



SAVONIA

PROJECT REPORT - MASTER'S DEGREE PROGRAMME
SOCIAL SERVICES, HEALTH AND SPORTS

Digital transformation of mental health care: Case study of virtual mental health clinic

"You can't use up creativity. The more you use, the more you have."

Field of Study			
Social Services, Health and Sports			
Degree Programme			
Master's Degree Programme in Digital Health			
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Title of Project Report			
Digital transformation of mental health care: Case study of virtual mental health clinic			
Date	20.05.2022.	Pages/Appendices	44/15
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<p>The WHO for the Europe region have been struggling with the surge in mental health illness occurrences among children and adolescents in the past decade. Statistics confirm that globally depression and anxiety disorders are among the top five causes of the overall disease burden and that suicide is the leading cause of death among adolescents, with disadvantaged youth being particularly affected. Some European regions have begun trialing initiatives that could offer widespread services for anyone in need of specialized mental health care, via digital tools. Given that the forecasted cost of mental health services by 2030 is \$6 trillion, implementation of a technology-based solution is one way of combatting the rising cost and need for widespread, accessible mental health services. The aim with this research was to investigate the potential of using telehealth as a supportive treatment tool in health care, with a focus on mental health. To identify the benefits of virtual clinics in general, to find which mental health care treatment procedures can be transferred online, identify the top needs set by patient, parent/caregiver, and healthcare provider (HCP) and determine feasibility and usability of such a (digital) service. To validate the value of digital health services in the mental healthcare sector, in the form of virtual mental health clinics, semi structured interviews were conducted with patients, caregivers, and healthcare providers throughout week 43 in October 2021 at the Neuropsychiatric hospital Dr. Ivan Barbot Popovača in Croatia.</p> <p>The results confirmed there is a need and a willingness to support the use of digital tools (e.g., telehealth and supportive tools as trackers or reminders, educational components etc.) among respondents; especially when they live remotely or within a lower socioeconomic group.</p> <p>The recommendation is to investigate the type of experience and user interface individuals in need of digital health services would benefit from and how to make it as accessible, user friendly, reliable, and secure, with a focus on incorporating the requirements of those using a virtual mental health clinic tool in their daily routine.</p>			
Keywords: digital transformation in healthcare, mental health, children, adolescents, virtual mental health clinic, disease management solution.			

PREFACE

This research study resulted from the personal and professional experience in mental health. Years of curiosity and reading, professional involvement, and unfortunate personal life circumstances led to idea to research something that can help not only children and caregivers of patients affected with mental health illnesses, but also my colleague's nurses, therapists, and other relevant healthcare professionals.

I would like to express my greatest gratitude to my mentor Marja-Liisa Rissanen from Savonia UAS. Your experience and professionalism made this research achieve best possible results. Thank you for all the time, understanding, comments, suggestions, patience, and support throughout this journey. Also, special thanks to the Prim. Dr. sc. Igor Štimac and his team at Neuropsychiatric hospital Popovača, for their time, support and professional input that helped me out with this research.

Additionally, I would like to thank my grandmother that this work is dedicated to, my mother and sister that supported me through all my life. Our hard times in 2020/2021 pushed me to do this in the best possible way and to achieve what I always aspired to.

Thanks to Keagan and Melena, my two amazing friends that supported me all the time while writing this report during the lockdown. Thanks for believing in me and understanding me when I needed it the most. Also, thanks to my friend Jovana who was always here, even when on another side of Europe. Special thank you goes to Mani, my partner who supported me tremendously in all the days when I felt I cannot move forward with this.

Lastly, thanks to everyone else who contributed to this work with their participation, reading the paper or just a kind word of support.

Copenhagen, 20.05.2022.

DECLARATION OF ACADEMIC INTEGRITY

I hereby confirm that this report is the result of my own independent work, and that all materials and work from others is acknowledged, and quotations and paraphrases are clearly indicated. No material other than listed in the references has been used.

I have read and understood the Savonia's regulations and procedures concerning plagiarism.

Copenhagen, 20.05.2022.

Helena Blažinčić

A handwritten signature in blue ink, consisting of a stylized, cursive script that appears to be the name 'Helena Blažinčić'.

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SUMMARY

This research study is covering the topic of digitalization of mental health care, in the context of virtual mental health clinic (VMHC) and interventions that can be transferred to the online environment. The overall research direction and assumption is that digital technologies represent great added value in the mental health care.

It has been noticed that since the second half of the 20th century, healthcare expenditure has been growing faster than the income. Econometric studies have shown that ageing population had a positive impact on that expenditure (European Commission, 2020), while at the same time digital transformation has been seen as an opportunity to accelerate healthcare performance by improving the quality of care and lowering cost within the industry in the future (Herrmann, et al., 2018). With rise of paperless healthcare and more digital approach (e.g., telehealth) on-demand virtual urgent care, virtual office visits, near-virtual office visits, virtual home health services and tech-enabled home medication administration has allowed patients to manage their health in a much better and efficient way (Bestsenyy, Gilbert, Harris, & Rost, 2021). This is important to take in count as European WHO region has been struggling with the surge in mental health illness occurrence among children and adolescents in the past decade. Statistics have confirmed that depression and anxiety disorders were among the top five causes of the overall disease burden and suicide as the leading cause of death among adolescents (10–19 years old), with young people who are disadvantaged being particularly affected. Some European regions started with initiatives that could offer widespread services for everyone to serve population in need for specialized mental care, via digital tools. Given that the cost of mental health services by 2030 is assumed to be \$6 trillion, implementation of technology within mental health care comes in hand (World Health Organization, 2020).

With this thesis I wanted to investigate:

- potential of using telehealth as supportive treatment tools in mental health care,
- the benefits of virtual mental health clinics,
- to find which mental health care treatment procedures could be transferred online,
- to find out the top needs set by patient, parent/caregiver, and healthcare provider, and
- determine feasibility and usability of such (digital) services.

The empirical part of the research has been executed in the premises of the partner organization Neuropsychiatric hospital "Dr. Ivan Barbot" Popovača in Croatia, throughout week 43 of October 2021. Research results have confirmed only part of the usual interventions in the mental health clinic should be transferred online. Most of them are related to education, medication and appointment reminders, peers consultations and small support groups.

The final recommendation is to investigate these interventions in more depth and understand what type of experience and user interface individuals in need would love to see to use virtual mental health clinic tool in their daily routine.

1. INTRODUCTION

It has been known for a while now that technology and digital transformation in healthcare has tremendous potential to improve quality and reduce costs in healthcare that are rising year on year (Agarwal, Gao, DesRoches, & Jha, 2010). Today, digital platforms leverage and orchestrate a platform-mediated ecosystem to create and co-create value with a much wider array of partners and actors within healthcare. Although they are still lagging other industries a bit (Hermes, Riasanow, Clemons, Böhm, & Krcmar, 2020). Internet, eHealth, and overall digitalization have opened new information access for patients and healthcare providers. Digitalization and digital transformation provide an opportunity for telemedicine, storage of electronic health records and online communication for both patients and healthcare providers with the internet access (Lagumdzija & King Swing, 2017).

With rise of paperless healthcare and digital transformation it has been allowed for the patients to manage their health in a much better and efficient way (Bestsenny, Gilbert, Harris, & Rost, 2021). This is very important for all patients, and especially mental health service receivers. European WHO region has lately been struggling with the surge in mental health illness occurrence among children and adolescents, and statistics have confirmed that depression and anxiety disorders are among the top five causes of the overall disease burden and suicide as the leading cause of death among them. Young people who are disadvantaged are particularly affected. Because of that, some European regions started with initiatives that could offer widespread services for everyone to serve population in need for specialized mental care, via innovative digital tools. Given that the cost of mental health services by 2030 is assumed to be \$6 trillion, digital transformation within mental health care is heavily needed (World Health Organization, 2020).

In this research I was dealing with the topics of digital transformation of healthcare, with focus on mental health and virtual mental health clinics that could offer accessible and affordable mental health care. The main question I wanted to answer is how we can provide cost efficient, easily accessible digital (virtual) solution for high-quality mental health treatment programs targeting children and adolescents with mental health challenges, their caregivers and healthcare providers (HCP's). The research was conducted within the partner organization, Neuropsychiatric hospital Dr. Ivan Barbot Popovača - the Polyclinic for child and adolescent psychiatry with a day-hospital and Lipik Community Service Center as part of the work of Polyclinic. I have collected the empirical data through the interviews conducted within both sites.

The main objectives of the research were to investigate potential of using telehealth as supportive treatment tools in health care, with focus on mental health, the benefits of virtual clinics in general, to find which mental health care treatment procedures can be transferred online, to find out the top needs set by patient, parent/caregiver, and healthcare provider (HCP) and to determine feasibility and usability of such (digital) service.

The main purpose of the research was to investigate potential and applicability of transferring majority of institutional procedures online in the form of virtual mental health clinic, and that can be easily

used within patient's safe environment – home. On the other hand, I wanted to understand would this solution be replicable among many markets and healthcare systems across EU and beyond.

This is important because, assumingly:

- Patients want to feel more in control of their decisions and health in critical age (youth and adolescence) while their parents and medical team can actively participate.
- This can elevate quality of care and deliver fast and affordable mental health services that consequently enables sustainability of mental health profession and digital health industry.
- These solutions can offer long terms symbiosis in between communities and mental health care profession with focus on early prevention and treatment to create healthy individuals and communities.

In the following chapters I will explain and justify the main concepts used in this research and respectively definition of digital transformation in general and digital transformation in healthcare with focus on mental health, telehealth in mental health and virtual mental health clinics

2. DEFINING THE DIGITAL TRANSFORMATION

The term digital transformation (DT) became a worldwide known buzzword in the past few years. The most important thing about DT is the understand that DT is not about the technology only, but to a much higher extent it is about the individuals and organizations using technology to produce some value. It is also important for different stakeholders to understand that value is being produced only when end users are introduced to the products and services that match their real needs. So, it is fair to assume user experience and usability are crucial for successful digital transformation. DT focuses on the holistic approach to change products, services, and culture, in any industry. It goes beyond the digitization and digitalization by including the whole organization/s and individual/s while it changes the bureaucratic and organizational culture and relationships. Short-term goal of DT aims the measurable increases in the number of new digital products and services, while long-term effect and outcome aims on increase of overall effectiveness and individual satisfaction (Mergel, Edelmann, & Haug, 2019). Gartner has defined digital transformation as anything that is happening within IT and digital world – from IT modernization through digital optimization to the creation of new digital business models. This term is nowadays widely used in public sector to refer to initiatives like for example, putting some of the services online, modernization of existing legacy etc. In their definition of digital transformation within public sector, it is still more about the digitization rather than digital business transformation (Gartner, 2021).

EU Commission defines digital transformation within the public as a new way of working with different stakeholders, creating new forms of relationships, and building new frameworks for service delivery (European Commission - Directorate General for Research and Innovation, 2013). For some time now, EU faces crisis in economic growth that is also putting all public services under pressure, including the healthcare sector. Issues, such as increase of healthcare and social security costs often put a burden on governments around EU. Infrastructure supporting public sectors often lag other (private) sectors and businesses, and above-mentioned issue become even more explicit. With this on mind, innovation

is critical for provisioning services within public sector, both in quality and quantity. Innovation in that context represents the process of new idea generation and implementation of thus to create certain value for communities through either new or improvement of existing products, processes, or services (European Commission - Directorate General for Research and Innovation, 2013).

3. DIGITAL TRANSFORMATION IN HEALTHCARE

Poushter has reported that by end of 2020 there would be around 6 billion smartphones in use globally, and the number will grow in the following years (Poushter, 2017). Of course, we must take in count that developed economies globally will faithfully follow this trend, while underdeveloped ones will still experience a big lag. People in countries with advanced economies are more likely to have smartphones and use them to search through the internet or social comparing to people in emerging economies. One research reported that median of 76% people across eighteen advanced global economies surveyed had smartphones, compared with a median of only 45% in emerging economies (Silver, 2019). Following Poushter report, a 2019 study from Pew Research Center stated that 61% of mobile phone users they have interviewed, declared that they used their phones over the past year to search for information about health and medication for themselves or their family members (Silver & Huang, 2019).

These statistics are important because development of any new digital health product must take in count the end users and health systems, they need to be integrated within. So, for example we can expect to successfully integrate modern and sophisticated solutions across Western Europe or North America, while we cannot do the same within African or South American countries as they tend to use more basic and simple technologies due to lack of infrastructure, financial resources, lower educational level etc. Another research from 2019 confirmed that simple, hybrid computer-human two-way interactive SMS text messaging tools could be extremely useful to all patients and their caregiver who are unable (because of for example lack of resources such as time, money for smartphones or extra data packages, and Wi-Fi) to interact face-to-face with their health care team (Marko-Holguin, et al., 2019).

Healthcare as an industry that provides professional services to people's physical and mental well-being, is today one of the main industries in which digital transformation has occurred or is rapidly happening (Marques & Ferreira, 2020). Digital transformation in healthcare creates new business opportunities and business models to address issues in medical practice, value creation and other problems related to, among others, the previously mentioned, ageing society (Kraus, Schiavone, Pluzhnikova, & Invernizzie, 2021). In 2020 Marques and Ferreira did a study on how healthcare became digitalized by time, with a comprehensive systematic review of 45 years of healthcare industry evolution. The following conclusions were made (Marques & Ferreira, 2020):

- Electronic health record (EHR) and integrated management are constant subjects of research and development with the final goal of improving the quality of data, fast data access and finally data processing. This can help healthcare professionals in obtaining their role more quality and punctual, and without the paper-based documentation.

- Mobile (portable) devices that apply to digital healthcare are being improved by time. The study indicates healthcare professionals tend to adopt them more and more often due to the ease and flexibility of using them. They also allow the wireless monitoring of patients which is convenient for busy work schedules.
- Telemedicine and e-health within different areas of healthcare offer flexibility in setting medical appointments and consultations. In this report I will mostly focus on this aspect.
- System integrations offer easy and accurate statistical data about diagnoses and deep analysis of signs and symptoms before and after the medical treatments.

Technology today is bringing the change to every segment of health industry, from fitness, wellness, healthcare, and medicine; it is changing the elementary aspects of how people keep track of their health. It is obvious that the application of digital technologies has the great potential of bringing better conditions for both patients and their disease management as well as for the humanity and their self-wellness check (Güler & Çiğdem, 2015).

Today's often limited access to clinical care that stands in contrast to the ubiquity of smartphones implicates the great potential of digital health solutions (Torous & Hsin, 2018). Global Market Insights report from 2018 mentioned that "*favorable government initiatives coupled with increasing use of smartphones, tablets, and other mobile platforms will drive digital health market*". Supportive government activities related to digital health and growing number of venture capital investments are fueling the growth within the industry (Globe Newswire, 2018).

In 2019 global digital health market size was estimated over USD 106 billion, and the industry will probably grow at 28.5% CAGR through 2026 (almost double than projected for 2024). Increase in number of COVID-19 cases across the globe has also surged the adoption of digital health technology and will boost the digital health industry growth (Global Market Insights, 2020). The following figure represents the current state of and segmentation within the digital health market.

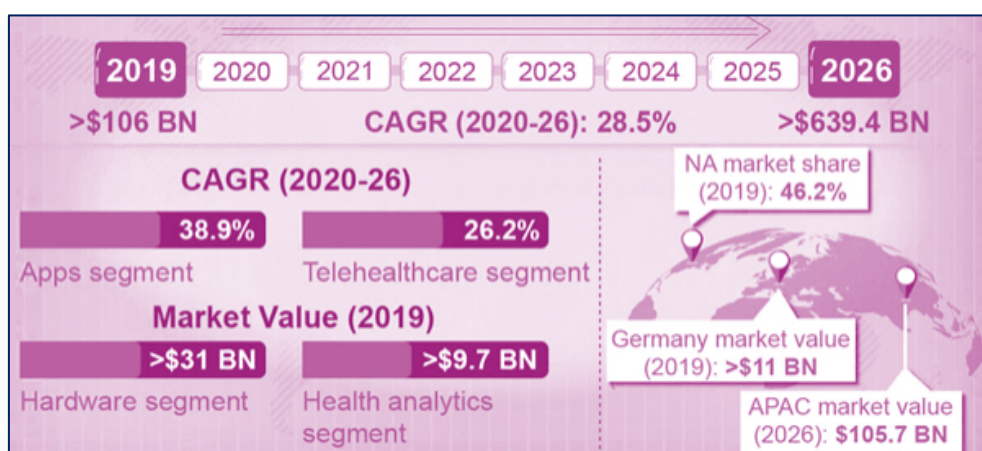


Figure 1: Industry trends and growth within digital health market 2019-2026
(Global Market Insights, 2020)

The European digital health market in 2019 was valued at nearly USD 37 billion in 2019, with Germany alone being valued over USD 11 billion (Global Market Insights, 2020). It is predicted that the European market will grow at CAGR of 27.1% from 2020 to 2026. In the European region digital health

market is gaining its momentum, with mobile application being widely used for improving health and lifestyle. Several mobile health apps for both patients and healthcare providers (HCP's) are being constantly improved and developed. High penetration of technically advanced solutions with the existence of government support will drive the growth of digital health market in the future (Market Data Forecast, 2020).

One study from 2020 indicated that new roles appeared within healthcare now that digital transformation has emerged, and most important ones are information platforms and data collection technology and services for remote and on-demand healthcare (Hermes, Riasanow, Clemons, Böhm, & Krcmar, 2020). Paperwork to paperless shift will cause an increase in demand for digital health systems such as EHR. Telemedicine market was demonstrated as a preferred within home care setting and eventually will boost the e-prescription market too. Software segment currently holds nearly 34% of the market share, with the tendency to grow more until 2026, mainly boosted by EHR's, fitness and medical apps (Global Market Insights, 2020).

Seems also that the European physicians are very supportive of digital health technologies usage. The Digital Doctor Report 2015 conducted by the Ipsos Healthcare in the UK, found out that 72% of doctors surveyed in Germany, France and UK have used or recommended an app, online forum, or wearable technology in that year, and that 4 out of 5 doctors see digital health tools as more than just a trend (Wicklund, 2015).

A key driver for digital health market growth in the future will be growing number of smartphone users followed by the increased awareness about importance of healthy lifestyle and fitness as well as the rapid growth of healthcare IT infrastructure in developed and developing countries. Increase of chronic illnesses and communicable diseases as COVID-19 will drive the digitization of services as well. Of course, some concerns regarding misuse of patient data and high capital expenditure and maintenance costs might delay the market expansion during the short run (Global Market Insights, 2020).

