

Telemedicine services in Brazil: using service design to analyze experiences

Larissa Farias¹, Carla Cipolla¹

larissa.farias@coppe.ufrj.br, carla.cipolla@pep.ufrj.br

¹Universidade Federal do Rio de Janeiro (PEP/Coppe), Brazil

Abstract

Due to its long regulatory process, telemedicine is an immature service modality in Brazil. With the coronavirus pandemic, users experienced for the first time remote care in the face of quarantine and social isolation. This study analyzes the experience of beginner users in telemedicine services during the period of the COVID-19 pandemic. The analysis was based on the context of service design where people were interviewed and tools such as blueprint, user profile and brainstorming were used in the process. With these tools, the analysis process became agile to identify the complaints and expectations of users by visually understanding the services used. The results highlight touchpoints categories and lessons learned regarding the experience with telemedicine in a fortuitous period. Understanding the experiences of those involved help researchers and service providers design new telemedicine services considering this current practice in Brazil.

Keywords: telemedicine, service design, experience, healthcare.

1. Introduction

Telemedicine encompasses a broad provision of medical and healthcare services by means of telecommunications for the purpose of exchanging information across geographical, temporal, social, and cultural barriers (Fong et al., 2020). For the World Health Organization and the International Telecommunication Union (ITU), telemedicine is a "support for the provision of health services at a distance" (WHO & ITU, 2012). This service modality is quickly being adopted by healthcare providers around the world, raising expectations that as technologies advance and are used continuously, it will continue to develop and improve (Hsu et al., 2020). From these biases, telemedicine seeks to bring health professionals closer to patients through remote care supported by communication technologies, whether in an emergency situation or not.

With the pandemic, telemedicine has become a prominent and essential service for healthcare professionals and patients. Whether in the pandemic context of COVID-19 or in fortuitous weather-related cases, the service of telemedicine can become a standard way to monitor patients and ensure disease control without exposing them to risk (Compton et al., 2020). Therefore, this remote service has more notoriety in the post-pandemic scenario due to the calamity caused in the years 2019 and 2020 and, moreover, it caused a facilitating condition perceived by people (Kamal et al., 2020).

Developing countries are under continuous efforts to provide free access to face-to-face health services and, in this scenario, telemedicine has mobilized discussions about its accessibility (Kamal et al., 2020). However, legal and regulatory aspects also result in the late use of telemedicine, making it an immature service. Brazil, for example, teleconsultation that includes exchanging information between physician and patient with the possibility of prescription and medical certificate was only so notorious in 2020 in face of COVID-19.

Given these facts, physician-patient care through telemedicine is new for consumers and healthcare providers seeking to adapt to the new demand for types of remote care. With the pandemic of new coronavirus, the challenges have become aggravating and emerging, requiring economic dynamics, adaptations to new needs, and urgency for expanding medical care capacity. This has increased the demand for new telemedicine services in the Brazilian scenario, where providers also seek to improve the experience of patients and professionals.

From a holistic and systemic perspective, Service Design (SD) supports and engages stakeholders in complex environments, such as healthcare, by enabling



them to visualize their activities and goals (Patrício, de Pinho, et al., 2018). This approach also integrates the values of design thinking because it involves an iterative process of immersion, ideation, reflection, and implementation (Brown, 2009) and offers visual tools and methods that support the process of analysis, creation, and communication (Huang et al., 2016). Since design tools can explore valuable opportunities in the field of SD, this study aims to analyze the experiences of users who used the telemedicine service for the first time during the COVID-19 pandemic. This analysis was based on the scope of SD where lessons learned in the face of the recent practice of telemedicine in the Brazilian context were evidenced.

2. Theoretical Reference

2.1. Telemedicine in Brazil

Telemedicine was formally recognized in 1999 by the Tel Aviv Declaration (WMA, 1999) considered as "the practice of medicine at a distance, in which interventions, decisions, and recommendations for diagnosis and treatment are based on clinical data, documents, and other information conveyed by telecommunications systems.

