

Type of the Paper: Peer-reviewed Conference Paper / Full Paper

Track title: Stream 1 (future-proofing)

Knowledge dissemination among healthcare design organizations (case study)

Mina Shokrollahi Ardekani 1*, Göran Lindahl 2, Anjali Joseph 3 and David Allison 4

- College of Architecture, Arts and Humanities, Clemson University, SC, USA 1; mshokro@clemson.edu
 Division of Building Design, Department of Architecture and Civil Engineering, Chalmers University of
- Technology, Sweden 2; Goran.Lindahl@chalmers.se ; http://orcid.org/0000-0003-0007-7270
- ³ College of Architecture, Arts and Humanities, Clemson University, SC, USA 3; anjalij@clemson.edu
- 4 College of Architecture, Arts and Humanities, Clemson University, SC, USA 4; adavid@clemson.edu Affiliation 2; e-mail; ORCID (if applicable)

Abstract: Despite years of research being conducted in the healthcare design field, we still struggle to incorporate this knowledge into decision-making across all areas of policy and practice. Integrating the knowledge into practice is even more problematic in times of crisis. The systematic documentation and dissemination of existing and emerging networks and organizations in the healthcare design context and their activities could be extremely valuable to the field to support collaboration and information sharing during a crisis. Therefore, the primary aim of this paper is to explore the knowledge transfer process among healthcare design organizations and their target group(s) and the extent of their activities in response to the COVID-19 pandemic. In order to have a better understanding of the process, we studied three organizations actively engaged in the creation and/or dissemination of knowledge related to healthcare facilities design: one from the USA "organization A", one from the UK "organization B", and one from Sweden "organization C". The primary data source included some literature covering elements of the knowledge transfer process on the inter-organizational level. The supplementary data are from individual interviews with key representatives from each organization. The core part of this paper discusses the organizations' strategies and channels for knowledge dissemination. It also reviews the COVID-19 period, the associated challenges, and the organizations' activities to respond to the situation during the pandemic.

Keywords: knowledge transfer process 1; healthcare design organization 2; dissemination 3; COVID-19 4; crises 5.

1. Introduction

The pandemic has been a time of mobilizing in the healthcare sector. Similarly, the pandemic urgency has affected healthcare design networks, resulting in the activation of contacts, and forming new strategies. Healthcare design organizations worldwide responded to the challenges posed by COVID-19 by providing resources, guidance, and technical support and contributing to sharing the body of knowledge among professionals. These organizations have made efforts through years of practice to advance evidence-based design and mobilize evidence to inform policy. They are committed to promoting evidence in the field and acquiring the role of dissemination across the healthcare system and decision-makers to stimulate evidence adoption in the healthcare sector. The matter of dissemination is a significant factor for a successful organizational impact and outcome. In healthcare design, providing evidence-based interventions for the practice and informing the decision-makers about the other's successes and failures is a challenge. In this paper, we briefly explore organizational efforts to disseminate knowledge developed in the design field to the decision-makers and review the COVID-19 impacts on the process.

Names of the Topic editors:

Clarine van Oel

Journal: The Evolving Scholar

DOI:10.24404/622ff4e285cd1deb9d f83094

Submitted: 12 Jul 2022

Revised: 12 Jul 2022

Accepted: 14 Jul 2022

Citation: Shokrollahi Ardekani, M., Lindahl, G., Joseph , A. & Allison , D. (2022). Knowledge dissemination among healthcare design organizations (case study). The Evolving Scholar | ARCH22.

This work is licensed under a Creative Commons Attribution BY license (CC BY).

© 2022 Shokrollahi Ardekani, M., Lindahl, G., Joseph , A. & Allison , D. published by TU Delft OPEN on behalf of the authors. We conducted interviews with three organizations across the world. We invited their representatives to tell us how their organization has been upholding that commitment, especially during COVID-19. Therefore, we mainly describe the dissemination efforts among those healthcare design organizations and their target group(s), as well as the extent of their activities toward navigating the COVID-19 situation regarding their role in spreading knowledge and evidence based design interventions. We hope this will be useful to all professional bodies in the healthcare design sector to think about their activities in terms of knowledge dissemination.

