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Digitalization of Peer Support for Substance Use Disorders

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<p>Päihdehäiriöt ovat merkittävä yhteiskunnallinen ja maailmanlaajuinen terveysongelma. Yhteisöihin perustuva vertaistuki näyttelee merkittävää roolia päihdehäiriöiden hoidossa mutta erilaisten organisaatioiden ja palvelujen joukosta oikeiden palvelujen löytäminen voi olla hankalaa niitä tarvitseville. COVID-19-pandemia pakotti ihmiset siirtämään suuren osan elämästään verkkoon ja tämä vaikutti myös heihin, jotka tarvitsevat vertaisyhteisöihin perustuvaa tukea päihdehäiriöihin. Melkein täydellinen fyysinen eristäytyminen tarkoitti, että ihmisten täytyi ottaa digitaalisia työkaluja käyttöön osallistuakseen verkkotapaamisiin ja pitääkseen yhteyttä vertaistukiyhteisöön.</p> <p>Digitalisaatio onkin erinomainen mahdollisuus saattaa palvelut helpommin löydettäväksi ja tavaksi yhdistää päihdehäiriöistä toipuvia yhteisöjä. Tässä kandidaattityössä tutkittiin 16 tutkimusartikkelia, joita etsittiin Google Scholar sekä Scopus-tietokannoista. Tutkimuskysymyksiä on useita. Minkälaisia vertaistukiyhteisöitä on olemassa päihteiden käyttäjille sekä heidän läheisilleen, mitä digitaalisia työkaluja he käyttävät ja kuinka he ovat kokeneet näiden käytön ennen, jälkeen ja COVID-19-pandemian aikana.</p> <p>Uudenlaisella digitaalisilla työkaluilla on paljon potentiaalia tuoda vertaistuki saataville myös niille, joille muuten avun saavuttaminen voi olla hankalaa. Vertaistuen digitalisaatio voidaankin nähdä täydentävänä mahdollisuutena olemassa oleviin hoitoihin ja toipumista tukeviin palveluihin.</p>	
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<p>Substance use disorders (SUDs) are a major societal and global health problem. Community-based peer support plays an important role in substance use disorder treatment. However, finding and engaging the right services across wide variety of organizations and services available is the main challenge for those in need. Furthermore, the COVID-19 pandemic forced people to move a major part of their life online and this also applied to people needing community-driven peer support for substance use disorders. Nearly complete physical isolation meant that people had to take digital tools into use when attending community online meetings and to remain connected with their peers.</p> <p>Digitalization provides an excellent opportunity to make the services more easily available and is a great way to connect communities recovering from substance use disorders. In this thesis 16 research articles were reviewed and they were searched from Google Scholar and Scopus database. This review addresses several questions. What peer support communities are available for substance users and their families, what digital tools do they use and how the use has been perceived before, during and after the pandemic.</p> <p>New digital tools have great potential to make peer support available for many that have challenges to reach the help otherwise. Digitalization of peer support can be seen as a complementary opportunity for existing treatments and recovery support services.</p>	
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1 Introduction

Substance use disorders (SUDs) are a major global health problem associated with high mortality and disease burden [26]. It has been estimated that over 23 million 12 years and older individuals in the US suffer from a substance use disorder but only 10 percent receive treatment [22][10]. Not only substance use disorders cause individual suffering but they also have a major impact and cost for the society. In the US alone, substance misuse and disorders cause over \$500 billion annual costs [9].

Substance use disorders are illnesses affecting person's behavior and brain causing the person to lose control over their use of substances such as alcohol and drugs. The severity of substance use disorder (SUD) symptoms may vary but addiction is the most severe form of SUDs [3].

Research has shown that approximately half of the persons who experience co-occurring substance use disorder in their lifetime also experience mental health issues and vice versa. Although mental health and SUDs commonly co-occur, it does not necessarily mean that one causes the other [3].

Addictions in general can be divided into behavioral and substance addictions and they all share the same neurobiological mechanisms [4]. Peer support treatments for behavioral addictions such as gaming or sex are similar to substance addictions but they are not in the scope of this thesis.