The Brazilian Federal Council of Medicine (CFM) defines telemedicine as "the practice of medicine through the use of interactive methodologies of audiovisual and data communication, with the objective of assistance, education and research in health" (CFM, 2002). The CFM also establishes that there are some modalities such as teleorientation, telemonitoring, teleinterconsultation and teleconsultation. The first experiences with telemedicine in Brazil began in the 1990s with autonomous projects in the public, private and university spheres that carried out mainly telediagnosis activities (Khouri, 2003). However, the first legal evidence on the use of telemedicine in Brazil was noted in 1997 about a legal opinion that guided remote medical care only in an vital entity called Petrobras (CFM, 1997). Between 2002 and 2019 telemedicine was legally recognized in some states in Brazil and apps were recognized for the practice. In March 2020, the Brazilian government authorized the use of telemedicine on an exceptional basis for the duration of the pandemic. Thus, modalities such as pre-clinical care, care support, consultation, monitoring, and diagnosis started to be validated in April 2020, both in public and private health. Furthermore, in 2022, telemedicine was regulated in Brazil as a form of technology-mediated medical and communication services.



2.2. Telemedicine engagement with the pandemic

Telemedicine became a complimentary service during the pandemic and boosted its scope, multiplying the system's capacity to deal with COVID-19 (Vinicius et al., 2020). According to Omboni (2020), the limited diffusion of telemedicine solutions on a large scale, the heterogeneity of available tools, the lack of a patient-centered approach, and the regulatory difficulty of clear legal guidelines are limiting factors to the wide use of telemedicine.

In recent years telemedicine has grown considerably and with the COVID-19 crisis health systems have increased telehealth programs (Iancu et al., 2020). According to Gupta et al., (2019), numerous telemedicine service projects have been implemented on an emergency basis in several countries due to the lack of digital structure and regulation in healthcare systems. However, for Kissi et al., (2020), although there has been a significant increase in the technology of telemedicine services, their adoption and use have been rather slow, and the success of these services depends on user satisfaction.

As stated by the Global Market Insight report (GMI, 2020), even before the pandemic, the telemedicine market was predicted to grow from \$38.3 billion in 2018 to \$130.5 billion in 2025. Hence, although telemedicine has increased significantly with the pandemic, it is predicted that it will continue to be an essential vehicle for healthcare. In Brazil, telemedicine is understood as new for both consumers and healthcare providers. A report on healthcare startups in Brazil (Distrito, 2020) reported that providers have started to expand their telemedicine service offerings in the last year. However, at the same time, they need help providing proactive, personalized services in the out-of-hospital environment. On this matter, as telemedicine is implemented, given market demand, clinical skills become necessary. At the same time, the design of new telemedicine services depends on legal actions and user satisfaction.

2.3. The user experience and telemedicine

Research preceding the pandemic period already reports data on user experience. A qualitative study on patients' experience with lung diseases found that they felt more secure about the telemedicine service as long as nurses who performed the telemetry and translated symptoms to physicians were from permanent staff (Nissen & Lindhardt, 2017). Thus, returning to teleconsultations provided more confidence for patients since the same hospital team saw them. Another study conducted in Bangladesh (Zobair et al., 2019), observed that the main antecedent factors influencing patients' expectations of telemedicine adoption are self-efficacy, telemedicine experience, prior enjoyment and satisfaction. It was noted that there are



still few studies in the literature that have reported users' experiences with telemedicine during the pandemic period of COVID-19, and it is easier to find studies about institutional or provider experiences. According to Kissi et al., (2020), healthcare professionals must understand the concept of telemedicine and reflect on whether they are professionally prepared to embrace this service before introducing it into their workflow.

The main barriers to telemedicine implementation are regulatory, financial, cultural, labor, and technological (Zachrison et al., 2020; Luciano et al., 2020). In this sense, some factors impact, such as infrastructure, financial incentives, preferences for traditional methods of medical care, lack of skill with digital systems, and lack of time for skills training. The infrastructure factor is related to the availability of technologies and means that encourage the use of telemedicine (Kamal et al., 2020). The organization factor deals with operational issues of the service, where providers and professionals must be able to operate efficiently (Zachrison et al., 2020). The security and privacy factor relate the intention to use telemedicine to data use policies, such as confidentiality of information and use of trusted applications (Zachrison et al., 2020; Luciano et al., 2020). Policy factors can increase awareness about the use of telemedicine if there are regulations and legislations for a good operationalization of the service (Zachrison et al., 2020; Luciano et al., 2020). Furthermore, the cultural factor is related to the public's preference to adopt remote health services in their daily lives, aware that the clinical and hospital space should be used in more severe cases (Zachrison et al., 2020).