2. Theories and Methods

The "knowledge" in this paper has been considered in the context of healthcare design, including the findings of the design impact on a different level, from organizational level (e.g., efficiency indicators, reputation) to the patient and providers outcome (e.g., recovery time, anxiety level, fall rates, the burnout rate among staff, the overall satisfaction) (Stichler, 2011). This paper does not discuss the "knowledge" per se but instead tries to shed light on the process of transferring the knowledge and the evidence through healthcare design organizations to the target group(s). As Thomas & Prétat (2009) states, it is not enough that an organization owns certain knowledge; it has to be turned into action, which means that it has to be transferred between the individuals, groups, teams, and external interested parties.

Dissemination of knowledge often involves passive diffusion geared toward improving individual or organizational awareness to affect behavior through a planned and systematic manner (Kerner et al., 2005). It should include all positive and negative outcomes to inform decisions. Failures are as important as successes, and in times of a crisis, when there is uncertainty, the decisions are highly prone to end up as a failure and informing others not to do the same is crucial.

Dissemination occurs with a set of information or evidence getting through determined channels using planned strategies to inform the target group(s) (Rabin et al., 2008). Strategies determine how the evidence, and the information would spread, and the channels are the ways in which it will get through to reach the target group(s). The concept of the dissemination process includes "push/pull effort"; the strategies involved in this process are formed to expand the reach of the evidence, the "push" which is tied to the disseminative capabilities of the sender, while other strategies are targeted at the "pull" effort, meaning the increase of receptivity of the target group(s), which requires the sender being aware of recipient's absorptive capabilities (Kerner et al., 2005; Rabin et al., 2008) (Figure 1).

Evidence dissemination could have different intentions among organizations, such as increasing their reach to a broader audience and making the information as accessible as possible to motivate the target group(s) to implement the evidence (McCormack et al., 2013). Organizations would also evaluate the strategies to disseminate the evidence by specifying the interventions and desired outcomes (e.g., on the individual or organizational level). The processes that the evidence and information have to go through for dissemination are also a factor, a mediator, and throughout the process, determining the other factors, the moderators that would influence the extent and speed of dissemination is essential (Rabin et al., 2008).



Figure 1: Dissemination Process (developed based on Kerner et al., 2005 & Rabin et al., 2008)

Our study's primary data includes literature covering elements of the knowledge transfer process on the inter-organizational level. Supplementary data are from semistructured interviews with a key representative from each organization active in the healthcare design context, including case A in the U.S., case B in the U.K., and case C in Sweden. Interviews lasted approximately 50 minutes. Though there was an interview guide, additional questions emerged as we proceeded with the conversation (Merriam, 2009). All interviews were recorded and transcribed, and the responses were analyzed based on the reviewed dissemination process (Strategies and Channels) (Figure 1).

Examples of interview questions included (a) How do you describe your organization's disseminative capabilities, (b) What are your thoughts on your organization's understanding of the absorptive capabilities of the healthcare system (providers, decisionmakers) and practice (firms, industry) in the E.U./U.S., (c) What sorts of activities did you undertake during COVID-19 situation that were unique and different, and (d) How does your organization act to prepare for uncertainties.

3. Results

3.1. The context of studied organizations

Before turning to the subject of organizations' efforts toward knowledge dissemination, it is helpful to establish the general context of each organization. The cases reviewed in this study were organizations established to share the successes and failures in the field of healthcare design and help disseminate the research outcomes among the target group(s). In the U.S, case A is active both at the professional level, developing research for practice, and governmental and regulatory level, involving with the policy development in healthcare design aiming at creating healthcare facilities that promote healthier environments for patients and staff. Organization A is a non-profit organization that supports advocacy and regulatory change in the healthcare design context.

Case B is a professional body working on practice-based research while occasionally engaging with governmental functions, depending on the needs and demands. As a network-based organization, Organization B aims to develop a stronger connection between service and system design in healthcare and strengthen the relationship between health systems and infrastructure, buildings, and the physical environment. The main driver for initiating this organization was the lack of enough focus on the broader issues around sustainable development and planetary health at the time, as well as the need to enhance the knowledge delivery process, digitalize content, create archives to preserve the knowledge being transferred, and to develop different channels for knowledge dissemination

Case C is a non-profit organization active in the research and design field established about 30 years ago to build a common ground between architects and the healthcare sector, informing the involved authorities on how to design and build healthcare facilities. This organization has governmental members, the counties in Sweden, as well as architects and consultants, and the aim is to stimulate research development and application to promote safe and effective environments in the healthcare setting.