Pater et. al [22] explain how the recovery is an individualized and personal process. Depending on individual's personal history SUD recovery journeys typically involve various types of integrated inpatient and outpatient treatments that may involve components such as medical interventions, behavioral therapy and peer recovery support. Due to this complex nature of the substance use disorder, recovery journeys are non-linear and there is no single treatment that can be applied to all individuals. Therefore, it is important that there are a wide variety of treatments and recovery paths available for substance use disorders. Substance use disorder treatment and support can practically be divided into clinical and community support [22].

Substance use also affects the families and therefore, they are usually involved in SUD treatments [17]. For this reason, this thesis introduces also family related support as the organizations and digital tools have similarities.

The goal of this literature study was to find answers to the following questions:

- how has digitalization changed peer support accessibility and what digital peer support tools are available for individuals and their families suffering from substance use disorders (SUDs)?

- what kind of organizations and communities are there and how do they use digital peer support tools?
- how do those seeking help perceive the help using digital peer support vs getting peer support in-person?
- how has the COVID-19 pandemic changed this landscape?

Professional help and clinical setting are not in the scope of this literature review. Instead the emphasis is on communities providing peer support based on their experience in dealing with substance use disorders.

The rest of this thesis is structured as follows. Chapter 2 introduces the methodology for this thesis and how the literature study was conducted. Chapter 3 examines substance use disorders (SUDs) support ecosystem and mutual-help organizations (MHOs) in the US. In particular, peer support for families is examined. Chapter 4 examines various types of digital tools available for peer support. In this bachelor's thesis, the focus is to cover various types of digital peer support tools and provide common examples of each type. Chapter 5 examines how online peer support was perceived during the COVID-19 pandemic. Moreover, the challenges and opportunities of digital peer support are discussed. Finally, Chapter 6 discusses the research questions in broader context and how the digitalization landscape of peer support might look like in the future.

2 Methodology

This thesis reviewed literature available in Google Scholar [1] and Scopus [7] database. The search queries were performed by identifying the most relevant keywords to the study and by fine-tuning the queries based on best match for the most relevant research articles. This section summarizes those queries.

To form the initial search queries the following keywords were used "peer", "support", "digital", "substance use disorders", "recovery". Based on initial findings in the literature "SUD" is commonly used acronym and it was used as an additional keyword in final query.

digital AND peer AND support AND ("substance use disorders" OR SUD)

Scopus provided only 8 matches whereas Google Scholar provided +5000 matches. To reduce the amount of Google Scholar search results and find relevant articles for COVID-19 pandemic an additional filter "from year 2020" and extra "COVID-19" keywords were used:

digital AND peer AND support AND recovery AND COVID-19 AND ("substance use disorders" OR SUD)

Based on the abstracts of 28 papers in total were identified how well they could answer the research questions. The articles were studied in detail to satisfy one or both of the following criteria: 1) The study examined digital technology relevant to SUD peer support and recovery 2) The study examined mutual-help for substance users and their families. Finally, 16 papers were selected to this literature review.

3 Substance use disorders support ecosystem

This chapter explains what peer support and substance use disorders ecosystem are. It is crucial to understand how peer support and organizations behind them work in a traditional setting to understand how digitalization can be applied to peer support services. In research article Pater et al. [22] describes how the SUD support can be divided into two categories:

- Clinical support (Professional, primarily provided by private and public health care providers)
- Community support (Non-professional, primarily provided by mutual-help organizations)

Clinical support for SUDs, are typically provided by health care professionals such as physicians, nurses and social workers. Community support is based on mutual-help organizations where the individuals have lived through similar experiences they are providing assistance with. For instance, a family member who has lived close to an individual having a substance use disorder.

Ashford et al. [11] introduces a new special peer support type has emerged between clinical and community support. These so-called peer-based recovery support services are usually provided by certified personnel. This type of personnel is called peer or recovery coaches. These individuals have their own lived SUD recovery experience, and they usually provide coaching to the patients in professional recovery community organizations or as part of medical or clinical treatment programs.

Peer coaches and peer-based recovery support services should not be confused with mutual-help organizations (MHOs) and individuals (i.e. sponsors) in the community discussed in the following sections. MHOs and individuals helping in the communities are usually acting on volunteer basis and are not directly linked to clinical support. However, it is common that those working as certified peer coaches attend MHO activities such as peer support in personal life as they are also living in recovery.