4. DIGITAL TRANSFORMATION WITHIN THE MENTAL HEALTH CARE DOMAIN

4.1. Status of mental health globally

Mental health problems are a large and increasing burden for the healthcare systems worldwide. As such, their prevention, treatment, and mental health promotion are important parts of public health. In the 90's globally approximately 450 million persons suffered from mental health disorders, and 1/4 of the world's population had a risk to develop a mental or behavioral disorder at some point during their lives (Murray & Lopez, 1996).

The following graphic is demonstrating the widespread of mental health disorders globally.

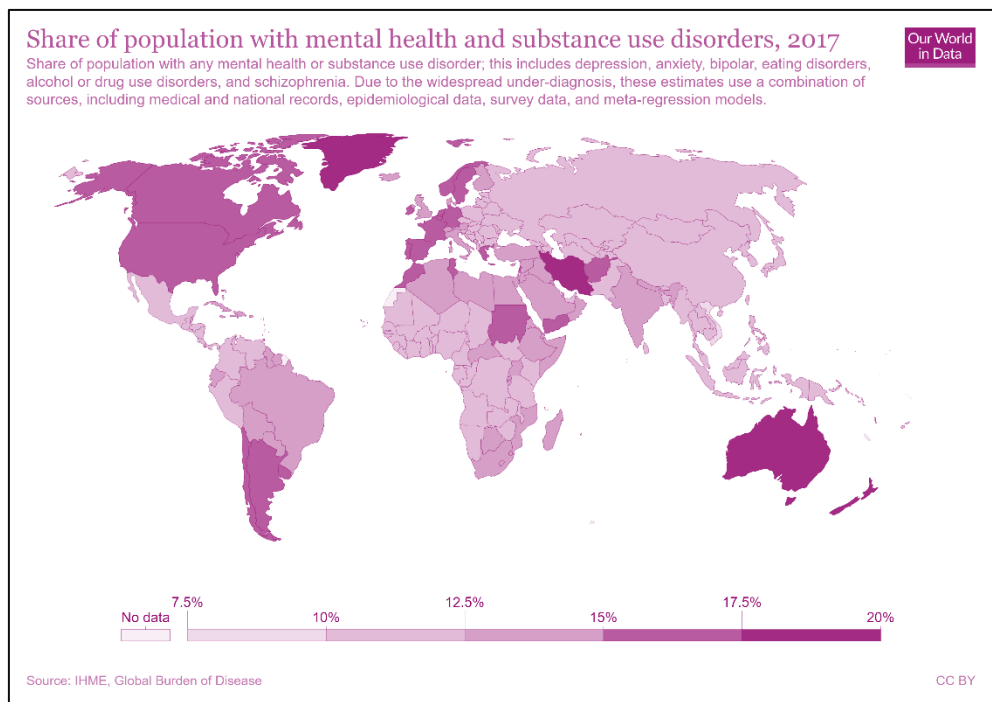


Figure 2: Share of population with any mental health or substance use disorder, 1990-2017.
(Ritchie & Roser, 2018)

It has been estimated that about 970 million people globally had a mental health disorder or substance use disorder back in 2017. The largest number of people had an anxiety disorder, estimated to at around 4% of the world population. In the map we can see that around 15% have one or more mental or substance use disorders globally. Also, on average anxiety, depression, eating disorder and bipolar disorder is more prevalent in women. Mental health disorders and substance use disorders accounted for around 5% of disease burden globally in 2017. In several countries, it even reaches up to 10%. The disease burden in this context stands for not only the mortality associated with the disorder but also years lived with the disability or health burden (Ritchie & Roser, 2018). Today, 10-20% of children and adolescents globally experience mental disorders. ½ of all mental illnesses begin at age of 14 and ¾ by mid-20's. If untreated, these conditions seriously influence children's development and consequently their potential to live accomplished and productive lives (World Health Organization, 2021). Some other key facts about mental health, and specifically among children and adolescents worldwide, are as follow (World Health Organization, 2020):

- 16% of the global burden of disease and injury in children and adolescents aged 10-19 are caused by mental health conditions.
- ½ of all mental health disorders start by age of 14, but most are undetected and untreated.
- Globally, depression is one of the leading causes of illness and disability among adolescents.
- Suicide is the 3rd leading cause of death at age group 15-19.
- If not addressed, adolescent mental health conditions can easily extend to adulthood, compromising both mental and physical health and limiting opportunities for having fulfilling lives as adults.

In the WHO European region, same as on global level, there is high and increasing rate of mental and behavioral health issues in adolescents at population level (WHO Regional Office Europe, 2018):

- 29% of girls and 13% of boys across European countries reported they felt low more than once a week by the age of 15.
- 9% of girls and 16% of boys reported they were regular weekly drinkers by the age of 15 (which is one out of ten adolescents across Europe).
- ½ of all mental health issues in adulthood have their onset during or before adolescence.
- Anxiety disorders and depression are on the top of causes of the overall disease burden among youth and adolescents in Europe (measured in terms of disability-adjusted life years).
- Suicide is the leading cause of death among youth and adolescents in the low and middle-income countries, and the 2nd leading cause in high-income countries across the EU Region.
- There were over 4000 deaths caused by suicide among 10–19-year-olds in 2015 across Europe, primarily among boys.
- Young people who are disadvantaged are particularly affected (minorities, children without proper parental care, etc.).

Mental health illnesses are common nowadays, and they typically have an early onset. Effective mental health treatments in childhood and adolescence are available, yet only a smaller portion of children who are affected access them. This is concerning fact, considering the extensive and long-term negative consequences of such problems (O'Brien, Harvey, Howse, Reardon, & Creswell, 2016). One of them is also the cost. The cost of mental health illnesses plus their related consequences is projected to rise to \$6 trillion globally by year of 2030. That cost was around \$2.5 trillion back in 2010. That would make the cost of compromised mental health greater than that of cancer, diabetes, and respiratory diseases combined (World Economic Forum, 2019). In Europe itself, the expenditure reached more than 600 billion EUR (or more than 4% of GDP) across EU countries (Organisation for Economic Co-operation and Development, 2021).

4.2. Potential of digitalization within mental health care domain

When talking about the mental health care nowadays, digital technologies are rapidly evolving in this area, especially within psychiatric rehabilitation (Poushter, 2017). But, even with the rapid penetration of the digital technology within the mental health care, lack of educated professionals seems to be a major problem. Meaning, the opportunity to utilize technology to cover the growing needs to support the mental health of population is tremendous (Olfson, 2016). Concretely, the behavioral/mental health software market size will grow at a CAGR of 14.8% from \$1.15 billion in 2017 to \$2.31 billion by 2022. This growth will be mainly driven by the increasing of availability to governmental fundings followed by the governmental initiatives to encourage EHR adoption in mental health organizations and favorable mental health reforms. This will allow faster adoption of behavioral health software's, and support high demand for mental health services amidst provider shortages (Olfson, Druss, & Marcus, 2015). USA and Canada (North America) are expected to account for the largest share of the mental health software market immediately followed by Europe. The high growth in this regional segment is attributed to growing incidence of mental disorders, government initiatives for increasing

awareness about mental disorders, and the improving accessibility of behavioral healthcare. For example, the percentage of youths receiving any outpatient mental health service increased from 9.2% in 1996–1998 to 13.3% in 2010–2012 (4pp) (Olfson, Druss, & Marcus, 2015).

When talking about Europe, there are noticeable differences with regards to the use of e-mental health products across some EU regions. I took northwestern Europe (NWE) as example. It is assumed there should be increase in usage of e-mental health solutions for about 7 pp (to 15%) after implementing the set of first-of-its-kind projects called e-MEN from 2016. e-MEN is the EU-wide platform for e-mental health innovation and implementation formed by private and public partners in NWE, and respectively the Netherlands, Belgium, France, Germany, and Ireland (Mental Health Foundation, 2016.). Five years after the project ends (Interreg North-West Europe, 2019):

- The average use of e-mental health solutions across the partner countries should increase to at least 25% (with more than 10% in France and 40% in the Netherlands).
- Unmet needs will be on average reduced up to 2 pp.
- The average e-mental health solutions use will increase to about 60%, with an average reduction of unsatisfied needs up to 4 pp, 10 years after the project ends.
- During the project period, a growth of 5-10 pp of e-health SME's is expected and mental health costs savings of up to 10 pp in NWE.

The areas covered and interventions executed and included in this unique project are, respectively (Interreg North-West Europe, 2019):

- Depression and suicide prevention interventions for general population.
- Online therapy for primary care, depression, and anxiety.
- Online treatment for people with depression.
- Cognitive behavioral therapy game for children with depression.
- Self-test for PTSD patients after experiencing a distressing event.
- Screener on possible PTSD symptoms.
- Game therapy for PTSD patients.

The initial e-MEN project activities have been implemented across urban settings by the end of 2020, within partner countries. Though, they have reached a limited number of healthcare providers outside the urban areas. Main activities were mainly, and successfully, focused on product innovation. For this project to be successful it is necessary to initiate the project activities into rural communities with less access to services. The following criteria should be satisfied to fulfill its purpose and goals (Interreg North-West Europe, 2020):

- Accessibility, because rural residents often need to commute long distances to receive mental health services and are also less likely to recognize a mental problem or illness.
- Availability, given that there are significant shortages of mental health professionals.
- Acceptability due to the stigma around needing or receiving mental health care and support.

Good or at least improved access to mental health care services could improve outcomes for communities in the rural areas and with that reduce the territorial differences. In addition, capitalization that is specifically focused on the complexities of e-mental health integration into existing mental health services can reduce them as well. This process requires knowledge and understanding of existing workflows, skills, 'blended care' protocols with combining face-to-face and online sessions, reimbursement systems, good quality and validation guidelines, standardization, etc. E-mental health is, by the definition of e-MEN project, effective social innovation tool which can reach large and excluded groups with mental health challenges (Interreg North-West Europe, 2020). This can surely be also applied to other less developed and rural areas within EU and beyond, so similar interventions and activities were researched and evaluated through this research paper.

Technology in mental health care should be focused on automatization of functions that allow patients input some data or contact HCP by using different types of technologies, preferably the ones that reflect their lifestyle, budget, and skillset. For example, people that can afford only intermittent services on their smartphones maybe prefer to receive e-mails versus SMS messages (Alcaraz, Riehm, Vereen, Bontemps-Jones, & Westmaas, 2018). It is also very important to take into consideration that different people (different age, disabilities, certain types of impairments) could prefer using technology other than just smartphone (Watanabe, Yamaguchi, & Minatani, 2015). Health technologies used in mental health should also not exclude people with physical disabilities too given that many physical disorders and disabilities have been identified as more prevalent among individuals with depression and severe mental disorders (Wolbring & Lashewicz, 2014).

Given that we are in the era of personalization, modern medicine should be able to recognize that different patients prefer and use different technologies in their daily life. For example, a medication reminder system could consist of sending simple SMS messages to feature phone or smartphone, or sending e-mails to personal laptops, might be a standard telephone call or be connected to voice assistant. Analysis of patient data and daily habits should enable many types of technologies that support condition management rather than just focusing on unregulated, sensor-based measurements. Digital solutions should assist patient in a way that a small amount of data can be entered by patient itself, at a frequency such as daily or weekly and manage its health in that way. Another benefit of recommending digital tools to people with mental illnesses is that they increase their digital skills. There is still an existing issue of "mobile underclass" in between emerged and economies in development which brings us back to the ubiquitous of more simple technologies as SMS or a simple phone call. Integral part of the mental health programs should also be training on safe usage of (any) technology (Bauer, et al., 2020).

As the interest in and use of remote health services during the COVID-19 pandemic increased, the potential of those services in increasing access and quality of care is becoming clear. Although the world must focus on decrease of spread of the coronavirus, we can notice that now is the time to accelerate digital health. Increased investments in digital health we see today will enable access to high-quality mental health care (Torous, Rauseo-Ricupero, & Firth, 2020.).

4.3. Telehealth in mental health care

In year of 2021, increase in consumer and provider readiness to use telehealth and regulatory changes allowing greater access and reimbursement, offered a well-deserved attention for telehealth. During the COVID-19 pandemic, telehealth offered a bridge to care, and now offers an opportunity to reinvent virtual and hybrid virtual/in-person care models, with a goal of improved healthcare access, outcomes, and affordability (Bestsenny, Gilbert, Harris, & Rost, 2021). Since the initial spike in using telehealth in April 2020 (due to COVID-19), the adoption of it overall has approached up to 17% of all outpatient/office visits. This trend has been relatively stable since June 2020. It has also been noticed that different specialties adopted telehealth in different amount, with the highest penetration in psychiatry (50%) and substance use treatment (30%) (Bestsenny, Gilbert, Harris, & Rost, 2021). The uptake is shown in the following two graphics.

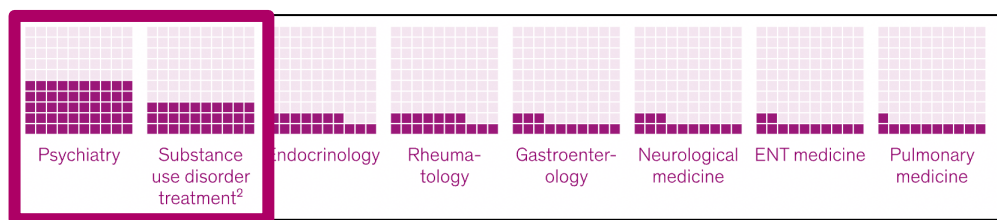


Figure 3: Share of telehealth of outpatient and office visits claims by specialty in % in February 2021 (Bestsenny, Gilbert, Harris, & Rost, 2021)

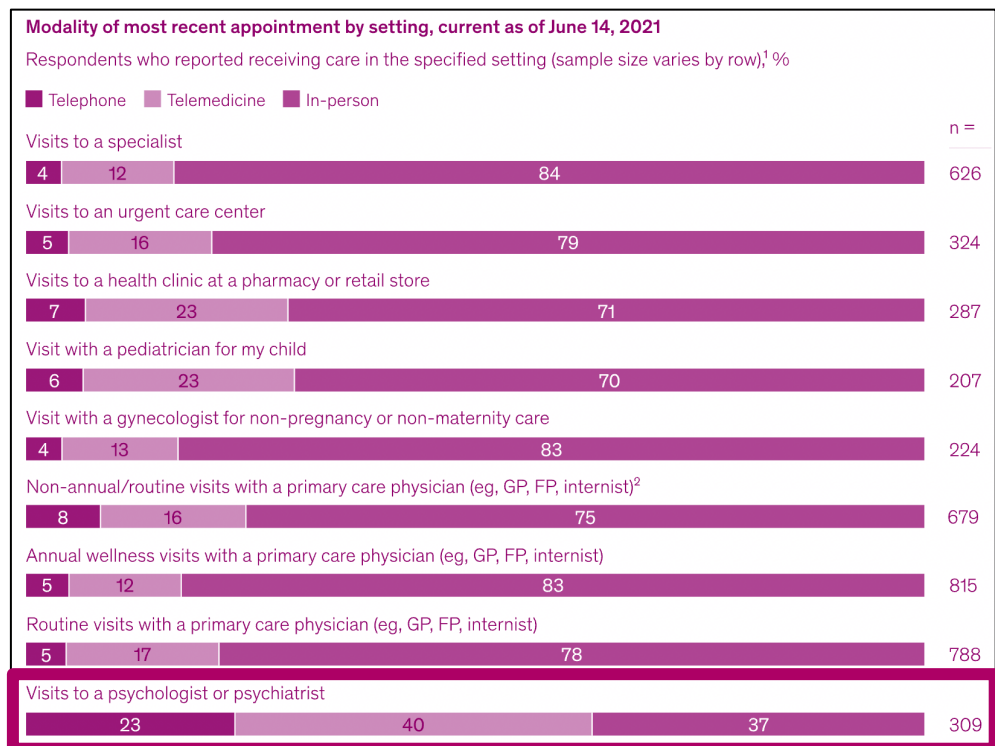


Figure 4: Use of telemedicine by care setting, as of June 2021 (Bestsenny, Gilbert, Harris, & Rost, 2021)

On the following list we can see five identified potentials of using telehealth within the (mental) health care. They include (Bestsenny, Gilbert, Harris, & Rost, 2021):

- As an alternative to lower acuity emergency room (ER) visits, urgent care visits or after-hours consultations, on-demand virtual urgent care can be used.
- For visits that do not require physical exams or diagnostics, such as primary care, behavioral health, and some specialty care, virtual office visits can be used.
- Combination of virtual access to the provider consultations with near home sites for needed service (such as worksite or retail clinics) through the near-virtual office visits extend the possibility for patients to access care outside their provider's office.
- Health evaluation, patient, and caregiver education as well as occupational therapy can utilize virtual home health services (such as remote monitoring and digital patient engagement tools).
- Tech-enabled home medication administration solutions allow patients to receive drugs in home setting rather than in clinic (such as injectable and infusible drugs). This shift can happen by utilizing remote monitoring tools, self-service tools for disease education, and telehealth oversight tools for staff.

With the ability of connecting patients and providers remotely, virtual health care has penetrated different areas of healthcare, from healthcare education to virtual visits and consultations. As technology advances, virtual care becomes more accessible and utilized by everyone. In parallel to it, the acceptance of virtual care and the supportive technology also increases. The technology supporting virtual care, such as video conferencing tools and educational programs, are also maturing to enhance patient and provider experience in using those tools (Li, Borycki, & Kushniruk, 2021).

4.4. Virtual mental health clinics (VMHC)

Health self-management is an essential part of everyone's daily life. Until recently, we have been living in provider-centric model where patients came in to visit the provider for the service (e.g., hospitals, mental health educational facilities, walk in clinics etc.). With technological advances in healthcare, there is an opportunity to enhance this existing patient-provider relationships by creating support for new, preferred patient-centric care model. This model of care occurs when HCP'S and healthcare organizations are providing better access to care from a patient's perspective which includes, among others, direct services such as telehealth visits in virtual clinics. Basically, the service is now focused on patient and not the provider organization anymore. Virtual care provides the opportunity for the patient-centric model to become a reality, as virtual care can increase the level of convenience for patients to access care from their providers (Li, Borycki, & Kushniruk, 2021).

Virtual health care extends beyond the perimeter of healthcare organizations to provide remote care. Even though virtual care cannot be used as a solution for all health-related inquiries, it provides another care delivery channel for specific patient groups (e.g., appointments that do not require diagnostics or in-person physical examinations). One review suggests that virtual care includes the provision of care using advanced video conferencing technology to support distance care that takes place between patients and providers. Some examples of virtual care use in healthcare include virtual therapy, consultations and follow-up visits, anxiety management, outpatient clinics, and some emergency services. While both patients and providers see benefits of virtual care and scored the services

as highly satisfactory after using them, the significant barrier to using virtual care services are technological challenges (Li, Borycki, & Kushniruk, 2021).