The incentives for all three organizations were the need for archiving the information and knowledge being produced and providing a repository that helps different user group(s) to find the information they need more efficiently and timely. There was also a matter of collaboration between different bodies to promote a healthy environment that drove the organizations to think differently and start their establishment. In more detail, organization A is involved with producing knowledge in the field of healthcare design and sharing it among target group(s), while in the UK case, the organization B is more oriented towards healthcare professionals and healthcare structures and organizations and less about design and construction bodies. Organization B identifies as a network of networks; they connect the networks in the field by only scratching the surface; the knowledge they transfer is merely the knowledge that it's been out there, and they are acting as a facilitator for the knowledge transfer process rather than producing knowledge and then transfer it. For the third case, C, in Sweden, the organization's establishment was more about creating links and promoting collaborative behavior among different bodies engaged in the healthcare design field, more like case A to promote research, design, and education.

In the U.S., given the novelty of the healthcare design topic back in the 90s, the organization A has been formed to create a conversation about the role of design in improving healthcare outcomes, which at the time was formed around the seminal paper published by Roger Ulrich (Ulrich, 1984). In the early 90s, several experts got together trying to build the body of research that would support the practice in addition to just providing the knowledge. There was a lack of organized resources to learn from others' work and practice at the time, and the need for a systematic sharing process for the knowledge that one might acquire through their own experiences was strongly felt. Therefore, the main driver for creating the organization was first to start this conversation around the significant impacts of design on healthcare outcomes and second, to develop the body of knowledge and share it across the organizations at the time as a collaborative effort (interview, March 2022).

In Sweden, organization C was established as a response to the demand at the time for guidelines to design and build healthcare facilities right after the government abolished standards and deregulated construction in the early 90s for healthcare building design. Their concepts and guidelines are not compulsory to adhere to, but they are encouraged to be considered; plus, this organization identifies as the only comprehensive source of knowledge in the country with both architects and consultants as well as authorities working together (interview, March 2022).

The level of collaboration between these organizations and target group(s) is different. Organization B collaborates with other organizations in the healthcare sector worldwide, mainly within the E.U. area, to build a web of knowledge and just "scratch the surface" (interview, February 2022). On the other hand, in the U.S., organization A is involved in influencing policy and the formation of guidelines that are adopted in some way, shape, or form by almost all states and their user's guidance documents internationally (e.g., FGI). Organization C is more of an informal organizational body in Sweden, and they connect to their target group(s) through their members, the counties in the country (interview, March 2022).

3.2. COVID-19 and Challenges

In the case of COVID-19, we encounter a different set of information and uncertain evidence that posed a considerable challenge for the healthcare sector. Uncertainty is always part of evidence associated with healthcare due to the imperfection of the origins of knowledge that the evidence is coming from, the variety of patients' preferences and inconsistency of the circumstances, and the inherent uncertainty in applying judgment in the decision-making process (McCormack et al., 2013). However, in the time of COVID-19, the uncertainty, along with the lack of enough evidence at the time, raised many challenges that we will go through as follows.

The sender and the recipient of knowledge are two main entities involved in the sharing process, and the absorptive capabilities of the target group(s) as the recipient would influence this process significantly. However, there is a problem recognized with awareness on the recipient end. In many organizations, people don't often get to work on many projects. For example, the chief nursing officer may have one healthcare design project to be involved with in their lifetime, and they have to learn everything in that project, and then they don't get to transfer that acquired knowledge going forward. This is even more problematic in the case of a pandemic when the chances are even more limited. In an ordinary situation, organization A addressed this barrier by absorbing as much information as possible and providing the important information by launching webinars containing information potentially for a project type that the healthcare sector is doing or an issue that they are grappling with to get the basic level of understanding, flipping the barrier into a facilitator. Organization A also helps clinicians find available resources and work with healthcare organizations directly (interview, March 2022). Of course, the way these organizations handled the knowledge transfer process during the pandemic was different. In general, their performance to keep up with the massive amount of data coming out daily was impressive. During the time of COVID-19, the world experienced an overabundance of information. One of the challenges that authorities faced during the pandemic was going through all the information and trying to understand which one they should choose to apply, which is very time-consuming and slows down the decision-making process. There are hundreds of thousands of papers about COVID now, and the more papers that are out, the more the potential for conflicting information.