In the following sections various types of organizations operating in the community support organizations are explained.

3.1 Mutual aid and mutual-help organizations (MHOs)

The previous section explained how recovery experience provided by non-professionals plays an important role in formal treatment programs too. Evidence shows that helping others also helps the person providing the help [21]. This is the key for mutual aid effectiveness in general. Traditionally, the mutual aid organized by mutual help organizations (MHOs) happens in in-person groups. The COVID-19 pandemic forced people to find mutual aid groups remotely for the first time at very large scale. The following section introduces various type of MHOs.

3.1.1 Different types of mutual-help organizations

Individuals suffering from substance use disorders have various personal preferences and needs. Therefore, according to Kelly et. al [19] the following three main types of MHOs have emerged: secular, spiritual and religious.

The wide variety of MHO alternatives in the US reflect the demographic diversity, recovery preferences and addiction experiences [19]. In the following section the two main approaches for secular, spiritual and religious MHOs are introduced.

3.1.2 12-step and non-12 step approaches

Kelly et al. [19] explains that in addition to the three main types listed in previous section mutual-help organizations can be split into two categories based on the approach they have organized to provide help to the individuals. Those providing assistance based on a 12-step approach and those that use other approaches including cognitive-behavioral and evidence-based motivational strategies. There are 12-step communities for both substance users and their families. Most commonly known 12-steps communities for substance users are Alcoholics Anonymous (AA) and Narcotics Anonymous (NA).

In total there are over 200 various 12-step communities for both substance and behavioral (for instance gaming) addictions [16]. Some people do not like 12-step approach due to their spiritual and theistic nature [21]. For those who find 12-step communities uncomfortable, there are also secular mutual-help organizations. Various types of groups such as Smart Recovery, LifeRing, Women for Sobriety are described a bit more in detail in the following sections. The recent research shows that various types of secular groups are equally effective and they are found to be as effective as 12-step communities as long as individual's goal is abstinence [21].

Many of the 12-step communities have a practise called sponsorship. Sponsorship means that a more experienced member guides a new member through the recovery steps and the

sponsee can learn from sponsor’s experience. Research has shown that getting in-person sponsorship in early recovery helps the sponsee to get long-term sobriety and abstinence [16].

3.1.3 MHOs available in the US

As described in previous section, a wide variety of mutual-help organizations provide community-based peer support and they have primarily differences in how they operate, what is the target group and what is the substance in question. To get a better picture of the range of organizations and communities available in the US and worldwide the following table lists some of them.

Table 1: Mutual-help organizations

Name	Type	Nature	Substance	Target group	Specialty / groups
AA	12-step	Spiritual	Alcohol	Substance users	gender, LGBTQ+, age, language etc.
NA	12-step	Spiritual	Drugs	Substance users	gender, LGBTQ+, age, language etc.
SMART Recovery	EBT, CBT	Secular	Alcohol, Drugs	Substance users, families	gender, LGBTQ+, age, language etc.
Secular Organization for Sobriety	SOS specific	Secular	Alcohol, Drugs	Substance users, families	gender, LGBTQ+, age, language etc.
Women for sobriety	Self-Help	Secular	Alcohol, Drugs	Substance users	Women only, LGBTQ+
LifeRing	Self-Help	Secular	Alcohol, Drugs	Substance users, families	gender, LGBTQ+
Celebrate Recovery	Christ-centered 12-step	Religious	Alcohol, Drugs	Substance users, families	gender specific
Recovery Dharma	Buddhist	Secular	Alcohol, Drugs	Substance users, families	gender specific

Hogue et al. [17] sees family involvement especially important when treating transitions (ages 15-26) youth. Peer support for substance users and their families can have a significant role in SUD treatment and recovery continuum. In the US mutual aid for family members is widely available and there are proof that i.e. Al-Anon and other groups is an important part of self-care [17]. For children and youth there are also dedicated groups.

Friends and family members affected by substance use have similar mutual-help organizations providing peer support. For both substance users and their family members it is important that they can identify themselves with the age group, substance used, circumstance or other specialty. Some of them are listed in the following table.