During the COVID-19 pandemic youth mental health and substance use services have rapidly gone online so it was essential to hear their perspectives on that matter. Accessible, technologically stable, and diverse virtual services are required to meet the needs of different youth, possibly with in-person options for some of them (Hawke, Sheikhan, MacCon, & Henderson, 2021). Because of that, today is important to understand youth attitudes toward and experience of virtual services.

4.5. Virtual mental health clinics and their benefits

There is evidence of great interest in non-face-to-face (F2F), internet or app-based outpatient interaction (Parish, Ratnaraj, & Ahmed, 2019). There is also evidence that virtual consultations can be fast and easily implemented in the case of need (e.g., COVID-19) and that they are largely acceptable (Gilbert, et al., 2020).

In theory and on paper digital health services like sophisticated phone apps appear to be the ideal solution for the current mental health crisis. Anxiety and depression are now the leading cause of disability worldwide, and mental health problems impact ¼ people worldwide. Yet, current, and projected future access to care and treatment remain inadequate (Torous & Hsin, 2018).

The COVID-19 pandemic has largely increased the need for psychological care and support in the global population and has also created new barriers to accessing those services. Mental health facilities, hospitals and other clinics faced the challenge of providing uninterrupted care to a population that was under severe stress, while minimizing in-person visits that risk spreading the new virus. For example, the Veterans Health Administration (VHA) which is the largest integrated health care system in the USA, ensured the continuous flow of mental health services after the COVID-19 outbreak by rapidly expanding its use of tele-mental health methods in the first weeks after the US pandemic outbreak. They provided nearly 1.2 million video and telephone consultations to their patients during April 2020. As a result, they reduced in-person visits by approximately 80%, compared to period from October 2019 to February 2020, before the pandemic started. By June 2020, they had an elevenfold increase in consultations using direct-to-home video and a fivefold increase in telephone contacts comparing to before the pandemic (Rosen, et al., 2021).

Attendanywhere[®] is another good example of a platform used to connect clinicians and patients using video in Ireland. It only required both patient and healthcare provider to access a smart phone or computer with a webcam and have a good internet connection. Clinicians at pediatrics department, at Midlands Regional Hospital in Westmeath used this platform during the COVID-19 outbreak (Elhassan, Sharif, & Yousif, 2021).

In the following table I have identified requirements, opportunities, and limitations of virtual clinics.

Table 1: Showing requirements, opportunities, and limitations of some virtual clinic platforms
(Taken from: Elhassan, Sharif, & Yousif, 2021)

PLATFORM	TECHNOLOGY REQUIREMENTS	OPPORTUNITIES	LIMITATIONS
PATIENT-INITIATED TEXTING	- High-tech infrastructure	- Handling clear issues	- Needs staffing - Potential lack of context - No physical exam
PHONE CALLS	- Minimum	- Universally accessible - Cost-effective - Easy & quick	- No physical exam
VIDEOCONFERENCING	- Moderate - Requires Wi-Fi connection, a smart device with good camera and a microphone	- Allows visual inspection - Allows for non-verbal cues	- Could be time consuming - Cost
TELEHEALTH SOFTWARE	- Complex	- Confidential - Allows visual inspection	- Time and high tech required - Cost
VIDEO-VISIT (E.G. FOR PATIENTS DURING COVID)	- Complex - Requires Wi-Fi connection, a smart device with good camera and a microphone	- Allows visual and verbal consultation	- May need digital peripherals

The following benefits are being currently perceived in industry when it comes to the VMHC's for children (Rasmussen, 2022; MacMillan, 2021; Yellowlees, et. al., 2020):

- many children find online visits easy (from 8–9-year old's, to teenager and adolescents),
- convenience in meeting at any time or place that is suitable for the patient,
- ability to choose in person or sessions – it is completely up to the patient,
- easier access to specialists and mental health care,
- opportunity for therapist to get the “peek inside the home” of a child and its environment,
- physicians benefit from flexible work arrangements (savings in time mainly),
- convenience in scheduling, billing, and prescribing,
- telehealth has a great equalizing effect, by giving access to the service to almost everyone,
- well-designed virtual care can improve patient experience in therapy,
- telehealth excellence can also offer competitive edge, when talking about industry benefits,
- telehealth has an ability to cut the time and financial costs.

When it comes to using VMHC's among youth and adolescents, some of the perceived concerns about web-based mental health services included issues around privacy and confidentiality, difficulty communicating on the Internet, and the quality of web-based resources provided to the patients. On the other hand, potential benefits that were perceived included anonymity, avoidance of stigma, and accessibility to the service. Participants in one study also reported mixed views with regards to the

ability of patients with similar mental health problems to interact on the Internet (Chan, Farrer, Gulliver, Bennett, & Griffiths, 2016).

VMHC is an emerging area with available evidence of being beneficial in working with children and adolescents. Given that the concept of it is relatively new, there are many considerations that must be taken in count, including accessibility issues or unsafe living environments that challenges its delivery. Establishing the internet infrastructure in underserved communities will be critical for ensuring access to VMHC. Interestingly, even though tele-mental health has been actively practiced by some clinicians for over 30 years now, the COVID-19 pandemic seems to have propelled the use of technology by a much wider group of providers to deliver mental health care. A well thought out approach to VMHC can also provide opportunities for identification of inequities in access to care that may be related to access to technology, geography, or other barriers (Doan, et al., 2021).

5. PURPOSE AND OBJECTIVE OF THE STUDY

The main purpose of this research was to find out how can we provide cost efficient, easy access digital (virtual) solution for high-quality mental health prevention and treatment programs targeting children and adolescents with mental health challenges, their caregivers and healthcare providers. I wanted to investigate potential of making majority of institutional procedures transferred online within patient's safe environment – home, and applicable among many other markets and healthcare systems, in the format of virtual mental health clinic. This is important because, assumingly:

- Patients want to feel more in control of their decisions and health in critical age (youth and adolescence) while their parents and medical team can actively participate.
- This can elevate quality of care and deliver fast and affordable mental health services that consequently enables sustainability of mental health profession and digital health industry.
- These solutions can offer long terms symbiosis in between communities and mental health care profession with focus on early prevention and treatment to create healthy and happy individuals and communities.

Main objectives of this thesis research were to investigate:

- potential of using telehealth as supportive treatment tools in mental health care,
- the benefits of virtual mental health clinics,
- to find which mental health care treatment procedures could be transferred online,
- to find out the top needs set by patient, parent/caregiver, and healthcare provider (HCP), and
- determine feasibility and usability of such (digital) services.

6. RESEARCH IMPLEMENTATION

6.1. Research methodology

In this study I have used two methods: synthesis and semi structured interview. First, synthesis attempts to integrate results from several different but inter-related qualitative studies and this method has an interpretive intent (Walsh & Downe, 2005). Semi-structured interviews are in-depth interviews

where the respondents must answer preset open-ended questions, and these are widely used by different healthcare professionals in their research (Jamshed, 2014). Research methodology for this study consists of:

- gathering existing knowledge through books, articles, and reports on the topic of digitalization of mental health care:
 - this type of data is primarily theoretical background found in scientific articles proving efficiency of telehealth in mental health setting. I have used sources available through different search engines (Savonia library, Google Scholar, Elsevier, PubMed etc.).
- collecting new empirical data from the service users:
 - this type of data has been collected through interview I have prepared for patients, their caregiver and healthcare providers within the partner organization described in sub section 6.2.

6.2. Research environment

The partner organization for this research was Polyclinic for child and adolescent psychiatry with a day hospital that is part of Neuropsychiatric hospital dr. Ivan Barbot Popovača in Croatia. The Polyclinic is intended for the treatment of children, adolescents and young adults suffering from mental disorders that most often occur in these populations, as well as for the assessment and treatment of specific problems of children and adolescents. Their work is age-appropriate and uses psychotherapeutic techniques tailored to the specific needs of different developmental stages of growing up. They offer (Neuropsihijatrijska bolnica dr. Ivan Barbot Popovača, 2021):

- counseling,
- individual and family psychotherapy (integrative, i.e., systemic family therapy),
- play therapy, and
- psychiatric assessment and treatment in the narrower sense.

They also offer the possibility of partial team processing of complicated case studies. As part of the Polyclinic services, the Lipik Community Service Center which supports underprivileged and disadvantaged children and adolescents without appropriate parental care, is included (Neuropsihijatrijska bolnica dr. Ivan Barbot Popovača, 2021; Centar za pružanje usluga u zajednici Lipik, 2018).

6.3. Data collection

Data collection in its narrowest sense represents the generation of big amount of data with preferred data collection method (Sutton, 2015). For this thesis I have used semi-structured interviews as data collection method. The interview sessions were executed during time span of one week (week 43) in October 2021. Main participants in this research were children in between 7 and 18 y/o, their caregivers (parents where applicable, or other caregivers) and their HCP (psychiatrist, nurse, psychologist). Note that one part of respondents from all groups was interviewed in the Lipik Community Service Center - patients without proper parental care, and their caregivers/healthcare providers in

dual role. I have used three different questionnaires – one for patients, one for caregivers and one for HCP's. All respondents were interviewed separately and in private, up to 30 minutes maximum.

The answers were recorded digitally in Word document directly during the interview, and they were not audio recorded. Some respondents did not answer all the question due to young age, not understanding the question, tiredness, or lack of concentration. This did not influence the final group report. The purpose of the interviews was to find out the following:

- usual behaviors in home/school/work setting,
- daily habits in using technology,
- technological savviness,
- attitudes towards the mental health condition, and
- willingness to adopt new technologies in the disease management process.

Interviews were particularly useful for getting the stories behind every participant's experience with current mental health therapy they are receiving/giving. I have pursued in depth information around the topic to get as much information as possible. To avoid any bias in the data analysis I did the following:

- I had participants review the results on spot (e.g., they commented on assumed results and actual results and whether they represent their beliefs).
- Verification of more data sources (e.g., comparison of the data I have collected with the data available in academic articles on the same topic).

All consent forms that were handed over to the participants, as well as interview questions are part of the appendices of this document. Signed consent documentation is not part of the appendices due to data privacy regulations in Croatia.

6.4. Data processing and analysis

Qualitative data analysis is a procedure aimed at reducing vast amounts of information and making sense of them – often from multiple sources, in this case from individual interviews and observations – to deduce relevant themes and patterns that address the research questions (Barrech, Cartier, & Franzetti, 2021). Collected data in this research was analyzed, synthesized, and merged into the final report that served us as a baseline for suggestions. I have first validated the data to find out whether the data collection was done as per the pre-set standards. That included:

- Screening for making participants were chosen as per the set research criteria.
- Procedure for checking whether the data collection procedure was properly followed.
- Completeness, to ensure that all the questions were asked, rather than just required ones.
 - Note that some children were too young to understand/afraid of some of the questions that I have prepared, so I rather skipped those.

Analysis and preparation of data happened in parallel and included the following steps:

- Familiarization with the data where I started looking for basic observations and patterns.
- Reassessing research objectives and identification of questions that can be answered through the collected data.
- Development of framework for identification of broad ideas, concepts, behaviors, or phrases and assigns codes to them. For example, coding age, gender, type of response, diagnosis. Coding helped us in structuring and labeling the data.
- Identification of patterns and connections within the coded data. That means, looking into the most common responses, identifying patterns or data that can answer research question, and finding the areas that can be further explored.

7. EMPIRICAL STUDY RESULTS

In the first part of the empirical report, I have presented the basic respondents' data (gender, age, role) so I could understand their structure, while in the second part I have analyzed interviews that were made with 3 groups of respondents. The results were presented as a group report in the following chapters.

7.1. Respondents' structure

In total I have interviewed 10 patients, 5 (7) caregivers and 6 HCP's who were part of this research study. Note that half of the patients were children institutionalized in the institution for children without the proper parental care in Lipik. With that on mind, I have also categorized 2 healthcare providers from that institution as both caregivers and HCP's, as they are playing dual role for institutionalized children.

In terms of diagnosis, the most common ones were:

- Behavioral disorders
- Depressive and anxious disorders (due to domestic abuse)
- Suicidal thoughts or attempts

The following few graphics represent the patient's structure. In total I had 10 patients, in between age 7-18. 5 of them were children with proper parental care while the rest was temporarily institutionalized and without proper parental care (Table 2 and 3, Figure 5).

Table 2: Patient breakdown based on age and gender

n=10	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
FEMALE	1	x	2	1
MALE	x	4	1	1

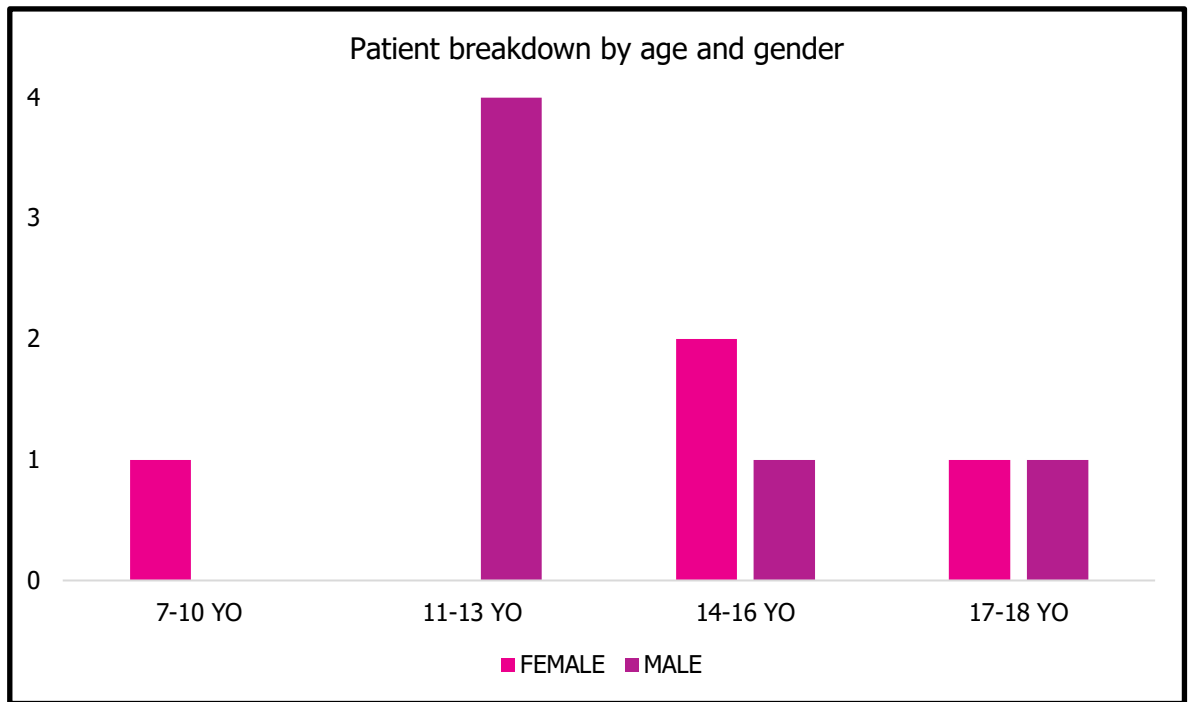


Figure 5: Patient breakdown based on age and gender

Table 3: Breakdown of patients based on care receiving status

n=10	NUMBER OF PATIENTS
WITH PARENTS	5
WITHOUT PARENTS (INSTITUTIONALIZED)	5

In terms of caregivers, I have interviewed 5 parents. In total there were 3 mothers and 2 fathers, with different educational and economic backgrounds. I have also interviewed 2 healthcare providers from Lipik Community Service Center in this category as they the role of caregiver as well as healthcare provider at the same time (Table 4).

Table 4: Caregiver breakdown, by caregiver status

n=7	NUMBER OF CAREGIVERS
PARENT CAREGIVER	5
INSTITUTIONAL CAREGIVER <i>(also counted as healthcare provider)</i>	2

I have interviewed in total 6 HCP's. 4 of them were part of medical team of the Polyclinic in the Neuropsychiatric hospital Dr. Ivan Barbot Popovača. Two of the HCP's were categorized as both caregiver and healthcare provider and they are part of Lipik Community Service Center. The Community Center is contractually receiving services from the Polyclinic for their children without proper parental care.

Table 5: HCP breakdown, by specialty

n=6	NUMBER OF HEALTH CARE PROVIDERS
PSYCHIATRIST	1
PSYCHOLOGIST	2
NURSE	3

7.2. Interview analysis – Patients

In this section I have analyzed 11 interview questions set to the patients and categorized them based on the age groups. It is important to take in count the following items:

- There are few questions where I did not receive answers from all respondents due to age, tiredness or fear and confusion (among institutionalized children mainly).
- I have merged the data from two groups of patients (children with proper parental care and institutionalized children) and presented them as a group report.
- Each question with respective answers is presented as a separate table.

Table 6: PATIENT: Question 1 analysis

n=10	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
Can you tell me more about yourself? What do you like to do in your free time? Do you like your school? What is your favorite subject and why?	At this age, children are very playful. Hence, playing with friends, video gaming, playing football, drawing, using make up or hairdressing kits at home are their main activities. The children did not show much of an interest in school activities, but rather in their free time alone and time spent with friends.	This group of patients is mostly interested in playing football, video games, watching TV, spending time on the phone, helping other people or family with chores etc. Video games that they like to play are mostly the ones where they control something in a way: FIFA, Fortnite, Warzone, farming simulator. Many patients mentioned they also like playing these games with their friends and are not very interested in school. Only few reported enjoying schools activities.	This group mainly likes to spend time with friends or their siblings. Also, spending time outside and walking around or taking dance classes seems to be more interesting for them. They did not report being on the phone that much as younger patients, but they are still very connected. Studying and doing their homework is reported more often than younger patients in the previous two groups.	This group is more focused on school obligations and studying and they are usually communicating virtually with their friends. They also reported playing video games, alone or with friends. This group is very sociable, like extracurricular activities, inviting friends to their place and hang around with them. Social life seems to be most important to this group and it determines them more than younger respondents.

I have started the interviews with patients by trying to understand their daily habits and asking simple questions about their routines. The difference in between age and daily habits is visible, in terms of school obligations, studying and extracurricular activities. The older the age group is, more interested they are in school and understand the importance of studying. The younger the group is, more connected virtually they are as well as very playful. Not many patients mentioned having any type of hobby. Only few reported having one, and these were in the age groups 14-16 and 17-18. I have taken in count that the research has been done year and a half post COVID-19, and that might have influenced the habits of using digital tools vs. other activities. I also noticed that female patients were more open about speaking about their habits and overall condition over male respondents.

