, advances, and challenges. *The Lancet*, 377(9779), 1778-1797.

- PNAD. (2018) Internet and television access and possession of mobile phone for personal use - National Continuous Household Sample Survey - Annual disclosure. Available at: <https://www.ibge.gov.br/busca.html?searchword=internet> Access on: July 14th, 2020.
- Rocha, T. A. H., da Silva, N. C., Amaral, P. V., Barbosa, A. C. Q., Rocha, J. V. M., Alvares, V., ... & Facchini, L. A. (2017). Addressing geographic access barriers to emergency care services: a national ecologic study of hospitals in Brazil. *International Journal for Equity in Health*, 16(1), 1-10.
- OMS, (2020) Atualização de la estrategia frente a la COVID-19, 14 de abril de 2020.
- Santelli, J., Ott, M. A., Lyon, M., Rogers, J., Summers, D., & Schleifer, R. (2006). Abstinence and abstinence-only education: A review of U.S. policies and programs. *The Journal of Adolescent Health*, 38(1), 72-81.
- Sodha, S. (2020, March 26) Media experts despair at Boris Johnson's coronavirus campaign. *The Guardian*; <https://www.theguardian.com/commentisfree/2020/mar/26/media-experts-despair-boris-johnson-coronavirus-campaign>
- Sun, X., Yan, W., Zhou, H., Wang, Z., Zhang, X., Huang, S., & Li, L. (2020). Internet use and need for digital health technology among the elderly: a cross-sectional survey in China. *BMC public health*, 20(1), 1-8.
- Travassos, C., & Viacava, F. (2007). Acesso e uso de serviços de saúde em idosos residentes em áreas rurais, Brasil, 1998 e 2003. *Cadernos de Saúde Pública*, 23(10), 2490-2502.
- Tseklevs, E., & Cooper, R. (Eds.) (2017). *Design for Health. (Design for Social Responsibility)*. Abingdon, Routledge.
- Tseklevs, E., Darby, A., Ahorlu, C., De Souza, D., Pickup, R., & Boakye, D. (2019). Combining design research with microbiology to tackle drug-resistant infections in different home environments in Ghana: Challenging the boundaries of design thinking. *The Design Journal*, 22(sup1), 347-358.
- Turban, J. L., Keuroghlian, A. S., & Mayer, K. H. (2020). Sexual Health in the SARS-CoV-2 Era. *Annals of Internal Medicine*, 1-4.
- Ulrich, R.S., Zimring, C., Zhu, X., DuBose, J., Seo, H., Choi, Y., Quan, X. and Joseph, A. (2008) A review of the research literature on evidence-based healthcare design. *Health Environments Research and Design Journal*, 1(3): 61-125.
- Venditti, S., Piredda, F. & Mattana, W. (2017). Micronarratives as the form of contemporary communication. *The Design Journal*, 20, Pp. 273-282.
- Zitkus, E., & Libanio, C. (2019). User Experience of Brazilian Public Healthcare System. A case study on the accessibility of the information provided. *The Design Journal*, 22(sup1), 707-721.



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