Since research on users' experience with telemedicine during the coronavirus pandemic was limited, studies were needed to verify this issue. For Patrício et al., (2020) the healthcare sector offers relevant research opportunities to explore the user journey view. Additionally, the understanding of experiences seeks that health systems improve and move toward an integrated model. In this sense, the health sector, regardless of its particularity, offers research opportunities to use a systemic SD approach to understand the activities of multiple actors (Patrício et al., 2020b). Therefore, SD comprehends human experiences and translates that understanding into future services (Sangiorgi et al., 2019), as it also contributes to research on the user experience of services.

2.4. Using service design to analyze experiences

According to Vargo and Lusch (2010), SD addresses knowledge and tools coming from the fields of service and operations marketing, interaction and experience design, and participatory design. In this universe, SD can contribute to addressing the challenges faced by users because it uses a human-centered, participatory,



holistic, and creative approach (Grenha et al., 2019; Ostrom et al., 2015). With a holistic and systemic perspective, SD engages and supports stakeholders in complex environments, such as healthcare, to enable them to realize their activities and goals (Patrício, Pinho, et al., 2018). Further, SD also integrates a design thinking approach, i.e., the process is iterative over exploration, ideation, reflection, and implementation steps and offers visual methods and tools (Bitner et al., 2008) that support this process and foster stakeholder communication (Grenha et al., 2019).

In SD, touchpoints are a key concept, and together with user journeys, they constitute the major designable building blocks in services (Edelman & Singer, 2015; Halvorsrud et al., 2016). From the touchpoints, the user's preconceptions and perceptions are shaped, they are redirected, and their experience is defined about whether or not to use a service again. A study on the remote use of x-rays demonstrated how SD could improve service (Parikh & Shrivastav, 2022), and during the analysis, it was reported that healthcare organizations and providers have little experience in identifying touchpoints to understand the patient experience. Thus, SD can support how the elements of a service are related by understanding the interrelation of each touchpoint rather than viewing them as static relations.

SD applies interdisciplinary methods and tools from several backgrounds, but they seem focused on single elements of user experience rather than on the complete landscape of experience factors (Teixeira et al., 2012). In this regard, SD techniques and approaches focus on separate elements of the user experience, but designers are able to embrace the holistic nature of the experience and take into account any and all elements and touchpoints.

3. Method

This is a study case that starts by exploring the theoretical facts, interviews beginner users of telemedicine services, analyzes the services using different tools and synthesizes the findings into lessons learned. The research was conducted to understand telemedicine in the Brazilian scenario, the state of the art on regulatory aspects, the manifestation of these services during the pandemic of COVID-19 and users' general experience. Thus, the study consists of three stages.

- (1) Immersion: composed of exploratory research, user interviews, and user profile;
- (2) Analysis: investigation of the interviews with users using the blueprint and brainstorming to understand problematic touchpoints considering that each interviewee used different services according to their health conditions;



(3) Synthesis: gathering the data obtained to generate lessons learned about the investigative process.

This study conducted interviews with patients and health professionals and was approved by the ethics committee of the Universidade Federal do Rio de Janeiro (CAAE nº 60233622.7.0000.5257).

3.1. Tools to explore and analyze

This study used brainstorming, and blueprinting tools to support data immersion and analysis. User profiles were used to represent a sample of interviewed people, i.e., patients whose identities were kept anonymous. A user profile is used for personalization and reflects personal information or interesting facts. It should capture how the user thinks or feels, it's focused on behaviors and goals (Farid et al., 2018). User profiles are not like personas because these profiles may have some personality and it should be possible to understand who that person is in a superficial way. Also, with a small sample of interviewees there is little data to set up a persona.

Brainstorming was used to visualize the findings from the research and interviews and connect the experiences and expectations. This technique aims to gather as many ideas as possible, good or bad, in order to provide a basis for the topic to be investigated (Lewrick et al., 2020). In this sense, this technique sought to support the clustering of ideas coming from the users, and further on, it was possible to identify the categories of accessibility of telemedicine.

The blueprint can be used to visualize the service in order to locate points of improvement and new opportunities (Vianna et al., 2011). This tool is such an advanced journey map (Lewrick et al., 2020) and describes the physical evidence, the users and their actions along the journey and allows the identification of the missing points and unnecessary overlaps (Vianna et al., 2011). In this study, the blueprint was applied as an analysis tool to understand experiences in telemedicine services.

4. Results

4.1. Interviewees

The interviewees were selected considering a convenience sample. They had geographic diversities, among them health professionals and patients. Even so, most users are in the city of Rio de Janeiro due to their ease of access. These people



were patients or health professionals who experienced the telemedicine service during the pandemic period.