Table 7: PATIENT: Question 2 analysis

n=10	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
Do you use mobile phone or computer? What are the most common activities you do on them? How do you feel when you are using them? Do you search for any health-related stuff on them?	This group uses phone and computer usage on daily basis. They are not using them for school that often, but mainly to google games they are interested in, to find cute animals and similar. They are still too young to understand it is possible to google things about their condition. Time spent on these devices was not determined – they feel it is less than 2 hours what I assumed.	This group is using both computer and phone daily, mostly for video games, particularly multi-player games. They are also using them for making videos or sometimes to google their health condition - but no one wanted to talk about that, and they all became nervous. Time spent on devices cannot be determined, but assumingly more than 2 hours as they reported.	This group spends 5-7 hours on phone or computer daily, mostly for video gaming, watching series, cartoons, googling trends in fashion - and more for school than in the previous two groups. Sometimes they google about the health conditions they have but not that much. They were not very open to talk about that part.	This group uses computer and phones daily, usually for their hobbies, or to follow trends in politics and economy. Also, they are using it for things they need, and not necessarily just social media. They are not googling that much about their health condition as it was a bit overwhelming in the past. Also being in the Polyclinic twice a week suffice to get all information needed. This group is more conscious about using phone or computer.

When I asked about the daily usage of computers or phones, the answers varied among individual respondents, but were very constant among age groups. The younger the group is the more time they spend on the phone for activities like games, videos, movies etc. they are not that engaged with searching about their health condition, opposite from what older patients did.

Table 8: PATIENT: Question 3 analysis

n=10	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
What are 3 favorite applications of yours? Are they the ones you use the most? Why is that so, why being they so cool comparing to other ones? Why are they appealing? Are your friends online too?	YouTube, TikTok, WhatsApp, Snap Chat. I received no additional comments on this topic because they just like funny videos and video calls and are not interested in additional functions or possibilities.	YouTube, Google, TikTok, Instagram, Snap Chat, Twitter, video calls. It seemed that watching videos and doing video calls is most important feature for this group too.	Netflix, TikTok, Instagram, Snap Chat, WhatsApp, Instagram. YouTube. Videos are most appealing feature for this group together with the video calls. They mentioned they would like to have peers to talk with about their condition – or use them for school.	TikTok, Instagram, YouTube, Google, WhatsApp. Depending on the day, they can spend 2hrs on these apps. when in school, and 3hrs. when they have nothing else to do. They prefer these apps because it allows them to stay connected with their friends and search for what they like.

Responses in this question were very similar across age groups and individual respondents, but the utility of features varied a bit in between younger vs. older respondents. While younger respondents prefer to watch short funny videos, make video calls with friends through the chosen solutions, older ones prefer to use them also for school or other interests they have. Video calls feature seems to have universal value for all respondents.

Table 9: PATIENT: Question 4 analysis

n=10	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
Can you tell me how do you feel about your condition? Does any of your friends know about it? Do you feel ashamed of it? Does it influence your life somehow? Does your school counselor know about it?	The patient's don't understand why they are receiving psychiatric treatment and it makes them anxious.	This group was very reluctant to speak about their condition. They did state they prefer to speak face to face with their medical team and they also stated the conversation usually helps them. Majority of respondent in this group are in institutionalized care, without proper parental care.	This group is aware why it is in treatment. Most of them is due to behavioral issues. Most respondents reported that their environment is aware of their condition, and no one is stigmatizing them. All respondents confirmed their condition does not influence their life in a negative way.	This group is fully aware of their condition. They see a lot of progress since they got into therapy. Their friends know about them being in treatment but not about what is triggering them. All of them are very open about it and talk openly, even with strangers. They do not feel ashamed of themselves most of the time, but sometimes there is this feeling of guilt and shame for not feeling better.

When it comes to understanding their own condition, feelings about it and similar, answers vary a lot among the individuals and age groups as well. Younger children either do not understand why they are in treatment, or they are afraid to speak about it and feel ashamed. Older patients speak about their condition openly, with friends but also strangers. Self-perception is also changing based on the worsening of the symptoms, as reported by few older respondents.

Table 10: PATIENT: Question 5 analysis

n=6	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
Can you please tell me how do you feel before you come into the Clinic? Do you feel these people here will help you, do you feel safe? Do you trust these people? Do you like coming over here?	The respondents were not interested in the conversation on this topic in general. The overall reported feeling was being bored, so not much information that I could get out of them.	INSTITUTIONALIZED CHILDREN DID NOT WANT TO ANSWER Other respondents commented that therapy makes them feel better and they feel better after the sessions.	INSTITUTIONALIZED CHILDREN DID NOT WANT TO ANSWER Other respondents stated they feel normal and ok, and they speak about everything with their parents. In general, they feel therapy will be good for them and their condition. They were scared at the beginning but after few therapy sessions they felt much better.	Some respondents are very anxious before coming in – they stated no special reason, and it is not connected with the medical team. They do feel that the medical team can help them and trust them but that does not lower the anxiety. They reported the therapy is helping and they like coming in.

This is the first question where some respondents did not want to talk about specifics of their condition. Youngest group was uninterested to speak about the matter – while middle two groups were reporting that therapy makes them feel better, and some of them even talk about it with their parents to make it even better. None of the institutionalized children wanted to talk about this topic. The reason was unknown, but they might have felt uncomfortable as new person was introduced to their daily routine and they are a sensitive group of children who do not wish to speak with everyone about their situation. Older respondents openly talked about their feelings and understand most of the time on what is happening and what they need to do.

Table 11: PATIENT: Question 6 analysis

n=6	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
Can you tell me about your therapy here? Do you find it helpful? Do you feel better after you go back home? Do you get new ideas on how to help yourself after sessions?	Respondents are again uninterested in talking and reported therapy not being helpful (as they do not see the reason for being in therapy in the first place).	INSTITUTIONALIZED CHILDREN DID NOT WANT TO ANSWER Rest of the respondents reported that the therapy is helpful, they know how to cope in certain situations and that gives them feeling of control and safer.	INSTITUTIONALIZED CHILDREN DID NOT WANT TO ANSWER The rest of the group thinks they will be able to apply knowledge getting on the therapies to live normally.	This group reported to follow all the doctor/s instructions and they are usually helpful.

In this question I again discarded 4 respondents who were institutionalized. They did not want to speak about the therapy process again. The reasoning is the same as for the previous question and that was discussed with the caregivers/medical team. The rest of respondents again had different answers, based on their age. Younger respondents did not want to talk, or gave fewer comprehensive answers, where older respondents found the therapy and overall process good for them, they feel safe and are applying advice given at the therapy sessions.

Table 12: PATIENT: Question 7 analysis

n=10	AGE 9-10	AGE 11-13	AGE 14-16	AGE 17-18
Do you think some of the things you do here could be done via your mobile phone or computer (if you have them)? What are those things? Can you explain why exactly those?	This group thinks it would be better to do this all online. They did not comment more than that.	This group would love to have some platform on which they could find items related to their health and condition. They would even look for the information self-initiated. It is important to emphasize everyone stated they would love to keep the physical meetings with the therapist.	This group prefers physical contact over fully online solution. Though, they would love to have some solution as platform where relevant information can be found. Videos or texting are preferred communication channels especially for topics of great relevance. On some days, getting help when in the comfort of home is reported as welcome. Combination of physical and online treatment is preferred among all respondents. Some messaging reminders solution was perceived as helpful for some respondents.	This group confirmed there is nothing that can replace the therapist and physical presence. The feeling of constantly needing to be in touch with therapist online would initiate overwhelming feeling and would not be helpful in the end. Also, some tracking tools would be beneficial (e.g., mood tracker as it is indication that something is changing). Virtual solution is welcome, but not necessarily of great help. Virtual solution probably would not offer the feeling of "being in control", but it offers great addition to what they have in the Polyclinic.

Opinions on whether therapeutic interventions should be placed online are very different. Youngest group believes everything should be transferred online, but this is also group that was in general uninterested and was negating the presence of needing to be in the therapy in the first place. Middle age groups believe equal division of interventions online vs. offline is beneficial for them, with suggestions of having educational videos, articles, and some reminders offered. The oldest group showed big interest in physical contact mainly, whereas they think online solutions would not be too helpful unless they just offer support as tracking tools for example.

Table 13: PATIENT: Question 8 analysis

n=5	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
Do you think you would have the same relationship with your doctor if you would get your treatment via Internet? Why do you think or feel that?	NOT UNDERSTANDABLE QUESTION DUE TO YOUNG AGE	INSTITUTIONALIZED CHILDREN DID NOT WANT TO ANSWER The rest of the group thinks things would change, depending on the context. They are aware of the value that physical contact offers for patients with mental health issues.	INSTITUTIONALIZED CHILDREN DID NOT WANT TO ANSWER Rest of the group reported they might be bored if everything would be transferred online, and combination of online and offline treatment is best option for them. Also, physical contact is preferred, but they stated it is nice to have alternative on the days when they feel bad and cannot leave their bed or house to visit the clinic.	In this group a strong opinion is that things would change, and the relationship with the doctor and the medical team would be different if fully online. Physical contact is extremely important, and nothing can't replace it,

Similar as in the previous question, physical contact is of great importance for all patients. Youngest group of patients plus all institutionalized patients did not answer this question; youngest group due to not understanding the context of the question and boredom, while institutionalized children just didn't feel like discussing this topic. Overall opinion, among all groups where I got the answer is that physical contact is extremely important and that putting all interventions online might change the relationship in between them and the doctor. Online solution should only be used as a support and alternative to what physical interventions offer.

Table 14: PATIENT: Question 9 analysis

n=9	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
Do you think you would feel in charge if you could find your therapy instructions somewhere via your phone or computer? What else would make you feel that? Progress tracker tool?	NOT UNDERSTANDABLE QUESTION DUE TO YOUNG AGE	This group finds medication reminders and some relevant information related to their condition useful on the platform. They just don't know in which format they prefer to have it, but probably videos and images.	This group would love to have medication and mood tracking reminders. Progress bars (for medication compliance, mood tracker or similar) with images would be very useful and are welcome.	This group would love to have some instructions and relevant information within a safe and controlled environment online. Breathing or physical exercise instructions would be beneficial, and mood and medication compliance tracker as well.

Most respondents find some type of reminders useful for them. For example, medication reminders (connected to their phone), mood tracking feature, medication compliance tracker in both textual and graphic form would be very beneficial. This could help them feel in control a bit more in each given moment. Also, any type of instructions on how to handle certain conditions (e.g., panic attacks, suicidal thoughts) is something that older respondent reported. Youngest group did not manage to understand the question.

Table 15: PATIENT: Question 10 analysis

n=9	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
What would motivate you to use digital service for your health management? Why would you like it? Where would you like to hear about it?	NOT UNDERSTANDABLE QUESTION DUE TO YOUNG AGE	The group was not sure what could motivate them to use the new online service. Most of them reported it needs to be interactive and fun. In terms of where they want to hear about it, most reported they would love to hear it from the doctor or from their caregivers, or maybe even in school.	Similar as the previous group, they are not sure what could motivate them, to use new online service for mental health management but something interesting and interactive would be nice to have. In terms of hearing about something like virtual health clinic – they would love to hear it from the parents/caregivers, doctors or even at school as well. Few reported that influencers on Instagram could talk about it too, but they understood this could be harder to do.	The respondents were talking about the quality of resources and relevance to use new digital solution that helps them manage their health. Privacy is one of the features that came up as important for them. Easy to use and functional solution would be appealing. All respondents would love to hear about the solution from their doctor primarily.

All respondents across all the age groups (except the youngest one) reported that the new digital mental health management solution should be easy to use, functional and relevant from them. At the same time, being visually appealing and fun, the solution would become much more interesting. It must be very interactive, safe to use and private. It is interesting how much most respondents emphasized their concern over their privacy. Also, older respondents mentioned the safety and quality of resources would be very important for them as they know how much it is helpful for them. When it comes to where they would love to hear about the solution, most of them mentioned medical team/doctor, while patients in institutionalized care want to hear it from their caregivers primarily. It is assumed they are much more attached to their primary caregiver than kids with safe and parental home and trust them more. Few patients mentioned that hearing about the solution in school or even social media would be nice, but that they are aware Instagram or other social media could be dangerous platforms to share information like this. They connected that thought with the fact that there is a lot of bullying happening online now, especially when it comes to children with mental health challenges.

Table 16: PATIENT: Question 11 analysis

n=4	AGE 7-10	AGE 11-13	AGE 14-16	AGE 17-18
<p>Do you believe those 3 apps you mentioned earlier (repeat which one he or she stated) would be helpful for you to manage your condition? Would you feel safe and good about using them or similar ones in your treatment?</p>	<p>NOT UNDERSTANDABLE QUESTION DUE TO YOUNG AGE</p>	<p>INSTITUTIONALIZED CHILDREN DID NOT WANT TO ANSWER</p> <p>The rest of the patients confirmed it would be good to have something similar in their mental health care management too. They just don't know what exactly. But they would feel safe in using them.</p>	<p>INSTITUTIONALIZED CHILDREN DID NOT WANT TO ANSWER</p> <p>Part of the group raised a concern around the hate comments if there would be open chat rooms where other kids with same problems would be active as well. Other, similar features to the ones available in favorite apps would be welcome. Some reported they still like to have parents in charge of their treatment process but only to a certain extent.</p>	<p>ONE PATIENT DID NOT ANSWER DUE TO TIREDNESS.</p> <p>The patients reported they would feel safe if there is some solution available and recommended by their doctor as well as useful to a certain extent. They again mentioned only parts of the interventions should be online – like trackers and useful resources.</p>

The final question was responded by only 4 participants – due to tiredness, or fear/lack of understanding. Though, the respondents who participated, mainly reported they would love to have something that can help them manage their health better – not completely sure how but they still are open to it. They would also like to have something like the apps they use daily, because it is familiar to them already. Some also reported they still want parents involved to certain extent in the whole process. If the solution is recommended by both doctor/caregiver, all respondents agree they would use it and see benefits of it.

7.3. Interview analysis – caregivers

In this section I have analyzed 11 interview questions set to the caregivers and categorized them. Institutional caregivers could not answer some questions fully due to the nature of their role.

Table 17: CAREGIVER: Question 1 analysis

n=7	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>Can you tell me something about yourself, your life? What do you like to do in your free time? How about your work? Is it stressful? What about family relationships and friends? How do you feel about that?</p>	<p>All 5 parents reported high level of stress at work. Some reported to have a sick partner, being divorced, with new partners or single. Some reported not having enough time to spend with the kid that is ill plus other children that also require care. Some reported they are trying to introduce family time and relaxation in daily routine plus weekends but is not always successful. Everyone reported that their life with ill child is very difficult, and they would love to have more time on top of driving children to school, doctor etc. Everyone also reported they feel happy because they are in treatment because it helps with stabilization of the child.</p>	<p>All institutional caregivers confirmed the daily workload is way too big and it can be stressful sometimes. Responsibility that their work brings is also a stress factor. Everyone reported that the daily work with children is also rewarding because even small progress means a lot to both kids but also caregivers. All caregivers spend good portion of awake hours with the children (same or more than parents usually do). This group of caregivers is specific because it is dealing with significant number of children with mental health issues on top of regular challenges they have as institutionalized children. They are serving all children as a “parent” in the institution.</p>

I have started the interview by asking caregivers about their usual daily habits, like work, what do they do in their free time and how do they spend it with children or friends. All of them reported stressful work, family relationships that are distorted in a way (divorces, new partners, being single parent, sick partner etc.). None of them reported rich relationships with friends, but all reported having difficult life with a child with mental illness. Also, some are trying to spend as much time as possible with their ill child and other kids but is sometimes challenging due to work obligations. Also, time

where parents take their children to school and/or hospital is the time they would like “spare”. Everyone also reported being happy that they are in therapy with their child because it sets the burden off to a certain extent (e.g., the child feels better).

Table 18: CAREGIVER: Question 2 analysis

n=7	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
Do you use mobile phone or computer? What are the most common activities you do on them? How do you feel when you are using them?	All parents reported using both computer and phone daily. Most of them use it for work and some social media. Parents who are more educated tend to search more information on the child's condition comparing to low educated ones. Though, they all reported low usefulness as each of their children have specific cases and it is hard to replicate other people's experiences to what they are dealing with. Some parents even took online educational courses related to their children's conditions (high educated parents).	The institutional caregivers reported to use computer and phone mostly for work and communication with children. Some social media and private search are also part of that daily routine. Some reported to be in touch with some other caregivers to understand how to deal with certain situations when it comes to institutionalized children with mental health issues.

All parents reported using computers and phones daily. Most of them use it for work and/or social media. Highly educated parents tend to search for more condition related information, even though they don't find it applicable for their case. But it is a good reference at least. Some also took educations online to understand how to create daily activities for them and their children to help them out. Institutional caregivers also spend their time on computer or phone related to work and to communicate with children (usually not out of working hours, but sometimes it happens as well). Some also reported to be in touch with other specialists in their area to get peer perspectives on certain issues or situations they are dealing with. From the conversations from both groups, they are both doing their best to help their caretakers.

Table 19: CAREGIVER: Question 3 analysis

n=7	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
What are 3 favorite applications of yours? Are they the ones you use the most? Why is that so, why being they so important for you comparing to other ones? Why are they appealing?	Facebook, WhatsApp, Viber, Facebook messenger, Microsoft Teams, YouTube are some apps specific for their work. All respondents confirmed they need most apps to communicate with children, family, and friends. One respondent has a partner with hearing difficulties, so this is of huge importance. Some of them like video content, or articles on their work, hobbies etc. (specialized Reddit like apps).	For this group WhatsApp, Instagram, Viber, and Reddit are most interesting apps. They like textual content, with some educational videos. They all reported being visual types, so well-designed app is welcome.

When it comes to the applications the caregivers use, both groups reported similarly. Communication tools are very important for them, as well as platforms with video and educational content. More educated parents tend to use search engine for researching on their hobbies, a bit about work etc. They tend to read more textual content and articles comparing to low educated caregivers. All reported a well-designed app is something that attracts them, on top of relevant content.