In the UK, organization B responded very quickly to the COVID-19 outbreak; it took them about a month to adapt to the situation. Their main activity was the bulletins providing weekly news quite early on to share what people were doing, the practices, and the innovations. They also integrated a "COVID-19 Summit" as part of their conference in September 2020 virtually, which was one of the first meetings on a large scale covering the papers and research related to the ongoing situation (interview, February 2022). On the other side of the world, organization A was also involved with the flood of information from the research and practice. The organization collaborated with another network active in the field of healthcare design at the time, shaped by several organizations located in different geographical areas of the country, having weekly or biweekly online meetings to cover the level of COVID-19 impacts in different parts of the country and the strategies being applied to address those impacts. Those meetings were the main activity of organization A and a knowledge transfer tool for the organizations to learn from others' experiences. The main driver for having those conversations for the organization was the fact that the time was crucial, and they didn't want to wait for the research to be published (interview, March 2022). However, there were some challenges along the way, and the biggest one in the knowledge transfer process in both regions was healthcare professionals' intense workload, lack of time, and high level of stress, which negatively affected their capability to be more aware of the knowledge, have time to engage with the knowledge and to apply it in the context; the absorptive capabilities were impacted negatively due to the intense situation. The overabundance of knowledge and information is also a barrier in this rapidly changing situation. More importantly, the main challenge is where the seekers find the required knowledge and how they would decide on knowledge credibility. The healthcare providers also face challenges in applying the knowledge being transferred. However, sometimes they are limited by their own capacity; they need a system and a culture of knowledge to make it work, and often they don't even know what they don't know, which is the biggest problem (interview, February 2022).

In Sweden, organization C was mainly involved with the knowledge dissemination about the best coping strategies during the pandemic. Their members were the main groups that were highly active at the time of the pandemic in developing solutions and strategies, but the organization itself acted more as an information gatherer rather than being involved with knowledge production. The organization's vision for acting upon uncertainties in the future is more of an informative body through hosting conferences and lectures, as well as financial support for research. In the case of COVID-19, the organization has funded some researchers to examine the situation and develop solutions.

Financial stability was also a barrier to getting the knowledge transferred. Organization A's primary goal is to provide as many resources as possible for free, but there is also the matter of financial need that becomes a barrier, leading to the fact that people can't participate in the knowledge sharing activities because there is a cost associated with it. When a crisis hit and the economy get affected, things get intense. In the case of COVID-19, one of the main problems was the activities of numerous different architectural firms in the U.S. trying to financially survive by presenting themselves as the ones who can do something about the pandemic, having the ultimate solutions in hand, and then it sets up confusion for authorities who are trying to make the decision. Organization A positioned itself as neutral in this dynamic, working with different organizations and architectural firms to get the information out there with a minimum level of confusion (interview, March 2022).

The structure of the organizations is another factor that has influenced knowledge dissemination during the time of COVID-19. For instance, some organizations do not necessarily have full-time employees, and they are primarily voluntary-based organizations; therefore, in a time of crisis, it is harder for them to respond unless they have a full-time employment body, while some other organizations, such as the FGI, and AIA had a whole committee that was working on emergency conditions during the pandemic.

4. Discussion

The success of the transfer can be affected by many factors and pose serious challenges to organizations to act upon the uncertainties in the future; lack of evidence early on in time of a crisis and later information overabundance are the main challenges faced by the engaged organizations. Time is also a crucial factor; being able to respond timely and cope with the new situation even at the organizational level is important.

After all, all problems are multifaceted and multidisciplinary collaboration is the key to overcoming difficulties, especially in times of uncertainty.

Making the knowledge and evidence accessible to all sorts of target group(s) should be the core aim for all organizations. Therefore, documenting that knowledge, planning effective dissemination strategies, and determining suitable channels are of utmost importance.

It's noteworthy to mention that every hospital has a different culture for healthcare delivery and a different budget to provide services. Part of the challenge in disseminating the information gets back to the amount of time to think through all the issues and evaluate the context versus just seeking an answer; that feedback loop poses some challenges itself. At the organizational level, organization A is a good example that has intended to make a conversation to address this challenge by developing several tools. Further on, the existing and emerging networks and organizations in this field need to pay extra attention to the knowledge transfer process, the accompanying challenges, and the strategies that could be adopted to overcome those challenges.