The interviews were conducted semi-structured and remotely via phone calls, messages, audio exchanges, or video calls. The interviewees consented to cede their experiences to the objectives of this study. Table 1 presents data from the interviewees, such as their occupation, location, category of access to the telemedicine service, and type of user (Table 1).

<i>Interviewee</i>	<i>Occupation</i>	<i>City</i>	<i>Category of telemedicine access</i>	<i>Category of user</i>
E01	Housekeeper	Rio de Janeiro	Private service	Patient
E02	Professor	Rio de Janeiro	Health insurance + private service	Patient
E03	Pharmacist	Rio de Janeiro	Health insurance	Patient
E04	Bank seller	Rio de Janeiro	Healthtech	Patient
E05	Psychiatrist	Roraima	Private service	Professional
E06	Retired	Piauí	Private service	Patient

Table 1. Main data from interviewees

The interviewee (E01) experienced telemedicine as the mother of a patient with a rare disease, being a mediator in the service channels he sought; The interviewee (E02) obtained two forms of access because his health insurance did not solve his problem. Furthermore, to maintain the anonymity of the interviewees and, even so, consider the main aspects reported, the following user profile were created to compile the information through a storytelling (Figures 1, 2 and 3):






Maria – 66 years old:

- She is retired;
- She has diabetes and feels pain in her teeth;
- She has difficulties with technologies;

- Maria needed to see a dentist but was in quarantine. She decided to use her health insurance app to seek remote emergency care. But she couldn't because her health insurance didn't provide remote dental care. A friend of hers referred her to a healthtech for dental care. This healthtech provided care via whatsapp, which made the process easier because she was familiar with this application. Maria sent pictures of her tooth to the physician, who was able to identify the problem at first, even though the images had low resolution. Through this triage, the dentist scheduled a face-to-face consultation, establishing health guidelines and minimum exposure time. Maria was satisfied with the tele-triage made available by the healthtech.

Figure 1. User profile 1

Source: Authors



Daniel – 30 years old

- He works in a hospital laboratory;
- He had the flu and was suspected of having COVID-19


- Daniel presented symptoms of COVID-19 and was taken off work. He tried to access his health insurance to get remote medical care, but could not. So, he called his health insurance and obtained telemedicine care via voice call.

- He experienced tele-triage with a nurse before the physician attended to him. Daniel liked the speed of the service but would like his insurance plan to provide an integrated testing service to his home. Daniel preferred to pay for the COVID exams because the insurance plan results were slow, and he would like to get back to work soon

Figure 2. User profile 2

Source: Authors





Carol – 42 years old

- Psychiatrist and university professor;
- She started doing teleconsultations;
- With the pandemic, Carol interrupted her face-to-face consultations both in her office and at the university hospital. As a result, she started doing private telemedicine consultations while this service was not implemented at the university where she worked. Carol used WhatsApp to perform her teleconsultations. Before starting the consultations, she asked for the patients' consent to authorize video calls. She noticed that older patients had difficulties with video calls, so her teleconsultations were delayed. Carol's biggest problem was prescribing prescription drugs, since there was not yet some kind of government validation for digital prescriptions. Her solution was to send the prescriptions by post. Even with this obstacle, she liked the convenience of telemedicine.

Figure 3. User profile 3

Source: Authors

Three profiles were elaborated as a way to compile the experiences of the interviewed users. Thus, one can succinctly observe the interviewees' feedback regarding the telemedicine services they experienced.

4.2. Analysis

As the interviewees have different profiles and health conditions, semi-structured interviews were conducted in order to understand each one's experience with the services used and their perception of the services operationalization. We highlighted some excerpts from the interviewees:

- *"I want to continue to use telemedicine because I save on public transportation and avoid risks by exposing my son who has more reduced mobility. Even though I have difficulty with technology, I'd rather ask for help than commute."*
- *"The effectiveness of telemedicine depends much more on the patient's ability to provide a high quality photo or video for the physician to understand the problem."*
- *"Although I was unable to use the health insurance app, telemedicine by phone call was more practical than I imagined."*
- *"I didn't like the healthtech service model of having to stay available for them to call me, I prefer a timely appointment."*
- *"Elderly users have more difficulty with technology and prescribing controlled medications makes the process more time consuming."*



- *"I used WhatsApp for the consultation and it made the process easier since I have little experience with new applications."*

In order to categorize the interviewees according to their experiences with telemedicine, a brainstorming session was developed exploring their forms of accessibility, service characteristics, experiences, and expectations (Figure 4).