Table 20: CAREGIVER: Question 4 analysis

n=7	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>Can you tell me how do you feel about your child having the mental health illness? What is your biggest challenge with regards to that? Would you like to be supported somehow? How? Parent support groups?</p>	<p>All parents reported to be shocked when they first dealt with one of the episodes the child had. Some of the children had a hard time dealing with the classmates when they called them crazy or weird for being hyperactive, suicidal etc. Some of the kids have issues with authority so they are hard to manage which makes parents tired. Some parents reported to be proactive and have started looking for help even before the first "attack", they asked for counseling, talked to friends, and used all possible resources to cope with new condition. All parents reported they would love to have relevant text or video content or even support groups – but are afraid if it will be applicable to their case as all of them are specific.</p>	<p>Institutional caregivers have a bit different setup of challenges. They sometimes feel incompetent as every child is so different and with different diagnosis. So, approach must change, and many different children bring many different scenarios they must deal with to help a child. They all agreed more experts to help them out would be welcome, as well as peer support groups.</p>

All parents reported to be shocked or overwhelmed with their child/s condition. Some also reported that school environment didn't help much as some children were bullied by classmates. I have no information how school counselors dealt in those situations. Also, given that some children on top of everything have behavioral issues, parents have hard time to deal with them. More educated parents showed some proactivity, in taking their children to hospital before first episode happened – as they noticed something wrong is going on, they tried counseling self-initiated, asked help from family, friends etc. All parents reported they need some helpful resources but tailored for them otherwise it is useless. Institutional caregivers have different set of issues – they have many children with different diagnoses, and they often don't feel competent enough to deal and help them. Help from experts in the fields in terms of mentoring or even larger staff setup would be very beneficial.

Table 21: CAREGIVER: Question 5 analysis

n=7	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>How do you mostly spend your time with your child? Is there a routine you have with him/her at home? How do you control if he or she is taking medications? How do you track progress?</p>	<p>Most parents reported spending time with kids short but quality time. Many of the kids are into phone or video games which makes it harder for parents to interact with them. Though, one parent stated that denying that time would be potentially counterproductive for the child. One child completely avoids spending time with the parent. Some of the activities: going for daily trips, cooking, watching TV, some board games, preparing for bedtime. None of parents reported having in place medication or progress tracking process.</p>	<p>Institutional caregivers usually spend time with kids in a way they teach them hygienic habits, good eating habits, writing homework, some reading. Due to big number of children to take care of most of the time these activities last a short time. During the weekends they sometimes go for a walk or have some fun workshops (drawing, decoupage etc.). These caregivers have more streamlined progress tracking because it is also their task as HCP / medical team member. They do it through nursing reports mainly.</p>

Most parents showed interest and great willingness to spend quality time with their sick children as they understand how important it is. Though it is not always easy for them due to lack of time or lack of interest from the child. Most reported some good ways of spending quality time together as walks, cooking, day trips (including whole family). None of parents reported medication or progress tracking processes in place, most just manage child in taking therapy by standing next to the child while taking medication. Mood changes are sometimes indicator that something is wrong with the therapy regimen. Institutional caregivers are mostly spending time with patients in a way that they teach them good, healthy habits, writing homework etc. At the same time, they try to implement some fun activities over the weekends when workload is smaller as children do not go to school. This group tracks medication intake and condition progress, but because it is part of their HCP role they have as well.

Table 22: CAREGIVER: Question 6 analysis

n=7	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>Can you please tell me how do you feel before you come into the Clinic? Do you feel these people here will help you and your child; do you feel safe? Do you trust these people? Do you like coming over here?</p>	<p>All parents reported feeling of hope, trust, they were assured they would get help they are getting, there was no fear or shame related to the help they needed. Some are also in touch with the social support center in their community, so this was just a step up. Everyone feels like the child will get proper help. Children are sometimes nervous before coming but that disappears soon after the arrival to the Polyclinic.</p>	<p>Everyone reported to be happy knowing the HCP is coming in for the sessions, but children tend to be nervous a bit. This also brings some challenges to the caregivers, but without major issues. Everyone also reported feeling good about it because the therapy helps the children, and they have complete trust to the visiting psychiatrist.</p>

When it comes to attitudes and feelings toward the therapy in the Polyclinic, all parents are happy, they feel trust and they are comfortable with coming to the sessions. Everyone reported their child is doing well after the sessions which makes them relieved. Some children tend to be a bit nervous before coming in, but it is usually not a big issue. Everyone reported the feel like they will get a proper help. Institutional caregivers reported they have complete trust in the visiting psychiatrist, and they feel comfortable and relieved knowing children will get proper help. Some kids tend to be a bit nervous before visit, but it is also usually not an issue.

Table 23: CAREGIVER: Question 7 analysis

n=7	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>Can you tell me about your child's therapy here? Do you find it helpful? Do you feel better after you go back home? Do you feel inspired to look for new content and tools for your child? How do you do it?</p>	<p>Everyone confirmed the therapy is helping their children. Especially after a tedious and slow process with local psychiatrists that could not take their child into the therapy due to complex diagnoses. Some children attend group therapy too which is helpful. Some children did show the resistance to therapy in the beginning but all of them are stable now in that context. Parents seemed to be inspired to help their children and to make some changes in home environment too, as part of the therapeutic process. No consistency in the process in the past was making parents miserable, but here they feel much better now.</p>	<p>Institutional caregiver did not comment much on this due to their dual role. But they do see improvements after the therapy and often they feel more motivated to find additional ways on how to help children with complex diagnoses.</p>

All parents reported the therapy is helping their children, and all of them together with their children feel better and inspired to work on the problem and therapeutic process. All of them usually take advice from the therapist rather than taking new content on their own – they trust the expert better than content they can find randomly online. Good process offered at Polyclinic makes parents feel safe and happy as overall process to get the therapy in the past, through primary care, hospitalizations, and transfers, made things worse for the kids as they need routine. Institutional caregivers also like the therapy and the process their children receive from the polyclinic as they are not fully competent in offering same level of therapy (no psychiatrist in the Center). They usually get some motivation to make all the best possible environment for the children, after the therapy and rapport given from the therapist.

Table 24: CAREGIVER: Question 8 analysis

n=6	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>Do you think some of the things you do here could be done via your mobile phone or computer (if you have them)? What are those things? Can you explain why exactly those?</p>	<p>ONE PARENT DID NOT ANSWER THIS QUESTION DUE TO TIREDNESS.</p> <p>Most parents believe that online interventions should take place, but very limited. Articles, working groups, reminders or progress trackers should be online, but physical sessions must take place because these are the ones that make trust and comfort with them and their children. Issues like internet connection, lack of infrastructure or economic challenges in terms of having internet connection are some of the problems that few parents mentioned. All confirmed that video counseling makes sense when a child is stable and without flare ups. Resources on safe platform would be very beneficial, in terms of text, images, videos.</p>	<p>Institutional caregivers confirmed only those sessions could be done online (in situations as COVID-19) but they still think children react better when on physical sessions. Video games-based tools online that can help them in therapy would be good, or anything interactive, colorful, etc.</p>

One parent did not answer this question due to tiredness. Same parent did not answer further questions either for the same reason. When we started discussing interventions that could be transferred online, most of the parents had the same attitude – nothing can't change the physical contact because it is the contact that builds the trust. Though, they also agreed online sessions are good in case a child is stable and nothing major is happening as well as for content that is adapted to the kid in video, image, or text format, adapted to the age. Everyone firmly stood up for physical contact therapy for their children. Some parents reported issues with internet connectivity or lack of infrastructure or financial difficulties in affording good connection, but even with that they really would love to have some items transferred online, that gives their children some autonomy and control over their health. Institutional caregivers share the same opinions and suggestions. Anything that is fun and interactive, but relevant for the child should be on the platform, but sessions should take place live in the Polyclinic, unless the condition is stable or in case of emergency like COVID-19 for example. They also mentioned older children tend to be more adaptable and focused when it comes to the online therapy/telehealth.

Table 25: CAREGIVER: Question 9 analysis

n=5	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>Do you think you and your child would have the same relationship with your doctor if your child would get treatment via Internet? Why do you think or feel that?</p>	<p>TWO PARENTS DID NOT ANSWER THIS QUESTION DUE TO TIREDNESS.</p> <p>All parents agreed unanimously that the relationship with the psychiatrist would be different if the treatment is offered via Internet only. Online sessions are more formal, and when they are F2F, it is less formal, and benefit of the live session is digression. Also, it is more possible to go in the right way when on live session. Physical contact is perceived as very important and has been emphasized in many answers by now. They also think virtual therapy could make things worse, especially for someone who has an episode (e.g., schizoid condition).</p>	<p>Institutional caregivers also strongly vouch for the physical contact because children reported to feel better when they have someone sitting on front of them and express emotion and warmth.</p>

All parents unanimously responded that the relationship in between them and their child with the therapist would not be the same if all interventions are put online. Live sessions are perceived as less formal, more relaxed, and comfortable for everyone. Also, digression is big part of the live sessions, which usually is not the case with online sessions. Physical contact is important because of the earlier mentioned trust, ability to express feelings and emotions. Also, some parents mentioned that virtual

clinic might evoke some unwanted conditions, if it becomes overwhelming for a child that has an episode. Institutional caregivers confirmed similarly, but more from a child experience perspective. Institutional caregivers are usually not in the room with a child and therapist, so they put out this opinion based on what the children reported – they want a human contact, someone who can express emotions and show sympathy and warmth.

Table 26: CAREGIVER: Question 10 analysis

n=5	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>What would make you use online mental care services that can support your child? What does it have to include? What would motivate you in this service to enroll you and your kid into it?</p>	<p>TWO PARENTS DID NOT ANSWER THIS QUESTION DUE TO TIREDNESS.</p> <p>All parents confirmed they would use something that is recommended by the therapist or the medical team. Ideally all in one place, so they do not lose time with different logins and getting used to something new. Some reported that getting advice on support groups might be a bit tricky as every parent think he or she know better and could be confusing. They also think if someone starts applying advice from other parents, it might push the child over the edge and be potentially dangerous. Some parents reported though, they would love to have the option of online support groups. All reported they are ok with listening other parents and consult with the doctor before any application in the relationship with the child. Any type of relevant reminders would be beneficial too (medication, mood tracker reminders etc.). Relevant articles recommended by the therapist to understand the illness would be beneficial too.</p>	<p>Institutional caregivers confirmed they would love to hear other parent / caregivers experiences just to know how to help a child from that perspective, when outside of the HCP role.</p> <p>One unified platform where they can find all relevant content would be very helpful. They would love to hear about it from the experts and other peers.</p>

All caregivers confirmed they want to hear about any supportive tool within their expert network, or psychiatrist. When it comes to the usability everyone confirmed one platform or application would be preferred as there is already so many things they are involved with, and they don't want one more solution scattered all around. A solution accepted by the clinicians, safe and private is welcome. Not everyone is keen on getting the group therapy support, because they believe some advice might push their child over the edge – every child is individual, and it needs individual approach. Also, they need some level of trust before sharing their stories, most of them still talk about their situation with their friends first. Some parents though, did report that they would use some of the other parent's advice but with supervision of the doctor; hence they would love to have online support group, chat rooms etc. These parents also confirmed they would love to have someone listen to them because sometimes it is hard to talk to someone who does not understand. Reminders were again mentioned as something that would be useful for parents and in that way, they can have peace of mind and not constantly be helicopter parents. Some parents also mentioned articles would be a nice to have feature, with content relevant for their kids so they understand the disease better. Institutional caregivers confirmed they would also like to hear some experiences from other caregivers. In this case the contact is maybe not that personal as it is not about their own children, so they don't perceive it as something potentially dangerous – it does not affect their life directly.

Table 27: CAREGIVER: Question 11 analysis

n=7	CAREGIVER PARENT	INSTITUTIONAL CAREGIVER
<p>Would you feel more comfortable if you would have service that gets you content and tools that might help you and your child and connect you both with HCP? Where and how would you like to know about this option?</p>	<p>All parents confirmed they would be comfortable in having some supportive tools, but with some limitations, as already mentioned above. They want to hear from it from the HCP's Direct access to the doctor is something everyone would love to have, because some requests are not necessarily needed to be discussed on the sessions. Something like instant messaging. Privacy is something that many parents mentioned and complete anonymity as well (if it comes to the chat rooms).</p>	<p>Institutional caregivers reported they would love to have a tool through which they can have direct access to the therapist that is working with children to manage critical and acute situations, where applicable. They would love to hear about this recommendation from the therapist itself.</p>

As in the previous questions, parents reported they would love to have immediate connection with the therapists, for both them and children. With some limitations as they still don't want to have everything online. Medical team is the one who should recommend something like this. Privacy is again mentioned as something very important for the parents, especially if they are part of some support groups or similar. Institutional caregivers would also love to have "instant" access to the medical advice when needed, which is out of their scope of work. They would love to get suggestion on such supportive tool from medical team as well.

7.4. Interview analysis – HCP's

As expected, the answers from HCP's were more exhaustive, detailed, and comprehensive. The assumption is that patients and caregivers were introduced to new person and procedure that was relatively unexpected and therefore they were a bit more reserved in answering.

Table 28: HCP: Question 1 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>Can you tell me something about yourself, your life? What do you like to do in your free time? How about your work? Is it stressful? What about family relationships and friends? How do you feel about that?</p>	<p>All HCP's confirmed their job is stressful. Not that much related to the tasks and workload itself but the fact they are dealing with young people with serious diagnoses and sometimes suicides. It is particularly challenging due to the electronic bullying and violence which cannot often be controlled, and it makes regressions in the progress of therapy. Another challenging factor is that in this region only this team is working with children, and they tend to have children in need of acute help which they cannot provide, and it can be frustrating due that fact. Privately most of the HCP's use social media, but very limited due to concerns around their privacy. Some confirmed they have been working with adults with mental health issues before coming to the polyclinic, and it was less challenging. Many reported losing time on writing documentation because some items are still in paper format. Everyone reported to have steady private life, work does not affect their private time and they are controlling the work life balance to the high extent. Relaxing, reading, spending time with family is what they usually prefer.</p>

When it comes to the HCP's, everyone as expected, reported to feel stressed out at work. This is mainly because of the complexity of conditions they are dealing with, and not due to workload. HCP's in Lipik have more tasks which makes it harder for them, but that is the result of number of children they are dealing with at the same time. Some reported working with adults with mental health issues in the past, and comparing to their current work, this was less stressful. This might be because some of the HCP's have their own children, and they also perceived it in that way. Many talked about the problematics of the society we live in and how that affects their patients, but also them to a certain extent. When it comes to their private life, everyone reported they are usually relaxing and spending

time with their families when not at work. No one reported their job is in any way influencing their private life.

Table 29: HCP: Question 2 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>How often do you use phone or computer daily? Can you determine which amount of time you spend on those work related? What is the most common thing you search/do on them?</p>	<p>Everyone reported using both phone and computer daily, and mainly at work. Some reported to do work related research at home but only because they are interested in it. Some spend more, and some less time online when it comes to the daily tasks. Some reported watching self-help programs so they can help children that need that type of help, how they can counsel parents in certain situations, reading books related to their work, investigating different diagnoses they are dealing with etc. Also, recent scientific literature and articles is of everyone's interest to read about (both in work and home setting, but mostly at work setting when the time allows).</p>

When it comes to the usage of computer on daily basis, answers varied a bit. Some reported 1 hour, some up to 4 hours. Most HCP's reported that except the regular tasks and documentation they do on computer daily, they look for scientific and relevant materials that can help them in their work. They usually do it when the time allows it and when workload is not that bad. Some reported that they think they spend way too much time on computer, just for regular data input.

Table 30: HCP: Question 3 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>What are 3 favorite applications of yours – non work related? Are they the ones you use the most? Why is that so, why being they so important for you comparing to other ones? Why are they appealing to you?</p>	<p>YouTube, WhatsApp, Instagram. Reddit, Viber, Facebook for private use. They use it for searching the fun and relaxing content or to stay in touch with family and friends. Most reported that they do not post and are not very active – only from time to time. as well, comments. Most reported to like textual content and videos. Also, few reported to choose an app based on their current mood, when in private environment. Few HCP's mentioned they use also some other work-related and specialized apps, so they can understand how to introduce them to patients and parents. Most of the above-mentioned solutions are being used for communication purposes. It is worth to mentioned that HCP's working with institutionalized children use Viber as well, and mainly for communication.</p>

All HCP's confirmed apps they use daily are important for them for communications purposes. All of them are intuitive, easy to use and practical as everyone is using it as well. On top of the communication apps, some social media is prevalent among respondents, but not everyone is using it extensively as privacy concerns have been mentioned. In terms of work environment, some respondents confirmed they are using very specific apps or platforms as they are using insight in the illnesses they are dealing with and help for their patients and their caregivers.

Table 31: HCP: Question 4 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>Can you tell me what is the most challenging thing about your work? Is it the therapy session itself or something else? Administration, lack of resources, something else? Is availability of relevant experts and content an issue?</p>	<p>There are few things that are mentioned as challenging: feeling of not enough competent for dealing in some situations or certain illnesses, therapy process can be complicated (preparing the child for the session or daily hospital, assisting the psychiatrist on top of other tasks etc.), diagnostic process, dealing with many questions from patients and caregivers, prevention on local and national level, non-collaborative caregivers, unable of giving enough support for the child and caregiver/family sometimes, responsibility for the child if the acuity assessment is wrong. Lack of some other expertise profiles is also mentioned as a problem, as well as lack of infrastructure, digitalized tools (some items are still paper based).</p>

The discussion around challenges in daily routine of HCP's was very interesting and intensive. We could say that different profiles of HCP's have different and similar challenges. Among nurses we have noticed they often feel they need to get more education and skill upgrading trainings. With this on mind, they confirmed they could deal better with all other challenges. Psychologists and psychiatrists confirmed diagnosing and prevention, with uncollaborative parents can be very challenging. Some parents do not accept sometimes that a child has a diagnosis as has, and in society with a high level of stigma this is an issue. In terms of operations, there were few mentions in lack of better, unified tools and infrastructure that can replace manual and paper-based tasks that still exist to a certain extent (up to 10%). General problem in Croatia is that the public health care systems are decentralized which makes it harder to pick up relevant documentation if a child comes in from another region.