Table 2: Mutual-help organizations for friends and families

Name	Type	Nature	Substance	Specialty
Adult Children of Alcoholics (ACA)	12-step	Spiritual	Alcohol	Children of Alcoholics (Adult)
Al-anon	12-step	Spiritual	Alcohol	N/A
Alateen	12-step	Spiritual	Alcohol	mostly teenagers
Nar-anon	12-step	Spiritual	Drugs	N/A
Naraateen	12-step	Spiritual	Drugs	mostly teenagers
SMART Recovery Family and Friends	EBT, CBT	Secular	Alcohol, Drugs	N/A
Families Anonymous	12-step	Spiritual	Alcohol, Drugs	N/A
LifeRing Family and Friends	Self-Help	Secular	Alcohol, Drugs	N/A

4 Digital tools in peer support

In previous section the SUD support ecosystem and various types of mutual-help communities were introduced. Digital tools in recovery support have growing research interest [12]. From the selected research articles the following were examined in this thesis and are discussed in this chapter. The COVID-19 pandemic forced people to seek peer support and other help remotely using wide variety of digital tools. Already before the pandemic it was estimated that 11 percent of those in recovery used some digital technology to reduce or support abstinence [21].

Table 3: Digital tools examined in the thesis

Name	Type of help	Type of tool	Platforms	Timing	Substance
Zoom	Online peer support meeting	Remote video	Desktop, mobile app, phone	Synchronous	Drugs, alcohol
Facebook	Peer support chat	Social network site	Desktop or mobile app	Asynchronous	Drug, alcohol
TikTok	Peer support chat	Social network site	Desktop or mobile app	Asynchronous	Drug, alcohol
Reddit	Peer support chat	Discussion boards ("subreddits")	Website and mobile app	Asynchronous	Drugs, alcohol
Intherooms	Networking, chat, online meetings, stories	Recovery-specific social network site	Website and mobile app	Both asynchronous and synchronous	Drugs, alcohol
Sobergrid	Networking, 1-2-1 and 1-2-many chat	Recovery-specific social network site	Mobile app	Both asynchronous and synchronous	Drugs, alcohol
DST	In-person peer support	Digital story telling	Digital images / transcripts	N/A	Drugs, alcohol

4.1 Online peer support meetings

Online peer support meeting is a type of service that has not been a necessity for peer support only during the COVID-19 pandemic, but they have been proven to provide other types of benefits for the attendees too [21]. The most common platform used is Zoom [8] by Zoom Video Communications Inc. and it can be accessed either using mobile or desktop application [12]. Regardless of the MHO most of the online peer support meetings are hosted using Zoom.

Kelly et al. [20] explain that in particular those living in rural areas or have other reasons for not being able to access in-person meetings can attend online peer support meetings anytime and anywhere. Substance use disorders have a stigma associated with them that alone may prevent individuals attending in-person meetings. Online peer support meetings allow people to use pseudonymous names as their visible name to ensure anonymity during the online meeting. Online peer support meetings make it also possible to provide wider range of specialized groups for various genders, age groups and other population.

Krentzman [21] defines two type of online peer support meetings "location-agnostic" online meetings and "location-centric" online meetings. In location-agnostic online meetings the geographical location of the meeting is not significant. These types of meetings already existed before the COVID-19 pandemic with roughly 10-20 participants. During the COVID-19 the size of meetings grew up to 400 participants. When the COVID-19 started the amount of location-centric online meetings started to increase quickly. In location-centric online meeting case the in-person meeting was changed to online one due to fact that physical meeting spaces were shut down. The location-centric meetings continued to happen at the same time and with the same people as in the in-person meetings. Now when the restrictions have eased the meetings have continued in hybrid format where some people attend remotely and some people in-person. There are both "closed" and "open" meetings available. Open meetings are open to anyone who wants to attend or wants to know more about substance use disorders. Closed meetings are meant for those who have, or have had an issue with a substance.

4.2 Social media and discussion boards

Social media platforms and discussion boards have become important digital tools to share information about recovery and substance use [12]. Most mutual-help organizations (MHOs) and recovery communities have presence in some social media platforms such as Facebook. Most of the substance use research studies in the past have been explored Facebook, Twitter, Instagram and Youtube [24]. For this study the most recent TikTok

and Reddit studies were selected and they are covered in the following sections.