Figure 4. Brainstorming

Source: Authors

It was possible to devise insights into improvements to the services used by the respondents through questioning. It was understood that there are gaps in telemedicine services that led to dissatisfaction by users even if they would use them again. The following categorization was evidenced (Figure 5):

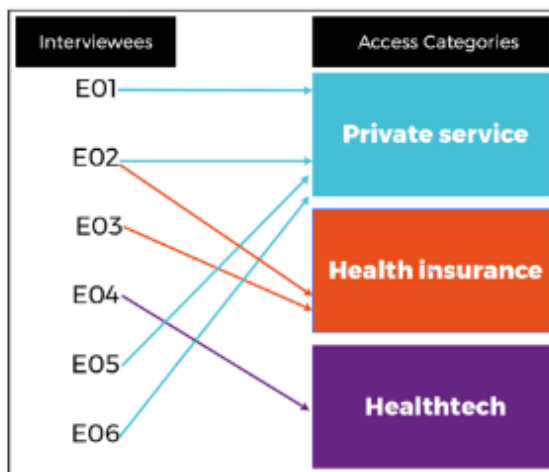


Figure 5. Ways in which interviewees accessed telemedicine

Source: Authors

Three forms of access to telemedicine services were evidenced: through private services, health insurance and healthtechs. The form of access by the private service is characterized by making available, mainly, the supply of a specialist. For example, an individual ophthalmologist, without a company, but licensed, can offer tele-guidance services considering a fee. The health insurance form of access is characterized by incorporating a group of specialists who provide telemedicine through an organization. The form access by healthtech is characterized by incorporating a network of medical specialties licensed, charging a certain amount for the patient to use telemedicine. In this sense, healthtech adheres to the characteristics of both a private network and health plans, but the difference is in the lower cost or the delivery of the service through different platforms.

The next stage of analysis was through the blueprint tool. Only interviewees from Rio de Janeiro city who used telemedicine in the period of the COVID-19 pandemic were evaluated (Figure 6) under the Blueprint tool. These criteria were chosen due to the ease of access to the interviewees, so the level of detail obtained would enable the Blueprint design. This technique allowed us to visualize patients' contact points and identify their primary complaints and expectations. With the four interviewees, it was possible to elaborate five blueprints from the identified forms of access.

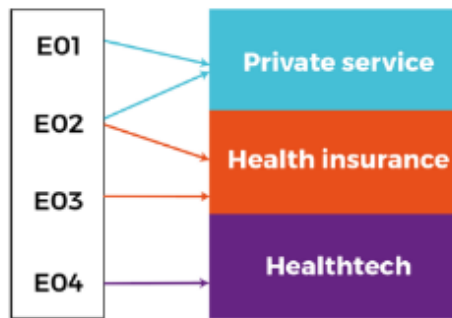


Figure 6. Interviewees selected for the Blueprint development
 Source: Authors

The detailed journey of each patient user was evaluated according to the access modality: private service, health insurance or healthtech. Two blueprints were elaborated for the interviewee (E02) since the patient used both modalities. The blueprints can be seen in Appendix 1 of this study.

The following table (Table 2) identifies the main complaints and expectations for each Blueprint respondent:

Interviewees	Complaints	Expectations
E01	<ul style="list-style-type: none"> • Her/his difficulty is to take good pictures to send to the physician; • Her/his health insurance does not offer to home exams; 	<ul style="list-style-type: none"> • Trusts telemedicine because she/he was satisfied with tele-triage; • Would use telemedicine again because it saves on transportation costs and does not expose your child to risks; • Would like that the health insurance offer more medical specialties;
E02	<ul style="list-style-type: none"> • Her/His health insurance did not offer the medical specialty needed, even so, she/he signed up for emergency care through the health insurance; • He did not feel confident in the telediagnosis and went to a private specialist; • The greatest difficulty was to provide high quality photos to the physician; 	<ul style="list-style-type: none"> • Would like that the health insurance offer more medical specialties; • She/He thinks that telediagnosis depends much more on the patient, because the patient must translate the symptoms in detail and sometimes offer quality photos or videos;