Table 32: HCP: Question 5 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>How do you usually measure progress with a patient and parent? How do you update them about it? How do you measure medication compliance? How do you inform them on new tools and content available?</p>	<p>All respondents they need to make a report after interaction with a child or group, which is main tracking tool when it comes to condition improvement or worsening. Regular morning rapports and overall experience is also giving each team member an insight in the progress. Psychiatrist in this context has the best insight as it is directly talking to the children and caregivers. In case of condition worsening things are usually rerouted and new techniques are being implemented and monitored closely. New symptoms are also indicator the condition might be worsening, and they are also documented (digitally). Nurses did not report having any type of specific nursing documentation, but rapport after the daily hospital is being made in their context of role. Nurses in Lipik center did report having nursing documentation and writing their own nursing diagnoses. Their documentation is paper based. Everyone mentioned that the experience sharing and informing team members is the crucial for following the progress.</p>

When it comes to progress tracking and medication compliance, many respondents reported same type of tracking process. Writing reports after every individual or group interaction, sharing information and experiences with the team, noting all changes in the common system and retroactive pull of information can give one a good overview what has been happening with a child. On top of it, change in symptoms can be a good indicator of progress and medication compliance; mostly relevant for psychiatrist and psychologists as they are working directly with children in terms of therapy sessions. Experience in context of progress tracking is crucial, but some visual representation of it would be beneficial, as reported by everyone.

Table 33: HCP: Question 6 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>Can you tell me how does your workday looks like? What do you do during, before and after the session?</p>	<p>Days are different across different specialties, but there are some consistencies among them as well. Everyone needs to make individual report for every child from their role standpoint, as well as group report when group therapy is executed. Everyone reported their own work is usually individual and does not depend on other team members, but in the end their work is simultaneous and complements each other. Psychologists reported to split the days of week based on the activities on the agenda: diagnostic vs. therapy. Everyone reported that they also need the time to prepare themselves for the daily hospital when it is on the schedule, one day before (e.g., is it tactile, auditory or any other format). Daily hospital has 12 members max, lasts 3 months max, every day.</p>

Workday of HCP working with mentally ill children are challenging and different. Depending on the specialty, the tasks look different as well. From preparing a child to visit a doctor, together with the caregiver, to prepare content for daily hospital (e.g., format, materials etc.), to deciding the diagnosis and therapy days for psychologists, and executing therapy sessions for psychiatrists. Every team member needs to make individual and group report after every activity and place it in the system for

tracking purposes. Preparation for different interventions is the key, and experience here plays a very important role.

Table 34: HCP: Question 7 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
What is the most important thing you must have in order to support patient and its parent/s?	Everyone needs to know what and how to do that. Some reported needing supervision but not having that, and everyone needs someone who is objective to rate their work and performance. Everyone also needs to be updated with new learnings and research, especially treatment that can be used with kids. More education, and enough education. Not everything from the "old" therapy interventions should be avoided because there are some good practices to consider. Many parents have no time to be alone and then they use digital tool to make children calmer. F2F contact is very important for children (e.g., autism) so the digital tools should be avoided, while with some other diagnoses it makes more sense. Clear goals, processes in place, bigger team, and more experts to cover more diagnoses, approving nurses to execute some interventions are also some of the things that might improve ability to help parents too.

When it comes to assessment on how HCP's can help and support caregivers, and what they need in order to do so, education and supervision was something that every HCP mentioned in our conversation. Sometimes they feel they need to be more up to date with novelties in psychiatry, but they often don't have access to that information or trainings. Also, sometimes they feel that using old interventions can help and that not necessarily only new trends should be applied exclusively. F5F contact is again mentioned as very important here, for specific diagnoses as autism as they are dealing with it very often. Better processes in place, bigger team, clear goals could help HCP's in their daily struggles, and this is how consequently they can help their patients and caregivers.

Table 35: HCP: Question 8 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
Do you think some of the things you do with patient and parent/s could be done via mobile phone or computer? What are those things? Can you explain why exactly those?	For Lipik center HCP's technology could be used for calming children down or as reminders for when to do their homework – they think they would be more responsible and could be used as a therapeutical tool in that context. In the opinion of all HCP's, technology should be used depending on the age, intervention, condition and technological savviness, or even intellectual capabilities. Video consulting is not interesting for some of the children, but for some are so this can be used in decision making process on how to execute therapy. Some type of education and questionnaires that usually takes a lot of time in Polyclinic could be done. Also, some tests and scoring interventions could be used online. Depending on the age, depends on the intellectual capabilities. Video therapies not that interesting, but some other activities (fun ones) would like to be in control with. Counseling, apps as she mentioned above, identifying symptoms, generation of diagnosis based on symptoms (questionnaire), whom to ask and what. Marketing of the services is lacking. Daily hospital and therapy sessions is something that need to stay offline, F2F (sessions can be transferred online if condition allows it, and patient and caregiver prefer it). All respondents agreed on this. Additional education, relevant content and support groups for caregivers or children (supervised by the medical team) could be transferred online too, as it gives more control to the user, and it really doesn't need to be done F2F.

When it comes to specific interventions that could be transferred online, few have arisen as most applicable one, such as: education, tests, questionnaires and scoring as part of diagnostic process, support groups, and even therapy sessions (when possible). Daily hospitals or therapy sessions in the times of acuity are strongly recommended to stay F2F as physical contact gives added value. On top of everything mentioned, Lipik center HCP's confirmed some type of reminders for homework or just basic daily routines could be beneficial for their children, as this is part of their therapeutic process. Also, some games or videos seemed to be useful for calming patients down in times of condition worsening.

Table 36: HCP: Question 9 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>Do you think you would still have the same relationship with patient and parent/s if they would get treatment via Internet? Why do you think or feel that?</p>	<p>Everyone confirmed that we cannot put all the mental health care interventions online as it is not sustainable; humans need human interaction in live environment as it is therapeutical as well. Digital tools should be utilized to its maximum, but many factors need to be taken in count. "Screening" is very serious issue today and with VMHC this could be even worsen so we need to be careful. Yes, the exclusively online interventions would change the relationship in between HCP's and patients and/or caregivers. Too much information can be overwhelming for affected individuals, so it needs to have some limitation and control. All therapy work should be F2F if the circumstances allow it. Everything else can be to a certain extent be digitalized, if it has good experience, it is useful and easy to use.</p>

I have received unanimous response when it comes to question if the relationship in between HCP's and patients or caregivers would change if all interventions were set to be online. F2F contact brings added value and therapeutic effect in the process and should be kept in its original form. Everything else, that is important but secondary after therapy, should be put online as it is important way of living nowadays – it is familiar and "normal". One thing, though, needs to be taken in count, and that is, amount of information and screen time on a solution like this. Screening tends to evoke some episodes in certain illnesses so this needs to be controlled in a very cautious way as well.

Table 37: HCP: Question 10 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>What would make you use online mental care services that can support your patient? What does it have to include? What would motivate you in this service to enroll?</p>	<p>Most of the HCP's reported they would use a tool that is recommended by Ministry of Health, together with relevant experts. A tool that is easily integrated in existing systems, intuitive for use, with relevant content, relevant documentation feature for their rappsots, diagnoses etc. Educational component is very important for everyone because some did report earlier, they sometimes do not feel competent to deal with certain diagnoses or situations. Ability to connect with peers on national and international level is very important as well. A tool that can give them insight on child's activities or even progress is nice to have as it gives one extra component to what they are doing in the Polyclinic. A tool that gives information to parents on how the child is progressing, but at the same time the tool that gives a child some autonomy is very important and would be very helpful in the therapy process. Remote patients would benefit from this a lot as well. There was one interesting note where one HCP mentioned that texting for children with autism would be very nice to have as sometimes, they just do not want to talk. Visually appealing and easy to use tools are the only ones that would be taken in count, on top of relevant content.</p>

All HCP's were thinking about this question from their but also patient's and caregiver's perspective. On top of their need that allows them to educate themselves, have peer to peer conversations, supervisions, where they can put in their diagnoses and comments easily and that is integrated in existing system (with visual representation of data) etc., they would love to see a tool that is helpful for children and caregivers. Everyone was immediately thinking on that because if it is not useful for them, there is no sense in introducing new tool only for HCP's. Finally, visually appealing, and easy to use tool is something they would use or recommend, because on top of all struggles no one should offer something complex and what can cause frustrations among their end users.

Table 38: HCP: Question 11 analysis

n= 6	HCP (nurse, psychologist, psychiatrist)
<p>Do you think your work would get added value with this kind of service? Please explain a bit. Where and how would you like to know about this option?</p>	<p>All HCP's confirmed they see added value of digital service. Especially for patients and caregivers that are remote and of low socioeconomic status, plus younger patients. The service in this case needs to be well organized, it must make sense for every user and is functional, safe and needs to have wide use (e.g., communication, education, therapy etc.). Though, it should not be divided F2F vs. virtual exclusively, as some children would love it better online, while some not. If there would be possibility for the platform to track the behavior and leave digital trace and generate reports in real time, it would be very valuable. Ideally everything is integrated within one solution.</p>

After the interview and last question, the conclusion and opinion by all respondents is that the assumed digital solution would have an added value for both patients and caregivers, as well as for the medical team if it is well organized, relevant, safe for use and only used as a supportive tool and not as an exchange for F2F therapy. The digital tool should be used for communication and education primarily, and for therapy as an option – depending on the diagnosis, current condition, and stability, as well as preferences of the patient.

8. DISCUSSION

8.1. Results review

Today in the WHO European Region there is a high and increasing rate of mental and behavioral health problems among adolescents, with depression and anxiety disorders being among the top five causes of the overall disease burden and suicide being the leading cause of death among adolescents (with male children being more prone to it comparing to female children). Young people who are disadvantaged seem to be particularly affected (WHO Regional Office Europe, 2018). Groups of patients I have been talking with as part of the empirical study confirmed the same pattern – most of them had depressive or anxious disorder with behavioral issues, patients with suicidal thoughts, and patients who had behavioral or depressive anxious disorder due to disadvantageous life circumstances, such as inadequate parental care. The disadvantaged group is extremely sensitive, and this was confirmed by the institutional caregivers and HCP's that are leading their therapy process. There were more male respondents and during the interviews it was noticeable the male respondents were more closed, answered very shortly and were not open to talk about their condition, comparing to female respondents in the same age group.

When thinking about the data above, I can confirm the relevance of previously mentioned e-MEN project in NEW, especially when it comes to the depression and suicide prevention interventions, online therapy for anxiety, and depression, online treatment for people with depression and cognitive behavioral therapy game for children with depression. HCP's involved in this study also confirmed the relevance of these interventions potentially offered online – with a disclaimer that it must be combined with F2F contact and only with children who are perceived as eligible for this type of interventions. Something that is also very relevant from the e-MEN project is that it targets rural residents who often travel long distances to receive services and are less likely to recognize a mental illness, it covers shortages of mental health professionals, and decreases the stigma of needing or receiving mental healthcare (Interreg North-West Europe, 2019). Most respondents I talked with in the groups patients and parent caregivers were residents who lived remotely, far away from the centers and specialists who can provide good access to specialized care they need. They were also less educated and did not necessarily understand when the moment was to seek for help or where to seek is given that smaller communities did not offer specialized care that their children needed. Smaller communities they come from also had tendency to stigmatize a child or even a whole family due to having child that was dealing with mental illness.

Back in the theoretical background section I have also mentioned that one comprehensive review of 45 years healthcare industry evolution concluded that EHR's and integrated management are constant

subjects of research and development with the final goal of improving the quality of data, fast data access and data processing (Marques & Ferreira, 2020). They also mentioned that telemedicine and e-health within different areas of healthcare would offer flexibility in setting medical appointments and consultations. Another, and very recent study from 2020 indicated that information platforms and data collection technology, services for remote and on-demand healthcare, cloud service provider, and intelligent data analysis for healthcare provider are future of healthcare are too (Hermes, Riasanow, Clemons, Böhm, & Krcmar, 2020). Nowadays a key driver for digital health market growth is growing number of smartphone and computer users followed by the increased awareness about importance of healthy lifestyle and fitness as well as the rapid growth of healthcare IT infrastructure in developed and developing countries (Global Market Insights, 2020). Results from the empirical research I have conducted confirmed all the above. Patients, caregivers, and HCP's need and would love to have EHR platforms for integrated condition management, telemedicine solutions for e-consultations, online training and guidance, progress trackers, medication, and appointment reminders they can manage on their own via some safe-to-use platform, and where data is available in real time via cloud solutions. Relevant and safe data is a requirement for usage of solutions alike.

When it comes to the communication channels and what all respondents prefer, there is just small difference in between different respondents' groups; children in different age subgroups prefer different formats (videos and visually appealing content over text for younger children, and comprehensive text and relevant short videos for older children). Given that some children or caregivers come from families of lower economical capabilities, intermittent services on their smartphones like e-mails or SMS messages could be an option for some interventions, over sophisticated web or mobile apps as some studies suggest (Bauer, et al., 2020; Marko-Holguin, et al., 2019; Alcaraz, Riehman, Vereen, Bontemps-Jones, & Westmaas, 2018). I have also learned that different people (different age, disabilities, certain types of impairments) could prefer using technology other than just plain smartphone or computer (e.g., Viber or Messenger for deaf partner of one of the parents). Health technologies used in mental health should not exclude people with physical disabilities either (Wolbring & Lashewicz, 2014), so this needs to be taken in count as a "nice to have" feature. The existing issue of "mobile underclass" in between families with less economic opportunities brings us back to the ubiquitous of more simple technologies as SMS or a simple phone call, where applicable (Bauer, et al., 2020). Integral part of the mental health programs should also be training on safe usage of (any) technology, which was also emphasized by many of the respondents – they need safe environment, but most of the time users' needs to be trained on how to safely use the solutions provided to them.

Virtual care today extends beyond the borders of healthcare organizations to provide distance care. Although virtual care cannot be used as a solution for all mental health-related interventions, it certainly provides additional care delivery channel for specific patient populations and requests. Some of the virtual care applications in mental care include anxiety management, virtual follow-up visits, therapy and consultations, outpatient clinics, and emergency services. One review suggested that virtual care should encompass the provision of care using advanced technology to support remote care (Li, Borycki, & Kushniruk, 2021). My study confirmed that respondents are on-board with using virtual care options, including the therapy sessions, if they are offered as an alternative on the days when

the patients is feeling particularly low and cannot attend the session in the Polyclinic. Psychiatric F2F sessions in that context cannot be replaced, but different types of trainings, game-based therapy instructions, appointment, medication, or progress tracking reminders are welcome to be transferred to the virtual environment. Disease specific and relevant content in different formats (text, images, videos) are also perceived as useful for all 3 groups of respondents, if they are offering relevant and safe use, and if they are suggested by the medical team.

The cost of mental health illnesses plus their related consequences is projected to rise to \$6 trillion globally by year of 2030 (World Economic Forum, 2019). Potential of using telehealth within the mental health care could help lower these costs down, because on-demand virtual urgent care could be used as an alternative to lower acuity emergency room (ER) visits, urgent care visits, and after-hours consultations. Also, virtual home health services leverage could be used for condition evaluation (when illness is not in an acute stage), patient and caregiver education, occupational therapy etc. (Bestsenny, Gilbert, Harris, & Rost, 2021). All respondents in this research confirmed this as well.

The empirical study I have conducted also confirmed that many children find online visits easy (from younger than 10, to teenager and adolescents). Younger children tend to prefer it more over the older ones, but the assumption is the older children tend to understand their condition better than the younger ones which are often still very playful and are not necessarily that much interested in coming to the Polyclinic. Caregivers tend to see the same among their children but are keener to bring their children in the Polyclinic. Caregivers also find it supportive for themselves to have F2F visits. Convenience in meeting at any time or place and easier access to specialists and mental health care, is perceived as an advantage of virtual clinics, but only in the times of a regular check in and when the condition is stable. In case of a flare up episode or suicidal attempts, F2F visit is preferred by all three groups of respondents. Ability to choose in between in person and online sessions is something that is perceived among all respondents as a big advantage. It is completely up to the patient and caregiver to decide on how they want to conduct their session, especially in the times of crisis as we have seen with COVID-19 in 2020, when there is no option for F2F visits. Opportunity for therapist to get the "peek inside the home" of a child and the environment child is spending within could be potentially very beneficial because sometimes this brings a good context for the medical team to determine how much does the home environment affect the overall condition and how it may influence the recovery.

When it comes to using VMHC's among youth and adolescents, perceived concerns about web-based help-seeking tools that included privacy and confidentiality, difficulty communicating on the Internet space (e.g., hate comments), and the quality of web-based resources (Global Market Insights, 2020; Chan, Farrer, Gulliver, Bennett, & Griffiths, 2016) was confirmed by the respondents in my research as well. Even though perceived as young, all patients who participated in the interviews were afraid that telehealth solution might have replicated environment as they have it now on social media platforms they are using. And not all experiences are necessarily positive; in contrary, they are more negative for the patients with mental health illnesses. Caregivers have confirmed the same. Potential benefits that respondents saw throughout the research included anonymity/avoidance of stigma, and accessibility. Caregivers and HCP's confirmed this assumption as well – privacy is very important.

Solution that a child is using to manage its health must reflect a safe environment and support safe and slow, progressive recovery.

Earlier in the theoretical background I mentioned that different technological platforms have some level of technological requirements, offer different opportunities, and have some limitations (Elhassan, Sharif, & Yousif, 2021). Based on the interview data I can confirm that patient-initiated texting, videoconferencing, tele-health software and video visits are preferred among respondents. Phone calls were not mentioned as an option but could be taken in consideration as their implementation is very easy and cheap, universally accessible, and cost-effective way of communication. In this context phone calls should be scheduled with the HCP in advance for mild episodes. Meaning, high acuity ER visits should still be kept as F2F intervention.

The overall observation is that implementation of new tool would not present an obstacle for patients, caregivers, or HCP's to use the mental health services, as digital tools are already part of their daily routine. All the respondents were technologically savvy; though there were difference in between age subgroups among patients, and caregivers with less education (they tend to be less savvy and use less rich content or applications).

8.2. Trustworthiness and ethical issues

Trustworthiness of the research refers on to how consistently a method measured something. If the same result can be accomplished under the same circumstances using the same methodology, the result is considered reliable (Leung, 2015.). Trustworthiness or study rigidity refers to the degree of data confidence, used methods and interpretation to ensure the quality of a study. Every researcher in its study should establish all the procedures and protocols needed for study to be considered worthy of readers consideration (Connelly, 2016).

As established in the 1980's, trustworthiness involves the following concepts (Lincoln & Guba, 1985):

- Credibility or confidence in the truth of the results and how well they reflect the original data.
 - For this research I have used the method of synthesis of several academic and industry data on the topic and semi-structured interviews to confirm the previous theoretical findings and gain bigger picture on the topic itself. I have been using written descriptions based on the interviews conducted, but for some participants descriptions were measured from only few words to half page detailed answers.
- Transferability or meaning that the findings are applicable in other contexts as well.
 - The theory of this research can be transferred across other healthcare domains, and not only within mental health care. Virtual health clinics work very similar, it depends on the disease areas which features they will include.
- Dependability of presented results could be repeated and are consistent.
 - The overall research process has been described as detailed as possible within this thesis to be to replicate it in a similar environment.
- Confirmability, neutrality, or the extent to which the results are shaped by the respondents and not by researchers assumptions, bias, motivation, or interest.