4.2.1 TikTok

TikTok is a short-video service for sharing video stories and it has gained popularity among young generation. Russel et al. [24] examined in their study how people in SUD recovery use TikTok platform to get assistance and provide hope to others suffering from SUD. The selection of the videos was based on keyword hashtags commonly used in SUD related earlier studies. In total, 82 substance use related videos that received most likes were selected to the study. On average these videos were liked 325000 times viewed over 2 million times. They concluded that while recovery related videos can reach millions of viewers more research is needed to understand whether TikTok short-video stories can reduce stigma, normalize experience of addictions and change behaviour to seek for help.

4.2.2 Reddit

Reddit is probably the most well-known network of communities service that uses topic specific discussion boards called "subreddits" [14][12]. Compared to real-time online meetings discussed in the previous section discussion boards provide a platform for asynchronous communication and good information resource. Reddit is accessed either through a website [5] or a mobile application and users can use pseudonymous user names without the need to show with their real name [14]. There are subreddits for most of the MHO organizations including those in recovery and their families such as SMART Recovery, Al-Anon and NA.

Garg et. al [14] studied how Reddit online community posts can be used to detect the risk level of individuals misusing fentanyl substance. In particular, they used machine learning techniques to analyze user posts and comments to identify and automatically detect risk of those users that might benefit from getting support for substance use. The study indicated that although fentanyl was at the center of the study it should be possible to apply similar models to detect also high risk users of other substances (such as alcohol and drugs).

4.3 Recovery-specific social networking services

In this section two recovery specific social networking services are examined. These types of services constitute a new form of digital social peer support solutions that combine and integrate separate digital services into a more holistic solution.

In a research article Bergman et al. [12] introduce and compare two free recover-specific

social networking services. The first Intherooms.com is a service accessible both via mobile application and website. The second one Sobergrid, is a mobile application only. Compared to traditional social networking sites both services are targeted to those recovering from substance use disorders. Typically, the users of these type of services have either psychiatric or substance use disorder history and most of them have participated MHO peer support groups such as AA [12].

4.3.1 In The Rooms

According to the Bergman et al. [12], Intherooms.com [6] is a free service with 30000 monthly active and 450000 registered users. It has similar functionalities as traditional social network sites, but the users are those who seek help or want to get more information about SUD recovery. However, the biggest difference is that the service also offers database to search meetings. Moreover, using the site the users can attend both in-person and online peer support meetings. Through the site recordings of MHOs meetings are also available where people share their recovery stories.

Bergman et al. [12] explain that if the user is new to recovery, there is a possibility that by listening to the stories they identify with them and realize recovery can be possible for them too. This type of initial engagement might result spending more time on the site, increase activity and engagement with other members or even attend in-person meetings. The site provides not only synchronous but also asynchronous services such as discussion boards with 24/7 access to read and learn how to tackle challenging situations. Similar to 12-step MHOs the site provides also supportive network of individuals in recovery to form new social connections and get help with substance use disorders.

Intherooms.com is free for the individuals seeking for help but the company's business model is to sell advertisement for recovery support and treatment service providers. In comparison to traditional social network sites, they do not use user data to personalize advertisement.

4.3.2 Sobergrid

Ashford et al. [10] studied digital recovery networks especially investigating the Sobergrid [2] application and its usage data. Sobergrid is a free smartphone application available for iOS and Android platforms. The Sobergrid application has similarities to traditional social network services (i.e. Facebook). For instance, one can share location, make new text/image posts and comment other persons' posts.

In addition to this Sobergrid also allows messaging with individuals and groups. A special feature in the application is "burning desire" feature which makes it possible to contact

the community immediately when there is urgent need for support. The application has twitter like follow feature that allows to follow people and they can follow back. It also has an "alumni group" feature which are private groups for people to join e.g. from particular substance use disorder treatment program and using a specific sign-up code.