E03	<ul style="list-style-type: none"> • She/He could not start remote care through the health insurance app and had to call them; • The health insurance takes long time to show test results remotely; • In fortuitus events, medical care is quick and unsatisfactory; 	<ul style="list-style-type: none"> • She/He felt that telemedicine by phone call met her/his needs and would seek this service again; • Would also seek telemedicine again if the health insurance offered the specialty she/he wanted;
E04	<ul style="list-style-type: none"> • The physician presented unstable internet, where the video call was interrupted several times until he decided to proceed with a voice call; • The scheduling was based on an estimated time, i.e. the patient had to be available for a few hours until the physician would contact her/him. 	<ul style="list-style-type: none"> • The startup offered partnerships with laboratories and pharmacies and this would make it easier to buy medicines or perform tests at home; • She/He prefers remote service than face-to-face service because it saves commuting time;

Table 2. Complaints and expectations from the interviewees

Source: Authors

In addition to the complaints and expectations identified, applying the blueprint to visualize the telemedicine services used by each interviewee allowed us to identify the waiting time it took for patients to initiate or get feedback from the healthcare professional and the categories of touchpoints from the services (table 4). With this tool, it was also able to understand the physician's support systems, the moments of decision-making, and the platforms used for video calling.

Touchpoints	Observations
Organizational	<ul style="list-style-type: none"> • The choice of service access category (private, private or healthtech) is influenced by whether the organization has the type of care that is sought by the user; • If the user has a health plan that provides telemedicine service but does not have good experience with the attendance, they try to seek other forms of remote attendance than face-to-face; • Access to telemedicine by public network although it is available, has not been noted because this service provision is scarce in Brazil;
Physical	<ul style="list-style-type: none"> • Limitations in the use of different applications; • Limitations to provide media (photos or good quality videos); • It avoids commuting, but it is necessary to take exams in person that are not provided by the organization;
Social	<ul style="list-style-type: none"> • The waiting time is something to be dealt with as in presence attendance, given the physician's delay. The physician-patient or organization-patient relationship is affected; • Family or organization support network is needed in the face of technological difficulties; • A chat or phone conversation to schedule a remote service requires personalized attention to the different questions of the users.



Digital

- Communication fails when Wi-Fi is unstable;
 - Unstable app operation, making it necessary to look for other ways to get the same service, such as voice call or messages;
-

Table 3. Noted Touchpoint Categories

Source: Authors

5. Discussion

The experiences reported by the interviewees match the factors that limit the use of telemedicine where lessons were learned:

- Adapting to new technologies was the interviewees' main occurrence of difficulty in use. Mainly users over 50 years old reported this inconvenience. It is understood that telemedicine's efficiency depends on how the user performs the task with the digital system. Making images or videos available to support problem detection by the health professional is a sensitive step.
- The pandemic was the starting point for disseminating telemedicine services in Brazil. On this point, the infrastructure regarding the availability of technologies showed through the interviewees that private organizations, such as telemedicine by access by health insurances, healthtechs and private services are easily accessible and more available. No interviewee used telemedicine services through the public companies. Although public telemedicine services exist in Brazil, they have had little impact.
- Although telemedicine corroborates geographical barriers, one of the interviewees was able to get telemedicine care with a medical specialist only in a region far away from where he lives. This demonstrated telemedicine's remarkable capacity to bring assistance to the countryside and benefit the big cities. However, studies would be necessary to verify the hypothesis that patients from the northern or northeastern region of Brazil access telemedicine services installed in the southeastern region more than in their region.
- Interviewees who were patients showed no concerns with their data exposed in the systems they used in telemedicine services. Only the interviewee who was a psychiatrist understood that the prescription validation system was bureaucratic. But at the end of the pandemic, the government implemented a prescription validation system. Every health professional who works with



telemedicine can use this platform for free. With the demand for telemedicine, the Brazilian government noticed the need to implement an infrastructure that facilitates this service.

- Some interviewees demonstrated cultural issues due to resistance for using telemedicine. One of them admitted that prefers face-to-face consultations for having experienced telemedicine only once. Another interviewee fears the devaluation of some professionals, such as nurses who intermediate with physicians. As observed, there is resistance in the recognition of telemedicine, so it is expected that novelties cause insecurity. With the recent regulation of telemedicine, it is expected that the offer of these services will increase and more strategies will emerge to promote the incentive to use them.

6. Conclusion

Telemedicine services have an essential role in improving healthcare systems' quality and efficiency. This study noted the provision of different access channels such as health insurance, private healthcare, and healthtechs. Through this paper, we observed that the services showed collaborative aspects when a nurse supports the teleconsulting physician in seeking translation of the patient's symptoms. Although there are concerns about health systems sustaining the ability to provide services in fortuitous situations, this study showed that telemedicine proves satisfactory for users in routine medical care or their interest in using remote services again. With the recent regulation of telemedicine in Brazil, more services are expected to be offered.