- Before executing this research, I had no direct experience with children and adolescents with mental health illnesses using virtual mental health clinics. Though, previous experience working with adolescent with bi-polar disorder (and their caregiver) on two-way SMS disease management program has given a different perspective and understanding of all patients and caregivers I have interviewed. Thus, assumptions or predefined conclusions have not been made.

Given that the data was collected with semi-structured interviewing method, within strict clinical environment, it can be easily reproduced and replicated. By this way I assume this research paper can be considered as trustworthy.

Psychiatric research has several important ethical issues which are different from other medical disciplines. The issues I have identified as potentially challenging in this research were related to (Jain, Kuppili, Pattanayak, & Sagar, 2017):

- Informed consent because people with mental illness face more issues in consent process compared to other medical illness and healthy person. This means the research objectives and process needed to be explained in a way that is understandable for patient with mental health illness.
- Confidentiality because it refers to researcher's responsibility of not disclosing information learned during research to anyone without the patient's permission. Sometimes confidential data can be disclosed non intentionally, and it is in researcher's responsibility to keep the data safe and confidential.
- Participant-research relationship is important to take in count because mental illness itself affects patients' emotions, cognitive functions and overall, which leads to issues in decision-making capacity. As researchers are usually highly respected, they can easily get the authority by affected patients and caregivers. This may consequently lead to exploitation of rights of patient with mental health problem (like issues of informed consent, providing wrong information etc.).
- Conflict of interest where primary researchers interest such as patients' wellbeing or validity of study results tends to be unduly influenced by a secondary interest, such as financial or professional gain.

During the research I have taken in count all ethical principles and identified challenges to keep the privacy, ethics, and trustworthiness to the highest possible extent. The thesis was also written taking in context the following additional ethical principles (Finnish National Board on Research Integrity TENK, 2019):

1. Thesis research will not harm participants.
2. Informed consent is the foundation of the research, which means that participants should understand that they are actively taking part in the research and what exactly the research requires of them
3. Protecting the anonymity and confidentiality of participants.

4. Research participants at any given time have the right to withdraw from the research process. Furthermore, participants have the right to withdraw at any stage in the research process.

In addition, according to the Finnish and Croatian suggested ethical principles in research I took in count (Finnish National Board on Research Integrity TENK, 2019; EUR Lex Europa, 2016):

1. Participants in the research have the right:
 - a. to participate voluntarily as well as to refuse to participate. It is very important to ensure voluntary participation. Therefore, the researcher documents the participant's consent in writing or electronically.
 - b. to withdraw from the study at any given time without any negative effects, either from the overall research or an individual phase, permanently or temporary. Participant also does not need to give any reasoning for the withdrawal and in some circumstances, the researcher may stop participation on the participant's behalf. Withdrawing from the research does not prevent the use of the data that has already been collected.
 - c. to withdraw their participation consent as easily to as it is to give it.
 - d. to receive information on the research content, the personal data processing path, and practical implications. This information should be offered in the language that the participant understands, either in writing or in electronic form and enough time must be given for participant to consider its decision whether to participate.
 - e. to receive truthful and understandable explanation of the research aims, any potential harm and risks as well as the accurate account of the effects and potential benefits of the research.

Also, given that minors were participating in this research, the following principles were taken in count (Finnish National Board on Research Integrity TENK, 2019.):

2. Minors were informed about the research:
 - a. in a way that they can understand it.
 - b. if the participant is 15 or older, their own consent is sufficient for research participation. The parent or legal caregiver should also be informed of the research details.
 - c. parent or legal caregiver primarily decide on the participation of minors under the age of 15. Even though participation consent requires the approval of the parent or legal caregiver, the minors give their own participation consent primarily.
 - d. despite of whether the consent of the parent or legal caregiver has been obtained for the research, researcher must always respect the autonomy of minor and the principle of voluntary participation.
 - e. the researcher must discontinue the minor's participation if participating in the research is not in the minor's best interests and the minor does not wish to participate.

All other items related to data privacy, processing personal data in research, and protection of privacy was followed by the standards set in TENK 3/2019 Guidelines, by Finnish National Board on Research

Integrity and European GDPR law, as well as National Research Integrity Framework in Croatia. In terms of privacy data collection, the research did not require any personal identifiable data, but rather included the data such as:

1. Gender, age, diagnosis.
2. In case of caregivers, I have asked for data about their gender and age, as well as diagnosis of a child.
3. For HCP's I have asked for info about gender, age, and role in the team.

There is no possibility to link any of the variables in this research with identity of any of the participants. Given that in Croatia it is not permitted to publicly disclose personal information (e.g., signed consent form) without participant's agreement, I did not put any of the signed forms as appendix of this report; rather I have published empty consent form as an example of what has been used for the research. I did not find necessary to ask for extra permission to publish signed consent forms as they are not relevant for the group research report.

Before starting the research, the permission from ethical committee from Neuropsychiatric hospital dr. Ivan Barbot has been obtained. Ethical committee took one week to decide the research can be executed. Once the research period started, the assigned mentor in the partner organization has informed all participants about the research and voluntary participation before I have questioned them and handed them over the written consent forms. Each participant has been explained on which data I am collecting, what is the purpose of the data collection and that they can withdraw from the research at any given moment.

9. SUMMARY, CONCLUSION AND RECOMMENDATIONS

9.1. Summary and conclusion

The purpose of this research was to find out the usual behaviors in home/school/work setting for all respondents, their daily habits in using technology, their technological savviness, attitudes toward the mental health condition they are dealing/working with and willingness to adopt new tools in the disease management process. By discussing 11 pre-prepared and adapted questions for patients, caregivers and HCP's I wanted to answer the question "What are the mental health services we could transfer online and fully support the children and adolescents, their caregivers and therapy team in the patient condition management?". Having in mind the objectives of the study, I can summarize this study as follows:

1. Telehealth has immense potential as supportive treatment tool in mental health. Both theoretical and industry data proved it, and this study confirmed it as well. On top of added value for the patients, caregivers, and HCP's, it has a potential to cut the costs, lower the gap in between urban and rural areas and increase access to mental health care to those who usually are less privileged (rural areas, less economic or purchasing power, individuals with disabilities and limitations, etc.).

2. Virtual health clinics are proven to have good impact on care outcomes and are consequently cutting the costs of healthcare in general. When it comes to VMHC's, they have almost equal value, but context of condition needs to be taken in count. It is very important to know that in mental health F2F contact also has therapeutical effect and should not be transferred online just for the sake of practicality or cost reduction. Cost reduction will come along with improved patient outcomes, and this should be on top of decision makers agenda.
3. The following procedures can be transferred online:
 - a. Therapy sessions in the time of disease stability and only when the patient requires it (e.g., not in the mood to travel, not enough time in between daily activities and appointment in Polyclinic).
 - b. Disease relevant education and training assessed and created by certified psychologists and psychiatrists, specialized in child psychology and psychiatry.
 - c. Support groups with peers, for patients and caregivers.
 - d. Education and access to expert groups that are specialized in peditric psychology and psychiatry for HCP's.
 - e. Supervisions for medical staff that are usually done F2F and require a lot of cost in terms of time.
4. Most relevant needs that I have identified by three groups in the context of VHMC are:
 - a. All three groups need to preserve F2F contact and VMHC should not be perceived as new way of working with mental health patients.
 - b. New digital solutions should offer safe, relevant, and expert assessed and approved environment.
 - c. Educational content for all three groups needs to be relevant, updated, and interactive. Different formats of content should be available, as different age groups, educational level and simple daily habits influence what type of content one consumes.
 - d. If there are options of support groups as part of the digital solutions, it should be supervised by an expert and should not allow group to advise individuals; it should serve only as a support and encouragement. Advises from other patients or caregivers might be counterproductive.
 - e. Medication reminders would be useful, with ability to track progress over time with motivational feature available (e.g., send automated message if the compliance is higher than 80%). Data should be available in real time, and visible to HCP.
 - f. Appointment reminders are perceived as useful as it would give more autonomy and control over the therapeutic process to both patients and caregivers.
 - g. Mood tracking tool should be part of the solution as it would provide insight for patients, caregivers, and HCP about the patient condition. It would be complementary to medication reminder feature, and it would offer better insight how compliance and mood are correlated.
 - h. Ability to send instant messages to the HCP in case of need, i.e., in the times of low acuity (both patients and caregivers, if the head count in the medical team allows it).
 - i. Communication component of the digital solutions is perceived as very important, and it should offer various modules: e-mails, SMS, instant messages, native app etc.

5. VMHC in terms of feasibility can be implemented, as many similar solutions are already existing and on the market. Though, many factor need to be taken in count, as legal frame, regulations, data safety and privacy, technological requirements, system integration (e.g., within the national public health system) and above all – content that is relevant. In terms of usability, VMHC is needed on the market and many studies have shown there is a target audience. Industry trends are also projecting a huge demand in the next 5-10 years in the mental health branch.

Having in mind the sensibility and complexity of mental health illness and that many interventions can trigger unwanted behaviors (especially with children with suicidal thoughts and attempts), it is important to plan any of the interventions very thoroughly. Digital tools can be a great support for patients, caregivers, and HCP's but they have to offer flexibility and reliability at any given time. There is no ideal VMHC given that there is nothing that can change the physical contact in between patient, caregiver and HCP which is also therapeutical. But there are many ways on how digital tools and telehealth can improve care that is available, give sense of control and empowerment that many seek for when struggling with mental health illness.

9.2. Recommendations

The following recommendations have arisen based on the conducted research:

1. Investigate user experience (therapy journey) for every intervention that can be transferred online, and that is listed in the 9.1. subsection, item 4.
2. Investigate user interface components that should be taken in count based on the app usage preference investigated in the empirical part of this study, and which would need to be implemented in the VMHC's in the future.
3. Conduct similar research with higher number of respondents, with different backgrounds, remoteness, age subgroups, and diagnoses.
4. Add cost effectiveness study as part of future studies for better argumentation of the value of VMHC's.

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Digital transformation of mental health care:
Case study of virtual mental health clinic
Study Research Consent

Author: **Helena Blažinčić**

RESEARCH SPECIFICS

Field of Study Social Services, Health and Sports
Degree Programme Master's Degree Programme in Digital Health
Author Helena Blažinčić
Title of Project Report Digital transformation of mental health care: Case study of virtual mental health clinic
Supervisor/s: Prof. Dr. Sc. Marja-Liisa Rissanen Prim. Dr. Sc. Domagoj Štimac
Organization/s Savonia University of Applied Sciences Neuropsychiatric Hospital "Dr. Ivan Barbot" Popovača Lipik Community Service Center

My name is Helena Blažinčić, and I am student at Savonia University of Applied Sciences. I am attending master's degree programme called "Digital Health" and I am on my 2nd (final) year of studies. To finish my studies, I am obliged to write master thesis. By this way I am asking you to be part of my research study that I conducting as part of that master thesis.

The aim of this study research is to investigate the potential of digital solutions (e.g., app and platforms) in supporting treatment of psychological disorders among youth and adolescents. I want to investigate potential of making majority of institutional procedures transferred online within patient's environment. This is especially important for children who want to feel more in control of their decisions and health in critical age.

I am asking you to take part in this research study because I am trying to learn more about virtual mental health clinics – e.g., how can digital tools help youth and adolescents; their parents and healthcare providers communicate better and deliver best possible mental health care online. If you agree to be in this study, I will conduct an interview with **YOU/YOU AND YOUR CHILD** (circle applicable), supervised by **NAME OF THE SUPERVISOR**. There are no risks for **YOU/YOU AND YOUR CHILD** – this interview is completely anonymous. I have prepared questions for **YOU/YOU AND YOUR CHILD** that are open-ended and are mostly tied to your everyday life and activities, experience with **WORK/TREATMENT** here at the Polyclinic and coping mechanisms you are using daily. I hope to use what I learn from the study to make solution that will help kids with psychological disorders and their families even more than this on-site, face-to-face program already does.

The study consists of the following activities:

1. I will ask **YOU/YOU AND YOUR CHILD** to be part of this interview. The session will take up to maximum of 30 minutes.
2. The interview includes: (1) answering basic questions on **YOU/YOUR AND YOUR CHILD'S** daily routines in school, at work, free time, at home, (2) your experience before, during and after session at the Polyclinic and (3) your habits on using digital tools by now.
3. During the research I will both talk and observe **YOU/YOU AND YOUR CHILD**. I will also record our conversations and make notes on a separate sheet. This will be only and exclusively used for this study research

purpose. I will delete this recording when the research finishes. I will not replicate the audio for further distribution.

4. I will ask **YOU/YOU AND YOUR CHILD** to sign consent forms so that I have confirmation you agree to be part of this study research.

The project will be explained in terms that **YOU/YOU AND YOUR CHILD** can understand and will participate only if **YOU/YOU AND YOUR CHILD** are willing to do so. Only **SUPERVISOR NAME** and I will have access to information from **YOU/YOU AND YOUR CHILD**. At the conclusion of the study, children's, parents, and HCPs responses will be reported as group results only. At the conclusion of the study a summary of group results will be made available to all interested parties. Please contact us in case you want to do so.

Information for parents: Participation in this study is voluntary. Your decision whether to allow you or your child to participate will not affect the services normally provided to you and your child by the Polyclinic, and you or your child will lose no benefits to which he or she is otherwise entitled. Even if you give your permission for your child to participate, your child is free to refuse to participate. If your child agrees to participate, he or she is free to end participation at any time. He or she (if age if 15+) will also be asked to sign a form under your supervision. You and your child are not waiving any legal claims, rights, or remedies because participation in this research study. Remember, being in this study is up to you and your child and no one will be upset if you do not want to participate or even if you change your mind later and want to stop or delete information provided by you or your child.

Signing your name at the bottom means **that you/both you and your child agree to be in this study.** Should you have any questions or desire further information, please feel free to contact me at:

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Keep this letter with you. **Please return the consent page to me** 😊

Signature of patient and parent/caregiver



Date and place

Signature of Researcher

Date and place

CODE:

DIGITAL TRANSFORMATION OF MENTAL HEALTH CARE: CASE STUDY OF VIRTUAL MENTAL HEALTH CLINIC

STUDY RESEARCH CONSENT FOR PARENTS

1. I voluntarily agree to participate in this research study together with my under-aged child named
2. I understand that even if me and my child agree to participate now, we can withdraw at any time or refuse to answer any question without any consequences of any kind.
3. I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study as well as my child did.
4. I understand that participation involves me, and my child being asked questions about our daily routines, coping mechanisms, and other general information about disease management.
5. I understand that me and my child will not benefit directly from participating in this research.
6. I agree to my and my child's interview being audio-recorded.
7. I understand that all information me or my child provide for this study will be treated confidentially and compliant with GDPR and other national laws that assume privacy data protection.
8. I understand that in any report on the results of this research my or my child's identity will remain completely anonymous.
9. I understand that signed consent forms and original audio recordings will be retained by the Researcher (computer and mobile phone).
10. I understand that under freedom of information legalization I am entitled to access the information I have provided at any time while stored as specified above.
11. I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Signature of parent/caregiver

Date and place



Signature of Researcher

Date and place

CODE:

DIGITAL TRANSFORMATION OF MENTAL HEALTH CARE: CASE STUDY OF VIRTUAL MENTAL HEALTH CLINIC

STUDY RESEARCH CONSENT PATIENTS (AGE 15+) 😊

1. My name is Helena Blažinčić, and I am a student at Savonia University of Applied Sciences in Finland.
2. My mentor **MENTOR NAME** and I are asking you to take part in a research study because we are trying to learn more about how technology could help you learn things about your mental health condition to make your life easier. You parent already said this is okay to do, but I want to explain you my intentions for you to decide if you want to participate or not. If you agree to be in this study, I will ask you few things about you:
 - a. I will ask you questions about your time at school, when you are with your friends etc.
 - b. I will ask you questions about what you do when you are at home, when you are alone and spending time with your parents.
 - c. I will ask you questions about how you feel about being in the program in the clinic, as well as how you feel before coming in and going out.
 - d. I will also ask you about your habits of using different applications on your phone and computer (e.g., Tik Tok, Snapchat, Instagram, video games etc.).
3. I may make an audio tape of our conversation on my phone if you allow me. I will just use it as a reminder later in my analysis. I will delete it after I finish my research.
4. I do not believe that you will be upset by being in this study. If you take part in the study and believe that you have been upset in any way, you may stop being in the study. I will not tell anyone else the things you tell me during the interview or anything you tell me about yourself or any other person.
5. If you participate in this study, it will teach me important ways to help other children like you in the future.
6. Your parent gave permission for you to take part in this study. Even though your parent said "yes," you can still decide not to do this.
7. If you do not want to be in this study, you do not have to participate. Remember, being in this study is up to you and no one will be upset if you do not want to participate or even if you change your mind later and want to withdraw your answers.
8. You can ask any questions that you have about the study. If you have a question later that you did not think of now, you can call me at +45 91 85 16 92 or e-mail me at helena.blazincic@edu.savonia.fi
9. Signing your name at the bottom means that you agree to be in this study. Your doctors and therapists will continue to treat you whether you participate in this study. You will be given a copy of this form after you have signed it.