The Ashford et al. [10] study showed that on average the users of Sobergrid application have been sober less than a year and the users being most active were in the beginning of their recovery journey. Sobergrid has similarities to other applications in health intervention where the download rates are high, but the users do not show active regular use of the application. This does not necessarily mean poor adoption nor lack of interest in SoberGrid application. The users having more social connections in Sobergrid application tend to have longer sobriety and thus peer-to-peer connections may provide better user engagement and thus improved recovery resiliency [10].

4.4 Digital story telling

Discussion boards, online support meetings, and recovery social networks discussed in previous sections form the most common and daily peer support, but it is important to consider other type of modalities too, where digital tools can be used to enhance peer support. Digital story telling is one good example of such peer support type.

In Moms supporting moms pilot project by Paterno et al. [23] digital story telling (DST) was used as a method to understand pregnant womens' substance use and perspectives for SUD recovery. Peer mentors who were in recovery themselves and had pregnancy time substance use experience used digital storytelling tools in digital transcripts and pictures to share their recovery story during pregnancy. Each mentor was also in-depth interviewed and they participated the digital storytelling workshop which helped themselves through shared experience not only help the mentees but also created deep social connections with other mentors. The project found out that it could be possible to integrate digital story telling in SUD recovery programs and DST can also provide hope and social support among participants [23].

5 Perceptions of digital peer support

When the COVID-19 pandemic hit worldwide in March 2020 in-person meetings had to be moved to online peer support meetings. Although online and social media recovery support has been studied in the past this was the first time that recovery support services went online at this scale. This section examines how people in recovery have perceived the lack of in-person meetings and getting most of the peer support remotely. Luckily at

the time of writing the thesis four research papers were found to answer this question.

In an online and social media sobriety study carried out in 2015 by Grant et al. [15] with 191 adult participants it was concluded that the possibility to reach recovery support from anywhere anytime is not just beneficial but for some individuals in recovery it could be life-saving. Although the digital services were not on the same level in 2015 the researchers saw the mixture of online meetings and in-person meeting modalities becoming increasingly popular.

To get a better picture on how COVID-19 affected to the behavior and their use of digital services several research articles were examined. Scarfe et al. [25] found in their qualitative investigation that while many of the study participants perceived significant negative consequences due to COVID-19, there were positive impacts too. The study emphasized that online resources are not suitable for everyone. Relying long time purely on online resources may leave some persons out of the support they need for recovery maintenance.

Although Scarfe et al. [25] investigation showed there were positive impacts too some important aspects from in-person meeting were lacking. For instance, one participant commented:

"It's different because you don't have the personal contact. You don't have the hugs, the coffee, the socializing before the meeting, after the meeting. But we find a way to do it even through Zoom. So the only difference is you just don't- you're not sitting next to no one. You don't have the physical contact. That's it" [25, p. 10].

In the use of technology people experienced significant change. For instance, one participant said:

"Zoom, Messenger, WhatsApp app, video chatting, a lot more phone calls to people who you kind of overlook in your normal life" [25, p. 14].

The study participants had access to phone or internet, so it didn't cover those who do not have access to online resources at all. Thus, many of the participants did report individuals among their own peers that had problems accessing virtual resources. Although online resources were available participants still wanted some type of in-person support too [25].

An important finding from Scarfe et al. [25] study was that those organizing recovery services should pay attention to not replace in-person meetings totally or for a long-time with online resources. Moreover, the study showed that quite significant number of participant had negative experience of online resources during the COVID-19 pandemic.

Kelly et al. [20] the COVID-19 effect to SMART Recovery online group meetings was studied. Due to quick expansion of online meetings many new countries took online groups into use. For SMART Recovery the online groups can be seen a common delivery method for group meetings also after the COVID-19 pandemic. Online group meetings have provided many new opportunities. People can choose if they wish to have their camera on or if they prefer to use pseudonymous name instead of a real one. Online meetings also provide the opportunity to customize and target the meeting better for a specific group of people based on age, background, and other individual preferences.

Although the online meetings have provided also many benefits, they have introduced new challenges too. These challenges will be examined in the following section.

5.1 Challenges and opportunities in digital peer support

Moving activities online at a big scale had also negative consequences. At the start of COVID-19 pandemic in March 2020 a phenomenon called "zoom bombing" erupted in online meetings [18]. Zoom being the most common tool for online also the SUD peer support meetings were affected. Global research done on zoom bombing highlighted that especially Alcoholics Anonymous (AA) and Narcotic Anonymous (NA) online meetings were targeted [13].