Observing the use of telemedicine during the pandemic period allowed us to verify that the Brazilian health system, even though it was not favorable and ready to practice this service, quickly gathered efforts to make remote care possible. Using SD approach to immerse and analyze allowed us to visualize the operational aspects in each service, the touchpoints between patient and physician, physician, and support system. It is possible to understand an overview of the information collected through users profile and to schematize this data into groupings through brainstorming. With the blueprint it is possible to visually understand the services used by the interviewees. Although this study has focused on describing experience reports, it demonstrates how to use intuitive and visual SD-based tools. More studies are needed to understand the intra-organizational stakeholders implementing services to analyze the orchestration of touchpoints from a design perspective. This



study had some limitations, such as the interviewee sample size. Even so, it can contribute to providers and research on the use of SD and studies on users' experiences with telemedicine services.

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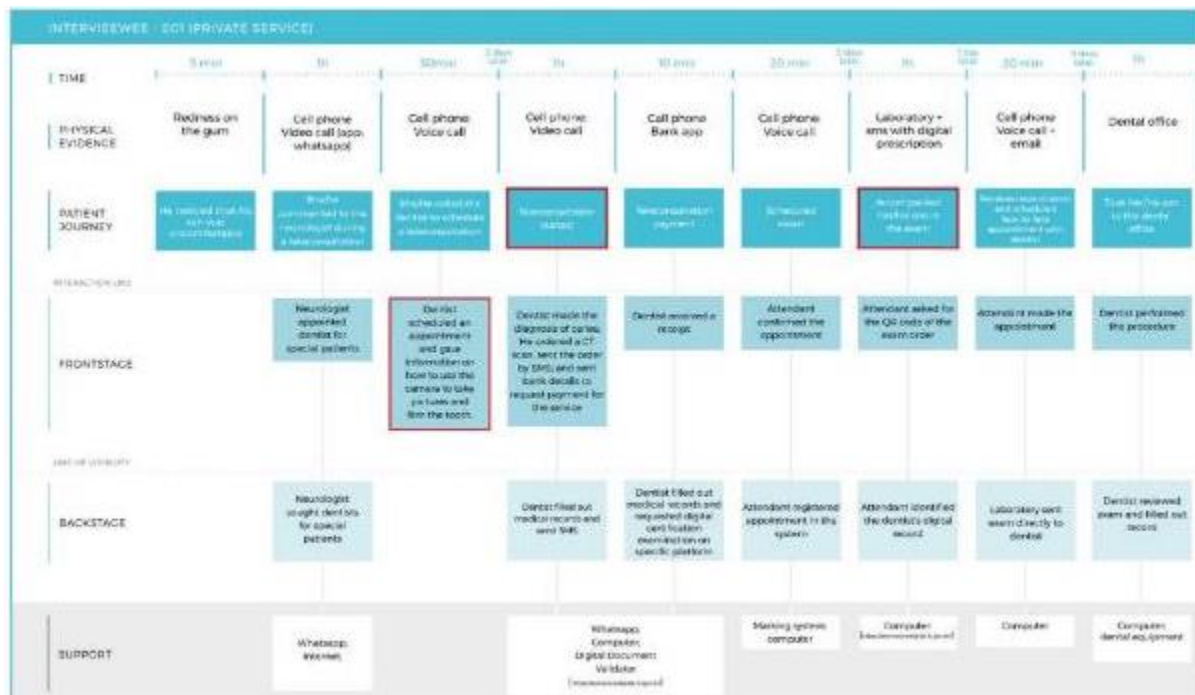
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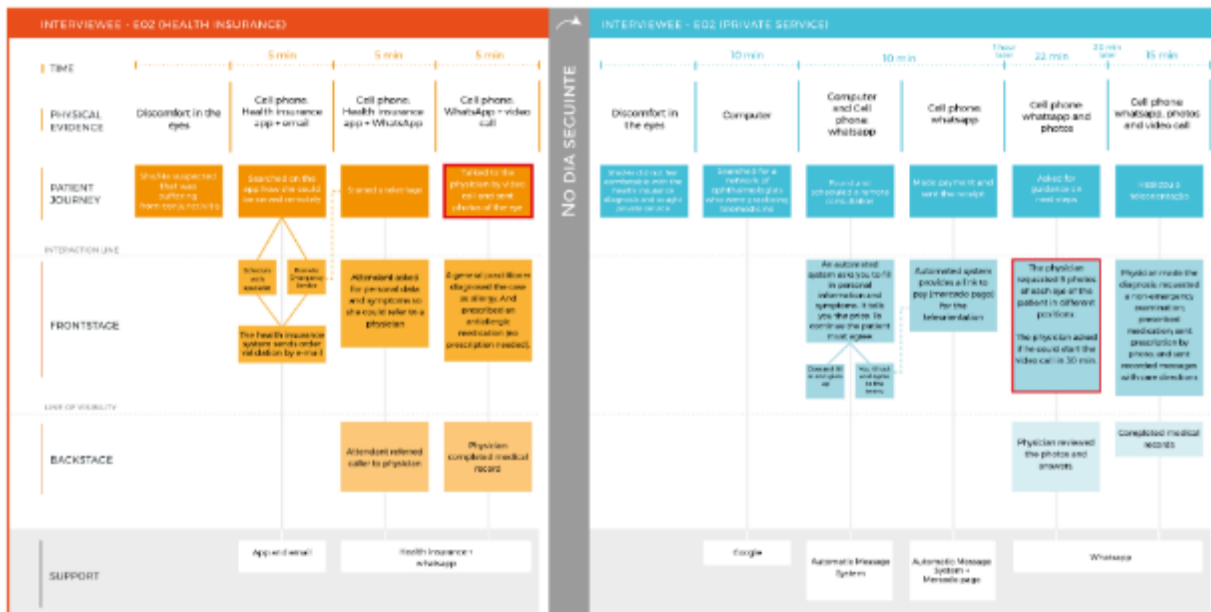
Appendix 1