Signature of the patient



Date and place

Signature of the Researcher

Date and place

CODE:

DIGITAL TRANSFORMATION OF MENTAL HEALTH CARE: CASE STUDY OF VIRTUAL MENTAL HEALTH CLINIC

STUDY RESEARCH CONSENT FOR HEALTH CARE PROVIDERS

1. I voluntarily agree to participate in this research study.
2. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
3. I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
4. I understand that participation involves me being asked questions about my daily routines, work- and work-related activities.
5. I understand that I will not benefit directly from participating in this research.
6. I agree to my interview being audio-recorded.
7. I understand that all information I provide for this study will be treated confidentially and compliant with GDPR and other national laws that assume privacy data protection.
8. I understand that in any report on the results of this research my identity will remain completely anonymous.
9. I understand that signed consent forms and original audio recordings will be retained by the Researcher (computer and mobile phone).
10. I understand that under freedom of information legalization I am entitled to access the information I have provided at any time while stored as specified above.
11. I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Signature of healthcare provider

Date and place



Signature of Researcher

Date and place

CODE:

Digitalna transformacija u području mentalne zdravstvene zaštite:
Studija slučaja – virtualna klinika za zaštitu mentalnog zdravlja
Pristanak na sudjelovanje u istraživanju

Autor: **Helena Blažinčić**

SPECIFIČNOSTI ISTRAŽIVANJA

Područje studija: Socijalne usluge, zdravlje i sport <i>Social Services, Health and Sports</i>
Studijski program: Magistarski studij "Digitalno Zdravlje" <i>Master's Degree Programme in Digital Health</i>
Autor: Helena Blažinčić
Naslov istraživačkog projekta: Digitalna transformacija u području mentalne zdravstvene zaštite: Studija slučaja – virtualna klinika za zaštitu mentalnog zdravlja
Supervizor/i: Prof. Dr. Sc. Marja-Liisa Rissanen, Prim. Dr. Sc. Domagoj Štimac
Organizacija/e: Sveučilište primjenjenih znanosti Savonia <i>Savonia University of Applied Sciences</i> Neuropsihijatrojska bolnica "Dr. Ivan Barbot" Popovača Centar za pružanje usluga u zajednici Lipik

Moje ime je Helena Blažinčić i studentica sam Sveučilišta primjenjenih znanosti Savonia u Finskoj (Savonia University of Applied Sciences). Pohađam magistarski program pod nazivom „Digitalno zdravlje“ (Digital Health), i na drugoj sam (posljednjoj) godini studija. Za završetak studija dužna sam napisati magistarski rad. Ovim putem Vas molim da budete dio mog istraživačkog studija koji provodim u sklopu tog magistarskog rada.

Cilj ovog istraživanja je istražiti potencijal digitalnih rješenja (npr. aplikacija i platformi) kao potpora liječenju psiholoških poremećaja među mladima i adolescentima. Želim istražiti potencijal prenošenja većine institucionalnih postupaka u pacijentovo "online" okruženje. To je osobito važno za djecu koja žele osjetiti da više kontroliraju svoje odluke i zdravlje u kritičnoj dobi.

Ljubazno Vas molim da sudjelujete u ovoj istraživačkoj studiji jer pokušavam saznati više o virtualnim klinikama za mentalno zdravlje - npr. kako digitalni alati mogu pomoći mladima i adolescentima; njihovim roditeljima i pružateljima zdravstvenih usluga da bolje komuniciraju i pružaju najbolju moguću skrb o mentalnom zdravlju u "online" okruženju. Ako se slažete da ćete biti u ovoj studiji, obaviti ću intervju s Vama/Vama i vašim djetetom, pod nadzorom prim. Dr.Sc. Domagoja Štimca. Nema rizika za Vas/Vas i vaše dijete - ovaj je intervju potpuno anoniman. Pripremila sam pitanja za Vas/Vas i vaše dijete koja su otvorena i uglavnom su vezana za vaš svakodnevni život i aktivnosti, iskustvo s radom/liječenjem ovdje u Poliklinici i mehanizme suočavanja koje svakodnevno koristite. Nadam se da ću iskoristiti sve ono što smo naučili iz ove studije kako bismo napravili rješenja koje će pomoći djeci s psihološkim poremećajima i njihovim obiteljima čak i više nego što to već čini program kroz koji sada prolazite. Istraživanje se sastoji od sljedećih aktivnosti:

1. Zamoliti ću Vas/Vas i Vaše dijete da budete dio ovog intervjua. Sesija će trajati najviše 30 minuta.
2. Intervju uključuje: (1) odgovaranje na osnovna pitanja o dnevnim rutinama Vas/Vas i Vašeg djeteta u školi, na poslu, u slobodno vrijeme, kod kuće, (2) vaše iskustvo prije, za vrijeme i nakon seanse u Poliklinici i (3) vaše navike pri korištenju digitalnih alata do sada.

3. Tijekom istraživanja ću i razgovarati i promatrati Vas/Vas i Vaše dijete. Registrirati ću i naše razgovore i bilježiti ih na zasebnom listu/računalu. **To će se koristiti samo i isključivo u svrhu ovog istraživanja. Izbrisati ću sve podatke kad istraživanje završi. Neću kopirati informacije za daljnju distribuciju.**
4. Zamoliti ću Vas/Vas i Vaše dijete da potpišete obrasce za pristanak kako bih imala potvrdu da pristajete biti dio ovog istraživanja.

Projekt će biti objašnjen na način koji Vi/Vi i vaše dijete možete razumjeti. Samo Prim. Dr. Sc. Domagoj Štimac i ja imat ćemo pristup informacijama. Na kraju studije, odgovori djece, roditelja i zdravstvenih radnika bit će obrađeni samo kao grupni rezultati. Na kraju istraživanja, sažetak grupnih rezultata bit će dostupan svim zainteresiranim stranama. Molimo kontaktirajte me u slučaju da to želite.

INFORMACIJE ZA RODITELJE: Sudjelovanje u ovoj studiji je dobrovoljno. Vaša odluka o sudjelovanju Vas i Vašeg djeteta neće utjecati na usluge koje Poliklinika Vama i Vašem djetetu obično pruža, a Vi ili Vaše dijete nećete izgubiti nikakve beneficije na koja imate pravo. Čak i ako dopustite djetetu da sudjeluje, Vaše dijete može slobodno odbiti sudjelovanje. Ako Vaše dijete pristane sudjelovati, Vi slobodno može prekinuti sudjelovanje u bilo kojem trenutku. On ili ona (ako ima 15+ godina) također će biti zamoljeni da potpišu obrazac pod Vašim nadzorom. Vi i Vaše dijete ne odričete se nikakvih prava zbog sudjelovanja u ovoj studiji. Upamtite, sudjelovanje u ovoj studiji ovisi o Vama i Vašem djetetu i nitko se neće uznemiriti ako ne želite sudjelovati ili čak ako se kasnije predomislite i želite prekinuti ili izbrisati podatke koje ste dali Vi ili Vaše dijete.

Svojim potpisom na dnu ovog obrasca znači da se Vi/Vi i vaše dijete slažete da ćete biti u ovoj studiji. **Ako imate pitanja ili želite dodatne informacije, slobodno me kontaktirajte na:**

Helena Blažinčić
Student magistarskog programa "Digitalno zdravlje" pri Savonia University of Applied Sciences
Microkatu 1
70210 Kuopio/Finland
+45 91 85 16 92
helena.blazincic@edu.savonia.fi

Zadržite ovaj list kod sebe. **Molim Vas da meni vratite potpisani obrazac za pristanak 😊**

Potpis ispitanika



Datum i mjesto

Potpis istraživača

Datum i mjesto

KÔD:

**DIGITALNA TRANSFORMACIJA U PODRUČJU MENTALNE ZDRAVSTVENE ZAŠTITE:
STUDIJA SLUČAJA – VIRTUALNA KLINIKA ZA ZAŠTITU MENTALNOG ZDRAVLJA
Pristanak za sudjelovanje u istraživanju za roditelje**

1. Dobrovoljno pristajem sudjelovati u ovoj istraživačkoj studiji zajedno sa svojim malodobnim djetetom.
2. Razumijem da, čak i ako ja i moje dijete pristanemo sudjelovati sada, možemo se predomisлити u bilo kojem trenutku, ili odbiti odgovoriti na bilo koje pitanje bez ikakvih posljedica.
3. Objašnjena mi je svrha i priroda studije te sam imao/la priliku postavljati pitanja o studiji, kao i moje dijete.
4. Razumijem da sudjelovanje u studiji uključuje pitanja upućena meni i mom djetetu o našoj dnevnoj rutini, mehanizmima suočavanja i drugim općim informacijama o liječenju bolesti.
5. Razumijem da ja i moje dijete nećemo imati izravne koristi od sudjelovanja u ovom istraživanju.
6. Slažem se da razgovor sa mnom i mojim djetetom bude dokumentiran.
7. Razumijem da će se sa svim podacima koje ja ili moje dijete pružimo za ovu studiju postupati povjerljivo i u skladu s GDPR - om i drugim nacionalnim zakonima koji pretpostavljaju zaštitu podataka o privatnosti.
8. Razumijem da će u svakom izvještaju o rezultatima ovog istraživanja moj identitet ili identitet mog djeteta ostati potpuno anoniman.
9. Razumijem da će istraživač zadržati potpisane obrasce pristanka i izvorne zapise (računalo i/ili mobilni telefon).
10. Razumijem da imam pravo pristupiti podacima koje sam dao/la u bilo kojem trenutku dok su pohranjeni kako je gore navedeno.
11. Razumijem da mogu slobodno kontaktirati bilo koju osobu uključenu u istraživanje radi traženja daljnjih pojašnjenja i informacija.

Potpis roditelja/skrbnika



Datum i mjesto

Potpis istraživača

Datum i mjesto

KÔD:

DIGITALNA TRANSFORMACIJA U PODRUČJU MENTALNE ZDRAVSTVENE ZAŠTITE: STUDIJA SLUČAJA – VIRTUALNA KLINIKA ZA ZAŠTITU MENTALNOG ZDRAVLJA

Pristanak za sudjelovanje u istraživanju za djecu stariju od 15 godina 😊

1. Moje ime je Helena Blažinčić i studentica sam Sveučilišta primijenjenih znanosti Savonia u Finskoj.
2. Moj mentor Prim. Dr. Sc. Domagoj Štimac i ja tražimo od tebe da sudjeluješ u istraživanju jer pokušavamo naučiti više o tome kako bi ti tehnologija mogla pomoći da naučiš stvari o svom mentalnom zdravlju kako bi si olakšao svakodnevni život. Tvoj roditelj je već rekao da je to u redu, ali želim ti objasniti svoje namjere da odlučiš želiš li sudjelovati ili ne. Ako se slažeš da ćeš biti dio ove studije, pitati ću te nekoliko stvari o tebi:
 - a. Postavljati ću ti pitanja o tvom vremenu u školi, kada si s prijateljima itd.
 - b. Postavljati ću ti pitanja o tome što radiš dok si kod kuće, kada si sam/sama i provodiš vrijeme s roditeljima.
 - c. Postaviti ću ti pitanja o tome kako se osjećaš u programu na Poliklinici, kao i kako se osjećaš prije dolaska na terapiju i izlaska nakon terapije.
 - d. Također ću te pitati o tvojim navikama korištenja različitih aplikacija na telefonu i računalu (npr. Tik Tok, Snapchat, Instagram, video igre itd.).
3. Ukoliko mi dopustiš, dokumentirati ću naš razgovor na svom računalu. Poslije ću ga upotrijebiti kao podsjetnik u svojoj analizi. Izbrisat ću ga nakon što završim istraživanje.
4. Ne vjerujem da ćeš biti uzrujan/a time što ćeš biti dio ove studije. Ako sudjeluješ u istraživanju i vjeruješ da si se na bilo koji način uznemirio/la, možeš odmah prestati biti dio istraživanja. Neću nikome reći stvari koje mi govoriš tijekom bilo kojej drugoj osobi.
5. Ako sudjeluješ u ovoj studiji, ona će me naučiti kako da možda u budućnosti pomognem drugoj djeci poput tebe.
6. Tvoj roditelj dao je dopuštenje da sudjeluješ u ovoj studiji. Iako je tvoj roditelj rekao "da", ipak možeš odlučiti da to nećeš učiniti i to je u redu.
7. Ako ne želiš biti u ovoj studiji, ne moraš sudjelovati. Upamti, nitko se neće uzrujati ako ne želiš sudjelovati ili čak ako se kasnije predomisliš i želiš povući svoje odgovore.
8. Možeš postaviti sva pitanja koja imaš. Ako kasnije imaš pitanje koje se nisi sjetio/la, možeš me nazvati na +45 91 85 16 92 ili mi poslati e-poruku na helena.blazincic@edu.savonia.fi

Svojim potpisom na dnu dokumenta potvrđuješ da pristaješ biti dio ovog istraživanja. Tvoji liječnici i terapeuti nastaviti će te liječiti bez obzira sudjeluješ li u ovoj studiji ili ne. Nakon što se potpišeš, dobit ćeš svoju kopiju ovog obrasca.

Tvoj potpis



Datum i mjesto

Potpis istraživača

Datum i mjesto

KÔD:

**DIGITALNA TRANSFORMACIJA U PODRUČJU MENTALNE ZDRAVSTVENE ZAŠTITE:
STUDIJA SLUČAJA – VIRTUALNA KLINIKA ZA ZAŠTITU MENTALNOG ZDRAVLJA
Pristanak za sudjelovanje u istraživanju za pružatelje zdravstvene skrbi**

12. Dobrovoljno pristajem sudjelovati u ovoj istraživačkoj studiji.
13. Razumijem da, čak i ako pristanem sudjelovati sada, mogu se predomisлити u bilo kojem trenutku, ili odbiti odgovoriti na bilo koje pitanje bez ikakvih posljedica.
14. Objašnjena mi je svrha i priroda studije te sam imao/la priliku postavljati pitanja o studiji.
15. Razumijem da sudjelovanje u studiji uključuje pitanja o mojoj dnevnoj rutini, radnim zadacima i drugim općim informacijama o radu s djecom s mentalnim poteškoćama.
16. Razumijem da neću imati izravne koristi od sudjelovanja u ovom istraživanju.
17. Slažem se da se razgovor bude dokumentiran.
18. Razumijem da će se sa svim podacima koje pružim za ovu studiju postupati povjerljivo i u skladu s GDPR - om i drugim nacionalnim zakonima koji pretpostavljaju zaštitu podataka o privatnosti.
19. Razumijem da će u svakom izvještaju o rezultatima ovog istraživanja moj identitet ostati potpuno anoniman.
20. Razumijem da će istraživač zadržati potpisane obrasce pristanka i izvorne zapise (računalo i/ili mobilni telefon).
21. Razumijem da imam pravo pristupiti podacima koje sam dao/la u bilo kojem trenutku dok su pohranjeni kako je gore navedeno.
22. Razumijem da mogu slobodno kontaktirati bilo koju osobu uključenu u istraživanje radi traženja daljnjih pojašnjenja i informacija.

Potpis ispitanika



Datum i mjesto

Potpis istraživača

Datum i mjesto

KÔD:

INTERVIEW WITH PATIENT/CHILD:

GENDER: _____

AGE: _____

DIAGNOSIS AND THERAPY: _____

CODE: _____

1. Can you tell me more about yourself? What do you like to do in your free time? Do you like your school? What is your favorite subject and why?
2. Do you use mobile phone or computer? What are the most common activities you do on them? How do you feel when you are using them? Do you search for any health-related stuff on them?
3. What are 3 favorite applications of yours? Are they the ones you use the most? Why is that so, why being they so cool comparing to other ones? Why are they appealing? Are your friends online too?
4. Can you tell me how do you feel about your condition? Does any of your friends know about it? Do you feel ashamed of it? Does it influence your life somehow? Does your school counselor know about it?
5. Can you please tell me how do you feel before you come into the Clinic? Do you feel these people here will help you, do you feel safe? Do you trust these people? Do you like coming over here?
6. Can you tell me about your therapy here? Do you find it helpful? Do you feel better after you go back home? Do you get new ideas on how to help yourself after sessions?
7. **Do you think some of the things you do here could be done via your mobile phone or computer (if you have them)? What are those things? Can you explain why exactly those?**
8. **Do you think you would have the same relationship with your doctor if you would get your treatment via Internet? Why do you think or feel that?**
9. **Do you think you would feel in charge if you could find your therapy instructions somewhere via your phone or computer? What else would make you feel that? Progress tracker tool?**
10. **What would motivate you to use digital service for your health management? Why would you like it? Where would you like to hear about it?**
11. **Do you believe those 3 apps you mentioned earlier (*repeat which one he or she stated*) would be helpful for you to manage your condition? Would you feel safe and good about using them or similar ones in your treatment?**

INTERVIEW WITH PARENT/CAREGIVER:

GENDER: _____

AGE: _____

DIAGNOSIS AND THERAPY OF A CHILD: _____

CODE: _____

1. Can you tell me something about yourself, your life? What do you like to do in your free time? How about your work? Is it stressful? What about family relationships and friends? How do you feel about that?
2. Do you use mobile phone or computer? What are the most common activities you do on them? How do you feel when you are using them?
3. What are 3 favorite applications of yours? Are they the ones you use the most? Why is that so, why being they so important for you comparing to other ones? Why are they appealing?
4. Can you tell me how do you feel about your child having the mental health illness? What is your biggest challenge with regards to that? Would you like to be supported somehow? How? Parent support groups?
5. How do you mostly spend your time with your child? Is there a routine you have with him/her at home? How do you control if he or she is taking medications? How do you track progress?
6. Can you please tell me how do you feel before you come into the Clinic? Do you feel these people here will help you and your child; do you feel safe? Do you trust these people? Do you like coming over here?
7. Can you tell me about your child's therapy here? Do you find it helpful? Do you feel better after you go back home? Do you feel inspired to look for new content and tools for your child? How do you do it?
8. **Do you think some of the things you do here could be done via your mobile phone or computer (if you have them)? What are those things? Can you explain why exactly those?**
9. **Do you think you and your child would have the same relationship with your doctor if your child would get treatment via Internet? Why do you think or feel that?**
10. **What would make you use online mental care services that can support your child? What does it have to include? What would motivate you in this service to enroll you and your kid into it?**
11. **Would you feel more comfortable if you would have service that gets you content and tools that might help you and your child and connect you both with HCP? Where and how would you like to know about this option?**

INTERVIEW WITH DOCTOR/HCP:

GENDER: _____

AGE: _____

ROLE: _____

CODE: _____

1. Can you tell me something about yourself, your life? What do you like to do in your free time? How about your work? Is it stressful? What about family relationships and friends? How do you feel about that?
2. How often do you use phone or computer daily? Can you determine which amount of time you spend on those work related? What is the most common thing you search/do on them?
3. What are 3 favorite applications of yours – non work related? Are they the ones you use the most? Why is that so, why being they so important for you comparing to other ones? Why are they appealing to you?
4. Can you tell me what is the most challenging thing about your work? Is it the therapy session itself or something else? Administration, lack of resources, something else? Is availability of relevant experts and content an issue?
5. How do you usually measure progress with a patient and parent? How do you update them about it? How do you measure medication compliance? How do you inform them on new tools and content available?
6. Can you tell me how does your workday looks like? What do you do during, before and after the session?
7. What is the most important thing you must have in order to support patient and its parent/s?
- 8. Do you think some of the things you do with patient and parent/s could be done via mobile phone or computer? What are those things? Can you explain why exactly those?**
- 9. Do you think you would still have the same relationship with patient and parent/s if they would get treatment via Internet? Why do you think or feel that?**
- 10. What would make you use online mental care services that can support your patient? What does it have to include? What would motivate you in this service to enroll?**
- 11. Do you think your work would get added value with this kind of service? Please explain a bit. Where and how would you like to know about this option?**