Zoom bombing appeared in various forms such as pranks, bullying and hate speech. Due to improper security settings online support meetings were interrupted and harassed. As people attended the online meetings with their real names and pictures there was also growing concern that the zoom bombers would record the meetings and could compromise the participants' anonymity [18].

Access to digital tools is not available for everyone and many find challenges using them. In addition to zoom bombing Krentzman [21] in research article describes other types of challenges people may encounter when they attend online meetings. To acquire a password for some online meetings the participants need to send an email but the persons didn't receive any reply. On the other hand the online meetings are hosted across the globe and there may also be challenges to interpret the correct local time. For those new to online peer meetings the article encourages to promote upsides that online meetings may bring. For example, there is no travel time and cost involved, support is available 24/7 and online meetings are available from all continents [21].

6 Discussion

The main research questions of this literature study were:

- how has digitalization changed peer support accessibility and what digital peer support tools are available for individuals and their families suffering from substance use disorders (SUDs)?
- what kind of organizations and communities are there and how do they use digital peer support tools?
- how do those seeking help perceive the help using digital peer support vs getting peer support in-person?
- how has the COVID-19 pandemic changed this landscape?

While the importance of in-person physical presence and social interaction in peer support meeting cannot be underestimated, this literature study has shown that digitalization of peer support with proper digital tools played an important role during and beyond the COVID-19 pandemic.

Substance use disorders affect individuals and their families worldwide. Peer support and digital services provided by various organizations are a significant form of community support in SUD support.

Online peer support meeting participants indicated that the perceived difference between in-person and online meeting is that the personal and physical contact is missing. The research articles studied did not clearly state the perceived effectiveness of an online vs. in-person meetings but it seems the experience may vary significantly depending on the individual.

Mutual-help organizations believe that digital peer support resources such as online meetings will continue after the COVID-19 pandemic. While this type of development in peer support digitalization may have happened organically during the years COVID-19 pandemic boosted the ongoing development.

Digitalization has made all kinds of peer support services more easily accessible 24/7 for those in need. Due to the wide range of organizations behind the services, it is challenging to find and navigate through these services in order to find the best fit for each individual. As the recovery paths for every individual are so unique, it is not possible to build a recovery path that fits all but instead, a more holistic range of services and approach is needed.

Digitalization in general has the potential to build digital recovery journeys that would integrate separate digital tools in a simpler manner for substance users and their families.

This way the most suitable help and support could be more easily found and available 24/7.

Intherooms.com and Sobergrid are good examples of new type of digital first services where a more holistic perspective is taken. For instance, Intherooms.com provides peer support meeting calendar including most mutual-help organizations available for both substance users and their families. These type of new approaches and digital services can be inspirational when new services are being developed in the future.

While digitalization of peer support has great potential it can still be seen as complementary to existing treatments and recovery paths. In the thesis, several research articles about digital peer support were covered both before and after the COVID-19 pandemic. Digital peer support has played a crucial role during the pandemic for those in SUD recovery. However, it is important to note that everyone does not have access to digital tools. Moreover, those individuals are usually the most vulnerable ones especially during the pandemic making them feel more lonely and isolated.

Especially "digital native" youth may find online peer support meetings increasingly important in the future. In addition, the services such as Reddit and TikTok may play an important role for young people to find more information and support for their own or their family's substance use problem.

Reddit and TikTok content analysis studies introduced in this literature review are good examples of possibilities to identify and engage the users who are seeking for help for alcohol and drug use.

In the future, it will be interesting to see how the digital peer support landscape will evolve and what an ideal digital recovery and peer support service will look like. At least such services should have elements of the solutions examined in this study. This study was quite well able to answer the research questions based on the research articles available at the time of writing. In addition, the articles covered the impact of COVID-19 pandemic. Further research and new tools are clearly needed in order to develop an ideal digital peer support service and identify the individuals needing it. Such service should have one digital entry point, adapt based on individual's needs (e.g. type of support, location and time) and be easily 24/7 accessible on various digital platforms by anyone when the help is urgently needed.

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