These blueprints represent services experienced by the interviewees. The rectangles highlighted with the red border indicate the complaint moments indicated in Table 2 of this paper.

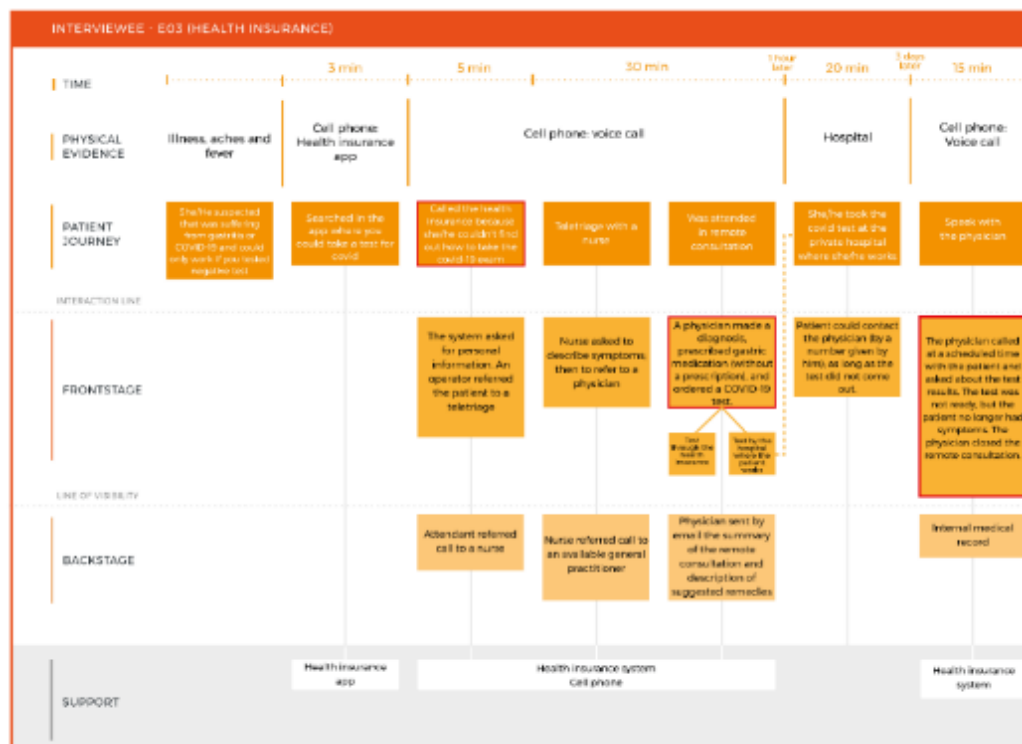
Interviewee – E01



Interviewee – E02



Interviewee – E03



Interviewee – E04