In the healthcare design context, considering the nature of Evidence-Based Design, being aware of the existing and evolving body of knowledge, including the best practice and experiences, to be able to hold professional debates worldwide is crucial to respond to the crisis, and that awareness could be fostered in an effective knowledge transfer process, and networks and organizations could be a big part of it. The organizations interviewed in this paper briefly touched upon the main challenges and barriers of the knowledge transfer process based on the COVID-19 experience that probably other organizations could relate to; however, reflecting on those experiences is much more critical.

5. Conclusions

Being resilient and responsive, keeping calm, and looking for opportunities would help enormously in order to navigate the uncertainties of future crisis scenarios. During COVID-19, different organizations tried to keep up with the evolving expectations. Now, with such an experience, acting upon an entirely different crisis in the future would be possibly easier. The organizations adopted various strategies to navigate the situation by providing frequent bulletins sharing people's practices and experiences in different parts of the world.

Launching conferences and meetings is another influential tool to ease the knowledge transfer process, and with the considerable progress of virtual technology, it will be much easier to reach people to get the knowledge through.

To be able to share knowledge, inter-organizational collaboration is of utmost importance. Developing solutions and strategies to overcome a crisis is not an individualistic effort, it demands a collaborative approach. Actively engaging in the conversation and sharing expertise and experiences is crucial in the sense that it saves time and effort when everyone contributes to the body of knowledge collectively.

Another element brought up during interviews was the intense workload and high level of stress among healthcare providers during the pandemic that prevented them from fully engaging with the knowledge being transferred and ultimately disabling them from applying the evidence shared by organizations effectively. Providing resources and services to foster a supporting system for the providers would implicitly influence the knowledge transfer process. Moreover, dealing with information overabundance during a crisis to make decisions in the healthcare sector adds to difficulties. Organizations could help by having a system in place to validate the information and make it accessible to mitigate the risk of confusion among decision-makers. Allocating a full-time workforce and resources by the organizations active in the knowledge transfer process would significantly support healthcare providers in developing their strategies.

In a time of crisis, adding a cost to share the knowledge would not be practical; providers are struggling with their financial stability, and assigning extra costs to access the information would hinder them from doing so. Hence, financial support from either governmental bodies or private sponsors is necessary.

Ultimately having a peer-to-peer conversation and maintaining the openness of mind to recognize the solutions would be of great value when it comes to uncertainties. Uncertainties bring unexpected challenges, and "having your radar out" (interview, February 2022) to update the information as it comes through, and act accordingly is the first step to overcoming a crisis.

What we can hope for now is that the urgency in adapting knowledge, testing solutions and cross managerial and professional structures can prevail to make the design professions an active part in preparing for future challenges.

Contributor statement

Author Contributions: Conceptualization, M.S., G.L; methodology, M.S., G.L; formal analysis, M.S., G.L; writing—original draft preparation, M.S.; writing—review and editing, M.S., G.L. and A.J.; supervision, G.L., A.J. and D.A; All authors have read and agreed to the published version of the manuscript. See Policies (tudelft.nl)

References

- 1. Breckon, J., Mthiyane, H., & Shepherd, J. (2019). Bodies of evidence: how professional organisations in health, education and policing champion the use of research.
- 2. Kerner, J., Rimer, B., & Emmons, K. (2005). Introduction to the special section on dissemination: dissemination research and research dissemination: how can we close the gap?. Health Psychology, 24(5), 443.
- 3. Merriam, S. B. (2009). Qualitative research: A guide to design and implementation. San Francisco, CA: Jossey-Bass.
- McCormack, L., Sheridan, S., Lewis, M., Boudewyns, V., Melvin, C. L., Kistler, C., ... & Lohr, K. N. (2013). Communication and dissemination strategies to facilitate the use of health-related evidence. doi:10.23970/ahrqepcerta213.
- 5. Rabin, B. A., Brownson, R. C., Haire-Joshu, D., Kreuter, M. W., & Weaver, N. L. (2008). A glossary for dissemination and implementation research in health. Journal of Public Health Management and Practice, 14(2), 117-123.

Stichler, J. F. (2011). Knowledge transfer through dissemination. HERD: Health Environments Research & Design Journal, 6.

^{4(2), 17-22.} Thomas, T., & Pretat, C. (2009). The process of knowledge transfer. Ulrich, R. S. (1984). View through a window may influence recovery from surgery. science, 224(4647), 420-421. 7.